EXHIBIT A-1
Defendant's Preliminary Invalidity Contentions
Orckit Corporation v. Cisco Systems, Inc., 2:22-cv-00276-JRG-RSP

Chart for U.S. Patent 6,680,904 ("the '904 Patent")
Cisco Catalyst 2900 Series XL and 3500 Series XL Switches (collectively, the "Catalyst XL Switches")

As shown in the chart below, all Asserted Claims of the '904 Patent are invalid under (1) 35 U.S.C. §§ 102 (a), (b), and (g) because the Catalyst XL Switches meet each element of those claims, (2) 35 U.S.C. §§ 102 (a), (b), and (g) because the references describing the Catalyst XL Switches disclose each element of those claims, and/or (3) 35 U.S.C. § 103 because the Catalyst XL Switches render those claims obvious either alone, or in combination with the knowledge of a person having ordinary skill in the art, and in further combination with the references specifically identified below and in the following claim chart and/or one or more references identified in Defendant's Preliminary Invalidity Contentions. The following quotations and diagrams come from documents that show both models of the Catalyst XL Switches were publicly available by at least May 24, 1999, that the Catalyst XL Switches were on sale and in public use by at least 1997, and describe the relevant functionality of those switches:

- 1997, Cisco Catalyst 2900 Series XL Data Sheet
- October 31, 1997 TrafficDirector v5.2, SwitchProbe v4.2 Product Requirements Document
- July 23, 1998, Product Requirements Document – Zuma Software
- 1998, Cisco Catalyst 2900 Series XL Overview
- 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches
- 1999, Cisco Catalyst 2900 Series XL ATM Modules Installation and Configuration Guide
- 1999, Cisco Catalyst 3500 Series XL Data Sheet
- 1999, Cisco Quick Start Guide – Catalyst 3500 Series XL Switches
- May 24, 1999, *Press Release: Cisco Introduces Next-Generation Stacking with New Catalyst 3500 Series XL* ("Cisco Systems, Inc. today announced the new Catalyst. 3500 Series XL, the industry's most scalable line of stackable 10/100 and Gigabit Ethernet desktop switches that delivers premium performance, manageability, flexibility and unparalleled investment protection.")
- June 11, 1999, *Release Notes for Catalyst GigaStack Gigabit Interface Converter* ("The GigaStack GBIC [Gigabit Interface Converter] can add port density to a Catalyst 3500 XL or Catalyst 2900 XL network. You can install the GigaStack GBIC in a 3500 XL switch or into a 1000BaseX module that resides in a modular 2900 XL switch.")

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- July 6, 1999, *Release Notes for Catalyst GigaStack Gigabit Interface Converter* ("The GigaStack GBIC [Gigabit Interface Converter] can add port density to a Catalyst 3500 XL or Catalyst 2900 XL network. You can install the GigaStack GBIC in a 3500 XL switch or into a 1000BaseX module that resides in a modular 2900 XL switch.")
- October 25, 1999, *Release Notes for Catalyst GigaStack Gigabit Interface* Converter ("The GigaStack GBIC [Gigabit Interface Converter] can add port density to a Catalyst 3500 XL or Catalyst 2900 XL network. You can install the GigaStack GBIC in a 3500 XL switch or into a 1000BaseX module that resides in a modular 2900 XL switch.")
- April 17, 1999, *TrafficDirector 5.7 Maintenance Update Product Requirements* ("The Catalyst 3500 Series XL is a full line of 10/100/1000 autosensing Fast and Gigabit Ethernet, stackable switches that combine outstanding performance, ease-of-use and integrated Cisco IOS software. Several models are offered with different port densities and configuration options. The Catalyst 3500 XL is expected to utilize the same MIBs and mini-RMON support as found in the Catalyst 2900XL. The Cisco IOS version used with the 3500XL should be the same as the 2900XL. The 2900XL in EMBU's test lab is currently running 11.2.8.SA3. An upgrade to IOS version 11.2.8.SA5 is planned. . . . We have 3500XL's available for access to NetScout from our lab. The 3500XL should be officially orderable around May 12th.")
- October 8, 1999, *Hapuna Project Requirements Document* ("Hapuna") ("Deep Space: 12.0(5)XP release of software; Cluster member support and software upgrade for these devices are already supported in DeepSpace.")
- November 12, 1999, *Merlin Functional Specification* ("Merlin") ("LAVA Deux is an easy-to-use web-based application that provides a single point of management for a collection of switches running the cluster-capable firmware. It includes Topology, Stackability, Group operations, Inventory and Performance management among other features. This application originally released in conjunction with firmware release SA6 supports Catalyst 2900XL and Catalyst 3500XL devices.")

Motivations to combine the disclosures in the Catalyst XL Switches with disclosures in other publications known in the art, as explained in this chart, include at least the similarity in subject matter between the references to the extent they concern methods of stacking switches within a network. Insofar as the references cite other patents or publications, or suggest additional changes, one of ordinary skill in the art would look beyond a single reference to other references in the field.

These invalidity contentions are based on Defendant's present understanding of the Asserted Claims, and Orckit's apparent construction of the claims in its November 3, 2022 Disclosure of Asserted Claims and Infringement Contentions Pursuant to P.R. 3-1, and Orckit's January 19, 2023 First Amended Disclosure of Asserted Claims and Infringement Contentions Pursuant to P.R. 3-1 (Orckit's "Infringement Disclosures"), which is deficient at least insofar as it fails to cite any documents or identify accused structures, acts, or materials in the Accused Products with particularity. Defendant does not agree with Orckit's application of the claims, or that the claims satisfy the requirements of 35 U.S.C. § 112. Defendant's contentions herein are not, and should in no way be seen as, admissions or

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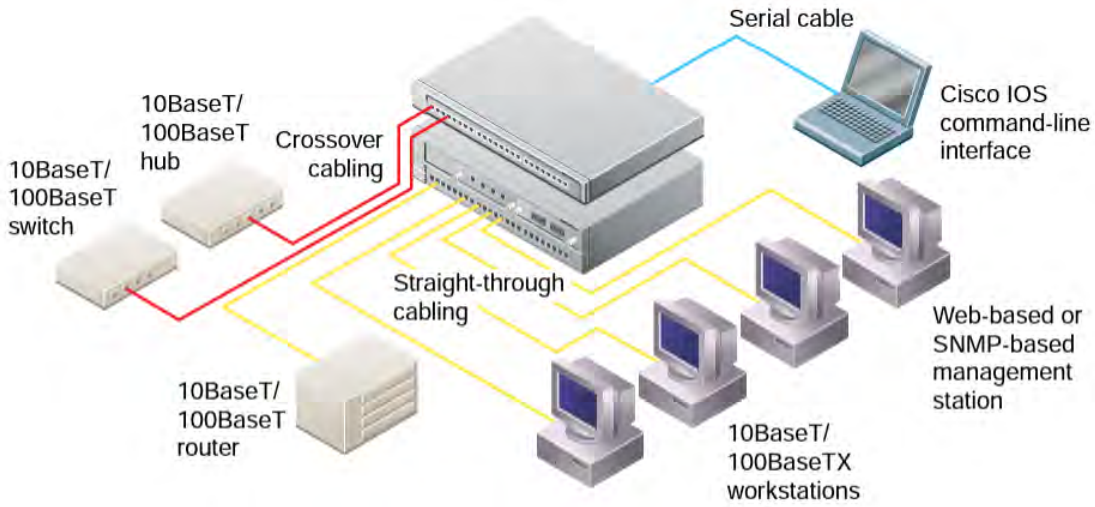
adoptions as to any particular claim scope or construction, or as any admission that any particular element is met by any accused product in any particular way. Defendant objects to any attempt to imply claim construction from this chart. Defendant's prior art invalidity contentions are made in a variety of alternatives and do not represent Defendant's agreement or view as to the meaning, definiteness, written description support for, or enablement of any claim contained therein.

The following contentions are subject to revision and amendment pursuant to Federal Rule of Civil Procedure 26(e), the Local Rules, and the Orders of record in this matter subject to further investigation and discovery regarding the prior art and the Court's construction of the claims at issue.

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No.	'904 Patent Claim 1	The Catalyst XL Switches
1[preamble]	Network access apparatus, comprising:	To the extent the preamble is found to be limiting, the Catalyst XL Switches disclose a network access apparatus. For example, The Catalyst XL Switches disclose that the Cisco Catalyst 2900 Series XL and Catalyst 3500 Series XL Switches were known and used by others in this country before the purported invention of the '904 patent. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. In one example, Cisco's Catalyst XL Switches disclose "Cisco's Catalyst® 2900 Series XL is a full line of 10/100 autosensing Fast Ethernet switches that offer outstanding performance, versatile modularity, and easy-to-use management. The Catalyst 2900 Series XL includes four models, with different port densities, configuration options, and pricing to meet a broad range of network design requirements." 1997, Cisco Catalyst 2900 Series XL Data Sheet at 1 of 6. Cisco's Catalyst XL Switches disclose that "[t]he Cisco Catalyst® 2900 series XL is a full line of 10/100 autosensing Fast Ethernet switches from the leader in networking that combines outstanding performance, ease of use, and integrated Cisco IOS® software. The Catalyst 2900 series XL includes five models, each with different port densities, configuration options, and pricing to meet a broad range of network design requirements. Available in Standard and Enterprise Editions, the software embedded in Catalyst 2900series XL switches is upgradeable so your investment is protected if your network grows or changes." 1998, Cisco Catalyst 2900 Series XL Overview at 1 of 6. Cisco's Catalyst XL Switches depict Catalyst 2900 Series XL Switches in an exemplary network configuration shown below.

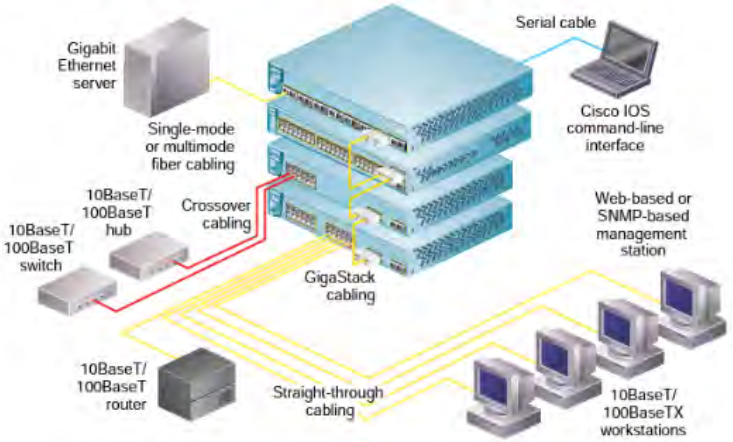
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No.	'904 Patent Claim 1	The Catalyst XL Switches
		Quick Start Guide CATALYST 2900 SERIES XL SWITCHES  1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 1 of 12. Cisco's Catalyst XL Switches describe the exemplary network configuration of Catalyst 2900 Series XL Switches shown above. *See generally* 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 3-9 of 12. For more information, the Quick Start Guide points to "the Catalyst 2900 Series XL Installation Guide for detailed instructions on installing the Cisco 2900 series XL switch. See the Cisco IOS Desktop Switching Software Configuration Guide for detailed instructions on using CVSM, the Cisco IOS CLI, and Cluster Management software to configure and manage switches. See Release Notes for the Catalyst 2900 Series XL and Catalyst 3500 Series XL Cisco IOS Release 12.0(5)XP for recent information about the Catalyst 2900 series XL switch." 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 10 of 12.

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No.	'904 Patent Claim 1	The Catalyst XL Switches
		Cisco's Catalyst XL Switches disclose that "[t]his manual is for technicians who install and maintain Catalyst 2900 series XL switches, hereafter referred to as the Catalyst 2900 series switches. It is assumed that the individual is familiar with 10BaseT, 100BaseT, and Asynchronous Transfer Mode (ATM) LAN concepts and terminology. This manual explains how to install the Catalyst 2900 series XL ATM modules (hereafter referred to as the ATM modules) in the Catalyst 2900 series switch and configure its LAN emulation client (LEC) software." 1999, Cisco Catalyst 2900 Series XL ATM Modules Installation and Configuration Guide at vii (7 of 108). Cisco's Catalyst XL Switches disclose "Cisco Systems, the leader in internetworking solutions, provides the industry's most flexible, scalable, and manageable stacking architecture for Catalyst 3500 series XL and gigabit-enabled Catalyst 2900 series XL switches." 1999, Cisco Catalyst 3500 Series XL Data Sheet at 2 of 13. Cisco's Catalyst XL Switches disclose "In a Cisco Switch Cluster, one Catalyst 3500 series XL or 2900 XL switch is specified as the 'command' switch and all other switches in the cluster are designated as 'member' switches. The command switch serves as the single IP address management point and disburses all management action dictated by the network administrator. Command switches can cluster up to additional 15 interconnected member switches regardless of their interconnection media. Cisco Switch Clustering command software is preinstalled on all Catalyst 3500 series XL switches and is available as an upgrade for Catalyst 2900 series XL switches with the Catalyst 2900 XL Command Software upgrade kit." 1999, Cisco Catalyst 3500 Series XL Data Sheet at 2 of 13. Cisco's Catalyst XL Switches depict Catalyst 3500 Series XL Switches in an exemplary network configuration, which is shown below. 1999, Cisco Quick Start Guide – Catalyst 3500 Series XL Switches at i (1 of 12).

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No.	'904 Patent Claim 1	The Catalyst XL Switches
		Quick Start Guide CATALYST 3500 SERIES XL SWITCHES  1 TAKE OUT WHAT YOU NEED 2 CABLE THE SWITCH 3 ASSIGN IP INFORMATION TO THE SWITCH 4 ACCESS THE SWITCH FROM YOUR BROWSER CISCO SYSTEMS 1999, Cisco Quick Start Guide – Catalyst 3500 Series XL Switches at i (1 of 12).

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No.	'904 Patent Claim 1	The Catalyst XL Switches
		Cisco's Catalyst XL Switches disclose "The new family of stackable switches, consisting of the Catalyst 3512 XL, Catalyst 3524 XL and Catalyst 3508G XL switches, use Cisco Switch Clustering technology to take traditional stacking to the next level by allowing network managers to manage geographically dispersed switches through a single IP address, using a standard Web browser. The Catalyst 3500 Series XL is targeted towards network managers within dynamic mid-sized businesses and enterprise workgroups who value high performance, reduced complexity, low cost of ownership and easy integration with their installed base of networking solutions." May 24, 1999, Press Release: Cisco Introduces Next-Generation Stacking with New Catalyst 3500 Series XL at 2 of 6. Cisco's Catalyst XL Switches disclose "Cisco Switch Clustering software enables up to 16 interconnected Catalyst 3500 XL, 2900 XL and 1900 switches, regardless of geographic proximity, to form a managed single-IP address network." May 24, 1999, Press Release: Cisco Introduces Next-Generation Stacking with New Catalyst 3500 Series XL at 4 of 6. Cisco's Catalyst XL Switches disclose "Cisco Switch Clustering software for the Catalyst 3500 XL, 2900 XL and 1900 switches, enables the management of a 'cluster' of switches through a single IP address. The clusters can be grouped regardless of interconnection media or physical proximity. In a Cisco switch cluster, one Catalyst 3500 XL or 2900 XL switch is designated as the 'command' switch and all other switches in the cluster are designated as 'member' switches. The command switch serves as the single IP management point and disburses all management action dictated by the network manager." May 24, 1999, Press Release: Cisco Introduces Next-Generation Stacking with New Catalyst 3500 Series XL at 4 of 6. Cisco's Catalyst XL Switches disclose "The GigaStack GBIC can add port density to a Catalyst 3500 XL or Catalyst 2900 XL network. You can install the GigaStack GBIC in a 3500 XL switch or into a 1000BaseX module that resides in a modular Catalyst 2900 XL switch. When installed in a 3500 XL switch or a Catalyst 2900 XL module, the GigaStack GBIC supports 1000BaseX connections." June 11, 1999, Release Notes for Catalyst GigaStack Gigabit Interface Converter at 2 of 6.

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No.	'904 Patent Claim 1	The Catalyst XL Switches
		Cisco's Catalyst XL Switches disclose "The GigaStack GBIC allows you to stack up to nine switches to form an independent backbone that can be managed with a single IP address. This stack gives the appearance of a single large switch for network management purposes. You can also form a point-to-point link between two switches. The GigaStack GBIC supports one full-duplex link (in a point-to-point link) or up to eight half-duplex links (in a stack configuration) to other Gigabit Ethernet devices." July 6, 1999, Release Notes for Catalyst GigaStack Gigabit Interface Converter at 1 of 6. Cisco's Catalyst XL Switches disclose "The GigaStack GBIC can add port density to a Catalyst 3500 XL or Catalyst 2900 XL network. You can install the GigaStack GBIC in a 3500 XL switch or into a 1000BaseX module that resides in a modular 2900 XL switch. When installed in a 3500 XL switch or a 2900 XL module, the GigaStack GBIC supports 1000BaseX connections. The GigaStack GBIC autonegotiates the duplex settings of each port to maximize the bandwidth for your configuration." July 6, 1999, Release Notes for Catalyst GigaStack Gigabit Interface Converter at 2 of 6. Cisco's Catalyst XL Switches disclose "The GigaStack GBIC can add port density to a Catalyst 3500 XL or Catalyst 2900 XL network." October 25, 1999, Release Notes for Catalyst GigaStack Gigabit Interface Converter at 2 of 6. Cisco's Catalyst XL Switches disclose "an easy-to-use web-based application that provides a single point of management for a collection of switches running the cluster-capable firmware. It includes Topology, Stackability, Group operations, Inventory and Performance management among other features. This application originally released in conjunction with firmware release SA6 supports Catalyst 2900XL and Catalyst 3500XL devices." November 12, 1999, Merlin Functional Specification at 1 of 8. Cisco's Catalyst XL Switches disclose that the "Catalyst 3500 Series XL is a full line of 10/100/1000 autosensing Fast and Gigabit Ethernet, stackable switches that combine outstanding performance, ease-of-use and integrated Cisco IOS software. Several models are offered with different port densities and configuration options. The Catalyst 3500 XL is expected to utilize the same MIBs and mini-RMON support as found in the Catalyst 2900XL.

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No.	'904 Patent Claim 1	The Catalyst XL Switches
		The Cisco IOS version used with the 3500XL should be the same as the 2900XL." April 17, 1999 TrafficDirector 5.7 Maintenance Update Product Requirements at 7of 24. Cisco's Catalyst XL Switches disclose a network with a "the Switch Clustering concept, first introduced in Kitsilano and Lava Deux, [which] has been widely accepted and adopted. With the addition of the Holstein products to the Switch Cluster via the Deep Space release, Switch Clustering supports more types and families of switches compared to all other competitors." October 8, 1999 Hapuna Product Requirements Document. Cisco's Catalyst XL Switches disclose "a *Hot swap of modules,*" which enables "the user [] to insert and de-insert the modules without first having to power cycle or reset the switch" and "*Port Based VLANs* - allows the setting up of 24 separate port based VLANs (bridge groups) within the switch. It also allows for ports to belong to multiple bridge groups. An instance of Spanning Tree will run on each bridge group." July 23, 1998, Product Requirements Document – Zuma Software. Cisco's Catalyst XL Switches disclose that "network management is a central issue in the switched internetworking marketplace and affects the rate of adoption and deployment of LAN switching equipment. TrafficDirector is Cisco's graphical RMON console application for use with Cisco's IOS embedded RMON agents and SwitchProbe product line. TrafficDirector provides standards-based RMON and RMON2 real-time traffic monitoring, historical traffic analysis and troubleshooting tools for switched internetworks. TrafficDirector will be an integral part of CiscoWorks for Switched Internetworks (CWSI), Cisco's Switch Management application and as such should integrate fully with CWSI." October 31, 1997 TrafficDirector v5.2, SwitchProbe v4.2 Product Requirements Document at 2 of 84.
1[a]	first and second master units, each comprising a physical interface to a packet-switched network;	The Catalyst XL Switches disclose first and second master units, each comprising a physical interface to a packet-switched network. For example, the Catalyst XL Switches disclose that Catalyst XL Switches may act as a 'command' switch (*e.g.*, a master unit) in a cluster. The Catalyst XL Switches can be arranged

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No.	'904 Patent Claim 1	The Catalyst XL Switches
		in a stack that includes two master switch units (one active master and one standby master) that connect to a packet-switched network (e.g., an ethernet network) via cables and/or other physical connections, that is, the stack comprises first and second master units, each comprising a physical interface to a packet-switched network. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Specifically, Cisco's Catalyst XL Switches disclose the Cisco Catalyst® 2900 series XL includes visual switch management software that "[p]rovides stack and network topology views." 1998, Cisco Catalyst 2900 Series XL Overview at 5 of 6. Cisco's Catalyst XL Switches depict management and system setup features that include stack views, as shown below.

Feature	Description	Benefit
Outstanding Performance (continued)	CGMP Fast Leave	Allows quick stoppage of multicasts to end stations that want to drop a data stream, reducing superfluous traffic on the network
Management and System Setup	Simple Network Management Protocol (SNMP) and Telnet interface support	Delivers comprehensive in-band management
	Telnet support for five simultaneous sessions	Allows menu-based management by terminal emulation software over the network
	Command-line interface (CLI)-based management console	Provides detailed out-of-band management
		Uses the same management interface as Cisco routers
	Cisco Visual Switch Manager software	Built-in HTTP server enables Web-based management interface through standard browser such as Netscape Navigator or Microsoft Explorer
		Provides stack and network topology views of a group of Catalyst 2900XL switches with one easy-to-use management interface

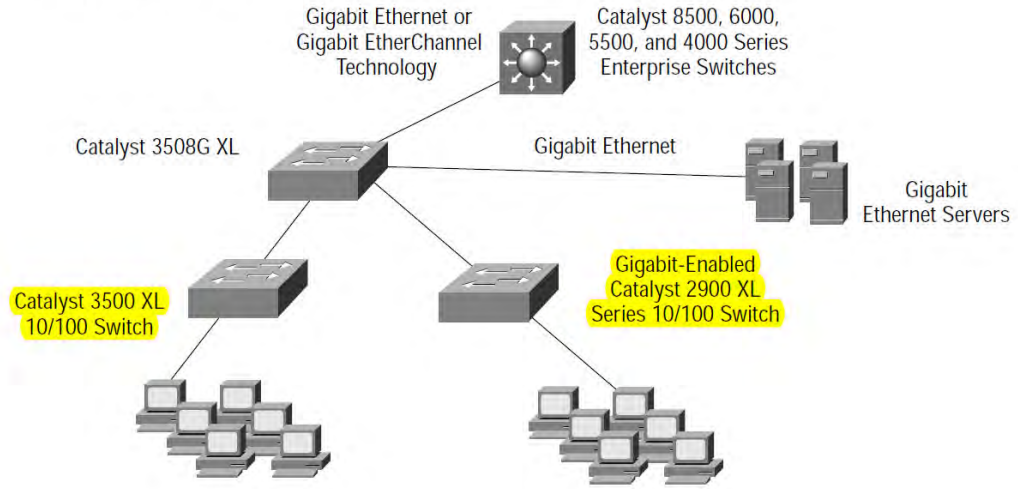
1998, Cisco Catalyst 2900 Series XL Overview at 5 of 6.

Cisco's Catalyst XL Switches disclose that "[i]f the switch will be a cluster member, it is not necessary to assign IP information or a password if the switch will be managed through the IP address of the command switch. If you are configuring the switch as a a standalone switch or as a command switch (Enterprise Edition only), you must assign IP information." 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 4 (6 of 12).

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No.	'904 Patent Claim 1	The Catalyst XL Switches
		Cisco's Catalyst XL Switches disclose that "[a]fter you assign an IP address to the switch, you can access the switch from your browser and use CVSM [Cisco Visual Switch Manager] to view or change configuration settings. If this is a command switch (Enterprise Edition only), you can use Cluster Management software to configure other switches." 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 6 (8 of 12). Cisco's Catalyst XL Switches disclose "In a Cisco Switch Cluster, one Catalyst 3500 series XL or 2900 XL switch is specified as the 'command' switch and all other switches in the cluster are designated as 'member' switches. The command switch serves as the single IP address management point and disburses all management action dictated by the network administrator. Command switches can cluster up to additional 15 interconnected member switches regardless of their interconnection media. Cisco Switch Clustering command software is preinstalled on all Catalyst 3500 series XL switches and is available as an upgrade for Catalyst 2900 series XL switches with the Catalyst 2900 XL Command Software upgrade kit." 1999, Cisco Catalyst 3500 Series XL Data Sheet at 2 of 13. In one example, Cisco's Catalyst XL Switches depict first and second commanders (*e.g.*, master units) that are each connected to a daisy chain. The exemplary first and second commanders are highlighted below in yellow.

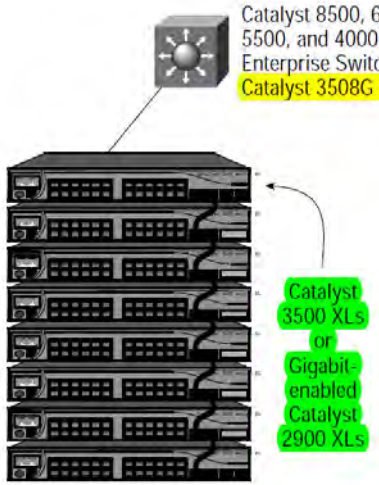
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No.	'904 Patent Claim 1	The Catalyst XL Switches
		Figure 7 Enterprise Workgroup Aggregation  1999, Cisco Catalyst 3500 Series XL Data Sheet at 8 of 13, FIG. 7. Cisco's Catalyst XL Switches disclose "Cisco Switch Clustering software for the Catalyst 3500 XL, 2900 XL and 1900 switches, enables the management of a 'cluster' of switches through a single IP address. The clusters can be grouped regardless of interconnection media or physical proximity. In a Cisco switch cluster, one Catalyst 3500 XL or 2900 XL switch is designated as the 'command' switch and all other switches in the cluster are designated as 'member' switches. The command switch serves as the single IP management point and disburses all management action dictated by the network manager." May 24, 1999, Press Release: Cisco Introduces Next-Generation Stacking with New Catalyst 3500 Series XL at 4 of 6. Cisco's Catalyst XL Switches disclose as a key feature: "support for Catalyst 2900XL/3500XL devices as cluster member or possibly command switch." November 12, 1999, Merlin Functional Specification at 1 of 8.

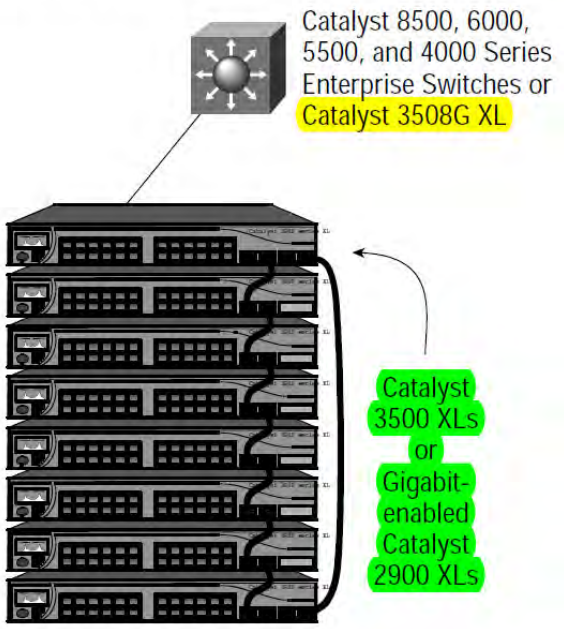
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No.	'904 Patent Claim 1	The Catalyst XL Switches
1[b]	a plurality of slave units,	The Catalyst XL Switches disclose a plurality of slave units. For example, The Catalyst XL Switches disclose that Catalyst XL Switches may act as a 'command' switch (*e.g.*, a master unit) in a cluster that includes a plurality of 'member' switches (*e.g.*, a plurality of slave units). Thus, the Catalyst XL Switches may include several stacked switch units that are slave units; that is, the Catalyst XL Switches are stackable switches that may include a plurality of slave units. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Cisco's Catalyst XL Switches disclose that "[i]f the switch will be a cluster member, it is not necessary to assign IP information or a password if the switch will be managed through the IP address of the command switch. If you are configuring the switch as a a standalone switch or as a command switch (Enterprise Edition only), you must assign IP information." 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 4 (6 of 12). Cisco's Catalyst XL Switches disclose that "[a]fter you assign an IP address to the switch, you can access the switch from your browser and use CVSM [Cisco Visual Switch Manager] to view or change configuration settings. If this is a command switch (Enterprise Edition only), you can use Cluster Management software to configure other switches." 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 6 (8 of 12). Cisco's Catalyst XL Switches disclose "In a Cisco Switch Cluster, one Catalyst 3500 series XL or 2900 XL switch is specified as the 'command' switch and all other switches in the cluster are designated as 'member' switches. The command switch serves as the single IP address management point and disburses all management action dictated by the network administrator. Command switches can cluster up to additional 15 interconnected member switches regardless of their interconnection media. Cisco Switch Clustering command software is preinstalled on all Catalyst 3500 series XL switches and is available as an upgrade for Catalyst 2900 series XL switches with the Catalyst 2900 XL Command Software upgrade kit." 1999, Cisco Catalyst 3500 Series XL Data Sheet at 2 of 13.

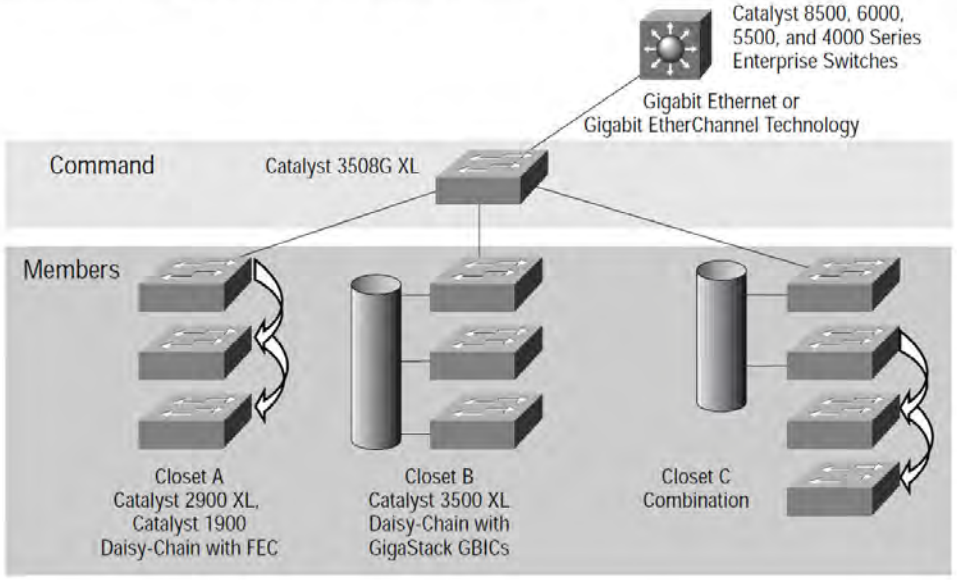
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No.	'904 Patent Claim 1	The Catalyst XL Switches
		Cisco's Catalyst XL Switches depict a plurality of members (*e.g.*, slaves) that are serially connected in a stack, which are shown below and highlighted in green. Figure 3 Creating an Independent Stack Bus Using the GigaStack GBIC, Catalyst 3500 Series XL, and Gigabit-Enabled Catalyst 2900 Series XL Switches  1999, Cisco Catalyst 3500 Series XL Data Sheet at 5 of 13, FIG. 3 (annotated). Indeed, Cisco's Catalyst XL Switches depict that this plurality of members (*e.g.*, slaves) may be serially connected in a stack having a redundant loopback, as shown below.

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No.	'904 Patent Claim 1	The Catalyst XL Switches
		Figure 4 Creating a Redundant Loopback Connection Using GigaStack GBICs  1999, Cisco Catalyst 3500 Series XL Data Sheet at 5 of 13, FIG. 4 (annotated). Cisco's Catalyst XL Switches further depict that a plurality of members (*e.g.*, slave units) in more than one daisy chain.

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No.	'904 Patent Claim 1	The Catalyst XL Switches
		Figure 6 Cisco Switch Clustering Using Catalyst 3500 XL, 2900 XL, and Catalyst 1900 Switches  1999, Cisco Catalyst 3500 Series XL Data Sheet at 7 of 13, FIG. 6. Cisco's Catalyst XL Switches disclose "Cisco Switch Clustering software for the Catalyst 3500 XL, 2900 XL and 1900 switches, enables the management of a 'cluster' of switches through a single IP address. The clusters can be grouped regardless of interconnection media or physical proximity. In a Cisco switch cluster, one Catalyst 3500 XL or 2900 XL switch is designated as the 'command' switch and all other switches in the cluster are designated as 'member' switches. The command switch serves as the single IP management point and disburses all management action dictated by the network manager." May 24, 1999, Press Release: Cisco Introduces Next-Generation Stacking with New Catalyst 3500 Series XL at 4 of 6. Cisco's Catalyst XL Switches disclose as a key feature: "support for Catalyst 2900XL/3500XL devices as cluster member or possibly command switch." November 12, 1999, Merlin Functional Specification at 1 of 8.

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No.	'904 Patent Claim 1	The Catalyst XL Switches
1[c]	each slave unit comprising one or more ports to respective subscriber lines; and	The Catalyst XL Switches disclose each slave unit comprising one or more ports to respective subscriber lines. For example, the Catalyst XL Switches disclose that each switch unit in the Cisco Catalyst XL Switches include ports that connect it to subscriber lines, that is, each slave unit comprises one or more ports to respective subscriber lines. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Specifically, the Catalyst XL Switches disclose that the "Catalyst 2900 Series XL includes four models, with different port densities, configuration options, and pricing to meet a broad range of network design requirements." 1997, Cisco Catalyst 2900 Series XL Data Sheet at 1 of 6. And the Catalyst XL Switches disclose that the "8-port Catalyst 2908 XL switch is ideal for aggregating smaller Ethernet and Fast Ethernet workgroups and servers. The Catalyst 2916M XL 16-port switch is also an excellent aggregation device, as well as the perfect solution for providing dedicated 10- or 100-Mbps bandwidth to individual users. The Catalyst 2916M XL's two versatile module slots provide expansion capabilities, higher-speed connectivity, and future support for feature modules, allowing users the flexibility to upgrade their networks and preserve their initial investment. The 24-port Catalyst 2924 XL and Catalyst 2924C XL switches are ideal for delivering low-cost, high-performance, 10- or 100-Mbps bandwidth to individual users and servers." 1997, Cisco Catalyst 2900 Series XL Data Sheet at 1 of 6. The Catalyst XL Switches also disclose security features, such as secure addressing that "secures a port to an individual MAC address or a group of up to 132 MAC addresses Addresses can be learned or manually entered; choice of actions upon secure address violation: – Send/not send an SNMP trap[;] – Suspend, disable, or leave security violation port enabled." 1997, Cisco Catalyst 2900 Series XL Data Sheet at 4 of 6. Further, the Catalyst XL Switches disclose the availability and ordering of models based on their number of ports.

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<table>
<tr><th>No.</th><th>’904 Patent Claim 1</th><th>The Catalyst XL Switches</th></tr>
<tr><td></td><td></td><td>

Availability and Orderability

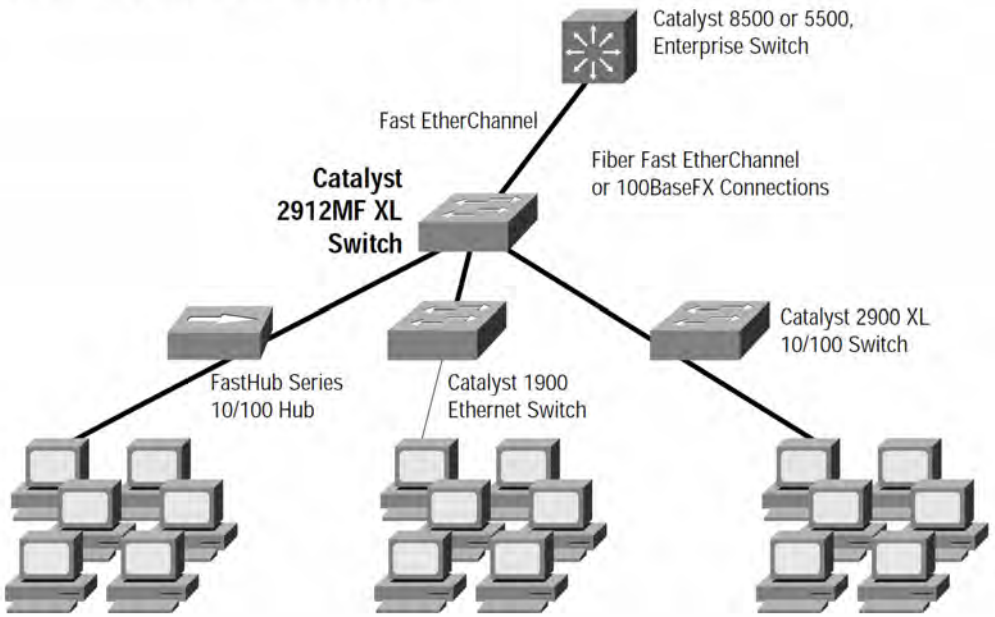
Model	Description	Availability
WS-C2908-XL	8-port 10BaseT/100BaseTX autosensing Fast Ethernet switch	January 1998
WS-C2916M-XL	16-port 10BaseT/100BaseTX autosensing Fast Ethernet switch with two expansion slots	January 1998
WS-C2924-XL	24-port 10BaseT/100BaseTX autosensing Fast Ethernet switch	March 1998
WS-C2924C-XL	24-port switch with 22 10BaseT/100BaseTX autosensing Fast Ethernet ports and two 100BaseFX ports.	March 1998
WS-X2914-XL	4-port 10BaseT/100BaseTX switch module for Catalyst 2916M XL	January 1998
WS-X2922-XL	2-port 100BaseFX switch module for Catalyst 2916M XL	January 1998

1997, Cisco Catalyst 2900 Series XL Data Sheet at 5 of 6.

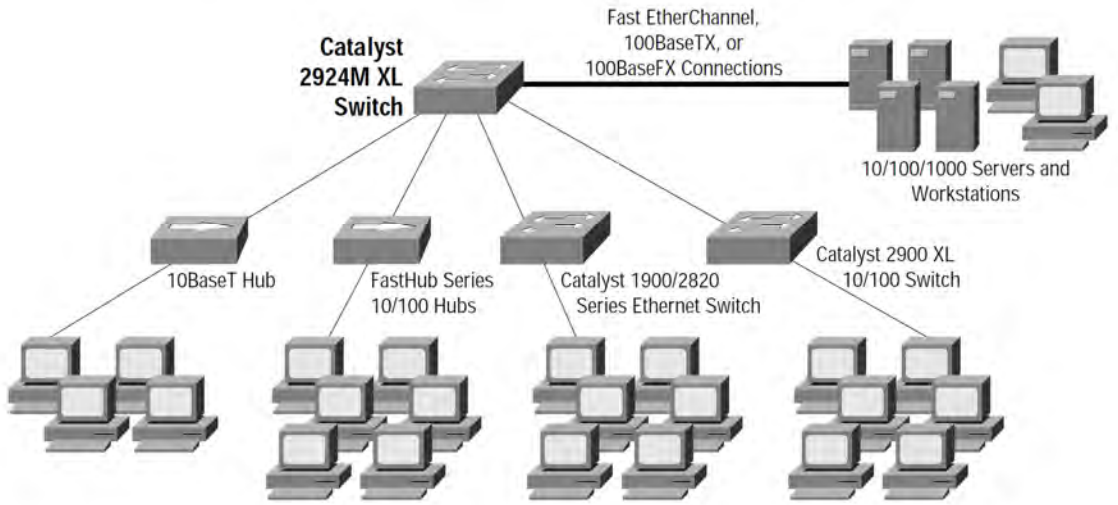
Cisco’s Catalyst XL Switches disclose “The 12-port Catalyst 2912MF XL is ideal for aggregating geographically disbursed Fast Ethernet workgroups over 100BaseFX fiber connections on a small or midsized campus environment. Two high-speed uplink slots enable users to add up to eight additional 100BaseFX or 10BaseT/100BaseT ports.” 1998, Cisco Catalyst 2900 Series XL Overview at 2 of 6.

</td></tr>
</table>

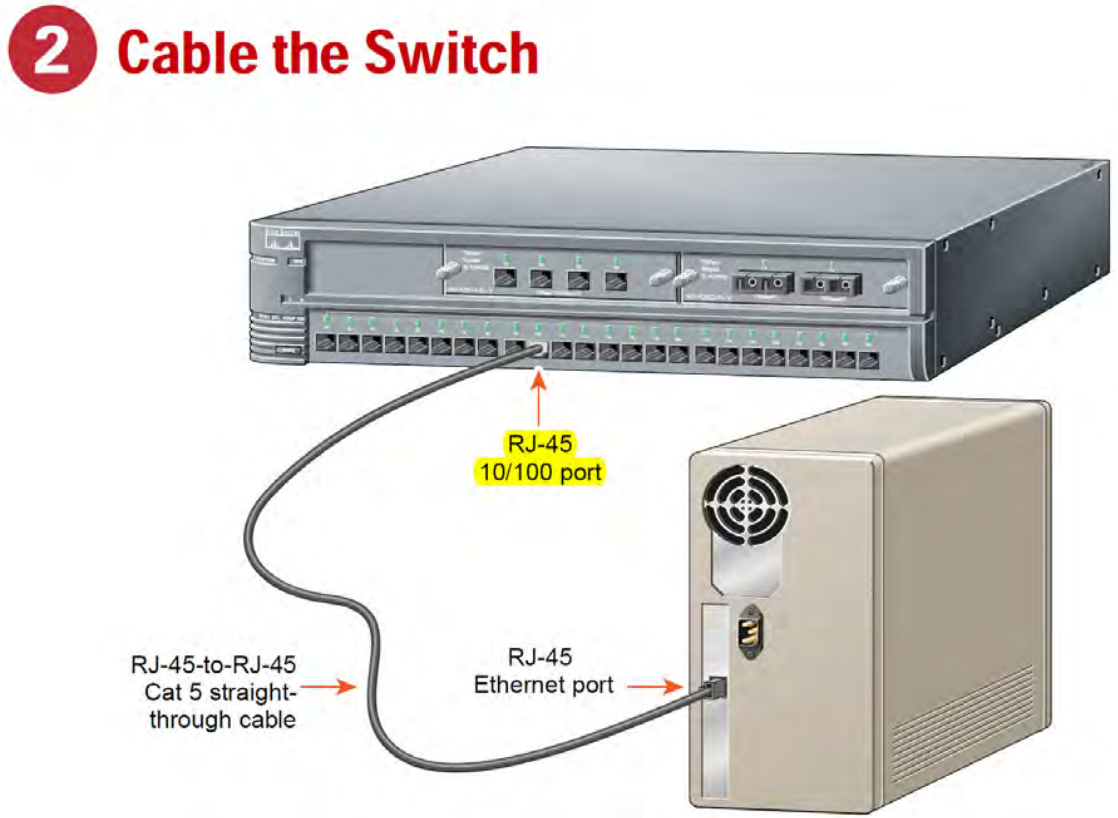
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No.	'904 Patent Claim 1	The Catalyst XL Switches
		Figure 3 The Catalyst 2912MF XL for Disbursed Small Campus Aggregation  1998, Cisco Catalyst 2900 Series XL Overview at 2 of 6, FIG. 3. Cisco's Catalyst XL Switches disclose "The 24-port Catalyst 2924M XL may be used as a flexible, scalable, network backbone for a small to medium-sized business (SMB). The switch is a effective solution for aggregating network resources and delivering dedicated 10- or 100-Mbps connectivity to individual users and workgroups in an SMB. Two high-speed uplink slots enable users to add up to eight additional 100BaseFX or 10BaseT/100BaseT ports." 1998, Cisco Catalyst 2900 Series XL Overview at 3 of 6.

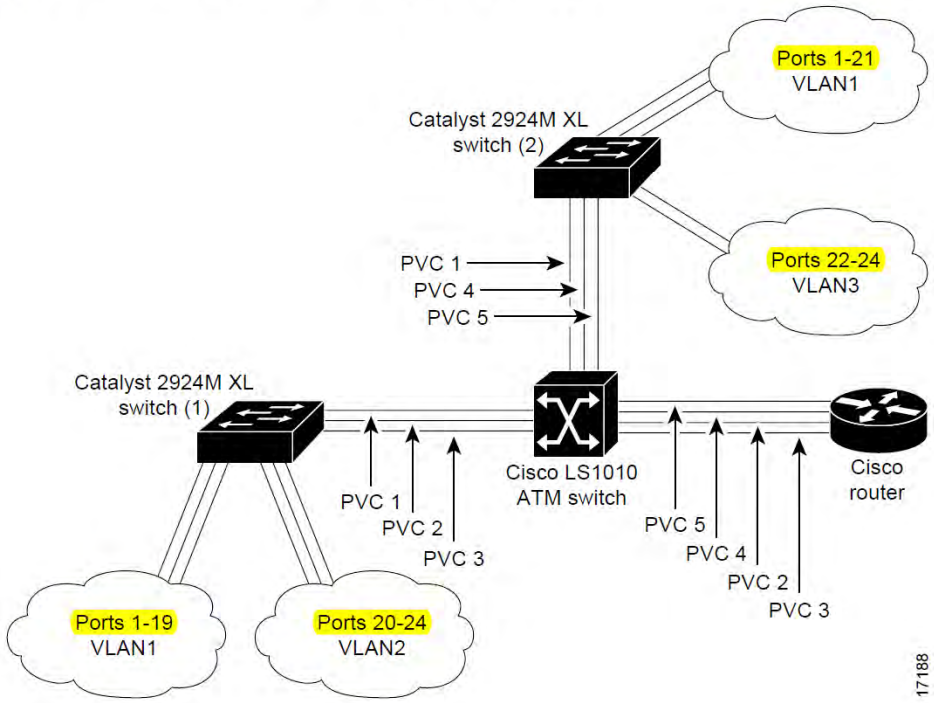
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No.	'904 Patent Claim 1	The Catalyst XL Switches
		Figure 4 The Catalyst 2924M XL as SMB Aggregator and Backbone  1998, Cisco Catalyst 2900 Series XL Overview at 3 of 6, FIG. 4. In one example, Cisco's Catalyst XL Switches depict a Catalyst 2900 Series XL Switch having a plurality of ports. Catalyst 2900 series XL Ethernet switch  1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 1 (3 of 12). Cisco's Catalyst XL Switches depict cabling a Catalyst 2900 Series XL Switch using one of its RJ-45 10/100 ports.

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No.	'904 Patent Claim 1	The Catalyst XL Switches
		 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 2 (4 of 12) (annotated). In yet another example, Cisco's Catalyst XL Switches depict ports that connect various Catalyst XL Switches to particular ports of virtual local area networks (VLANs).

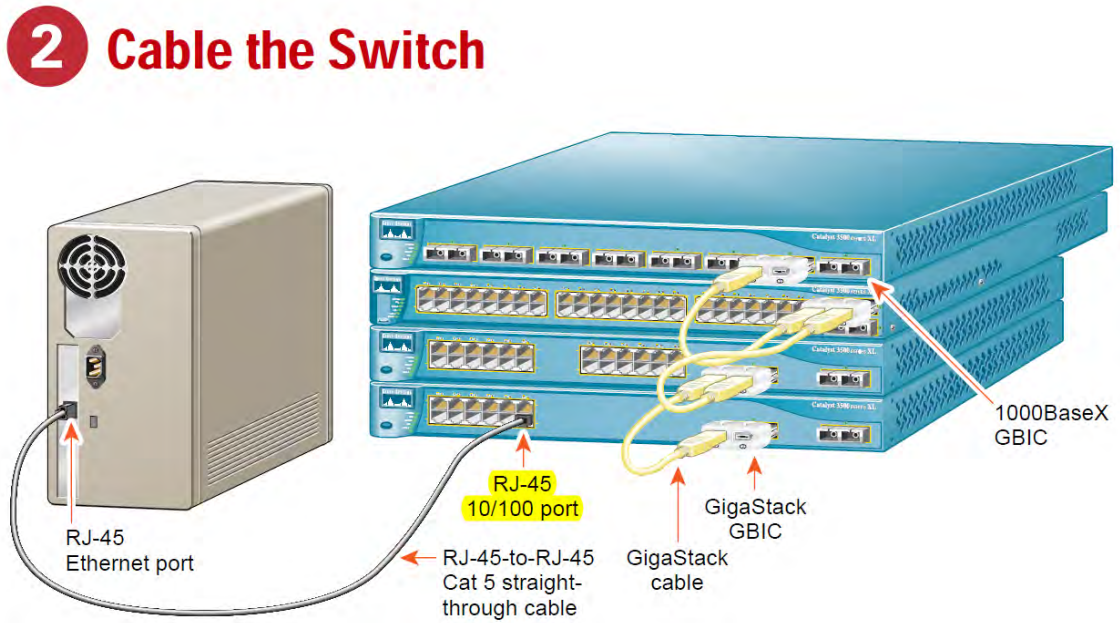
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No.	'904 Patent Claim 1	The Catalyst XL Switches
		RFC-1483 PVC Configuration Example Figure C-2 shows an example of an RFC-1483 PVC configuration with of the following components: • LightStream 1010 ATM switch • Catalyst 2924M XL and Catalyst 2924M XL switches with an ATM module • Cisco router **Figure C-2 RFC-1483 PVC Configuration Example**  1999, Cisco Catalyst 2900 Series XL ATM Modules Installation and Configuration Guide at 88 of 108.

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No.	'904 Patent Claim 1	The Catalyst XL Switches
		"The Cisco Systems Catalyst® 3500 series XL is a scalable line of stackable 10/100 and Gigabit Ethernet switches that deliver premium performance, manageability, and flexibility, with unparalleled investment protection. This line of low-cost, high-performance switching solutions provides next-generation stackable switching. It allows management of all Cisco switched ports from a single IP address and provides interconnected switches with an independent high-speed stack bus that preserves valuable desktop ports." 1999, Cisco Catalyst 3500 Series XL Data Sheet at 1 of 13. In another example, Cisco's Catalyst XL Switches depict a Catalyst 3500 Series XL Switch having a plurality of ports. Catalyst 3500 series XL switch  1999, Cisco Quick Start Guide – Catalyst 3500 Series XL Switches at 1 (3 of 12). Cisco's Catalyst XL Switches depict cabling a Catalyst 3500 Series XL Switch using one of its RJ-45 10/100 ports and its GigaStack Gigabit Interface Convertors (GBICs).

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No.	'904 Patent Claim 1	The Catalyst XL Switches
		 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 2 (4 of 12) (annotated). Cisco's Catalyst XL Switches describes various other types of port connectivity that is enabled and is shown below.

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No.	'904 Patent Claim 1	The Catalyst XL Switches



Connect PCs, Workstations, Servers, and Routers

1 Connect a Category 5 **straight-through** cable (not supplied) to a 10/100 port on the front panel of the switch.

2 Connect the other end of the cable to the RJ-45 port of the PC, workstation, server, or router.

Connect Switches and Hubs

1 Connect a Category 5 **crossover** cable (not supplied) to a 10/100 port on the front panel of the switch.

2 Connect the other end of the cable to an RJ-45 port on the target switch or hub.

Note: Use a straight-through cable to connect two ports when one of the port numbers is designated with an X. Use a crossover cable to connect two ports when both port numbers are designated with an X or when both ports do not have an X.

Connect the Switches through GigaStack GBICs (Optional)

1 Insert the GigaStack Gigabit Interface Convertors (GBICs) in the GBIC module slots on the switches.

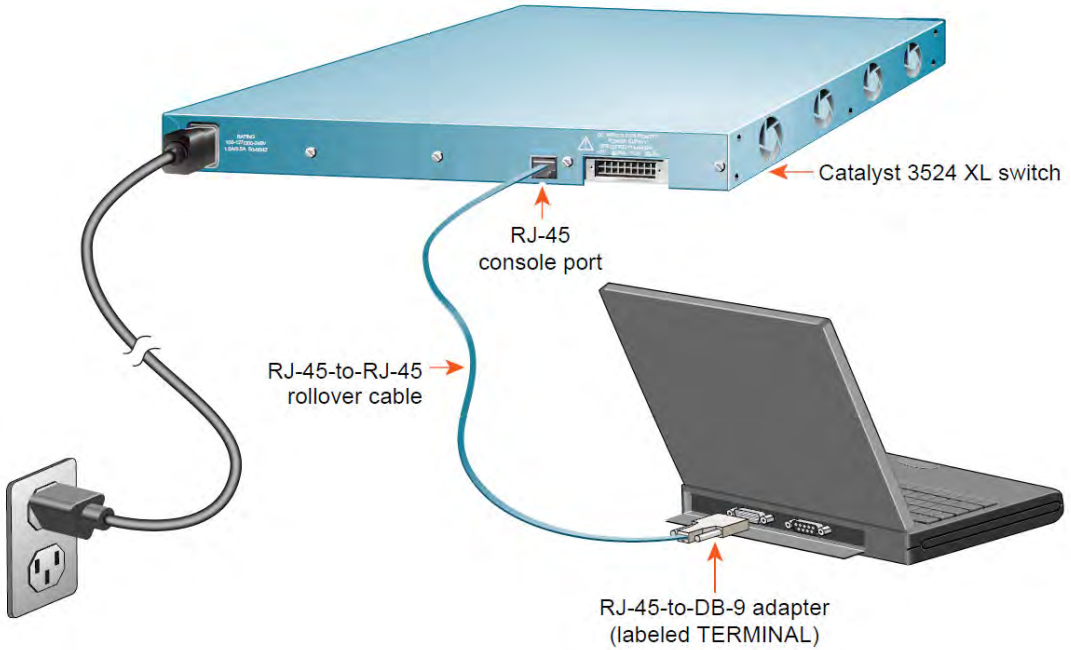
2 Connect the GigaStack GBICs with the Cisco GigaStack cable.

Note: The GigaStack GBICs are orderable separately. Refer to the Catalyst GigaStack Gigabit Interface Convertor Installation Guide for details on installing and cabling the GigaStack GBICs.

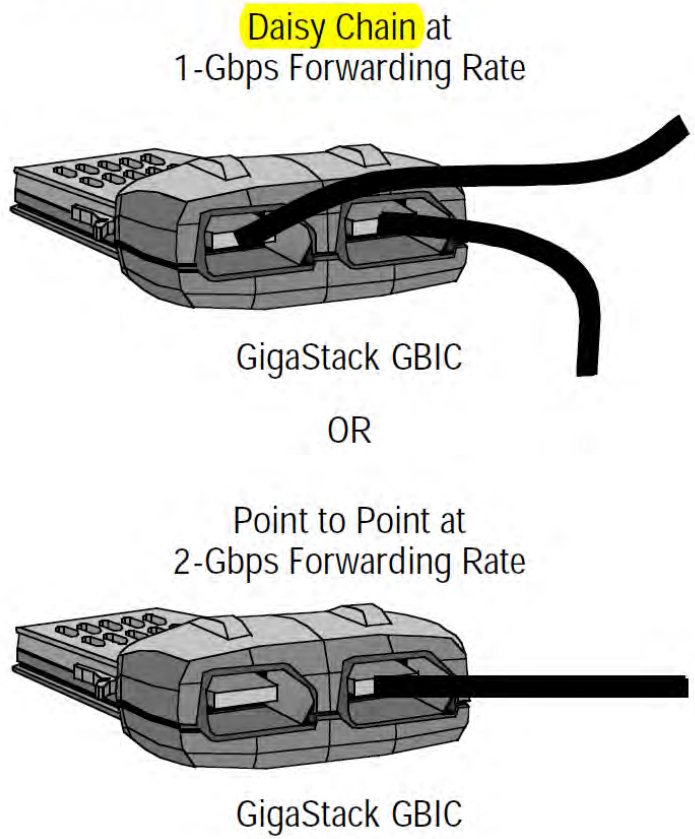
1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 2 (4 of 12).

Cisco's Catalyst XL Switches depict another example port connection shown below.

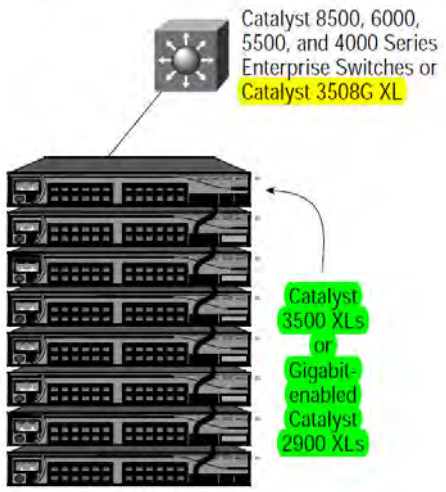
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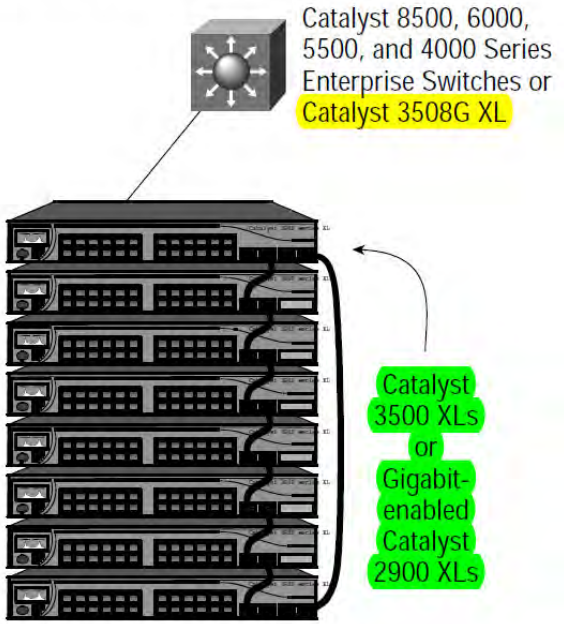
No.	'904 Patent Claim 1	The Catalyst XL Switches
		 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 3 (5 of 12).
1[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	The Catalyst XL Switches disclose a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. For example, the Catalyst XL Switches disclose that "Cisco Systems, the leader in internetworking solutions, provides the industry's most flexible, scalable, and manageable stacking architecture for Catalyst 3500 series XL and gigabit-enabled Catalyst 2900 series XL switches." 1999, Cisco Catalyst 3500 Series XL Data Sheet at 2 of 13. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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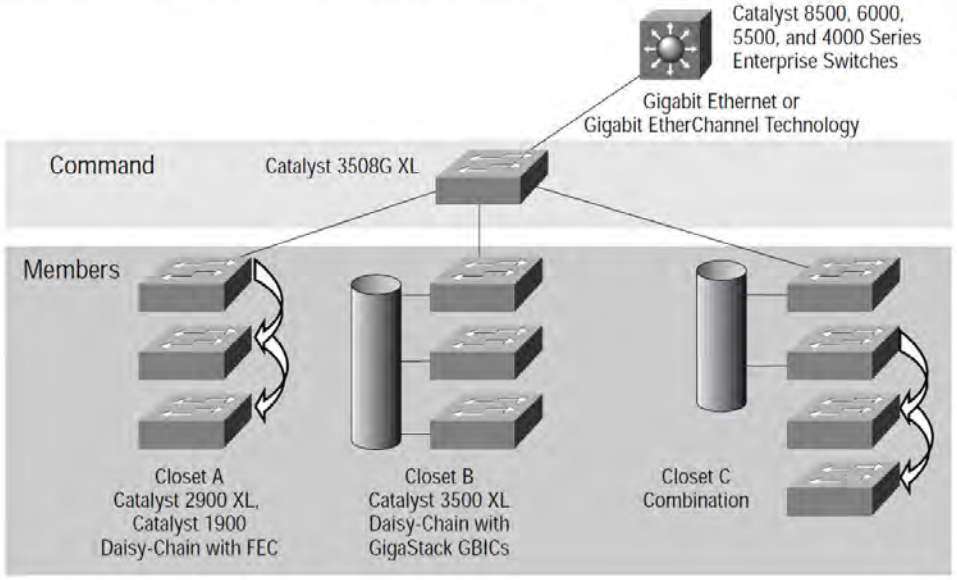
No.	'904 Patent Claim 1	The Catalyst XL Switches
		And the Catalyst XL Switches disclose that the "Catalyst 3500 series XL and gigabit-enabled Catalyst 2900 series XL switches can be stacked using the low-cost Cisco GigaStack GBIC. The two-port GigaStack GBIC offers a range of highly flexible stacking and performance options. It delivers 1-Gbps connectivity in a daisy-chained configuration or up to 2-Gbps full-duplex connectivity in a dedicated switch-to-switch configuration." 1999, Cisco Catalyst 3500 Series XL Data Sheet at 2 of 13. The Catalyst XL Switches depict just such a daisy chain configuration. Figure 1 GigaStack GBIC Connection Options 

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No.	'904 Patent Claim 1	The Catalyst XL Switches
		1999, Cisco Catalyst 3500 Series XL Data Sheet at 2 of 13. "In a Cisco Switch Cluster, one Catalyst 3500 series XL or 2900 XL switch is specified as the 'command' switch and all other switches in the cluster are designated as 'member' switches. The command switch serves as the single IP address management point and disburses all management action dictated by the network administrator. Command switches can cluster up to additional 15 interconnected member switches regardless of their interconnection media. Cisco Switch Clustering command software is preinstalled on all Catalyst 3500 series XL switches and is available as an upgrade for Catalyst 2900 series XL switches with the Catalyst 2900 XL Command Software upgrade kit." 1999, Cisco Catalyst 3500 Series XL Data Sheet at 2 of 13. Cisco's Catalyst XL Switches depict a plurality of members (*e.g.*, slaves) that are serially connected in a stack using physical interface lines, shown below highlighted in green. Figure 3 Creating an Independent Stack Bus Using the GigaStack GBIC, Catalyst 3500 Series XL, and Gigabit-Enabled Catalyst 2900 Series XL Switches  1999, Cisco Catalyst 3500 Series XL Data Sheet at 5 of 13, FIG. 3 (annotated).

No.	'904 Patent Claim 1	The Catalyst XL Switches
		Indeed, Cisco's Catalyst XL Switches depict that this plurality of members (*e.g.*, slaves) may be serially connected in a stack, for example, using physical interface lines and having a redundant loopback, as shown below. Figure 4 Creating a Redundant Loopback Connection Using GigaStack GBICs  1999, Cisco Catalyst 3500 Series XL Data Sheet at 5 of 13, FIG. 4 (annotated). Cisco's Catalyst XL Switches further depict that a plurality of members (*e.g.*, slave units) in more than one daisy chain.

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No.	'904 Patent Claim 1	The Catalyst XL Switches
		Figure 6 Cisco Switch Clustering Using Catalyst 3500 XL, 2900 XL, and Catalyst 1900 Switches  1999, Cisco Catalyst 3500 Series XL Data Sheet at 7 of 13, FIG. 6. Cisco's Catalyst XL Switches disclose "Cisco Switch Clustering software for the Catalyst 3500 XL, 2900 XL and 1900 switches, enables the management of a 'cluster' of switches through a single IP address. The clusters can be grouped regardless of interconnection media or physical proximity. In a Cisco switch cluster, one Catalyst 3500 XL or 2900 XL switch is designated as the 'command' switch and all other switches in the cluster are designated as 'member' switches. The command switch serves as the single IP management point and disburses all management action dictated by the network manager." May 24, 1999, Press Release: Cisco Introduces Next-Generation Stacking with New Catalyst 3500 Series XL at 4 of 6.
1[e]	each daisy chain comprising at least a first slave unit connected one of the	The Catalyst XL Switches disclose each daisy chain comprising at least a first slave unit connected one of the physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit.

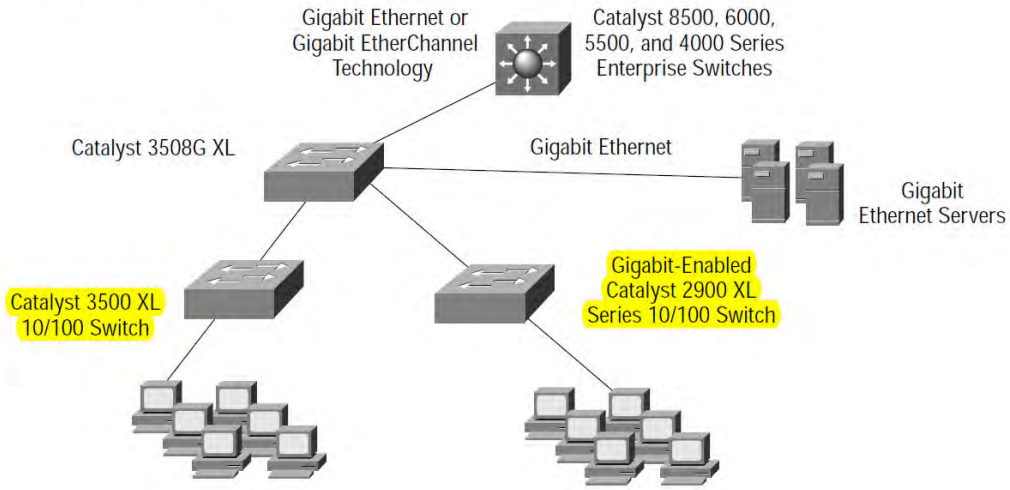
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<table>
<tr><th>No.</th><th>’904 Patent Claim 1</th><th>The Catalyst XL Switches</th></tr>
<tr><td></td><td>physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit.</td><td>For example, the Catalyst XL Switches disclose Cisco’s Catalyst XL Switches disclose the Cisco Catalyst® 2900 series XL includes visual switch management software that “[p]rovides stack and network topology views.” 1998, Cisco Catalyst 2900 Series XL Overview at 5 of 6. Thus, at least under the apparent claim scope alleged by Orckit’s Infringement Disclosures, this limitation is met.

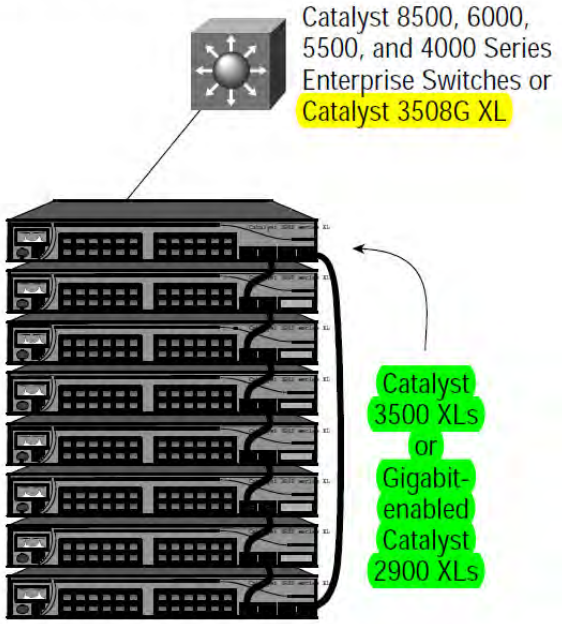
Cisco’s Catalyst XL Switches depict management and system setup features that include stack views, as shown below.
<table><tr><th>Feature</th><th>Description</th><th>Benefit</th></tr><tr><td>Outstanding Performance (continued)</td><td>CGMP Fast Leave</td><td>Allows quick stoppage of multicasts to end stations that want to drop a data stream, reducing superfluous traffic on the network</td></tr><tr><td rowspan="6">Management and System Setup</td><td>Simple Network Management Protocol (SNMP) and Telnet interface support</td><td>Delivers comprehensive in-band management</td></tr><tr><td>Telnet support for five simultaneous sessions</td><td>Allows menu-based management by terminal emulation software over the network</td></tr><tr><td rowspan="2">Command-line interface (CLI)-based management console</td><td>Provides detailed out-of-band management</td></tr><tr><td>Uses the same management interface as Cisco routers</td></tr><tr><td rowspan="2">Cisco Visual Switch Manager software</td><td>Built-in HTTP server enables Web-based management interface through standard browser such as Netscape Navigator or Microsoft Explorer</td></tr><tr><td>Provides stack and network topology views of a group of Catalyst 2900XL switches with one easy-to-use management interface</td></tr></table>1998, Cisco Catalyst 2900 Series XL Overview at 5 of 6.

Cisco’s Catalyst XL Switches disclose that “[i]f the switch will be a cluster member, it is not necessary to assign IP information or a password if the switch will be managed through the IP address of the command switch. If you are configuring the switch as a a standalone switch or as a command switch (Enterprise Edition only), you must assign IP information.” 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 4 (6 of 12).

Cisco’s Catalyst XL Switches disclose that “[a]fter you assign an IP address to the switch, you can access the switch from your browser and use CVSM [Cisco Visual Switch Manager] to view or change configuration settings. If this is a command switch (Enterprise Edition</td></tr>
</table>

No.	'904 Patent Claim 1	The Catalyst XL Switches
		only), you can use Cluster Management software to configure other switches." 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 6 (8 of 12). Cisco's Catalyst XL Switches disclose "In a Cisco Switch Cluster, one Catalyst 3500 series XL or 2900 XL switch is specified as the 'command' switch and all other switches in the cluster are designated as 'member' switches. The command switch serves as the single IP address management point and disburses all management action dictated by the network administrator. Command switches can cluster up to additional 15 interconnected member switches regardless of their interconnection media. Cisco Switch Clustering command software is preinstalled on all Catalyst 3500 series XL switches and is available as an upgrade for Catalyst 2900 series XL switches with the Catalyst 2900 XL Command Software upgrade kit." 1999, Cisco Catalyst 3500 Series XL Data Sheet at 2 of 13. In one example, Cisco's Catalyst XL Switches depict first and second commanders (*e.g.*, master units) that are each connected to a daisy chain. The exemplary first and second commanders are highlighted below in yellow. Figure 7 Enterprise Workgroup Aggregation  1999, Cisco Catalyst 3500 Series XL Data Sheet at 8 of 13, FIG. 7.

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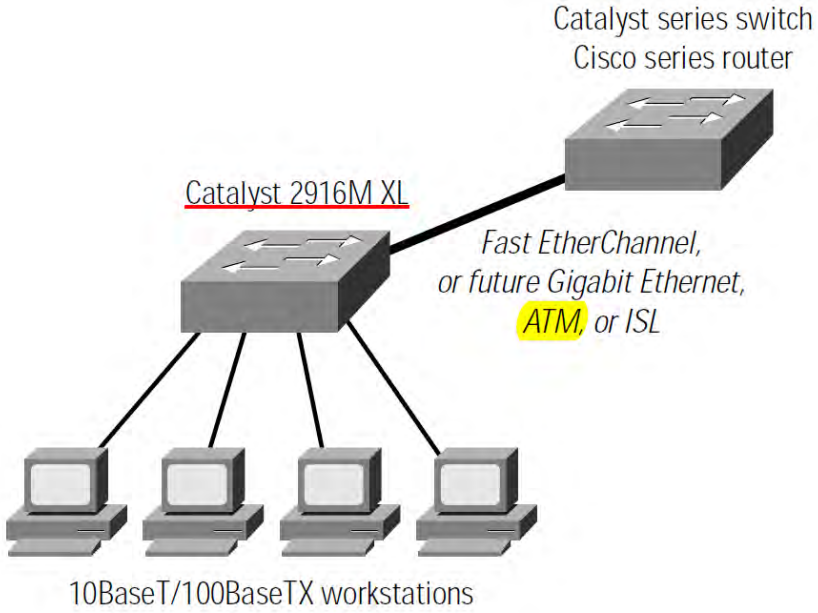
No.	'904 Patent Claim 1	The Catalyst XL Switches
		Cisco's Catalyst XL Switches disclose "Cisco Switch Clustering software for the Catalyst 3500 XL, 2900 XL and 1900 switches, enables the management of a 'cluster' of switches through a single IP address. The clusters can be grouped regardless of interconnection media or physical proximity. In a Cisco switch cluster, one Catalyst 3500 XL or 2900 XL switch is designated as the 'command' switch and all other switches in the cluster are designated as 'member' switches. The command switch serves as the single IP management point and disburses all management action dictated by the network manager." May 24, 1999, Press Release: Cisco Introduces Next-Generation Stacking with New Catalyst 3500 Series XL at 4 of 6. Cisco's Catalyst XL Switches depict that this plurality of members (*e.g.*, slaves) may be serially connected in a stack having a redundant loopback, as shown below. Figure 4 Creating a Redundant Loopback Connection Using GigaStack GBICs 

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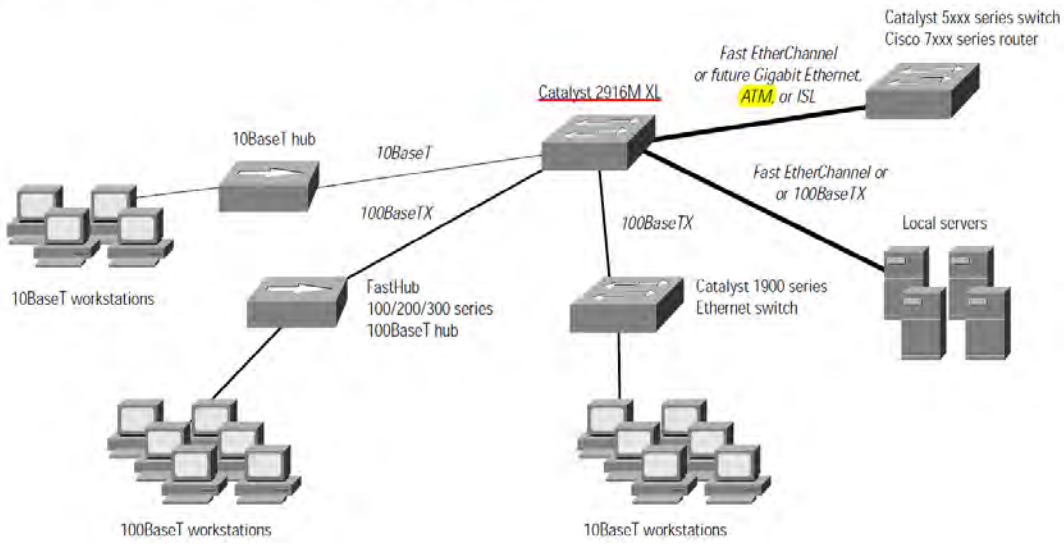
No.	'904 Patent Claim 1	The Catalyst XL Switches
		1999, Cisco Catalyst 3500 Series XL Data Sheet at 5 of 13, FIG. 4 (annotated). In one example, Cisco's Catalyst XL Switches describe security and redundancy features that include redundant stacking connections that provide a redundant loopback connection in top and bottom switches in a stack. Table 1 Features and Benefits Summary: Catalyst 3500 Series XL (Continued) **Feature** / **Description** / **Benefit** **Security and Redundancy (continued)** — Redundant stacking connections — Support for a redundant loopback connection through secondary GigaStack GBICs in top and bottom switches in a stack IEEE 802.1D Spanning-Tree Protocol — Supports redundant backbone connections and loop-free networks, simplifies network configuration, and improves fault tolerance Cisco Uplink Fast technology (Enterprise Edition only) — Ensures quick failover recovery, enhancing overall network stability and reliability MTBF exceeds 150,000 hours — Designed to provide the highest reliability for maximum network uptime Cisco 600-watt redundant AC power system option — Provides a backup power source for up to four separate units for improved fault tolerance and network uptime **Warranty** — Lifetime limited warranty — Backed by Cisco's service and support and the technology leadership that extends the reach of networks worldwide 1999, Cisco Catalyst 3500 Series XL Data Sheet at 12 of 13, Table 1 (Continued).

No.	'904 Patent Claim 2	The Catalyst XL Switches
2	Apparatus according to claim 1, wherein the network comprises an asynchronous transfer mode (ATM) network.	The Catalyst XL Switches disclose apparatus according to claim 1, wherein the network comprises an asynchronous transfer mode (ATM) network. For example, the Catalyst XL Switches disclose network connectivity that includes provisioning services for ATM networks. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Specifically, the Catalyst XL Switches disclose that "the Catalyst 2916M XL offers Fast EtherChannel and a clear migration path to Gigabit Ethernet, ATM and virtual LANs." 1997, Cisco Catalyst 2900 Series XL Data Sheet at 1 of 6.

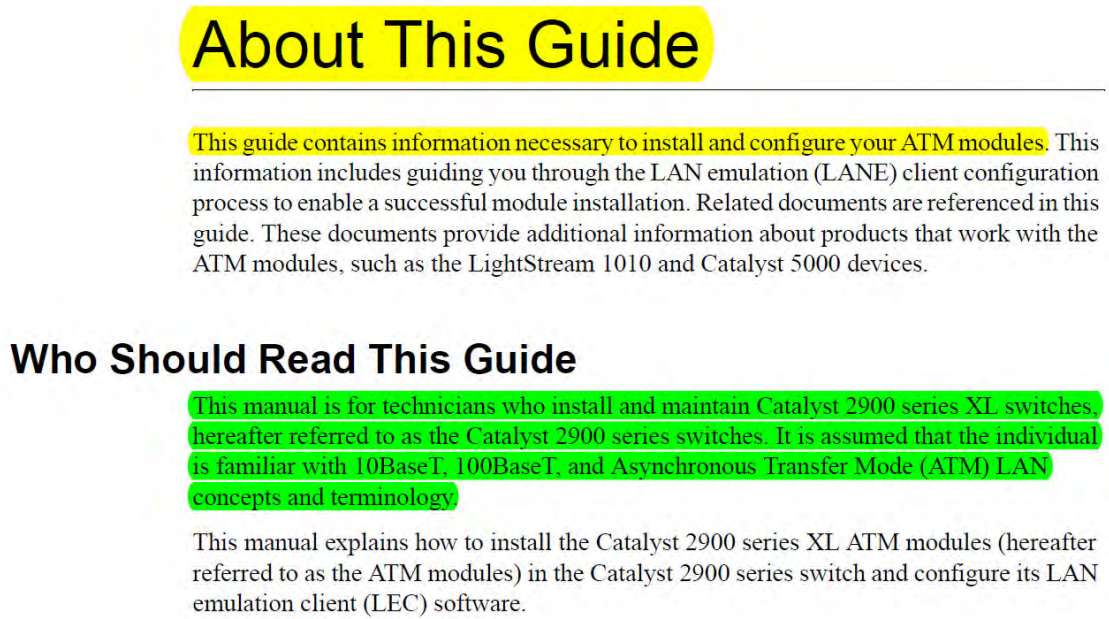
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No.	'904 Patent Claim 2	The Catalyst XL Switches
		 Figure 2 The Catalyst 2924 XL or Catalyst 2924C XL for High Performance Desktop Connectivity 1997, Cisco Catalyst 2900 Series XL Data Sheet at 1 of 6, FIG. 2.

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No.	'904 Patent Claim 2	The Catalyst XL Switches
		Figure 3 The Catalyst 2916M XL as Enterprise Workgroup and Server Aggregator  1997, Cisco Catalyst 2900 Series XL Data Sheet at 2 of 6, FIG. 3. Further, Cisco's Catalyst XL Switches disclose numerous configurations in its "Catalyst 2900 Series XL ATM Modules Installation and Configuration Guide." 1999, Cisco Catalyst 2900 Series XL ATM Modules Installation and Configuration Guide at i (1 of 108), Title.

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No.	'904 Patent Claim 2	The Catalyst XL Switches
		 1999, Cisco Catalyst 2900 Series XL ATM Modules Installation and Configuration Guide at vii (7 of 108).

No.	'904 Patent Claim 3	The Catalyst XL Switches
3	Apparatus according to claim 1, wherein the network comprises an Internet protocol (IP) network.	The Catalyst XL Switches disclose apparatus according to claim 1, wherein the network comprises an Internet protocol (IP) network. For example, the Catalyst XL Switches disclose a network that is used to provide access to an IP network through an IP address. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Cisco's Catalyst XL Switches disclose that "[i]f the switch will be a cluster member, it is not necessary to assign IP information or a password if the switch will be managed through the IP address of the command switch. If you are configuring the switch as a a standalone switch

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No.	'904 Patent Claim 3	The Catalyst XL Switches
		or as a command switch (Enterprise Edition only), you must assign IP information." 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 4 (6 of 12). Cisco's Catalyst XL Switches disclose that "[a]fter you assign an IP address to the switch, you can access the switch from your browser and use CVSM [Cisco Visual Switch Manager] to view or change configuration settings. If this is a command switch (Enterprise Edition only), you can use Cluster Management software to configure other switches." 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 6 (8 of 12). Cisco's Catalyst XL Switches disclose "Cisco Switch Clustering software enables up to 16 interconnected Catalyst 3500 XL, 2900 XL and 1900 switches, regardless of geographic proximity, to form a managed single-IP address network." May 24, 1999, Press Release: Cisco Introduces Next-Generation Stacking with New Catalyst 3500 Series XL at 4 of 6. Cisco's Catalyst XL Switches disclose "The GigaStack GBIC allows you to stack up to nine switches to form an independent backbone that can be managed with a single IP address. This stack gives the appearance of a single large switch for network management purposes. You can also form a point-to-point link between two switches. The GigaStack GBIC supports one full-duplex link (in a point-to-point link) or up to eight half-duplex links (in a stack configuration) to other Gigabit Ethernet devices." July 6, 1999, Release Notes for Catalyst GigaStack Gigabit Interface Converter at 1 of 6. Cisco's Catalyst XL Switches disclose that "network management is a central issue in the switched internetworking marketplace and affects the rate of adoption and deployment of LAN switching equipment. TrafficDirector is Cisco's graphical RMON console application for use with Cisco's IOS embedded RMON agents and SwitchProbe product line. TrafficDirector provides standards-based RMON and RMON2 real-time traffic monitoring, historical traffic analysis and troubleshooting tools for switched internetworks. TrafficDirector will be an integral part of CiscoWorks for Switched Internetworks (CWSI), Cisco's Switch Management application and as such should integrate fully with CWSI." October 31, 1997 TrafficDirector v5.2, SwitchProbe v4.2 Product Requirements Document at 2 of 84.

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No.	'904 Patent Claim 4	The Catalyst XL Switches
4[preamble]	Network access apparatus, comprising:	To the extent the preamble is found to be limiting, the Catalyst XL Switches disclose a network access apparatus. *See supra* at 1[preamble].
4[a]	first and second master units, each comprising a physical interface to a packet-switched network;	The Catalyst XL Switches disclose first and second master units, each comprising a physical interface to a packet-switched network. *See supra* at 1[a].
4[b]	a plurality of slave units,	The Catalyst XL Switches disclose a plurality of slave units. *See supra* at 1[b].
4[c]	each slave unit comprising one or more ports to respective subscriber lines; and	The Catalyst XL Switches disclose each slave unit comprising one or more ports to respective subscriber lines. *See supra* at 1[c].
4[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	the Catalyst XL Switches disclose a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. *See supra* at 1[d].

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No.	'904 Patent Claim 4	The Catalyst XL Switches
4[e]	each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit,	The Catalyst XL Switches disclose each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit. *See supra* at 1[e].
4[f]	wherein in normal operation, downstream data packets received from the network are passed from the first master unit to each of the daisy chains via the first slave unit in each chain, and upstream data packets received by the slaves in each chain from the subscriber lines are passed via the first slave unit in the chain to the first master unit for transmission over the network.	The Catalyst XL Switches disclose wherein in normal operation, downstream data packets received from the network are passed from the first master unit to each of the daisy chains via the first slave unit in each chain, and upstream data packets received by the slaves in each chain from the subscriber lines are passed via the first slave unit in the chain to the first master unit for transmission over the network. For example, the July 6, 1999 Release Notes (and June 11, 1999 Release Notes) discloses that a problem may be experienced when traffic flows in one direction. A person of ordinary skill in the art would understand from this disclosure that traffic can flow in two directions, *e.g.*, an upstream and downstream direction. Additionally, based upon information and belief, The Catalyst XL Switches allow traffic flow in two directions, *e.g.*, an upstream and downstream direction. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. "With IOS Release 11.2(8.1)SA6, you might experience a problem with traffic flow in one direction when you insert a cable. To determine if this problem exists, use the ping command on a station located on one end of the stack to verify connectivity to a station on the other end of the stack." July 6, 1999 at 4.

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<table>
<tr><th>No.</th><th>’904 Patent Claim 5</th><th>The Catalyst XL Switches</th></tr>
<tr><td>5</td><td>Apparatus according to claim 4, and comprising a protection interface, which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault.</td><td>The Catalyst XL Switches disclose apparatus according to claim 4, and comprising a protection interface, which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault.

For example, the Catalyst XL Switches disclose “Hapuna is a software release developed specifically for the 8Mb Catalyst 2900 XL and the Catalyst 3500 XL. However, this software release should be flexible enough to provide a foundation to support other devices (specifically the Vegas L3 products) in the future. With Hapuna we will also consolidate the software for the 2900 and 3500 into one image that will have all the Enterprise Edition features as well as Command Switch functionality integrated. The 2900/3500 product management team is also eliminating the distinction between the –A and –EN version prior to Hapuna release, thus minimizing the number of SKUs and simplifying our marketing message. We will also post the new image on CCO in the free/public area to address the upgrade needs of installed base.” October 8, 1999 Hapuna Product Requirements Document (“Hapuna”) at 4. Thus, at least under the apparent claim scope alleged by Orckit’s Infringement Disclosures, this limitation is met.

The Catalyst XL Switches disclose a product description of Hapuna in the table shown below.
<table>
<tr><th>Acronym</th><th>Description</th></tr>
<tr><td>Alcatraz</td><td>GBIC based Gigabit Ethernet Module</td></tr>
<tr><td>CDP</td><td>Cisco Discovery Protocol</td></tr>
<tr><td>CLI</td><td>Command Line Interface</td></tr>
<tr><td>CVSM</td><td>Cisco Visual Switch Manager</td></tr>
<tr><td>Deep Space</td><td>12.0(5)XP release of software</td></tr>
<tr><td>HSRP</td><td>Hot Standby Router Protocol</td></tr>
<tr><td>HTTP</td><td>Hyper Text Transfer Protocol</td></tr>
<tr><td>Merlin</td><td>Enhancement of Lava Deux</td></tr>
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</table>
</td></tr>
</table>

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No.	'904 Patent Claim 5	The Catalyst XL Switches

Vegas	Next Gen L3 3500 XL switches
UDLD	UniDirectional Link Detection

Hapuna at 4.

Further, the Catalyst XL Switches disclose "Upon FCS, Hapuna software will be available for free via CCO for all customers. We will post it in the public area of CCO to address the upgrade needs of the installed base. This will allow us to end-of-life the current upgrade SKUs for 2900 XL." Hapuna at 9.

The Catalyst XL Switches also disclose "feedback from customers has been that there are certain key features, such as redundant commander and extended candidate discovery, are still missing from the current implementation of Switch Clustering and needs to be addressed." Hapuna at 9.

Consequently, the Catalyst XL Switches disclose "Hapuna release has the following objectives: The ability to create and manage robust and fault tolerant switch clusters. The focus is on providing - Redundant command switch support and plug-and-play GigaStack loop back." Hapuna at 3.

As a result, the Catalyst XL Switches disclose switch clustering features for such a redundant command switch, noting that "Hapuna will deliver Redundant command switch capability using HSRP as a template. The Cluster HSRP group will consist of two or more Command switch capable devices that share the same virtual Cluster HSRP MAC and IP address. There can only be one active Command Switch at any given time. Failover between the active Command Switch and the backup Command switch should occur within 30 seconds and be transparent to the network administrator. However, this failover should generate SNMP traps informing the network administrator. Hapuna should also report candidate and member switches that are most qualified to be part of the HSRP group and set precedence order within the HSRP group based on a predefined matrix. The precedence is determined based on connectivity as well as device capabilities. *Redundant cabling is not a part of the scope of this Hapuna feature and does not need to be addressed via software*. Creation of the HSRP group should also not break an existing Switch Cluster." Hapuna at 4-5.

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No.	'904 Patent Claim 5	The Catalyst XL Switches
		Further, the Catalyst XL Switches disclose the redundant command switch will require updates to Merlin, stating that Merlin Requirements include "Identify[ing] members of the HSRP group and Draw Redundant Links." Hapuna at 6. "Since Hapuna will add support for the Cluster HSRP group, Merlin needs to graphically identify and display members of the Cluster HSRP group, specifically the Active and Backup Command Switches. Cluster Builder should also diagram any redundant (blocked) links within the cluster. In addition, Razor links should be uniquely identified in Cluster Builder." Hapuna at 6.

No.	'904 Patent Claim 6	The Catalyst XL Switches
6	Apparatus according to claim 5, wherein the first master unit bicasts the upstream data packets that it receives from the slave units to the network and, via the protection interface, to the second master unit, which transmits the upstream data packets to the network.	The Catalyst XL Switches disclose apparatus according to claim 5, wherein the first master unit bicasts the upstream data packets that it receives from the slave units to the network and, via the protection interface, to the second master unit, which transmits the upstream data packets to the network. For example, the July 6, 1999 Release Notes (and June 11, 1999 Release Notes) discloses that the a problem may be experienced when traffic flows in one direction. A person of ordinary skill in the art would understand from this disclosure that traffic can flow in two directions, *e.g.*, an upstream and downstream direction. Additionally, based upon information and belief, The Catalyst XL Switches allow traffic flow in two directions, *e.g.*, an upstream and downstream direction. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. "With IOS Release 11.2(8.1)SA6, you might experience a problem with traffic flow in one direction when you insert a cable. To determine if this problem exists, use the ping command on a station located on one end of the stack to verify connectivity to a station on the other end of the stack." July 6, 1999 at 4. For example, the Catalyst XL Switches disclose "Hapuna is a software release developed specifically for the 8Mb Catalyst 2900 XL and the Catalyst 3500 XL. However, this software release should be flexible enough to provide a foundation to support other devices (specifically the Vegas L3 products) in the future. With Hapuna we will also consolidate the

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<table>
<tr><th>No.</th><th>’904 Patent Claim 6</th><th>The Catalyst XL Switches</th></tr>
<tr><td></td><td></td><td>software for the 2900 and 3500 into one image that will have all the Enterprise Edition features as well as Command Switch functionality integrated. The 2900/3500 product management team is also eliminating the distinction between the –A and –EN version prior to Hapuna release, thus minimizing the number of SKUs and simplifying our marketing message. We will also post the new image on CCO in the free/public area to address the upgrade needs of installed base.” October 8, 1999 Hapuna Product Requirements Document (“Hapuna”) at 4.

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</table>
Hapuna at 4.

Further, the Catalyst XL Switches disclose “Upon FCS, Hapuna software will be available for free via CCO for all customers. We will post it in the public area of CCO to address the upgrade needs of the installed base. This will allow us to end-of-life the current upgrade SKUs for 2900 XL.” Hapuna at 9.

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No.	'904 Patent Claim 6	The Catalyst XL Switches
		still missing from the current implementation of Switch Clustering and needs to be addressed." Hapuna at 9. Consequently, the Catalyst XL Switches disclose "Hapuna release has the following objectives: The ability to create and manage robust and fault tolerant switch clusters. The focus is on providing - Redundant command switch support and plug-and-play GigaStack loop back." Hapuna at 3. As a result, the Catalyst XL Switches disclose switch clustering features for such a redundant command switch, noting that "Hapuna will deliver Redundant command switch capability using HSRP as a template. The Cluster HSRP group will consist of two or more Command switch capable devices that share the same virtual Cluster HSRP MAC and IP address. There can only be one active Command Switch at any given time. Failover between the active Command Switch and the backup Command switch should occur within 30 seconds and be transparent to the network administrator. However, this failover should generate SNMP traps informing the network administrator. Hapuna should also report candidate and member switches that are most qualified to be part of the HSRP group and set precedence order within the HSRP group based on a predefined matrix. The precedence is determined based on connectivity as well as device capabilities. *Redundant cabling is not a part of the scope of this Hapuna feature and does not need to be addressed via software*. Creation of the HSRP group should also not break an existing Switch Cluster." Hapuna at 4-5. Further, the Catalyst XL Switches disclose the redundant command switch will require updates to Merlin, stating that Merlin Requirements include "Identify[ing] members of the HSRP group and Draw Redundant Links." Hapuna at 6. "Since Hapuna will add support for the Cluster HSRP group, Merlin needs to graphically identify and display members of the Cluster HSRP group, specifically the Active and Backup Command Switches. Cluster Builder should also diagram any redundant (blocked) links within the cluster. In addition, Razor links should be uniquely identified in Cluster Builder." Hapuna at 6.

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<table>
<tr><th>No.</th><th>’904 Patent Claim 7</th><th>The Catalyst XL Switches</th></tr>
<tr><td>7</td><td>Apparatus according to claim 4, wherein in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit.</td><td>The Catalyst XL Switches disclose apparatus according to claim 4, wherein in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit.

For example, the Catalyst XL Switches disclose “Hapuna is a software release developed specifically for the 8Mb Catalyst 2900 XL and the Catalyst 3500 XL. However, this software release should be flexible enough to provide a foundation to support other devices (specifically the Vegas L3 products) in the future. With Hapuna we will also consolidate the software for the 2900 and 3500 into one image that will have all the Enterprise Edition features as well as Command Switch functionality integrated. The 2900/3500 product management team is also eliminating the distinction between the –A and –EN version prior to Hapuna release, thus minimizing the number of SKUs and simplifying our marketing message. We will also post the new image on CCO in the free/public area to address the upgrade needs of installed base.” October 8, 1999 Hapuna Product Requirements Document (“Hapuna”) at 4. Thus, at least under the apparent claim scope alleged by Orckit’s Infringement Disclosures, this limitation is met. To the extent that the Catalyst XL switches are found to not meet this limitation, an apparatus according to claim 4, wherein in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit would have been obvious to a person having ordinary skill in the art, as explained below.

The Catalyst XL Switches disclose a product description of Hapuna in the table shown below.
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No.	'904 Patent Claim 7	The Catalyst XL Switches
		transparent to the network administrator. However, this failover should generate SNMP traps informing the network administrator. Hapuna should also report candidate and member switches that are most qualified to be part of the HSRP group and set precedence order within the HSRP group based on a predefined matrix. The precedence is determined based on connectivity as well as device capabilities. *Redundant cabling is not a part of the scope of this Hapuna feature and does not need to be addressed via software*. Creation of the HSRP group should also not break an existing Switch Cluster." Hapuna at 4-5. Further, the Catalyst XL Switches disclose the redundant command switch will require updates to Merlin, stating that Merlin Requirements include "Identify[ing] members of the HSRP group and Draw Redundant Links." Hapuna at 6. "Since Hapuna will add support for the Cluster HSRP group, Merlin needs to graphically identify and display members of the Cluster HSRP group, specifically the Active and Backup Command Switches. Cluster Builder should also diagram any redundant (blocked) links within the cluster. In addition, Razor links should be uniquely identified in Cluster Builder." Hapuna at 6. In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, the Catalyst XL Switches in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 7 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Vink '324 discloses reversing direction of packet flow in the chain in the event of a fault, so that the slaves can still communicate with a master on either side of the fault. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Vink '324 16:19-17:2 ("The shift register principle is also of advantage with respect to use, for example for reliability reasons, of a plurality of masters as is illustrated in Figure 2 by the broken lines. In such a multi-master concept, one of the masters is in general active in relation to data exchange, while one or more other masters only have a passive role therein. All the masters are so designed that they can assume the function of the active master, for example

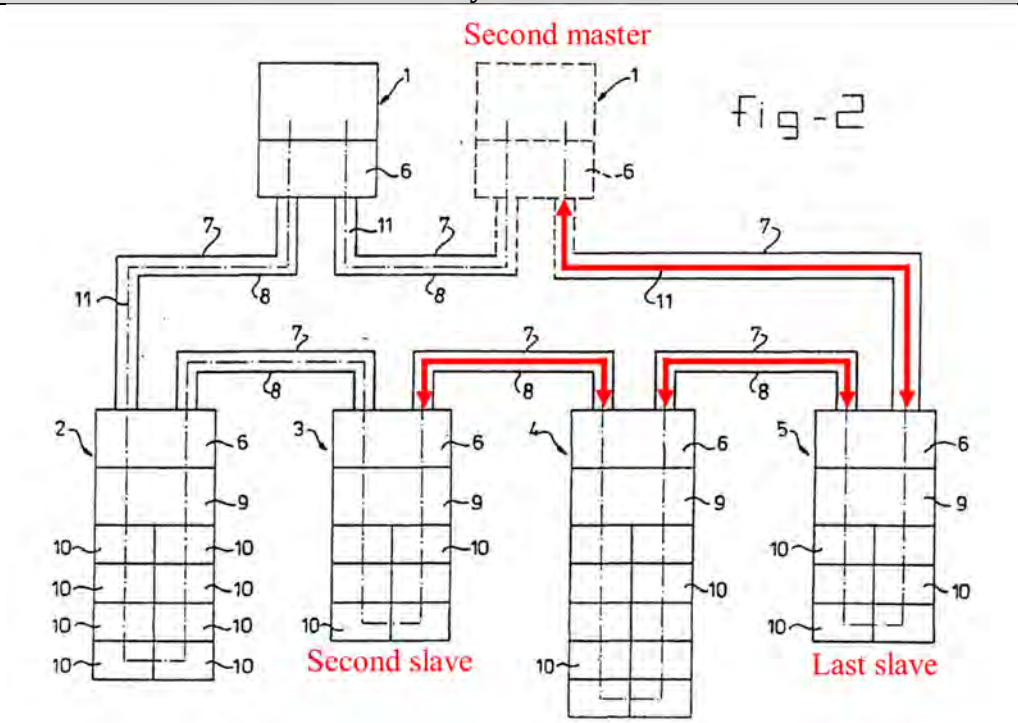
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No.	'904 Patent Claim 7	The Catalyst XL Switches
		in the event of faults. The passive masters are easily able to detect errors of the active master because, as a consequence of their cascade arrangement and the serial transfer of data bits in the communication system according to the invention, they receive all the information which is intended for the active master. Consequently, no separate communication path is required between the various masters to keep the passive masters abreast of the operations, instruction etc. carried out by the active master. Such a "hot stand-by" mode is of importance, in particular, in industrial process measurement and control in which failure or delay in the production process may, inter alia, have serious financial consequences. It is obvious that, in such a multi-master concept, the conditions under which, and the manner in which, the tasks of a master are assumed by another master have to be specified in advance."). Vink '324 14:2-27 ("In particular, with implicit addressing of the I/O modules, that is to say, if the sequence of the data bits corresponds to the sequence of the I/O modules of the relevant slave, errors in the transmission system and/or the local data bus can give rise to undesirable responses. To prevent this as far as possible, in an embodiment of the communication system according to the invention, a slave is provided with means for monitoring the serial transfer of data bits via the transmission system and/or the local data bus. A complete monitoring of the data exchange is achieved in that the at least one master is provided with means for detecting error situations in the transmission system. When a transmission error is detected, the control module of a slave will not accept the data received, nor will it transmit new data. The data bits received are then transferred further unchanged. The master then receives back the data bits despatched, possibly with transmission errors. By checking the transmitted and received data, information can be obtained about a transmission fault. If necessary, the relevant data bits can, for example, be transmitted again. Owing to the serial transfer down to the level of the I/O modules, the nodes in the communication system according to the invention are particularly suitable for use in a ring network configuration. Making use of this, the slaves in a further embodiment of the invention are connected to the at least one master via a multiple ring transmission system, the at least one master and the slaves being provided with means for change-over of a transmission system ring."). Vink '324 14:28-38 "A very flexible system is obtained in an embodiment of the invention in that the at least one master and slaves are designed to transmit or receive packets of data

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No.	'904 Patent Claim 7	The Catalyst XL Switches
		bits via a transmission system ring in one and/or the other direction. Master and/or slaves constructed in this way are capable of functioning as a switching centre so that, for example, the master is able to reach as many connected slaves as possible in a fault situation. The invention also relates to an I/O module, a substation (slave) and a master station (master) corresponding to, and suitable for, use in the communication system according to one or more of the preceding embodiments."). Vink '324 21:3-17 ("The transmitting/receiving unit 6 provides for the monitoring of the transmission and the control computer 38 provides for and monitors the correct sequence of the data bits for a relevant slave, related to the sequence in which the I/O modules are arranged. The information about this sequence is extracted by the control unit 36 from the status information received from the relevant slaves. In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about whether the connection to the transmission system is or is not operating correctly. For use in the communication system according to Figure 1 the unit 6 can be omitted.")

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No.	'904 Patent Claim 7	The Catalyst XL Switches
		 Fig. 2 (annotation added)

No.	'904 Patent Claim 8	The Catalyst XL Switches
8	Apparatus according to claim 7, wherein the downstream packets for the slave units in the portion of the daisy chain between the location of the fault and the second	The Catalyst XL Switches disclose apparatus according to claim 7, wherein the downstream packets for the slave units in the portion of the daisy chain between the location of the fault and the second master unit are conveyed to the second master unit from the first master unit via another one of the daisy chains. For example, the Catalyst XL Switches disclose "Hapuna is a software release developed specifically for the 8Mb Catalyst 2900 XL and the Catalyst 3500 XL. However, this software release should be flexible enough to provide a foundation to support other devices

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<tr><th>No.</th><th>’904 Patent Claim 8</th><th>The Catalyst XL Switches</th></tr>
<tr><td></td><td>master unit are conveyed to the second master unit from the first master unit via another one of the daisy chains.</td><td>(specifically the Vegas L3 products) in the future. With Hapuna we will also consolidate the software for the 2900 and 3500 into one image that will have all the Enterprise Edition features as well as Command Switch functionality integrated. The 2900/3500 product management team is also eliminating the distinction between the –A and –EN version prior to Hapuna release, thus minimizing the number of SKUs and simplifying our marketing message. We will also post the new image on CCO in the free/public area to address the upgrade needs of installed base.” October 8, 1999 Hapuna Product Requirements Document (“Hapuna”) at 4. Thus, at least under the apparent claim scope alleged by Orckit’s Infringement Disclosures, this limitation is met. To the extent that the Catalyst XL switches are found to not meet this limitation, an apparatus according to claim 7, wherein the downstream packets for the slave units in the portion of the daisy chain between the location of the fault and the second master unit are conveyed to the second master unit from the first master unit via another one of the daisy chains would have been obvious to a person having ordinary skill in the art, as explained below.

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No.	'904 Patent Claim 8	The Catalyst XL Switches
		Further, the Catalyst XL Switches disclose "Upon FCS, Hapuna software will be available for free via CCO for all customers. We will post it in the public area of CCO to address the upgrade needs of the installed base. This will allow us to end-of-life the current upgrade SKUs for 2900 XL." Hapuna at 9. The Catalyst XL Switches also disclose "feedback from customers has been that there are certain key features, such as redundant commander and extended candidate discovery, are still missing from the current implementation of Switch Clustering and needs to be addressed." Hapuna at 9. Consequently, the Catalyst XL Switches disclose "Hapuna release has the following objectives: The ability to create and manage robust and fault tolerant switch clusters. The focus is on providing - Redundant command switch support and plug-and-play GigaStack loop back." Hapuna at 3. As a result, the Catalyst XL Switches disclose switch clustering features for such a redundant command switch, noting that "Hapuna will deliver Redundant command switch capability using HSRP as a template. The Cluster HSRP group will consist of two or more Command switch capable devices that share the same virtual Cluster HSRP MAC and IP address. There can only be one active Command Switch at any given time. Failover between the active Command Switch and the backup Command switch should occur within 30 seconds and be transparent to the network administrator. However, this failover should generate SNMP traps informing the network administrator. Hapuna should also report candidate and member switches that are most qualified to be part of the HSRP group and set precedence order within the HSRP group based on a predefined matrix. The precedence is determined based on connectivity as well as device capabilities. *Redundant cabling is not a part of the scope of this Hapuna feature and does not need to be addressed via software*. Creation of the HSRP group should also not break an existing Switch Cluster." Hapuna at 4-5. Further, the Catalyst XL Switches disclose the redundant command switch will require updates to Merlin, stating that Merlin Requirements include "Identify[ing] members of the HSRP group and Draw Redundant Links." Hapuna at 6. "Since Hapuna will add support for

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No.	'904 Patent Claim 8	The Catalyst XL Switches
		the Cluster HSRP group, Merlin needs to graphically identify and display members of the Cluster HSRP group, specifically the Active and Backup Command Switches. Cluster Builder should also diagram any redundant (blocked) links within the cluster. In addition, Razor links should be uniquely identified in Cluster Builder." Hapuna at 6. And the Catalyst XL Switches disclose Hapuna allows circular links on a razor daisy chain. Hapuna at 8. "This feature allows a standard one-meter loopback cable to be used to create a circular link on a Razor daisy chain. Hapuna will detect the loop and block the link typically within 30 seconds, with a worst case limit of 2 minutes. Hapuna should also be able to failover to this blocked link within 30 seconds when there is a link failure in the Razor daisy chain." Hapuna at 8. In addition, the Catalyst XL Switches disclose that Merlin provides a cluster builder and view that provides redundant commander support. Merlin at 33 of 114. Legend: Following legend describes the icon and label to distinguish various ***devices*** in the Cluster Builder/View screens: 1. **Command Switch:** Special Switch icon with ***green*** label. 2. **Standby Command Switch:** Special Switch icon with ***white*** label (the icon is same as that of the command switch). Merlin at 33 of 114. "Merlin will have the capability to support a redundant commander. The Cluster Builder will display the current Active Commander and the standby Commander. The Active Commander is designated by the command switch icon with green label and the Standby Commander will be designated by the command switch icon with white label. Please refer to the Legend section regarding the representation of various devices and links. The Standby command switch selection is possible from the Standby Command Configuration dialog in the Cluster Manager. Please refer to that section for further information on the criteria for selection of Standby Command Switch." Merlin at 33 of 114.

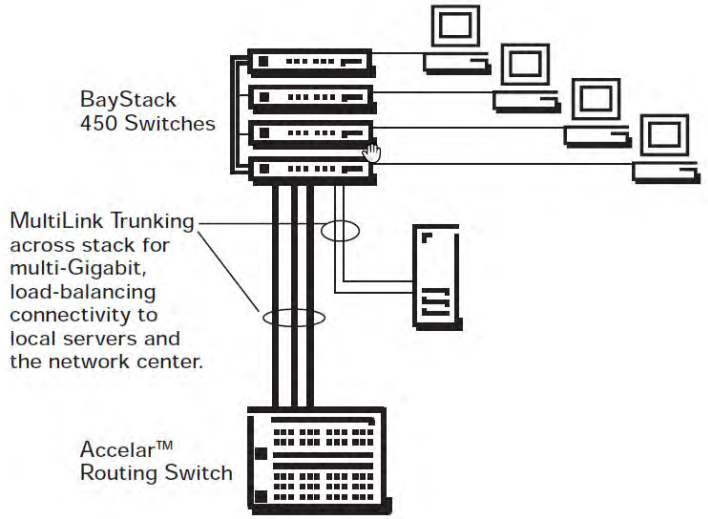
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No.	'904 Patent Claim 8	The Catalyst XL Switches
		Standby Command Configuration How to launch: Main menu: Cluster->Standby Command Configuration Toolbar: *No toolbar icon.* This screen allows the user to configure cluster-command-capable members as standby command switch. If the active command switch goes down then the standby command switch will take over. This screen also helps the user to pick the most suitable standby command. It should display a list of suggested standby command (the most desirable is listed first). The most desirable standby candidate is: • The one with the most number of connections between itself and other cluster members. • It also has a fast processor. For example 3500 switches are faster than 2900 switches. WS-3524 takes precedence over WS-3548. User also need to provide a group number and a virtual IP address. Merlin at 51 of 114. Moreover, the Catalyst XL Switches disclose that Merlin provides support for "HSRP [Hot Standby Router Protocol] group configuration & Management VLAN switchover in Cluster Manager." Merlin at 8 of 114. In particular, the Catalyst XL Switches disclose that user's can access a Standby Command Configuration Dialog to select from among a "'Candidate(s)' list box will contain the list of all the members that can belong to a cluster HSRP group." Merlin at 52 of 114. Additionally, the Catalyst XL Switches disclose that Merlin provides support for Cisco Group Management Protocol (CGMP), explaining that "Clicking on the 'Management Groups' tab will bring up the management groups information to the front as shown in the figure below. It contains a table that shows the VLAN id, MAC address, and the interface id of the current

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No.	'904 Patent Claim 8	The Catalyst XL Switches
		management groups. To delete an entry, select the row first and then click on the 'Remove' button. It is also possible to delete multiple entries using the same method." Merlin at 65 of 114. Further, the Catalyst XL Switches disclose that Merlin provides support for multiple virtual networks or multi-VLANs, where users can select VLAN commanders, members, for different virtual daisy chains and/or making these VLANs static. *See generally* Merlin at 80-82. In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, the Catalyst XL Switches in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 8 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. In addition, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8.

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No.	'904 Patent Claim 8	The Catalyst XL Switches
		Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below. *Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.*  BayStack 450 Data Sheet at 4 of 8, FIG. 2. The Baystack 450 Switches in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) Ding renders the claim, including the present limitation, obvious. Ding discloses failure protection. ("In order to coordinate management and control operations across the various cooperating Ethernet Switching modules in the Stack, one of the cooperating Ethernet Switching modules operates as the base module for the Stack. In a preferred embodiment of the present invention, a particular Ethernet Switching module is configured as the base module through a user-controlled toggle Switch on the Ethernet

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No.	'904 Patent Claim 8	The Catalyst XL Switches
		Switching module. If that Ethernet Switching module fails, then another Ethernet switching module (preferably the next upstream Ethernet Switching module in the Stack) automatically reconfigures itself to become the base module for the Stack. The base module is responsible for coordinating management and control for the Stack. Specifically, the base module manages the Stack configuration by ensuring that the Stack is initialized in an orderly manner, handling Stack configuration changes Such as module insertion and removal, and verifying stack integrity. The base module also coordinates certain Stack management functions that require synchronization or mutual exclusion among the various cooperating Ethernet switching modules in the stack." Ding, 8:9-30.

No.	'904 Patent Claim 9	The Catalyst XL Switches
9[preamble]	Network access apparatus, comprising:	To the extent the preamble is found to be limiting, the Catalyst XL Switches disclose a network access apparatus. *See supra* at 1[preamble].
9[a]	first and second master units, each comprising a physical interface to a packet-switched network;	The Catalyst XL Switches disclose first and second master units, each comprising a physical interface to a packet-switched network. *See supra* at 1[a].
9[b]	a plurality of slave units,	The Catalyst XL Switches disclose a plurality of slave units. *See supra* at 1[b].
9[c]	each slave unit comprising one or more ports to respective subscriber lines; and	The Catalyst XL Switches disclose each slave unit comprising one or more ports to respective subscriber lines. *See supra* at 1[c].

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No.	'904 Patent Claim 9	The Catalyst XL Switches
9[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	The Catalyst XL Switches disclose a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. *See supra* at 1[d].
9[e]	each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit, wherein each of the first and second master units comprises:	The Catalyst XL Switches disclose each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit. *See supra* at 1[e].
9[f]	a switch, configured to route data packets between the respective physical interface and the one or more daisy chains; and	The Catalyst XL Switches disclose wherein each of the first and second master units comprises: a switch, configured to route data packets between the respective physical interface and the one or more daisy chains. For example, the Catalyst XL Switches disclose "Hapuna is a software release developed specifically for the 8Mb Catalyst 2900 XL and the Catalyst 3500 XL. However, this software release should be flexible enough to provide a foundation to support other devices

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<tr><td></td><td></td><td>(specifically the Vegas L3 products) in the future. With Hapuna we will also consolidate the software for the 2900 and 3500 into one image that will have all the Enterprise Edition features as well as Command Switch functionality integrated. The 2900/3500 product management team is also eliminating the distinction between the –A and –EN version prior to Hapuna release, thus minimizing the number of SKUs and simplifying our marketing message. We will also post the new image on CCO in the free/public area to address the upgrade needs of installed base.” October 8, 1999 Hapuna Product Requirements Document (“Hapuna”) at 4. Thus, at least under the apparent claim scope alleged by Orckit’s Infringement Disclosures, this limitation is met.

The Catalyst XL Switches disclose a product description of Hapuna in the table shown below.
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No.	'904 Patent Claim 9	The Catalyst XL Switches
		The Catalyst XL Switches also disclose "feedback from customers has been that there are certain key features, such as redundant commander and extended candidate discovery, are still missing from the current implementation of Switch Clustering and needs to be addressed." Hapuna at 9. Consequently, the Catalyst XL Switches disclose "Hapuna release has the following objectives: The ability to create and manage robust and fault tolerant switch clusters. The focus is on providing - Redundant command switch support and plug-and-play GigaStack loop back." Hapuna at 3. As a result, the Catalyst XL Switches disclose switch clustering features for such a redundant command switch, noting that "Hapuna will deliver Redundant command switch capability using HSRP as a template. The Cluster HSRP group will consist of two or more Command switch capable devices that share the same virtual Cluster HSRP MAC and IP address. There can only be one active Command Switch at any given time. Failover between the active Command Switch and the backup Command switch should occur within 30 seconds and be transparent to the network administrator. However, this failover should generate SNMP traps informing the network administrator. Hapuna should also report candidate and member switches that are most qualified to be part of the HSRP group and set precedence order within the HSRP group based on a predefined matrix. The precedence is determined based on connectivity as well as device capabilities. *Redundant cabling is not a part of the scope of this Hapuna feature and does not need to be addressed via software*. Creation of the HSRP group should also not break an existing Switch Cluster." Hapuna at 4-5. Further, the Catalyst XL Switches disclose the redundant command switch will require updates to Merlin, stating that Merlin Requirements include "Identify[ing] members of the HSRP group and Draw Redundant Links." Hapuna at 6. "Since Hapuna will add support for the Cluster HSRP group, Merlin needs to graphically identify and display members of the Cluster HSRP group, specifically the Active and Backup Command Switches. Cluster Builder should also diagram any redundant (blocked) links within the cluster. In addition, Razor links should be uniquely identified in Cluster Builder." Hapuna at 6.

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No.	'904 Patent Claim 9	The Catalyst XL Switches

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No.	'904 Patent Claim 9	The Catalyst XL Switches
		Command Switch and the backup Command switch should occur within 30 seconds and be transparent to the network administrator. However, this failover should generate SNMP traps informing the network administrator. Hapuna should also report candidate and member switches that are most qualified to be part of the HSRP group and set precedence order within the HSRP group based on a predefined matrix. The precedence is determined based on connectivity as well as device capabilities. *Redundant cabling is not a part of the scope of this Hapuna feature and does not need to be addressed via software*. Creation of the HSRP group should also not break an existing Switch Cluster." Hapuna at 4-5. Further, the Catalyst XL Switches disclose the redundant command switch will require updates to Merlin, stating that Merlin Requirements include "Identify[ing] members of the HSRP group and Draw Redundant Links." Hapuna at 6. "Since Hapuna will add support for the Cluster HSRP group, Merlin needs to graphically identify and display members of the Cluster HSRP group, specifically the Active and Backup Command Switches. Cluster Builder should also diagram any redundant (blocked) links within the cluster. In addition, Razor links should be uniquely identified in Cluster Builder." Hapuna at 6. And the Catalyst XL Switches disclose Hapuna allows circular links on a razor daisy chain. Hapuna at 8. "This feature allows a standard one-meter loopback cable to be used to create a circular link on a Razor daisy chain. Hapuna will detect the loop and block the link typically within 30 seconds, with a worst case limit of 2 minutes. Hapuna should also be able to failover to this blocked link within 30 seconds when there is a link failure in the Razor daisy chain." Hapuna at 8. In addition, the Catalyst XL Switches disclose that Merlin provides a cluster builder and view that provides redundant commander support. Merlin at 33 of 114.

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No.	'904 Patent Claim 9	The Catalyst XL Switches
		Legend: Following legend describes the icon and label to distinguish various ***devices*** in the Cluster Builder/View screens: 1. **Command Switch:** Special Switch icon with ***green*** label. 2. **Standby Command Switch:** Special Switch icon with ***white*** label (the icon is same as that of the command switch). Merlin at 33 of 114. "Merlin will have the capability to support a redundant commander. The Cluster Builder will display the current Active Commander and the standby Commander. The Active Commander is designated by the command switch icon with green label and the Standby Commander will be designated by the command switch icon with white label. Please refer to the Legend section regarding the representation of various devices and links. The Standby command switch selection is possible from the Standby Command Configuration dialog in the Cluster Manager. Please refer to that section for further information on the criteria for selection of Standby Command Switch." Merlin at 33 of 114.

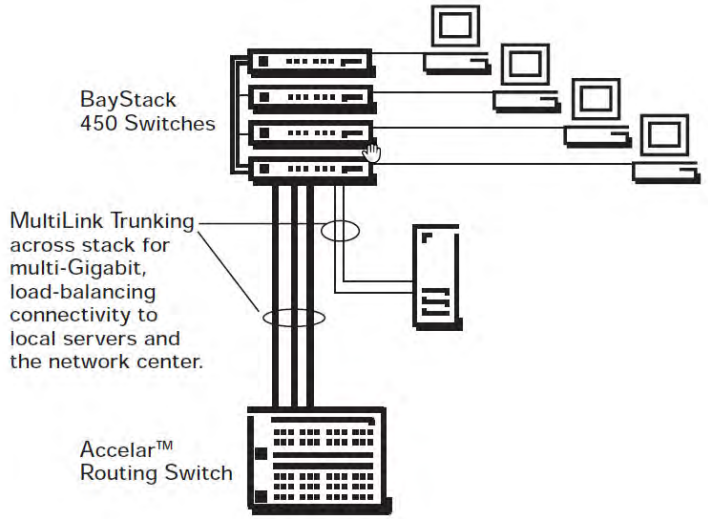
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No.	'904 Patent Claim 9	The Catalyst XL Switches
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No.	'904 Patent Claim 9	The Catalyst XL Switches
		management groups. To delete an entry, select the row first and then click on the 'Remove' button. It is also possible to delete multiple entries using the same method." Merlin at 65 of 114. Further, the Catalyst XL Switches disclose that Merlin provides support for multiple virtual networks or multi-VLANs, where users can select VLAN commanders, members, for different virtual daisy chains and/or making these VLANs static. *See generally* Merlin at 80-82. In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, the Catalyst XL Switches in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 9[g] of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. In addition, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8.

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No.	'904 Patent Claim 9	The Catalyst XL Switches
		Switching module. If that Ethernet Switching module fails, then another Ethernet switching module (preferably the next upstream Ethernet Switching module in the Stack) automatically reconfigures itself to become the base module for the Stack. The base module is responsible for coordinating management and control for the Stack. Specifically, the base module manages the Stack configuration by ensuring that the Stack is initialized in an orderly manner, handling Stack configuration changes Such as module insertion and removal, and verifying stack integrity. The base module also coordinates certain Stack management functions that require synchronization or mutual exclusion among the various cooperating Ethernet switching modules in the stack." Ding, 8:9-30.

No.	'904 Patent Claim 10	The Catalyst XL Switches
10	Apparatus according to claim 9, wherein the pre-switch re-routes the data packets such that substantially no reconfiguration of the switch is required responsive to the fault.	The Catalyst XL Switches disclose apparatus according to claim 9, wherein the pre-switch re-routes the data packets such that substantially no reconfiguration of the switch is required responsive to the fault. For example, the Catalyst XL Switches disclose "Hapuna is a software release developed specifically for the 8Mb Catalyst 2900 XL and the Catalyst 3500 XL. However, this software release should be flexible enough to provide a foundation to support other devices (specifically the Vegas L3 products) in the future. With Hapuna we will also consolidate the software for the 2900 and 3500 into one image that will have all the Enterprise Edition features as well as Command Switch functionality integrated. The 2900/3500 product management team is also eliminating the distinction between the –A and –EN version prior to Hapuna release, thus minimizing the number of SKUs and simplifying our marketing message. We will also post the new image on CCO in the free/public area to address the upgrade needs of installed base." October 8, 1999 Hapuna Product Requirements Document ("Hapuna") at 4. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that the Catalyst XL Switches are found to not meet this limitation, an apparatus according to claim 9, wherein the pre-switch re-routes the data packets such that substantially no reconfiguration of the switch is required responsive to the fault would have been obvious to a person having ordinary skill in the art, as explained below.

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<table>
<tr><th>No.</th><th>’904 Patent Claim 10</th><th>The Catalyst XL Switches</th></tr>
<tr><td></td><td></td><td>The Catalyst XL Switches disclose a product description of Hapuna in the table shown below.
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<tr><td>CLI</td><td>Command Line Interface</td></tr>
<tr><td>CVSM</td><td>Cisco Visual Switch Manager</td></tr>
<tr><td>Deep Space</td><td>12.0(5)XP release of software</td></tr>
<tr><td>HSRP</td><td>Hot Standby Router Protocol</td></tr>
<tr><td>HTTP</td><td>Hyper Text Transfer Protocol</td></tr>
<tr><td>Merlin</td><td>Enhancement of Lava Deux</td></tr>
<tr><td>QoS</td><td>Quality of Service</td></tr>
<tr><td>RPS2000</td><td>New redundant power supply</td></tr>
<tr><td>Vegas</td><td>Next Gen L3 3500 XL switches</td></tr>
<tr><td>UDLD</td><td>UniDirectional Link Detection</td></tr>
</table>
Hapuna at 4.

Further, the Catalyst XL Switches disclose “Upon FCS, Hapuna software will be available for free via CCO for all customers. We will post it in the public area of CCO to address the upgrade needs of the installed base. This will allow us to end-of-life the current upgrade SKUs for 2900 XL.” Hapuna at 9.

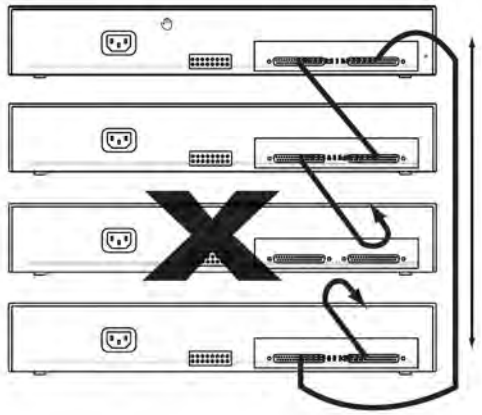
The Catalyst XL Switches also disclose “feedback from customers has been that there are certain key features, such as redundant commander and extended candidate discovery, are still missing from the current implementation of Switch Clustering and needs to be addressed.” Hapuna at 9.

Consequently, the Catalyst XL Switches disclose “Hapuna release has the following objectives: The ability to create and manage robust and fault tolerant switch clusters. The focus is on providing - Redundant command switch support and plug-and-play GigaStack loop back.” Hapuna at 3.</td></tr>
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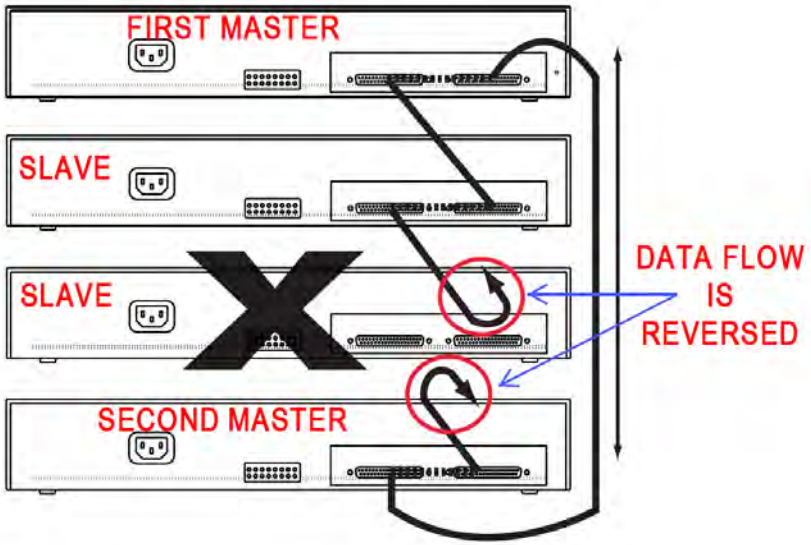
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No.	'904 Patent Claim 10	The Catalyst XL Switches
		As a result, the Catalyst XL Switches disclose switch clustering features for such a redundant command switch, noting that "Hapuna will deliver Redundant command switch capability using HSRP as a template. The Cluster HSRP group will consist of two or more Command switch capable devices that share the same virtual Cluster HSRP MAC and IP address. There can only be one active Command Switch at any given time. Failover between the active Command Switch and the backup Command switch should occur within 30 seconds and be transparent to the network administrator. However, this failover should generate SNMP traps informing the network administrator. Hapuna should also report candidate and member switches that are most qualified to be part of the HSRP group and set precedence order within the HSRP group based on a predefined matrix. The precedence is determined based on connectivity as well as device capabilities. *Redundant cabling is not a part of the scope of this Hapuna feature and does not need to be addressed via software*. Creation of the HSRP group should also not break an existing Switch Cluster." Hapuna at 4-5. Further, the Catalyst XL Switches disclose the redundant command switch will require updates to Merlin, stating that Merlin Requirements include "Identify[ing] members of the HSRP group and Draw Redundant Links." Hapuna at 6. "Since Hapuna will add support for the Cluster HSRP group, Merlin needs to graphically identify and display members of the Cluster HSRP group, specifically the Active and Backup Command Switches. Cluster Builder should also diagram any redundant (blocked) links within the cluster. In addition, Razor links should be uniquely identified in Cluster Builder." Hapuna at 6. And the Catalyst XL Switches disclose Hapuna allows circular links on a razor daisy chain. Hapuna at 8. "This feature allows a standard one-meter loopback cable to be used to create a circular link on a Razor daisy chain. Hapuna will detect the loop and block the link typically within 30 seconds, with a worst case limit of 2 minutes. Hapuna should also be able to failover to this blocked link within 30 seconds when there is a link failure in the Razor daisy chain." Hapuna at 8. In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, the Catalyst XL Switches in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well

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No.	'904 Patent Claim 10	The Catalyst XL Switches
		as one or more together) of the references identified in element 10 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.*  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

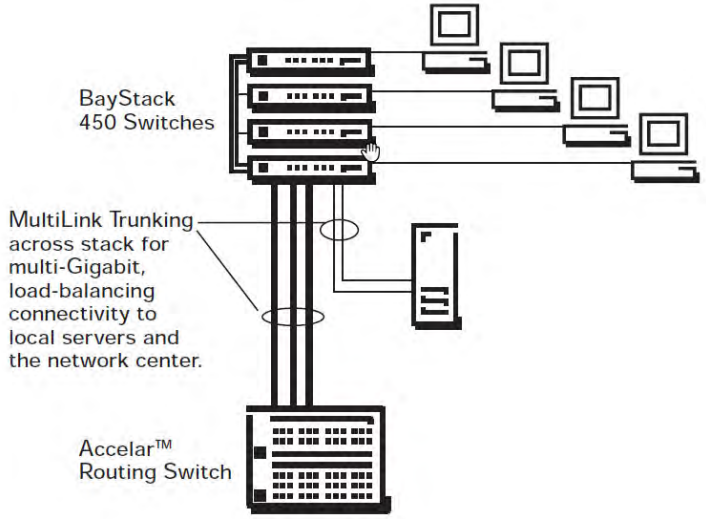
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No.	'904 Patent Claim 10	The Catalyst XL Switches
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. In this example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features where "[e]ach unit in the stack has a full copy of the stack configuration so in the unlikely event of any unit failure, operation of the stack continues without affecting application connectivity." BayStack 450 Data Sheet at 3 of 8.

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No.	'904 Patent Claim 10	The Catalyst XL Switches
		In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches further disclose its fail-safe design features includes that "[e]ach switch includes a Redundant Power Supply Unit connection. Should the switch's built-in power supply fail, the Bay Networks RPSU (sold separately) will automatically supply power to the switch for uninterrupted operation." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below.

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No.	'904 Patent Claim 10	The Catalyst XL Switches
		Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.  BayStack 450 Data Sheet at 4 of 8, FIG. 2. And Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. In one example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the bottom of the stack in an aptly-named "Stack Up Configuration." BayStack 450 Manual at 54 of 290.

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No.	'904 Patent Claim 10	The Catalyst XL Switches

Stack Up Configurations

In Figure 1-12, data flows from the base unit (unit 1) to the next switch, which is assigned as unit 2, and continues until the last switch in the stack is assigned as unit 8. The physical order of the switches is *from bottom to top* (unit 1 to unit 8).

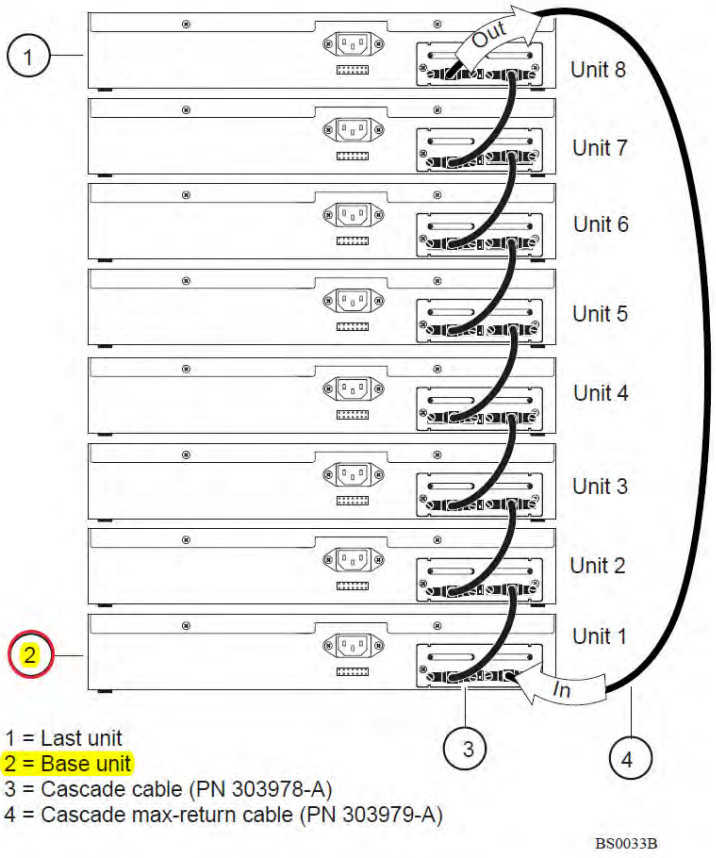


Figure 1-12. Stack Up Configuration Example

BayStack 450 Manual at 54 of 290, FIG. 1-12 (annotated).

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No.	'904 Patent Claim 10	The Catalyst XL Switches
		In another example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the top of the stack in the also aptly-named "Stack Down Configuration." BayStack 450 Manual at 55 of 290.

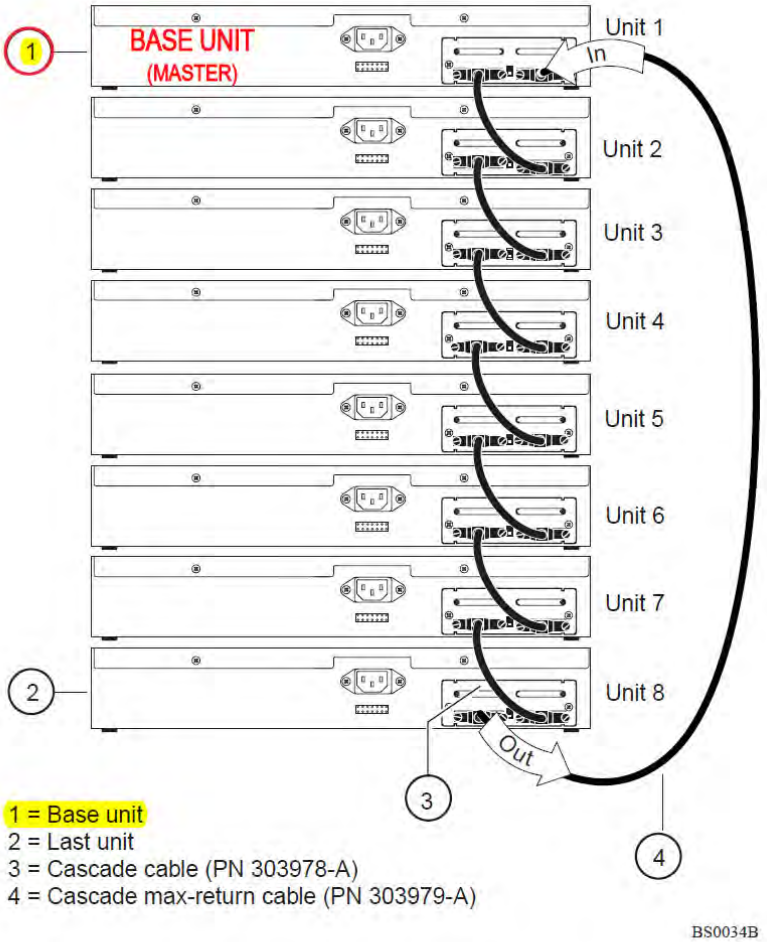


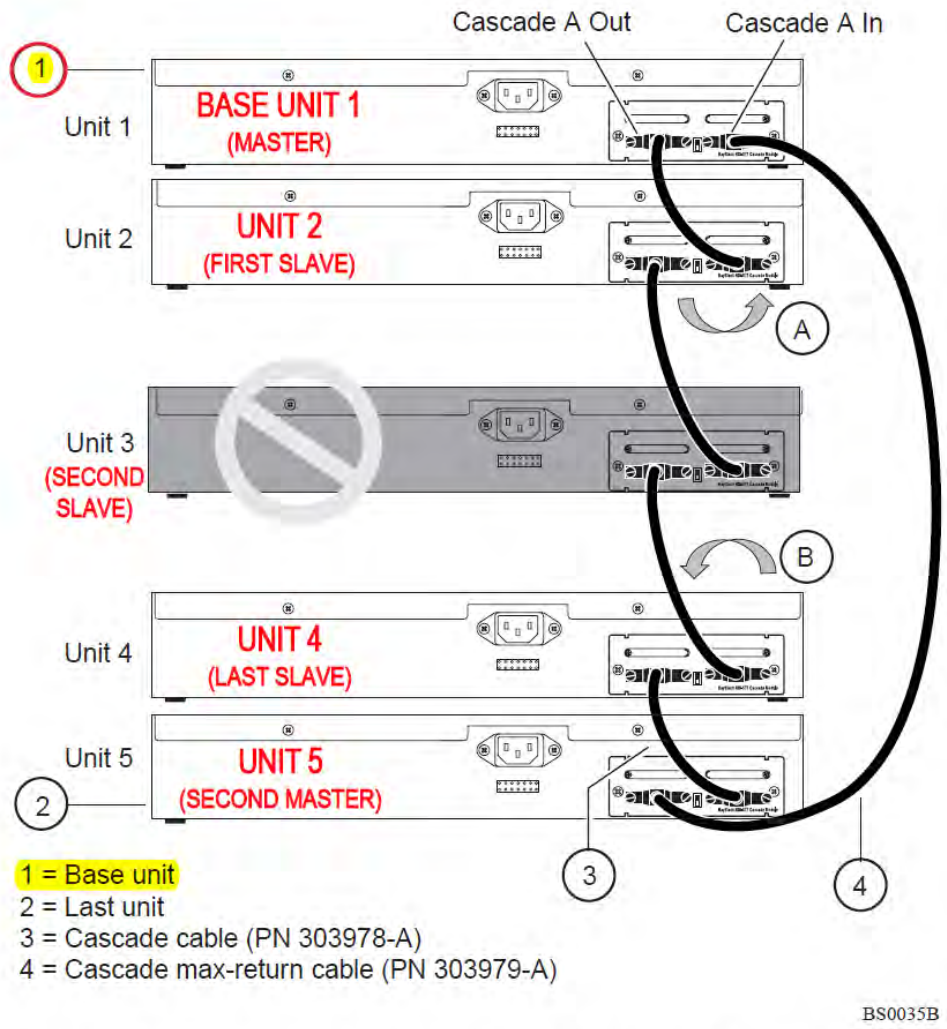
Figure 1-13. Stack Down Configuration Example

BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

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No.	'904 Patent Claim 10	The Catalyst XL Switches
		In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290. Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

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No.	'904 Patent Claim 10	The Catalyst XL Switches
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

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No.	'904 Patent Claim 11	The Catalyst XL Switches
11[preamble]	Network access apparatus, comprising:	To the extent the preamble is found to be limiting, the Catalyst XL Switches disclose a network access apparatus. *See supra* at 1[preamble].
11[a]	first and second master units, each comprising a physical interface to a packet-switched network;	The Catalyst XL Switches disclose first and second master units, each comprising a physical interface to a packet-switched network. *See supra* at 1[a].
11[b]	a plurality of slave units,	The Catalyst XL Switches disclose a plurality of slave units. *See supra* at 1[b].
11[c]	each slave unit comprising one or more ports to respective subscriber lines; and	The Catalyst XL Switches disclose each slave unit comprising one or more ports to respective subscriber lines. *See supra* at 1[c].
11[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	The Catalyst XL Switches disclose a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. *See supra* at 1[d].
11[e]	each daisy chain comprising at least a first slave unit	The Catalyst XL Switches disclose each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit.

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<table>
<tr><th>No.</th><th>’904 Patent Claim 11</th><th>The Catalyst XL Switches</th></tr>
<tr><td></td><td>connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit,</td><td>See supra at 1[e].</td></tr>
<tr><td>11[f]</td><td>wherein each of the slave units comprises: a switch fabric comprising one or more switches, which convey data packets to respective ports on the switch to which the packets are addressed; and</td><td>The Catalyst XL Switches disclose wherein each of the slave units comprises: a switch fabric comprising one or more switches, which convey data packets to respective ports on the switch to which the packets are addressed.

or example, the Catalyst XL Switches disclose “Hapuna is a software release developed specifically for the 8Mb Catalyst 2900 XL and the Catalyst 3500 XL. However, this software release should be flexible enough to provide a foundation to support other devices (specifically the Vegas L3 products) in the future. With Hapuna we will also consolidate the software for the 2900 and 3500 into one image that will have all the Enterprise Edition features as well as Command Switch functionality integrated. The 2900/3500 product management team is also eliminating the distinction between the –A and –EN version prior to Hapuna release, thus minimizing the number of SKUs and simplifying our marketing message. We will also post the new image on CCO in the free/public area to address the upgrade needs of installed base.” October 8, 1999 Hapuna Product Requirements Document (“Hapuna”) at 4. Thus, at least under the apparent claim scope alleged by Orckit’s Infringement Disclosures, this limitation is met.

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No.	'904 Patent Claim 11	The Catalyst XL Switches

HSRP	Hot Standby Router Protocol
HTTP	Hyper Text Transfer Protocol
Merlin	Enhancement of Lava Deux
QoS	Quality of Service
RPS2000	New redundant power supply
Vegas	Next Gen L3 3500 XL switches
UDLD	UniDirectional Link Detection

Hapuna at 4.

Further, the Catalyst XL Switches disclose "Upon FCS, Hapuna software will be available for free via CCO for all customers. We will post it in the public area of CCO to address the upgrade needs of the installed base. This will allow us to end-of-life the current upgrade SKUs for 2900 XL." Hapuna at 9.

The Catalyst XL Switches also disclose "feedback from customers has been that there are certain key features, such as redundant commander and extended candidate discovery, are still missing from the current implementation of Switch Clustering and needs to be addressed." Hapuna at 9.

Consequently, the Catalyst XL Switches disclose "Hapuna release has the following objectives: The ability to create and manage robust and fault tolerant switch clusters. The focus is on providing - Redundant command switch support and plug-and-play GigaStack loop back." Hapuna at 3.

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No.	'904 Patent Claim 11	The Catalyst XL Switches
		switches that are most qualified to be part of the HSRP group and set precedence order within the HSRP group based on a predefined matrix. The precedence is determined based on connectivity as well as device capabilities. *Redundant cabling is not a part of the scope of this Hapuna feature and does not need to be addressed via software*. Creation of the HSRP group should also not break an existing Switch Cluster." Hapuna at 4-5. Further, the Catalyst XL Switches disclose the redundant command switch will require updates to Merlin, stating that Merlin Requirements include "Identify[ing] members of the HSRP group and Draw Redundant Links." Hapuna at 6. "Since Hapuna will add support for the Cluster HSRP group, Merlin needs to graphically identify and display members of the Cluster HSRP group, specifically the Active and Backup Command Switches. Cluster Builder should also diagram any redundant (blocked) links within the cluster. In addition, Razor links should be uniquely identified in Cluster Builder." Hapuna at 6. And the Catalyst XL Switches disclose Hapuna allows circular links on a razor daisy chain. Hapuna at 8. "This feature allows a standard one-meter loopback cable to be used to create a circular link on a Razor daisy chain. Hapuna will detect the loop and block the link typically within 30 seconds, with a worst case limit of 2 minutes. Hapuna should also be able to failover to this blocked link within 30 seconds when there is a link failure in the Razor daisy chain." Hapuna at 8. In addition, the Catalyst XL Switches disclose that Merlin provides a cluster builder and view that provides redundant commander support. Merlin at 33 of 114. Legend: Following legend describes the icon and label to distinguish various ***devices*** in the Cluster Builder/View screens: 1. **Command Switch:** Special Switch icon with ***green*** label. 2. **Standby Command Switch:** Special Switch icon with ***white*** label (the icon is same as that of the command switch). Merlin at 33 of 114.

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No.	'904 Patent Claim 11	The Catalyst XL Switches
		"Merlin will have the capability to support a redundant commander. The Cluster Builder will display the current Active Commander and the standby Commander. The Active Commander is designated by the command switch icon with green label and the Standby Commander will be designated by the command switch icon with white label. Please refer to the Legend section regarding the representation of various devices and links. The Standby command switch selection is possible from the Standby Command Configuration dialog in the Cluster Manager. Please refer to that section for further information on the criteria for selection of Standby Command Switch." Merlin at 33 of 114. Standby Command Configuration How to launch: Main menu: Cluster->Standby Command Configuration Toolbar: *No toolbar icon.* This screen allows the user to configure cluster-command-capable members as standby command switch. If the active command switch goes down then the standby command switch will take over. This screen also helps the user to pick the most suitable standby command. It should display a list of suggested standby command (the most desirable is listed first). The most desirable standby candidate is: • The one with the most number of connections between itself and other cluster members. • It also has a fast processor. For example 3500 switches are faster than 2900 switches. WS-3524 takes precedence over WS-3548. User also need to provide a group number and a virtual IP address. Merlin at 51 of 114. Moreover, the Catalyst XL Switches disclose that Merlin provides support for "HSRP [Hot Standby Router Protocol] group configuration & Management VLAN switchover in Cluster Manager." Merlin at 8 of 114.

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No.	'904 Patent Claim 11	The Catalyst XL Switches
		In particular, the Catalyst XL Switches disclose that user's can access a Standby Command Configuration Dialog to select from among a "'Candidate(s)' list box will contain the list of all the members that can belong to a cluster HSRP group." Merlin at 52 of 114. Additionally, the Catalyst XL Switches disclose that Merlin provides support for Cisco Group Management Protocol (CGMP), explaining that "Clicking on the 'Management Groups' tab will bring up the management groups information to the front as shown in the figure below. It contains a table that shows the VLAN id, MAC address, and the interface id of the current management groups. To delete an entry, select the row first and then click on the 'Remove' button. It is also possible to delete multiple entries using the same method." Merlin at 65 of 114. Further, the Catalyst XL Switches disclose that Merlin provides support for multiple virtual networks or multi-VLANs, where users can select VLAN commanders, members, for different virtual daisy chains and/or making these VLANs static. *See generally* Merlin at 80-82.
11[g]	a pre-switch, which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through	The Catalyst XL Switches disclose a pre-switch, which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines. For example, the Catalyst XL Switches disclose "Hapuna is a software release developed specifically for the 8Mb Catalyst 2900 XL and the Catalyst 3500 XL. However, this software release should be flexible enough to provide a foundation to support other devices (specifically the Vegas L3 products) in the future. With Hapuna we will also consolidate the software for the 2900 and 3500 into one image that will have all the Enterprise Edition features as well as Command Switch functionality integrated. The 2900/3500 product management team is also eliminating the distinction between the –A and –EN version prior to Hapuna release, thus minimizing the number of SKUs and simplifying our marketing message. We will also post the new image on CCO in the free/public area to address the upgrade needs of installed base." October 8, 1999 Hapuna Product Requirements Document

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<table>
<tr><th>No.</th><th>’904 Patent Claim 11</th><th>The Catalyst XL Switches</th></tr>
<tr><td></td><td>another of the physical interface lines.</td><td>(“Hapuna”) at 4. Thus, at least under the apparent claim scope alleged by Orckit’s Infringement Disclosures, this limitation is met. To the extent that the Catalyst XL switches are found to not meet this limitation, a pre-switch, which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines would have been obvious to a person having ordinary skill in the art, as explained below.

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</table>
Hapuna at 4.

Further, the Catalyst XL Switches disclose “Upon FCS, Hapuna software will be available for free via CCO for all customers. We will post it in the public area of CCO to address the upgrade needs of the installed base. This will allow us to end-of-life the current upgrade SKUs for 2900 XL.” Hapuna at 9.</td></tr>
</table>

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No.	'904 Patent Claim 11	The Catalyst XL Switches
		The Catalyst XL Switches also disclose "feedback from customers has been that there are certain key features, such as redundant commander and extended candidate discovery, are still missing from the current implementation of Switch Clustering and needs to be addressed." Hapuna at 9. Consequently, the Catalyst XL Switches disclose "Hapuna release has the following objectives: The ability to create and manage robust and fault tolerant switch clusters. The focus is on providing - Redundant command switch support and plug-and-play GigaStack loop back." Hapuna at 3. As a result, the Catalyst XL Switches disclose switch clustering features for such a redundant command switch, noting that "Hapuna will deliver Redundant command switch capability using HSRP as a template. The Cluster HSRP group will consist of two or more Command switch capable devices that share the same virtual Cluster HSRP MAC and IP address. There can only be one active Command Switch at any given time. Failover between the active Command Switch and the backup Command switch should occur within 30 seconds and be transparent to the network administrator. However, this failover should generate SNMP traps informing the network administrator. Hapuna should also report candidate and member switches that are most qualified to be part of the HSRP group and set precedence order within the HSRP group based on a predefined matrix. The precedence is determined based on connectivity as well as device capabilities. *Redundant cabling is not a part of the scope of this Hapuna feature and does not need to be addressed via software*. Creation of the HSRP group should also not break an existing Switch Cluster." Hapuna at 4-5. Further, the Catalyst XL Switches disclose the redundant command switch will require updates to Merlin, stating that Merlin Requirements include "Identify[ing] members of the HSRP group and Draw Redundant Links." Hapuna at 6. "Since Hapuna will add support for the Cluster HSRP group, Merlin needs to graphically identify and display members of the Cluster HSRP group, specifically the Active and Backup Command Switches. Cluster Builder should also diagram any redundant (blocked) links within the cluster. In addition, Razor links should be uniquely identified in Cluster Builder." Hapuna at 6.

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No.	'904 Patent Claim 11	The Catalyst XL Switches
		And the Catalyst XL Switches disclose Hapuna allows circular links on a razor daisy chain. Hapuna at 8. "This feature allows a standard one-meter loopback cable to be used to create a circular link on a Razor daisy chain. Hapuna will detect the loop and block the link typically within 30 seconds, with a worst case limit of 2 minutes. Hapuna should also be able to failover to this blocked link within 30 seconds when there is a link failure in the Razor daisy chain." Hapuna at 8. In addition, the Catalyst XL Switches disclose that Merlin provides a cluster builder and view that provides redundant commander support. Merlin at 33 of 114. Legend: Following legend describes the icon and label to distinguish various ***devices*** in the Cluster Builder/View screens: 1. **Command Switch:** Special Switch icon with ***green*** label. 2. **Standby Command Switch:** Special Switch icon with ***white*** label (the icon is same as that of the command switch). Merlin at 33 of 114. "Merlin will have the capability to support a redundant commander. The Cluster Builder will display the current Active Commander and the standby Commander. The Active Commander is designated by the command switch icon with green label and the Standby Commander will be designated by the command switch icon with white label. Please refer to the Legend section regarding the representation of various devices and links. The Standby command switch selection is possible from the Standby Command Configuration dialog in the Cluster Manager. Please refer to that section for further information on the criteria for selection of Standby Command Switch." Merlin at 33 of 114.

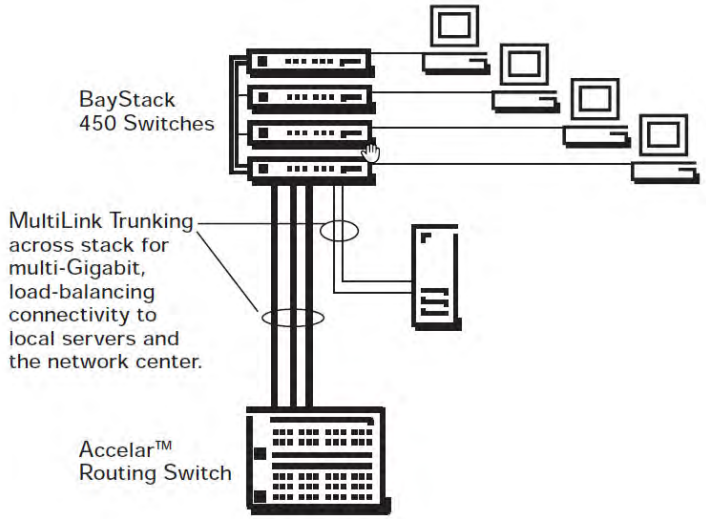
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No.	'904 Patent Claim 11	The Catalyst XL Switches
		Standby Command Configuration How to launch: Main menu: Cluster->Standby Command Configuration Toolbar: *No toolbar icon.* This screen allows the user to configure cluster-command-capable members as standby command switch. If the active command switch goes down then the standby command switch will take over. This screen also helps the user to pick the most suitable standby command. It should display a list of suggested standby command (the most desirable is listed first). The most desirable standby candidate is: • The one with the most number of connections between itself and other cluster members. • It also has a fast processor. For example 3500 switches are faster than 2900 switches. WS-3524 takes precedence over WS-3548. User also need to provide a group number and a virtual IP address. Merlin at 51 of 114. Moreover, the Catalyst XL Switches disclose that Merlin provides support for "HSRP [Hot Standby Router Protocol] group configuration & Management VLAN switchover in Cluster Manager." Merlin at 8 of 114. In particular, the Catalyst XL Switches disclose that user's can access a Standby Command Configuration Dialog to select from among a "'Candidate(s)' list box will contain the list of all the members that can belong to a cluster HSRP group." Merlin at 52 of 114. Additionally, the Catalyst XL Switches disclose that Merlin provides support for Cisco Group Management Protocol (CGMP), explaining that "Clicking on the 'Management Groups' tab will bring up the management groups information to the front as shown in the figure below. It contains a table that shows the VLAN id, MAC address, and the interface id of the current

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No.	'904 Patent Claim 11	The Catalyst XL Switches
		management groups. To delete an entry, select the row first and then click on the 'Remove' button. It is also possible to delete multiple entries using the same method." Merlin at 65 of 114. Further, the Catalyst XL Switches disclose that Merlin provides support for multiple virtual networks or multi-VLANs, where users can select VLAN commanders, members, for different virtual daisy chains and/or making these VLANs static. *See generally* Merlin at 80-82. In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, the Catalyst XL Switches in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 11[g] of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. In addition, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8.

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No.	'904 Patent Claim 11	The Catalyst XL Switches
		Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below. *Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.*  BayStack 450 Data Sheet at 4 of 8, FIG. 2. Further, Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. Nortel Networks' BayStack 450 Switches disclose a BootP Automatic IP/MAC Address: "The BayStack 450 switch has a unique 48-bit hardware address, or MAC address, that is printed on a label on the back panel. You use this MAC address when you configure the network BootP server to recognize the BayStack 450 switch BootP requests. A properly configured BootP server enables the switch to automatically learn its assigned IP address,

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No.	'904 Patent Claim 11	The Catalyst XL Switches
		subnet mask, IP address of the default router (default gateway), and software image file name. When the switch is participating in a stack configuration, a Stack MAC address is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If another unit in the stack is assigned as the base unit, the MAC address of the new base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit." BayStack 450 Manual at 43 of 290.

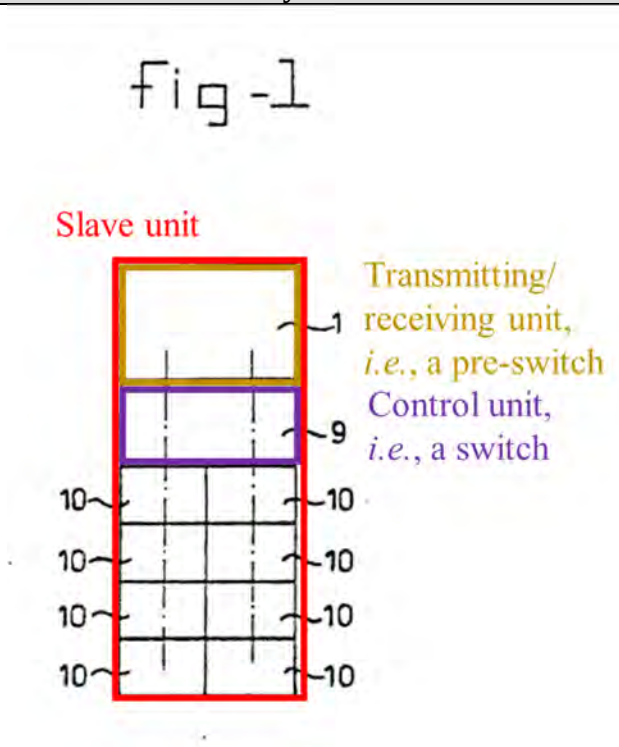
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No.	'904 Patent Claim 11	The Catalyst XL Switches
		Stack MAC Address The *Stack MAC address* is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If you designate another unit in the stack as the base unit, the MAC address of the *new* base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit. BayStack 450 Manual at 52 of 290. Nortel Networks' BayStack 450 Switches provide an overview of the fail-safe stacking feature, which discloses "BayStack 450 switches that are configured with BayStack 450 software version V1.1.0 or later provide fail-safe stackability when you install the optional BayStack 400-ST1 Cascade Module. You can connect up to eight switches to provide uninterrupted connectivity for up to 224 ports (see 'Fail-Safe Stack Application' on page 1-22). The entire stack is manageable as a single unit. Installation instructions are provided with the BayStack 400-ST1 Cascade Module (see your Nortel Networks sales representative for ordering information)." BayStack 450 Manual at 49 of 290. As another example, Vink '324 discloses a transmitting/receiving unit that routes information across the system, including accepting information received across a transmission or

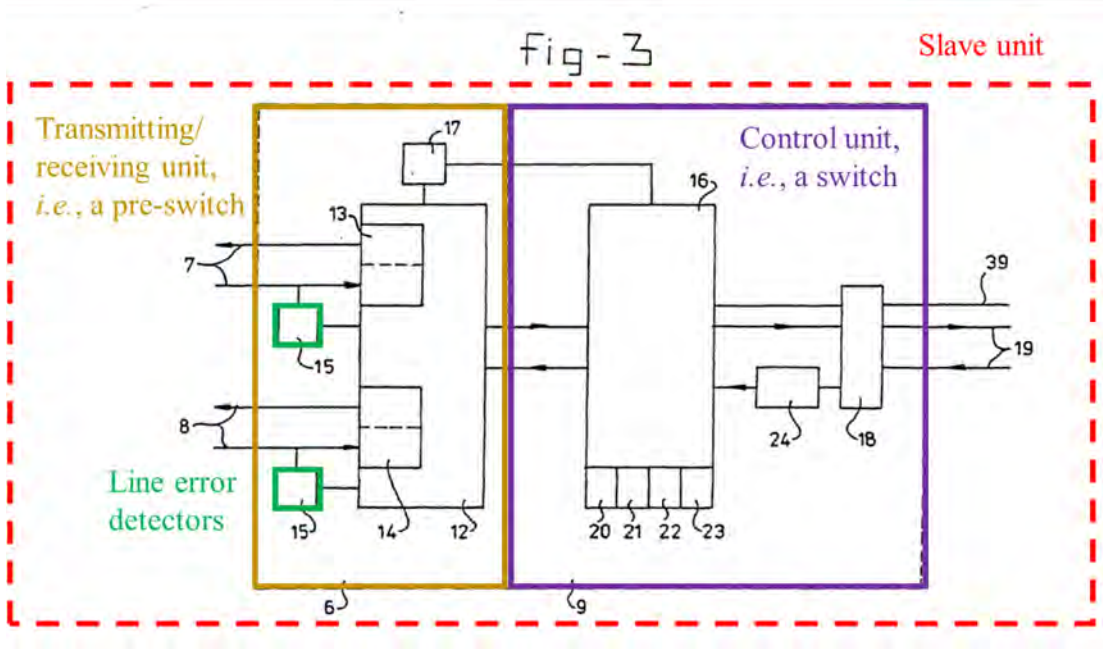
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No.	'904 Patent Claim 11	The Catalyst XL Switches
		receiving line by a substation and, if the address information of the packet corresponds to the address allocated to the relevant substation, initiating an exchange, and in the absence of address coincidence, not altering the packet information as it passes through the chain which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines. Vink '324 Claim 8 ("Communication system according to one or more of Claims 7 to 10 inclusive, wherein a slave (2, 3, 4, 5) is provided with means (15, 18, 23) for monitoring the serial transfer of data bits via the transmission system (7, 8) and/or the local data bus (19)."). Vink '324 3:35-4:10 ("European Patent Application 0,253,381 discloses a communication system in which the data bits are transferred serially up to I/O level. In this process, address information is added to the data bits intended for a particular substation. Information received by a-substation and transmitted under the control of a master station is investigated for address coincidence. In the case of a positive result, that is to say, when the address information added to a group of data bits corresponds to the address allocated to the relevant substation, exchange is initiated. In this process, the data bits intended for a substation are replaced in the same format by data bits originating from the relevant substation and intended for the master station. In the absence of address coincidence, the information concerned is not altered.").

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No.	'904 Patent Claim 11	The Catalyst XL Switches
		 Fig. 1 (annotation added) Vink '324 17:3-12 "Figure 3 shows a block diagram of an exemplary embodiment of a portion of a slave 2, 3, 4, 5. Data bits are transported via connections provided with an arrow. The transmitting/receiving unit 6 comprises a multiplexer 12 consisting of two moderns 13, 14 which are respectively connected to the first transmission ring 7 and to the second transmission ring 8. For the transmission of the data via the transmission system, signal coding techniques known per se in practice may be used. The operation of the relevant transmission ring 7, 8 can be monitored by means of line error detectors 15.").

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No.	'904 Patent Claim 11	The Catalyst XL Switches
		 Fig. 3 (annotation added) Vink '324 17:38-18:13 ("As already discussed in the introduction, every slave can be provided with an unambiguous address and the addressing of the separate I/0 modules 10 can take place on the bases of their sequence in the cascade arrangement. Consequently, a unit 20 which is capable of decoding the address of a slave, a unit 21 which is capable of detecting information about the number of data bits for a relevant slave and, if necessary, a unit 22 which is capable of reading out information about the type coding of the I/O modules connected to the local data bus, for example a module having only an input side or a module having only an output side, are provided. A further unit 23 is provided for a content check of the data bits received, for example on the basis of error detection techniques known per se. The relevant units 20, 21, 22, 23 are all connected to the unit 16 or form part thereof.").

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No.	'904 Patent Claim 12	The Catalyst XL Switches
12	Apparatus according to claim 11, wherein each of the slave units is coupled to receive packets transferred thereto from the first and second master units over first and second ones of the physical interface lines, respectively, and wherein the pre-switch passes the packets received through the first and second physical interface line and addressed to any of the ports on the slave unit to respective first and second addresses in the switch fabric.	The Catalyst XL Switches disclose apparatus according to claim 11, wherein each of the slave units is coupled to receive packets transferred thereto from the first and second master units over first and second ones of the physical interface lines, respectively, and wherein the pre-switch passes the packets received through the first and second physical interface line and addressed to any of the ports on the slave unit to respective first and second addresses in the switch fabric. *See supra* at 11[f].

No.	'904 Patent Claim 13	The Catalyst XL Switches
13	Apparatus according to claim 12, wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second addresses are swapped in the pre-	The Catalyst XL Switches disclose apparatus according to claim 12, wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second addresses are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required. For example, the Catalyst XL Switches disclose "Hapuna is a software release developed specifically for the 8Mb Catalyst 2900 XL and the Catalyst 3500 XL. However, this software release should be flexible enough to provide a foundation to support other devices

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<table>
<tr><th>No.</th><th>’904 Patent Claim 13</th><th>The Catalyst XL Switches</th></tr>
<tr><td></td><td>switch, so that substantially no reconfiguration of the switch fabric is required.</td><td>(specifically the Vegas L3 products) in the future. With Hapuna we will also consolidate the software for the 2900 and 3500 into one image that will have all the Enterprise Edition features as well as Command Switch functionality integrated. The 2900/3500 product management team is also eliminating the distinction between the –A and –EN version prior to Hapuna release, thus minimizing the number of SKUs and simplifying our marketing message. We will also post the new image on CCO in the free/public area to address the upgrade needs of installed base.” October 8, 1999 Hapuna Product Requirements Document (“Hapuna”) at 4. Thus, at least under the apparent claim scope alleged by Orckit’s Infringement Disclosures, this limitation is met. To the extent that the Catalyst XL switches are found to not meet this limitation, an apparatus according to claim 12, wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second addresses are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required would have been obvious to a person having ordinary skill in the art, as explained below.

The Catalyst XL Switches disclose a product description of Hapuna in the table shown below.
<table>
<tr><th>Acronym</th><th>Description</th></tr>
<tr><td>Alcatraz</td><td>GBIC based Gigabit Ethernet Module</td></tr>
<tr><td>CDP</td><td>Cisco Discovery Protocol</td></tr>
<tr><td>CLI</td><td>Command Line Interface</td></tr>
<tr><td>CVSM</td><td>Cisco Visual Switch Manager</td></tr>
<tr><td>Deep Space</td><td>12.0(5)XP release of software</td></tr>
<tr><td>HSRP</td><td>Hot Standby Router Protocol</td></tr>
<tr><td>HTTP</td><td>Hyper Text Transfer Protocol</td></tr>
<tr><td>Merlin</td><td>Enhancement of Lava Deux</td></tr>
<tr><td>QoS</td><td>Quality of Service</td></tr>
<tr><td>RPS2000</td><td>New redundant power supply</td></tr>
<tr><td>Vegas</td><td>Next Gen L3 3500 XL switches</td></tr>
<tr><td>UDLD</td><td>UniDirectional Link Detection</td></tr>
</table>
Hapuna at 4.</td></tr>
</table>

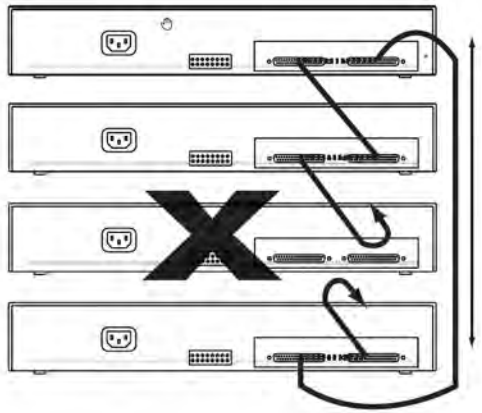
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No.	'904 Patent Claim 13	The Catalyst XL Switches
		Further, the Catalyst XL Switches disclose "Upon FCS, Hapuna software will be available for free via CCO for all customers. We will post it in the public area of CCO to address the upgrade needs of the installed base. This will allow us to end-of-life the current upgrade SKUs for 2900 XL." Hapuna at 9. The Catalyst XL Switches also disclose "feedback from customers has been that there are certain key features, such as redundant commander and extended candidate discovery, are still missing from the current implementation of Switch Clustering and needs to be addressed." Hapuna at 9. Consequently, the Catalyst XL Switches disclose "Hapuna release has the following objectives: The ability to create and manage robust and fault tolerant switch clusters. The focus is on providing - Redundant command switch support and plug-and-play GigaStack loop back." Hapuna at 3. As a result, the Catalyst XL Switches disclose switch clustering features for such a redundant command switch, noting that "Hapuna will deliver Redundant command switch capability using HSRP as a template. The Cluster HSRP group will consist of two or more Command switch capable devices that share the same virtual Cluster HSRP MAC and IP address. There can only be one active Command Switch at any given time. Failover between the active Command Switch and the backup Command switch should occur within 30 seconds and be transparent to the network administrator. However, this failover should generate SNMP traps informing the network administrator. Hapuna should also report candidate and member switches that are most qualified to be part of the HSRP group and set precedence order within the HSRP group based on a predefined matrix. The precedence is determined based on connectivity as well as device capabilities. *Redundant cabling is not a part of the scope of this Hapuna feature and does not need to be addressed via software*. Creation of the HSRP group should also not break an existing Switch Cluster." Hapuna at 4-5. Further, the Catalyst XL Switches disclose the redundant command switch will require updates to Merlin, stating that Merlin Requirements include "Identify[ing] members of the HSRP group and Draw Redundant Links." Hapuna at 6. "Since Hapuna will add support for

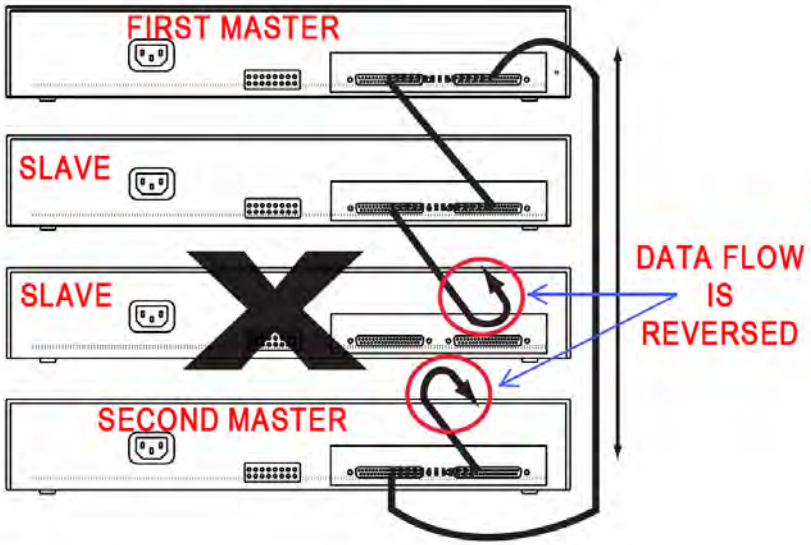
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No.	'904 Patent Claim 13	The Catalyst XL Switches
		the Cluster HSRP group, Merlin needs to graphically identify and display members of the Cluster HSRP group, specifically the Active and Backup Command Switches. Cluster Builder should also diagram any redundant (blocked) links within the cluster. In addition, Razor links should be uniquely identified in Cluster Builder." Hapuna at 6. And the Catalyst XL Switches disclose Hapuna allows circular links on a razor daisy chain. Hapuna at 8. "This feature allows a standard one-meter loopback cable to be used to create a circular link on a Razor daisy chain. Hapuna will detect the loop and block the link typically within 30 seconds, with a worst case limit of 2 minutes. Hapuna should also be able to failover to this blocked link within 30 seconds when there is a link failure in the Razor daisy chain." Hapuna at 8. In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, the Catalyst XL Switches in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 13 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Vink '324 discloses directing the packet to a different transmission ring in one and/or the other direction so that substantially no reconfiguration of the switch fabric is required. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Vink '324 Claim 14 ("Communication system according to Claim 13, wherein the at least one master (1) and the slaves (2, 3, 4, 5) are arranged to transmit or receive data bits via a transmission ring (7, 8) in one and/or the other direction."). Vink '324 21:3-9 ("The transmitting/receiving unit 6 provides for the monitoring of the transmission and the control computer 38 provides for and monitors the correct sequence of the data bits for a relevant slave, related to the sequence in which the I/O modules are arranged. The information about this sequence is extracted by the control unit 36 from the status information received from the relevant slaves. In the case where the transmission

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No.	'904 Patent Claim 13	The Catalyst XL Switches
		system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about whether the connection to the transmission system is or is not operating correctly."). As another example, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.*  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

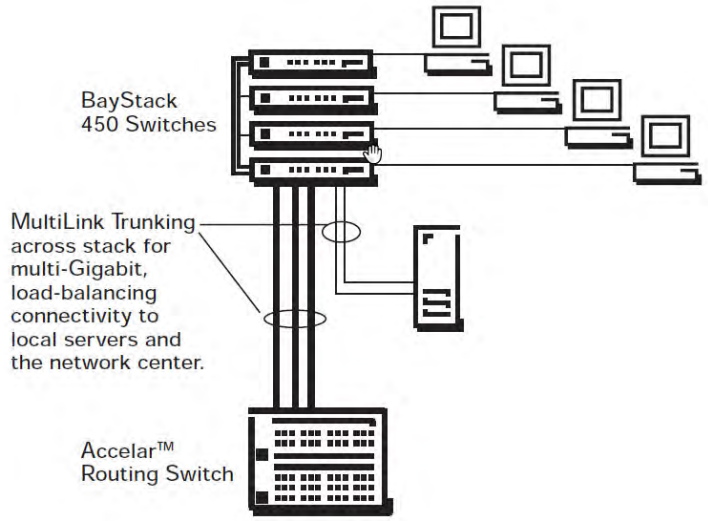
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No.	'904 Patent Claim 13	The Catalyst XL Switches
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. In this example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features where "[e]ach unit in the stack has a full copy of the stack configuration so in the unlikely event of any unit failure, operation of the stack continues without affecting application connectivity." BayStack 450 Data Sheet at 3 of 8.

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No.	'904 Patent Claim 13	The Catalyst XL Switches
		In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches further disclose its fail-safe design features includes that "[e]ach switch includes a Redundant Power Supply Unit connection. Should the switch's built-in power supply fail, the Bay Networks RPSU (sold separately) will automatically supply power to the switch for uninterrupted operation." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below.

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No.	'904 Patent Claim 13	The Catalyst XL Switches
		Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.  BayStack 450 Data Sheet at 4 of 8, FIG. 2. And Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. Nortel Networks' BayStack 450 Switches also disclose a "Fail-Safe Stack Application." BayStack 450 Manual at 48 of 290. More specifically, that Nortel Networks' BayStack 450 Switches disclose that "Figure 1-9 shows an example of eight BayStack 450 switches that are stacked together as a single managed unit. If any single unit in the stack fails, the remaining stack remains operational,

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No.	'904 Patent Claim 13	The Catalyst XL Switches
		without interruption." BayStack 450 Manual at 48 of 290. Figure 1-9 of the BayStack 450 Manual depicts a plurality of slaves and is shown below.

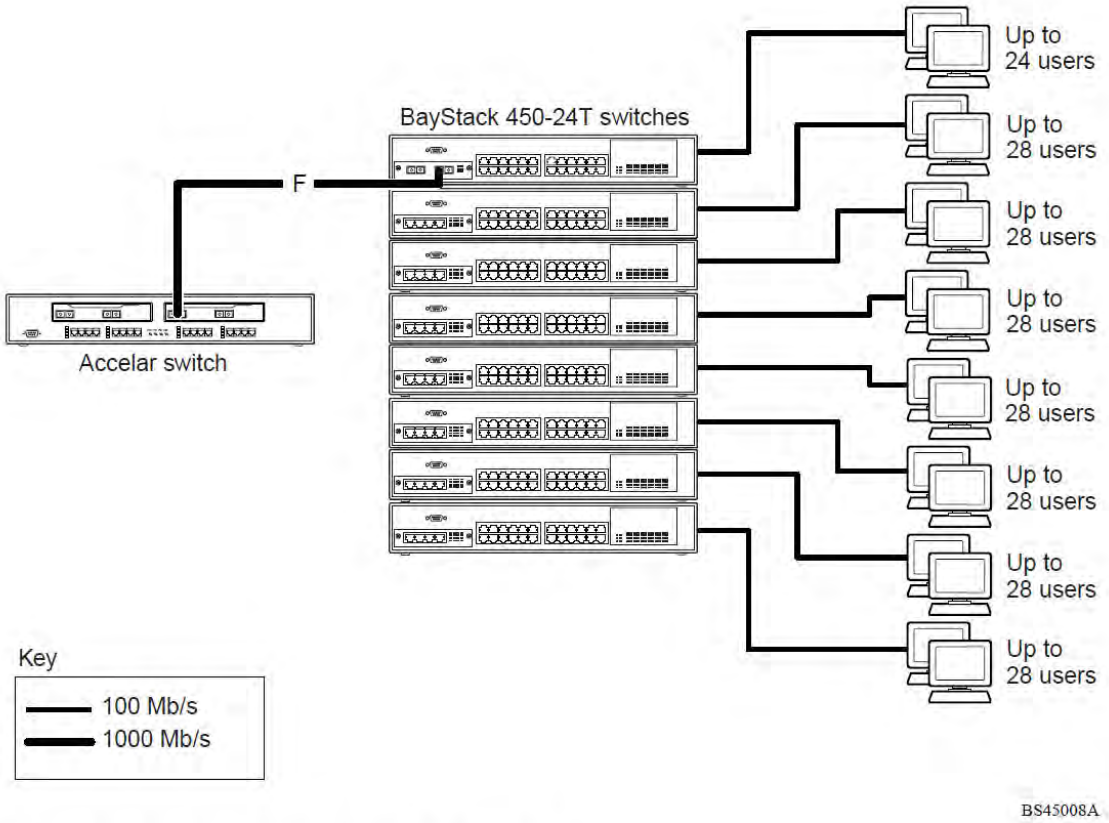


Figure 1-9. Fail-Safe Stack Example

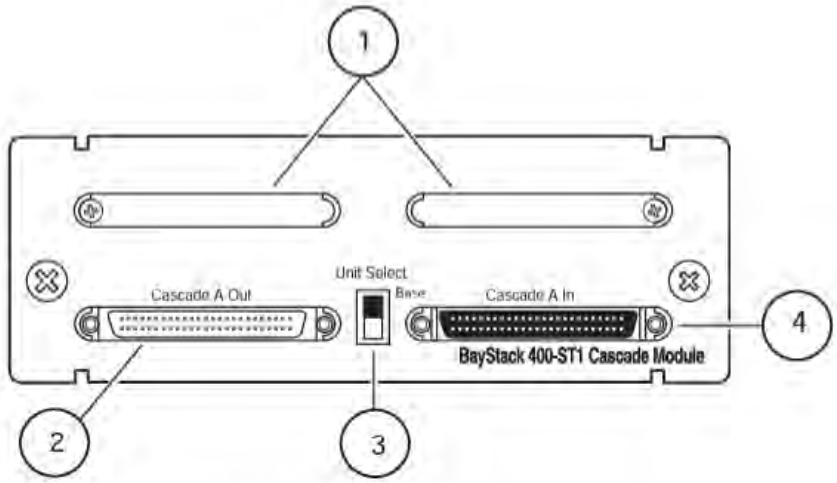
BayStack 450 Manual at 48 of 290, FIG. 1-9.

Nortel Networks' BayStack 450 Switches further disclose that "[a]s shown in Figure 1-9, the Accelar 1100 switch is used as a backbone switch, connecting to the BayStack 450 switch with an optional gigabit (1000BASE-SX) MDA for maximum bandwidth. This configuration

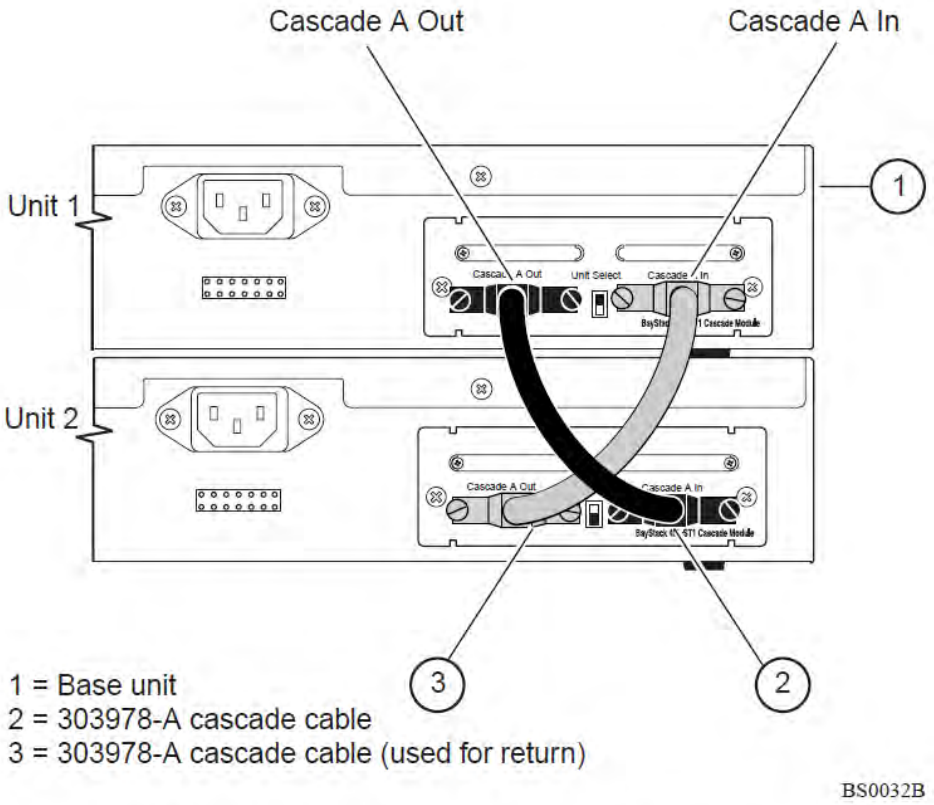
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No.	'904 Patent Claim 13	The Catalyst XL Switches
		uses optional BayStack 400-ST1 Cascade Modules to connect the switches in the fail-safe stack." BayStack 450 Manual at 48 of 290. Nortel Networks' BayStack 450 Switches disclose that "[f]or an overview of the fail-safe stacking feature that is available for the BayStack 450 switches, see 'Stack Operation' following this section." BayStack 450 Manual at 48 of 290. Indeed, Nortel Networks' BayStack 450 Switches provide an overview of the fail-safe stacking feature, which discloses "BayStack 450 switches that are configured with BayStack 450 software version V1.1.0 or later provide fail-safe stackability when you install the optional BayStack 400-ST1 Cascade Module. You can connect up to eight switches to provide uninterrupted connectivity for up to 224 ports (see 'Fail-Safe Stack Application' on page 1-22). The entire stack is manageable as a single unit. Installation instructions are provided with the BayStack 400-ST1 Cascade Module (see your Nortel Networks sales representative for ordering information)." BayStack 450 Manual at 49 of 290. Further, Nortel Networks' BayStack 450 Switches disclose that the "BayStack 400-ST1 Cascade Module," which is shown in Figure 1-10 below. BayStack 450 Manual at 49 of 290.

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No.	'904 Patent Claim 13	The Catalyst XL Switches
		 **Figure 1-10. BayStack 400-ST1 Front-Panel Components** BayStack 450 Manual at 49 of 290, FIG. 1-10. In addition, Nortel Networks' BayStack 450 Switches disclose that the "Unit Select switch (up = Base) determines the base unit for the stack configuration (see "Base Unit " on page 1-25). The Unit Select switch status is displayed on the BayStack 450 LED display panel. When the Unit Select switch is in the Base (up) position, all other Unit Select switches in the stack configuration must be set to Off (down)." BayStack 450 Manual at 50 of 290. Further still, Nortel Networks' BayStack 450 Switches disclose a Cascade A In Connector that provides "an attachment point for accepting a cascade cable connection from an adjacent unit in the stack. A return cable from this unit's Cascade A Out connector to the adjacent

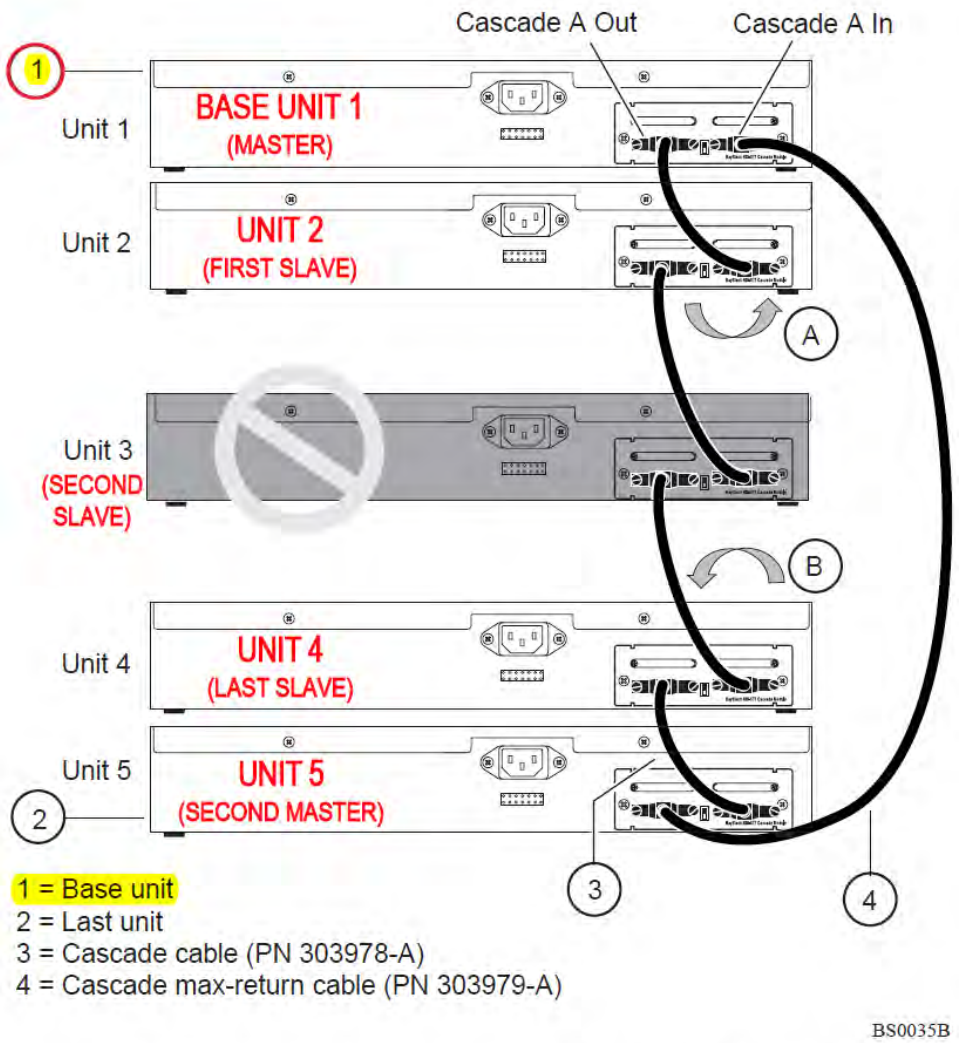
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No.	'904 Patent Claim 13	The Catalyst XL Switches
		unit's Cascade A In connector completes the stack connection (see the example shown in Figure 1-11)." BayStack 450 Manual at 50 of 290. Figure 1-11 is reproduced below. BayStack 450 Manual at 50 of 290, FIG. 1-11.  **Figure 1-11. Connecting Cascade Cables** In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290.

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No.	'904 Patent Claim 13	The Catalyst XL Switches
		Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

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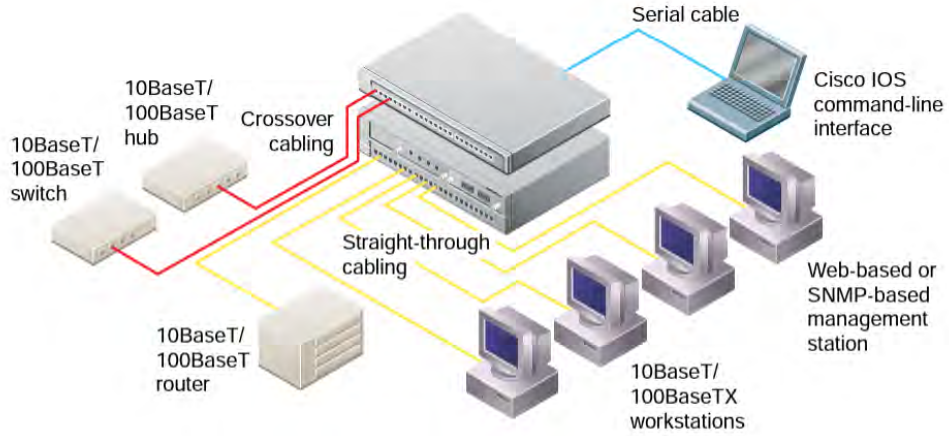
No.	'904 Patent Claim 13	The Catalyst XL Switches
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

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No.	'904 Patent Claim 13	The Catalyst XL Switches
		To the extent that Orckit contends that the BayStack 450 Switches does not disclose this limitation, the BayStack 450 Switches in combination with (1) the knowledge of a person of ordinary skill in the art and/or in further combination with (2) Ding renders the claim, including the present limitation, obvious. Further, Ding discloses, in the event of a failover where another unit takes over for the first, the same IP address continues to be used. ("An eleventh case involves "fail-over" to an alternate base module when the designated base module fails. In a preferred embodiment of the present invention, when the designated base module fails, the next upstream Ethernet switching modules takes over as the base module for the stack. When this occurs, it is preferable to continue using the same IP address, since various devices in the network are configured to use that IP address for communicating with the stack. However, the MAC address of the stack changes to a MAC address associated with the new base module. Therefore, when the new base module reconfigures the stack, the new base module broadcasts an ARP request including the stack IP address and the new MAC address." Ding, 13:3-15.

No.	'904 Patent Claim 14	The Catalyst XL Switches
14[preamble]	In a network access multiplexing system,	To the extent the preamble is found to be limiting, the Catalyst XL Switches disclose a network access multiplexing system. For example, The Catalyst XL Switches disclose that the Cisco Catalyst 2900 Series XL and Catalyst 3500 Series XL Switches were known and used by others in this country before the purported invention of the '904 patent. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. In one example, Cisco's Catalyst XL Switches disclose "Cisco's Catalyst® 2900 Series XL is a full line of 10/100 autosensing Fast Ethernet switches that offer outstanding performance, versatile modularity, and easy-to-use management. The Catalyst 2900 Series XL includes four models, with different port densities, configuration options, and pricing to meet a broad range of network design requirements." 1997, Cisco Catalyst 2900 Series XL Data Sheet at 1 of 6.

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No.	'904 Patent Claim 14	The Catalyst XL Switches
		Cisco's Catalyst XL Switches disclose that "[t]he Cisco Catalyst® 2900 series XL is a full line of 10/100 autosensing Fast Ethernet switches from the leader in networking that combines outstanding performance, ease of use, and integrated Cisco IOS® software. The Catalyst 2900 series XL includes five models, each with different port densities, configuration options, and pricing to meet a broad range of network design requirements. Available in Standard and Enterprise Editions, the software embedded in Catalyst 2900series XL switches is upgradeable so your investment is protected if your network grows or changes." 1998, Cisco Catalyst 2900 Series XL Overview at 1 of 6. Cisco's Catalyst XL Switches depict Catalyst 2900 Series XL Switches in an exemplary network configuration shown below. **Quick Start Guide** CATALYST 2900 SERIES XL SWITCHES  1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 1 of 12.

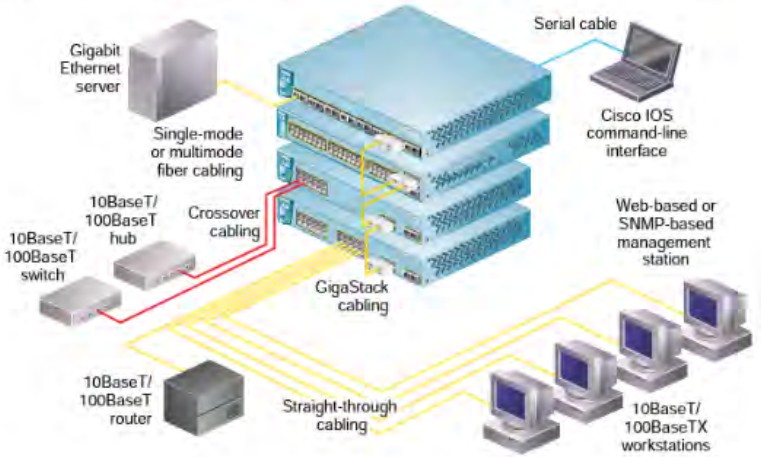
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No.	'904 Patent Claim 14	The Catalyst XL Switches
		Cisco's Catalyst XL Switches describe the exemplary network configuration of Catalyst 2900 Series XL Switches shown above. *See generally* 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 3-9 of 12. For more information, the Quick Start Guide points to "the Catalyst 2900 Series XL Installation Guide for detailed instructions on installing the Cisco 2900 series XL switch. See the Cisco IOS Desktop Switching Software Configuration Guide for detailed instructions on using CVSM, the Cisco IOS CLI, and Cluster Management software to configure and manage switches. See Release Notes for the Catalyst 2900 Series XL and Catalyst 3500 Series XL Cisco IOS Release 12.0(5)XP for recent information about the Catalyst 2900 series XL switch." 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 10 of 12. Cisco's Catalyst XL Switches disclose that "[t]his manual is for technicians who install and maintain Catalyst 2900 series XL switches, hereafter referred to as the Catalyst 2900 series switches. It is assumed that the individual is familiar with 10BaseT, 100BaseT, and Asynchronous Transfer Mode (ATM) LAN concepts and terminology. This manual explains how to install the Catalyst 2900 series XL ATM modules (hereafter referred to as the ATM modules) in the Catalyst 2900 series switch and configure its LAN emulation client (LEC) software." 1999, Cisco Catalyst 2900 Series XL ATM Modules Installation and Configuration Guide at vii (7 of 108). Cisco's Catalyst XL Switches disclose "Cisco Systems, the leader in internetworking solutions, provides the industry's most flexible, scalable, and manageable stacking architecture for Catalyst 3500 series XL and gigabit-enabled Catalyst 2900 series XL switches." 1999, Cisco Catalyst 3500 Series XL Data Sheet at 2 of 13. Cisco's Catalyst XL Switches disclose "In a Cisco Switch Cluster, one Catalyst 3500 series XL or 2900 XL switch is specified as the 'command' switch and all other switches in the cluster are designated as 'member' switches. The command switch serves as the single IP address management point and disburses all management action dictated by the network administrator. Command switches can cluster up to additional 15 interconnected member switches regardless of their interconnection media. Cisco Switch Clustering command software is preinstalled on all Catalyst 3500 series XL switches and is available as an upgrade

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No.	'904 Patent Claim 14	The Catalyst XL Switches
		for Catalyst 2900 series XL switches with the Catalyst 2900 XL Command Software upgrade kit." 1999, Cisco Catalyst 3500 Series XL Data Sheet at 2 of 13. Cisco's Catalyst XL Switches depict Catalyst 3500 Series XL Switches in an exemplary network configuration, which is shown below. 1999, Cisco Quick Start Guide – Catalyst 3500 Series XL Switches at i (1 of 12).

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No.	'904 Patent Claim 14	The Catalyst XL Switches
		CATALYST 3500 SERIES XL SWITCHES  1 TAKE OUT WHAT YOU NEED 2 CABLE THE SWITCH 3 ASSIGN IP INFORMATION TO THE SWITCH 4 ACCESS THE SWITCH FROM YOUR BROWSER 1999, Cisco Quick Start Guide – Catalyst 3500 Series XL Switches at i (1 of 12). Cisco's Catalyst XL Switches disclose "The new family of stackable switches, consisting of the Catalyst 3512 XL, Catalyst 3524 XL and Catalyst 3508G XL switches, use Cisco Switch Clustering technology to take traditional stacking to the next level by allowing network managers to manage geographically dispersed switches through a single IP address, using a

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No.	'904 Patent Claim 14	The Catalyst XL Switches
		standard Web browser. The Catalyst 3500 Series XL is targeted towards network managers within dynamic mid-sized businesses and enterprise workgroups who value high performance, reduced complexity, low cost of ownership and easy integration with their installed base of networking solutions." May 24, 1999, Press Release: Cisco Introduces Next-Generation Stacking with New Catalyst 3500 Series XL at 2 of 6. Cisco's Catalyst XL Switches disclose "Cisco Switch Clustering software enables up to 16 interconnected Catalyst 3500 XL, 2900 XL and 1900 switches, regardless of geographic proximity, to form a managed single-IP address network." May 24, 1999, Press Release: Cisco Introduces Next-Generation Stacking with New Catalyst 3500 Series XL at 4 of 6. Cisco's Catalyst XL Switches disclose "Cisco Switch Clustering software for the Catalyst 3500 XL, 2900 XL and 1900 switches, enables the management of a 'cluster' of switches through a single IP address. The clusters can be grouped regardless of interconnection media or physical proximity. In a Cisco switch cluster, one Catalyst 3500 XL or 2900 XL switch is designated as the 'command' switch and all other switches in the cluster are designated as 'member' switches. The command switch serves as the single IP management point and disburses all management action dictated by the network manager." May 24, 1999, Press Release: Cisco Introduces Next-Generation Stacking with New Catalyst 3500 Series XL at 4 of 6. Cisco's Catalyst XL Switches disclose "The GigaStack GBIC can add port density to a Catalyst 3500 XL or Catalyst 2900 XL network. You can install the GigaStack GBIC in a 3500 XL switch or into a 1000BaseX module that resides in a modular Catalyst 2900 XL switch. When installed in a 3500 XL switch or a Catalyst 2900 XL module, the GigaStack GBIC supports 1000BaseX connections." June 11, 1999, Release Notes for Catalyst GigaStack Gigabit Interface Converter at 2 of 6. Cisco's Catalyst XL Switches disclose "The GigaStack GBIC allows you to stack up to nine switches to form an independent backbone that can be managed with a single IP address. This stack gives the appearance of a single large switch for network management purposes. You can also form a point-to-point link between two switches. The GigaStack GBIC supports one

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No.	'904 Patent Claim 14	The Catalyst XL Switches
		full-duplex link (in a point-to-point link) or up to eight half-duplex links (in a stack configuration) to other Gigabit Ethernet devices." July 6, 1999, Release Notes for Catalyst GigaStack Gigabit Interface Converter at 1 of 6. Cisco's Catalyst XL Switches disclose "The GigaStack GBIC can add port density to a Catalyst 3500 XL or Catalyst 2900 XL network. You can install the GigaStack GBIC in a 3500 XL switch or into a 1000BaseX module that resides in a modular 2900 XL switch. When installed in a 3500 XL switch or a 2900 XL module, the GigaStack GBIC supports 1000BaseX connections. The GigaStack GBIC autonegotiates the duplex settings of each port to maximize the bandwidth for your configuration." July 6, 1999, Release Notes for Catalyst GigaStack Gigabit Interface Converter at 2 of 6. Cisco's Catalyst XL Switches disclose "The GigaStack GBIC can add port density to a Catalyst 3500 XL or Catalyst 2900 XL network." October 25, 1999, Release Notes for Catalyst GigaStack Gigabit Interface Converter at 2 of 6. Cisco's Catalyst XL Switches disclose "an easy-to-use web-based application that provides a single point of management for a collection of switches running the cluster-capable firmware. It includes Topology, Stackability, Group operations, Inventory and Performance management among other features. This application originally released in conjunction with firmware release SA6 supports Catalyst 2900XL and Catalyst 3500XL devices." November 12, 1999, Merlin Functional Specification at 1 of 8. Cisco's Catalyst XL Switches disclose that the "Catalyst 3500 Series XL is a full line of 10/100/1000 autosensing Fast and Gigabit Ethernet, stackable switches that combine outstanding performance, ease-of-use and integrated Cisco IOS software. Several models are offered with different port densities and configuration options. The Catalyst 3500 XL is expected to utilize the same MIBs and mini-RMON support as found in the Catalyst 2900XL. The Cisco IOS version used with the 3500XL should be the same as the 2900XL." April 17, 1999 TrafficDirector 5.7 Maintenance Update Product Requirements at 7of 24.

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No.	'904 Patent Claim 14	The Catalyst XL Switches
		Cisco's Catalyst XL Switches disclose a network with a "the Switch Clustering concept, first introduced in Kitsilano and Lava Deux, [which] has been widely accepted and adopted. With the addition of the Holstein products to the Switch Cluster via the Deep Space release, Switch Clustering supports more types and families of switches compared to all other competitors." October 8, 1999 Hapuna Product Requirements Document. Cisco's Catalyst XL Switches disclose "a *Hot swap of modules,*" which enables "the user [] to insert and de-insert the modules without first having to power cycle or reset the switch" and "*Port Based VLANs* - allows the setting up of 24 separate port based VLANs (bridge groups) within the switch. It also allows for ports to belong to multiple bridge groups. An instance of Spanning Tree will run on each bridge group." July 23, 1998, Product Requirements Document – Zuma Software. Cisco's Catalyst XL Switches disclose that "network management is a central issue in the switched internetworking marketplace and affects the rate of adoption and deployment of LAN switching equipment. TrafficDirector is Cisco's graphical RMON console application for use with Cisco's IOS embedded RMON agents and SwitchProbe product line. TrafficDirector provides standards-based RMON and RMON2 real-time traffic monitoring, historical traffic analysis and troubleshooting tools for switched internetworks. TrafficDirector will be an integral part of CiscoWorks for Switched Internetworks (CWSI), Cisco's Switch Management application and as such should integrate fully with CWSI." October 31, 1997 TrafficDirector v5.2, SwitchProbe v4.2 Product Requirements Document at 2 of 84.
14[a]	in which a master unit is connected by a physical interface to a packet-switched network,	The Catalyst XL Switches disclose a master unit is connected by a physical interface to a packet-switched network. For example, the Catalyst XL Switches disclose that Catalyst XL Switches may act as a 'command' switch (*e.g.*, a master unit) in a cluster that connects to a packet-switched network (e.g., an ethernet network) via cables and/or other physical connections, that is, the stack includes a master unit, which is connected by a physical interface to a packet switched network. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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No.	'904 Patent Claim 14	The Catalyst XL Switches
		Specifically, Cisco's Catalyst XL Switches disclose the Cisco Catalyst® 2900 series XL includes visual switch management software that "[p]rovides stack and network topology views." 1998, Cisco Catalyst 2900 Series XL Overview at 5 of 6. Cisco's Catalyst XL Switches depict management and system setup features that include stack views, as shown below.

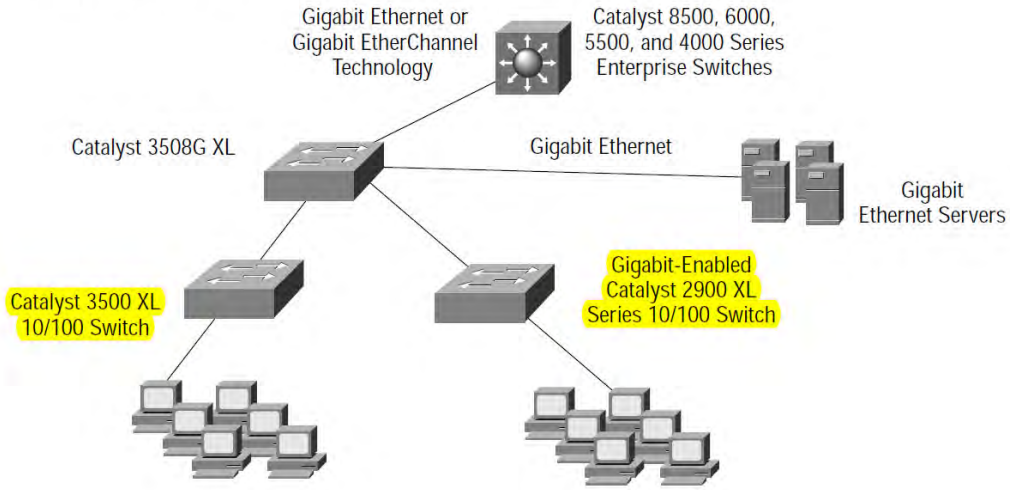
Feature	Description	Benefit
Outstanding Performance (continued)	CGMP Fast Leave	Allows quick stoppage of multicasts to end stations that want to drop a data stream, reducing superfluous traffic on the network
Management and System Setup	Simple Network Management Protocol (SNMP) and Telnet interface support	Delivers comprehensive in-band management
	Telnet support for five simultaneous sessions	Allows menu-based management by terminal emulation software over the network
	Command-line interface (CLI)-based management console	Provides detailed out-of-band management
		Uses the same management interface as Cisco routers
	Cisco Visual Switch Manager software	Built-in HTTP server enables Web-based management interface through standard browser such as Netscape Navigator or Microsoft Explorer
		Provides stack and network topology views of a group of Catalyst 2900XL switches with one easy-to-use management interface

1998, Cisco Catalyst 2900 Series XL Overview at 5 of 6.

Cisco's Catalyst XL Switches disclose that "[i]f the switch will be a cluster member, it is not necessary to assign IP information or a password if the switch will be managed through the IP address of the command switch. If you are configuring the switch as a a standalone switch or as a command switch (Enterprise Edition only), you must assign IP information." 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 4 (6 of 12).

Cisco's Catalyst XL Switches disclose that "[a]fter you assign an IP address to the switch, you can access the switch from your browser and use CVSM [Cisco Visual Switch Manager] to view or change configuration settings. If this is a command switch (Enterprise Edition only), you can use Cluster Management software to configure other switches." 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 6 (8 of 12).

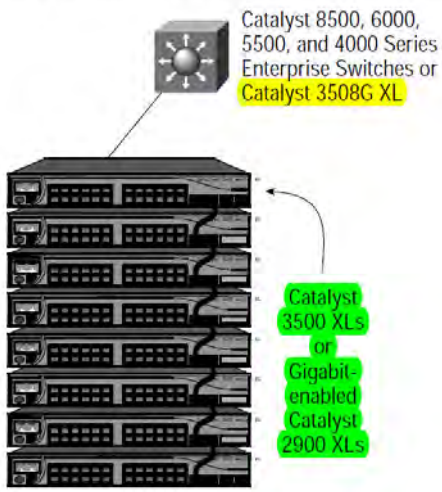
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No.	'904 Patent Claim 14	The Catalyst XL Switches
		Cisco's Catalyst XL Switches disclose "In a Cisco Switch Cluster, one Catalyst 3500 series XL or 2900 XL switch is specified as the 'command' switch and all other switches in the cluster are designated as 'member' switches. The command switch serves as the single IP address management point and disburses all management action dictated by the network administrator. Command switches can cluster up to additional 15 interconnected member switches regardless of their interconnection media. Cisco Switch Clustering command software is preinstalled on all Catalyst 3500 series XL switches and is available as an upgrade for Catalyst 2900 series XL switches with the Catalyst 2900 XL Command Software upgrade kit." 1999, Cisco Catalyst 3500 Series XL Data Sheet at 2 of 13. In one example, Cisco's Catalyst XL Switches depict first and second commanders (*e.g.*, master units) that are each connected to a daisy chain. The exemplary first and second commanders are highlighted below in yellow. Figure 7 Enterprise Workgroup Aggregation  1999, Cisco Catalyst 3500 Series XL Data Sheet at 8 of 13, FIG. 7. Cisco's Catalyst XL Switches disclose "Cisco Switch Clustering software for the Catalyst 3500 XL, 2900 XL and 1900 switches, enables the management of a 'cluster' of switches

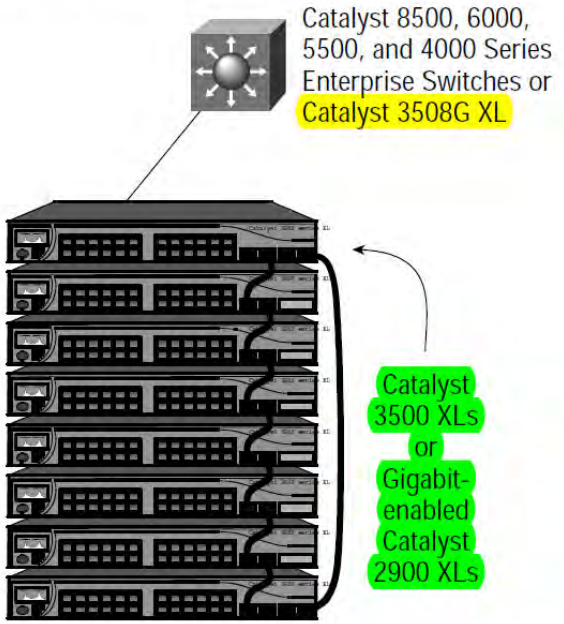
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No.	'904 Patent Claim 14	The Catalyst XL Switches
		through a single IP address. The clusters can be grouped regardless of interconnection media or physical proximity. In a Cisco switch cluster, one Catalyst 3500 XL or 2900 XL switch is designated as the 'command' switch and all other switches in the cluster are designated as 'member' switches. The command switch serves as the single IP management point and disburses all management action dictated by the network manager." May 24, 1999, Press Release: Cisco Introduces Next-Generation Stacking with New Catalyst 3500 Series XL at 4 of 6. Cisco's Catalyst XL Switches disclose as a key feature: "support for Catalyst 2900XL/3500XL devices as cluster member or possibly command switch." November 12, 1999, Merlin Functional Specification at 1 of 8.
14[b]	a slave unit configured to be coupled to the master unit in a daisy chain of such slave units,	The Catalyst XL Switches disclose a slave unit configured to be coupled to the master unit in a daisy chain of such slave units. For example, the Catalyst XL Switches disclose that Catalyst XL Switches may act as a 'command' switch (*e.g.*, a master unit) in a cluster that includes a plurality of 'member' switches (*e.g.*, a plurality of slave units); that is, the Catalyst XL Switches may include a slave unit configured to be coupled to the master unit in a daisy chain of such slave units. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Cisco's Catalyst XL Switches disclose that "[i]f the switch will be a cluster member, it is not necessary to assign IP information or a password if the switch will be managed through the IP address of the command switch. If you are configuring the switch as a standalone switch or as a command switch (Enterprise Edition only), you must assign IP information." 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 4 (6 of 12). Cisco's Catalyst XL Switches disclose that "[a]fter you assign an IP address to the switch, you can access the switch from your browser and use CVSM [Cisco Visual Switch Manager] to view or change configuration settings. If this is a command switch (Enterprise Edition

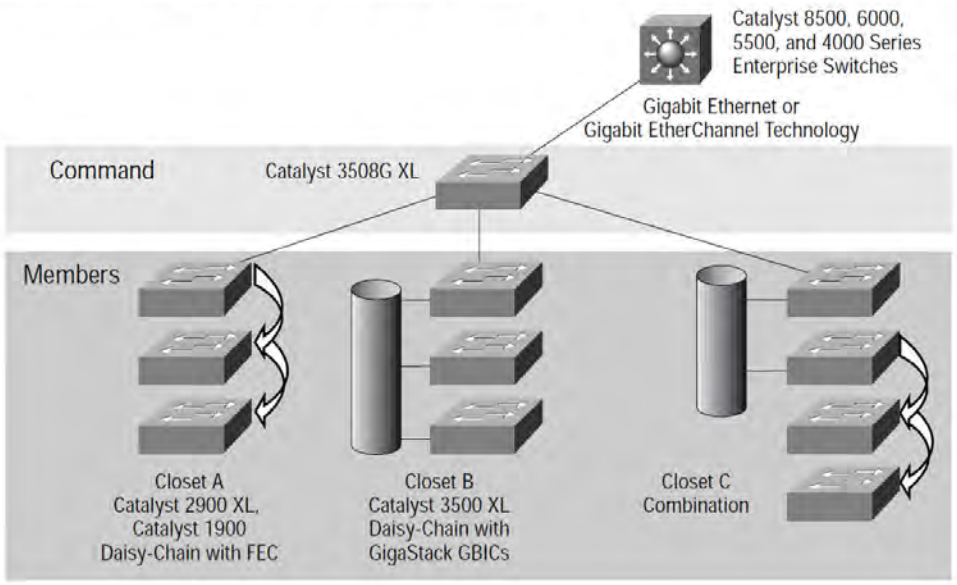
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No.	'904 Patent Claim 14	The Catalyst XL Switches
		only), you can use Cluster Management software to configure other switches." 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 6 (8 of 12). Cisco's Catalyst XL Switches disclose "In a Cisco Switch Cluster, one Catalyst 3500 series XL or 2900 XL switch is specified as the 'command' switch and all other switches in the cluster are designated as 'member' switches. The command switch serves as the single IP address management point and disburses all management action dictated by the network administrator. Command switches can cluster up to additional 15 interconnected member switches regardless of their interconnection media. Cisco Switch Clustering command software is preinstalled on all Catalyst 3500 series XL switches and is available as an upgrade for Catalyst 2900 series XL switches with the Catalyst 2900 XL Command Software upgrade kit." 1999, Cisco Catalyst 3500 Series XL Data Sheet at 2 of 13. Cisco's Catalyst XL Switches depict a plurality of members (*e.g.*, slaves) that are serially connected in a stack, which are shown below and highlighted in green. Figure 3 Creating an Independent Stack Bus Using the GigaStack GBIC, Catalyst 3500 Series XL, and Gigabit-Enabled Catalyst 2900 Series XL Switches  1999, Cisco Catalyst 3500 Series XL Data Sheet at 5 of 13, FIG. 3 (annotated).

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No.	'904 Patent Claim 14	The Catalyst XL Switches
		Indeed, Cisco's Catalyst XL Switches depict that this plurality of members (*e.g.*, slaves) may be serially connected in a stack having a redundant loopback, as shown below. Figure 4 Creating a Redundant Loopback Connection Using GigaStack GBICs  1999, Cisco Catalyst 3500 Series XL Data Sheet at 5 of 13, FIG. 4 (annotated). Cisco's Catalyst XL Switches further depict that a plurality of members (*e.g.*, slave units) in more than one daisy chain.

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No.	'904 Patent Claim 14	The Catalyst XL Switches
		Figure 6 Cisco Switch Clustering Using Catalyst 3500 XL, 2900 XL, and Catalyst 1900 Switches  1999, Cisco Catalyst 3500 Series XL Data Sheet at 7 of 13, FIG. 6. Cisco's Catalyst XL Switches disclose "Cisco Switch Clustering software for the Catalyst 3500 XL, 2900 XL and 1900 switches, enables the management of a 'cluster' of switches through a single IP address. The clusters can be grouped regardless of interconnection media or physical proximity. In a Cisco switch cluster, one Catalyst 3500 XL or 2900 XL switch is designated as the 'command' switch and all other switches in the cluster are designated as 'member' switches. The command switch serves as the single IP management point and disburses all management action dictated by the network manager." May 24, 1999, Press Release: Cisco Introduces Next-Generation Stacking with New Catalyst 3500 Series XL at 4 of 6. Cisco's Catalyst XL Switches disclose as a key feature: "support for Catalyst 2900XL/3500XL devices as cluster member or possibly command switch." November 12, 1999, Merlin Functional Specification at 1 of 8.

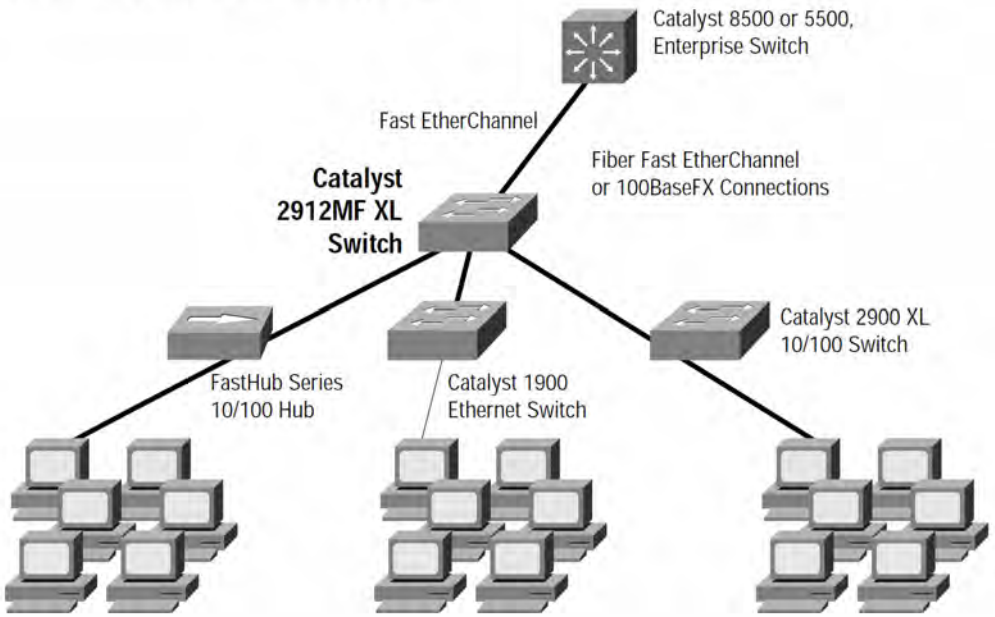
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No.	'904 Patent Claim 14	The Catalyst XL Switches
14[c]	the slave unit comprising: a plurality of ports, for coupling the slave unit to respective subscriber lines;	The Catalyst XL Switches disclose the slave unit comprising: a plurality of ports, for coupling the slave unit to respective subscriber lines. For example, the Catalyst XL Switches disclose each slave unit comprising a plurality of ports for coupling to respective subscriber lines to respective subscriber lines. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Specifically, the Catalyst XL Switches disclose that the "Catalyst 2900 Series XL includes four models, with different port densities, configuration options, and pricing to meet a broad range of network design requirements." 1997, Cisco Catalyst 2900 Series XL Data Sheet at 1 of 6. And the Catalyst XL Switches disclose that the "8-port Catalyst 2908 XL switch is ideal for aggregating smaller Ethernet and Fast Ethernet workgroups and servers. The Catalyst 2916M XL 16-port switch is also an excellent aggregation device, as well as the perfect solution for providing dedicated 10- or 100-Mbps bandwidth to individual users. The Catalyst 2916M XL's two versatile module slots provide expansion capabilities, higher-speed connectivity, and future support for feature modules, allowing users the flexibility to upgrade their networks and preserve their initial investment. The 24-port Catalyst 2924 XL and Catalyst 2924C XL switches are ideal for delivering low-cost, high-performance, 10- or 100-Mbps bandwidth to individual users and servers." 1997, Cisco Catalyst 2900 Series XL Data Sheet at 1 of 6. The Catalyst XL Switches also disclose security features, such as secure addressing that "secures a port to an individual MAC address or a group of up to 132 MAC addresses Addresses can be learned or manually entered; choice of actions upon secure address violation: – Send/not send an SNMP trap[;] – Suspend, disable, or leave security violation port enabled." 1997, Cisco Catalyst 2900 Series XL Data Sheet at 4 of 6. Further, the Catalyst XL Switches disclose the availability and ordering of models based on their number of ports.

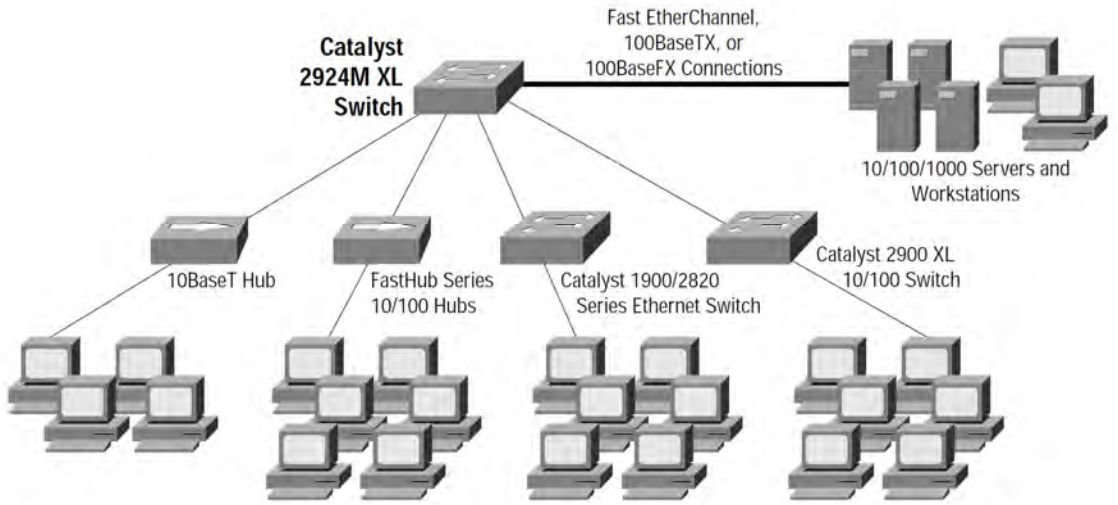
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No.	'904 Patent Claim 14	The Catalyst XL Switches
		Availability and Orderability **Model** / **Description** / **Availability** **WS-C2908-XL** / 8-port 10BaseT/100BaseTX autosensing Fast Ethernet switch / January 1998 **WS-C2916M-XL** / 16-port 10BaseT/100BaseTX autosensing Fast Ethernet switch with two expansion slots / January 1998 **WS-C2924-XL** / 24-port 10BaseT/100BaseTX autosensing Fast Ethernet switch / March 1998 **WS-C2924C-XL** / 24-port switch with 22 10BaseT/100BaseTX autosensing Fast Ethernet ports and two 100BaseFX ports. / March 1998 **WS-X2914-XL** / 4-port 10BaseT/100BaseTX switch module for Catalyst 2916M XL / January 1998 **WS-X2922-XL** / 2-port 100BaseFX switch module for Catalyst 2916M XL / January 1998 1997, Cisco Catalyst 2900 Series XL Data Sheet at 5 of 6. Cisco's Catalyst XL Switches disclose "The 12-port Catalyst 2912MF XL is ideal for aggregating geographically disbursed Fast Ethernet workgroups over 100BaseFX fiber connections on a small or midsized campus environment. Two high-speed uplink slots enable users to add up to eight additional 100BaseFX or 10BaseT/100BaseT ports." 1998, Cisco Catalyst 2900 Series XL Overview at 2 of 6.

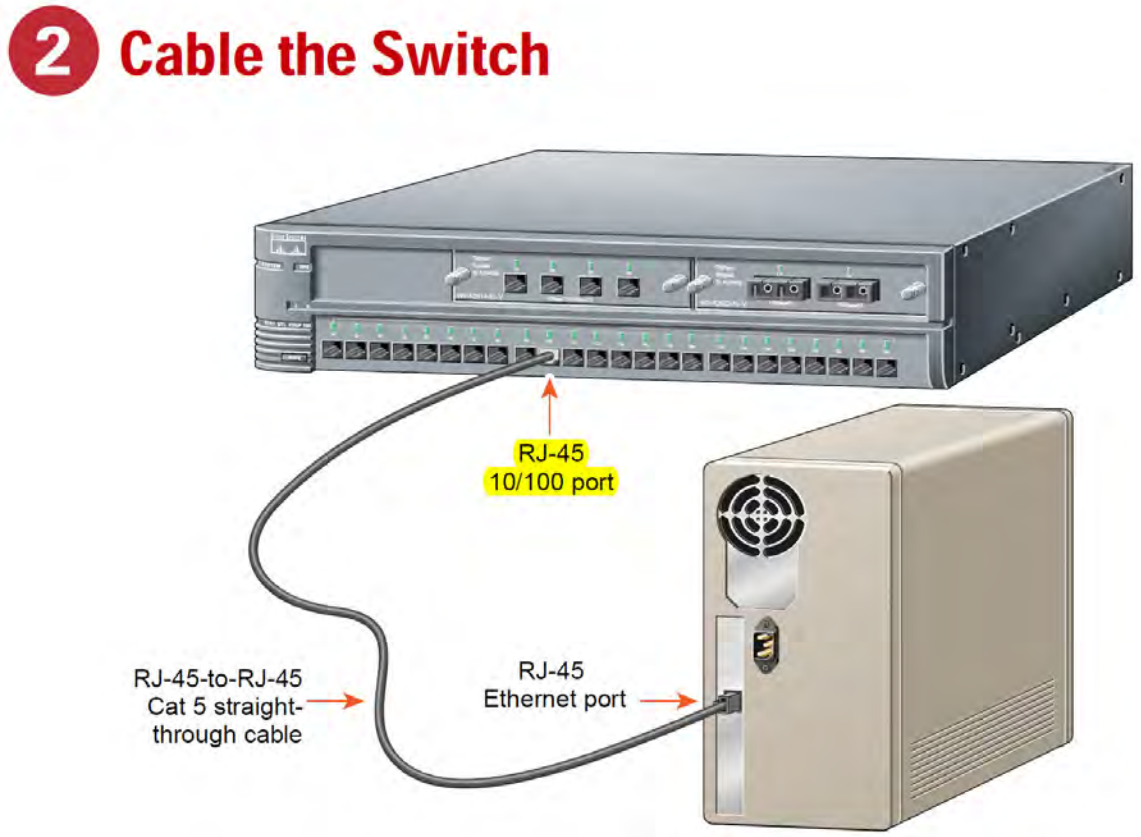
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No.	'904 Patent Claim 14	The Catalyst XL Switches
		Figure 3 The Catalyst 2912MF XL for Disbursed Small Campus Aggregation  1998, Cisco Catalyst 2900 Series XL Overview at 2 of 6, FIG. 3. Cisco's Catalyst XL Switches disclose "The 24-port Catalyst 2924M XL may be used as a flexible, scalable, network backbone for a small to medium-sized business (SMB). The switch is a effective solution for aggregating network resources and delivering dedicated 10- or 100-Mbps connectivity to individual users and workgroups in an SMB. Two high-speed uplink slots enable users to add up to eight additional 100BaseFX or 10BaseT/100BaseT ports." 1998, Cisco Catalyst 2900 Series XL Overview at 3 of 6.

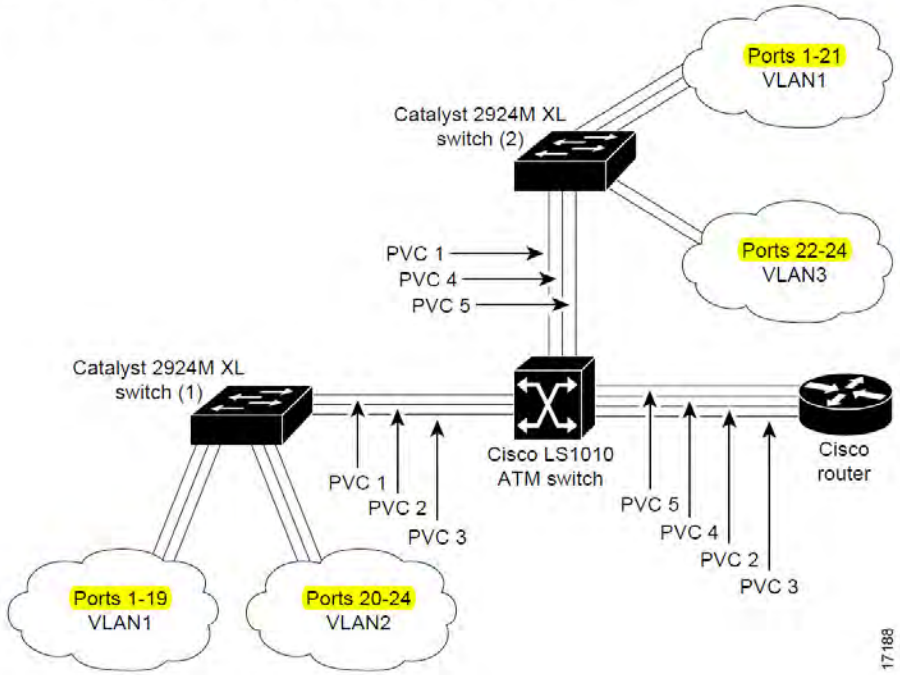
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No.	'904 Patent Claim 14	The Catalyst XL Switches
		Figure 4 The Catalyst 2924M XL as SMB Aggregator and Backbone  1998, Cisco Catalyst 2900 Series XL Overview at 3 of 6, FIG. 4. In one example, Cisco's Catalyst XL Switches depict a Catalyst 2900 Series XL Switch having a plurality of ports. Catalyst 2900 series XL Ethernet switch  1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 1 (3 of 12).

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No.	'904 Patent Claim 14	The Catalyst XL Switches
		Cisco's Catalyst XL Switches depict cabling a Catalyst 2900 Series XL Switch using one of its RJ-45 10/100 ports.  1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 2 (4 of 12) (annotated).

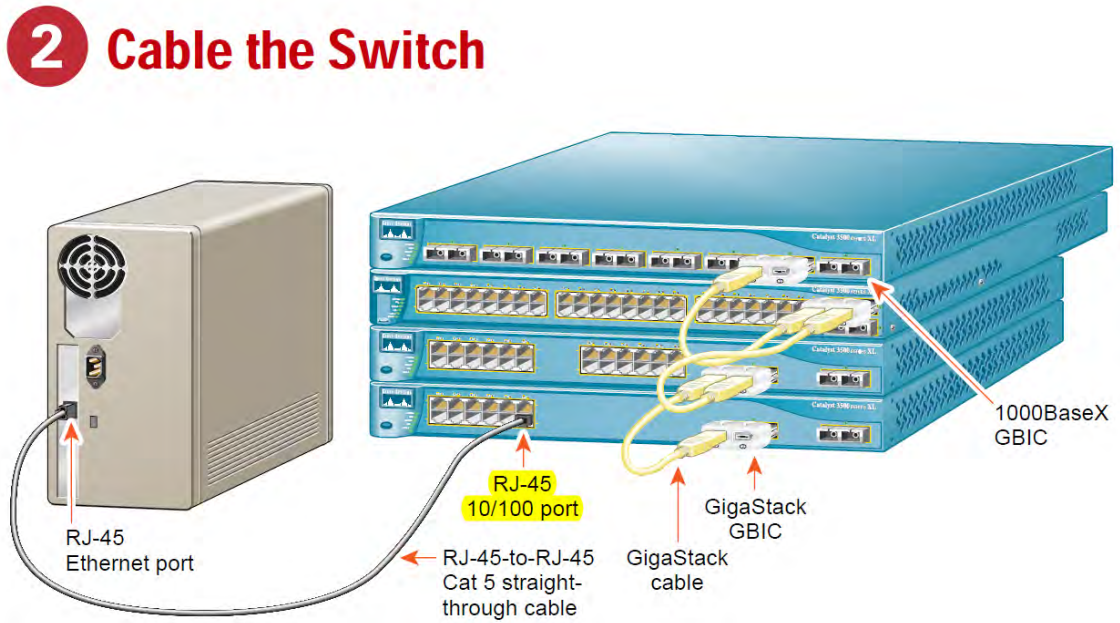
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No.	'904 Patent Claim 14	The Catalyst XL Switches
		In yet another example, Cisco's Catalyst XL Switches depict ports that connect various Catalyst XL Switches to particular ports of virtual local area networks (VLANs). **RFC-1483 PVC Configuration Example** Figure C-2 shows an example of an RFC-1483 PVC configuration with of the following components: • LightStream 1010 ATM switch • Catalyst 2924M XL and Catalyst 2924M XL switches with an ATM module • Cisco router **Figure C-2 RFC-1483 PVC Configuration Example**  1999, Cisco Catalyst 2900 Series XL ATM Modules Installation and Configuration Guide at 88 of 108.

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No.	'904 Patent Claim 14	The Catalyst XL Switches
		"The Cisco Systems Catalyst® 3500 series XL is a scalable line of stackable 10/100 and Gigabit Ethernet switches that deliver premium performance, manageability, and flexibility, with unparalleled investment protection. This line of low-cost, high-performance switching solutions provides next-generation stackable switching. It allows management of all Cisco switched ports from a single IP address and provides interconnected switches with an independent high-speed stack bus that preserves valuable desktop ports." 1999, Cisco Catalyst 3500 Series XL Data Sheet at 1 of 13. In another example, Cisco's Catalyst XL Switches depict a Catalyst 3500 Series XL Switch having a plurality of ports. Catalyst 3500 series XL switch  1999, Cisco Quick Start Guide – Catalyst 3500 Series XL Switches at 1 (3 of 12).

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No.	'904 Patent Claim 14	The Catalyst XL Switches
		Cisco's Catalyst XL Switches depict cabling a Catalyst 3500 Series XL Switch using one of its RJ-45 10/100 ports and its GigaStack Gigabit Interface Convertors (GBICs).  1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 2 (4 of 12) (annotated).

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No.	'904 Patent Claim 14	The Catalyst XL Switches
		Cisco's Catalyst XL Switches describes various other types of port connectivity that is enabled and is shown below.



Connect PCs, Workstations, Servers, and Routers

1 Connect a Category 5 **straight-through** cable (not supplied) to a 10/100 port on the front panel of the switch.

2 Connect the other end of the cable to the RJ-45 port of the PC, workstation, server, or router.

Connect Switches and Hubs

1 Connect a Category 5 **crossover** cable (not supplied) to a 10/100 port on the front panel of the switch.

2 Connect the other end of the cable to an RJ-45 port on the target switch or hub.

Note: Use a straight-through cable to connect two ports when one of the port numbers is designated with an X. Use a crossover cable to connect two ports when both port numbers are designated with an X or when both ports do not have an X.

Connect the Switches through GigaStack GBICs (Optional)

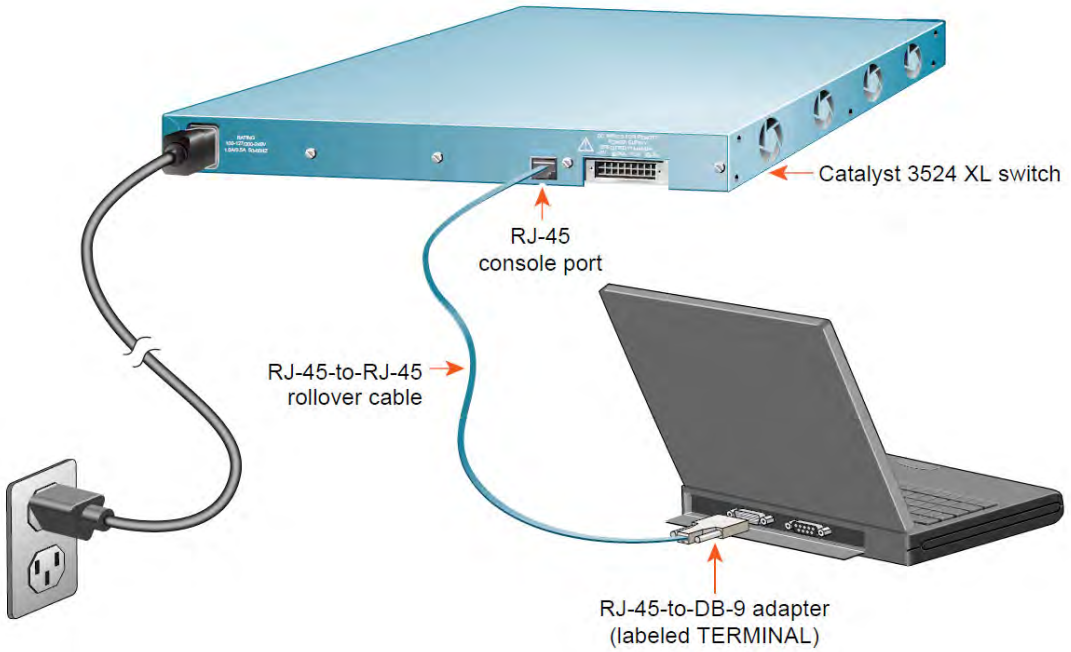
1 Insert the GigaStack Gigabit Interface Convertors (GBICs) in the GBIC module slots on the switches.

2 Connect the GigaStack GBICs with the Cisco GigaStack cable.

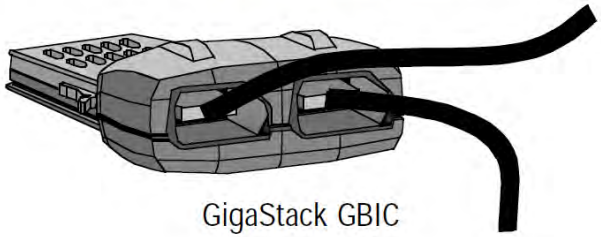
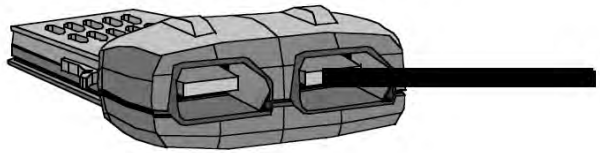
Note: The GigaStack GBICs are orderable separately. Refer to the Catalyst GigaStack Gigabit Interface Convertor Installation Guide for details on installing and cabling the GigaStack GBICs.

1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 2 (4 of 12).

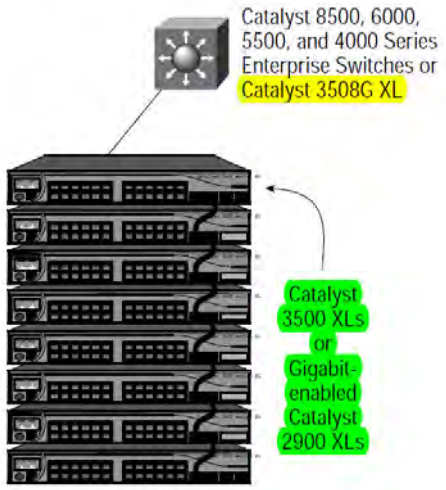
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No.	'904 Patent Claim 14	The Catalyst XL Switches
		Cisco's Catalyst XL Switches depict another example port connection shown below.  1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 3 (5 of 12).
14[d]	first and second physical interfaces, coupled to exchange packets with preceding and succeeding units, respectively, along the daisy chain;	The Catalyst XL Switches disclose first and second physical interfaces, coupled to exchange packets with preceding and succeeding units, respectively, along the daisy chain. For example, the Catalyst XL Switches disclose that "Cisco Systems, the leader in internetworking solutions, provides the industry's most flexible, scalable, and manageable stacking architecture for Catalyst 3500 series XL and gigabit-enabled Catalyst 2900 series XL switches." 1999, Cisco Catalyst 3500 Series XL Data Sheet at 2 of 13. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

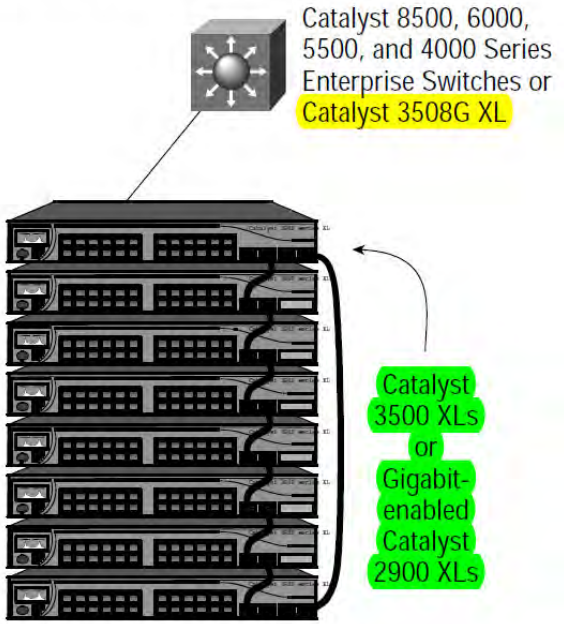
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No.	'904 Patent Claim 14	The Catalyst XL Switches
		And the Catalyst XL Switches disclose that the "Catalyst 3500 series XL and gigabit-enabled Catalyst 2900 series XL switches can be stacked using the low-cost Cisco GigaStack GBIC. The two-port GigaStack GBIC offers a range of highly flexible stacking and performance options. It delivers 1-Gbps connectivity in a daisy-chained configuration or up to 2-Gbps full-duplex connectivity in a dedicated switch-to-switch configuration." 1999, Cisco Catalyst 3500 Series XL Data Sheet at 2 of 13. The Catalyst XL Switches depict just such a daisy chain configuration with first and second physical interfaces, coupled to exchange packets with preceding and succeeding units, respectively, along the daisy chain. Figure 1 GigaStack GBIC Connection Options Daisy Chain at 1-Gbps Forwarding Rate  GigaStack GBIC OR Point to Point at 2-Gbps Forwarding Rate  GigaStack GBIC

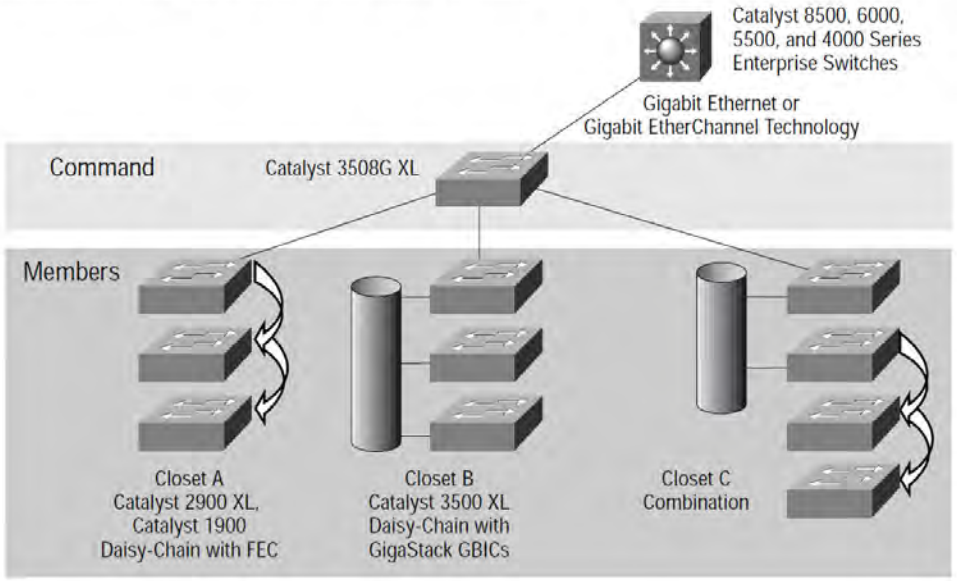
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No.	'904 Patent Claim 14	The Catalyst XL Switches
		1999, Cisco Catalyst 3500 Series XL Data Sheet at 2 of 13. "In a Cisco Switch Cluster, one Catalyst 3500 series XL or 2900 XL switch is specified as the 'command' switch and all other switches in the cluster are designated as 'member' switches. The command switch serves as the single IP address management point and disburses all management action dictated by the network administrator. Command switches can cluster up to additional 15 interconnected member switches regardless of their interconnection media. Cisco Switch Clustering command software is preinstalled on all Catalyst 3500 series XL switches and is available as an upgrade for Catalyst 2900 series XL switches with the Catalyst 2900 XL Command Software upgrade kit." 1999, Cisco Catalyst 3500 Series XL Data Sheet at 2 of 13. Cisco's Catalyst XL Switches depict a plurality of members (*e.g.*, slaves) that are serially connected in a stack using physical interface lines, shown below highlighted in green. Figure 3 Creating an Independent Stack Bus Using the GigaStack GBIC, Catalyst 3500 Series XL, and Gigabit-Enabled Catalyst 2900 Series XL Switches  1999, Cisco Catalyst 3500 Series XL Data Sheet at 5 of 13, FIG. 3 (annotated).

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No.	'904 Patent Claim 14	The Catalyst XL Switches
		Indeed, Cisco's Catalyst XL Switches depict that this plurality of members (*e.g.*, slaves) may be serially connected in a stack, for example, using physical interface lines and having a redundant loopback, as shown below. Figure 4 Creating a Redundant Loopback Connection Using GigaStack GBICs  1999, Cisco Catalyst 3500 Series XL Data Sheet at 5 of 13, FIG. 4 (annotated).

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No.	'904 Patent Claim 14	The Catalyst XL Switches
		Cisco's Catalyst XL Switches further depict that a plurality of members (*e.g.*, slave units) in more than one daisy chain. Figure 6 Cisco Switch Clustering Using Catalyst 3500 XL, 2900 XL, and Catalyst 1900 Switches  1999, Cisco Catalyst 3500 Series XL Data Sheet at 7 of 13, FIG. 6. Cisco's Catalyst XL Switches disclose "Cisco Switch Clustering software for the Catalyst 3500 XL, 2900 XL and 1900 switches, enables the management of a 'cluster' of switches through a single IP address. The clusters can be grouped regardless of interconnection media or physical proximity. In a Cisco switch cluster, one Catalyst 3500 XL or 2900 XL switch is designated as the 'command' switch and all other switches in the cluster are designated as 'member' switches. The command switch serves as the single IP management point and disburses all management action dictated by the network manager." May 24, 1999, Press Release: Cisco Introduces Next-Generation Stacking with New Catalyst 3500 Series XL at 4 of 6.
14[e]	a pre-switch, coupled to receive packets	The Catalyst XL Switches disclose a pre-switch, coupled to receive packets from the first physical interface and responsive to address data carried by the packets, to sort the packets

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No.	'904 Patent Claim 14	The Catalyst XL Switches
	from the first physical interface and responsive to address data carried by the packets, to sort the packets such that packets addressed to the slave unit are retained, and packets addressed to the succeeding units are passed to the second physical interface; and	such that packets addressed to the slave unit are retained, and packets addressed to the succeeding units are passed to the second physical interface. *See supra* at 11[g]
14[f]	a fabric of one or more switches, which convey the retained packets to the ports, responsive to the address data.	The Catalyst XL Switches disclose a fabric of one or more switches, which convey the retained packets to the ports, responsive to the address data. *See supra* at 11[f].

No.	'904 Patent Claim 15	the Catalyst XL Switches
15	The slave unit according to claim 14, wherein the pre-switch is further coupled to receive packets transferred thereto from the second physical interface and to sort the packets in like manner to the	The Catalyst XL Switches disclose the slave unit according to claim 14, wherein the pre-switch is further coupled to receive packets transferred thereto from the second physical interface and to sort the packets in like manner to the packets received through the first physical interface. For example, the Catalyst XL Switches disclose "Hapuna is a software release developed specifically for the 8Mb Catalyst 2900 XL and the Catalyst 3500 XL. However, this software release should be flexible enough to provide a foundation to support other devices (specifically the Vegas L3 products) in the future. With Hapuna we will also consolidate the software for the 2900 and 3500 into one image that will have all the Enterprise Edition

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<table>
<tr><th>No.</th><th>’904 Patent Claim 15</th><th>the Catalyst XL Switches</th></tr>
<tr><td></td><td>packets received through the first physical interface.</td><td>features as well as Command Switch functionality integrated. The 2900/3500 product management team is also eliminating the distinction between the –A and –EN version prior to Hapuna release, thus minimizing the number of SKUs and simplifying our marketing message. We will also post the new image on CCO in the free/public area to address the upgrade needs of installed base.” October 8, 1999 Hapuna Product Requirements Document (“Hapuna”) at 4. Thus, at least under the apparent claim scope alleged by Orckit’s Infringement Disclosures, this limitation is met.

The Catalyst XL Switches disclose a product description of Hapuna in the table shown below.
<table>
<tr><th>Acronym</th><th>Description</th></tr>
<tr><td>Alcatraz</td><td>GBIC based Gigabit Ethernet Module</td></tr>
<tr><td>CDP</td><td>Cisco Discovery Protocol</td></tr>
<tr><td>CLI</td><td>Command Line Interface</td></tr>
<tr><td>CVSM</td><td>Cisco Visual Switch Manager</td></tr>
<tr><td>Deep Space</td><td>12.0(5)XP release of software</td></tr>
<tr><td>HSRP</td><td>Hot Standby Router Protocol</td></tr>
<tr><td>HTTP</td><td>Hyper Text Transfer Protocol</td></tr>
<tr><td>Merlin</td><td>Enhancement of Lava Deux</td></tr>
<tr><td>QoS</td><td>Quality of Service</td></tr>
<tr><td>RPS2000</td><td>New redundant power supply</td></tr>
<tr><td>Vegas</td><td>Next Gen L3 3500 XL switches</td></tr>
<tr><td>UDLD</td><td>UniDirectional Link Detection</td></tr>
</table>
Hapuna at 4.
Further, the Catalyst XL Switches disclose “Upon FCS, Hapuna software will be available for free via CCO for all customers. We will post it in the public area of CCO to address the upgrade needs of the installed base. This will allow us to end-of-life the current upgrade SKUs for 2900 XL.” Hapuna at 9.

The Catalyst XL Switches also disclose “feedback from customers has been that there are certain key features, such as redundant commander and extended candidate discovery, are</td></tr>
</table>

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No.	'904 Patent Claim 15	the Catalyst XL Switches
		still missing from the current implementation of Switch Clustering and needs to be addressed." Hapuna at 9. Consequently, the Catalyst XL Switches disclose "Hapuna release has the following objectives: The ability to create and manage robust and fault tolerant switch clusters. The focus is on providing - Redundant command switch support and plug-and-play GigaStack loop back." Hapuna at 3. As a result, the Catalyst XL Switches disclose switch clustering features for such a redundant command switch, noting that "Hapuna will deliver Redundant command switch capability using HSRP as a template. The Cluster HSRP group will consist of two or more Command switch capable devices that share the same virtual Cluster HSRP MAC and IP address. There can only be one active Command Switch at any given time. Failover between the active Command Switch and the backup Command switch should occur within 30 seconds and be transparent to the network administrator. However, this failover should generate SNMP traps informing the network administrator. Hapuna should also report candidate and member switches that are most qualified to be part of the HSRP group and set precedence order within the HSRP group based on a predefined matrix. The precedence is determined based on connectivity as well as device capabilities. *Redundant cabling is not a part of the scope of this Hapuna feature and does not need to be addressed via software*. Creation of the HSRP group should also not break an existing Switch Cluster." Hapuna at 4-5. Further, the Catalyst XL Switches disclose the redundant command switch will require updates to Merlin, stating that Merlin Requirements include "Identify[ing] members of the HSRP group and Draw Redundant Links." Hapuna at 6. "Since Hapuna will add support for the Cluster HSRP group, Merlin needs to graphically identify and display members of the Cluster HSRP group, specifically the Active and Backup Command Switches. Cluster Builder should also diagram any redundant (blocked) links within the cluster. In addition, Razor links should be uniquely identified in Cluster Builder." Hapuna at 6. And the Catalyst XL Switches disclose Hapuna allows circular links on a razor daisy chain. Hapuna at 8. "This feature allows a standard one-meter loopback cable to be used to create a

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No.	'904 Patent Claim 15	the Catalyst XL Switches
		circular link on a Razor daisy chain. Hapuna will detect the loop and block the link typically within 30 seconds, with a worst case limit of 2 minutes. Hapuna should also be able to failover to this blocked link within 30 seconds when there is a link failure in the Razor daisy chain." Hapuna at 8. In addition, the Catalyst XL Switches disclose that Merlin provides a cluster builder and view that provides redundant commander support. Merlin at 33 of 114. Legend: Following legend describes the icon and label to distinguish various ***devices*** in the Cluster Builder/View screens: 1. **Command Switch:** Special Switch icon with ***green*** label. 2. **Standby Command Switch:** Special Switch icon with ***white*** label (the icon is same as that of the command switch). Merlin at 33 of 114. "Merlin will have the capability to support a redundant commander. The Cluster Builder will display the current Active Commander and the standby Commander. The Active Commander is designated by the command switch icon with green label and the Standby Commander will be designated by the command switch icon with white label. Please refer to the Legend section regarding the representation of various devices and links. The Standby command switch selection is possible from the Standby Command Configuration dialog in the Cluster Manager. Please refer to that section for further information on the criteria for selection of Standby Command Switch." Merlin at 33 of 114.

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No.	'904 Patent Claim 15	the Catalyst XL Switches
		Standby Command Configuration How to launch: Main menu: Cluster->Standby Command Configuration Toolbar: *No toolbar icon.* This screen allows the user to configure cluster-command-capable members as standby command switch. If the active command switch goes down then the standby command switch will take over. This screen also helps the user to pick the most suitable standby command. It should display a list of suggested standby command (the most desirable is listed first). The most desirable standby candidate is: • The one with the most number of connections between itself and other cluster members. • It also has a fast processor. For example 3500 switches are faster than 2900 switches. WS-3524 takes precedence over WS-3548. User also need to provide a group number and a virtual IP address. Merlin at 51 of 114. Moreover, the Catalyst XL Switches disclose that Merlin provides support for "HSRP [Hot Standby Router Protocol] group configuration & Management VLAN switchover in Cluster Manager." Merlin at 8 of 114. In particular, the Catalyst XL Switches disclose that user's can access a Standby Command Configuration Dialog to select from among a "'Candidate(s)' list box will contain the list of all the members that can belong to a cluster HSRP group." Merlin at 52 of 114. Additionally, the Catalyst XL Switches disclose that Merlin provides support for Cisco Group Management Protocol (CGMP), explaining that "Clicking on the 'Management Groups' tab will bring up the management groups information to the front as shown in the figure below. It contains a table that shows the VLAN id, MAC address, and the interface id of the current

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No.	'904 Patent Claim 15	the Catalyst XL Switches
		management groups. To delete an entry, select the row first and then click on the 'Remove' button. It is also possible to delete multiple entries using the same method." Merlin at 65 of 114. Further, the Catalyst XL Switches disclose that Merlin provides support for multiple virtual networks or multi-VLANs, where users can select VLAN commanders, members, for different virtual daisy chains and/or making these VLANs static. *See generally* Merlin at 80-82.

No.	'904 Patent Claim 16	The Catalyst XL Switches
16[a]	The slave unit according to claim 15, wherein the retained packets that were received from the first and second physical interfaces and are passed by the pre-switch to the switch fabric are identified by respective first and second port numbers,	The Catalyst XL Switches disclose the slave unit according to claim 15, wherein the retained packets that were received from the first and second physical interfaces and are passed by the pre-switch to the switch fabric are identified by respective first and second port numbers. *See supra* at 14[e].
16[b]	and wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second port numbers are swapped in the pre-switch, so that substantially no reconfiguration of the	The Catalyst XL Switches disclose wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second port numbers are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required in response to the reversal. *See supra* at 10.

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No.	'904 Patent Claim 16	The Catalyst XL Switches
	switch fabric is required in response to the reversal.	

No.	'904 Patent Claim 17	The Catalyst XL Switches
17	The slave unit according to claim 14, wherein when one of the packets received by the pre-switch comprises a multicast packet addressed to one or more of the ports on the slave unit, the pre-switch sorts the multicast packet such that one copy of the packet is retained and another copy of the packet is passed to the second physical interface.	The Catalyst XL Switches disclose the slave unit according to claim 14, wherein when one of the packets received by the pre-switch comprises a multicast packet addressed to one or more of the ports on the slave unit, the pre-switch sorts the multicast packet such that one copy of the packet is retained and another copy of the packet is passed to the second physical interface. *See supra* at 14[e].

No.	'904 Patent Claim 18	The Catalyst XL Switches
18	The slave unit according to claim 14, wherein in the event of a fault in the switch fabric, the pre-switch continues to pass the packets addressed to the succeeding units	The Catalyst XL Switches disclose the slave unit according to claim 14, wherein in the event of a fault in the switch fabric, the pre-switch continues to pass the packets addressed to the succeeding units on to the succeeding units without significant interruption. For example, the Catalyst XL Switches disclose "Hapuna is a software release developed specifically for the 8Mb Catalyst 2900 XL and the Catalyst 3500 XL. However, this software release should be flexible enough to provide a foundation to support other devices (specifically the Vegas L3 products) in the future. With Hapuna we will also consolidate the

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<table>
<tr><th>No.</th><th>’904 Patent Claim 18</th><th>The Catalyst XL Switches</th></tr>
<tr><td></td><td>on to the succeeding units without significant interruption.</td><td>software for the 2900 and 3500 into one image that will have all the Enterprise Edition features as well as Command Switch functionality integrated. The 2900/3500 product management team is also eliminating the distinction between the –A and –EN version prior to Hapuna release, thus minimizing the number of SKUs and simplifying our marketing message. We will also post the new image on CCO in the free/public area to address the upgrade needs of installed base.” Hapuna at 4. Thus, at least under the apparent claim scope alleged by Orckit’s Infringement Disclosures, this limitation is met. To the extent that the Catalyst XL switches are found to not meet this limitation, The slave unit according to claim 14, wherein in the event of a fault in the switch fabric, the pre-switch continues to pass the packets addressed to the succeeding units on to the succeeding units without significant interruption would have been obvious to a person having ordinary skill in the art, as explained below.

The Catalyst XL Switches disclose a product description of Hapuna in the table shown below.
<table>
<tr><th>Acronym</th><th>Description</th></tr>
<tr><td>Alcatraz</td><td>GBIC based Gigabit Ethernet Module</td></tr>
<tr><td>CDP</td><td>Cisco Discovery Protocol</td></tr>
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<tr><td>CVSM</td><td>Cisco Visual Switch Manager</td></tr>
<tr><td>Deep Space</td><td>12.0(5)XP release of software</td></tr>
<tr><td>HSRP</td><td>Hot Standby Router Protocol</td></tr>
<tr><td>HTTP</td><td>Hyper Text Transfer Protocol</td></tr>
<tr><td>Merlin</td><td>Enhancement of Lava Deux</td></tr>
<tr><td>QoS</td><td>Quality of Service</td></tr>
<tr><td>RPS2000</td><td>New redundant power supply</td></tr>
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Hapuna at 4.
Further, the Catalyst XL Switches disclose “Upon FCS, Hapuna software will be available for free via CCO for all customers. We will post it in the public area of CCO to address the</td></tr>
</table>

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No.	'904 Patent Claim 18	The Catalyst XL Switches
		upgrade needs of the installed base. This will allow us to end-of-life the current upgrade SKUs for 2900 XL." Hapuna at 9. The Catalyst XL Switches also disclose "feedback from customers has been that there are certain key features, such as redundant commander and extended candidate discovery, are still missing from the current implementation of Switch Clustering and needs to be addressed." Hapuna at 9. Consequently, the Catalyst XL Switches disclose "Hapuna release has the following objectives: The ability to create and manage robust and fault tolerant switch clusters. The focus is on providing - Redundant command switch support and plug-and-play GigaStack loop back." Hapuna at 3. As a result, the Catalyst XL Switches disclose switch clustering features for such a redundant command switch, noting that "Hapuna will deliver Redundant command switch capability using HSRP as a template. The Cluster HSRP group will consist of two or more Command switch capable devices that share the same virtual Cluster HSRP MAC and IP address. There can only be one active Command Switch at any given time. Failover between the active Command Switch and the backup Command switch should occur within 30 seconds and be transparent to the network administrator. However, this failover should generate SNMP traps informing the network administrator. Hapuna should also report candidate and member switches that are most qualified to be part of the HSRP group and set precedence order within the HSRP group based on a predefined matrix. The precedence is determined based on connectivity as well as device capabilities. *Redundant cabling is not a part of the scope of this Hapuna feature and does not need to be addressed via software*. Creation of the HSRP group should also not break an existing Switch Cluster." Hapuna at 4-5. Further, the Catalyst XL Switches disclose the redundant command switch will require updates to Merlin, stating that Merlin Requirements include "Identify[ing] members of the HSRP group and Draw Redundant Links." Hapuna at 6. "Since Hapuna will add support for the Cluster HSRP group, Merlin needs to graphically identify and display members of the Cluster HSRP group, specifically the Active and Backup Command Switches. Cluster

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No.	'904 Patent Claim 18	The Catalyst XL Switches
		Builder should also diagram any redundant (blocked) links within the cluster. In addition, Razor links should be uniquely identified in Cluster Builder." Hapuna at 6. And the Catalyst XL Switches disclose Hapuna allows circular links on a razor daisy chain. Hapuna at 8. "This feature allows a standard one-meter loopback cable to be used to create a circular link on a Razor daisy chain. Hapuna will detect the loop and block the link typically within 30 seconds, with a worst case limit of 2 minutes. Hapuna should also be able to failover to this blocked link within 30 seconds when there is a link failure in the Razor daisy chain." Hapuna at 8. In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, the Catalyst XL Switches in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 18 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Vink '324 discloses, in the event of a fault, having the transmitting/receiving unit pass on the packets to further units without altering them. Vink '324 3:35-4:10 ("European Patent Application 0,253,381 discloses a communication system in which the data bits are transferred serially up to I/O level. In this process, address information is added to the data bits intended for a particular substation. Information received by a-substation and transmitted under the control of a master station is investigated for address coincidence. In the case of a positive result, that is to say, when the address information added to a group of data bits corresponds to the address allocated to the relevant substation, exchange is initiated. In this process, the data bits intended for a substation are replaced in the same format by data bits originating from the relevant substation and intended for the master station. In the absence of address coincidence, the information concerned is not altered.") As another example, Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address

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No.	'904 Patent Claim 18	The Catalyst XL Switches
		assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. Nortel Networks' BayStack 450 Switches disclose a BootP Automatic IP/MAC Address: "The BayStack 450 switch has a unique 48-bit hardware address, or MAC address, that is printed on a label on the back panel. You use this MAC address when you configure the network BootP server to recognize the BayStack 450 switch BootP requests. A properly configured BootP server enables the switch to automatically learn its assigned IP address, subnet mask, IP address of the default router (default gateway), and software image file name. When the switch is participating in a stack configuration, a Stack MAC address is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If another unit in the stack is assigned as the base unit, the MAC address of the new base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit." BayStack 450 Manual at 43 of 290.

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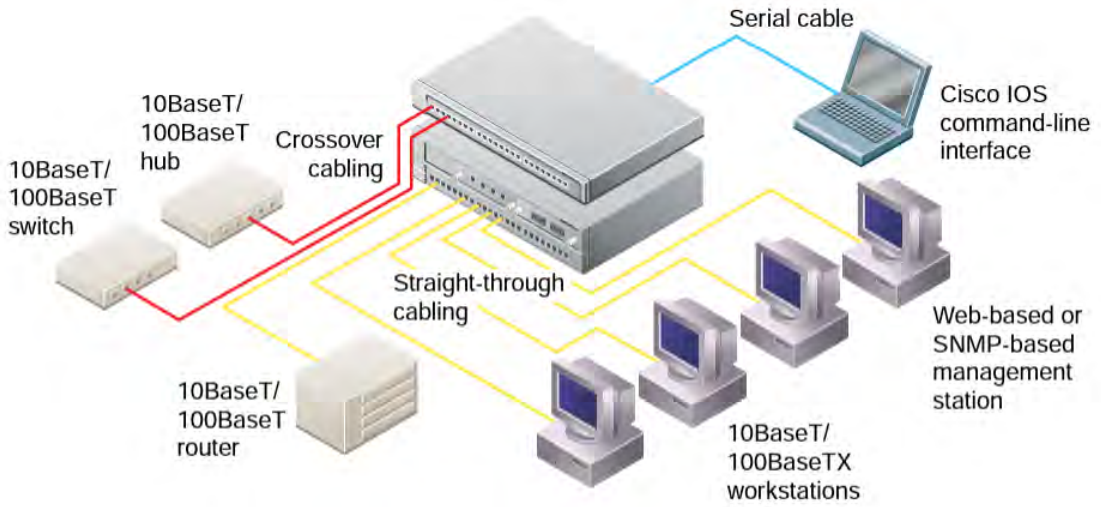
No.	'904 Patent Claim 18	The Catalyst XL Switches
		Stack MAC Address The *Stack MAC address* is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If you designate another unit in the stack as the base unit, the MAC address of the *new* base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit. BayStack 450 Manual at 52 of 290.

No.	'904 Patent Claim 19	The Catalyst XL Switches
19[preamble]	A method for providing access to a network, comprising:	To the extent the preamble is found to be limiting, the Catalyst XL Switches disclose a method for providing access to a network. For example, the Catalyst XL Switches disclose a method for providing access through a network through its Catalyst 2900 Series XL and Catalyst 3500 Series XL Switches, which were known and used by others in this country before the purported invention of the '904 patent. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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No.	'904 Patent Claim 19	The Catalyst XL Switches
		In one example, Cisco's Catalyst XL Switches disclose "Cisco's Catalyst® 2900 Series XL is a full line of 10/100 autosensing Fast Ethernet switches that offer outstanding performance, versatile modularity, and easy-to-use management. The Catalyst 2900 Series XL includes four models, with different port densities, configuration options, and pricing to meet a broad range of network design requirements." 1997, Cisco Catalyst 2900 Series XL Data Sheet at 1 of 6. Cisco's Catalyst XL Switches disclose that "[t]he Cisco Catalyst® 2900 series XL is a full line of 10/100 autosensing Fast Ethernet switches from the leader in networking that combines outstanding performance, ease of use, and integrated Cisco IOS® software. The Catalyst 2900 series XL includes five models, each with different port densities, configuration options, and pricing to meet a broad range of network design requirements. Available in Standard and Enterprise Editions, the software embedded in Catalyst 2900series XL switches is upgradeable so your investment is protected if your network grows or changes." 1998, Cisco Catalyst 2900 Series XL Overview at 1 of 6. Cisco's Catalyst XL Switches depict Catalyst 2900 Series XL Switches in an exemplary network configuration shown below.

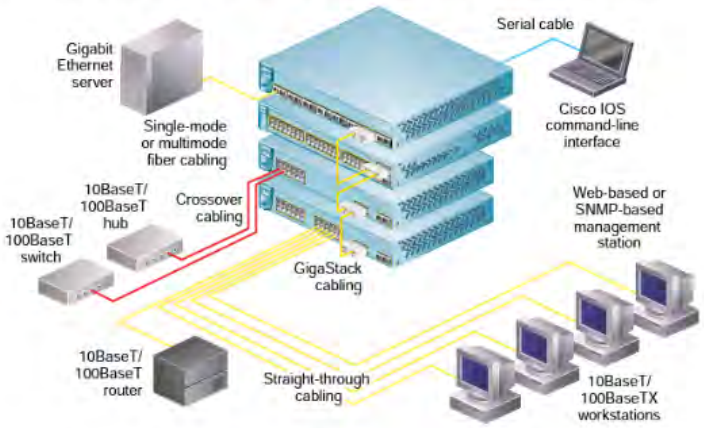
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No.	'904 Patent Claim 19	The Catalyst XL Switches
		Quick Start Guide CATALYST 2900 SERIES XL SWITCHES  1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 1 of 12. Cisco's Catalyst XL Switches describe the exemplary network configuration of Catalyst 2900 Series XL Switches shown above. *See generally* 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 3-9 of 12. For more information, the Quick Start Guide points to "the Catalyst 2900 Series XL Installation Guide for detailed instructions on installing the Cisco 2900 series XL switch. See the Cisco IOS Desktop Switching Software Configuration Guide for detailed instructions on using CVSM, the Cisco IOS CLI, and Cluster Management software to configure and manage switches. See Release Notes for the Catalyst 2900 Series XL and Catalyst 3500 Series XL Cisco IOS Release 12.0(5)XP for recent information about the Catalyst 2900 series XL switch." 1999, Cisco Quick Start Guide – Catalyst 2900 Series XL Switches at 10 of 12.

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No.	'904 Patent Claim 19	The Catalyst XL Switches
		Cisco's Catalyst XL Switches disclose that "[t]his manual is for technicians who install and maintain Catalyst 2900 series XL switches, hereafter referred to as the Catalyst 2900 series switches. It is assumed that the individual is familiar with 10BaseT, 100BaseT, and Asynchronous Transfer Mode (ATM) LAN concepts and terminology. This manual explains how to install the Catalyst 2900 series XL ATM modules (hereafter referred to as the ATM modules) in the Catalyst 2900 series switch and configure its LAN emulation client (LEC) software." 1999, Cisco Catalyst 2900 Series XL ATM Modules Installation and Configuration Guide at vii (7 of 108). Cisco's Catalyst XL Switches disclose "Cisco Systems, the leader in internetworking solutions, provides the industry's most flexible, scalable, and manageable stacking architecture for Catalyst 3500 series XL and gigabit-enabled Catalyst 2900 series XL switches." 1999, Cisco Catalyst 3500 Series XL Data Sheet at 2 of 13. Cisco's Catalyst XL Switches disclose "In a Cisco Switch Cluster, one Catalyst 3500 series XL or 2900 XL switch is specified as the 'command' switch and all other switches in the cluster are designated as 'member' switches. The command switch serves as the single IP address management point and disburses all management action dictated by the network administrator. Command switches can cluster up to additional 15 interconnected member switches regardless of their interconnection media. Cisco Switch Clustering command software is preinstalled on all Catalyst 3500 series XL switches and is available as an upgrade for Catalyst 2900 series XL switches with the Catalyst 2900 XL Command Software upgrade kit." 1999, Cisco Catalyst 3500 Series XL Data Sheet at 2 of 13. Cisco's Catalyst XL Switches depict Catalyst 3500 Series XL Switches in an exemplary network configuration, which is shown below. 1999, Cisco Quick Start Guide – Catalyst 3500 Series XL Switches at i (1 of 12).

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No.	'904 Patent Claim 19	The Catalyst XL Switches
		CATALYST 3500 SERIES XL SWITCHES  1 TAKE OUT WHAT YOU NEED 2 CABLE THE SWITCH 3 ASSIGN IP INFORMATION TO THE SWITCH 4 ACCESS THE SWITCH FROM YOUR BROWSER 1999, Cisco Quick Start Guide – Catalyst 3500 Series XL Switches at i (1 of 12). Cisco's Catalyst XL Switches disclose "The new family of stackable switches, consisting of the Catalyst 3512 XL, Catalyst 3524 XL and Catalyst 3508G XL switches, use Cisco Switch Clustering technology to take traditional stacking to the next level by allowing network managers to manage geographically dispersed switches through a single IP address, using a standard Web browser. The Catalyst 3500 Series XL is targeted towards network managers within dynamic mid-sized businesses and enterprise workgroups who value high

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No.	'904 Patent Claim 19	The Catalyst XL Switches
		performance, reduced complexity, low cost of ownership and easy integration with their installed base of networking solutions." May 24, 1999, Press Release: Cisco Introduces Next-Generation Stacking with New Catalyst 3500 Series XL at 2 of 6. Cisco's Catalyst XL Switches disclose "Cisco Switch Clustering software enables up to 16 interconnected Catalyst 3500 XL, 2900 XL and 1900 switches, regardless of geographic proximity, to form a managed single-IP address network." May 24, 1999, Press Release: Cisco Introduces Next-Generation Stacking with New Catalyst 3500 Series XL at 4 of 6. Cisco's Catalyst XL Switches disclose "Cisco Switch Clustering software for the Catalyst 3500 XL, 2900 XL and 1900 switches, enables the management of a 'cluster' of switches through a single IP address. The clusters can be grouped regardless of interconnection media or physical proximity. In a Cisco switch cluster, one Catalyst 3500 XL or 2900 XL switch is designated as the 'command' switch and all other switches in the cluster are designated as 'member' switches. The command switch serves as the single IP management point and disburses all management action dictated by the network manager." May 24, 1999, Press Release: Cisco Introduces Next-Generation Stacking with New Catalyst 3500 Series XL at 4 of 6. Cisco's Catalyst XL Switches disclose "The GigaStack GBIC can add port density to a Catalyst 3500 XL or Catalyst 2900 XL network. You can install the GigaStack GBIC in a 3500 XL switch or into a 1000BaseX module that resides in a modular Catalyst 2900 XL switch. When installed in a 3500 XL switch or a Catalyst 2900 XL module, the GigaStack GBIC supports 1000BaseX connections." June 11, 1999, Release Notes for Catalyst GigaStack Gigabit Interface Converter at 2 of 6. Cisco's Catalyst XL Switches disclose "The GigaStack GBIC allows you to stack up to nine switches to form an independent backbone that can be managed with a single IP address. This stack gives the appearance of a single large switch for network management purposes. You can also form a point-to-point link between two switches. The GigaStack GBIC supports one full-duplex link (in a point-to-point link) or up to eight half-duplex links (in a stack configuration) to other Gigabit Ethernet devices." July 6, 1999, Release Notes for Catalyst GigaStack Gigabit Interface Converter at 1 of 6.

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No.	'904 Patent Claim 19	The Catalyst XL Switches
		Cisco's Catalyst XL Switches disclose "The GigaStack GBIC can add port density to a Catalyst 3500 XL or Catalyst 2900 XL network. You can install the GigaStack GBIC in a 3500 XL switch or into a 1000BaseX module that resides in a modular 2900 XL switch. When installed in a 3500 XL switch or a 2900 XL module, the GigaStack GBIC supports 1000BaseX connections. The GigaStack GBIC autonegotiates the duplex settings of each port to maximize the bandwidth for your configuration." July 6, 1999, Release Notes for Catalyst GigaStack Gigabit Interface Converter at 2 of 6. Cisco's Catalyst XL Switches disclose "The GigaStack GBIC can add port density to a Catalyst 3500 XL or Catalyst 2900 XL network." October 25, 1999, Release Notes for Catalyst GigaStack Gigabit Interface Converter at 2 of 6. Cisco's Catalyst XL Switches disclose "an easy-to-use web-based application that provides a single point of management for a collection of switches running the cluster-capable firmware. It includes Topology, Stackability, Group operations, Inventory and Performance management among other features. This application originally released in conjunction with firmware release SA6 supports Catalyst 2900XL and Catalyst 3500XL devices." November 12, 1999, Merlin Functional Specification at 1 of 8. Cisco's Catalyst XL Switches disclose that the "Catalyst 3500 Series XL is a full line of 10/100/1000 autosensing Fast and Gigabit Ethernet, stackable switches that combine outstanding performance, ease-of-use and integrated Cisco IOS software. Several models are offered with different port densities and configuration options. The Catalyst 3500 XL is expected to utilize the same MIBs and mini-RMON support as found in the Catalyst 2900XL. The Cisco IOS version used with the 3500XL should be the same as the 2900XL." April 17, 1999 TrafficDirector 5.7 Maintenance Update Product Requirements at 7of 24. Cisco's Catalyst XL Switches disclose a network with a "the Switch Clustering concept, first introduced in Kitsilano and Lava Deux, [which] has been widely accepted and adopted. With the addition of the Holstein products to the Switch Cluster via the Deep Space release, Switch

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No.	'904 Patent Claim 19	The Catalyst XL Switches
		Clustering supports more types and families of switches compared to all other competitors." October 8, 1999 Hapuna Product Requirements Document. Cisco's Catalyst XL Switches disclose "a *Hot swap of modules,*" which enables "the user [] to insert and de-insert the modules without first having to power cycle or reset the switch" and "*Port Based VLANs* - allows the setting up of 24 separate port based VLANs (bridge groups) within the switch. It also allows for ports to belong to multiple bridge groups. An instance of Spanning Tree will run on each bridge group." July 23, 1998, Product Requirements Document – Zuma Software. Cisco's Catalyst XL Switches disclose that "network management is a central issue in the switched internetworking marketplace and affects the rate of adoption and deployment of LAN switching equipment. TrafficDirector is Cisco's graphical RMON console application for use with Cisco's IOS embedded RMON agents and SwitchProbe product line. TrafficDirector provides standards-based RMON and RMON2 real-time traffic monitoring, historical traffic analysis and troubleshooting tools for switched internetworks. TrafficDirector will be an integral part of CiscoWorks for Switched Internetworks (CWSI), Cisco's Switch Management application and as such should integrate fully with CWSI." October 31, 1997 TrafficDirector v5.2, SwitchProbe v4.2 Product Requirements Document at 2 of 84.
19[a]	coupling first and second master units to interface with the network;	The Catalyst XL Switches disclose coupling first and second master units to interface with the network. *See supra* at 1[a].
19[b]	linking a plurality of slave units,	The Catalyst XL Switches disclose linking a plurality of slave units . *See supra* at 1[b], 1[d].
19[c]	each slave unit comprising one or	The Catalyst XL Switches disclose each slave unit comprising one or more ports to respective subscriber lines, in a daisy chain between the first and second master units .

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No.	'904 Patent Claim 19	The Catalyst XL Switches
	more ports to respective subscriber lines, in a daisy chain between the first and second master units;	*See supra* at 1[c].
19[d]	conveying initial downstream data packets, received from the network by one of the master units, along the daisy chain in a first direction, so as to deliver the packets to the ports of the slave units; and	The Catalyst XL Switches disclose conveying initial downstream data packets, received from the network by one of the master units, along the daisy chain in a first direction, so as to deliver the packets to the ports of the slave units. *See supra* at 1[d], 1[e].
19[e]	in the event of a fault in the daisy chain, conveying further downstream data packets, received from the network by one of the master units, along the daisy chain in a second direction, opposite to the first direction, so as to deliver the further packets to the ports of at least some of the slave units.	The Catalyst XL Switches disclose in the event of a fault in the daisy chain, conveying further downstream data packets, received from the network by one of the master units, along the daisy chain in a second direction, opposite to the first direction, so as to deliver the further packets to the ports of at least some of the slave units. *See supra* at 7.

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<table>
<tr><th>No.</th><th>’904 Patent Claim 20</th><th>The Catalyst XL Switches</th></tr>
<tr><td>20</td><td>A method according to claim 19, wherein the initial and further downstream packets are received from the network by the first master unit, and wherein conveying the further downstream packets in the second direction comprises conveying the further downstream packets from the first master unit to the second master unit, and then conveying the further downstream packets from the second master unit to the daisy chain.</td><td>The Catalyst XL Switches disclose a method according to claim 19, wherein the initial and further downstream packets are received from the network by the first master unit, and wherein conveying the further downstream packets in the second direction comprises conveying the further downstream packets from the first master unit to the second master unit, and then conveying the further downstream packets from the second master unit to the daisy chain.

For example, the Catalyst XL Switches disclose “Hapuna is a software release developed specifically for the 8Mb Catalyst 2900 XL and the Catalyst 3500 XL. However, this software release should be flexible enough to provide a foundation to support other devices (specifically the Vegas L3 products) in the future. With Hapuna we will also consolidate the software for the 2900 and 3500 into one image that will have all the Enterprise Edition features as well as Command Switch functionality integrated. The 2900/3500 product management team is also eliminating the distinction between the –A and –EN version prior to Hapuna release, thus minimizing the number of SKUs and simplifying our marketing message. We will also post the new image on CCO in the free/public area to address the upgrade needs of installed base.” October 8, 1999 Hapuna Product Requirements Document (“Hapuna”) at 4. Thus, at least under the apparent claim scope alleged by Orckit’s Infringement Disclosures, this limitation is met.

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No.	'904 Patent Claim 20	The Catalyst XL Switches

Vegas	Next Gen L3 3500 XL switches
UDLD	UniDirectional Link Detection

Hapuna at 4.

Further, the Catalyst XL Switches disclose "Upon FCS, Hapuna software will be available for free via CCO for all customers. We will post it in the public area of CCO to address the upgrade needs of the installed base. This will allow us to end-of-life the current upgrade SKUs for 2900 XL." Hapuna at 9.

The Catalyst XL Switches also disclose "feedback from customers has been that there are certain key features, such as redundant commander and extended candidate discovery, are still missing from the current implementation of Switch Clustering and needs to be addressed." Hapuna at 9.

Consequently, the Catalyst XL Switches disclose "Hapuna release has the following objectives: The ability to create and manage robust and fault tolerant switch clusters. The focus is on providing - Redundant command switch support and plug-and-play GigaStack loop back." Hapuna at 3.

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No.	'904 Patent Claim 20	The Catalyst XL Switches
		Further, the Catalyst XL Switches disclose the redundant command switch will require updates to Merlin, stating that Merlin Requirements include "Identify[ing] members of the HSRP group and Draw Redundant Links." Hapuna at 6. "Since Hapuna will add support for the Cluster HSRP group, Merlin needs to graphically identify and display members of the Cluster HSRP group, specifically the Active and Backup Command Switches. Cluster Builder should also diagram any redundant (blocked) links within the cluster. In addition, Razor links should be uniquely identified in Cluster Builder." Hapuna at 6. And the Catalyst XL Switches disclose Hapuna allows circular links on a razor daisy chain. Hapuna at 8. "This feature allows a standard one-meter loopback cable to be used to create a circular link on a Razor daisy chain. Hapuna will detect the loop and block the link typically within 30 seconds, with a worst case limit of 2 minutes. Hapuna should also be able to failover to this blocked link within 30 seconds when there is a link failure in the Razor daisy chain." Hapuna at 8. In addition, the Catalyst XL Switches disclose that Merlin provides a cluster builder and view that provides redundant commander support. Merlin at 33 of 114. Legend: Following legend describes the icon and label to distinguish various ***devices*** in the Cluster Builder/View screens: 1. **Command Switch:** Special Switch icon with ***green*** label. 2. **Standby Command Switch:** Special Switch icon with ***white*** label (the icon is same as that of the command switch). Merlin at 33 of 114. "Merlin will have the capability to support a redundant commander. The Cluster Builder will display the current Active Commander and the standby Commander. The Active Commander is designated by the command switch icon with green label and the Standby Commander will be designated by the command switch icon with white label. Please refer to the Legend section regarding the representation of various devices and links. The Standby command switch

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No.	'904 Patent Claim 20	The Catalyst XL Switches
		selection is possible from the Standby Command Configuration dialog in the Cluster Manager. Please refer to that section for further information on the criteria for selection of Standby Command Switch." Merlin at 33 of 114. Standby Command Configuration How to launch: Main menu: Cluster->Standby Command Configuration Toolbar: *No toolbar icon.* This screen allows the user to configure cluster-command-capable members as standby command switch. If the active command switch goes down then the standby command switch will take over. This screen also helps the user to pick the most suitable standby command. It should display a list of suggested standby command (the most desirable is listed first). The most desirable standby candidate is: • The one with the most number of connections between itself and other cluster members. • It also has a fast processor. For example 3500 switches are faster than 2900 switches. WS-3524 takes precedence over WS-3548. User also need to provide a group number and a virtual IP address. Merlin at 51 of 114. Moreover, the Catalyst XL Switches disclose that Merlin provides support for "HSRP [Hot Standby Router Protocol] group configuration & Management VLAN switchover in Cluster Manager." Merlin at 8 of 114. In particular, the Catalyst XL Switches disclose that user's can access a Standby Command Configuration Dialog to select from among a "'Candidate(s)' list box will contain the list of all the members that can belong to a cluster HSRP group." Merlin at 52 of 114.

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No.	'904 Patent Claim 20	The Catalyst XL Switches
		Additionally, the Catalyst XL Switches disclose that Merlin provides support for Cisco Group Management Protocol (CGMP), explaining that "Clicking on the 'Management Groups' tab will bring up the management groups information to the front as shown in the figure below. It contains a table that shows the VLAN id, MAC address, and the interface id of the current management groups. To delete an entry, select the row first and then click on the 'Remove' button. It is also possible to delete multiple entries using the same method." Merlin at 65 of 114. Further, the Catalyst XL Switches disclose that Merlin provides support for multiple virtual networks or multi-VLANs, where users can select VLAN commanders, members, for different virtual daisy chains and/or making these VLANs static. *See generally* Merlin at 80-82.

No.	'904 Patent Claim 21	The Catalyst XL Switches
21	A method according to claim 20, wherein conveying the further downstream packets from the first master unit to the second master unit comprises linking further slave units in an additional daisy chain between the first and second master units, and conveying the further downstream packets from the first master unit to the second master unit over the additional daisy chain.	The Catalyst XL Switches disclose a method according to claim 20, conveying the further downstream packets from the first master unit to the second master unit comprises linking further slave units in an additional daisy chain between the first and second master units, and conveying the further downstream packets from the first master unit to the second master unit over the additional daisy chain. *See supra* at 8.

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No.	'904 Patent Claim 22	The Catalyst XL Switches
22[a]	A method according to claim 19, and comprising conveying initial upstream data packets, received by the slave units from the subscriber lines, along the daisy chain in the second direction so as to transmit the upstream data packets via the first master unit over the network,	The Catalyst XL Switches disclose a method according to claim 19, and comprising conveying initial upstream data packets, received by the slave units from the subscriber lines, along the daisy chain in the second direction so as to transmit the upstream data packets via the first master unit over the network. For example, the Catalyst XL Switches disclose bidirectional connections between the switches that permits the switches to communicate in both directions, as both the source and the destination, and therefore permits a user to use the system in such a manner of conveying initial upstream data packets, received by the slave units from the subscriber lines, along the daisy chain in the second direction so as to transmit the upstream data packets via the first master unit over the network. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See supra* at 4[f], 7.
22[b]	and in the event of the fault, conveying further upstream data packets received by one or more of the slave units along the daisy chain in the first direction via the second master unit.	The Catalyst XL Switches disclose in the event of the fault, conveying further upstream data packets received by one or more of the slave units along the daisy chain in the first direction via the second master unit. *See supra* at 4[f], 22[a].

No.	'904 Patent Claim 23	The Catalyst XL Switches
23	A method according to claim 22, and comprising bicasting the upstream data packets from the first	The Catalyst XL Switches disclose a method according to claim 22, and comprising bicasting the upstream data packets from the first master unit to the network and to the second master unit, which transmits the bicast upstream data packets over the network. *See supra* at 6.

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No.	'904 Patent Claim 23	The Catalyst XL Switches
	master unit to the network and to the second master unit, which transmits the bicast upstream data packets over the network.	

No.	'904 Patent Claim 24	The Catalyst XL Switches
24	A method according to claim 19, wherein conveying the initial downstream data packets along the daisy chain comprises pre-switching the packets at each of the slave units, so that packets not addressed to any of the ports on the slave unit are passed to the next slave unit in the daisy chain, while packets that are addressed to one or more of the ports on the slave unit are passed to a switch fabric that directs the packets to the ports to which they are addressed.	The Catalyst XL Switches disclose a method according to claim 19, wherein conveying the initial downstream data packets along the daisy chain comprises pre-switching the packets at each of the slave units, so that packets not addressed to any of the ports on the slave unit are passed to the next slave unit in the daisy chain, while packets that are addressed to one or more of the ports on the slave unit are passed to a switch fabric that directs the packets to the ports to which they are addressed. *See supra* at 11[f].

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No.	'904 Patent Claim 25	The Catalyst XL Switches
25	A method according to claim 19, wherein the network comprises an asynchronous transfer mode (ATM) network.	The Catalyst XL Switches disclose a method according to claim 19, wherein the network comprises an asynchronous transfer mode (ATM) network. *See supra* Claim 2.

No.	'904 Patent Claim 26	The Catalyst XL Switches
26	A method according to claim 19, wherein the network comprises an Internet protocol (IP) network.	The Catalyst XL Switches disclose a method according to claim 19, wherein the network comprises an Internet protocol (IP) network. *See supra* Claim 3.

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EXHIBIT A-2
Defendant's Preliminary Invalidity Contentions
Orckit Corporation v. Nortel Networks Systems, Inc., 2:22-cv-00276-JRG-RSP

Chart for U.S. Patent 6,680,904 ("the '904 Patent")
BayStack 450 Series Switches (the "BayStack 450 Switches")

As shown in the chart below, all Asserted Claims of the '904 Patent are invalid under (1) 35 U.S.C. §§ 102 (a) and (g) because the BayStack 450 Switches meet each element of those claims, (2) 35 U.S.C. §§ 102 (a) and (b) because the references describing the BayStack 450 Series Switches disclose every limitation of every Asserted Claim, and/or (3) 35 U.S.C. § 103 because the BayStack 450 Switches render those claims obvious either alone, or in combination with the knowledge of a person having ordinary skill in the art, and in further combination with the references specifically identified below and in the following claim chart and/or one or more references identified in Defendant's Preliminary Invalidity Contentions. The following quotations and diagrams come from documents that show the BayStack 450 Switches were on sale and in public use by at least January 1999 and describe its functionality.

- January 1999, Nortel Networks Workgroup Products – BayStack 450 Switches – Bay Networks Data Sheet (the "BayStack 450 Data Sheet");
- July 1999, Nortel Networks User Manual – Using the BayStack 450 10/100/1000 Series Switch (the "BayStack 450 Manual"); and
- U.S. Patent No. 6,981,034 B2 to Ding *et al*.

Motivations to combine the disclosures in the BayStack 450 Switches with disclosures in other publications known in the art, as explained in this chart, include at least the similarity in subject matter between the references to the extent they concern methods of stacking switches within a network. Insofar as the references cite other patents or publications, or suggest additional changes, one of ordinary skill in the art would look beyond a single reference to other references in the field.

These invalidity contentions are based on Defendant's present understanding of the Asserted Claims, and Orckit's apparent construction of the claims in its November 3, 2022 Disclosure of Asserted Claims and Infringement Contentions Pursuant to P.R. 3-1, and Orckit's January 19, 2023 First Amended Disclosure of Asserted Claims and Infringement Contentions Pursuant to P.R. 3-1 (Orckit's "Infringement Disclosures"), which is deficient at least insofar as it fails to cite any documents or identify accused structures, acts, or

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materials in the Accused Products with particularity. Defendant does not agree with Orckit's application of the claims, or that the claims satisfy the requirements of 35 U.S.C. § 112. Defendant's contentions herein are not, and should in no way be seen as, admissions or adoptions as to any particular claim scope or construction, or as any admission that any particular element is met by any accused product in any particular way. Defendant objects to any attempt to imply claim construction from this chart. Defendant's prior art invalidity contentions are made in a variety of alternatives and do not represent Defendant's agreement or view as to the meaning, definiteness, written description support for, or enablement of any claim contained therein.

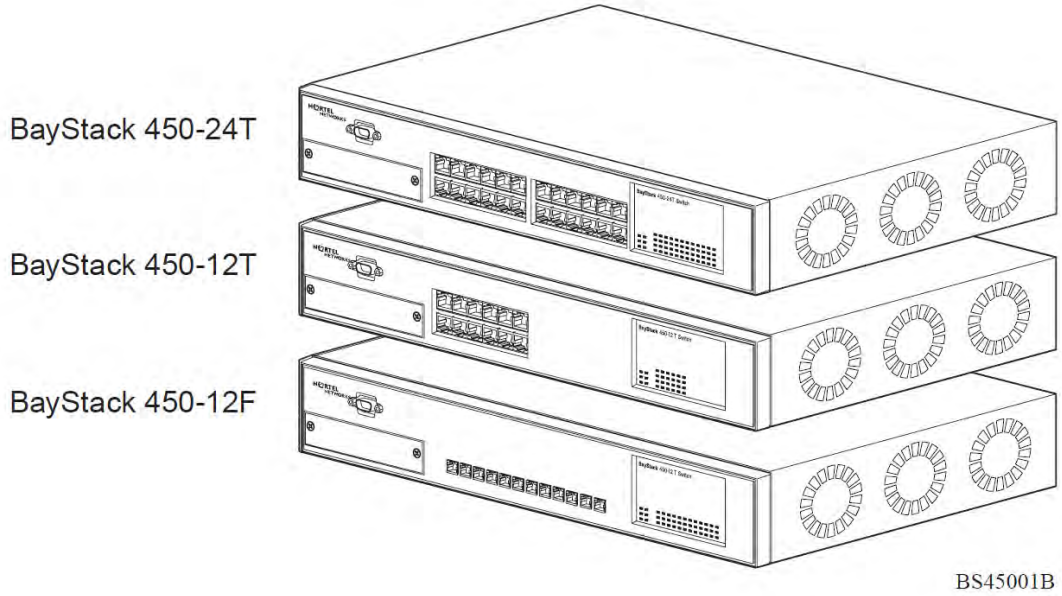
The following contentions are subject to revision and amendment pursuant to Federal Rule of Civil Procedure 26(e), the Local Rules, and the Orders of record in this matter subject to further investigation and discovery regarding the prior art and the Court's construction of the claims at issue.

No.	'904 Patent Claim 1	The BayStack 450 Switches
1[preamble]	Network access apparatus, comprising:	To the extent the preamble is found to be limiting, the BayStack 450 Switches disclose a network access apparatus. For example, the BayStack 450 Switches are devices that enabled customers to access communications networks. For example, Nortel Networks' BayStack 450 Switches disclose that the "BayStack™ 450 Switches are 10/100/1000 Ethernet switches featuring fail-safe stackability, flexible choices for high-speed uplinks, and advanced software features." BayStack 450 Data Sheet at 1 of 8. Further, Nortel Networks' BayStack 450 Switches disclose "BayStack 450 Switches are designed to provide high-density, high-performance switching for enterprise wiring closets, and to provide fail-safe scalability and advanced traffic management for rapidly growing networks in demanding environments." BayStack 450 Data Sheet at 1 of 8. Nortel Networks' BayStack 450 Switches disclose that "BayStack 450 Switches also include advanced features such as VLAN trunking, priority queuing, and IGMP snooping, for an enterprise class integrated solution with Accelar™ Routing Switches from Bay Networks, a Nortel Networks Business." BayStack 450 Data Sheet at 1 of 8.

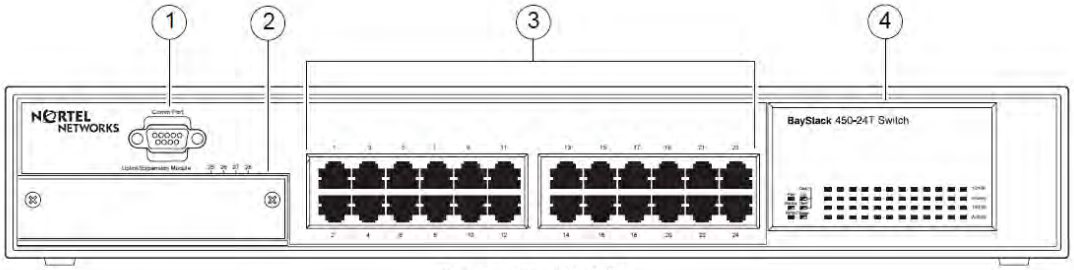
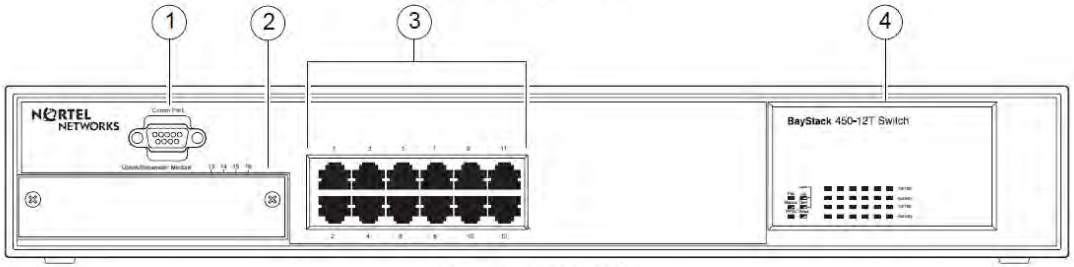
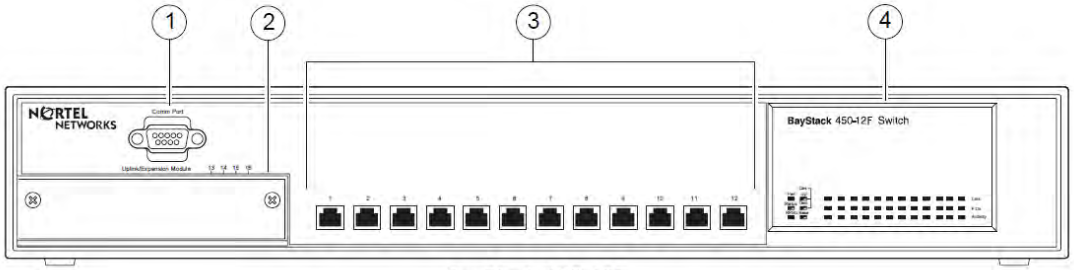
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No.	'904 Patent Claim 1	The BayStack 450 Switches
		Nortel Networks' BayStack 450 Switches further disclose that "BayStack 450 Switches and Accelar Routing Switches also provide network resilience and advanced management with MultiLink Trunking, LinkSafe™ redundant uplink ports, RMON on every port, complete integration into Optivity® network management software, and Web-based management." BayStack 450 Data Sheet at 1 of 8. In addition, Nortel Networks' BayStack 450 Switches disclose that "[a]s described in Table 1, BayStack 450 Switches are available in 24- and 12-port configurations, each with a Media Dependent Adapter (MDA) slot, as well as a cascade stacking module slot." BayStack 450 Data Sheet at 2 of 8. *Table 1: Port, MDA, and Stacking Module Slot Configurations of the BayStack 450 Switches.* **BayStack 450 Switch** / **Autosensing 10BASE-T/ 100BASE-TX Ports** / **MDA Slot** / **Cascade Stacking Module Slot** BayStack 450-12T — 12 — 1 — 1 BayStack 450-24T — 24 — 1 — 1 BayStack 450 Data Sheet at 2 of 8, Table 1.

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		Nortel Networks' BayStack 450 Switches disclose "MDAs for Gigabit Ethernet, Fast Ethernet fiber or 10/100 autosense Ethernet ports, and future ATM uplinks provide the high-bandwidth choices that fit into any network architecture." BayStack 450 Data Sheet at 2 of 8. Nortel Networks' BayStack 450 Switches depict its network apparatuses, for example, in Figure 1-1 of the BayStack 450 Manual shown below.  **Figure 1-1. BayStack 450 Switch Versions** BayStack 450 Manual at 27 of 290, FIG. 1-1. Nortel Networks' BayStack 450 Switches depict the front panels of its network apparatuses, for example, in Figure 1-2 of the BayStack 450 Manual shown below.

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		 BayStack 450-24T  BayStack 450-12T  BayStack 450-12F 1 = Comm Port 2 = Uplink/Expansion slot 3 = Port connectors 4 = LED display panel BS45002B **Figure 1-2. BayStack 450 Switch Front Panels** BayStack 450 Manual at 28 of 290, FIG. 1-2.

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		Nortel Networks' BayStack 450 Switches depict the BayStack 450-12F LED Display Panel, for example, in Figure 1-4 of the BayStack 450 Manual shown below.

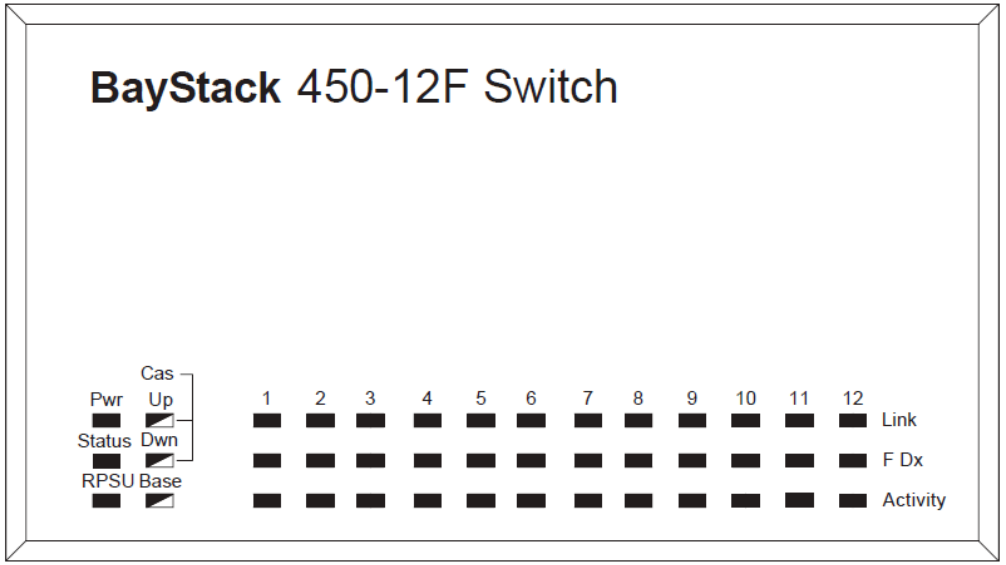
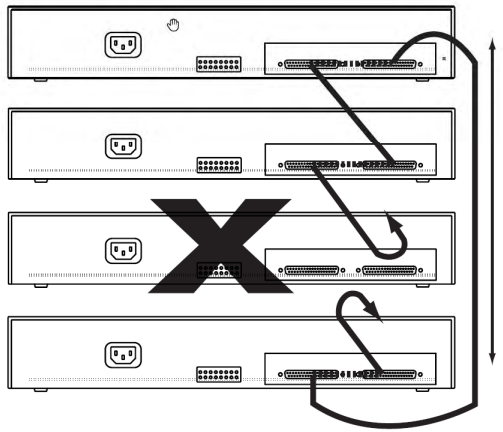


Figure 1-4. BayStack 450-12F LED Display Panel

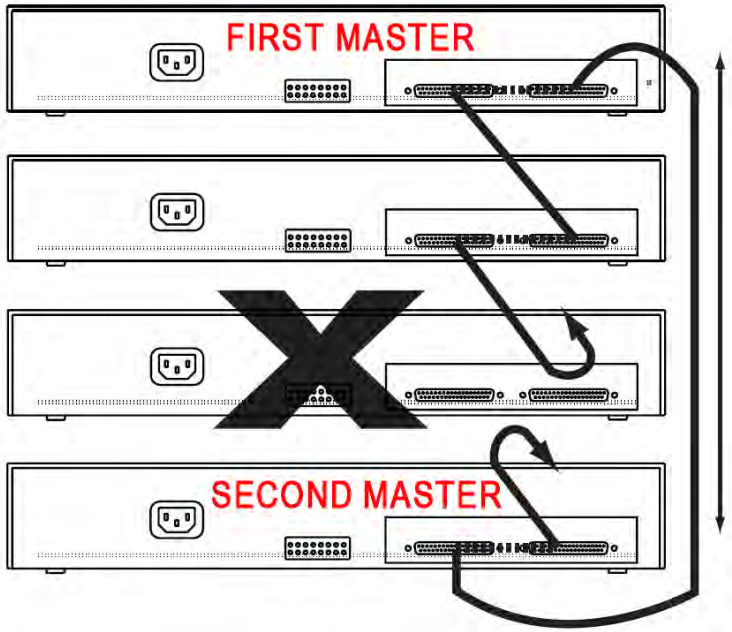
BayStack 450 Manual at 32 of 290, FIG. 1-4.

Nortel Networks' BayStack 450 Switches disclose that the BayStack 450 Switch LED Descriptions are described in Table 1-1. See generally BayStack 450 Manual at 32-34 of 290.

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No.	'904 Patent Claim 1	The BayStack 450 Switches
1[a]	first and second master units, each comprising a physical interface to a packet-switched network;	The BayStack 450 Switches disclose first and second master units, each comprising a physical interface to a packet-switched network. For example, BayStack 450 Switches disclose that BayStack 450 Switches may include physical connections between different switches in various configurations, such as a cascade stacking architecture. The BayStack 450 Switches can be arranged in a stack that includes two master switch units (one active master and one standby master) that connect to a packet-switched network (e.g., an ethernet network) via cables and/or other physical connections, that is, the stack comprises first and second master units, each comprising a physical interface to a packet-switched network. Specifically, Nortel Networks' BayStack 450 Switches disclose that "[u]nlike other stacking switches, BayStack 450 Switches are designed with a fail-safe cascade stacking architecture (see Figure 1)." BayStack 450 Data Sheet at 2 of 8. *Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.*  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). Nortel Networks' BayStack 450 Switches disclose that "[c]ascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption." BayStack 450 Data Sheet at 2 of 8. As a result, Nortel Networks' BayStack 450 Switches disclose that the "redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. In addition, Nortel Networks' BayStack 450 Switches disclose "RJ-45 Connectors Wired for MDI-X," describing that "[a]ll 10/100 autosense Ethernet port connectors are wired for MDI-

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		X connections to other devices. Inexpensive straight-through unshielded twisted pair (UTP) cables can be used to provide switch connections to servers, desktops, and internetworking device." BayStack 450 Data Sheet at 4 of 8. Moreover, Nortel Networks' BayStack 450 Switches disclose a web-based management that includes a "built-in Web-based network management, so network administrators can easily monitor the status and access data about their network via the local corporate intranet, or from any World Wide Web-connected PC, anywhere in the world." BayStack 450 Data Sheet at 4 of 8. In one example, Nortel Networks' BayStack 450 Switches disclose a packet-switch network, stating that its wire-speed throughput includes "2.5 Gigabit per second (Gbps) switching fabric and custom switching ASICs support full 802.1D-compliant MAC Layer frame forwarding and filtering across all ports at the peak rate of 3 million packets per second. The BayStack 450 Switches continue the Bay Networks tradition of industry- leading throughput performance." BayStack 450 Data Sheet at 2 of 8. In another example, Nortel Networks' BayStack 450 Switches disclose enhanced port mirroring capabilities, noting that "[p]ort mirroring copies packets flowing through a specified port and sends the replicated data to the probe for in-depth analysis of switched traffic patterns to trouble-shoot problems and optimize network configurations." BayStack 450 Data Sheet at 4 of 8. Indeed, Nortel Networks' BayStack 450 Switches disclose, in Table 2, various "Technical Specifications for the BayStack 450 Switches," including performance specifications for 64 byte packets and IEEE standards that are used in packet-switched networks. BayStack 450 Data Sheet at 5 of 8.

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No.	'904 Patent Claim 1	The BayStack 450 Switches

TECHNICAL SPECIFICATIONS

Table 2: Technical Specifications for the BayStack 450 Switches.

Performance Specifications (64 byte packets)	
Aggregate Throughput	3 million packets per second (pps)
Switched 10 Mbps Port Forwarding Rate	14,880 pps
Switched 100 Mbps Port Forwarding Rate	148,810 pps
Switched 1000 Mbps Port Forwarding Rate	1,488,100 pps
Latency	9 microseconds for minimum packet length at 100 Mbps
Network Protocol and Standards Compatibility	IEEE 802.3 CSMA/CD (ISO/IEC 8802-3) IEEE 802.3i 10BASE-T (ISO/IEC 8802-3) IEEE 802.3u 100BASE-T (ISO/IEC 8802-3) IEEE 802.1D MAC Bridges (ISO/IEC 10038) IEEE 802.3z 1000BASE-SX and 1000BASE-LX (Draft Standard ver. 3.1)
Data Rate and Encoding	
10 Mbps	Manchester encoding
100 Mbps	4B/5B encoding
1000 Mbps	8B/10B encoding

BayStack 450 Data Sheet at 5 of 8, Table 2.

Nortel Networks' BayStack 450 Switches disclose a first master that is referred to as a "base unit." BayStack 450 Manual at 51 of 290. "The base unit is the unique stack unit that you configure with the Unit Select switch on the front panel of the 400-ST1 cascade module. One unit in the stack must be configured as the base unit; all other units in the stack must have their Unit Select switch set to Off (see "Unit Select Switch " on page 1-24). You can assign any single unit in the stack as the base unit." *Id.*

In one example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the bottom of the stack in an aptly-named "Stack Up Configuration." BayStack 450 Manual at 54 of 290.

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No.	'904 Patent Claim 1	The BayStack 450 Switches

Stack Up Configurations

In Figure 1-12, data flows from the base unit (unit 1) to the next switch, which is assigned as unit 2, and continues until the last switch in the stack is assigned as unit 8. The physical order of the switches is *from bottom to top* (unit 1 to unit 8).

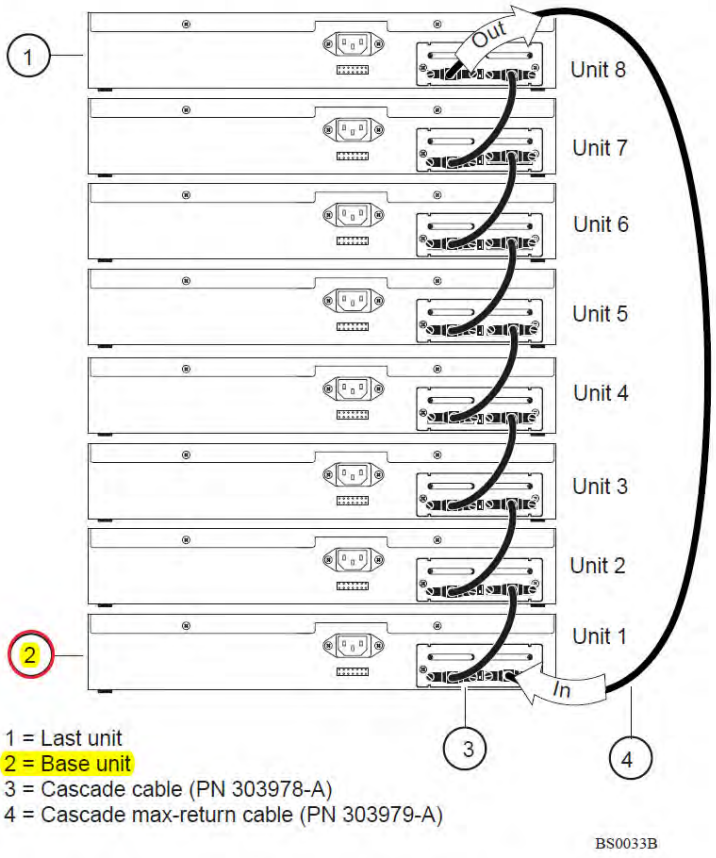


Figure 1-12. Stack Up Configuration Example

BayStack 450 Manual at 54 of 290, FIG. 1-12 (annotated).

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		In another example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the top of the stack in the also aptly-named "Stack Down Configuration." BayStack 450 Manual at 55 of 290.

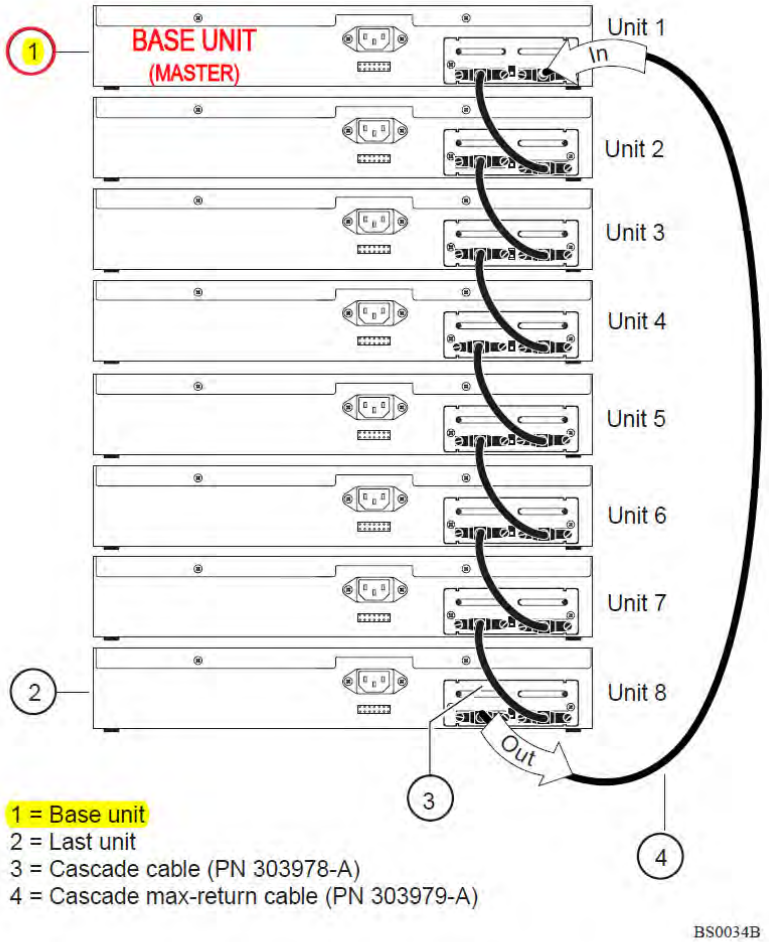


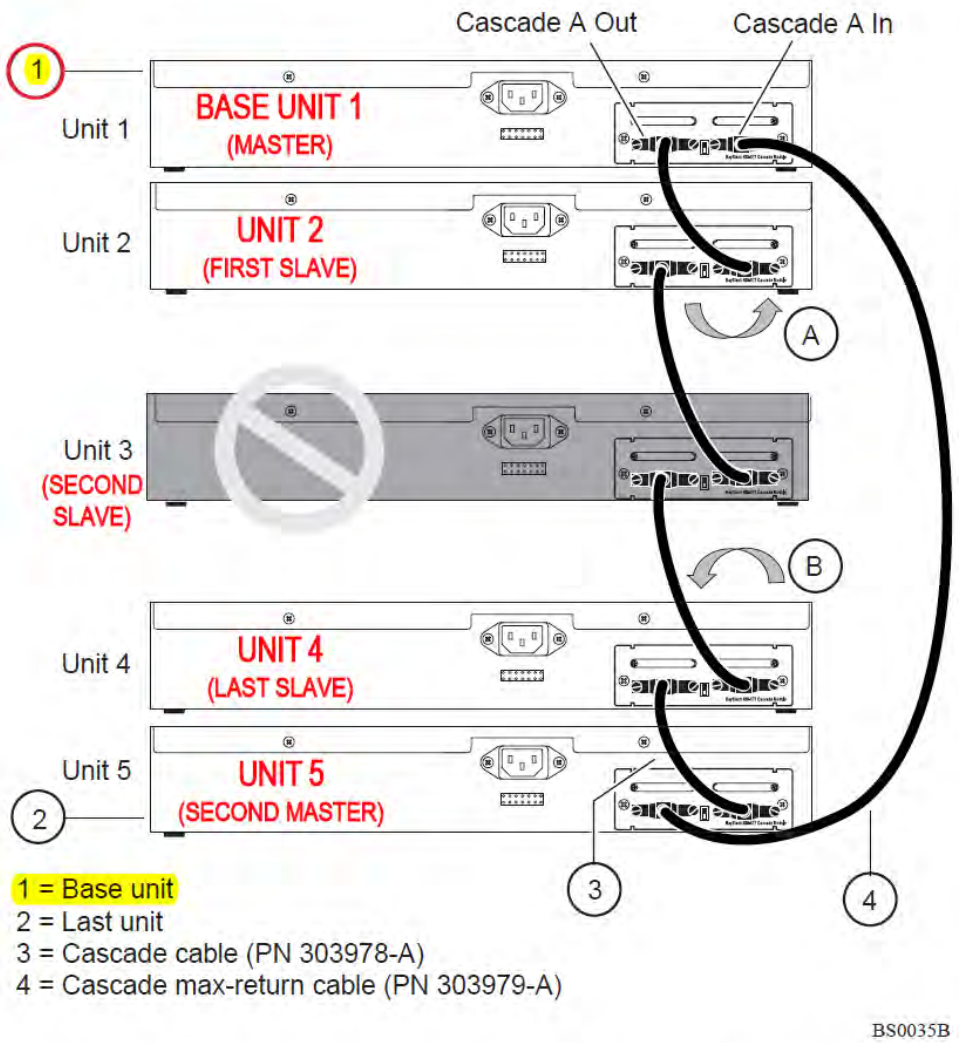
Figure 1-13. Stack Down Configuration Example

BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290. Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

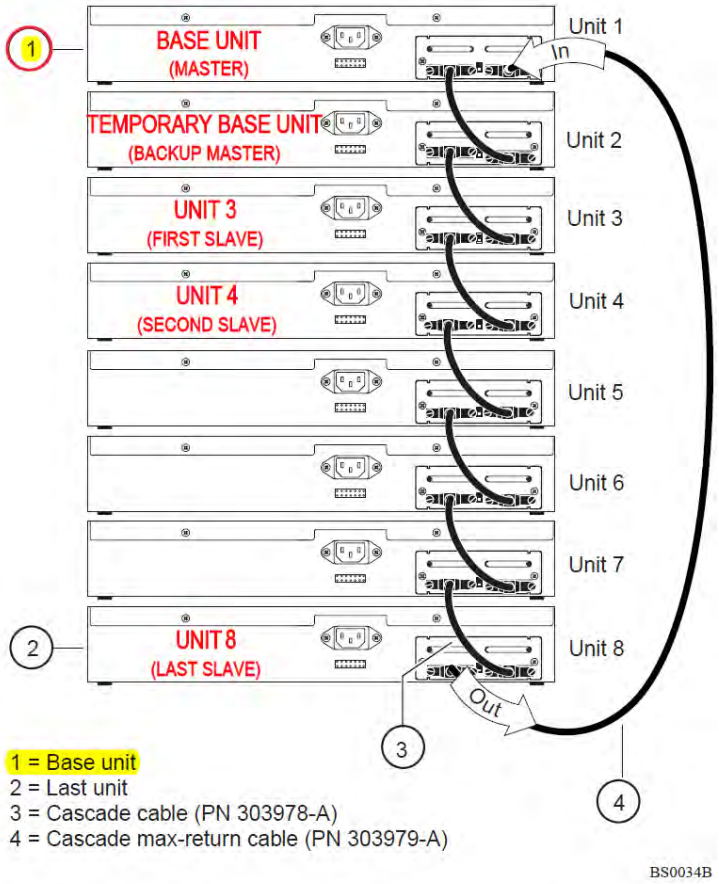
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No.	'904 Patent Claim 1	The BayStack 450 Switches
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		In an alternative example, the BayStack 450 Switches disclose a Temporary Base Unit as being a second master unit. See, e.g., BayStack 450 Manual at 33, 52, 230 of 290. For instance, the BayStack 450 Manual states that "[i]f an assigned base unit fails, the next unit in the stack order automatically becomes the new temporary base unit. This change is indicated by the Base LED on the temporary base unit's LED display panel turning on (amber). For detailed information about the base LED, see Table 1-1 on page 1-6." BayStack 450 Manual at 52 of 290. Further, in this alternative example, the BayStack 450 Manual describes that "[t]his automatic failover is a temporary safeguard only. If the stack configuration loses power, the temporary base unit will not power up as the base unit when power is restored. For this reason, you should always assign the temporary base unit as the base unit (set the Unit Select switch to Base) until the failed unit is repaired or replaced." BayStack 450 Manual at 52 of 290. The BayStack 450 Manual notes, in this alternative example, that "[i]f you do not reassign the temporary base unit as the new base unit, and the temporary base unit fails, the next unit directly downstream from this unit becomes the new temporary base unit. This process can continue until there are only two units left in the stack configuration." BayStack 450 Manual at 52 of 290. In this example, the BayStack 450 Switches disclose that the BayStack 450 Switch LED Descriptions include an amber light that indicates when "unit is operating as the stack configuration's temporary base unit." BayStack 450 Manual at 33 of 290 "This condition occurs automatically if the base unit (directly downstream from this unit) fails." *Id.* And the BayStack 450 Switches disclose that, in this case, the "two units directly upstream and directly downstream from the failed unit automatically wrap their cascade connectors and indicate this condition by lighting their Cas Up and Cas Dwn LEDs (see Cas Up and Cas Dwn description in this table)." BayStack 450 Manual at 33 of 290. But the BayStack 450 Switches also disclose, in this alternative example, that "[i]f the temporary base unit fails, the next unit directly downstream from this unit becomes the new

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		temporary base unit. This process can continue until there are only two units left in the stack configuration." BayStack 450 Manual at 33 of 290. As shown below, in the Stack Down Configuration, the second unit would become the temporary base unit if the base unit were to fail in this configuration.  **Figure 1-13. Stack Down Configuration Example** BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

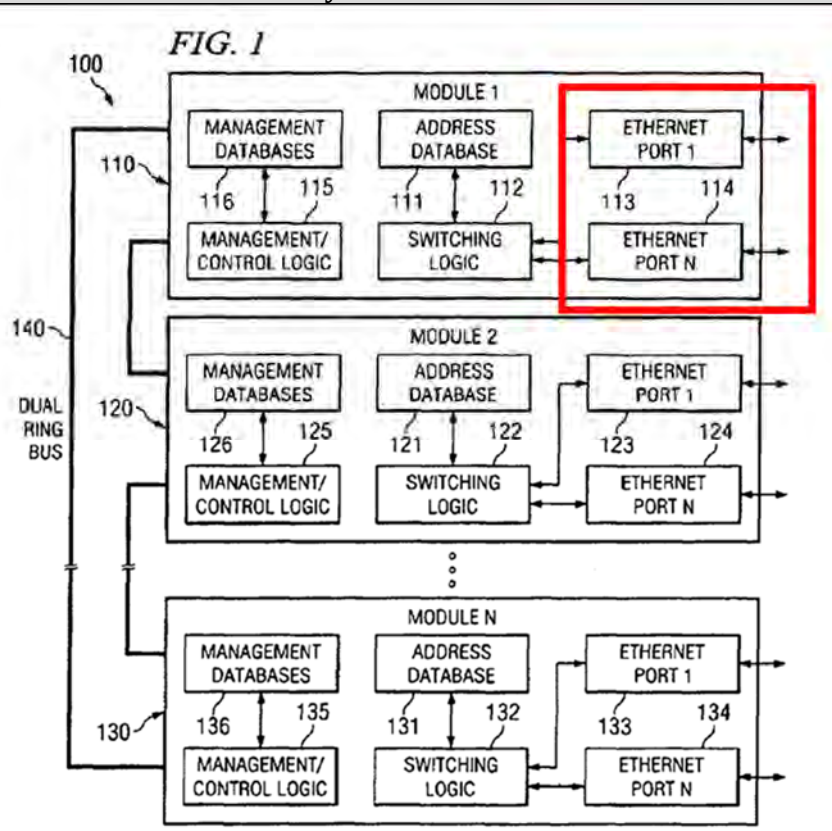
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No.	'904 Patent Claim 1	The BayStack 450 Switches
		To the extent that Orckit contends that the BayStack 450 Switches does not disclose this limitation, the BayStack 450 Switches in combination with (1) the knowledge of a person of ordinary skill in the art and/or in further combination with (2) Ding renders the claim, including the present limitation, obvious. For example, U.S. Patent No. 6,981,034 B2 to Ding et al. ("Ding") is titled "Decentralized Management Architecture for a Modular Communication System," was filed June 30, 1999, and issued on December 27, 2005. At filing and issuance, Ding was assigned to the same company, Nortel Networks, that made the BayStack 450 Switches. Ding, Cover. Indeed, Ding discloses that "[i]n a preferred embodiment of the present invention, each Ethernet Switching module is a particular device that is known as the BayStack™ 450 stackable Ethernet Switch." Thus, Ding discloses that its patented invention is embodied by the BayStack 450 Switches. And, as discussed below, Ding discloses a base module, switching modules, and stacking configuration that are substantially similar to the BayStack 450 Switches that the base unit, switching units, and fail-safe cascade stacking architecture, respectively. Moreover, as discussed below, Ding and the BayStack 450 Switches share many identical specifications, such as the ability to operate at 10 Mbps or 100 Mbps and the maximum throughput of 2.5 Gbps for wire-speed transmissions. Further, Ding (a patent sharing inventors with the BayStack switch) discloses a centralized managing unit, i.e. a "base module" for the stack. ("In order to operate and manage the interconnected mod ules as an integrated unit, a centralized management approach is often employed. Specifically, a centralized manager coordinates the operation and management of the various interconnected modules. The centralized manager may be, for example, a docking Station, a dedicated management module, or even one of the cooperating modules (which is often referred to as a "base module" for the stack)." Ding, 3:21-29. ("The distributed management approach of the present invention has a number of advantages over a centralized management approach. Each module is capable of acting as a base module, and therefore the base module does not represent a single point of failure for the Stack. Also, each module maintains essentially the same parameters whether operating as the base module,

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		a cooperating module, or in a Stand-alone mode, and therefore no additional memory resources are required for a module to operate as the base module. Furthermore, because the module-specific parameters are not maintained across all of the interconnected modules, the amount of inter-module communication is Substantially reduced. These and other advantages will become apparent below." Ding, 4:14-27. Ding discloses that each base module requires Ethernet connectivity. ("In order to coordinate management and control operations across the various cooperating Ethernet Switching modules in the Stack, one of the cooperating Ethernet Switching modules operates as the base module for the Stack. In a preferred embodiment of the present invention, a particular Ethernet Switching module is configured as the base module through a user-controlled toggle Switch on the Ethernet Switching module. If that Ethernet Switching module fails, then another Ethernet switching module (preferably the next upstream Ethernet Switching module in the Stack) automatically reconfigures itself to become the base module for the Stack. The base module is responsible for coordinating management and control for the Stack. Specifically, the base module manages the Stack configuration by ensuring that the Stack is initialized in an orderly manner, handling Stack configuration changes Such as module insertion and removal, and verifying stack integrity. The base module also coordinates certain Stack management functions that require synchronization or mutual exclusion among the various cooperating Ethernet switching modules in the stack." Ding, 8:9-30.

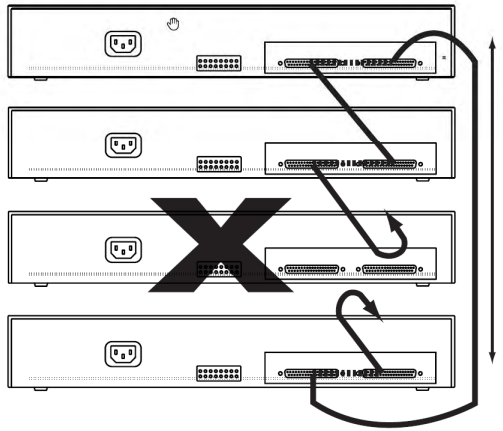
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No.	'904 Patent Claim 1	The BayStack 450 Switches
		 Ding, FIG. 1 (annotation added). Further, Ding discloses a dual ring bus having a bandwidth of 2.5 gigabits per second. ("In a preferred embodiment of the present invention, each Ethernet Switching module is a particular device that is known as the BayStack™ 450 stackable Ethernet Switch. The preferred Ethernet Switching module can be configured to operate as an independent Stand-alone device, or alternatively up to eight (8) Ethernet Switching modules can be interconnected in a Stack configuration, preferably by interconnecting the up to eight (8) Ethernet Switching modules through a dual ring bus having a bandwidth of 2.5 gigabits per

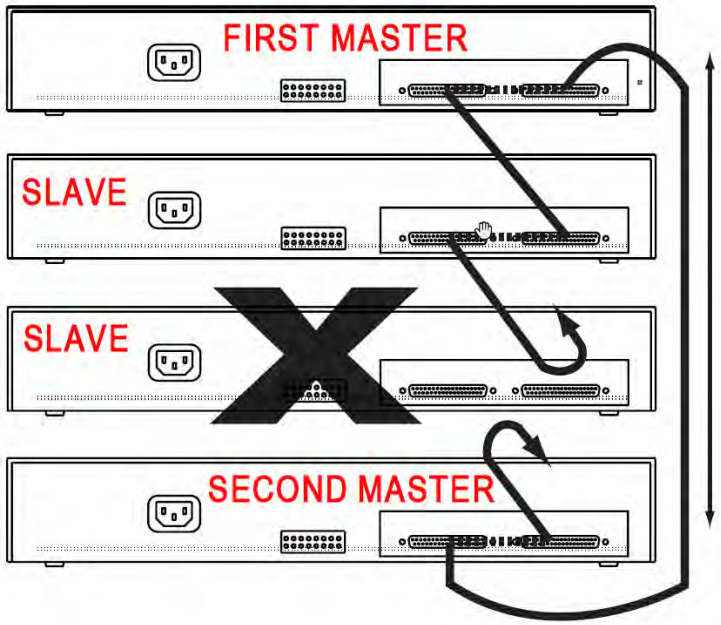
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No.	'904 Patent Claim 1	The BayStack 450 Switches
		second. Within the Stack configuration, a particular Ethernet Switching module can be configured to operate in either a Stand-alone mode, in which the particular Ethernet Switching module performs Ethernet Switching independently of the other Ethernet Switching modules in the Stack, or a cooperating mode, in which the particular Ethernet Switching module performs Ethernet Switching in conjunction with other cooperating Ethernet Switching modules. Furthermore, a particular Ethernet Switching module in the Stack can be dynamically reconfigured between the Stand alone mode and the cooperating mode without performing a System reset or power cycle of the particular Ethernet Switching module, and Ethernet Switching modules can be dynamically added to the Stack and removed from the Stack without performing a System reset or power cycle of the other Ethernet Switching modules in the stack." Ding, 5:43-67. Ding further discloses that if the Ethernet switching mode fails, then another Ethernet switching module (preferably the next upstream Ethernet switching module in the stack) automatically reconfigures itself to be the base module for the stack. ("In order to coordinate management and control operations across the various cooperating Ethernet Switching modules in the Stack, one of the cooperating Ethernet Switching modules operates as the base module for the Stack. In a preferred embodiment of the present invention, a particular Ethernet Switching module is configured as the base module through a user-controlled toggle Switch on the Ethernet Switching module. If that Ethernet Switching module fails, then another Ethernet switching module (preferably the next upstream Ethernet switching module in the stack) automatically reconfigures itself to become the base module for the stack." Ding, 8:9-21. Ding further discloses that the base module is responsible for coordinating management and control of the stack. ("The base module is responsible for coordinating management and control for the Stack. Specifically, the base module manages the stack configuration by ensuring that the Stack is initialized in an orderly manner, handling Stack configuration changes Such as module insertion and removal, and verifying stack integrity. The base module also coordinates certain Stack management functions that require synchronization or mutual eXclusion among the various cooperating Ethernet Switching modules in the Stack." Ding, 8:21-30.

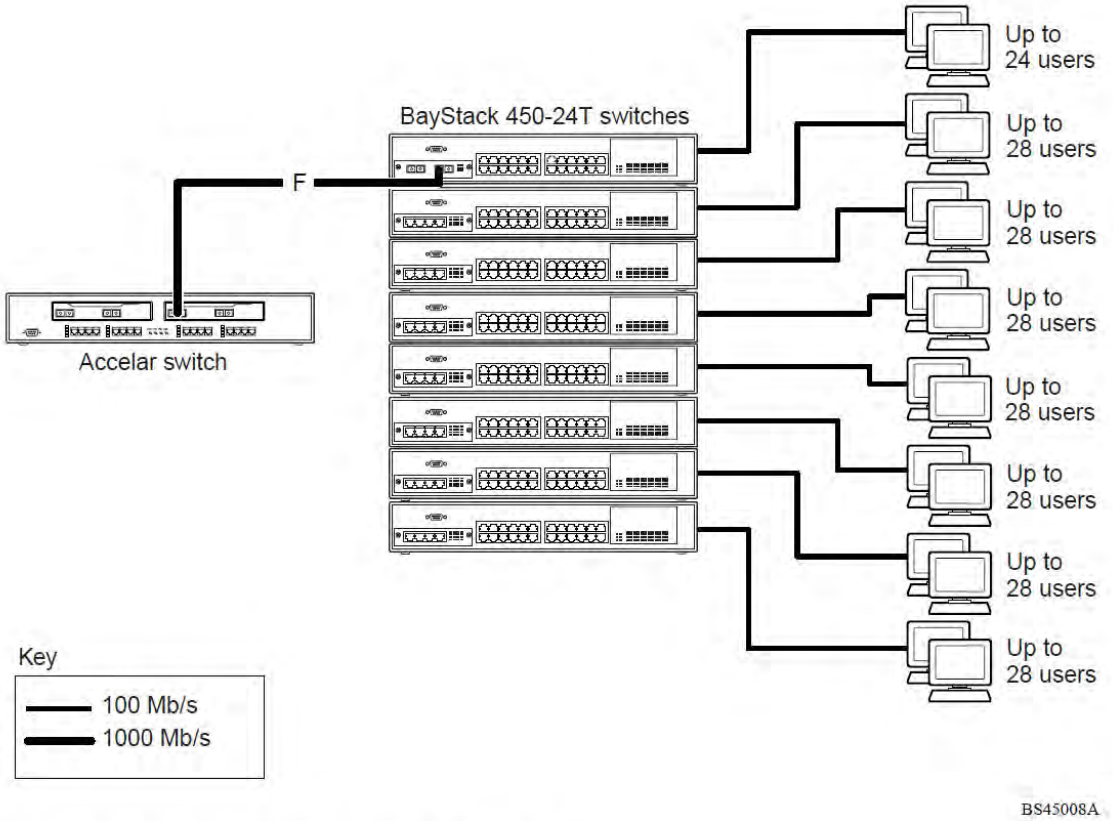
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No.	'904 Patent Claim 1	The BayStack 450 Switches
1[b]	a plurality of slave units,	The BayStack 450 Switches disclose a plurality of slave units. For example, The BayStack 450 Switches disclose that BayStack 450 Switches may include physical connections between different switches in various configurations, such as a cascade stacking architecture. Thus, the BayStack 450 Switches may include several stacked switch units that are slave units; that is, the BayStack 450 Switches are stackable switches that may include a plurality of slave units. Nortel Networks' BayStack 450 Switches disclose that "[u]nlike other stacking switches, BayStack 450 Switches are designed with a fail-safe cascade stacking architecture (see Figure 1)." BayStack 450 Data Sheet at 2 of 8. *Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.*  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). Nortel Networks' BayStack 450 Switches also disclose a "Fail-Safe Stack Application." BayStack 450 Manual at 48 of 290. More specifically, Nortel Networks' BayStack 450 Switches disclose that "Figure 1-9 shows an example of eight BayStack 450 switches that are stacked together as a single managed unit. If any single unit in the stack fails, the remaining stack remains operational, without interruption." BayStack 450 Manual at 48 of 290. Figure 1-9 of the BayStack 450 Manual depicts a plurality of slaves and is shown below.

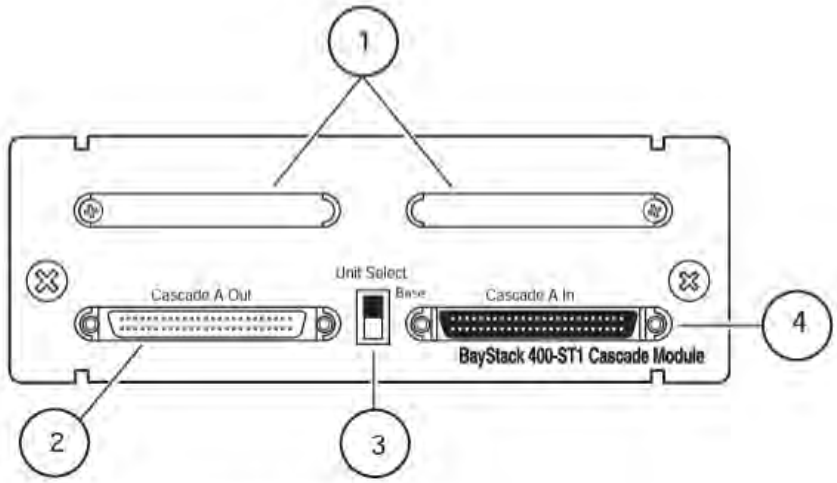
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No.	'904 Patent Claim 1	The BayStack 450 Switches
		 **Figure 1-9. Fail-Safe Stack Example** BayStack 450 Manual at 48 of 290, FIG. 1-9. Nortel Networks' BayStack 450 Switches further disclose that "[a]s shown in Figure 1-9, the Accelar 1100 switch is used as a backbone switch, connecting to the BayStack 450 switch with an optional gigabit (1000BASE-SX) MDA for maximum bandwidth. This configuration uses optional BayStack 400-ST1 Cascade Modules to connect the switches in the fail-safe stack." BayStack 450 Manual at 48 of 290.

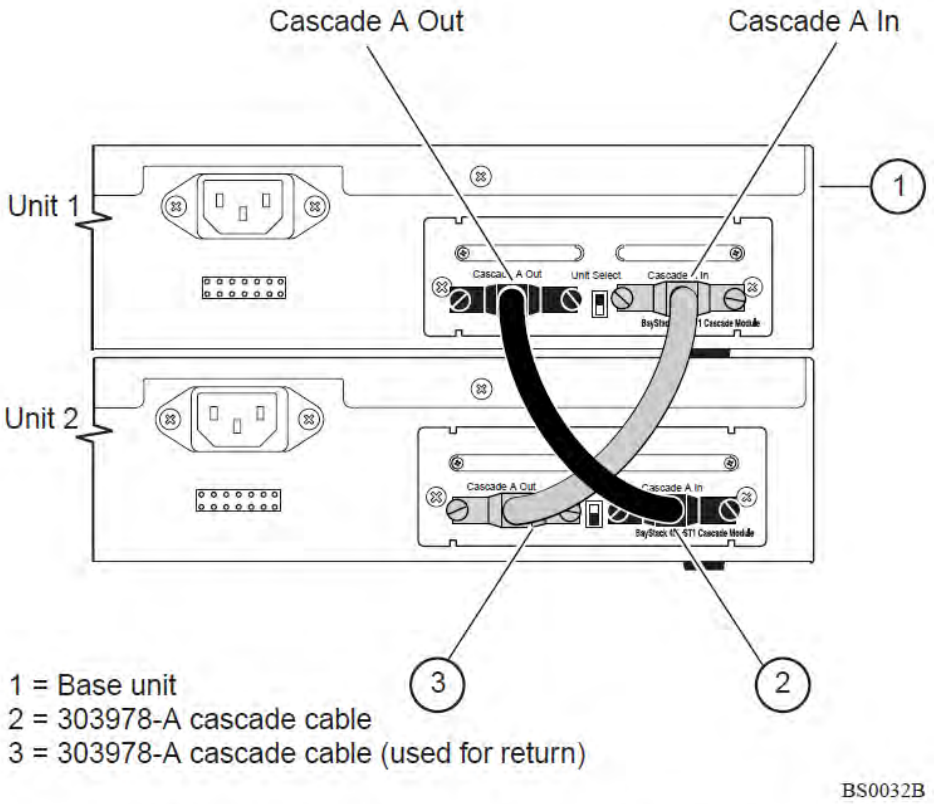
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No.	'904 Patent Claim 1	The BayStack 450 Switches
		Nortel Networks' BayStack 450 Switches disclose that "[f]or an overview of the fail-safe stacking feature that is available for the BayStack 450 switches, see 'Stack Operation' following this section." BayStack 450 Manual at 48 of 290. Indeed, Nortel Networks' BayStack 450 Switches provide an overview of the fail-safe stacking feature, which discloses "BayStack 450 switches that are configured with BayStack 450 software version V1.1.0 or later provide fail-safe stackability when you install the optional BayStack 400-ST1 Cascade Module. You can connect up to eight switches to provide uninterrupted connectivity for up to 224 ports (see 'Fail-Safe Stack Application' on page 1-22). The entire stack is manageable as a single unit. Installation instructions are provided with the BayStack 400-ST1 Cascade Module (see your Nortel Networks sales representative for ordering information)." BayStack 450 Manual at 49 of 290. Further, Nortel Networks' BayStack 450 Switches disclose that the "BayStack 400-ST1 Cascade Module," which is shown in Figure 1-10 below. BayStack 450 Manual at 49 of 290.

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		 **Figure 1-10. BayStack 400-ST1 Front-Panel Components** BayStack 450 Manual at 49 of 290, FIG. 1-10. In addition, Nortel Networks' BayStack 450 Switches disclose that the "Unit Select switch (up = Base) determines the base unit for the stack configuration (see "Base Unit " on page 1-25). The Unit Select switch status is displayed on the BayStack 450 LED display panel. When the Unit Select switch is in the Base (up) position, all other Unit Select switches in the stack configuration must be set to Off (down)." BayStack 450 Manual at 50 of 290. Further still, Nortel Networks' BayStack 450 Switches disclose a Cascade A In Connector that provides "an attachment point for accepting a cascade cable connection from an adjacent unit in the stack. A return cable from this unit's Cascade A Out connector to the adjacent

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		unit's Cascade A In connector completes the stack connection (see the example shown in Figure 1-11)." BayStack 450 Manual at 50 of 290. Figure 1-11 is reproduced below. BayStack 450 Manual at 50 of 290, FIG. 1-11.  **Figure 1-11. Connecting Cascade Cables** To the extent that Orckit contends that the BayStack 450 Switches does not disclose this limitation, the BayStack 450 Switches in combination with (1) the knowledge of a person of ordinary skill in the art and/or in further combination with (2) Ding renders the claim, including the present limitation, obvious.

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		For example, U.S. Patent No. 6,981,034 B2 to Ding et al. ("Ding") is titled "Decentralized Management Architecture for a Modular Communication System," was filed June 30, 1999, and issued on December 27, 2005. At filing and issuance, Ding was assigned to the same company, Nortel Networks, that made the BayStack 450 Switches. Ding, Cover. Indeed, Ding discloses that "[i]n a preferred embodiment of the present invention, each Ethernet Switching module is a particular device that is known as the BayStack™ 450 stackable Ethernet Switch." Thus, Ding discloses that its patented invention is embodied by the BayStack 450 Switches. And, as discussed below, Ding discloses a base module, switching modules, and stacking configuration that are substantially similar to the BayStack 450 Switches that the base unit, switching units, and fail-safe cascade stacking architecture, respectively. Moreover, as discussed below, Ding and the BayStack 450 Switches share many identical specifications, such as the ability to operate at 10 Mbps or 100 Mbps and the maximum throughput of 2.5 Gbps for wire-speed transmissions. Further, Ding discloses connecting up to 8 BayStack switches in a dual ring bus. ("In a preferred embodiment of the present invention, each Ethernet Switching module is a particular device that is known as the BayStack™ 450 stackable Ethernet Switch. The preferred Ethernet Switching module can be configured to operate as an independent Stand-alone device, or alternatively up to eight (8) Ethernet Switching modules can be interconnected in a Stack configuration, preferably by interconnecting the up to eight (8) Ethernet Switching modules through a dual ring bus having a bandwidth of 2.5 gigabits per Second. Within the Stack configuration, a particular Ethernet Switching module can be configured to operate in either a Stand-alone mode, in which the particular Ethernet Switching module performs Ethernet Switching independently of the other Ethernet Switching modules in the Stack, or a cooperating mode, in which the particular Ethernet Switching module performs Ethernet Switching in conjunction with other cooperating Ethernet Switching modules. Furthermore, a particular Ethernet Switching module in the Stack can be dynamically reconfigured between the stand alone mode and the cooperating mode without performing a System reset or power cycle of the particular Ethernet Switching module, and Ethernet Switching modules can be dynamically added to the Stack and removed from the

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		Stack without performing a System reset or power cycle of the other Ethernet Switching modules in the Stack." Ding, 5:43-67.

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<table>
<tr><th>No.</th><th>’904 Patent Claim 1</th><th>The BayStack 450 Switches</th></tr>
<tr><td>1[c]</td><td>each slave unit comprising one or more ports to respective subscriber lines; and</td><td>The BayStack 450 Switches disclose each slave unit comprising one or more ports to respective subscriber lines.

For example, the BayStack 450 Switches disclose that each switch unit in the Nortel Networks BayStack 450 Switches include ports that connect it to subscriber lines, that is, each slave unit comprises one or more ports to respective subscriber lines.

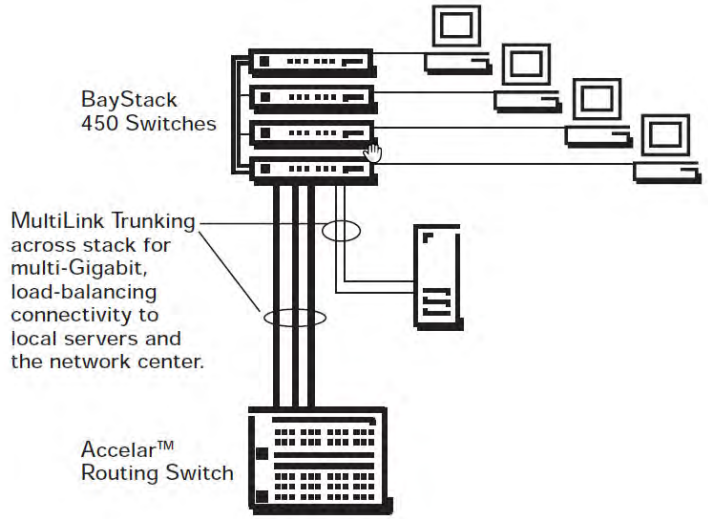
Nortel Networks’ BayStack 450 Switches disclose that “BayStack 450 Switches are available in 24- and 12-port configurations, each with a Media Dependent Adapter (MDA) slot, as well as a cascade stacking module slot.” BayStack 450 Data Sheet at 2 of 8.

Table 1: Port, MDA, and Stacking Module Slot Configurations of the BayStack 450 Switches.

<table>
<tr><th>BayStack 450 Switch</th><th>Autosensing 10BASE-T/ 100BASE-TX Ports</th><th>MDA Slot</th><th>Cascade Stacking Module Slot</th></tr>
<tr><td>BayStack 450-12T</td><td>12</td><td>1</td><td>1</td></tr>
<tr><td>BayStack 450-24T</td><td>24</td><td>1</td><td>1</td></tr>
</table>
BayStack 450 Data Sheet at 2 of 8, Table 1.

In particular, Nortel Networks’ BayStack 450 Switches disclose full autosensing on every port, stating that “[e]very UTP port on the BayStack 450 Switches is equipped with autosense technology to automatically detect and support the speed and mode of a connected device.</td></tr>
</table>

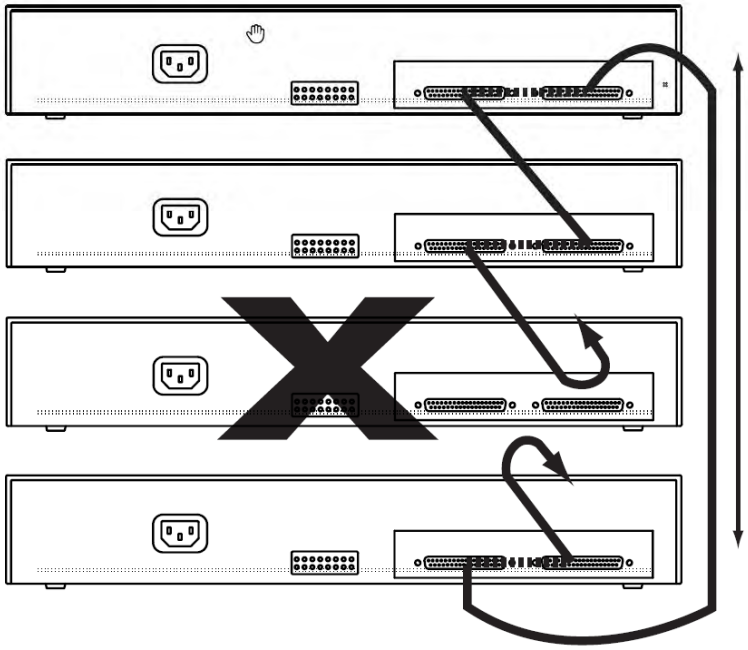
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No.	'904 Patent Claim 1	The BayStack 450 Switches
		As well as automatically determining whether a connected device is operating at 10 Mbps or 100 Mbps and automatically adjusting to the optimal speed, each switched port also automatically detects and supports full-duplex connections to servers, power-user endstations or other switches as well as half-duplex connections to legacy NICs or hubs." BayStack 450 Data Sheet at 2 of 8. Further, Nortel Networks' BayStack 450 Switches disclose that "[u]p to 64 port-based or policy-based VLANs can be established for each switch, to extend the broadcast domain and segment network traffic. Each switch can also support 4,096 transit VLANs." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts these connections in Figure 2 below. *Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.*  BayStack 450 Data Sheet at 4 of 8, FIG. 2.

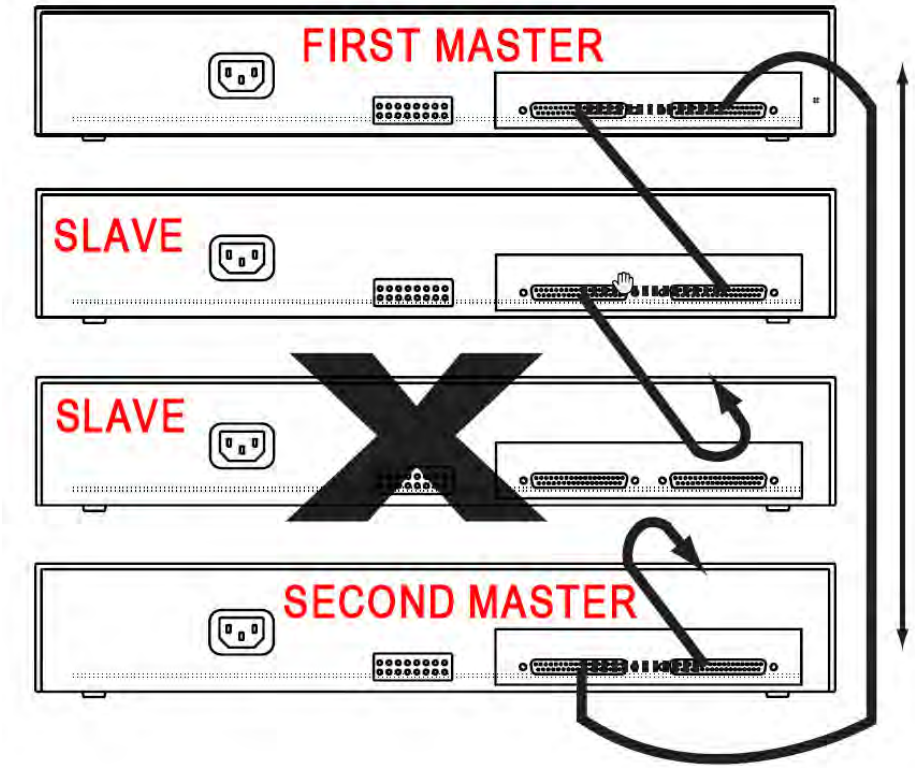
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No.	'904 Patent Claim 1	The BayStack 450 Switches
		In addition, Nortel Networks' BayStack 450 Switches disclose "RJ-45 Connectors Wired for MDI-X," describing that "[a]ll 10/100 autosense Ethernet port connectors are wired for MDI-X connections to other devices. Inexpensive straight-through unshielded twisted pair (UTP) cables can be used to provide switch connections to servers, desktops, and internetworking device." BayStack 450 Data Sheet at 4 of 8. Nortel Networks' BayStack 450 Switches provide an overview of the fail-safe stacking feature, which discloses "BayStack 450 switches that are configured with BayStack 450 software version V1.1.0 or later provide fail-safe stackability when you install the optional BayStack 400-ST1 Cascade Module. You can connect up to eight switches to provide uninterrupted connectivity for up to 224 ports (see 'Fail-Safe Stack Application' on page 1-22). The entire stack is manageable as a single unit. Installation instructions are provided with the BayStack 400-ST1 Cascade Module (see your Nortel Networks sales representative for ordering information)." BayStack 450 Manual at 49 of 290.
1[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	The BayStack 450 Switches disclose a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Figure 1, shown below, illustrates the plurality of physical interface lines that link the slave units in a daisy chain, in which the slave units are mutually connected in series by the physical interface lines therebetween.

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). Nortel Networks' BayStack 450 Switches also disclose a "Fail-Safe Stack Application." BayStack 450 Manual at 48 of 290. More specifically, that Nortel Networks' BayStack 450 Switches disclose that "Figure 1-9 shows an example of eight BayStack 450 switches that are stacked together as a single managed unit. If any single unit in the stack fails, the remaining stack remains operational, without interruption." BayStack 450 Manual at 48 of 290. Figure 1-9 of the BayStack 450 Manual depicts a plurality of slaves and is shown below.

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No.	'904 Patent Claim 1	The BayStack 450 Switches

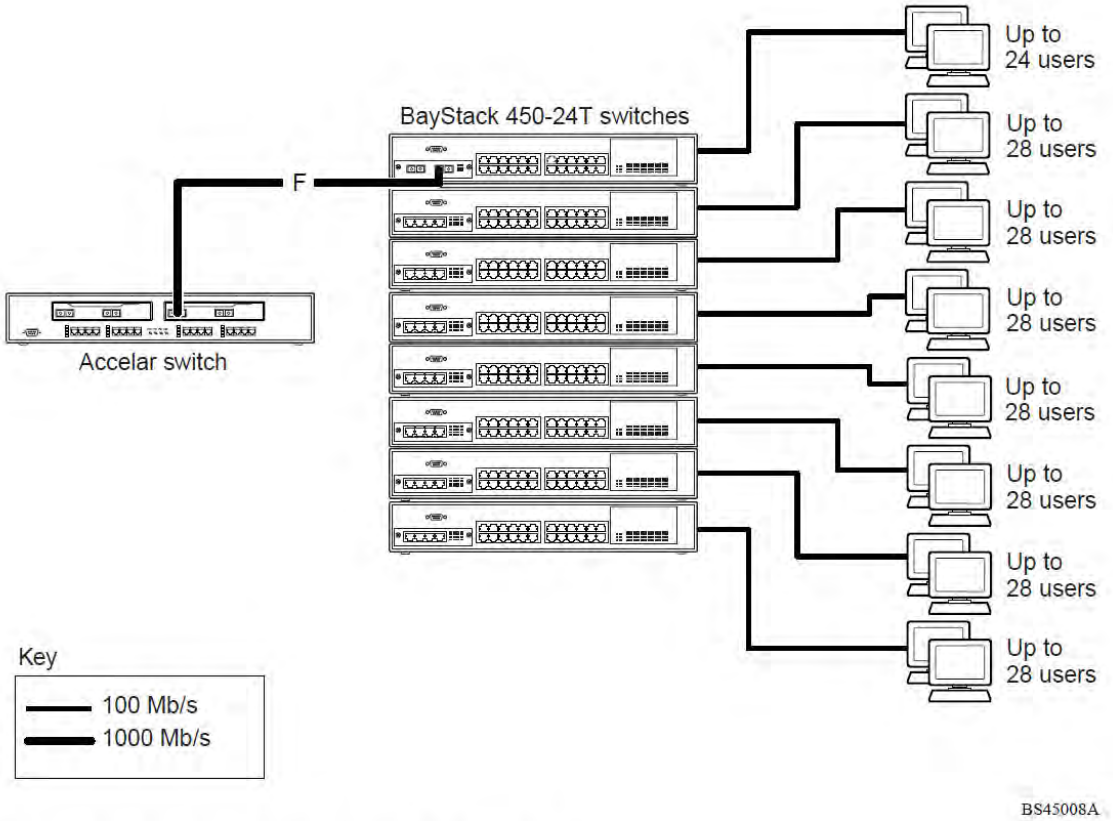


Figure 1-9. Fail-Safe Stack Example

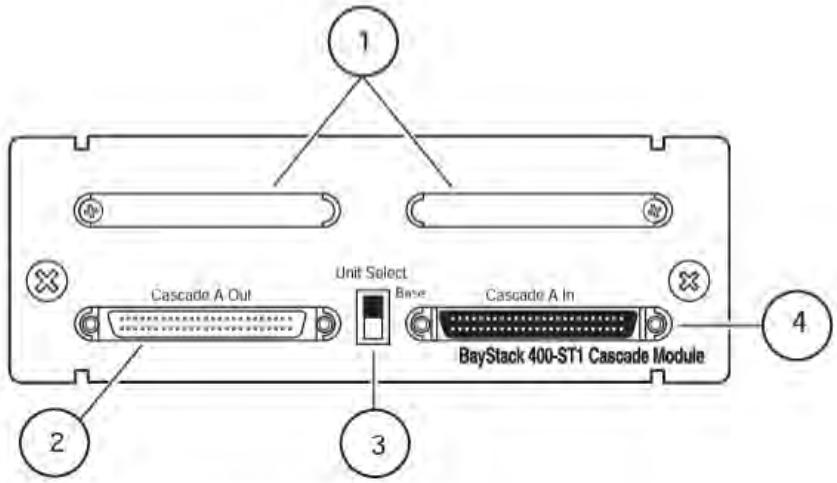
BayStack 450 Manual at 48 of 290, FIG. 1-9.

Nortel Networks' BayStack 450 Switches further disclose that "[a]s shown in Figure 1-9, the Accelar 1100 switch is used as a backbone switch, connecting to the BayStack 450 switch with an optional gigabit (1000BASE-SX) MDA for maximum bandwidth. This configuration uses optional BayStack 400-ST1 Cascade Modules to connect the switches in the fail-safe stack." BayStack 450 Manual at 48 of 290.

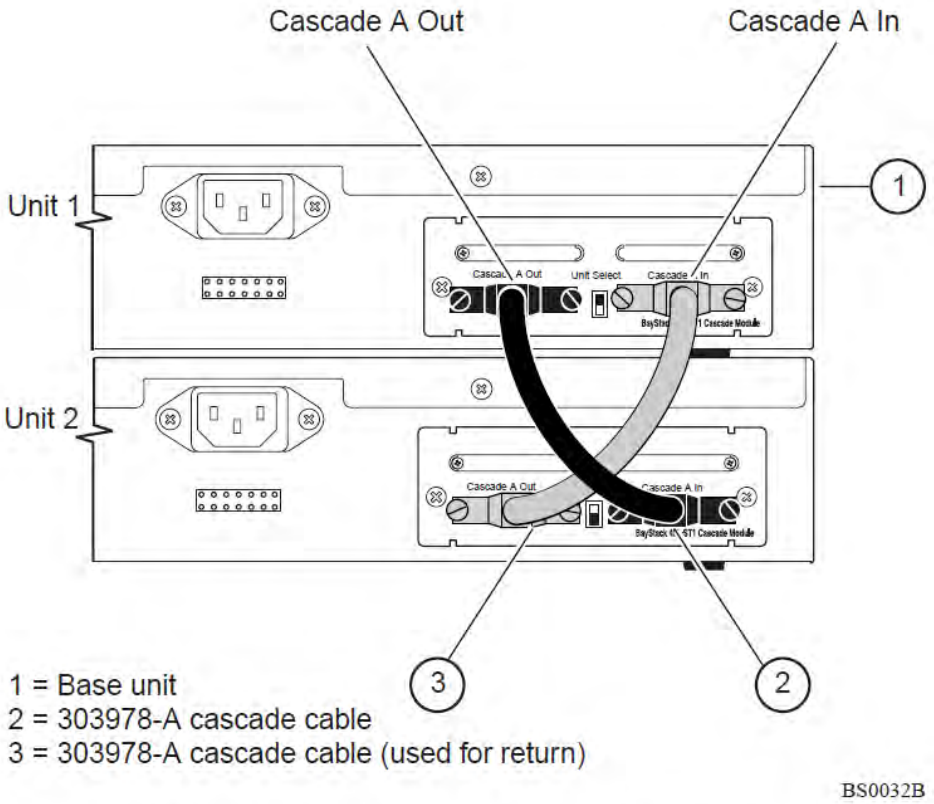
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No.	'904 Patent Claim 1	The BayStack 450 Switches
		Nortel Networks' BayStack 450 Switches disclose that "[f]or an overview of the fail-safe stacking feature that is available for the BayStack 450 switches, see 'Stack Operation' following this section." BayStack 450 Manual at 48 of 290. Indeed, Nortel Networks' BayStack 450 Switches provide an overview of the fail-safe stacking feature, which discloses "BayStack 450 switches that are configured with BayStack 450 software version V1.1.0 or later provide fail-safe stackability when you install the optional BayStack 400-ST1 Cascade Module. You can connect up to eight switches to provide uninterrupted connectivity for up to 224 ports (see 'Fail-Safe Stack Application' on page 1-22). The entire stack is manageable as a single unit. Installation instructions are provided with the BayStack 400-ST1 Cascade Module (see your Nortel Networks sales representative for ordering information)." BayStack 450 Manual at 49 of 290. Further, Nortel Networks' BayStack 450 Switches disclose that the "BayStack 400-ST1 Cascade Module," which is shown in Figure 1-10 below. BayStack 450 Manual at 49 of 290; *id.*, FIG. 1-10.

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		 **Figure 1-10. BayStack 400-ST1 Front-Panel Components** In addition, Nortel Networks' BayStack 450 Switches disclose that the "Unit Select switch (up = Base) determines the base unit for the stack configuration (see "Base Unit " on page 1-25). The Unit Select switch status is displayed on the BayStack 450 LED display panel. When the Unit Select switch is in the Base (up) position, all other Unit Select switches in the stack configuration must be set to Off (down)." BayStack 450 Manual at 50 of 290. Further still, Nortel Networks' BayStack 450 Switches disclose a Cascade A In Connector that provides "an attachment point for accepting a cascade cable connection from an adjacent unit in the stack. A return cable from this unit's Cascade A Out connector to the adjacent unit's Cascade A In connector completes the stack connection (see the example shown in

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		Figure 1-11)." BayStack 450 Manual at 50 of 290. Figure 1-11 shows physical interface lines of cascading cables and is reproduced below. BayStack 450 Manual at 50 of 290, FIG. 1-11.  **Figure 1-11. Connecting Cascade Cables** In one example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the bottom of the stack and connects a plurality of slaves via physical interface lines in a "Stack Up Configuration." BayStack 450 Manual at 54 of 290.

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No.	'904 Patent Claim 1	The BayStack 450 Switches

Stack Up Configurations

In Figure 1-12, data flows from the base unit (unit 1) to the next switch, which is assigned as unit 2, and continues until the last switch in the stack is assigned as unit 8. The physical order of the switches is *from bottom to top* (unit 1 to unit 8).

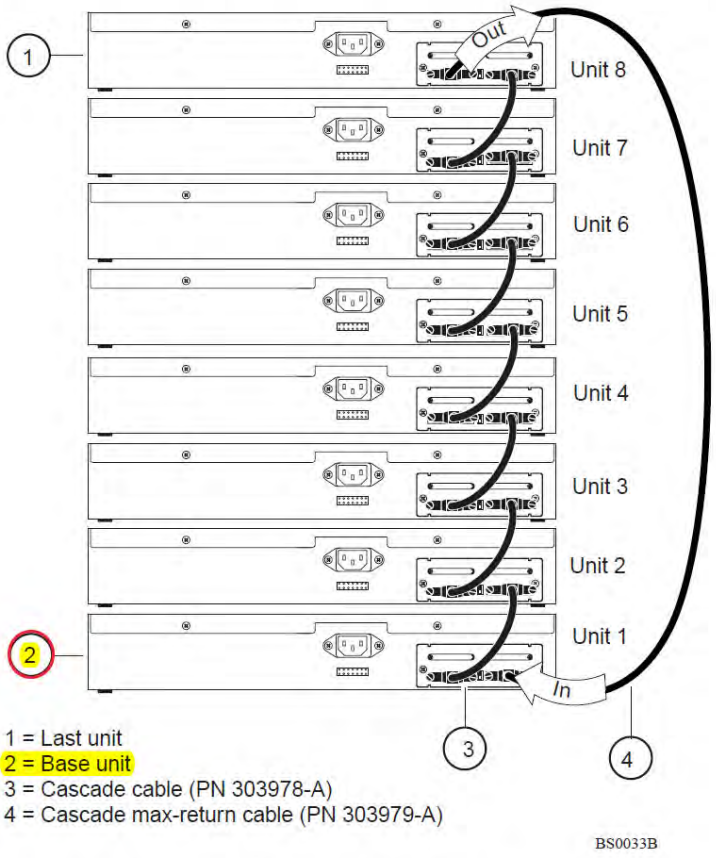


Figure 1-12. Stack Up Configuration Example

BayStack 450 Manual at 54 of 290, FIG. 1-12 (annotated).

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		In another example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the top of the stack and connects a plurality of slaves via physical interface lines in a "Stack Down Configuration." BayStack 450 Manual at 55 of 290.

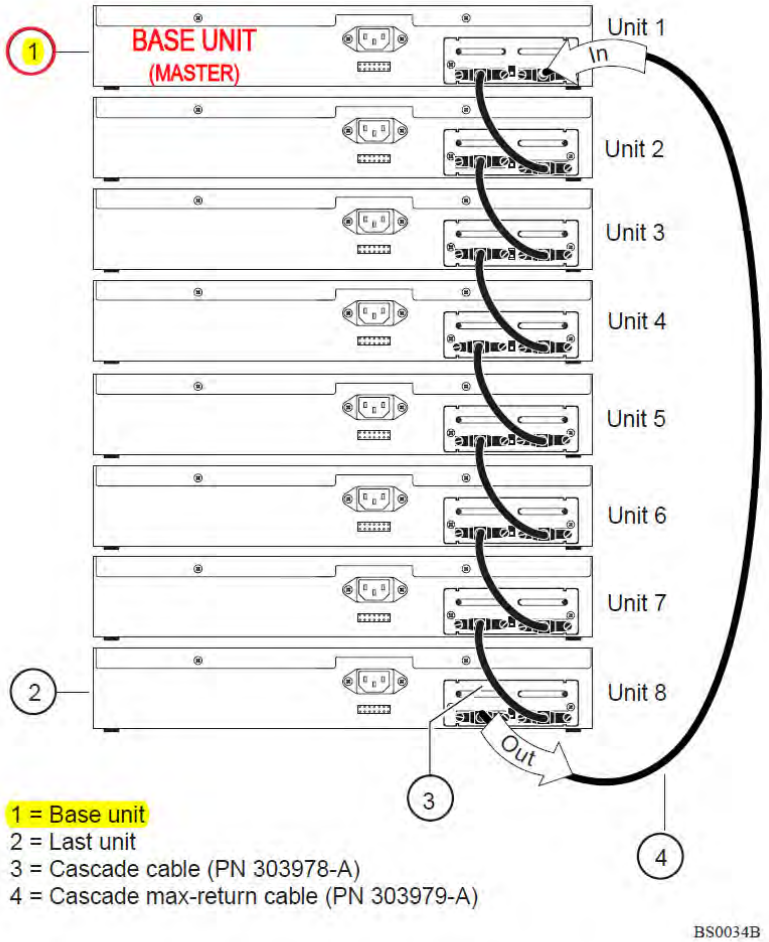


Figure 1-13. Stack Down Configuration Example

BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		As shown below, in the Stack Down Configuration, the physical interface lines connect a plurality of slave units.

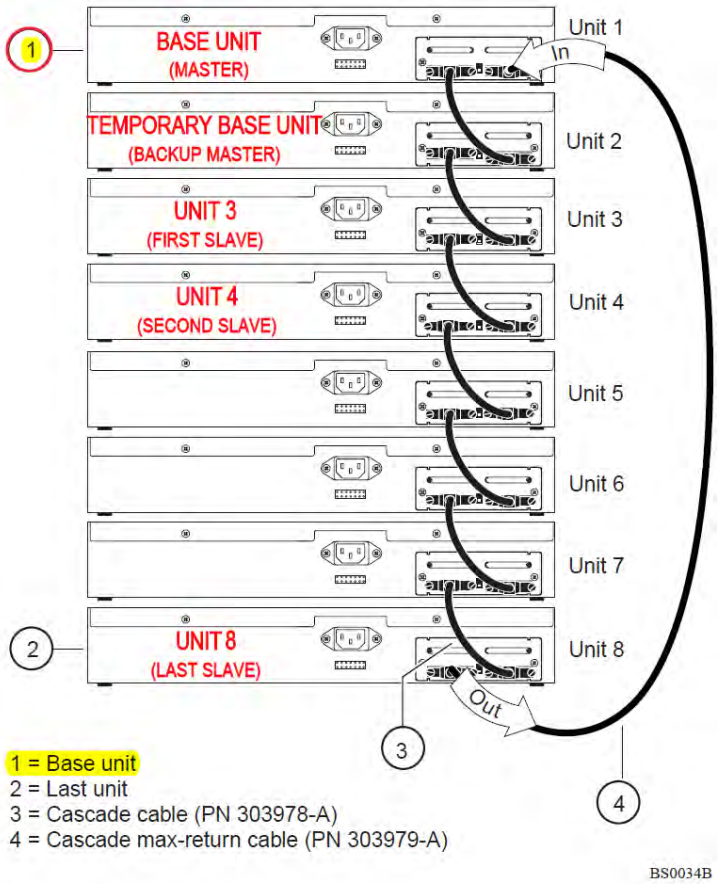


Figure 1-13. Stack Down Configuration Example

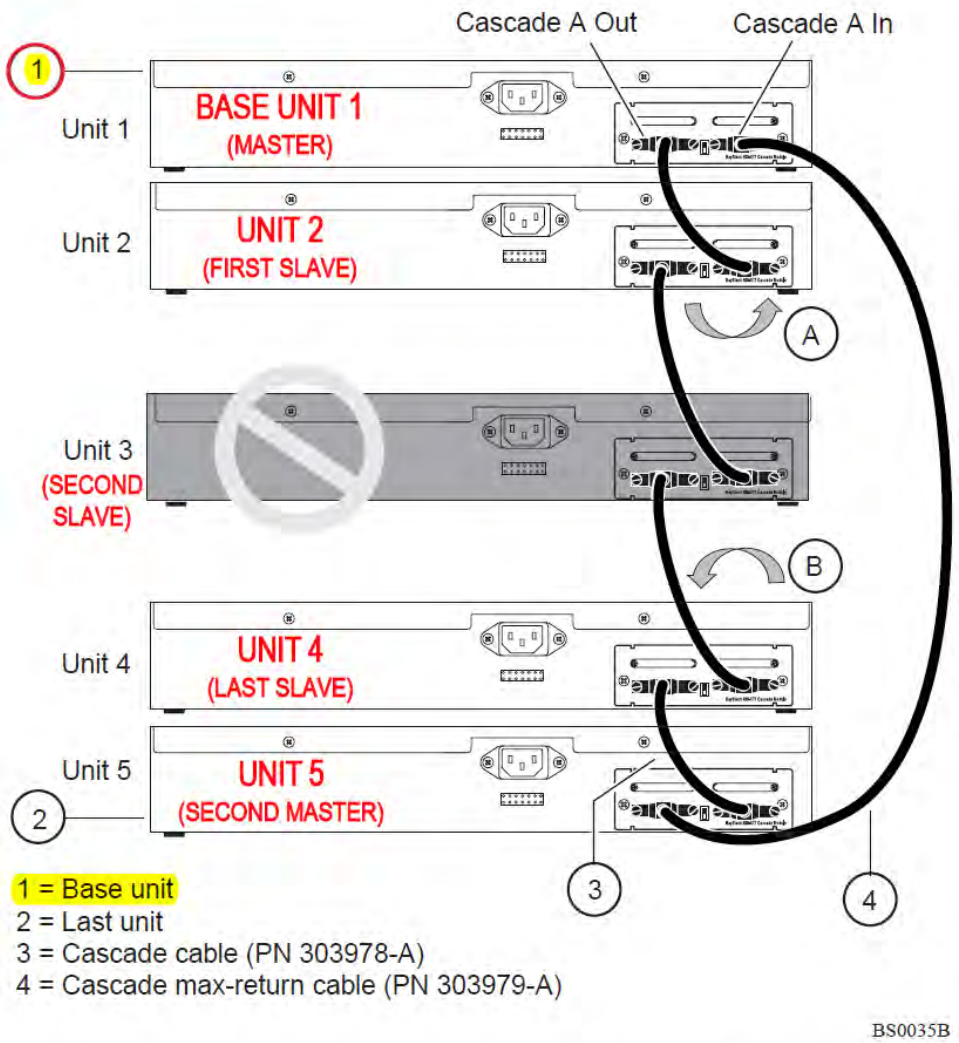
BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

Further, the BayStack 450 Switches disclose connectivity using physical interface lines using cables, stating "BayStack 450 switches allow you to connect up to 8 units into a redundant

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. The BayStack 450 Switches further disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

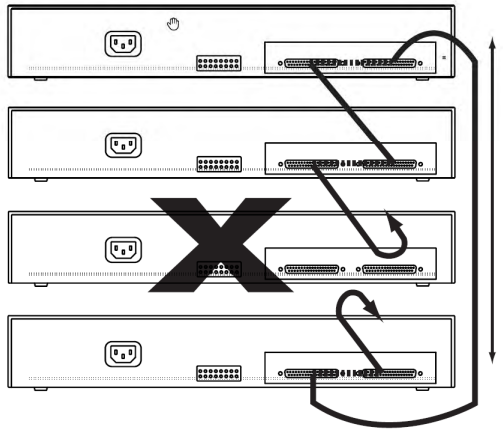
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No.	'904 Patent Claim 1	The BayStack 450 Switches
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

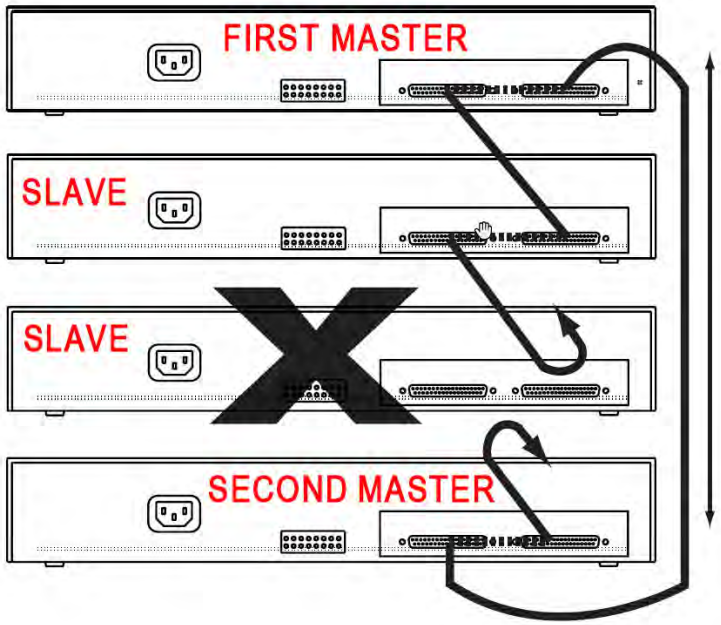
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No.	'904 Patent Claim 1	The BayStack 450 Switches
1[e]	each daisy chain comprising at least a first slave unit connected one of the physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit.	The BayStack 450 Switches disclose each daisy chain comprising at least a first slave unit connected one of the physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit. For example, the BayStack 450 Switches may include several stacked switch units that are slave units; that is, the BayStack 450 Switches are stackable switches that may include a plurality of slave units. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that the BayStack 450 Switches are found to not meet this limitation, each daisy chain comprising at least a first slave unit connected one of the physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit would have been obvious to a person having ordinary skill in the art, as explained below. Further, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption." BayStack 450 Data Sheet at 2 of 8. Figure 1, shown below, illustrates the plurality of physical interface lines that link the slave units in a daisy chain, in which the slave units are mutually connected in series by the physical interface lines therebetween.

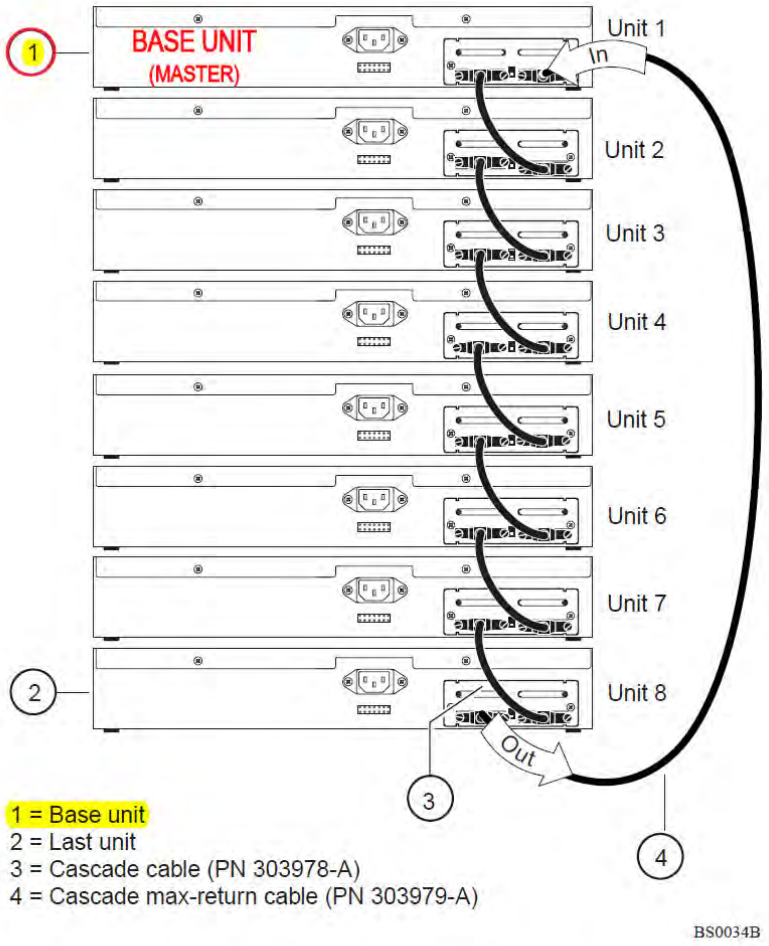
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No.	'904 Patent Claim 1	The BayStack 450 Switches
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

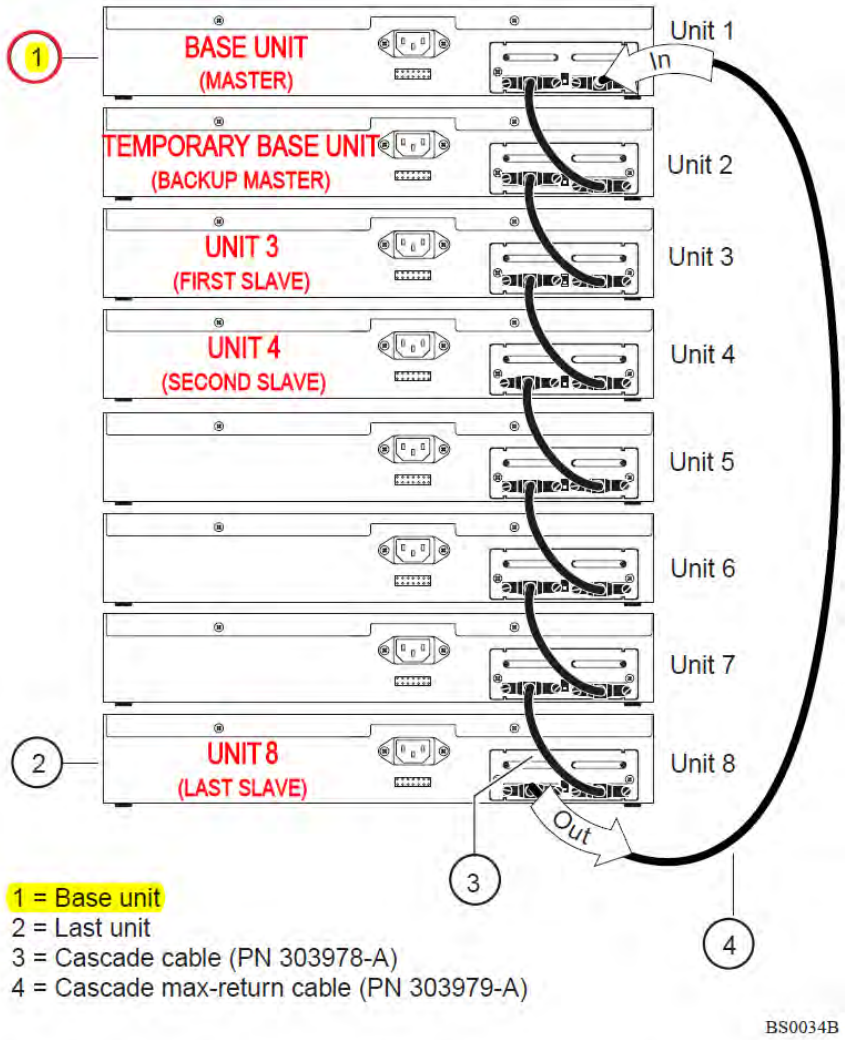
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No.	'904 Patent Claim 1	The BayStack 450 Switches
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In another example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the top of the stack and connects a plurality of slaves via physical interface lines in a "Stack Down Configuration." BayStack 450 Manual at 55 of 290.

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		 **Figure 1-13. Stack Down Configuration Example** BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated). As shown below, in the Stack Down Configuration, the physical interface lines connect a plurality of slave units.

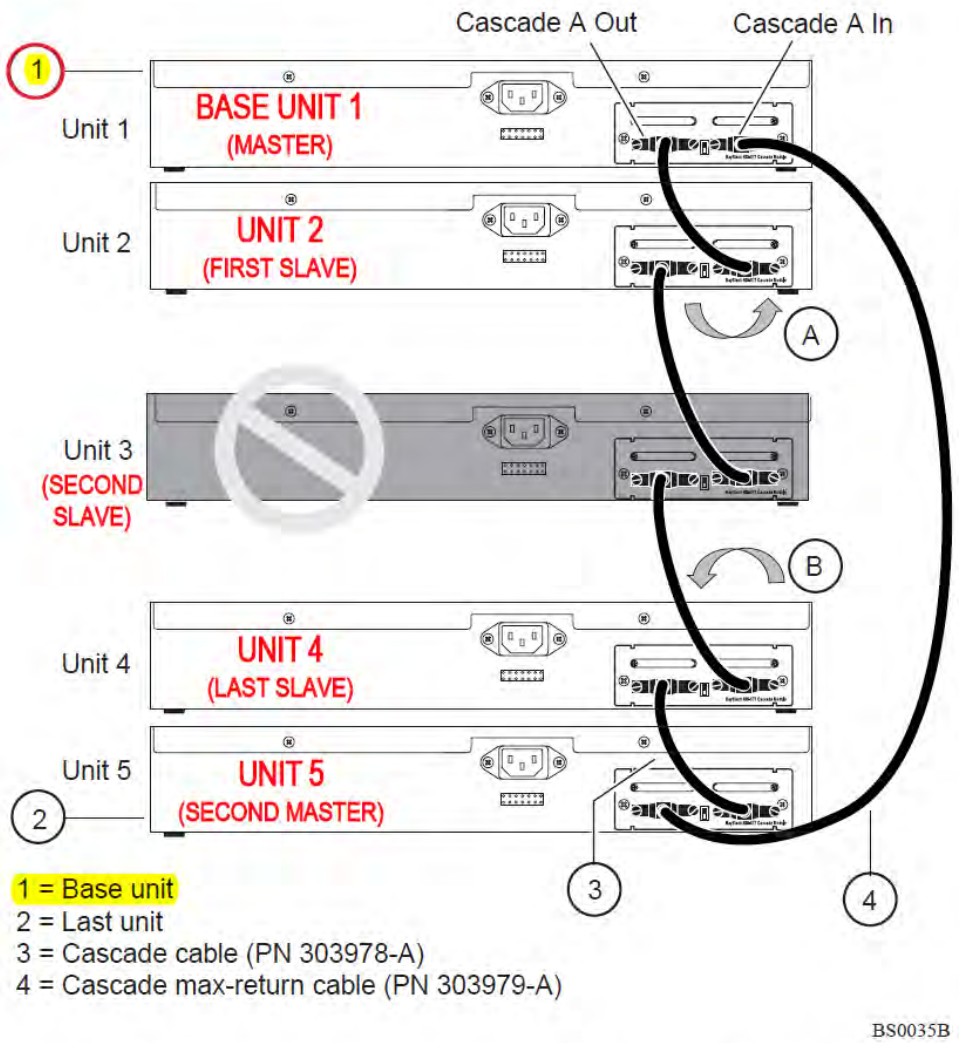
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No.	'904 Patent Claim 1	The BayStack 450 Switches
		 **Figure 1-13. Stack Down Configuration Example** BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		Further, the BayStack 450 Switches disclose connectivity using physical interface lines using cables, stating "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. The BayStack 450 Switches further disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

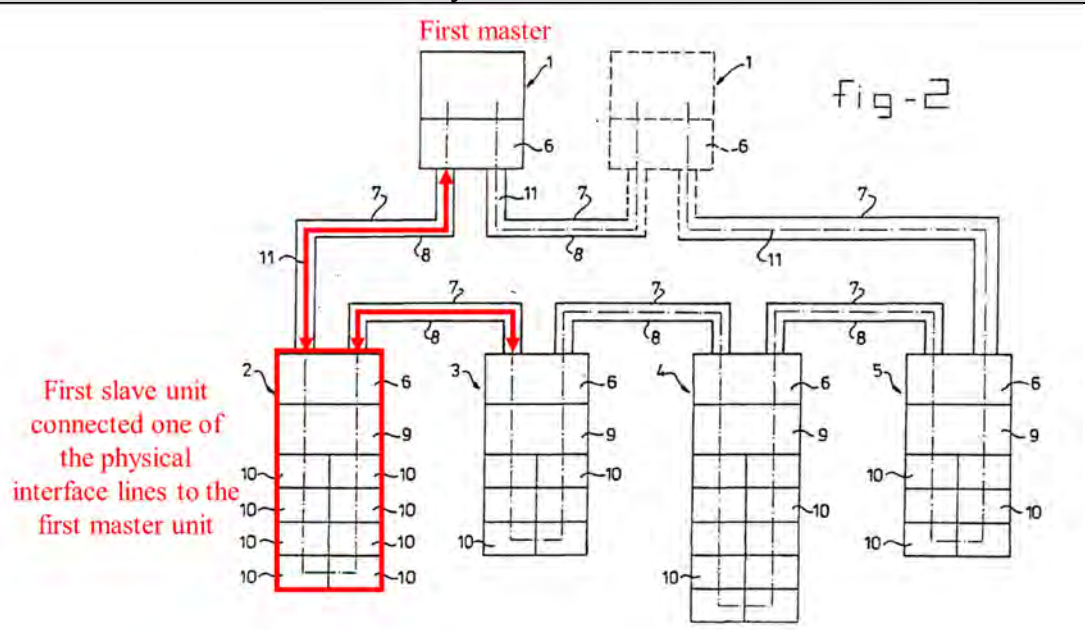
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No.	'904 Patent Claim 1	The BayStack 450 Switches
		Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, the BayStack 450 Switches in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 1[e] of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, U.S. Patent No. 6,981,034 B2 to Ding et al. ("Ding") is titled "Decentralized Management Architecture for a Modular Communication System," was filed June 30, 1999, and issued on December 27, 2005. At filing and issuance, Ding was assigned to the same company, Nortel Networks, that made the BayStack 450 Switches. Ding, Cover. Indeed, Ding discloses that "[i]n a preferred embodiment of the present invention, each Ethernet Switching module is a particular device that is known as the BayStack™ 450 stackable Ethernet Switch." Thus, Ding discloses that its patented invention is embodied by the BayStack 450 Switches. And, as discussed below, Ding discloses a base module, switching modules, and stacking configuration that are substantially similar to the BayStack 450 Switches that the base unit, switching units, and fail-safe cascade stacking architecture, respectively. Moreover, as discussed below, Ding and the BayStack 450 Switches share many identical specifications, such as the ability to operate at 10 Mbps or 100 Mbps and the maximum throughput of 2.5 Gbps for wire-speed transmissions. Ding discloses network a dual ring bus network where the base module monitors network management objects in the ring, such as through parameters for a trap event. ("Also as described above, the base module is responsible for generating "trap' messages on behalf of the Stack. FIG. 6 is a logic flow diagram showing exemplary management/ control logic (115, 125, 135) logic for generating "trap" messages. The logic begins in step 602. If the Ethernet Switching module is operating as the base module (YES in step 604), then the management/control logic (115, 125, 135) monitors the network management objects and param eters for a network management trap event, in Step 606. Upon detecting a network management trap event (YES in step 608), the management/control logic (115, 125, 135)

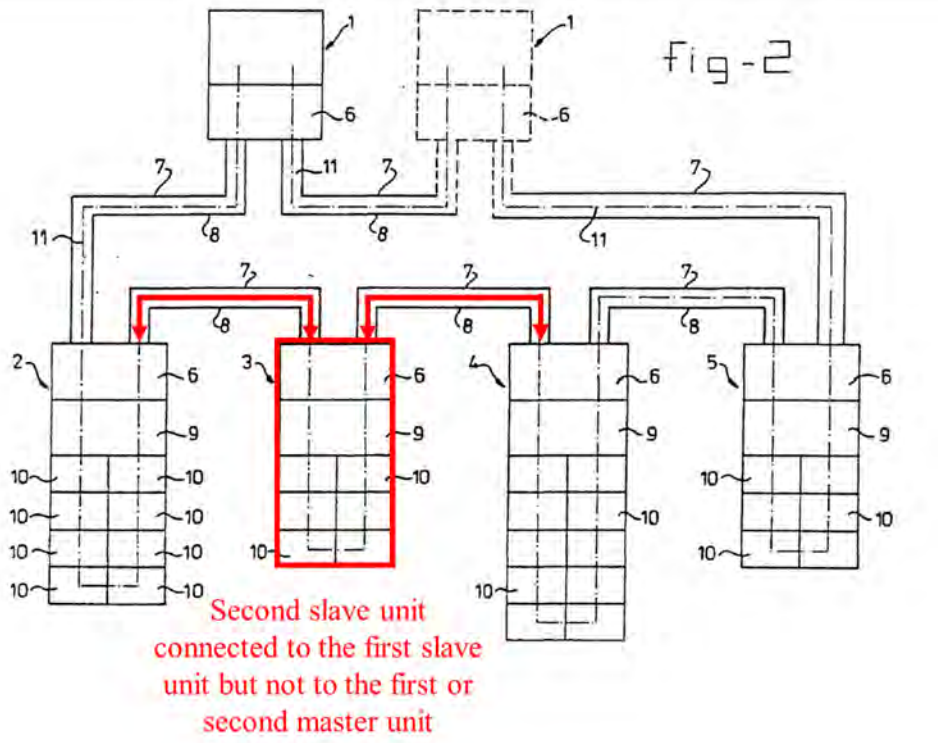
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No.	'904 Patent Claim 1	The BayStack 450 Switches
		sends a "trap' message, in step 610, and returns to step 606 to continue monitoring for network management trap events" Ding, 15:23-35. For example, Vink '324 discloses, due to the nature of the cascade and/or shift register arrangement, that substations and masters are only connection to a single substation or master in the upstream direction, and a single substation or master in the downstream direction. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Vink '324 15:28-35 ("Figure 2 shows diagrammatically the architecture of a more extensive communication system according to the invention, comprising a master station (master) 1 and a plurality of substations (slaves) 2, 3, 4, 5. The master 1 and the slaves 2, 3, 4, 5 are mutually connected via a double-ring transmission system composed of transmitting/ receiving units 6 and transmission lines 7, 8. The transmission lines 7, 8 may, for example, consist of coaxial cable, optical fibre cable and the like.").

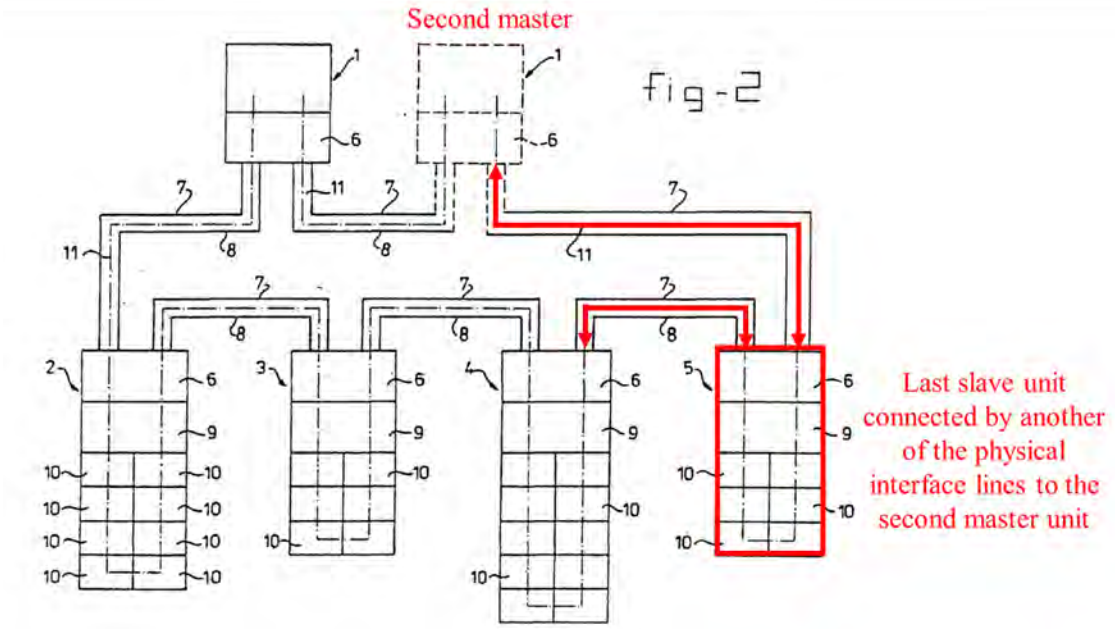
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No.	'904 Patent Claim 1	The BayStack 450 Switches
		 Fig. 2 (annotation added)

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		 Fig. 2 (annotation added)

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No.	'904 Patent Claim 1	The BayStack 450 Switches
		 Fig. 2 (annotation added)

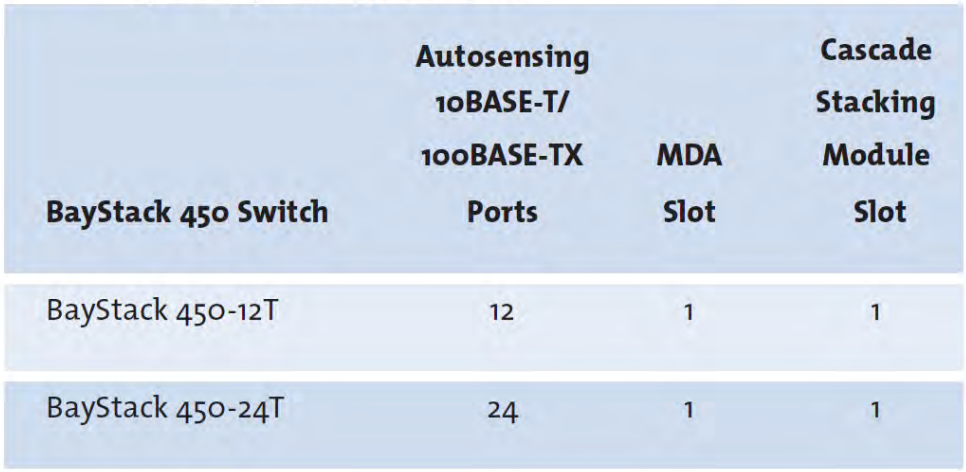
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<table>
<tr><th>No.</th><th>’904 Patent Claim 2</th><th>The BayStack 450 Switches</th></tr>
<tr><td>2</td><td>Apparatus according to claim 1, wherein the network comprises an asynchronous transfer mode (ATM) network.</td><td>The BayStack 450 Switches disclose apparatus according to claim 1, wherein the network comprises an asynchronous transfer mode (ATM) network.

For example, the BayStack 450 Switches disclose network connectivity that includes provisioning services for ATM networks.

Nortel Networks’ BayStack 450 Switches disclose that “[a]s described in Table 1, BayStack 450 Switches are available in 24- and 12-port configurations, each with a Media Dependent Adapter (MDA) slot, as well as a cascade stacking module slot.” BayStack 450 Data Sheet at 2 of 8.

Table 1: Port, MDA, and Stacking Module Slot Configurations of the BayStack 450 Switches.

BayStack 450 Data Sheet at 2 of 8, Table 1.

Nortel Networks’ BayStack 450 Switches disclose “MDAs for Gigabit Ethernet, Fast Ethernet fiber or 10/100 autosense Ethernet ports, and future ATM uplinks provide the high-bandwidth choices that fit into any network architecture.” BayStack 450 Data Sheet at 2 of 8.</td></tr>
</table>

BayStack 450 Switch	Autosensing 10BASE-T/ 100BASE-TX Ports	MDA Slot	Cascade Stacking Module Slot
BayStack 450-12T	12	1	1
BayStack 450-24T	24	1	1

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No.	'904 Patent Claim 3	The BayStack 450 Switches
3	Apparatus according to claim 1, wherein the network comprises an Internet protocol (IP) network.	The BayStack 450 Switches disclose apparatus according to claim 1, wherein the network comprises an Internet protocol (IP) network. For instance, Nortel Networks' BayStack 450 Switches disclose Internet Group Management Protocol ("IGMP") snooping capabilities, which uses an IP network. *See, e.g.*, BayStack 450 Data Sheet at 3 of 8. More specifically, Nortel Networks' BayStack 450 Switches disclose that "[t]he BayStack 450 Switches feature a new level of efficient IP MultiCast support by examining ('snooping') all IGMP traffic in hardware at line rate, and pruning unwanted data streams from affecting network or endstation performance." BayStack 450 Data Sheet at 3 of 8. And Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. Further, Nortel Networks' BayStack 450 Switches disclose "BaySecure™ allows authentication of all access not only to the switches for management and configuration but access to the infrastructure through these switches. Integrated with DHCP and other IP services from Bay Networks, this software feature limits access to the network to authorized and trusted users with full tracking of network connection." BayStack 450 Data Sheet at 4 of 8.

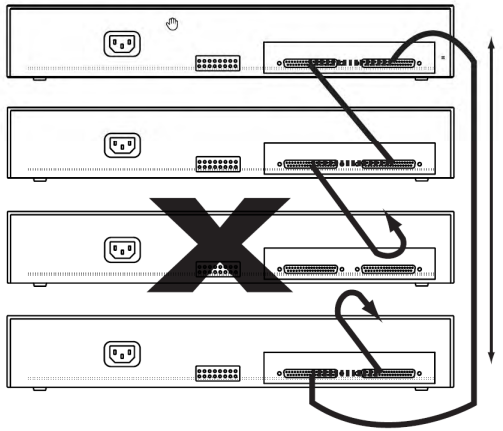
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No.	'904 Patent Claim 4	The BayStack 450 Switches
4[preamble]	Network access apparatus, comprising:	To the extent the preamble is found to be limiting, the BayStack 450 Switches disclose a network access apparatus. *See supra* at 1[preamble].
4[a]	first and second master units, each comprising a physical interface to a packet-switched network;	The BayStack 450 Switches disclose first and second master units, each comprising a physical interface to a packet-switched network. *See supra* at 1[a].
4[b]	a plurality of slave units,	The BayStack 450 Switches disclose a plurality of slave units. *See supra* at 1[b].
4[c]	each slave unit comprising one or more ports to respective subscriber lines; and	The BayStack 450 Switches disclose each slave unit comprising one or more ports to respective subscriber lines. *See supra* at 1[c].
4[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	the BayStack 450 Switches disclose a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. *See supra* at 1[d].
4[e]	each daisy chain comprising at least a first slave unit connected by one of the physical interface	The BayStack 450 Switches disclose each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit. *See supra* at 1[e].

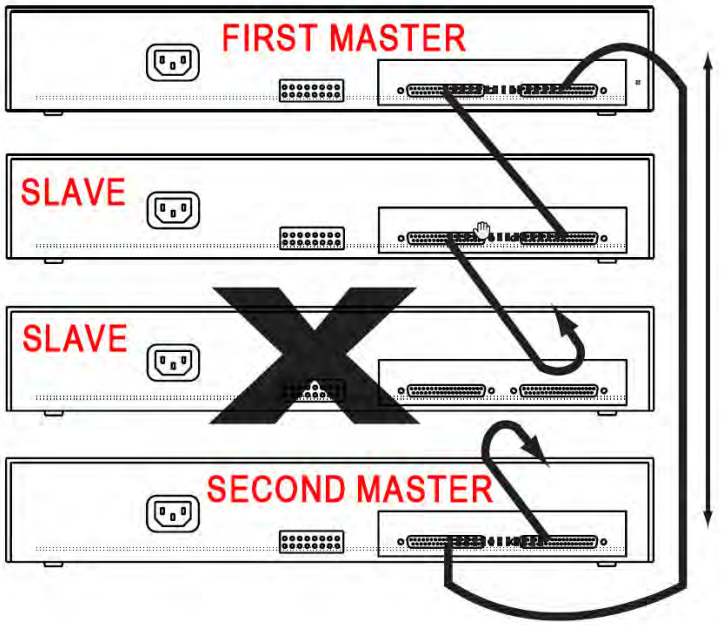
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No.	'904 Patent Claim 4	The BayStack 450 Switches
	lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit,	
4[f]	wherein in normal operation, downstream data packets received from the network are passed from the first master unit to each of the daisy chains via the first slave unit in each chain, and upstream data packets received by the slaves in each chain from the subscriber lines are passed via the first slave unit in the chain to the first master unit for transmission over the network.	The BayStack 450 Switches disclose wherein in normal operation, downstream data packets received from the network are passed from the first master unit to each of the daisy chains via the first slave unit in each chain, and upstream data packets received by the slaves in each chain from the subscriber lines are passed via the first slave unit in the chain to the first master unit for transmission over the network. Nortel Networks' BayStack 450 Switches are configured in normal operation to broadcast data to each unit, as shown below, with which data packets received from the network by the first master unit are transmitted via the first slave unit in each chain. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that the BayStack 450 Switches are found to not meet this limitation, wherein in normal operation, downstream data packets received from the network are passed from the first master unit to each of the daisy chains via the first slave unit in each chain, and upstream data packets received by the slaves in each chain from the subscriber lines are passed via the first slave unit in the chain to the first master unit for transmission over the network would have been obvious to a person having ordinary skill in the art, as explained below. Nortel Networks' BayStack 450 Switches disclose that "BayStack 450 Switches are available in 24- and 12-port configurations, each with a Media Dependent Adapter (MDA) slot, as well as a cascade stacking module slot." BayStack 450 Data Sheet at 2 of 8. . Nortel Networks' BayStack 450 Switches disclose that "[u]nlike other stacking switches, BayStack 450 Switches are designed with a fail-safe cascade stacking architecture (see Figure 1)." BayStack 450 Data Sheet at 2 of 8.

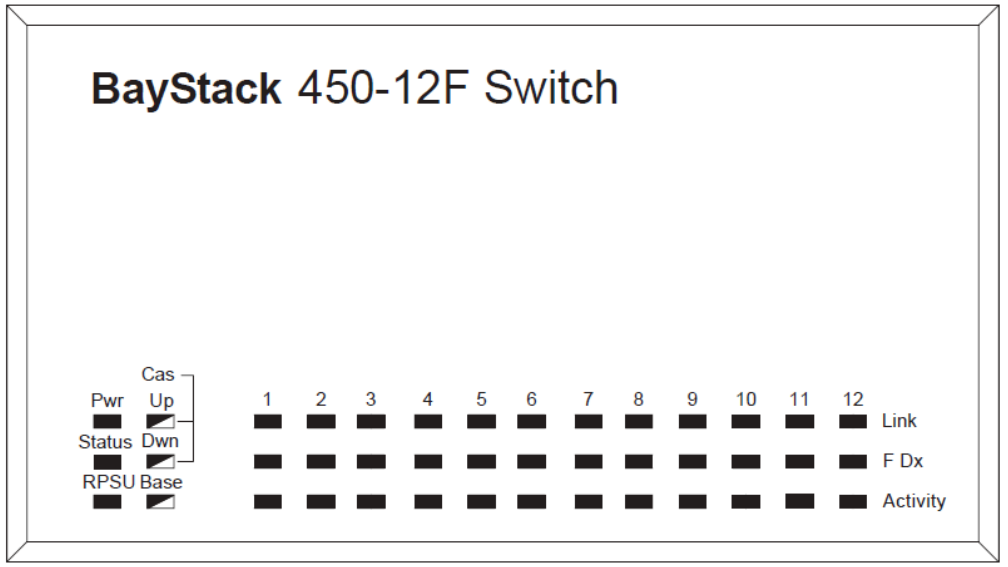
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No.	'904 Patent Claim 4	The BayStack 450 Switches
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

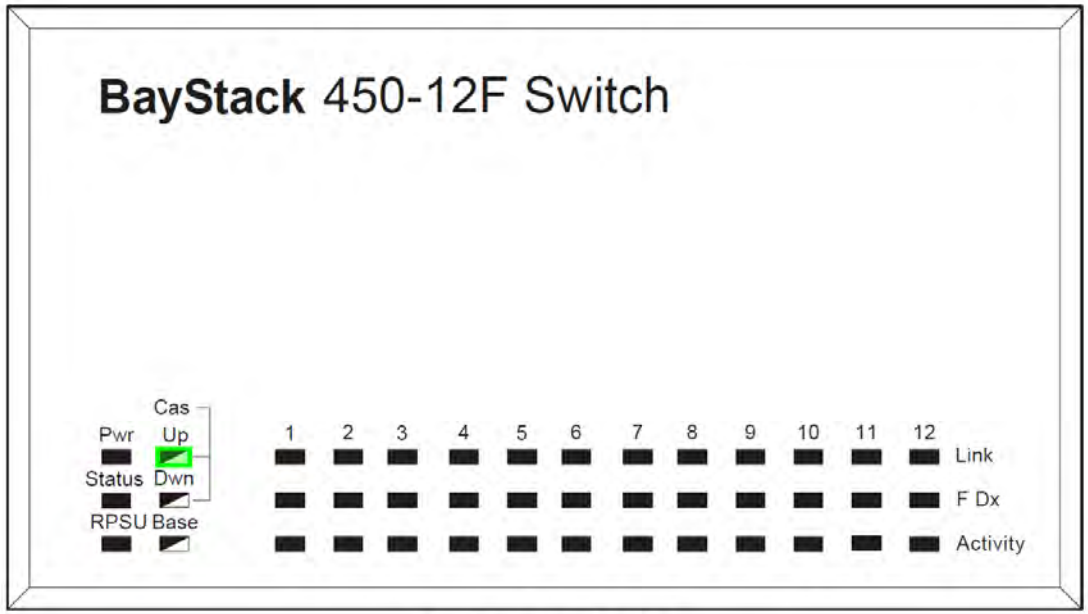
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No.	'904 Patent Claim 4	The BayStack 450 Switches
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). Nortel Networks' BayStack 450 Switches disclose that "[c]ascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption." BayStack 450 Data Sheet at 2 of 8. Nortel Networks' BayStack 450 Switches depict the BayStack 450-12F LED Display Panel, for example, in Figure 1-4 of the BayStack 450 Manual shown below.

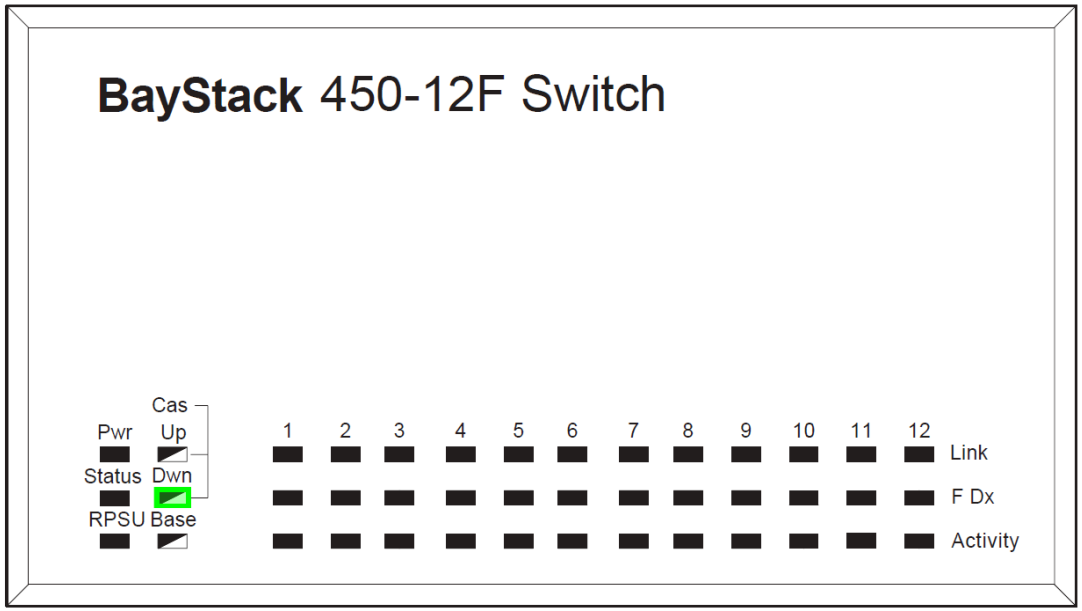
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No.	'904 Patent Claim 4	The BayStack 450 Switches
		 BayStack 450-12F = Dual color LED BS45071A **Figure 1-4. BayStack 450-12F LED Display Panel** BayStack 450 Manual at 32 of 290, FIG. 1-4. Nortel Networks' BayStack 450 Switches disclose when the Cas Up is shown as green, then "[t]he switch is connected to the upstream unit's Cascade A In connector." BayStack 450 Manual at 32 of 290. Nortel Networks' BayStack 450 Switches depicts the Cas Up (highlighted in green below).

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No.	'904 Patent Claim 4	The BayStack 450 Switches
		 BayStack 450-12F = Dual color LED BS45071A **Figure 1-4. BayStack 450-12F LED Display Panel** BayStack 450 Manual at 32 of 290, FIG. 1-4 (annotated). Nortel Networks' BayStack 450 Switches disclose when the Cas Down ("Dwn") is shown as green, then "[t]he switch is connected to the downstream unit's Cascade A Out connector." BayStack 450 Manual at 33 of 290. Nortel Networks' BayStack 450 Switches depicts the Cas Down (highlighted in green below).

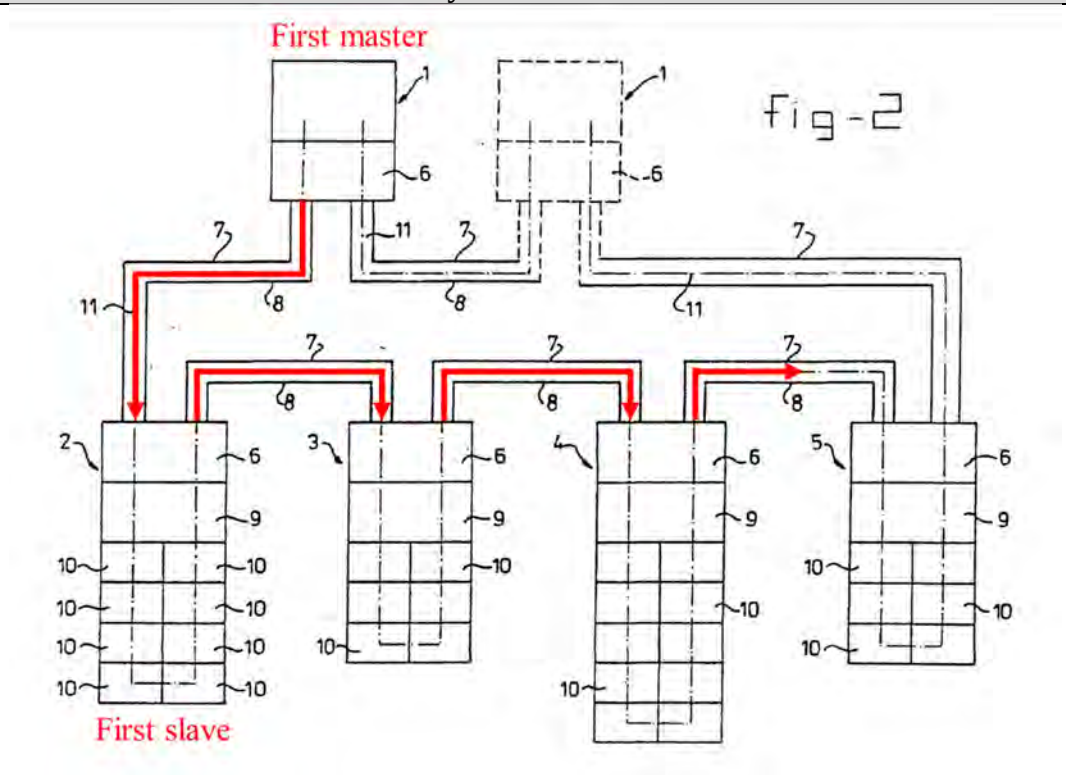
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No.	'904 Patent Claim 4	The BayStack 450 Switches
		 BayStack 450-12F = Dual color LED BS45071A **Figure 1-4. BayStack 450-12F LED Display Panel** BayStack 450 Manual at 32 of 290, FIG. 1-4 (annotated). Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, the BayStack 450 Switches in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 4[f] of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references.

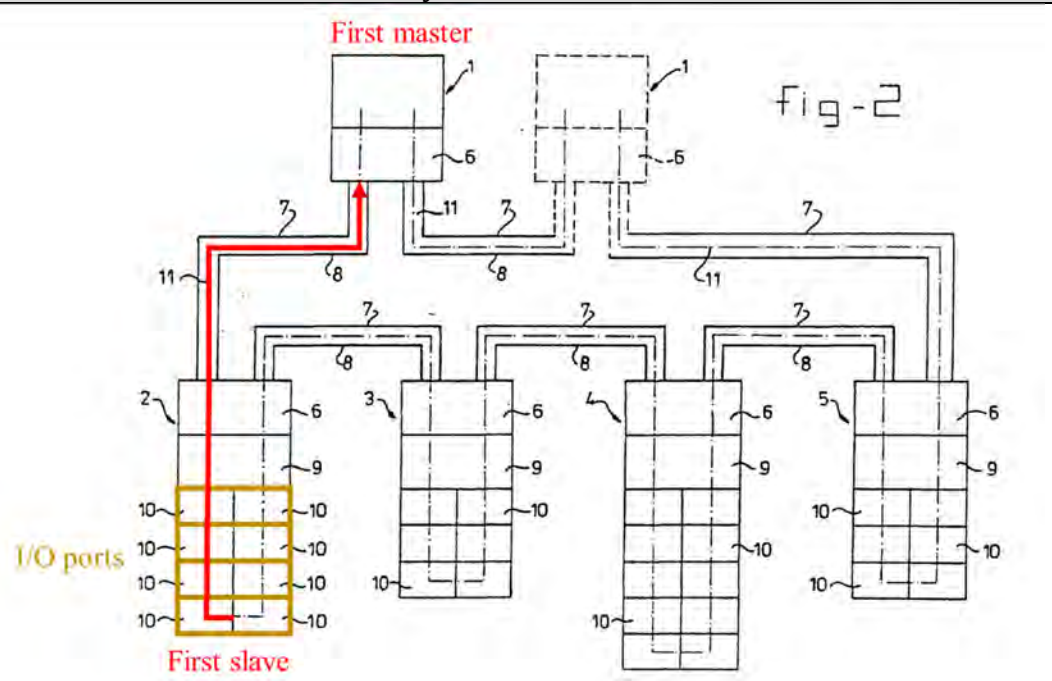
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No.	'904 Patent Claim 4	The BayStack 450 Switches
		For example, Vink '324 discloses each master and slave with a transmission line and a receiving line, where the first master's transmission line passes from the first master to the receiving line of the first slave, and the first slave passes information through a transmission line in the reverse direction to a receiving line in the first master. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Vink '324 21:10-16 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly."). Vink '324 15:28-35 ("Figure 2 shows diagrammatically the architecture of a more extensive communication system according to the invention, comprising a master station (master) 1 and a plurality of substations (slaves) 2, 3, 4, 5. The master 1 and the slaves 2, 3, 4, 5 are mutually connected via a double-ring transmission system composed of transmitting/ receiving units 6 and transmission lines 7, 8. The transmission lines 7, 8 may, for example, consist of coaxial cable, optical fibre cable and the like."). Vink '324 Claim 14 ("Communication system according to Claim 13, wherein the at least one master (1) and the slaves (2, 3, 4, 5) are arranged to transmit or receive data bits via a transmission ring (7, 8) in one and/or the other direction.").

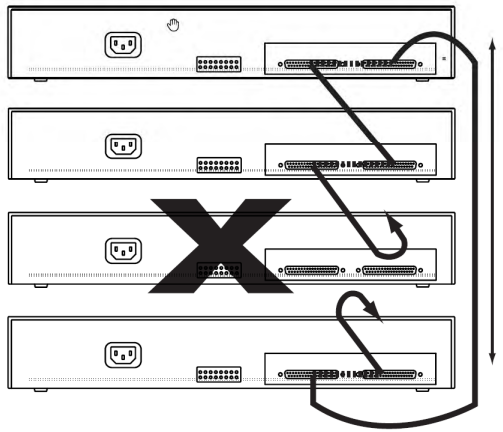
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No.	'904 Patent Claim 4	The BayStack 450 Switches
		 Fig. 2 (annotation added)

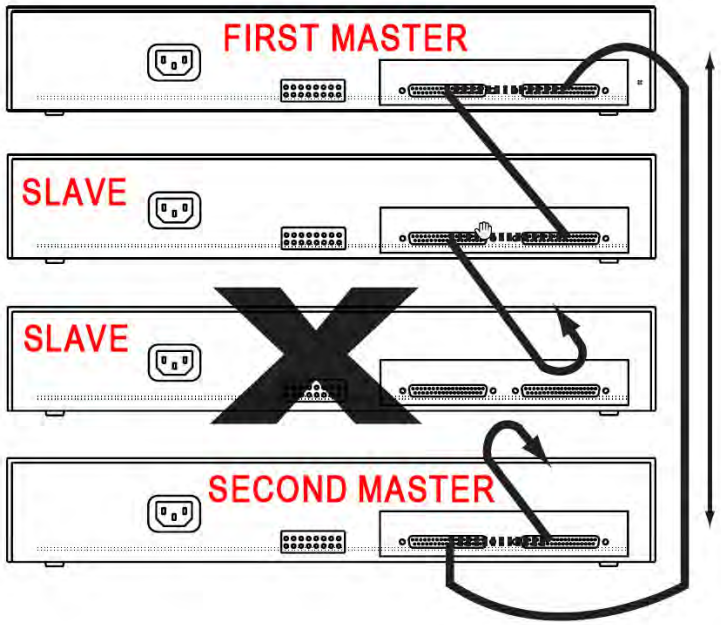
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No.	'904 Patent Claim 4	The BayStack 450 Switches
		 Fig. 2 (annotation added)

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No.	'904 Patent Claim 5	The BayStack 450 Switches
5	Apparatus according to claim 4, and comprising a protection interface, which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault.	The BayStack 450 Switches disclose apparatus according to claim 4, and comprising a protection interface, which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault. For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.*  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

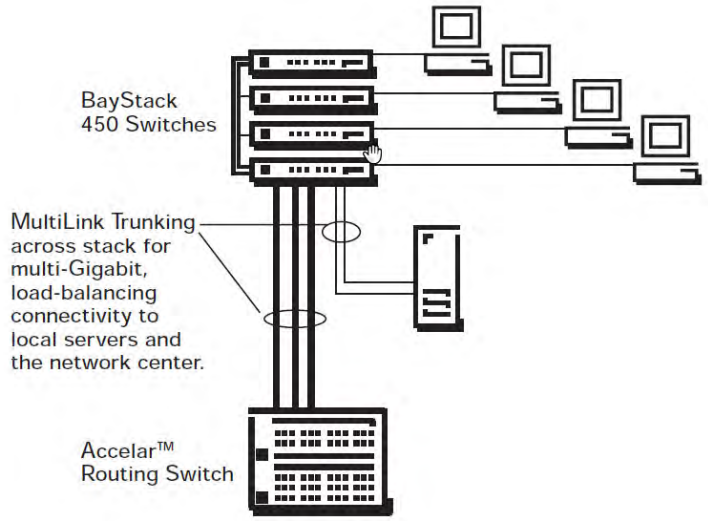
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No.	'904 Patent Claim 5	The BayStack 450 Switches
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. In this example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features where "[e]ach unit in the stack has a full copy of the stack configuration so in the unlikely event of any unit failure, operation of the stack continues without affecting application connectivity." BayStack 450 Data Sheet at 3 of 8. In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the

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No.	'904 Patent Claim 5	The BayStack 450 Switches
		redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches further disclose its fail-safe design features includes that "[e]ach switch includes a Redundant Power Supply Unit connection. Should the switch's built-in power supply fail, the Bay Networks RPSU (sold separately) will automatically supply power to the switch for uninterrupted operation." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below.

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No.	'904 Patent Claim 5	The BayStack 450 Switches
		Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.  BayStack 450 Data Sheet at 4 of 8, FIG. 2. The BayStack 450 Switches further disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290.

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No.	'904 Patent Claim 5	The BayStack 450 Switches
		Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

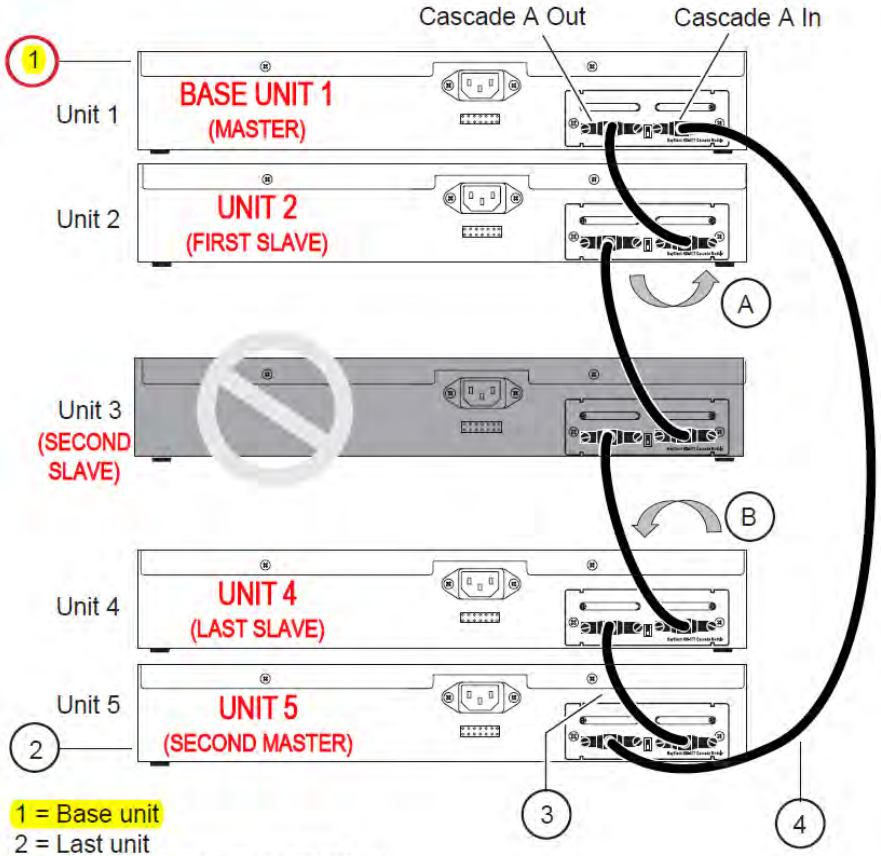


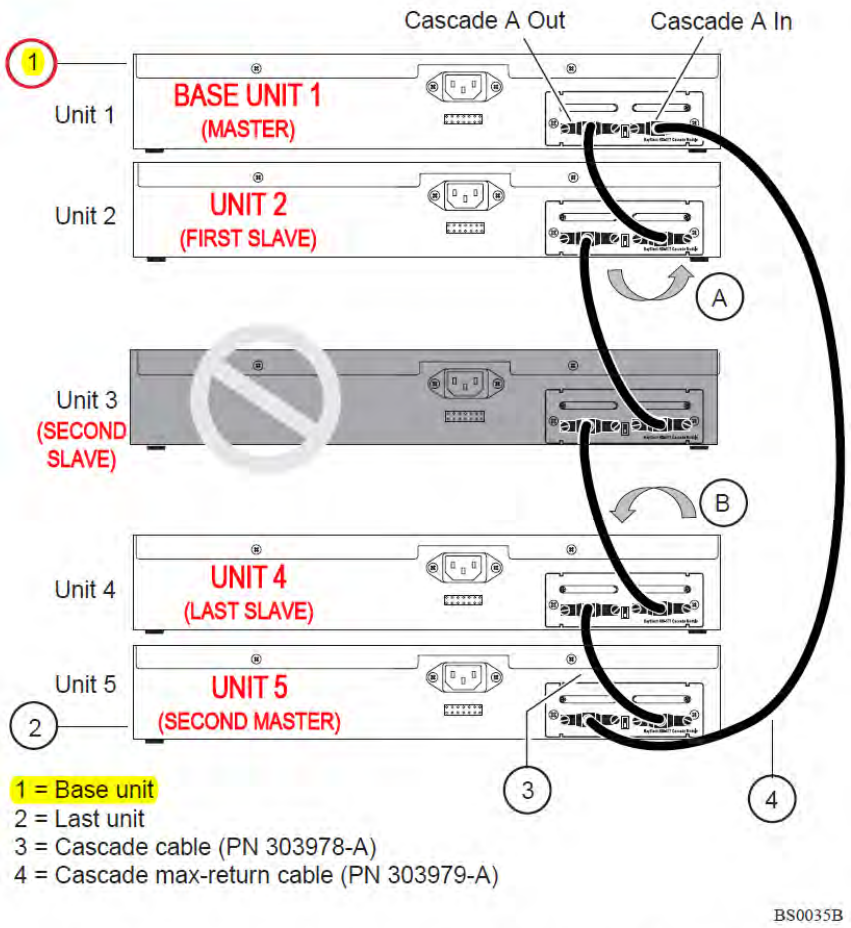
Figure 1-14. Redundant Cascade Stacking Feature

BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

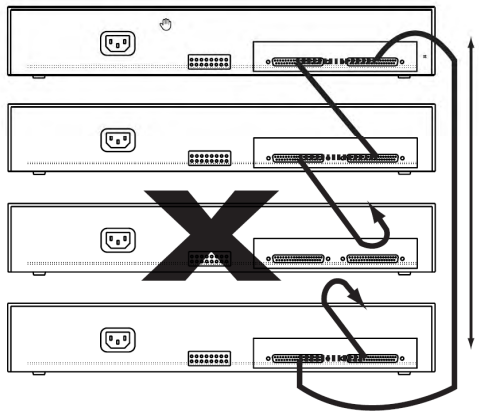
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No.	'904 Patent Claim 6	The BayStack 450 Switches
6	Apparatus according to claim 5, wherein the first master unit bicasts the upstream data packets that it receives from the slave units to the network and, via the protection interface, to the second master unit, which transmits the upstream data packets to the network.	The BayStack 450 Switches disclose apparatus according to claim 5, wherein the first master unit bicasts the upstream data packets that it receives from the slave units to the network and, via the protection interface, to the second master unit, which transmits the upstream data packets to the network. For example, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. The BayStack 450 Switches further disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

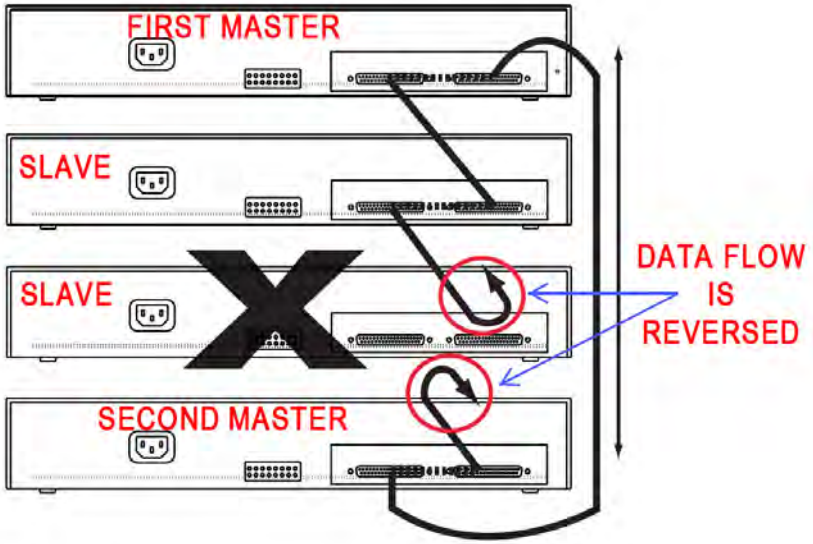
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No.	'904 Patent Claim 6	The BayStack 450 Switches
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated). Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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No.	'904 Patent Claim 7	The BayStack 450 Switches
7	Apparatus according to claim 4, wherein in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit.	The BayStack 450 Switches disclose apparatus according to claim 4, wherein in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit. For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.* 

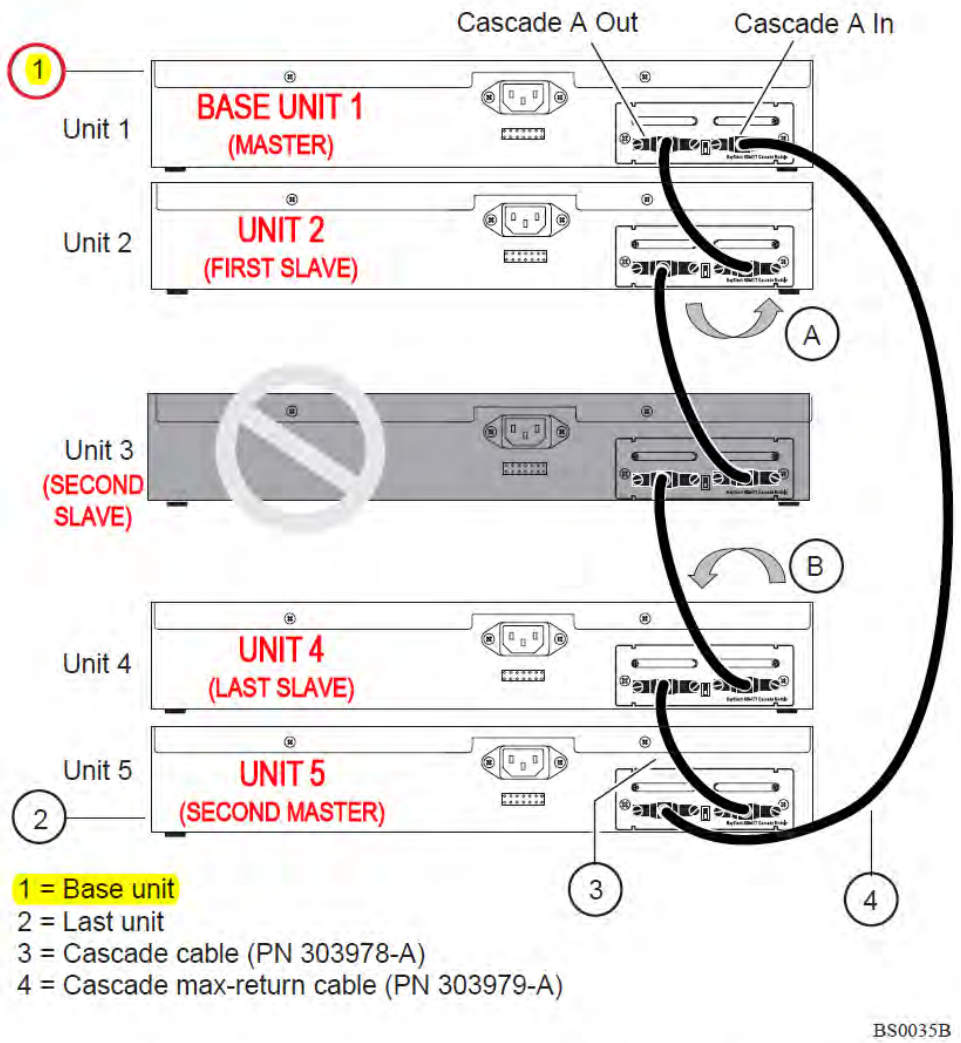
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No.	'904 Patent Claim 7	The BayStack 450 Switches
		BayStack 450 Data Sheet at 2 of 8, FIG. 1. *Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.*  BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In the event of a failure, the BayStack 450 Switches disclose a Temporary Base Unit as being a second master unit. See, e.g., BayStack 450 Manual at 33, 52, 230 of 290. For instance, the BayStack 450 Manual states that "[i]f an assigned base unit fails, the next unit in the stack order automatically becomes the new temporary base unit. This change is indicated by the Base LED on the temporary base unit's LED display panel turning on (amber). For detailed information about the base LED, see Table 1-1 on page 1-6." BayStack 450 Manual at 52 of 290.

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No.	'904 Patent Claim 7	The BayStack 450 Switches
		Further, in this alternative example, the BayStack 450 Manual describes that "[t]his automatic failover is a temporary safeguard only. If the stack configuration loses power, the temporary base unit will not power up as the base unit when power is restored. For this reason, you should always assign the temporary base unit as the base unit (set the Unit Select switch to Base) until the failed unit is repaired or replaced." BayStack 450 Manual at 52 of 290. In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290. Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

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No.	'904 Patent Claim 7	The BayStack 450 Switches
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

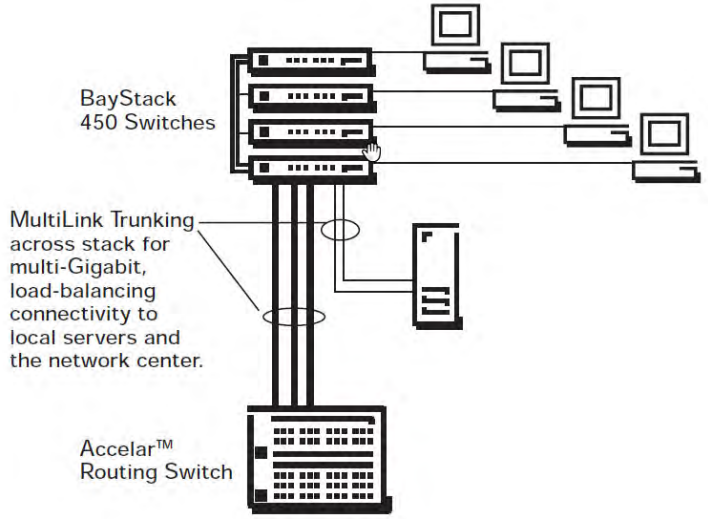
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No.	'904 Patent Claim 7	The BayStack 450 Switches
		The Baystack 450 Switches in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) Ding renders the claim, including the present limitation, obvious. Ding discloses failure protection. ("In order to coordinate management and control operations across the various cooperating Ethernet Switching modules in the Stack, one of the cooperating Ethernet Switching modules operates as the base module for the Stack. In a preferred embodiment of the present invention, a particular Ethernet Switching module is configured as the base module through a user-controlled toggle Switch on the Ethernet Switching module. If that Ethernet Switching module fails, then another Ethernet switching module (preferably the next upstream Ethernet Switching module in the Stack) automatically reconfigures itself to become the base module for the Stack. The base module is responsible for coordinating management and control for the Stack. Specifically, the base module manages the Stack configuration by ensuring that the Stack is initialized in an orderly manner, handling Stack configuration changes Such as module insertion and removal, and verifying stack integrity. The base module also coordinates certain Stack management functions that require synchronization or mutual exclusion among the various cooperating Ethernet switching modules in the stack." Ding, 8:9-30.

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No.	'904 Patent Claim 8	The BayStack 450 Switches
8	Apparatus according to claim 7, wherein the downstream packets for the slave units in the portion of the daisy chain between the location of the fault and the second master unit are conveyed to the second master unit from the first master unit via another one of the daisy chains.	The BayStack 450 Switches disclose apparatus according to claim 7, wherein the downstream packets for the slave units in the portion of the daisy chain between the location of the fault and the second master unit are conveyed to the second master unit from the first master unit via another one of the daisy chains. In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. In addition, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below.

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No.	'904 Patent Claim 8	The BayStack 450 Switches
		Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.  BayStack 450 Data Sheet at 4 of 8, FIG. 2.

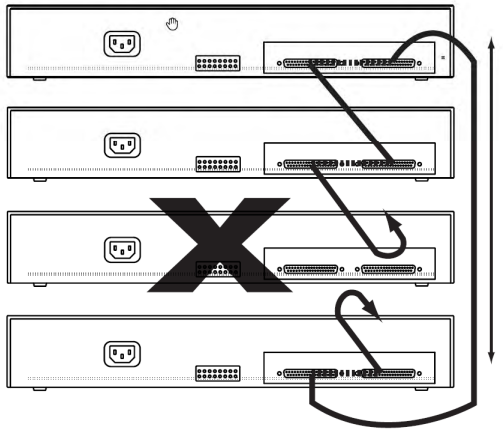
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No.	'904 Patent Claim 9	The BayStack 450 Switches
9[preamble]	Network access apparatus, comprising:	To the extent the preamble is found to be limiting, the BayStack 450 Switches disclose a network access apparatus. *See supra* at 1[preamble].
9[a]	first and second master units, each comprising a physical interface to a packet-switched network;	The BayStack 450 Switches disclose first and second master units, each comprising a physical interface to a packet-switched network. *See supra* at 1[a].
9[b]	a plurality of slave units,	The BayStack 450 Switches disclose a plurality of slave units. *See supra* at 1[b].
9[c]	each slave unit comprising one or more ports to respective subscriber lines; and	The BayStack 450 Switches disclose each slave unit comprising one or more ports to respective subscriber lines. *See supra* at 1[c].
9[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	The BayStack 450 Switches disclose a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. *See supra* at 1[d].
9[e]	each daisy chain comprising at least a first slave unit connected by one of the physical interface	The BayStack 450 Switches disclose each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit. *See supra* at 1[e].

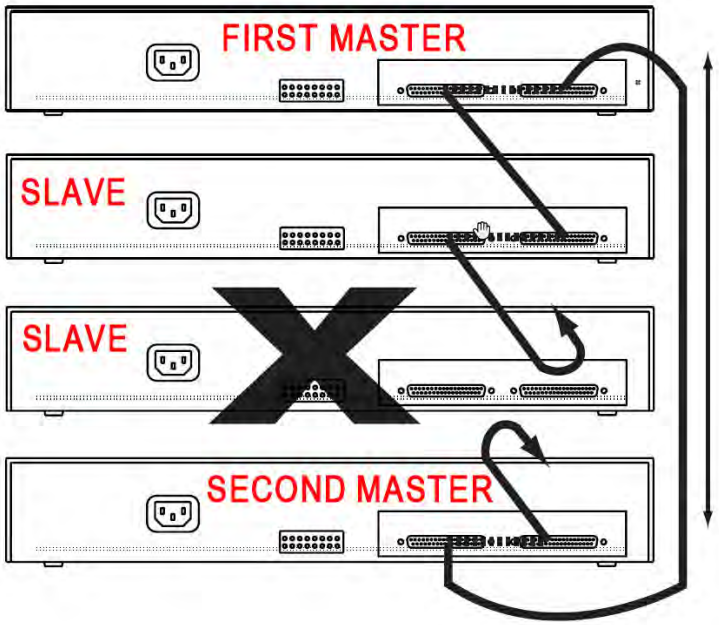
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No.	'904 Patent Claim 9	The BayStack 450 Switches
	lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit, wherein each of the first and second master units comprises:	
9[f]	a switch, configured to route data packets between the respective physical interface and the one or more daisy chains; and	The BayStack 450 Switches disclose wherein each of the first and second master units comprises: a switch, configured to route data packets between the respective physical interface and the one or more daisy chains. For example, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption." BayStack 450 Data Sheet at 2 of 8. Figure 1, shown below, illustrates the plurality of physical interface lines that link the slave units in a daisy chain, in which the slave units are mutually connected in series by the physical interface lines therebetween.

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No.	'904 Patent Claim 9	The BayStack 450 Switches
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

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No.	'904 Patent Claim 9	The BayStack 450 Switches
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In one example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the bottom of the stack in an aptly-named "Stack Up Configuration." BayStack 450 Manual at 54 of 290.

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No.	'904 Patent Claim 9	The BayStack 450 Switches

Stack Up Configurations

In Figure 1-12, data flows from the base unit (unit 1) to the next switch, which is assigned as unit 2, and continues until the last switch in the stack is assigned as unit 8. The physical order of the switches is *from bottom to top* (unit 1 to unit 8).

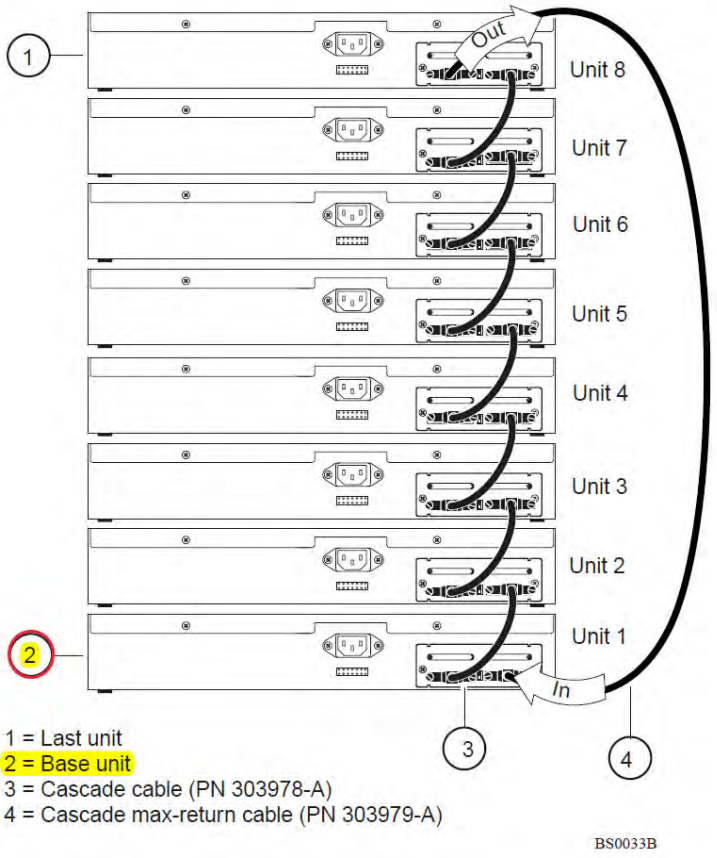


Figure 1-12. Stack Up Configuration Example

BayStack 450 Manual at 54 of 290, FIG. 1-12 (annotated).

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No.	'904 Patent Claim 9	The BayStack 450 Switches
		In another example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the top of the stack in the also aptly-named "Stack Down Configuration." BayStack 450 Manual at 55 of 290.

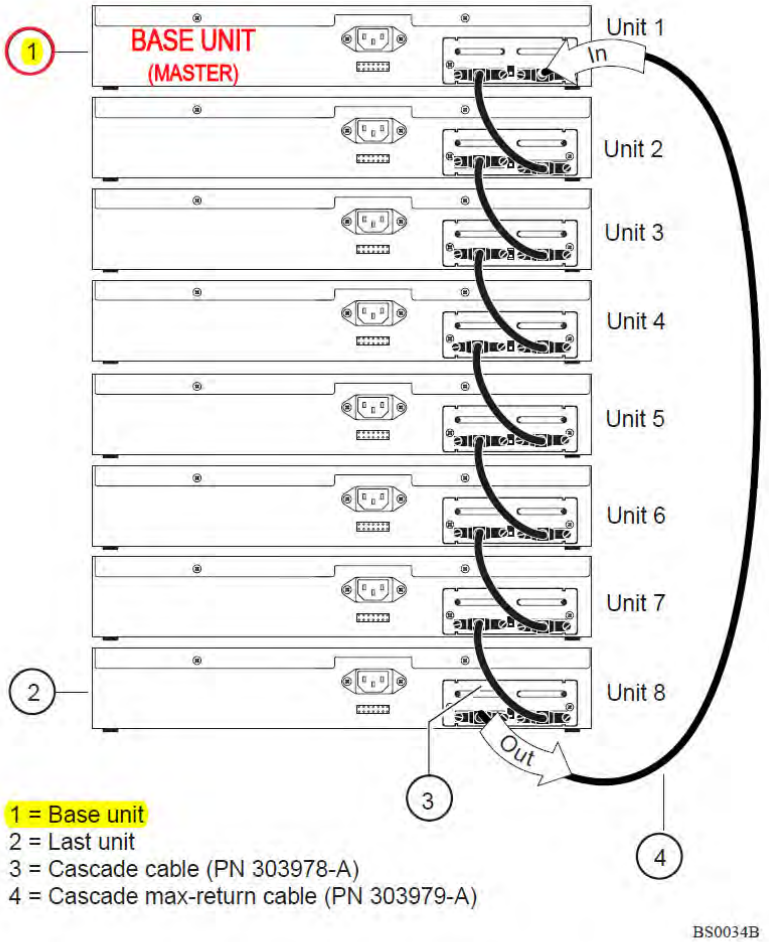


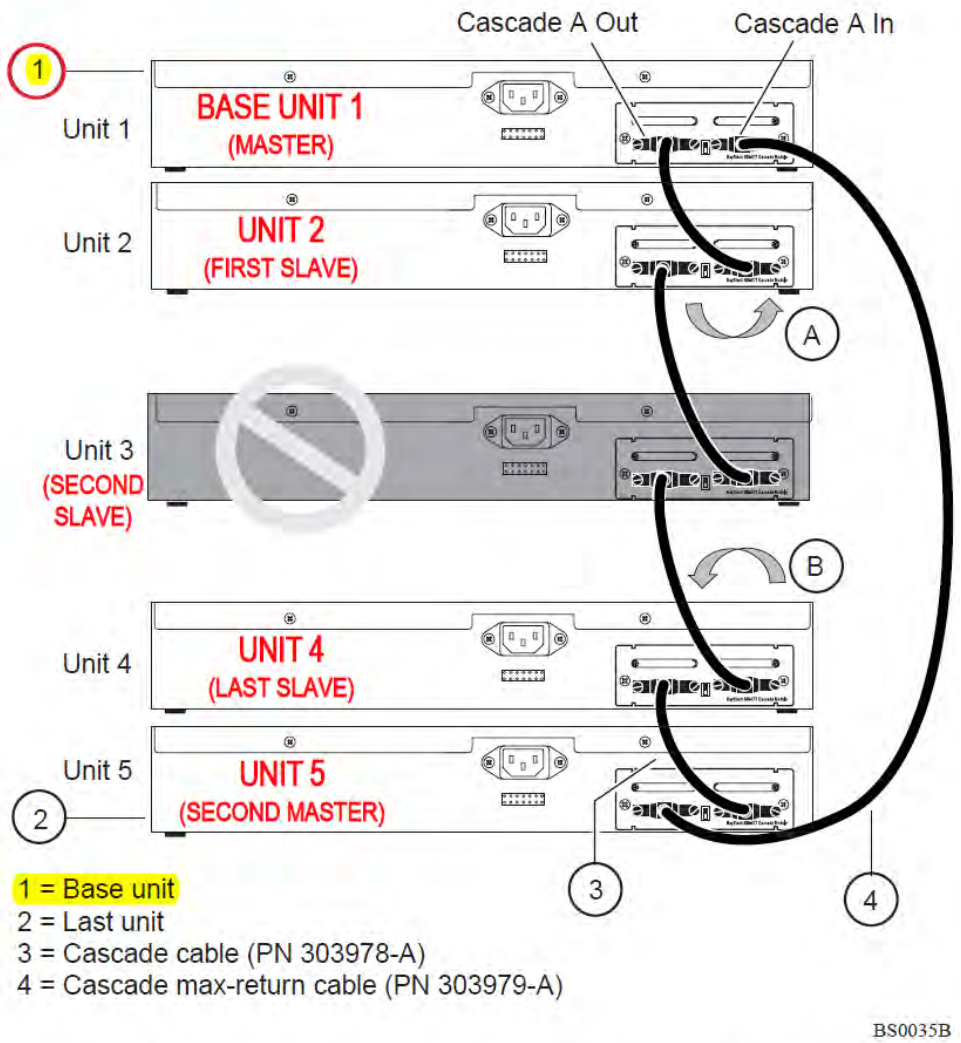
Figure 1-13. Stack Down Configuration Example

BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

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No.	'904 Patent Claim 9	The BayStack 450 Switches
		In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290. Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

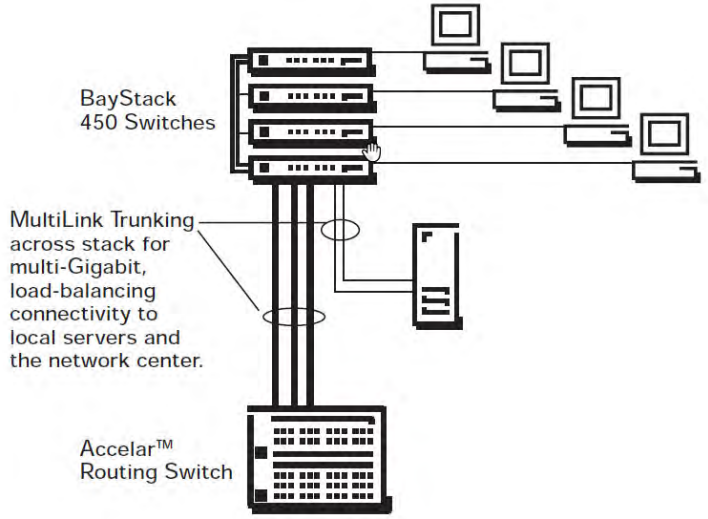
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No.	'904 Patent Claim 9	The BayStack 450 Switches
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

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No.	'904 Patent Claim 9	The BayStack 450 Switches
9[g]	a pre-switch, which in the event of a fault at a location in one of the daisy chains, re-routes at least a portion of the data packets exchanged with one or more of the slaves in the daisy chain in which the fault has occurred through another one of the daisy chains.	The BayStack 450 Switches disclose wherein each of the first and second master units comprises: a pre-switch, which in the event of a fault at a location in one of the daisy chains, re-routes at least a portion of the data packets exchanged with one or more of the slaves in the daisy chain in which the fault has occurred through another one of the daisy chains. In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. In addition, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below.

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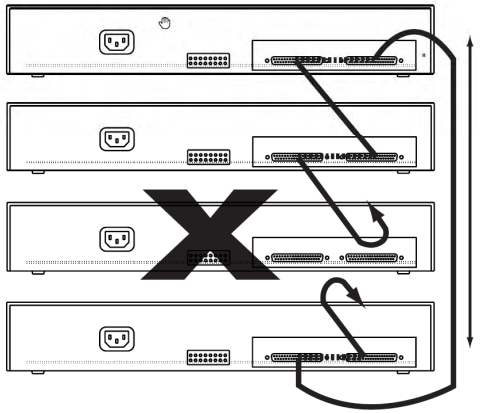
No.	'904 Patent Claim 9	The BayStack 450 Switches
		Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.  BayStack 450 Data Sheet at 4 of 8, FIG. 2. The Baystack 450 Switches in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) Ding renders the claim, including the present limitation, obvious. Ding discloses failure protection. ("In order to coordinate management and control operations across the various cooperating Ethernet Switching modules in the Stack, one of the cooperating Ethernet Switching modules operates as the base module for the Stack. In a preferred embodiment of the present invention, a particular Ethernet Switching module is configured as the base module through a user-controlled toggle Switch on the Ethernet Switching module. If that Ethernet Switching module fails, then another Ethernet switching module (preferably the next upstream Ethernet Switching module in the Stack) automatically

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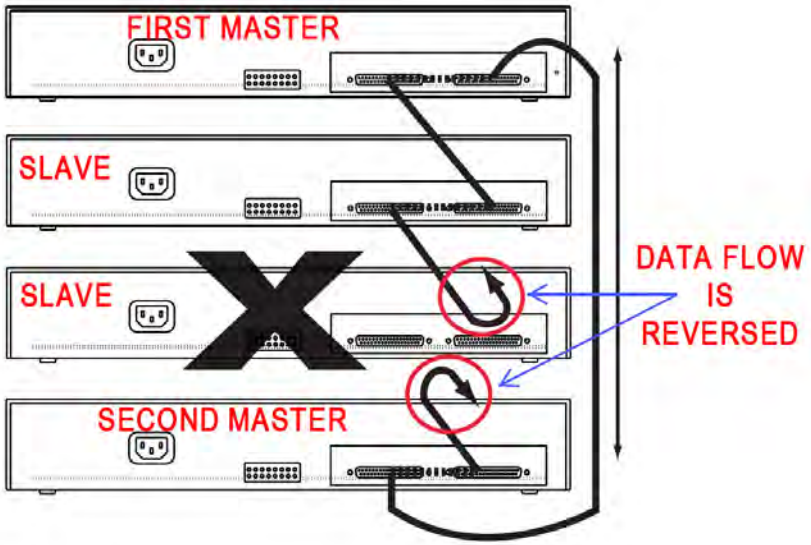
No.	'904 Patent Claim 9	The BayStack 450 Switches
		reconfigures itself to become the base module for the Stack. The base module is responsible for coordinating management and control for the Stack. Specifically, the base module manages the Stack configuration by ensuring that the Stack is initialized in an orderly manner, handling Stack configuration changes Such as module insertion and removal, and verifying stack integrity. The base module also coordinates certain Stack management functions that require synchronization or mutual exclusion among the various cooperating Ethernet switching modules in the stack." Ding, 8:9-30.

No.	'904 Patent Claim 10	The BayStack 450 Switches
10	Apparatus according to claim 9, wherein the pre-switch re-routes the data packets such that substantially no reconfiguration of the switch is required responsive to the fault.	The BayStack 450 Switches disclose apparatus according to claim 9, wherein the pre-switch re-routes the data packets such that substantially no reconfiguration of the switch is required responsive to the fault. For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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No.	'904 Patent Claim 10	The BayStack 450 Switches
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

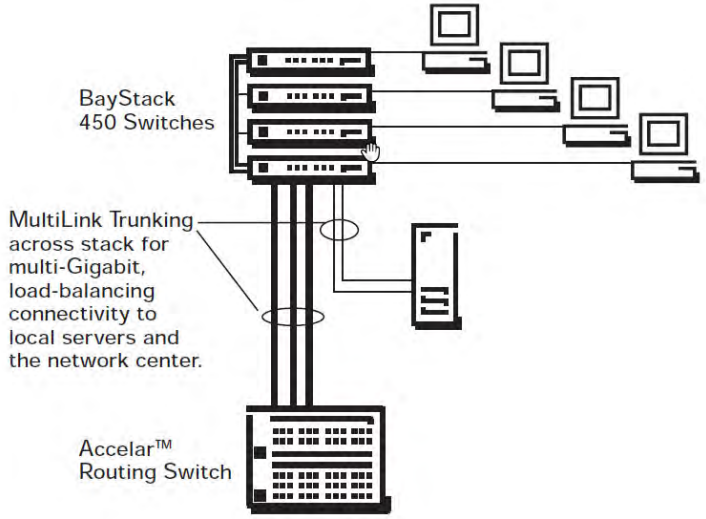
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No.	'904 Patent Claim 10	The BayStack 450 Switches
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. In this example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features where "[e]ach unit in the stack has a full copy of the stack configuration so in the unlikely event of any unit failure, operation of the stack continues without affecting application connectivity." BayStack 450 Data Sheet at 3 of 8.

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No.	'904 Patent Claim 10	The BayStack 450 Switches
		In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches further disclose its fail-safe design features includes that "[e]ach switch includes a Redundant Power Supply Unit connection. Should the switch's built-in power supply fail, the Bay Networks RPSU (sold separately) will automatically supply power to the switch for uninterrupted operation." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below.

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No.	'904 Patent Claim 10	The BayStack 450 Switches
		Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.  BayStack 450 Data Sheet at 4 of 8, FIG. 2. And Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. In one example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the bottom of the stack in an aptly-named "Stack Up Configuration." BayStack 450 Manual at 54 of 290.

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No.	'904 Patent Claim 10	The BayStack 450 Switches

Stack Up Configurations

In Figure 1-12, data flows from the base unit (unit 1) to the next switch, which is assigned as unit 2, and continues until the last switch in the stack is assigned as unit 8. The physical order of the switches is *from bottom to top* (unit 1 to unit 8).

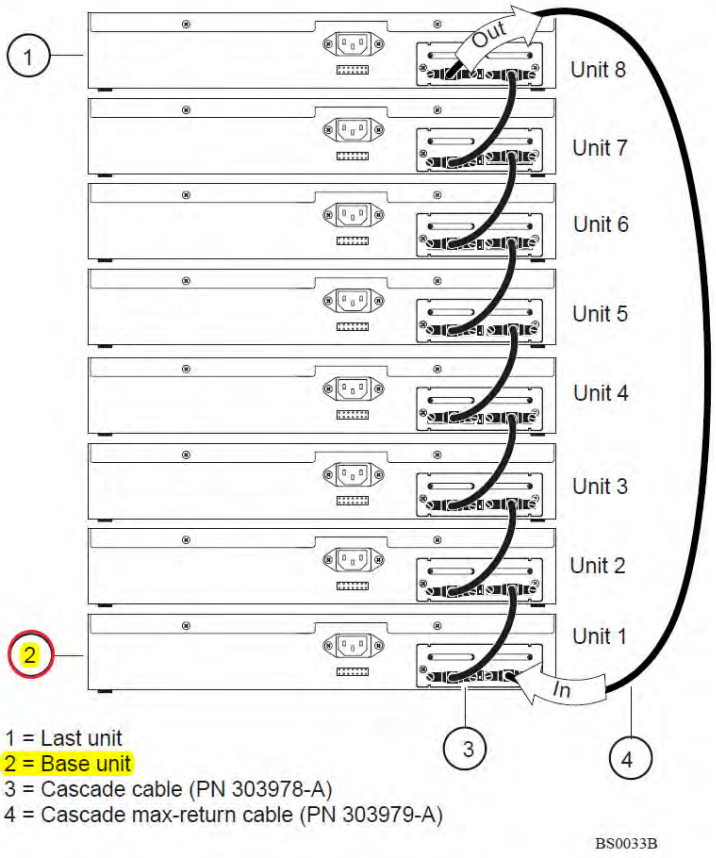


Figure 1-12. Stack Up Configuration Example

BayStack 450 Manual at 54 of 290, FIG. 1-12 (annotated).

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No.	'904 Patent Claim 10	The BayStack 450 Switches
		In another example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the top of the stack in the also aptly-named "Stack Down Configuration." BayStack 450 Manual at 55 of 290.

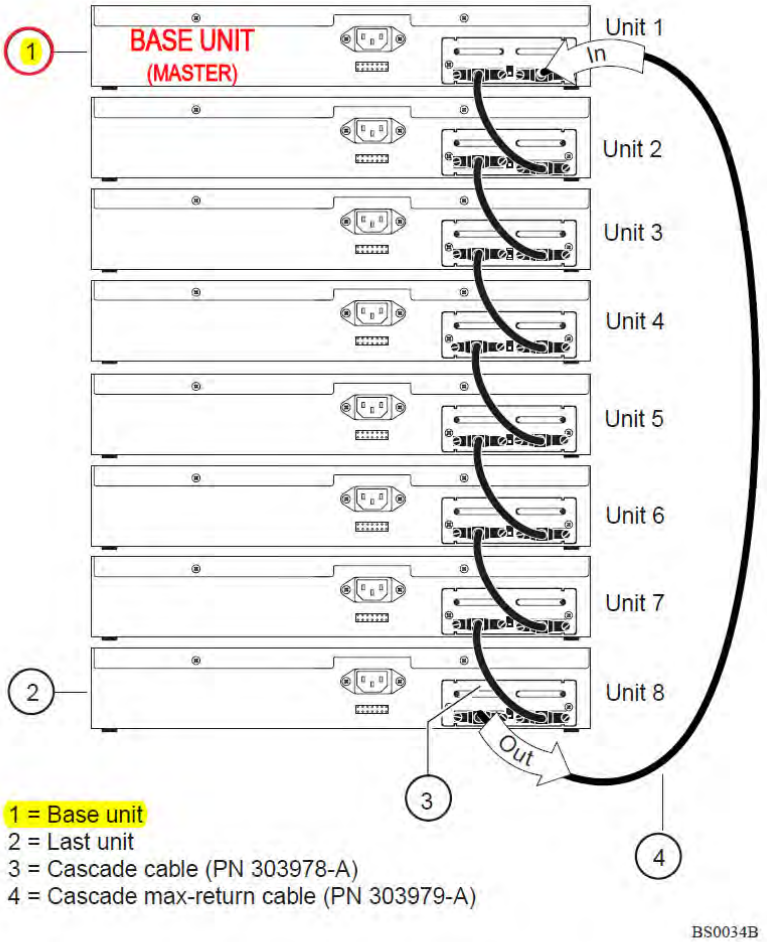


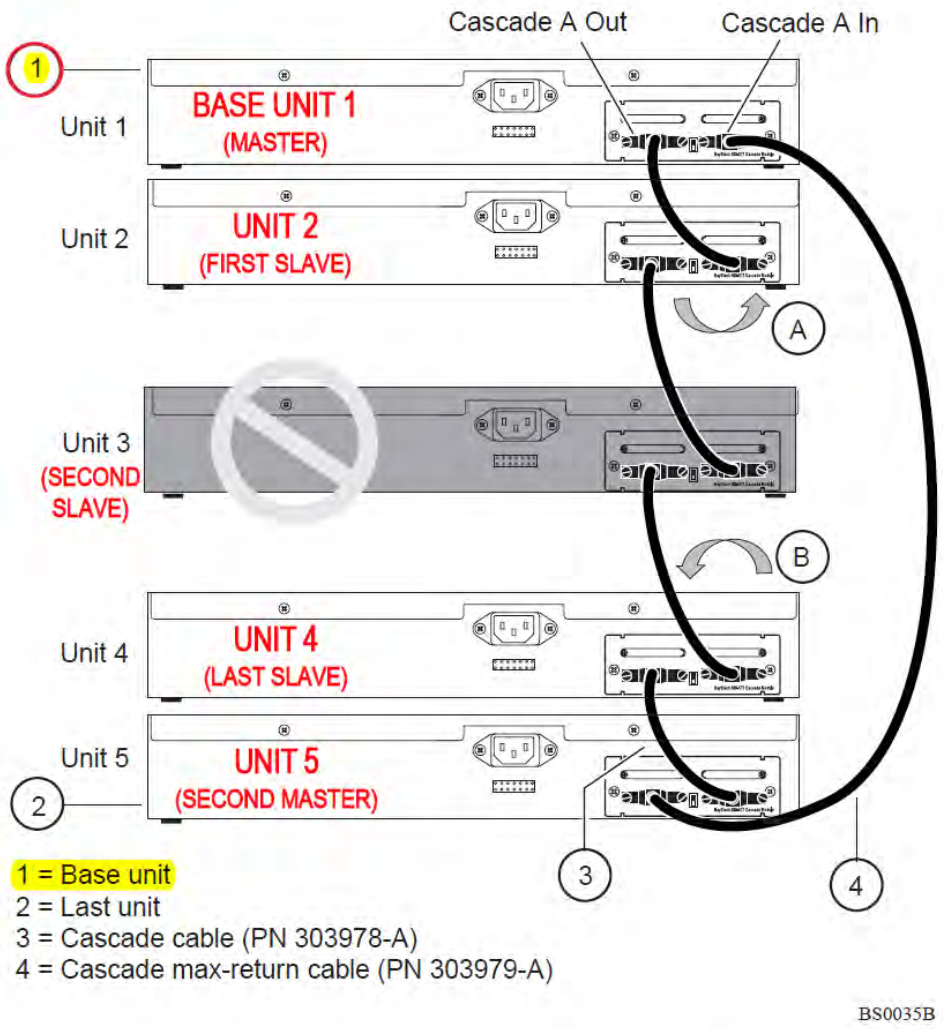
Figure 1-13. Stack Down Configuration Example

BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

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No.	'904 Patent Claim 10	The BayStack 450 Switches
		In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290. Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

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No.	'904 Patent Claim 10	The BayStack 450 Switches
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

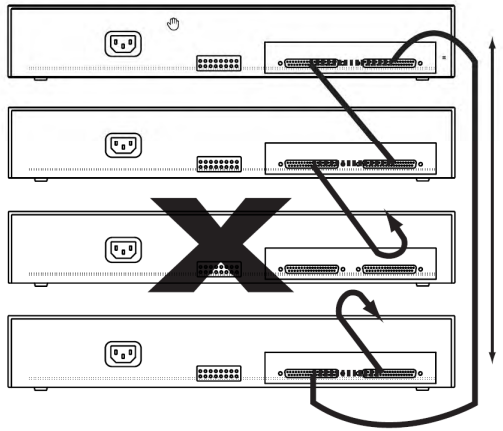
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No.	'904 Patent Claim 11	The BayStack 450 Switches
11[preamble]	Network access apparatus, comprising:	To the extent the preamble is found to be limiting, the BayStack 450 Switches disclose a network access apparatus. *See supra* at 1[preamble].
11[a]	first and second master units, each comprising a physical interface to a packet-switched network;	The BayStack 450 Switches disclose first and second master units, each comprising a physical interface to a packet-switched network. *See supra* at 1[a].
11[b]	a plurality of slave units,	The BayStack 450 Switches disclose a plurality of slave units. *See supra* at 1[b].
11[c]	each slave unit comprising one or more ports to respective subscriber lines; and	The BayStack 450 Switches disclose each slave unit comprising one or more ports to respective subscriber lines. *See supra* at 1[c].
11[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	The BayStack 450 Switches disclose a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. *See supra* at 1[d].
11[e]	each daisy chain comprising at least a first slave unit connected by one of the physical interface	The BayStack 450 Switches disclose each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit. *See supra* at 1[e].

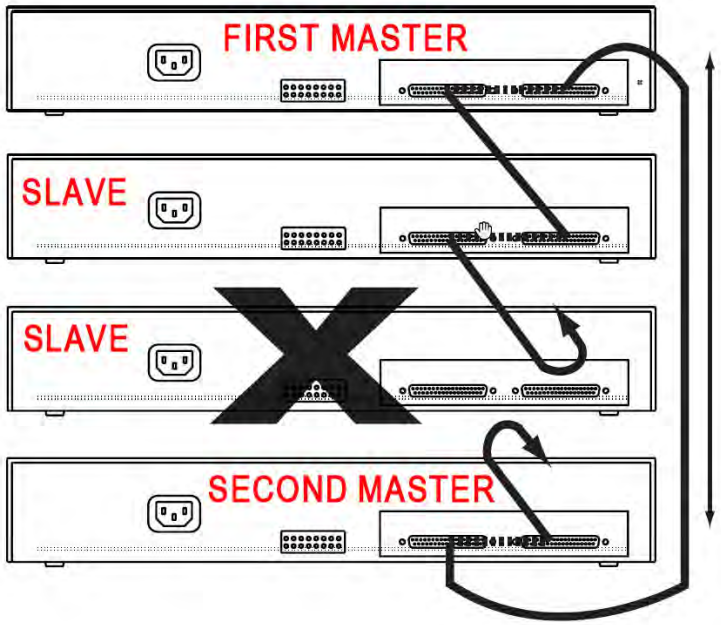
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No.	'904 Patent Claim 11	The BayStack 450 Switches
	lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit,	
11[f]	wherein each of the slave units comprises: a switch fabric comprising one or more switches, which convey data packets to respective ports on the switch to which the packets are addressed; and	The BayStack 450 Switches disclose wherein each of the slave units comprises: a switch fabric comprising one or more switches, which convey data packets to respective ports on the switch to which the packets are addressed. For example, Nortel Networks' BayStack 450 Switches disclose "2.5 Gigabit per second (Gbps) switching fabric and custom switching ASICs support full 802.1D-compliant MAC Layer frame forwarding and filtering across all ports at the peak rate of 3 million packets per second." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. For example, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption." BayStack 450 Data Sheet at 2 of 8. Figure 1, shown below, illustrates the plurality of physical interface lines that link the slave units in a daisy chain, in which the slave units are mutually connected in series by the physical interface lines therebetween.

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No.	'904 Patent Claim 11	The BayStack 450 Switches
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

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No.	'904 Patent Claim 11	The BayStack 450 Switches
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. Nortel Networks' BayStack 450 Switches disclose a BootP Automatic IP/MAC Address: "The BayStack 450 switch has a unique 48-bit hardware address, or MAC address, that is printed on a label on the back panel. You use this MAC address when you configure the network BootP server to recognize the BayStack 450 switch BootP requests. A properly configured BootP server enables the switch to automatically learn its assigned IP address, subnet mask, IP address of the default router (default gateway), and software image file name.

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No.	'904 Patent Claim 11	The BayStack 450 Switches
		When the switch is participating in a stack configuration, a Stack MAC address is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If another unit in the stack is assigned as the base unit, the MAC address of the new base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit." BayStack 450 Manual at 43 of 290.

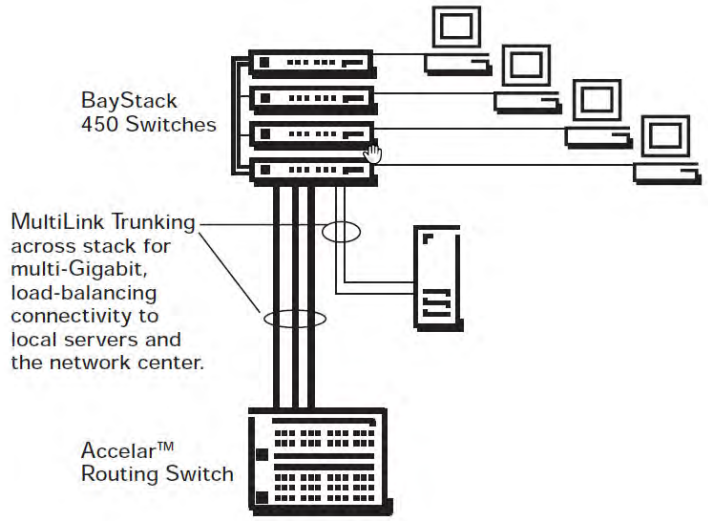
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No.	'904 Patent Claim 11	The BayStack 450 Switches
		Stack MAC Address The *Stack MAC address* is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If you designate another unit in the stack as the base unit, the MAC address of the *new* base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit. BayStack 450 Manual at 52 of 290. Nortel Networks' BayStack 450 Switches provide an overview of the fail-safe stacking feature, which discloses "BayStack 450 switches that are configured with BayStack 450 software version V1.1.0 or later provide fail-safe stackability when you install the optional BayStack 400-ST1 Cascade Module. You can connect up to eight switches to provide uninterrupted connectivity for up to 224 ports (see 'Fail-Safe Stack Application' on page 1-22). The entire stack is manageable as a single unit. Installation instructions are provided with the BayStack 400-ST1 Cascade Module (see your Nortel Networks sales representative for ordering information)." BayStack 450 Manual at 49 of 290.
11[g]	a pre-switch, which receives the data packets from one of	The BayStack 450 Switches disclose a pre-switch, which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing

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No.	'904 Patent Claim 11	The BayStack 450 Switches
	the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines.	packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines. In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. In addition, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below.

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No.	'904 Patent Claim 11	The BayStack 450 Switches
		Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.  BayStack 450 Data Sheet at 4 of 8, FIG. 2. Further, Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. Nortel Networks' BayStack 450 Switches disclose a BootP Automatic IP/MAC Address: "The BayStack 450 switch has a unique 48-bit hardware address, or MAC address, that is printed on a label on the back panel. You use this MAC address when you configure the network BootP server to recognize the BayStack 450 switch BootP requests. A properly configured BootP server enables the switch to automatically learn its assigned IP address,

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No.	'904 Patent Claim 11	The BayStack 450 Switches
		subnet mask, IP address of the default router (default gateway), and software image file name. When the switch is participating in a stack configuration, a Stack MAC address is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If another unit in the stack is assigned as the base unit, the MAC address of the new base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit." BayStack 450 Manual at 43 of 290.

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No.	'904 Patent Claim 11	The BayStack 450 Switches
		Stack MAC Address The *Stack MAC address* is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If you designate another unit in the stack as the base unit, the MAC address of the *new* base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit. BayStack 450 Manual at 52 of 290. Nortel Networks' BayStack 450 Switches provide an overview of the fail-safe stacking feature, which discloses "BayStack 450 switches that are configured with BayStack 450 software version V1.1.0 or later provide fail-safe stackability when you install the optional BayStack 400-ST1 Cascade Module. You can connect up to eight switches to provide uninterrupted connectivity for up to 224 ports (see 'Fail-Safe Stack Application' on page 1-22). The entire stack is manageable as a single unit. Installation instructions are provided with the BayStack 400-ST1 Cascade Module (see your Nortel Networks sales representative for ordering information)." BayStack 450 Manual at 49 of 290.

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No.	'904 Patent Claim 12	The BayStack 450 Switches
12	Apparatus according to claim 11, wherein each of the slave units is coupled to receive packets transferred thereto from the first and second master units over first and second ones of the physical interface lines, respectively, and wherein the pre-switch passes the packets received through the first and second physical interface line and addressed to any of the ports on the slave unit to respective first and second addresses in the switch fabric.	The BayStack 450 Switches disclose apparatus according to claim 11, wherein each of the slave units is coupled to receive packets transferred thereto from the first and second master units over first and second ones of the physical interface lines, respectively, and wherein the pre-switch passes the packets received through the first and second physical interface line and addressed to any of the ports on the slave unit to respective first and second addresses in the switch fabric. For instance, Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Nortel Networks' BayStack 450 Switches disclose a BootP Automatic IP/MAC Address: "The BayStack 450 switch has a unique 48-bit hardware address, or MAC address, that is printed on a label on the back panel. You use this MAC address when you configure the network BootP server to recognize the BayStack 450 switch BootP requests. A properly configured BootP server enables the switch to automatically learn its assigned IP address, subnet mask, IP address of the default router (default gateway), and software image file name. When the switch is participating in a stack configuration, a Stack MAC address is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F

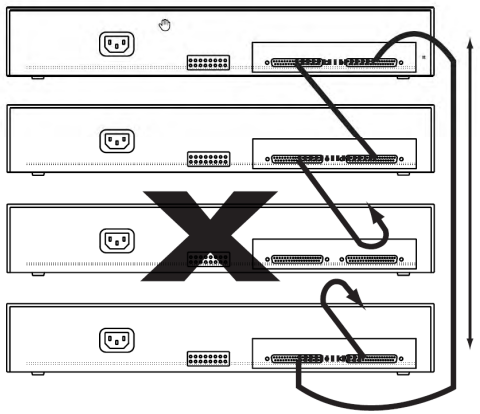
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No.	'904 Patent Claim 12	The BayStack 450 Switches
		If another unit in the stack is assigned as the base unit, the MAC address of the new base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit." BayStack 450 Manual at 43 of 290. **Stack MAC Address** The *Stack MAC address* is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If you designate another unit in the stack as the base unit, the MAC address of the *new* base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit. BayStack 450 Manual at 52 of 290. Nortel Networks' BayStack 450 Switches provide an overview of the fail-safe stacking feature, which discloses "BayStack 450 switches that are configured with BayStack 450 software version V1.1.0 or later provide fail-safe stackability when you install the optional BayStack 400-ST1 Cascade Module. You can connect up to eight switches to provide uninterrupted connectivity for up to 224 ports (see 'Fail-Safe Stack Application' on page 1-22). The entire stack is manageable as a single unit. Installation instructions are provided with

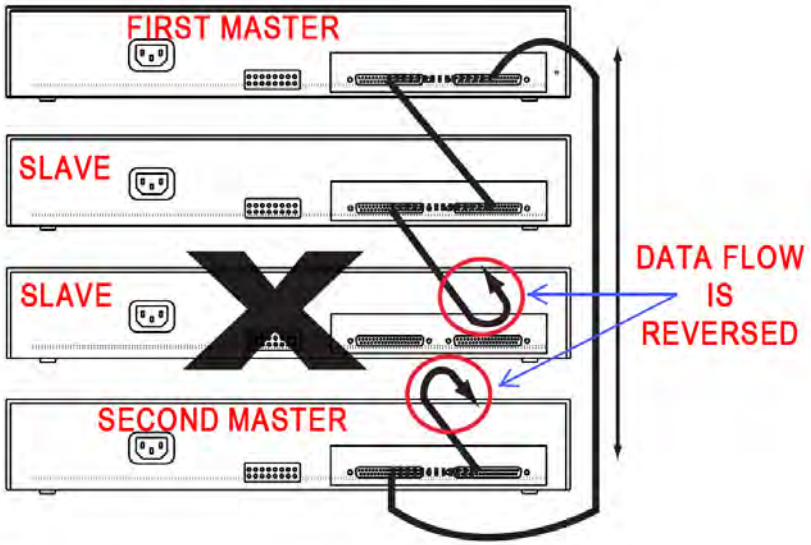
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No.	'904 Patent Claim 12	The BayStack 450 Switches
		the BayStack 400-ST1 Cascade Module (see your Nortel Networks sales representative for ordering information)." BayStack 450 Manual at 49 of 290. *See also supra* at 11[f].

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No.	'904 Patent Claim 13	The BayStack 450 Switches
13	Apparatus according to claim 12, wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second addresses are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required.	The BayStack 450 Switches disclose apparatus according to claim 12, wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second addresses are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required. For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.*  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

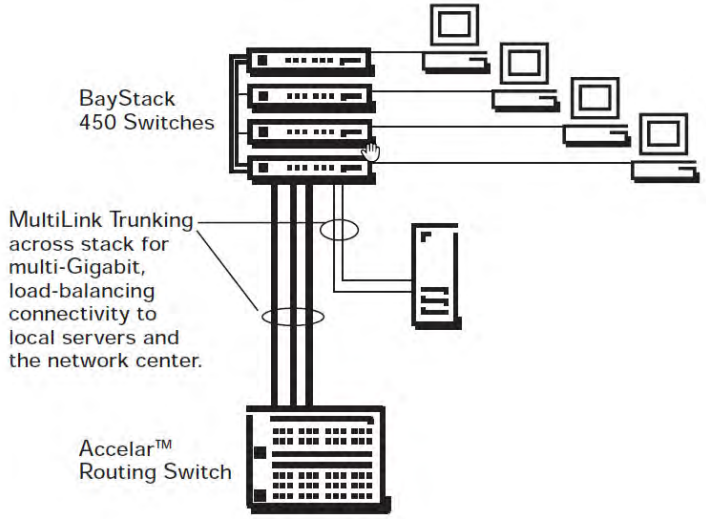
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No.	'904 Patent Claim 13	The BayStack 450 Switches
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. In this example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features where "[e]ach unit in the stack has a full copy of the stack configuration so in the unlikely event of any unit failure, operation of the stack continues without affecting application connectivity." BayStack 450 Data Sheet at 3 of 8.

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No.	'904 Patent Claim 13	The BayStack 450 Switches
		In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches further disclose its fail-safe design features includes that "[e]ach switch includes a Redundant Power Supply Unit connection. Should the switch's built-in power supply fail, the Bay Networks RPSU (sold separately) will automatically supply power to the switch for uninterrupted operation." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below.

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No.	'904 Patent Claim 13	The BayStack 450 Switches
		Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.  BayStack 450 Data Sheet at 4 of 8, FIG. 2. And Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. Nortel Networks' BayStack 450 Switches also disclose a "Fail-Safe Stack Application." BayStack 450 Manual at 48 of 290. More specifically, that Nortel Networks' BayStack 450 Switches disclose that "Figure 1-9 shows an example of eight BayStack 450 switches that are stacked together as a single managed unit. If any single unit in the stack fails, the remaining stack remains operational,

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No.	'904 Patent Claim 13	The BayStack 450 Switches
		without interruption." BayStack 450 Manual at 48 of 290. Figure 1-9 of the BayStack 450 Manual depicts a plurality of slaves and is shown below.

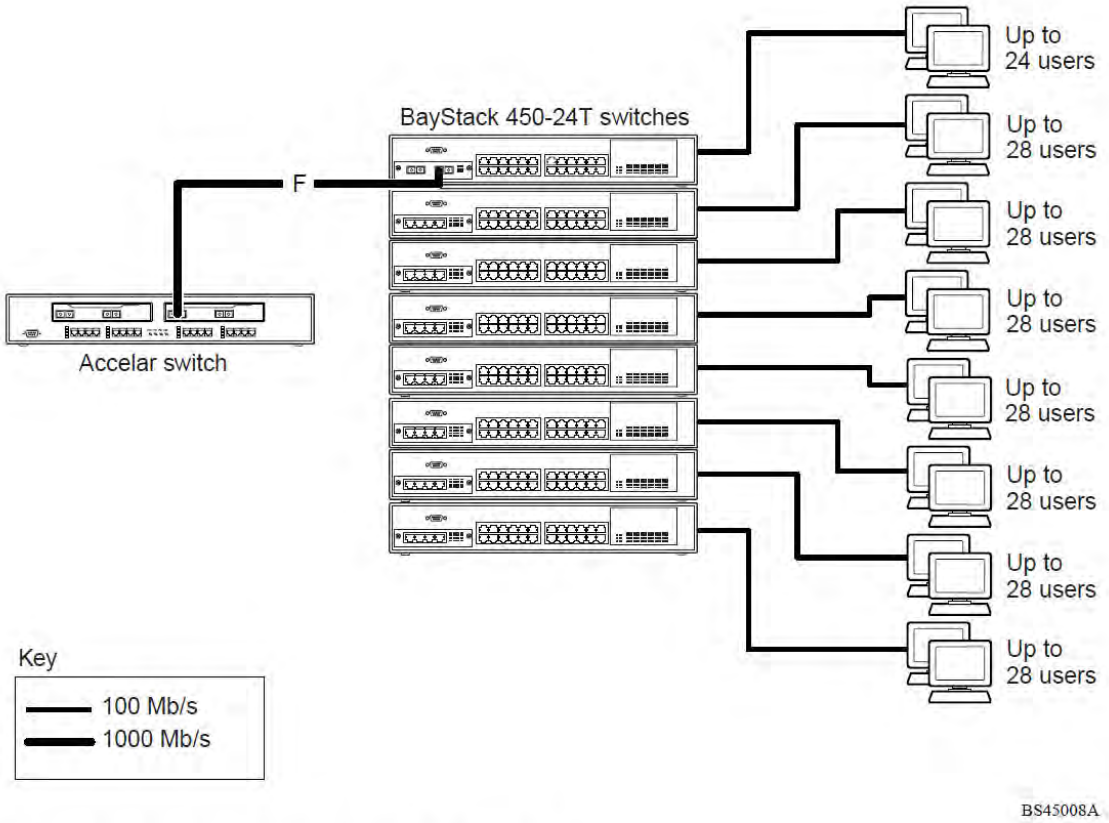


Figure 1-9. Fail-Safe Stack Example

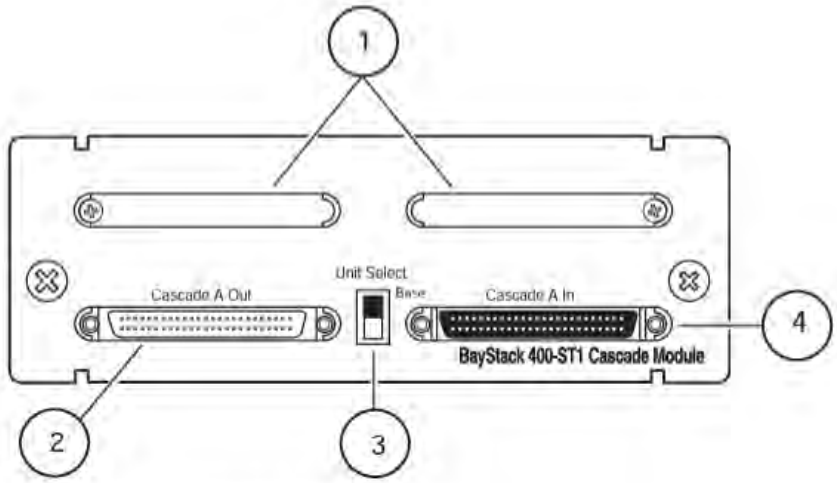
BayStack 450 Manual at 48 of 290, FIG. 1-9.

Nortel Networks' BayStack 450 Switches further disclose that "[a]s shown in Figure 1-9, the Accelar 1100 switch is used as a backbone switch, connecting to the BayStack 450 switch with an optional gigabit (1000BASE-SX) MDA for maximum bandwidth. This configuration

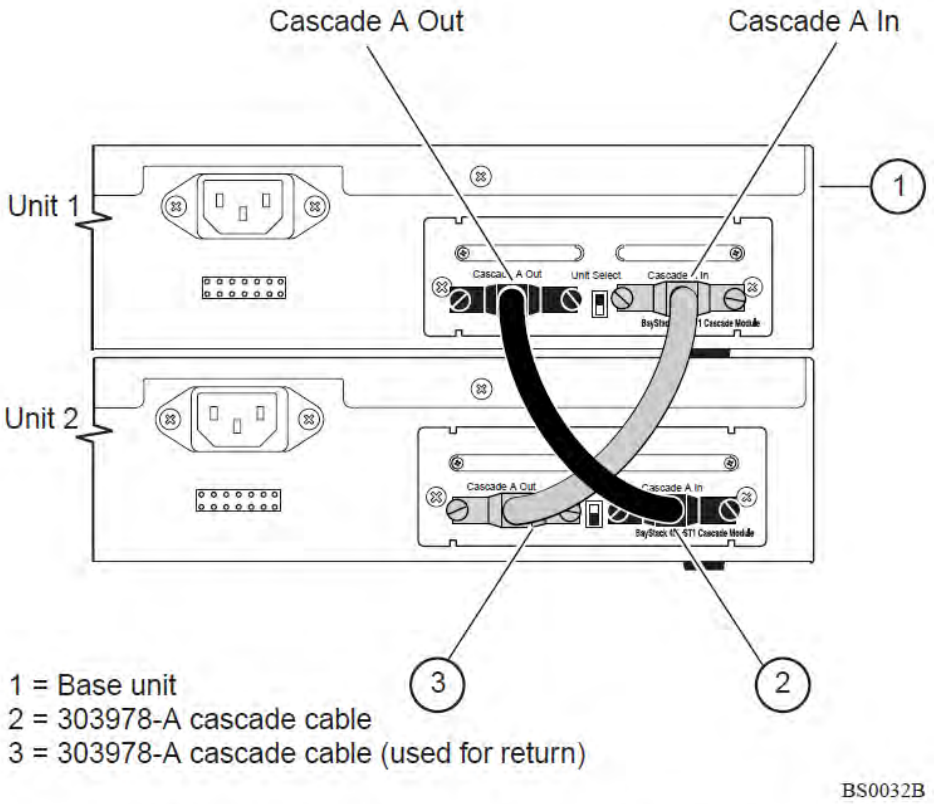
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No.	'904 Patent Claim 13	The BayStack 450 Switches
		uses optional BayStack 400-ST1 Cascade Modules to connect the switches in the fail-safe stack." BayStack 450 Manual at 48 of 290. Nortel Networks' BayStack 450 Switches disclose that "[f]or an overview of the fail-safe stacking feature that is available for the BayStack 450 switches, see 'Stack Operation' following this section." BayStack 450 Manual at 48 of 290. Indeed, Nortel Networks' BayStack 450 Switches provide an overview of the fail-safe stacking feature, which discloses "BayStack 450 switches that are configured with BayStack 450 software version V1.1.0 or later provide fail-safe stackability when you install the optional BayStack 400-ST1 Cascade Module. You can connect up to eight switches to provide uninterrupted connectivity for up to 224 ports (see 'Fail-Safe Stack Application' on page 1-22). The entire stack is manageable as a single unit. Installation instructions are provided with the BayStack 400-ST1 Cascade Module (see your Nortel Networks sales representative for ordering information)." BayStack 450 Manual at 49 of 290. Further, Nortel Networks' BayStack 450 Switches disclose that the "BayStack 400-ST1 Cascade Module," which is shown in Figure 1-10 below. BayStack 450 Manual at 49 of 290.

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No.	'904 Patent Claim 13	The BayStack 450 Switches
		 **Figure 1-10. BayStack 400-ST1 Front-Panel Components** BayStack 450 Manual at 49 of 290, FIG. 1-10. In addition, Nortel Networks' BayStack 450 Switches disclose that the "Unit Select switch (up = Base) determines the base unit for the stack configuration (see "Base Unit " on page 1-25). The Unit Select switch status is displayed on the BayStack 450 LED display panel. When the Unit Select switch is in the Base (up) position, all other Unit Select switches in the stack configuration must be set to Off (down)." BayStack 450 Manual at 50 of 290. Further still, Nortel Networks' BayStack 450 Switches disclose a Cascade A In Connector that provides "an attachment point for accepting a cascade cable connection from an adjacent unit in the stack. A return cable from this unit's Cascade A Out connector to the adjacent

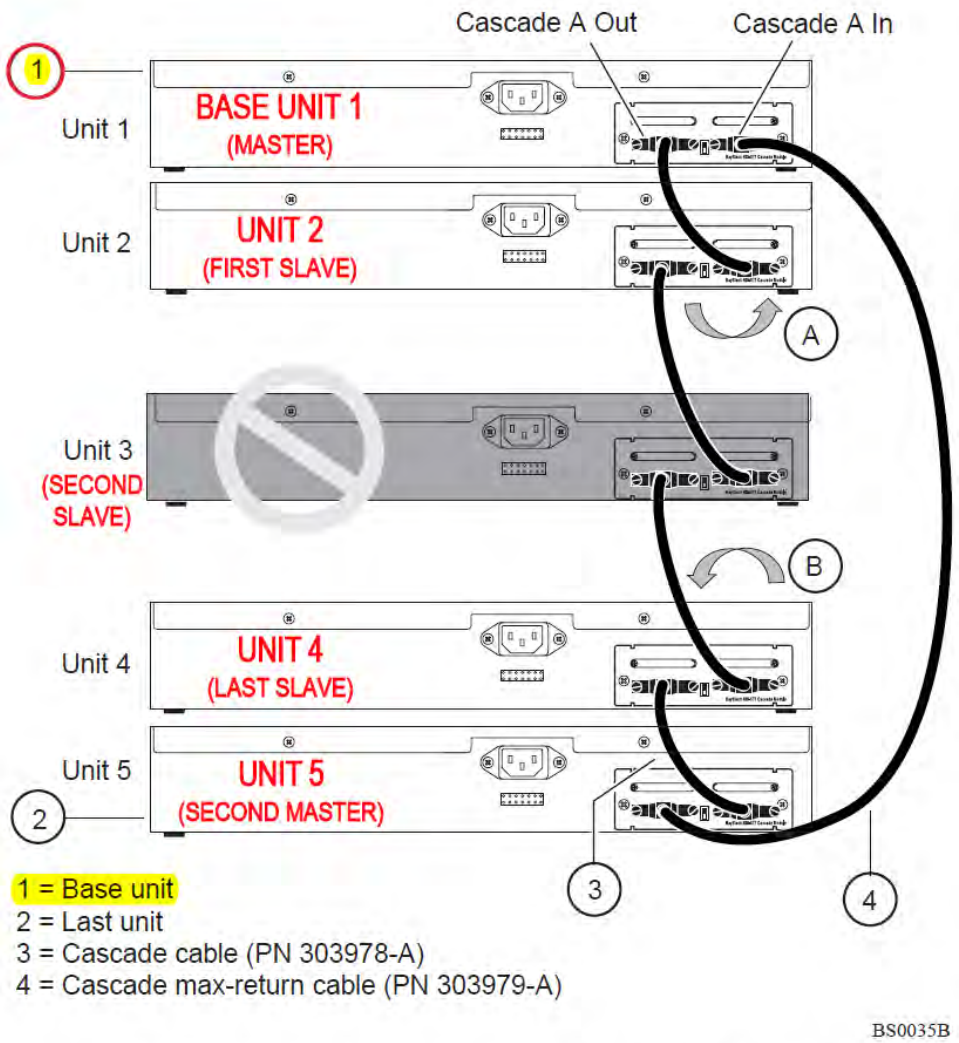
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No.	'904 Patent Claim 13	The BayStack 450 Switches
		unit's Cascade A In connector completes the stack connection (see the example shown in Figure 1-11)." BayStack 450 Manual at 50 of 290. Figure 1-11 is reproduced below. BayStack 450 Manual at 50 of 290, FIG. 1-11.  **Figure 1-11. Connecting Cascade Cables** In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290.

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No.	'904 Patent Claim 13	The BayStack 450 Switches
		Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

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No.	'904 Patent Claim 13	The BayStack 450 Switches
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

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No.	'904 Patent Claim 13	The BayStack 450 Switches
		To the extent that Orckit contends that the BayStack 450 Switches does not disclose this limitation, the BayStack 450 Switches in combination with (1) the knowledge of a person of ordinary skill in the art and/or in further combination with (2) Ding renders the claim, including the present limitation, obvious. Further, Ding discloses, in the event of a failover where another unit takes over for the first, the same IP address continues to be used. ("An eleventh case involves "fail-over" to an alternate base module when the designated base module fails. In a preferred embodiment of the present invention, when the designated base module fails, the next upstream Ethernet switching modules takes over as the base module for the stack. When this occurs, it is preferable to continue using the same IP address, since various devices in the network are configured to use that IP address for communicating with the stack. However, the MAC address of the stack changes to a MAC address associated with the new base module. Therefore, when the new base module reconfigures the stack, the new base module broadcasts an ARP request including the stack IP address and the new MAC address." Ding, 13:3-15.

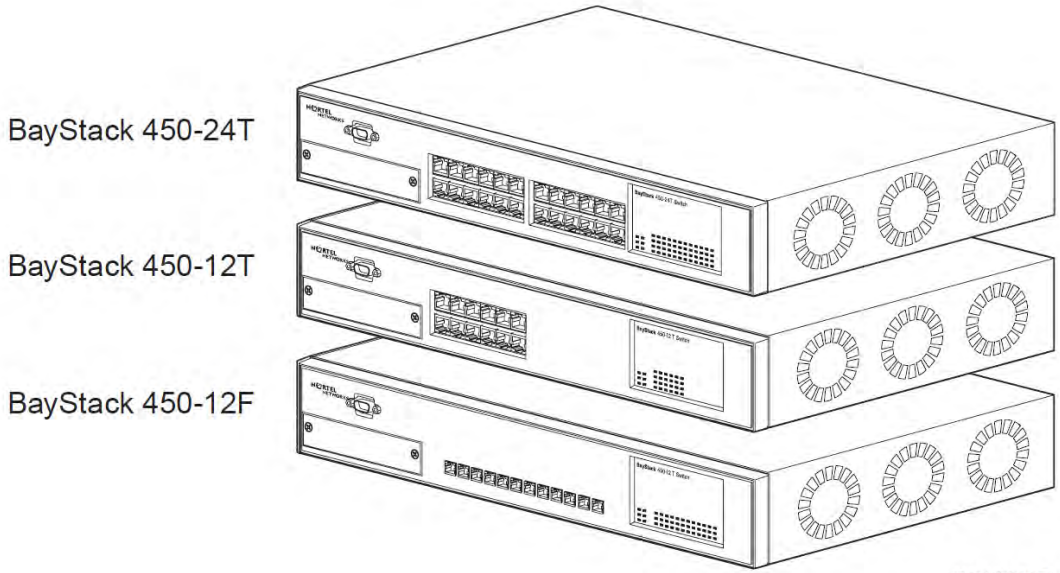
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No.	'904 Patent Claim 14	The BayStack 450 Switches
14[preamble]	In a network access multiplexing system,	To the extent the preamble is found to be limiting, the BayStack 450 Switches disclose a network access multiplexing system. For example, the BayStack 450 Switches disclose that the Nortel Networks BayStack 450 Switches were known and used by others in this country before the purported invention of the '904 patent. For example, Nortel Networks' BayStack 450 Switches disclose that the "BayStack™ 450 Switches are 10/100/1000 Ethernet switches featuring fail-safe stackability, flexible choices for high-speed uplinks, and advanced software features." BayStack 450 Data Sheet at 1 of 8. Further, Nortel Networks' BayStack 450 Switches disclose "BayStack 450 Switches are designed to provide high-density, high-performance switching for enterprise wiring closets, and to provide fail-safe scalability and advanced traffic management for rapidly growing networks in demanding environments." BayStack 450 Data Sheet at 1 of 8. Nortel Networks' BayStack 450 Switches disclose that "BayStack 450 Switches also include advanced features such as VLAN trunking, priority queuing, and IGMP snooping, for an enterpriseclass integrated solution with Accelar™ Routing Switches from Bay Networks, a Nortel Networks Business." BayStack 450 Data Sheet at 1 of 8. Nortel Networks' BayStack 450 Switches further disclose that "BayStack 450 Switches and Accelar Routing Switches also provide network resilience and advanced management with MultiLink Trunking, LinkSafe™ redundant uplink ports, RMON on every port, complete integration into Optivity® network management software, and Web-based management." BayStack 450 Data Sheet at 1 of 8. In addition, Nortel Networks' BayStack 450 Switches disclose that "[a]s described in Table 1, BayStack 450 Switches are available in 24- and 12-port configurations, each with a Media Dependent Adapter (MDA) slot, as well as a cascade stacking module slot." BayStack 450 Data Sheet at 2 of 8.

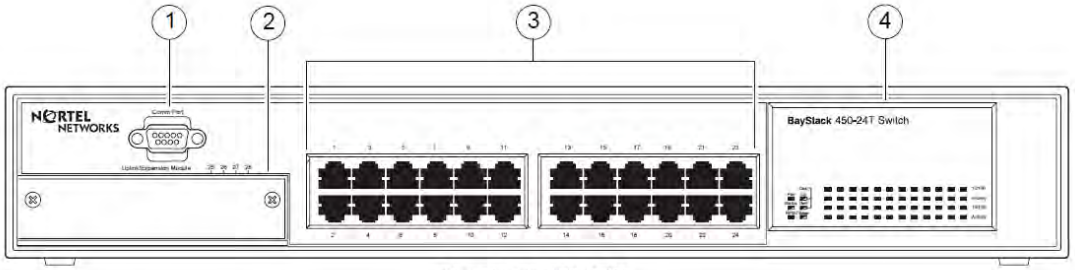
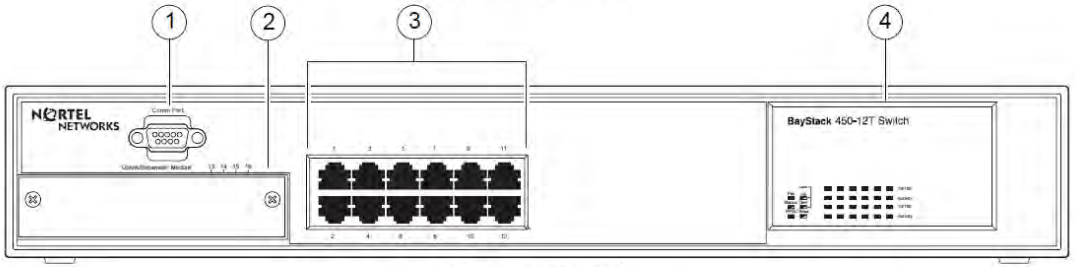
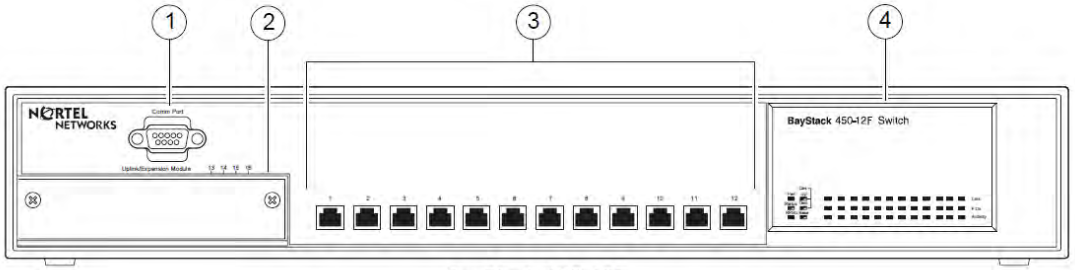
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No.	'904 Patent Claim 14	The BayStack 450 Switches
		Table 1: Port, MDA, and Stacking Module Slot Configurations of the BayStack 450 Switches. **BayStack 450 Switch** / **Autosensing 10BASE-T/ 100BASE-TX Ports** / **MDA Slot** / **Cascade Stacking Module Slot** BayStack 450-12T — 12 — 1 — 1 BayStack 450-24T — 24 — 1 — 1 BayStack 450 Data Sheet at 2 of 8, Table 1. Nortel Networks' BayStack 450 Switches disclose "MDAs for Gigabit Ethernet, Fast Ethernet fiber or 10/100 autosense Ethernet ports, and future ATM uplinks provide the high-bandwidth choices that fit into any network architecture." BayStack 450 Data Sheet at 2 of 8. Nortel Networks' BayStack 450 Switches depict its network apparatuses, for example, in Figure 1-1 of the BayStack 450 Manual shown below.

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		 **Figure 1-1. BayStack 450 Switch Versions** BayStack 450 Manual at 27 of 290, FIG. 1-1. Nortel Networks' BayStack 450 Switches depict the front panels of its network apparatuses, for example, in Figure 1-2 of the BayStack 450 Manual shown below.

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		 BayStack 450-24T  BayStack 450-12T  BayStack 450-12F 1 = Comm Port 2 = Uplink/Expansion slot 3 = Port connectors 4 = LED display panel BS45002B **Figure 1-2. BayStack 450 Switch Front Panels** BayStack 450 Manual at 28 of 290, FIG. 1-2.

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		Nortel Networks' BayStack 450 Switches depict the BayStack 450-12F LED Display Panel, for example, in Figure 1-4 of the BayStack 450 Manual shown below.

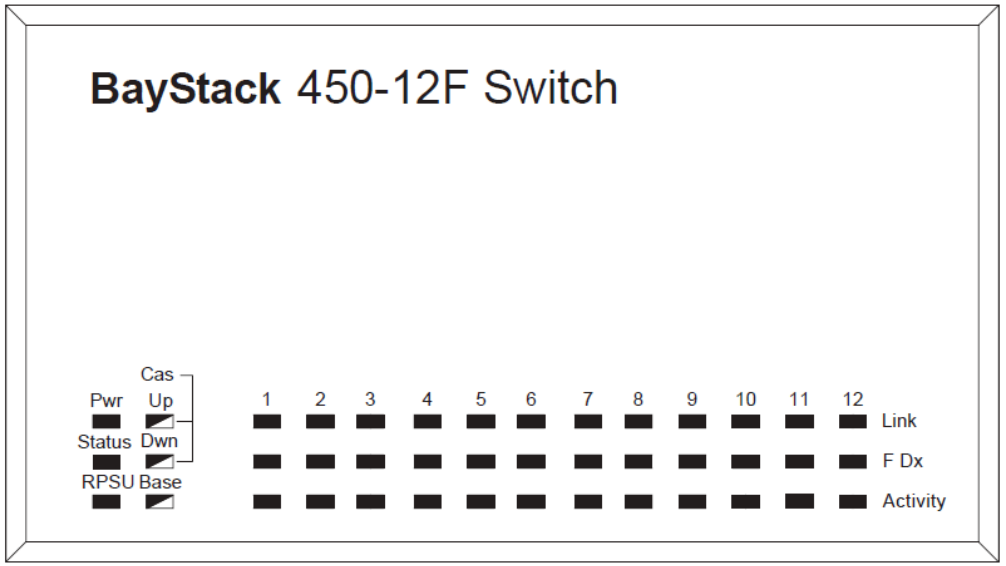


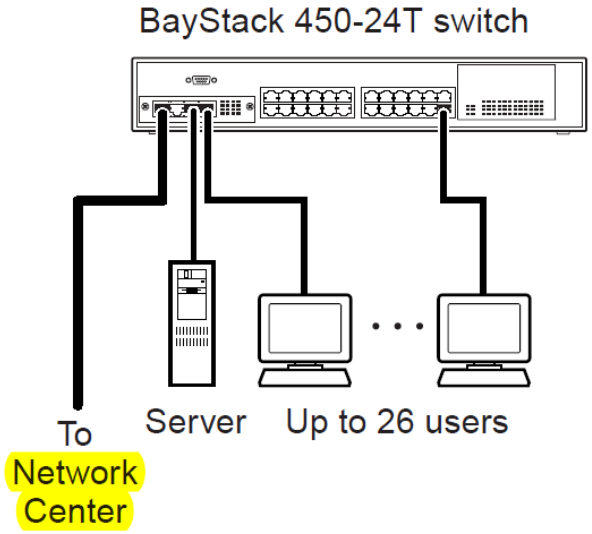
Figure 1-4. BayStack 450-12F LED Display Panel

BayStack 450 Manual at 32 of 290, FIG. 1-4.

Nortel Networks' BayStack 450 Switches disclose that the BayStack 450 Switch LED Descriptions are described in Table 1-1. See generally BayStack 450 Manual at 32-34 of 290.

In one example, Nortel Networks' BayStack 450 Switches disclose that the BayStack 450 Switch provides access to a network center. BayStack 450 Manual at 45 of 290.

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		 - 26 users; each with dedicated 100 Mb/s bandwidth - Server with dedicated 100 Mb/s bandwidth - Network center with dedicated 100 Mb/s full-duplex bandwith (200 mb/s bidirectional) BayStack 450 Manual at 45 of 290, FIG. 1-6 (annotated). Nortel Networks' BayStack 450 Switches also disclose a "Fail-Safe Stack Application." BayStack 450 Manual at 48 of 290.

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		More specifically, Nortel Networks' BayStack 450 Switches disclose that "Figure 1-9 shows an example of eight BayStack 450 switches that are stacked together as a single managed unit. If any single unit in the stack fails, the remaining stack remains operational, without interruption." BayStack 450 Manual at 48 of 290. Figure 1-9 of the BayStack 450 Manual depicts a plurality of slaves and is shown below.

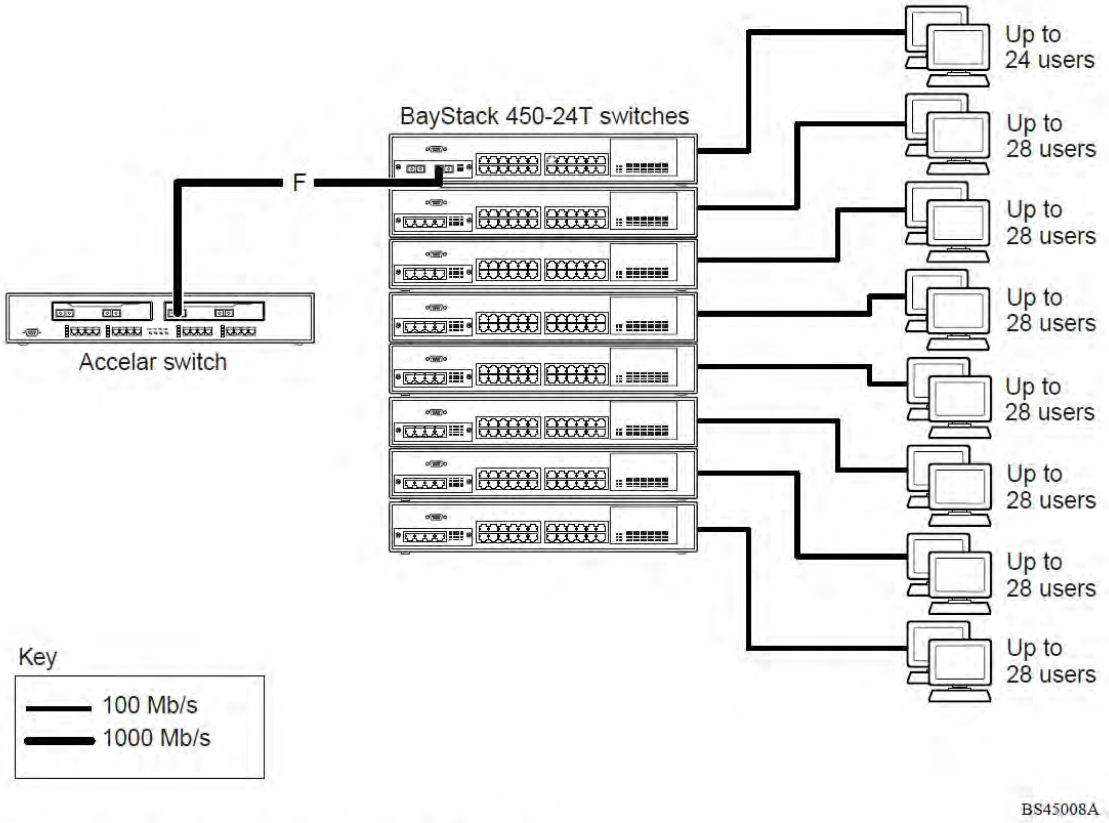


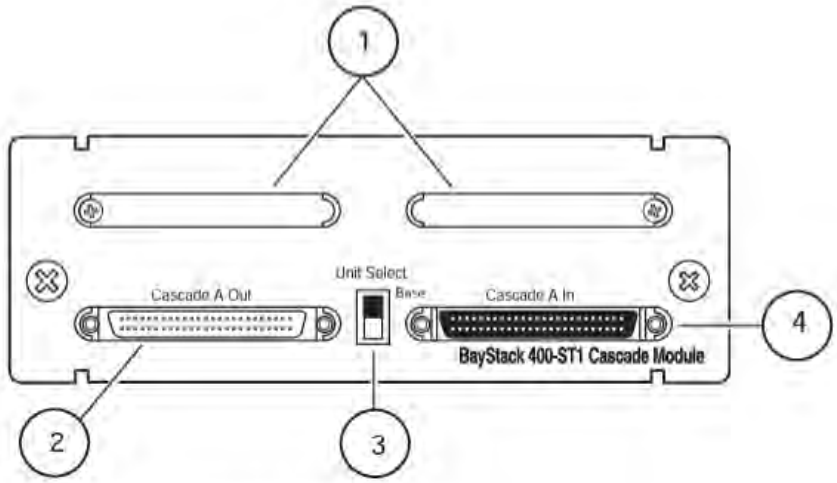
Figure 1-9. Fail-Safe Stack Example

BayStack 450 Manual at 48 of 290, FIG. 1-9.

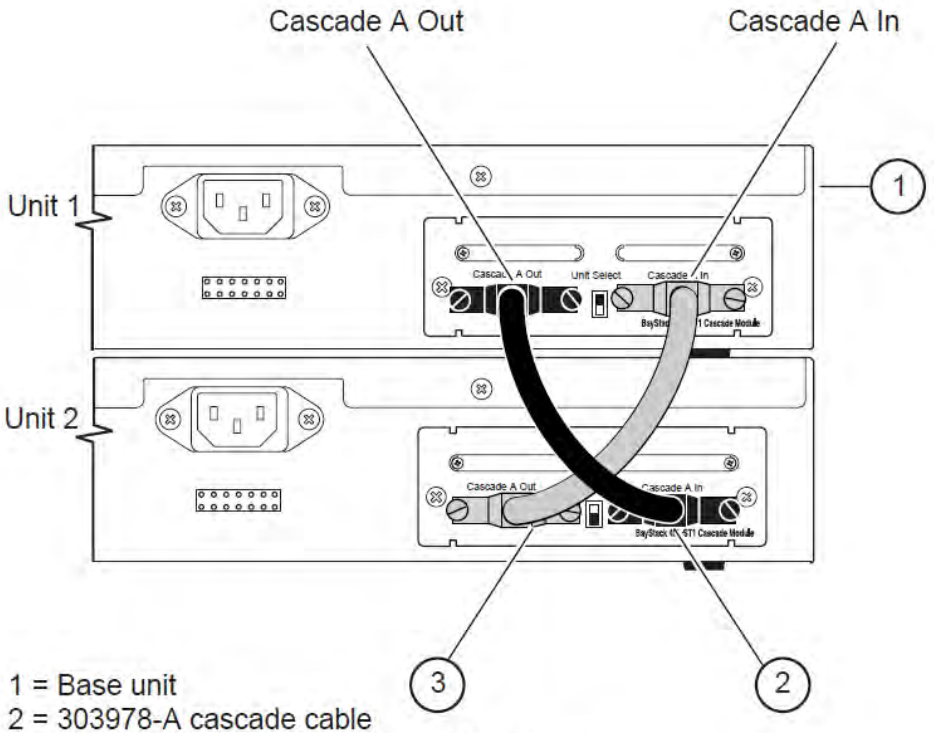
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No.	'904 Patent Claim 14	The BayStack 450 Switches
		Nortel Networks' BayStack 450 Switches further disclose that "[a]s shown in Figure 1-9, the Accelar 1100 switch is used as a backbone switch, connecting to the BayStack 450 switch with an optional gigabit (1000BASE-SX) MDA for maximum bandwidth. This configuration uses optional BayStack 400-ST1 Cascade Modules to connect the switches in the fail-safe stack." BayStack 450 Manual at 48 of 290. Nortel Networks' BayStack 450 Switches disclose that "[f]or an overview of the fail-safe stacking feature that is available for the BayStack 450 switches, see 'Stack Operation' following this section." BayStack 450 Manual at 48 of 290. Indeed, Nortel Networks' BayStack 450 Switches provide an overview of the fail-safe stacking feature, which discloses "BayStack 450 switches that are configured with BayStack 450 software version V1.1.0 or later provide fail-safe stackability when you install the optional BayStack 400-ST1 Cascade Module. You can connect up to eight switches to provide uninterrupted connectivity for up to 224 ports (see 'Fail-Safe Stack Application' on page 1-22). The entire stack is manageable as a single unit. Installation instructions are provided with the BayStack 400-ST1 Cascade Module (see your Nortel Networks sales representative for ordering information)." BayStack 450 Manual at 49 of 290. Further, Nortel Networks' BayStack 450 Switches disclose that the "BayStack 400-ST1 Cascade Module," which is shown in Figure 1-10 below. BayStack 450 Manual at 49 of 290.

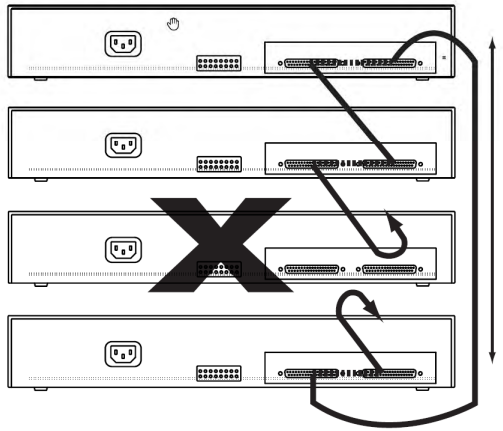
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No.	'904 Patent Claim 14	The BayStack 450 Switches
		 **Figure 1-10. BayStack 400-ST1 Front-Panel Components** BayStack 450 Manual at 49 of 290, FIG. 1-10. In addition, Nortel Networks' BayStack 450 Switches disclose that the "Unit Select switch (up = Base) determines the base unit for the stack configuration (see "Base Unit " on page 1-25). The Unit Select switch status is displayed on the BayStack 450 LED display panel. When the Unit Select switch is in the Base (up) position, all other Unit Select switches in the stack configuration must be set to Off (down)." BayStack 450 Manual at 50 of 290. Further still, Nortel Networks' BayStack 450 Switches disclose a Cascade A In Connector that provides "an attachment point for accepting a cascade cable connection from an adjacent unit in the stack. A return cable from this unit's Cascade A Out connector to the adjacent

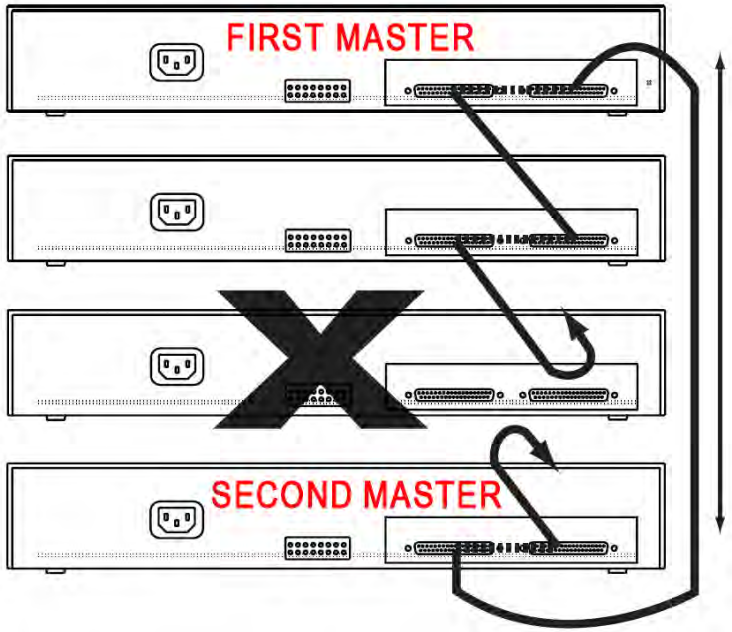
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No.	'904 Patent Claim 14	The BayStack 450 Switches
		unit's Cascade A In connector completes the stack connection (see the example shown in Figure 1-11)." BayStack 450 Manual at 50 of 290. Figure 1-11 is reproduced below. BayStack 450 Manual at 50 of 290, FIG. 1-11.  **Figure 1-11. Connecting Cascade Cables**
14[a]	in which a master unit is connected by a physical interface to a	The BayStack 450 Switches disclose a master unit is connected by a physical interface to a packet-switched network.

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No.	'904 Patent Claim 14	The BayStack 450 Switches
	packet-switched network,	For example, the BayStack 450 Switches disclose that BayStack 450 Switches may include physical connections between different switches in various configurations, such as a cascade stacking architecture. The BayStack 450 Switches can be arranged in a stack that includes two master switch units (one active master and one standby master) that connect to a packet-switched network (e.g., an ethernet network) via cables and/or other physical connections, that is, the stack comprises first and second master units, each comprising a physical interface to a packet-switched network. Specifically, Nortel Networks' BayStack 450 Switches disclose that "[u]nlike other stacking switches, BayStack 450 Switches are designed with a fail-safe cascade stacking architecture (see Figure 1)." BayStack 450 Data Sheet at 2 of 8. *Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.*  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

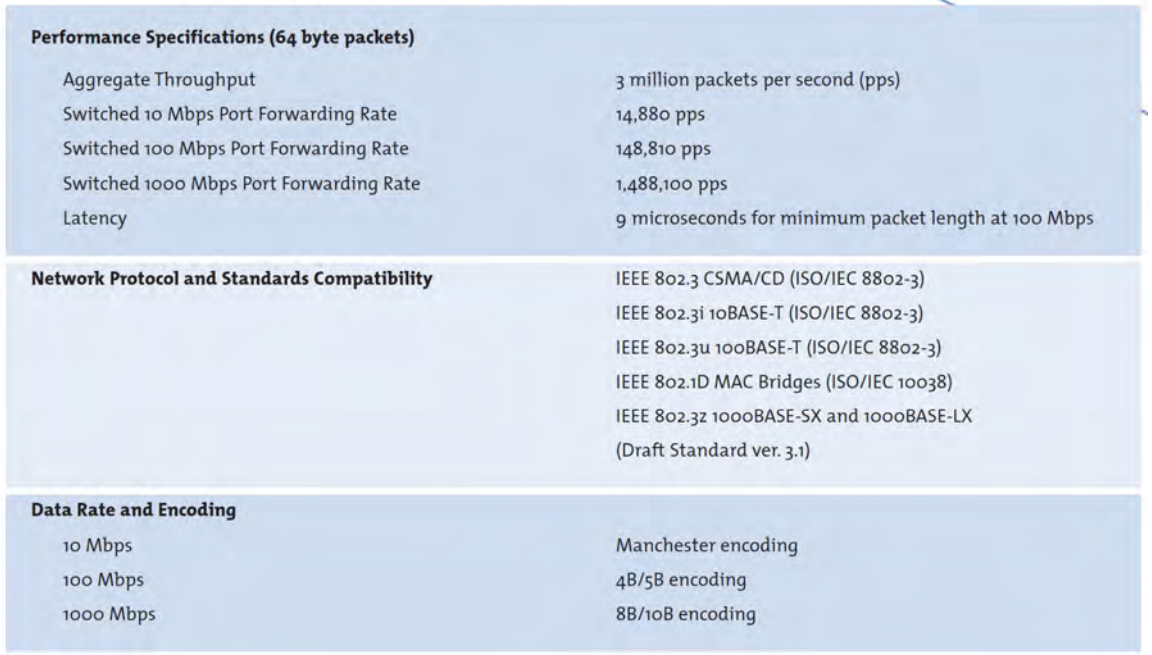
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No.	'904 Patent Claim 14	The BayStack 450 Switches
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). Nortel Networks' BayStack 450 Switches disclose that "[c]ascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption." BayStack 450 Data Sheet at 2 of 8. As a result, Nortel Networks' BayStack 450 Switches disclose that the "redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. In addition, Nortel Networks' BayStack 450 Switches disclose "RJ-45 Connectors Wired for MDI-X," describing that "[a]ll 10/100 autosense Ethernet port connectors are wired for MDI-

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		X connections to other devices. Inexpensive straight-through unshielded twisted pair (UTP) cables can be used to provide switch connections to servers, desktops, and internetworking device." BayStack 450 Data Sheet at 4 of 8. Moreover, Nortel Networks' BayStack 450 Switches disclose a web-based management that includes a "built-in Web-based network management, so network administrators can easily monitor the status and access data about their network via the local corporate intranet, or from any World Wide Web-connected PC, anywhere in the world." BayStack 450 Data Sheet at 4 of 8. In one example, Nortel Networks' BayStack 450 Switches disclose a packet-switch network, stating that its wire-speed throughput includes "2.5 Gigabit per second (Gbps) switching fabric and custom switching ASICs support full 802.1D-compliant MAC Layer frame forwarding and filtering across all ports at the peak rate of 3 million packets per second. The BayStack 450 Switches continue the Bay Networks tradition of industry- leading throughput performance." BayStack 450 Data Sheet at 2 of 8. In another example, Nortel Networks' BayStack 450 Switches disclose enhanced port mirroring capabilities, noting that "[p]ort mirroring copies packets flowing through a specified port and sends the replicated data to the probe for in-depth analysis of switched traffic patterns to trouble-shoot problems and optimize network configurations." BayStack 450 Data Sheet at 4 of 8. Indeed, Nortel Networks' BayStack 450 Switches disclose, in Table 2, various "Technical Specifications for the BayStack 450 Switches," including performance specifications for 64 byte packets and IEEE standards that are used in packet-switched networks. BayStack 450 Data Sheet at 5 of 8.

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		TECHNICAL SPECIFICATIONS *Table 2: Technical Specifications for the BayStack 450 Switches.*  **Performance Specifications (64 byte packets)** Aggregate Throughput — 3 million packets per second (pps) Switched 10 Mbps Port Forwarding Rate — 14,880 pps Switched 100 Mbps Port Forwarding Rate — 148,810 pps Switched 1000 Mbps Port Forwarding Rate — 1,488,100 pps Latency — 9 microseconds for minimum packet length at 100 Mbps **Network Protocol and Standards Compatibility** IEEE 802.3 CSMA/CD (ISO/IEC 8802-3) IEEE 802.3i 10BASE-T (ISO/IEC 8802-3) IEEE 802.3u 100BASE-T (ISO/IEC 8802-3) IEEE 802.1D MAC Bridges (ISO/IEC 10038) IEEE 802.3z 1000BASE-SX and 1000BASE-LX (Draft Standard ver. 3.1) **Data Rate and Encoding** 10 Mbps — Manchester encoding 100 Mbps — 4B/5B encoding 1000 Mbps — 8B/10B encoding BayStack 450 Data Sheet at 5 of 8, Table 2. In one example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the bottom of the stack in an aptly-named "Stack Up Configuration." BayStack 450 Manual at 54 of 290.

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No.	'904 Patent Claim 14	The BayStack 450 Switches

Stack Up Configurations

In Figure 1-12, data flows from the base unit (unit 1) to the next switch, which is assigned as unit 2, and continues until the last switch in the stack is assigned as unit 8. The physical order of the switches is *from bottom to top* (unit 1 to unit 8).

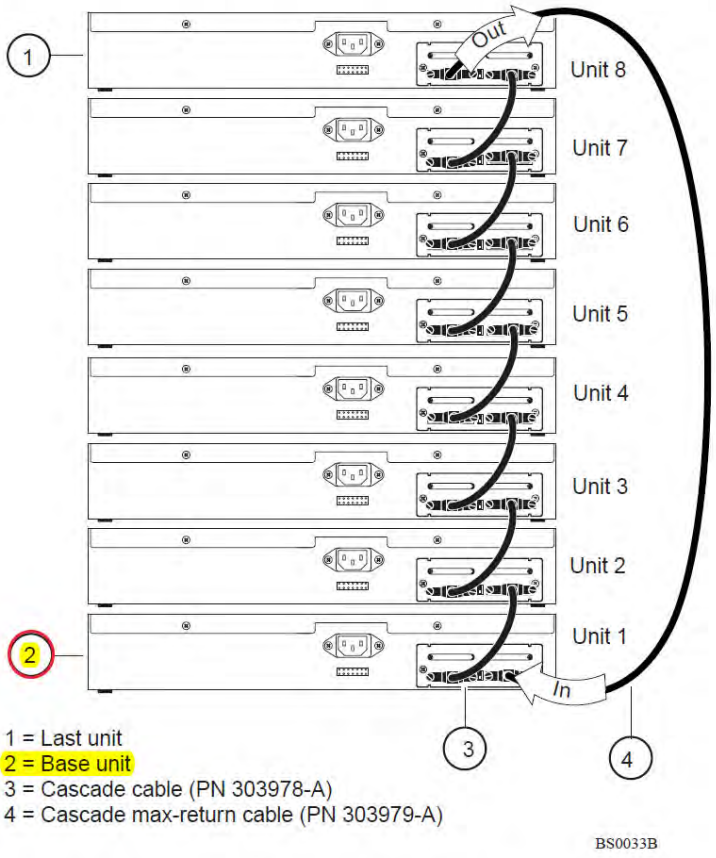


Figure 1-12. Stack Up Configuration Example

BayStack 450 Manual at 54 of 290, FIG. 1-12 (annotated).

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		In another example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the top of the stack in the also aptly-named "Stack Down Configuration." BayStack 450 Manual at 55 of 290.

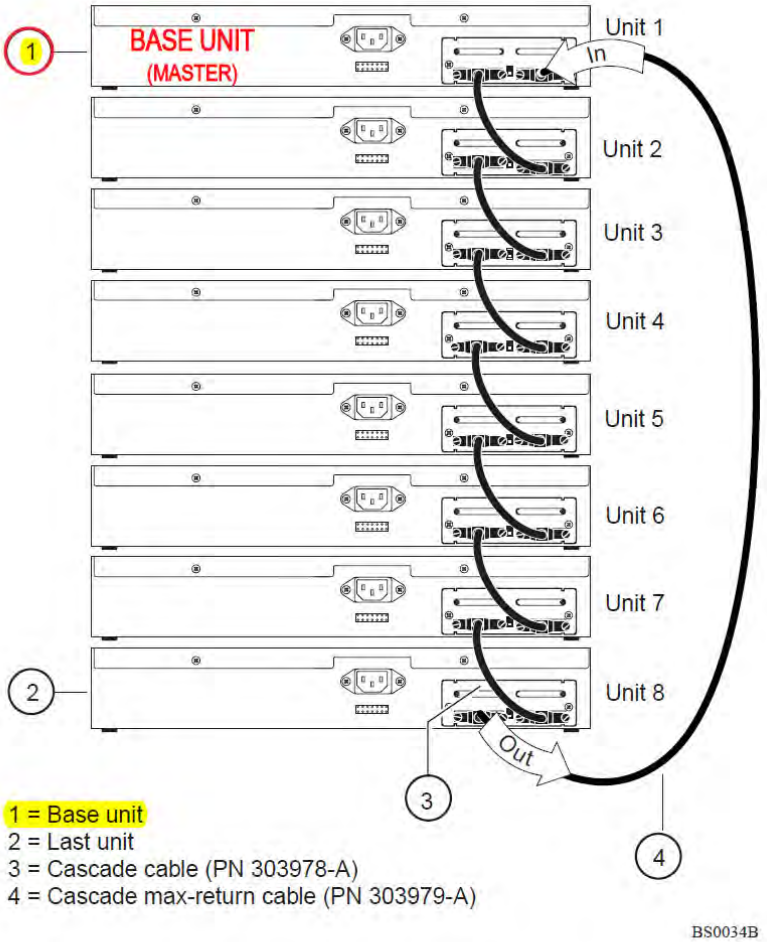


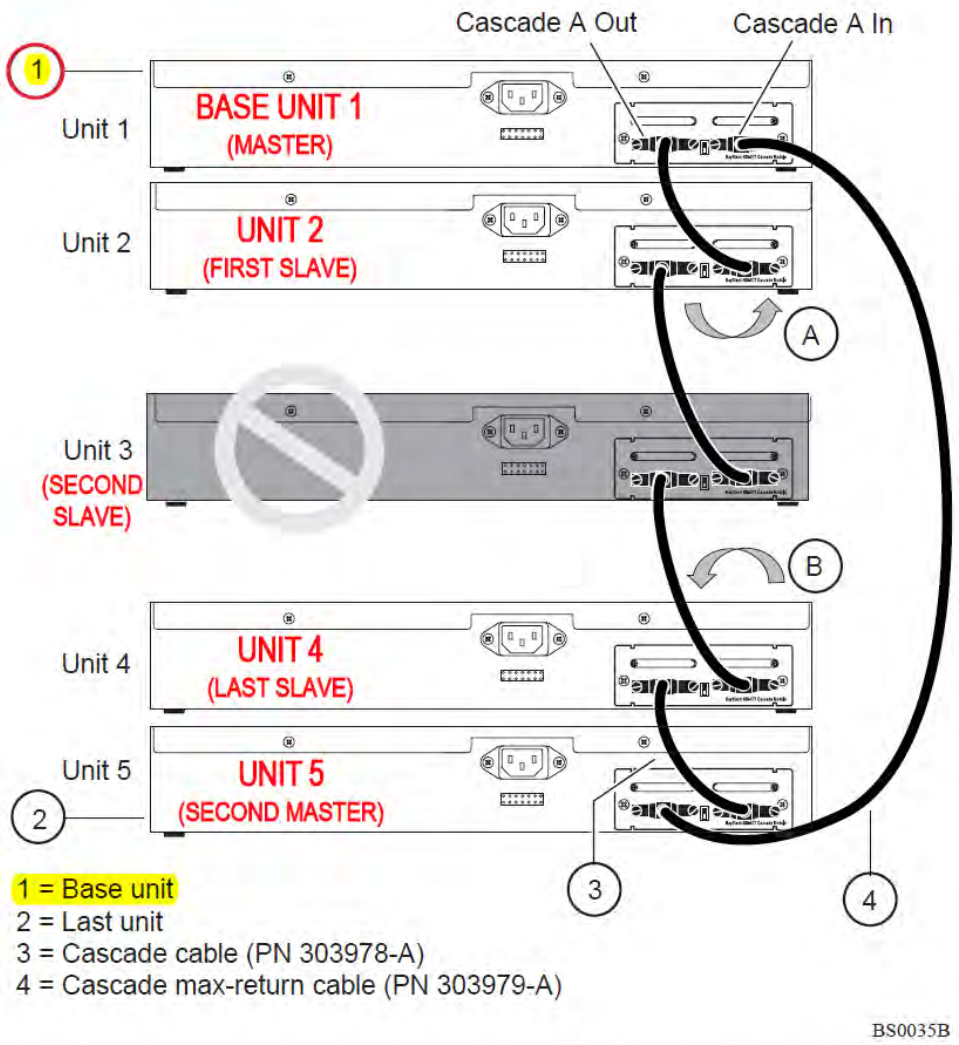
Figure 1-13. Stack Down Configuration Example

BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290. Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

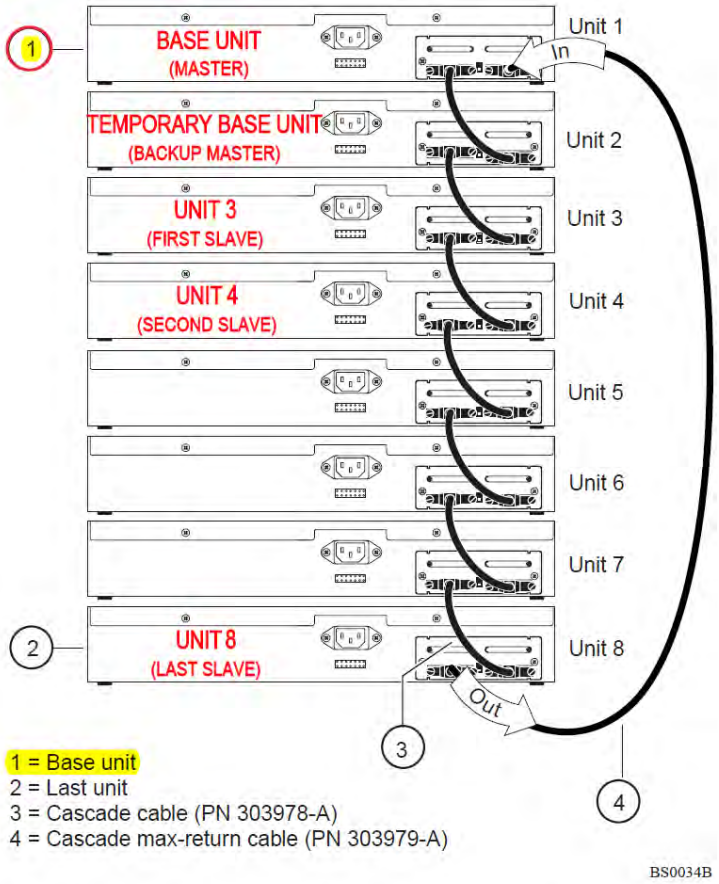
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No.	'904 Patent Claim 14	The BayStack 450 Switches
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		In an alternative example, the BayStack 450 Switches disclose a Temporary Base Unit as being a second master unit. See, e.g., BayStack 450 Manual at 33, 52, 230 of 290. For instance, the BayStack 450 Manual states that "[i]f an assigned base unit fails, the next unit in the stack order automatically becomes the new temporary base unit. This change is indicated by the Base LED on the temporary base unit's LED display panel turning on (amber). For detailed information about the base LED, see Table 1-1 on page 1-6." BayStack 450 Manual at 52 of 290. Further, in this alternative example, the BayStack 450 Manual describes that "[t]his automatic failover is a temporary safeguard only. If the stack configuration loses power, the temporary base unit will not power up as the base unit when power is restored. For this reason, you should always assign the temporary base unit as the base unit (set the Unit Select switch to Base) until the failed unit is repaired or replaced." BayStack 450 Manual at 52 of 290. The BayStack 450 Manual notes, in this alternative example, that "[i]f you do not reassign the temporary base unit as the new base unit, and the temporary base unit fails, the next unit directly downstream from this unit becomes the new temporary base unit. This process can continue until there are only two units left in the stack configuration." BayStack 450 Manual at 52 of 290. In this example, the BayStack 450 Switches disclose that the BayStack 450 Switch LED Descriptions include an amber light that indicates when "unit is operating as the stack configuration's temporary base unit." BayStack 450 Manual at 33 of 290 "This condition occurs automatically if the base unit (directly downstream from this unit) fails." *Id.* And the BayStack 450 Switches disclose that, in this case, the "two units directly upstream and directly downstream from the failed unit automatically wrap their cascade connectors and indicate this condition by lighting their Cas Up and Cas Dwn LEDs (see Cas Up and Cas Dwn description in this table)." BayStack 450 Manual at 33 of 290. But the BayStack 450 Switches also disclose, in this alternative example, that "[i]f the temporary base unit fails, the next unit directly downstream from this unit becomes the new

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		temporary base unit. This process can continue until there are only two units left in the stack configuration." BayStack 450 Manual at 33 of 290. As shown below, in the Stack Down Configuration, the second unit would become the temporary base unit if the base unit were to fail in this configuration.  **Figure 1-13. Stack Down Configuration Example** BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		To the extent that Orckit contends that the BayStack 450 Switches does not disclose this limitation, the BayStack 450 Switches in combination with (1) the knowledge of a person of ordinary skill in the art and/or in further combination with (2) Ding renders the claim, including the present limitation, obvious. For example, U.S. Patent No. 6,981,034 B2 to Ding et al. ("Ding") is titled "Decentralized Management Architecture for a Modular Communication System," was filed June 30, 1999, and issued on December 27, 2005. At filing and issuance, Ding was assigned to the same company, Nortel Networks, that made the BayStack 450 Switches. Ding, Cover. Indeed, Ding discloses that "[i]n a preferred embodiment of the present invention, each Ethernet Switching module is a particular device that is known as the BayStack™ 450 stackable Ethernet Switch." Thus, Ding discloses that its patented invention is embodied by the BayStack 450 Switches. And, as discussed below, Ding discloses a base module, switching modules, and stacking configuration that are substantially similar to the BayStack 450 Switches that the base unit, switching units, and fail-safe cascade stacking architecture, respectively. Moreover, as discussed below, Ding and the BayStack 450 Switches share many identical specifications, such as the ability to operate at 10 Mbps or 100 Mbps and the maximum throughput of 2.5 Gbps for wire-speed transmissions. Further, Ding (a patent sharing inventors with the BayStack switch) discloses a centralized managing unit, *i.e.* a "base module" for the stack. ("In order to operate and manage the interconnected mod ules as an integrated unit, a centralized management approach is often employed. Specifically, a centralized manager coordinates the operation and management of the various interconnected modules. The centralized manager may be, for example, a docking Station, a dedicated management module, or even one of the cooperating modules (which is often referred to as a "base module" for the stack)." Ding, 3:21-29. ("The distributed management approach of the present invention has a number of advantages over a centralized management approach. Each module is capable of acting as a base module, and therefore the base module does not represent a single point of failure for the Stack. Also, each module maintains essentially the same parameters whether operating as the base module,

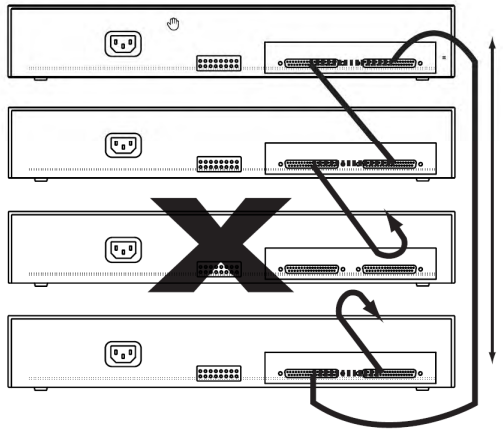
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No.	'904 Patent Claim 14	The BayStack 450 Switches
		a cooperating module, or in a Stand-alone mode, and therefore no additional memory resources are required for a module to operate as the base module. Furthermore, because the module-specific param eters are not maintained acroSS all of the interconnected modules, the amount of inter-module communication is Substantially reduced. These and other advantages will become apparent below." Ding, 4:14-27. Ding discloses that each base module requires Ethernet connectivity. ("In order to coordinate management and control operations across the various cooperating Ethernet Switching modules in the Stack, one of the cooperating Ethernet Switching modules operates as the base module for the Stack. In a preferred embodiment of the present invention, a particular Ethernet Switching module is configured as the base module through a user-controlled toggle Switch on the Ethernet Switching module. If that Ethernet Switching module fails, then another Ethernet switching module (preferably the next upstream Ethernet Switching module in the Stack) automatically reconfigures itself to become the base module for the Stack. The base module is responsible for coordinating management and control for the Stack. Specifically, the base module manages the Stack configuration by ensuring that the Stack is initialized in an orderly manner, handling Stack configuration changes Such as module insertion and removal, and verifying stack integrity. The base module also coordinates certain Stack management functions that require Synchronization or mutual exclusion among the various cooperating Ethernet Switching modules in the Stack." Ding, 8:9-30. Further, Ding discloses a dual ring bus having a bandwidth of 2.5 gigabits per second. ("In a preferred embodiment of the present invention, each Ethernet Switching module is a particular device that is known as the BayStackTM 450 stackable Ethernet Switch. The preferred Ethernet Switching module can be configured to operate as an independent Stand-alone device, or alternatively up to eight (8) Ethernet Switching modules can be interconnected in a Stack configuration, preferably by interconnecting the up to eight (8) Ethernet Switching modules through a dual ring bus having a bandwidth of 2.5 gigabits per Second. Within the Stack configuration, a particular Ethernet Switching module can be configured to operate in either a Stand-alone mode, in which the particular Ethernet Switching module performs Ethernet Switching independently of the other Ethernet Switching modules in the Stack, or a cooperating mode, in which the particular Ethernet Switching module

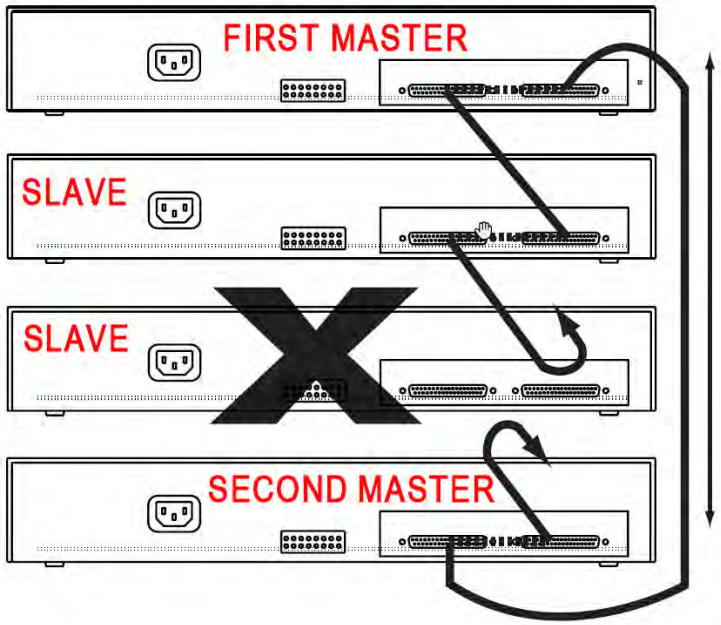
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No.	'904 Patent Claim 14	The BayStack 450 Switches
		performs Ethernet Switching in conjunction with other cooperating Ethernet Switching modules. Furthermore, a particular Ethernet Switching module in the Stack can be dynamically reconfigured between the Stand alone mode and the cooperating mode without performing a System reset or power cycle of the particular Ethernet Switching module, and Ethernet Switching modules can be dynamically added to the Stack and removed from the Stack without performing a System reset or power cycle of the other Ethernet Switching modules in the Stack." Ding, 5:43-67. Ding further discloses that the base module is responsible for coordinating management and control of the stack. ("The base module is responsible for coordinating management and control for the Stack. Specifically, the base module manages the Stack configuration by ensuring that the Stack is initialized in an orderly manner, handling Stack configuration changes Such as module insertion and removal, and verifying stack integrity. The base module also coordinates certain Stack management functions that require synchronization or mutual exclusion among the various cooperating Ethernet Switching modules in the Stack." Ding, 8:21-30.
14[b]	a slave unit configured to be coupled to the master unit in a daisy chain of such slave units,	The BayStack 450 Switches disclose a slave unit configured to be coupled to the master unit in a daisy chain of such slave units. For example, The BayStack 450 Switches disclose that BayStack 450 Switches may include physical connections between different switches in various configurations, such as a cascade stacking architecture. Thus, the BayStack 450 Switches may include several stacked switch units that are slave units; that is, the BayStack 450 Switches are stackable switches that may include a plurality of slave units. *See supra* Claim 1[c]. Nortel Networks' BayStack 450 Switches disclose that "[u]nlike other stacking switches, BayStack 450 Switches are designed with a fail-safe cascade stacking architecture (see Figure 1)." BayStack 450 Data Sheet at 2 of 8.

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In one example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the bottom of the stack in an aptly-named "Stack Up Configuration." BayStack 450 Manual at 54 of 290.

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No.	'904 Patent Claim 14	The BayStack 450 Switches

Stack Up Configurations

In Figure 1-12, data flows from the base unit (unit 1) to the next switch, which is assigned as unit 2, and continues until the last switch in the stack is assigned as unit 8. The physical order of the switches is *from bottom to top* (unit 1 to unit 8).

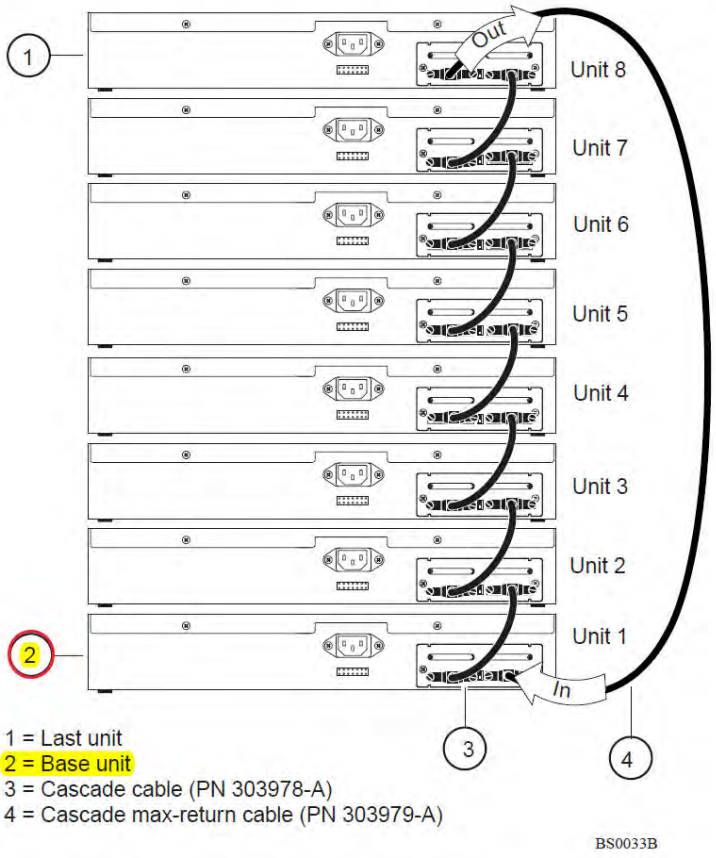


Figure 1-12. Stack Up Configuration Example

BayStack 450 Manual at 54 of 290, FIG. 1-12 (annotated).

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		In another example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the top of the stack in the also aptly-named "Stack Down Configuration." BayStack 450 Manual at 55 of 290.

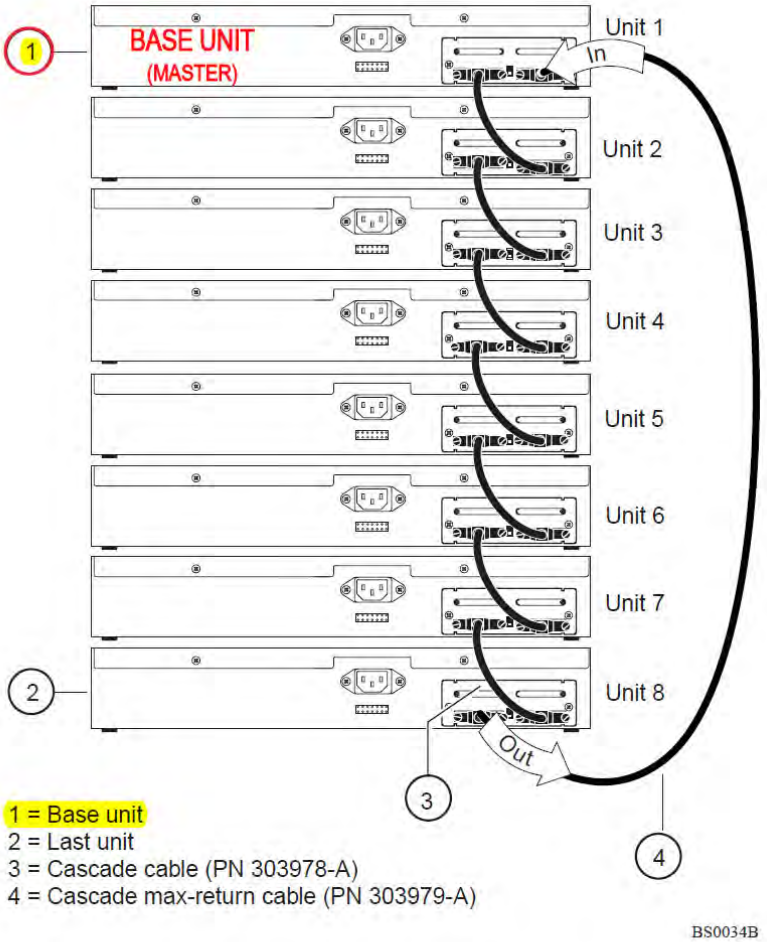


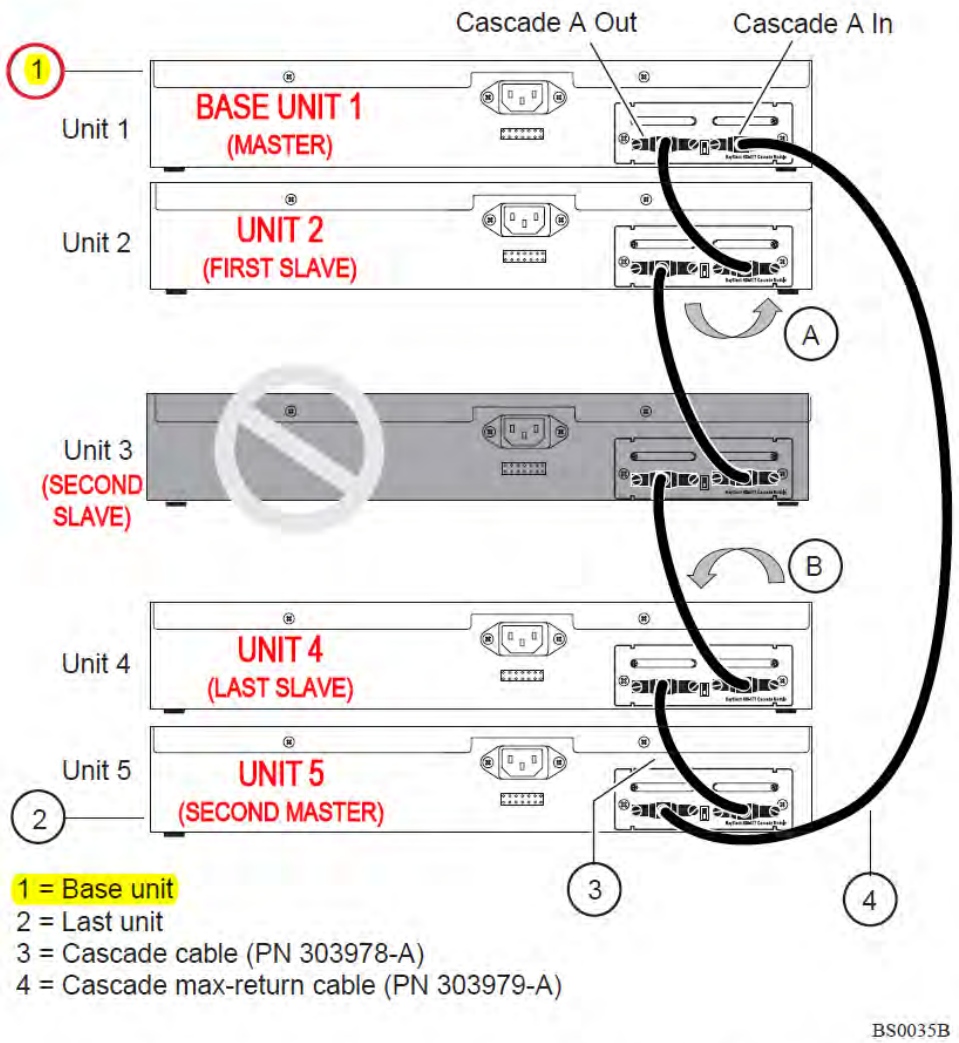
Figure 1-13. Stack Down Configuration Example

BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290. Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

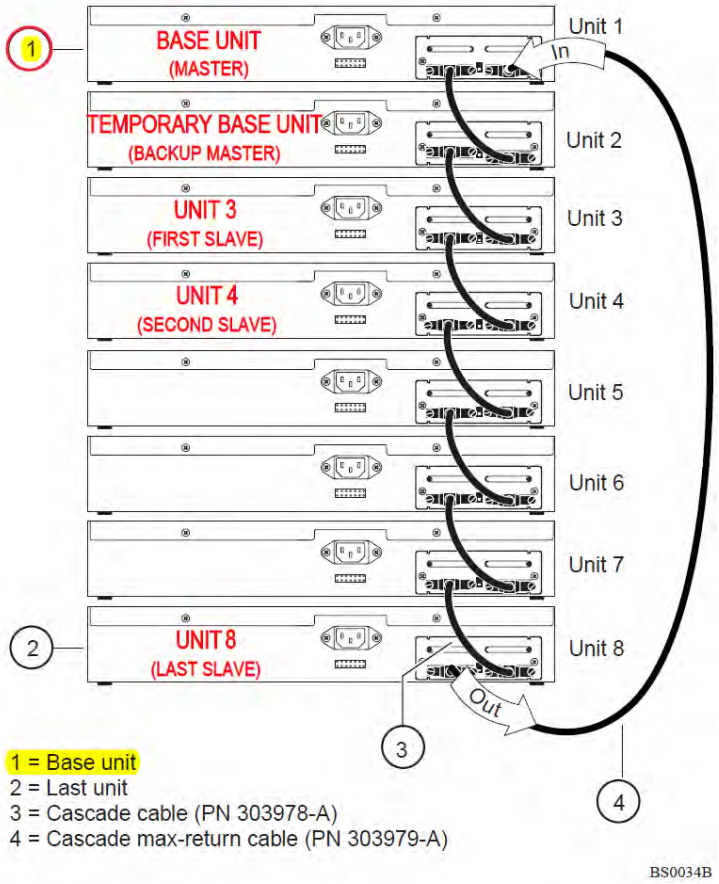
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No.	'904 Patent Claim 14	The BayStack 450 Switches
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		In an alternative example, the BayStack 450 Switches disclose a Temporary Base Unit as being a second master unit. See, e.g., BayStack 450 Manual at 33, 52, 230 of 290. For instance, the BayStack 450 Manual states that "[i]f an assigned base unit fails, the next unit in the stack order automatically becomes the new temporary base unit. This change is indicated by the Base LED on the temporary base unit's LED display panel turning on (amber). For detailed information about the base LED, see Table 1-1 on page 1-6." BayStack 450 Manual at 52 of 290. Further, in this alternative example, the BayStack 450 Manual describes that "[t]his automatic failover is a temporary safeguard only. If the stack configuration loses power, the temporary base unit will not power up as the base unit when power is restored. For this reason, you should always assign the temporary base unit as the base unit (set the Unit Select switch to Base) until the failed unit is repaired or replaced." BayStack 450 Manual at 52 of 290. The BayStack 450 Manual notes, in this alternative example, that "[i]f you do not reassign the temporary base unit as the new base unit, and the temporary base unit fails, the next unit directly downstream from this unit becomes the new temporary base unit. This process can continue until there are only two units left in the stack configuration." BayStack 450 Manual at 52 of 290. In this example, the BayStack 450 Switches disclose that the BayStack 450 Switch LED Descriptions include an amber light that indicates when "unit is operating as the stack configuration's temporary base unit." BayStack 450 Manual at 33 of 290 "This condition occurs automatically if the base unit (directly downstream from this unit) fails." *Id.* And the BayStack 450 Switches disclose that, in this case, the "two units directly upstream and directly downstream from the failed unit automatically wrap their cascade connectors and indicate this condition by lighting their Cas Up and Cas Dwn LEDs (see Cas Up and Cas Dwn description in this table)." BayStack 450 Manual at 33 of 290. But the BayStack 450 Switches also disclose, in this alternative example, that "[i]f the temporary base unit fails, the next unit directly downstream from this unit becomes the new

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		temporary base unit. This process can continue until there are only two units left in the stack configuration." BayStack 450 Manual at 33 of 290. As shown below, in the Stack Down Configuration, the second unit would become the temporary base unit if the base unit were to fail in this configuration.  **Figure 1-13. Stack Down Configuration Example** BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

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<table>
<tr><th>No.</th><th>’904 Patent Claim 14</th><th>The BayStack 450 Switches</th></tr>
<tr><td>14[c]</td><td>the slave unit comprising: a plurality of ports, for coupling the slave unit to respective subscriber lines;</td><td>The BayStack 450 Switches disclose the slave unit comprising: a plurality of ports, for coupling the slave unit to respective subscriber lines.

For example, the BayStack 450 Switches disclose that each switch unit in the Nortel Networks BayStack 450 Switches include ports that connect it to subscriber lines, that is, each slave unit comprises one or more ports to respective subscriber lines.

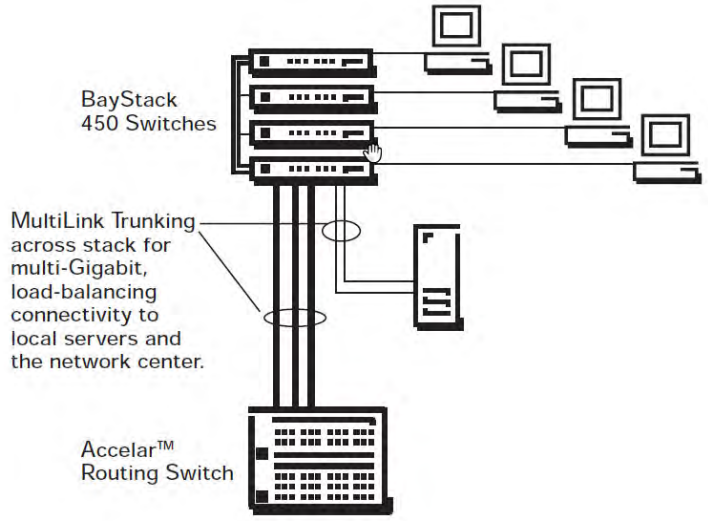
Nortel Networks’ BayStack 450 Switches disclose that “BayStack 450 Switches are available in 24- and 12-port configurations, each with a Media Dependent Adapter (MDA) slot, as well as a cascade stacking module slot.” BayStack 450 Data Sheet at 2 of 8.

Table 1: Port, MDA, and Stacking Module Slot Configurations of the BayStack 450 Switches.

<table>
<tr><th>BayStack 450 Switch</th><th>Autosensing 10BASE-T/ 100BASE-TX Ports</th><th>MDA Slot</th><th>Cascade Stacking Module Slot</th></tr>
<tr><td>BayStack 450-12T</td><td>12</td><td>1</td><td>1</td></tr>
<tr><td>BayStack 450-24T</td><td>24</td><td>1</td><td>1</td></tr>
</table>
BayStack 450 Data Sheet at 2 of 8, Table 1.

In particular, Nortel Networks’ BayStack 450 Switches disclose full autosensing on every port, stating that “[e]very UTP port on the BayStack 450 Switches is equipped with autosense technology to automatically detect and support the speed and mode of a connected device.</td></tr>
</table>

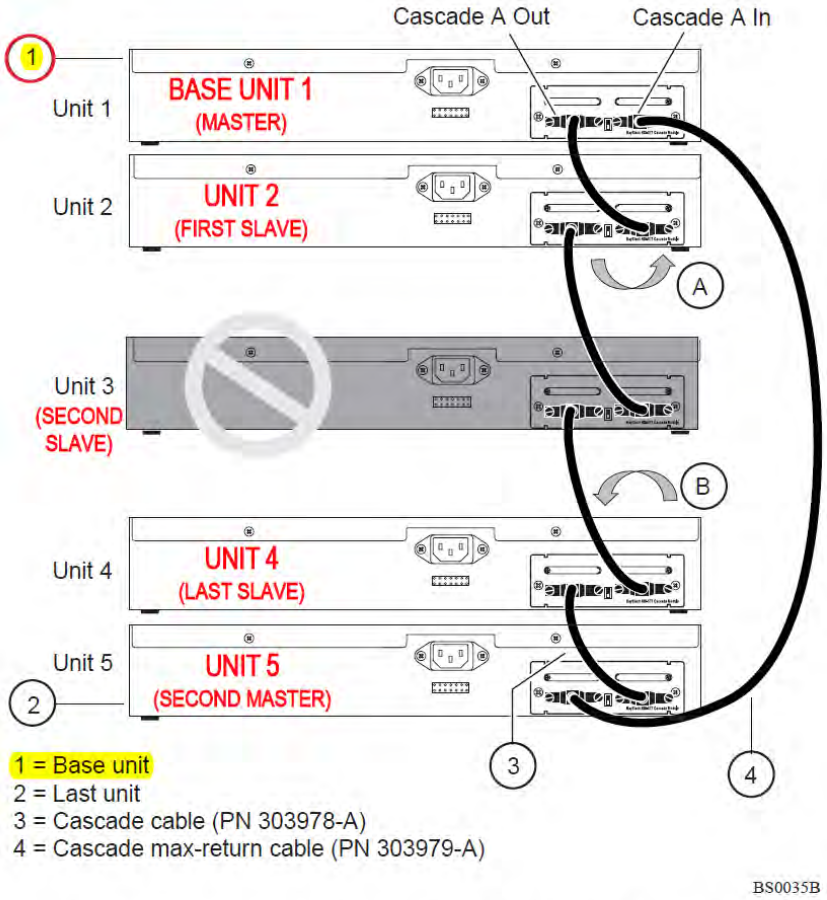
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No.	'904 Patent Claim 14	The BayStack 450 Switches
		As well as automatically determining whether a connected device is operating at 10 Mbps or 100 Mbps and automatically adjusting to the optimal speed, each switched port also automatically detects and supports full-duplex connections to servers, power-user endstations or other switches as well as half-duplex connections to legacy NICs or hubs." BayStack 450 Data Sheet at 2 of 8. Further, Nortel Networks' BayStack 450 Switches disclose that "[u]p to 64 port-based or policy-based VLANs can be established for each switch, to extend the broadcast domain and segment network traffic. Each switch can also support 4,096 transit VLANs." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts these connections in Figure 2 below. *Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.*  BayStack 450 Data Sheet at 4 of 8, FIG. 2.

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		In addition, Nortel Networks' BayStack 450 Switches disclose "RJ-45 Connectors Wired for MDI-X," describing that "[a]ll 10/100 autosense Ethernet port connectors are wired for MDI-X connections to other devices. Inexpensive straight-through unshielded twisted pair (UTP) cables can be used to provide switch connections to servers, desktops, and internetworking device." BayStack 450 Data Sheet at 4 of 8. Nortel Networks' BayStack 450 Switches provide an overview of the fail-safe stacking feature, which discloses "BayStack 450 switches that are configured with BayStack 450 software version V1.1.0 or later provide fail-safe stackability when you install the optional BayStack 400-ST1 Cascade Module. You can connect up to eight switches to provide uninterrupted connectivity for up to 224 ports (see 'Fail-Safe Stack Application' on page 1-22). The entire stack is manageable as a single unit. Installation instructions are provided with the BayStack 400-ST1 Cascade Module (see your Nortel Networks sales representative for ordering information)." BayStack 450 Manual at 49 of 290. In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290. Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows

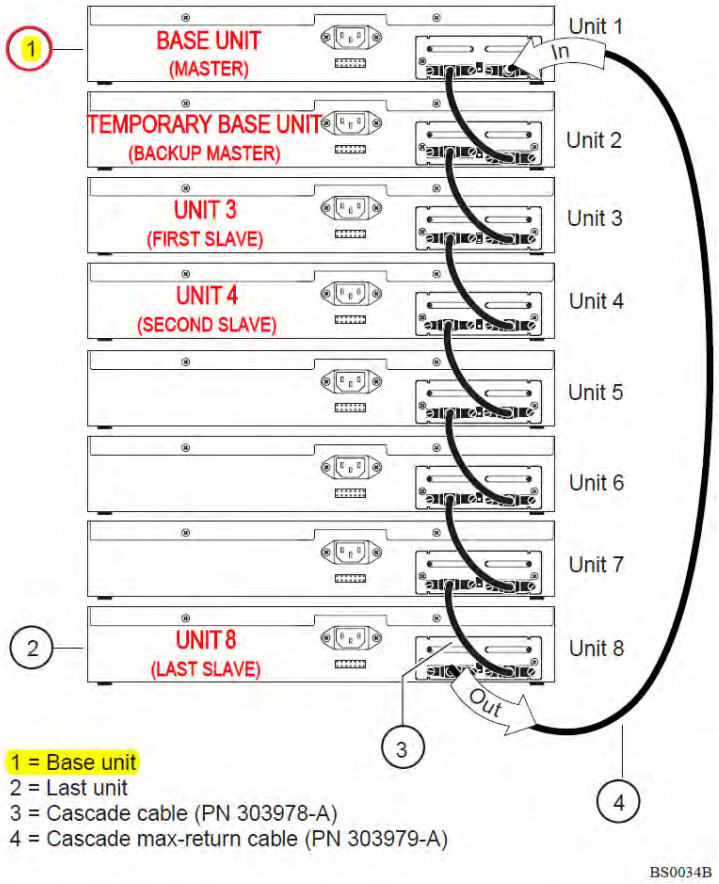
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No.	'904 Patent Claim 14	The BayStack 450 Switches
		a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Figure 1-14 of the BayStack 450 Manual is annotated and shown below.  **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

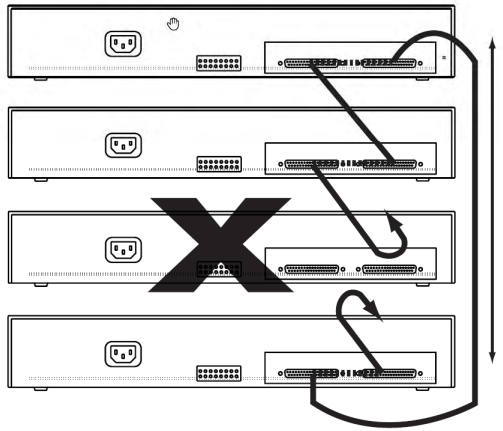
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No.	'904 Patent Claim 14	The BayStack 450 Switches
		In an alternative example, the BayStack 450 Switches disclose a Temporary Base Unit as being a second master unit. See, e.g., BayStack 450 Manual at 33, 52, 230 of 290. For instance, the BayStack 450 Manual states that "[i]f an assigned base unit fails, the next unit in the stack order automatically becomes the new temporary base unit. This change is indicated by the Base LED on the temporary base unit's LED display panel turning on (amber). For detailed information about the base LED, see Table 1-1 on page 1-6." BayStack 450 Manual at 52 of 290. Further, in this alternative example, the BayStack 450 Manual describes that "[t]his automatic failover is a temporary safeguard only. If the stack configuration loses power, the temporary base unit will not power up as the base unit when power is restored. For this reason, you should always assign the temporary base unit as the base unit (set the Unit Select switch to Base) until the failed unit is repaired or replaced." BayStack 450 Manual at 52 of 290. The BayStack 450 Manual notes, in this alternative example, that "[i]f you do not reassign the temporary base unit as the new base unit, and the temporary base unit fails, the next unit directly downstream from this unit becomes the new temporary base unit. This process can continue until there are only two units left in the stack configuration." BayStack 450 Manual at 52 of 290. In this example, the BayStack 450 Switches disclose that the BayStack 450 Switch LED Descriptions include an amber light that indicates when "unit is operating as the stack configuration's temporary base unit." BayStack 450 Manual at 33 of 290 "This condition occurs automatically if the base unit (directly downstream from this unit) fails." *Id.* And the BayStack 450 Switches disclose that, in this case, the "two units directly upstream and directly downstream from the failed unit automatically wrap their cascade connectors and indicate this condition by lighting their Cas Up and Cas Dwn LEDs (see Cas Up and Cas Dwn description in this table)." BayStack 450 Manual at 33 of 290. But the BayStack 450 Switches also disclose, in this alternative example, that "[i]f the temporary base unit fails, the next unit directly downstream from this unit becomes the new

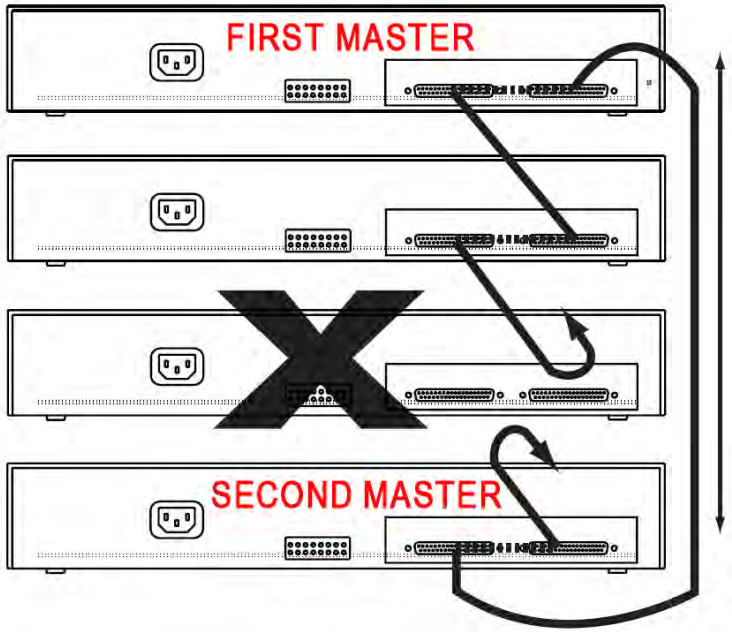
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No.	'904 Patent Claim 14	The BayStack 450 Switches
		temporary base unit. This process can continue until there are only two units left in the stack configuration." BayStack 450 Manual at 33 of 290. As shown below, in the Stack Down Configuration, the second unit would become the temporary base unit if the base unit were to fail in this configuration.  **Figure 1-13. Stack Down Configuration Example** BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

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No.	'904 Patent Claim 14	The BayStack 450 Switches
14[d]	first and second physical interfaces, coupled to exchange packets with preceding and succeeding units, respectively, along the daisy chain;	The BayStack 450 Switches disclose first and second physical interfaces, coupled to exchange packets with preceding and succeeding units, respectively, along the daisy chain. For example, Nortel Networks' BayStack 450 Switches disclose that "[u]nlike other stacking switches, BayStack 450 Switches are designed with a fail-safe cascade stacking architecture (see Figure 1)." BayStack 450 Data Sheet at 2 of 8. *Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.*  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). Nortel Networks' BayStack 450 Switches disclose that "[c]ascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption." BayStack 450 Data Sheet at 2 of 8. As a result, Nortel Networks' BayStack 450 Switches disclose that the "redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8.

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		Nortel Networks' BayStack 450 Switches disclose that "BayStack 450 Switches are available in 24- and 12-port configurations, each with a Media Dependent Adapter (MDA) slot, as well as a cascade stacking module slot." BayStack 450 Data Sheet at 2 of 8.

Table 1: Port, MDA, and Stacking Module Slot Configurations of the BayStack 450 Switches.

BayStack 450 Switch	Autosensing 10BASE-T/ 100BASE-TX Ports	MDA Slot	Cascade Stacking Module Slot
BayStack 450-12T	12	1	1
BayStack 450-24T	24	1	1

BayStack 450 Data Sheet at 2 of 8, Table 1.

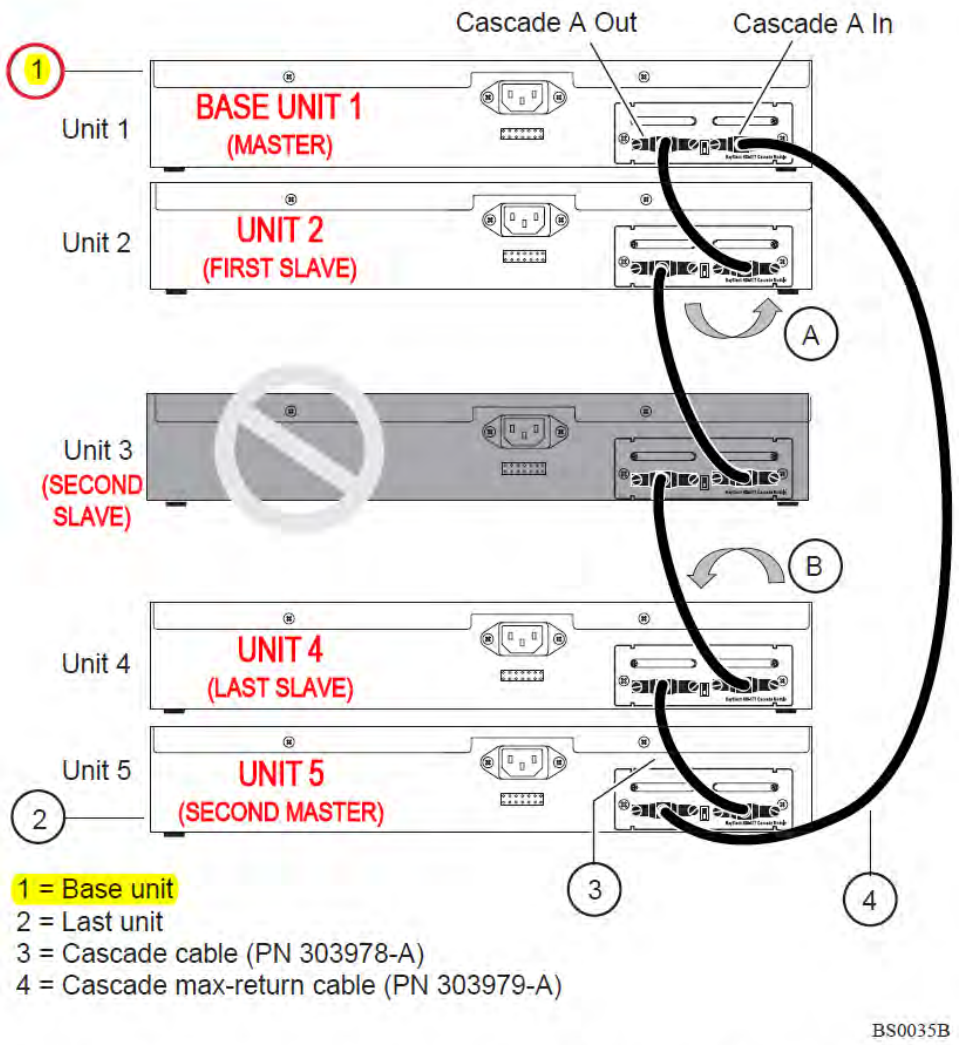
In particular, Nortel Networks' BayStack 450 Switches disclose full autosensing on every port, stating that "[e]very UTP port on the BayStack 450 Switches is equipped with autosense technology to automatically detect and support the speed and mode of a connected device. As well as automatically determining whether a connected device is operating at 10 Mbps or 100 Mbps and automatically adjusting to the optimal speed, each switched port also automatically detects and supports full-duplex connections to servers, power-user endstations or other switches as well as half-duplex connections to legacy NICs or hubs." BayStack 450 Data Sheet at 2 of 8.

In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290.

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

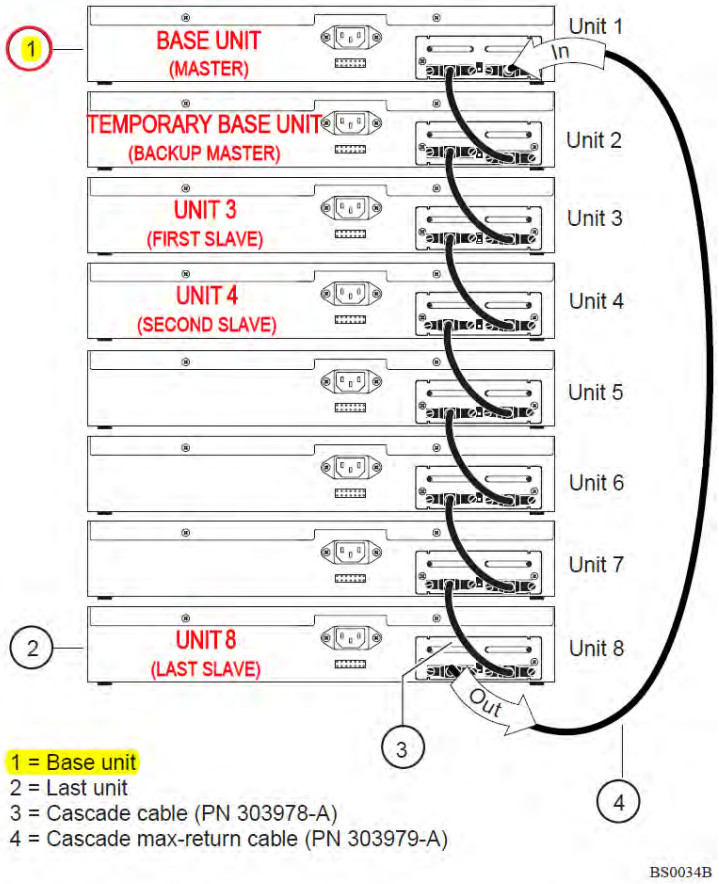
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No.	'904 Patent Claim 14	The BayStack 450 Switches
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		In an alternative example, the BayStack 450 Switches disclose a Temporary Base Unit as being a second master unit. See, e.g., BayStack 450 Manual at 33, 52, 230 of 290. For instance, the BayStack 450 Manual states that "[i]f an assigned base unit fails, the next unit in the stack order automatically becomes the new temporary base unit. This change is indicated by the Base LED on the temporary base unit's LED display panel turning on (amber). For detailed information about the base LED, see Table 1-1 on page 1-6." BayStack 450 Manual at 52 of 290. Further, in this alternative example, the BayStack 450 Manual describes that "[t]his automatic failover is a temporary safeguard only. If the stack configuration loses power, the temporary base unit will not power up as the base unit when power is restored. For this reason, you should always assign the temporary base unit as the base unit (set the Unit Select switch to Base) until the failed unit is repaired or replaced." BayStack 450 Manual at 52 of 290. The BayStack 450 Manual notes, in this alternative example, that "[i]f you do not reassign the temporary base unit as the new base unit, and the temporary base unit fails, the next unit directly downstream from this unit becomes the new temporary base unit. This process can continue until there are only two units left in the stack configuration." BayStack 450 Manual at 52 of 290. In this example, the BayStack 450 Switches disclose that the BayStack 450 Switch LED Descriptions include an amber light that indicates when "unit is operating as the stack configuration's temporary base unit." BayStack 450 Manual at 33 of 290 "This condition occurs automatically if the base unit (directly downstream from this unit) fails." *Id.* And the BayStack 450 Switches disclose that, in this case, the "two units directly upstream and directly downstream from the failed unit automatically wrap their cascade connectors and indicate this condition by lighting their Cas Up and Cas Dwn LEDs (see Cas Up and Cas Dwn description in this table)." BayStack 450 Manual at 33 of 290. But the BayStack 450 Switches also disclose, in this alternative example, that "[i]f the temporary base unit fails, the next unit directly downstream from this unit becomes the new

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		temporary base unit. This process can continue until there are only two units left in the stack configuration." BayStack 450 Manual at 33 of 290. As shown below, in the Stack Down Configuration, the second unit would become the temporary base unit if the base unit were to fail in this configuration.  **Figure 1-13. Stack Down Configuration Example** BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

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No.	'904 Patent Claim 14	The BayStack 450 Switches
14[e]	a pre-switch, coupled to receive packets from the first physical interface and responsive to address data carried by the packets, to sort the packets such that packets addressed to the slave unit are retained, and packets addressed to the succeeding units are passed to the second physical interface; and	The BayStack 450 Switches disclose a pre-switch, coupled to receive packets from the first physical interface and responsive to address data carried by the packets, to sort the packets such that packets addressed to the slave unit are retained, and packets addressed to the succeeding units are passed to the second physical interface. For example, Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Nortel Networks' BayStack 450 Switches disclose a BootP Automatic IP/MAC Address: "The BayStack 450 switch has a unique 48-bit hardware address, or MAC address, that is printed on a label on the back panel. You use this MAC address when you configure the network BootP server to recognize the BayStack 450 switch BootP requests. A properly configured BootP server enables the switch to automatically learn its assigned IP address, subnet mask, IP address of the default router (default gateway), and software image file name. When the switch is participating in a stack configuration, a Stack MAC address is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F

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No.	'904 Patent Claim 14	The BayStack 450 Switches
		If another unit in the stack is assigned as the base unit, the MAC address of the new base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit." BayStack 450 Manual at 43 of 290. **Stack MAC Address** The *Stack MAC address* is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If you designate another unit in the stack as the base unit, the MAC address of the *new* base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit. BayStack 450 Manual at 52 of 290.
14[f]	a fabric of one or more switches, which convey the retained packets to the ports, responsive to the address data.	The BayStack 450 Switches disclose a fabric of one or more switches, which convey the retained packets to the ports, responsive to the address data. *See supra* at 11[f].

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No.	'904 Patent Claim 15	the BayStack 450 Switches
15	The slave unit according to claim 14, wherein the pre-switch is further coupled to receive packets transferred thereto from the second physical interface and to sort the packets in like manner to the packets received through the first physical interface.	The BayStack 450 Switches disclose the slave unit according to claim 14, wherein the pre-switch is further coupled to receive packets transferred thereto from the second physical interface and to sort the packets in like manner to the packets received through the first physical interface. In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290. Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

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No.	'904 Patent Claim 15	the BayStack 450 Switches

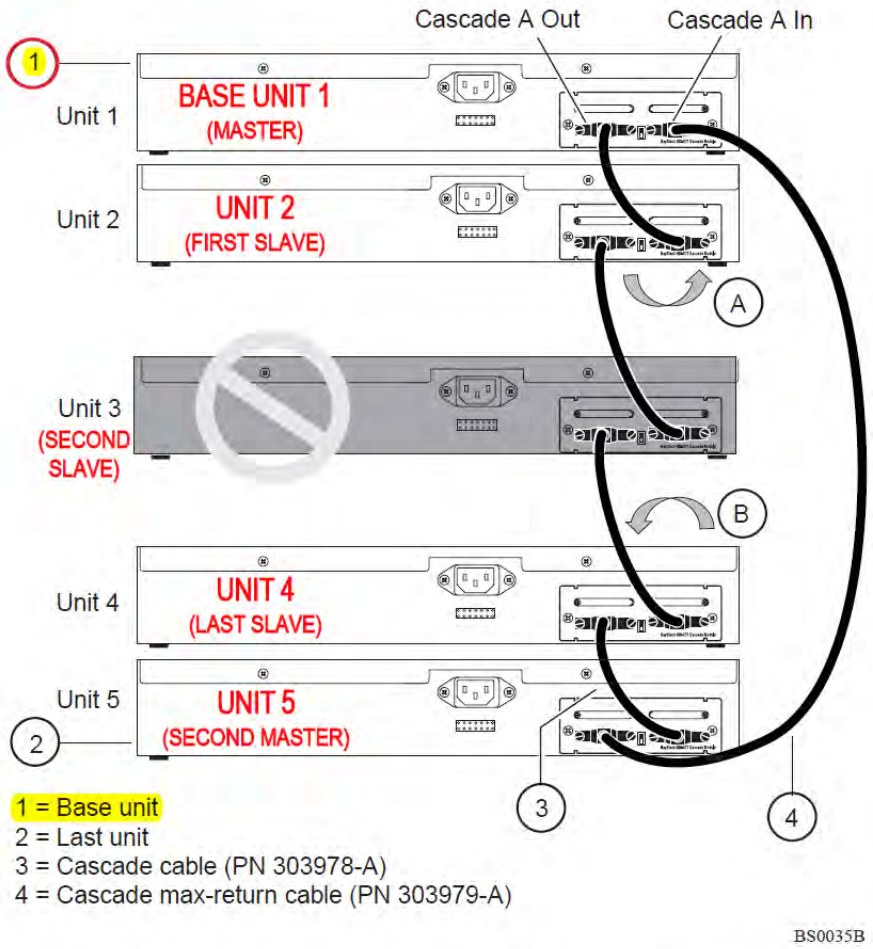


Figure 1-14. Redundant Cascade Stacking Feature

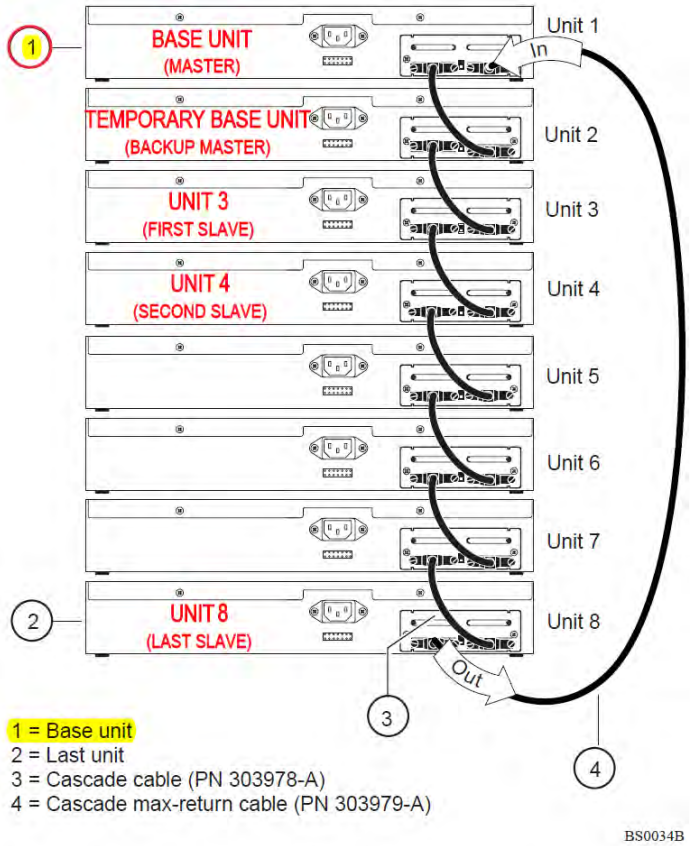
BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

In an alternative example, the BayStack 450 Switches disclose a Temporary Base Unit as being a second master unit. See, e.g., BayStack 450 Manual at 33, 52, 230 of 290. For

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No.	'904 Patent Claim 15	the BayStack 450 Switches
		instance, the BayStack 450 Manual states that "[i]f an assigned base unit fails, the next unit in the stack order automatically becomes the new temporary base unit. This change is indicated by the Base LED on the temporary base unit's LED display panel turning on (amber). For detailed information about the base LED, see Table 1-1 on page 1-6." BayStack 450 Manual at 52 of 290. Further, in this alternative example, the BayStack 450 Manual describes that "[t]his automatic failover is a temporary safeguard only. If the stack configuration loses power, the temporary base unit will not power up as the base unit when power is restored. For this reason, you should always assign the temporary base unit as the base unit (set the Unit Select switch to Base) until the failed unit is repaired or replaced." BayStack 450 Manual at 52 of 290. The BayStack 450 Manual notes, in this alternative example, that "[i]f you do not reassign the temporary base unit as the new base unit, and the temporary base unit fails, the next unit directly downstream from this unit becomes the new temporary base unit. This process can continue until there are only two units left in the stack configuration." BayStack 450 Manual at 52 of 290. In this example, the BayStack 450 Switches disclose that the BayStack 450 Switch LED Descriptions include an amber light that indicates when "unit is operating as the stack configuration's temporary base unit." BayStack 450 Manual at 33 of 290. "This condition occurs automatically if the base unit (directly downstream from this unit) fails." *Id.* And the BayStack 450 Switches disclose that, in this case, the "two units directly upstream and directly downstream from the failed unit automatically wrap their cascade connectors and indicate this condition by lighting their Cas Up and Cas Dwn LEDs (see Cas Up and Cas Dwn description in this table)." BayStack 450 Manual at 33 of 290. But the BayStack 450 Switches also disclose, in this alternative example, that "[i]f the temporary base unit fails, the next unit directly downstream from this unit becomes the new temporary base unit. This process can continue until there are only two units left in the stack configuration." BayStack 450 Manual at 33 of 290.

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No.	'904 Patent Claim 15	the BayStack 450 Switches
		As shown below, in the Stack Down Configuration, the second unit would become the temporary base unit if the base unit were to fail in this configuration.  **Figure 1-13. Stack Down Configuration Example** BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated). Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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No.	'904 Patent Claim 16	The BayStack 450 Switches
16[a]	The slave unit according to claim 15, wherein the retained packets that were received from the first and second physical interfaces and are passed by the pre-switch to the switch fabric are identified by respective first and second port numbers,	The BayStack 450 Switches disclose the slave unit according to claim 15, wherein the retained packets that were received from the first and second physical interfaces and are passed by the pre-switch to the switch fabric are identified by respective first and second port numbers. *See supra* at 14[e].
16[b]	and wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second port numbers are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required in response to the reversal.	The BayStack 450 Switches disclose wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second port numbers are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required in response to the reversal. *See supra* at 10, 13.

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No.	'904 Patent Claim 17	The BayStack 450 Switches
17	The slave unit according to claim 14, wherein when one of the packets received by the pre-switch comprises a multicast packet addressed to one or more of the ports on the slave unit, the pre-switch sorts the multicast packet such that one copy of the packet is retained and another copy of the packet is passed to the second physical interface.	The BayStack 450 Switches disclose the slave unit according to claim 14, wherein when one of the packets received by the pre-switch comprises a multicast packet addressed to one or more of the ports on the slave unit, the pre-switch sorts the multicast packet such that one copy of the packet is retained and another copy of the packet is passed to the second physical interface. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that The BayStack 450 Switches are found to not meet this limitation, wherein when one of the packets received by the pre-switch comprises a multicast packet addressed to one or more of the ports on the slave unit, the pre-switch sorts the multicast packet such that one copy of the packet is retained and another copy of the packet is passed to the second physical interface would have been obvious to a person having ordinary skill in the art, as explained below. *See supra* at 14[e]. Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, The BayStack 450 Switches in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 17 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Dowling discloses network devices where each network device sends periodic messages to a multicast address, and multicasting to a group of stations. See, e.g., Dowling at 2:58-3:12 ("Ethernet uses variable-length frames of data to transmit information from a source to one or more destinations. Every Ethernet frame has two fields defined as the source and destination addresses, which indicate the MAC addresses of the network devices where a frame originated and where it is ultimately destined, respectively. . . . Special addresses allow for multicasting to a group of Stations and for broadcasting to all Stations on the network.")

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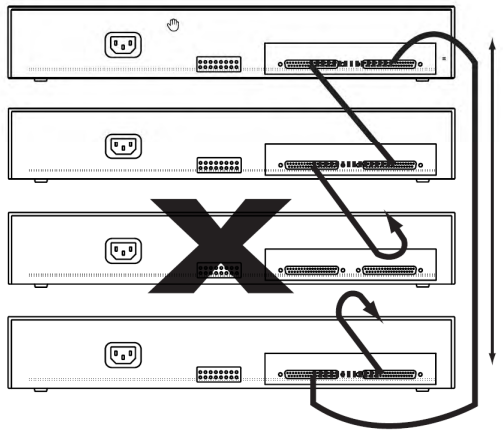
No.	'904 Patent Claim 17	The BayStack 450 Switches
		Dowling at 11:1-9 ("It is to be understood that the present invention is not limited to devices that are compatible with CDP. CDP runs on all media that support the Subnetwork Access Protocol ("SNAP"), including LAN and Frame Relay. CDP runs over the data link layer only. Each network device sends periodic messages to a multicast address and listens to the periodic messages Sent by others in order to learn about neighboring devices and determine when their interfaces to the media go up or down.")

No.	'904 Patent Claim 18	The BayStack 450 Switches
18	The slave unit according to claim 14, wherein in the event of a fault in the switch fabric, the pre-switch continues to pass the packets addressed to the succeeding units on to the succeeding units without significant interruption.	The BayStack 450 Switches disclose the slave unit according to claim 14, wherein in the event of a fault in the switch fabric, the pre-switch continues to pass the packets addressed to the succeeding units on to the succeeding units without significant interruption. For example, Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. Nortel Networks' BayStack 450 Switches disclose a BootP Automatic IP/MAC Address: "The BayStack 450 switch has a unique 48-bit hardware address, or MAC address, that is printed on a label on the back panel. You use this MAC address when you configure the network BootP server to recognize the BayStack 450 switch BootP requests. A properly configured BootP server enables the switch to automatically learn its assigned IP address, subnet mask, IP address of the default router (default gateway), and software image file name. When the switch is participating in a stack configuration, a Stack MAC address is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is:

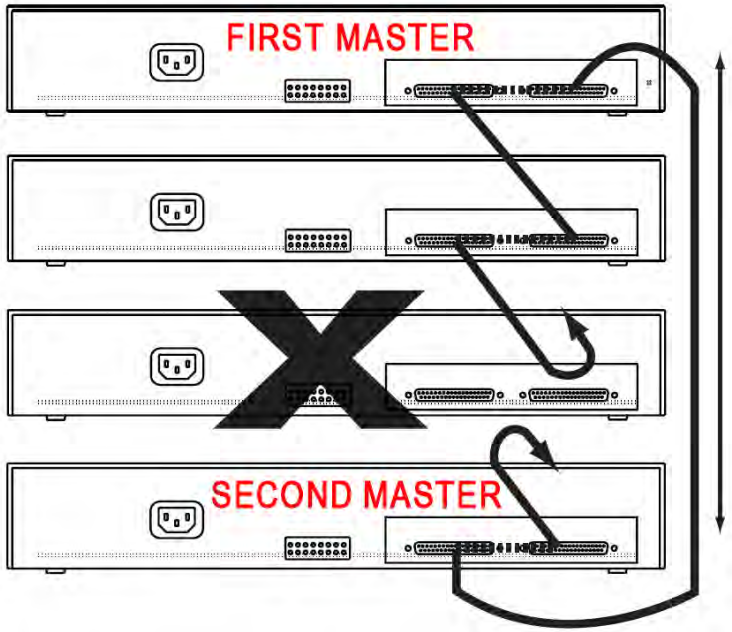
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No.	'904 Patent Claim 18	The BayStack 450 Switches
		1F then the Stack MAC address becomes: 00-00-82-99-44-1F If another unit in the stack is assigned as the base unit, the MAC address of the new base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit." BayStack 450 Manual at 43 of 290. **Stack MAC Address** The *Stack MAC address* is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If you designate another unit in the stack as the base unit, the MAC address of the *new* base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit. BayStack 450 Manual at 52 of 290.

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No.	'904 Patent Claim 19	The BayStack 450 Switches
19[preamble]	A method for providing access to a network, comprising:	To the extent the preamble is found to be limiting, the BayStack 450 Switches disclose a method for providing access to a network. For example, the BayStack 450 Switches disclose that BayStack 450 Switches may include physical connections between different switches in various configurations, such as a cascade stacking architecture. The BayStack 450 Switches can be arranged in a stack that includes two master switch units (one active master and one standby master) that connect to a packet-switched network (e.g., an ethernet network) via cables and/or other physical connections, that is, the stack comprises first and second master units, each comprising a physical interface to a packet-switched network. Specifically, Nortel Networks' BayStack 450 Switches disclose that "[u]nlike other stacking switches, BayStack 450 Switches are designed with a fail-safe cascade stacking architecture (see Figure 1)." BayStack 450 Data Sheet at 2 of 8. *Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.*  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

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No.	'904 Patent Claim 19	The BayStack 450 Switches
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). Nortel Networks' BayStack 450 Switches disclose that "[c]ascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption." BayStack 450 Data Sheet at 2 of 8. As a result, Nortel Networks' BayStack 450 Switches disclose that the "redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. In addition, Nortel Networks' BayStack 450 Switches disclose "RJ-45 Connectors Wired for MDI-X," describing that "[a]ll 10/100 autosense Ethernet port connectors are wired for MDI-

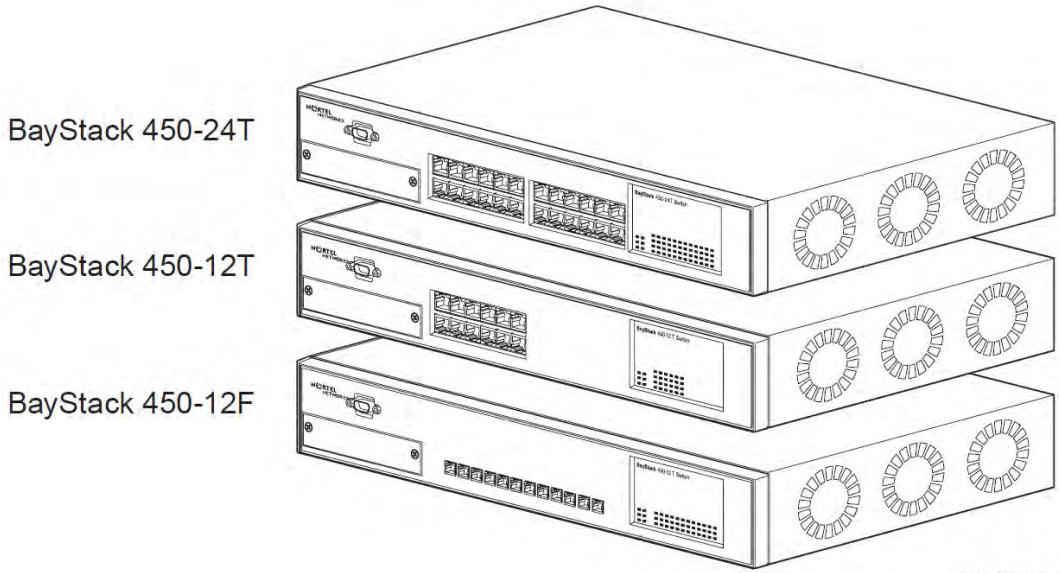
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No.	'904 Patent Claim 19	The BayStack 450 Switches
		X connections to other devices. Inexpensive straight-through unshielded twisted pair (UTP) cables can be used to provide switch connections to servers, desktops, and internetworking device." BayStack 450 Data Sheet at 4 of 8. Moreover, Nortel Networks' BayStack 450 Switches disclose a web-based management that includes a "built-in Web-based network management, so network administrators can easily monitor the status and access data about their network via the local corporate intranet, or from any World Wide Web-connected PC, anywhere in the world." BayStack 450 Data Sheet at 4 of 8. In one example, Nortel Networks' BayStack 450 Switches disclose a packet-switch network, stating that its wire-speed throughput includes "2.5 Gigabit per second (Gbps) switching fabric and custom switching ASICs support full 802.1D-compliant MAC Layer frame forwarding and filtering across all ports at the peak rate of 3 million packets per second. The BayStack 450 Switches continue the Bay Networks tradition of industry- leading throughput performance." BayStack 450 Data Sheet at 2 of 8. In another example, Nortel Networks' BayStack 450 Switches disclose enhanced port mirroring capabilities, noting that "[p]ort mirroring copies packets flowing through a specified port and sends the replicated data to the probe for in-depth analysis of switched traffic patterns to trouble-shoot problems and optimize network configurations." BayStack 450 Data Sheet at 4 of 8. Indeed, Nortel Networks' BayStack 450 Switches disclose, in Table 2, various "Technical Specifications for the BayStack 450 Switches," including performance specifications for 64 byte packets and IEEE standards that are used in packet-switched networks. BayStack 450 Data Sheet at 5 of 8.

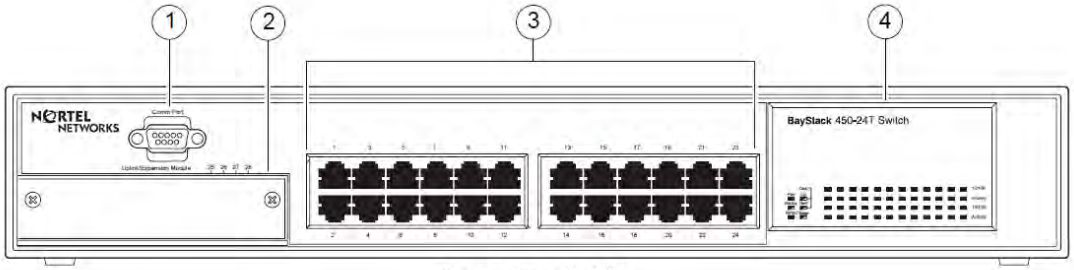
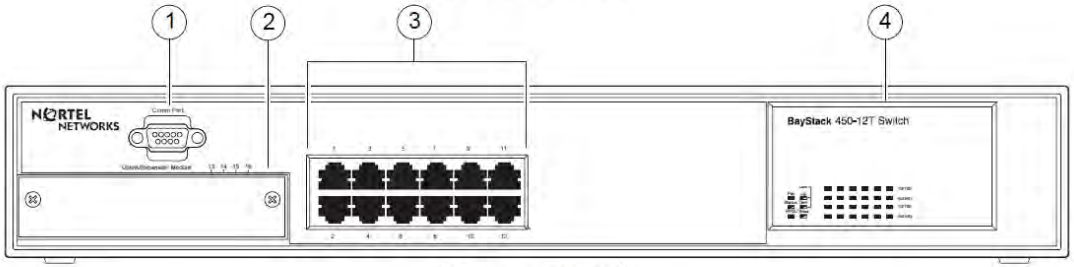
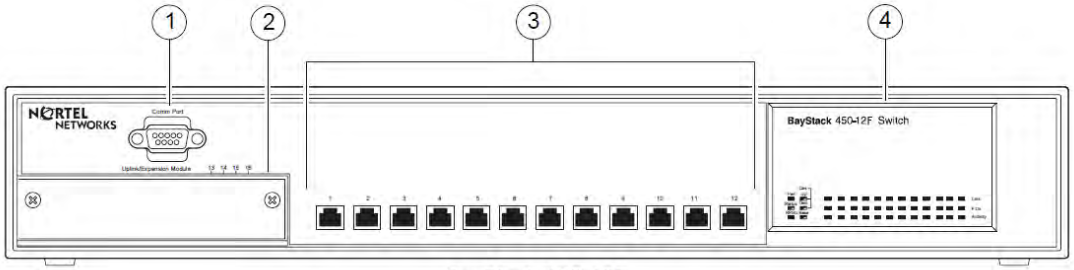
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No.	'904 Patent Claim 19	The BayStack 450 Switches
		TECHNICAL SPECIFICATIONS *Table 2: Technical Specifications for the BayStack 450 Switches.* **Performance Specifications (64 byte packets)** Aggregate Throughput — 3 million packets per second (pps) Switched 10 Mbps Port Forwarding Rate — 14,880 pps Switched 100 Mbps Port Forwarding Rate — 148,810 pps Switched 1000 Mbps Port Forwarding Rate — 1,488,100 pps Latency — 9 microseconds for minimum packet length at 100 Mbps **Network Protocol and Standards Compatibility** — IEEE 802.3 CSMA/CD (ISO/IEC 8802-3); IEEE 802.3i 10BASE-T (ISO/IEC 8802-3); IEEE 802.3u 100BASE-T (ISO/IEC 8802-3); IEEE 802.1D MAC Bridges (ISO/IEC 10038); IEEE 802.3z 1000BASE-SX and 1000BASE-LX (Draft Standard ver. 3.1) **Data Rate and Encoding** 10 Mbps — Manchester encoding 100 Mbps — 4B/5B encoding 1000 Mbps — 8B/10B encoding BayStack 450 Data Sheet at 5 of 8, Table 2. Nortel Networks' BayStack 450 Switches depict its network apparatuses, for example, in Figure 1-1 of the BayStack 450 Manual shown below.

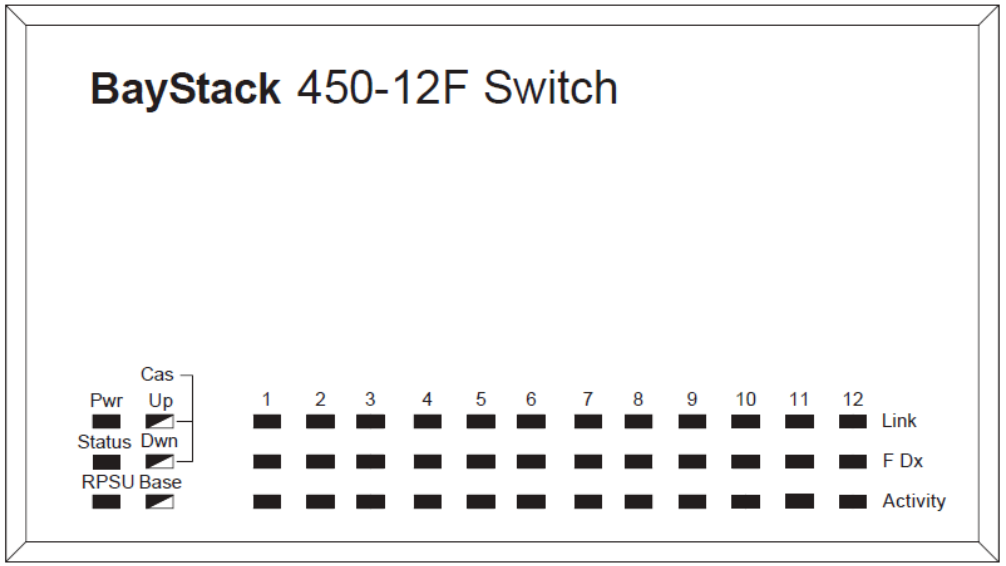
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No.	'904 Patent Claim 19	The BayStack 450 Switches
		 **Figure 1-1. BayStack 450 Switch Versions** BayStack 450 Manual at 27 of 290, FIG. 1-1. Nortel Networks' BayStack 450 Switches depict the front panels of its network apparatuses, for example, in Figure 1-2 of the BayStack 450 Manual shown below.

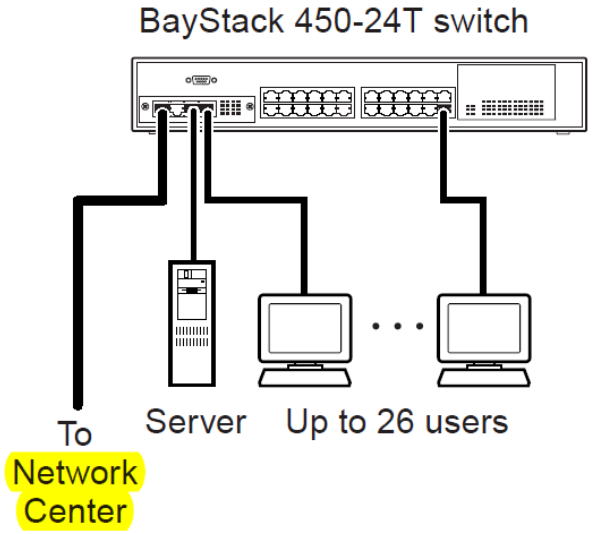
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No.	'904 Patent Claim 19	The BayStack 450 Switches
		 BayStack 450-24T  BayStack 450-12T  BayStack 450-12F 1 = Comm Port 2 = Uplink/Expansion slot 3 = Port connectors 4 = LED display panel BS45002B **Figure 1-2. BayStack 450 Switch Front Panels** BayStack 450 Manual at 28 of 290, FIG. 1-2.

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No.	'904 Patent Claim 19	The BayStack 450 Switches
		Nortel Networks' BayStack 450 Switches depict the BayStack 450-12F LED Display Panel, for example, in Figure 1-4 of the BayStack 450 Manual shown below.  BayStack 450-12F = Dual color LED BS45071A **Figure 1-4. BayStack 450-12F LED Display Panel** BayStack 450 Manual at 32 of 290, FIG. 1-4. Nortel Networks' BayStack 450 Switches disclose that the BayStack 450 Switch LED Descriptions are described in Table 1-1. See generally BayStack 450 Manual at 32-34 of 290. In one example, Nortel Networks' BayStack 450 Switches disclose that the BayStack 450 Switch provides access to a network center. BayStack 450 Manual at 45 of 290.

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No.	'904 Patent Claim 19	The BayStack 450 Switches
		 - 26 users; each with dedicated 100 Mb/s bandwidth - Server with dedicated 100 Mb/s bandwidth - Network center with dedicated 100 Mb/s full-duplex bandwith (200 mb/s bidirectional) BayStack 450 Manual at 45 of 290, FIG. 1-6 (annotated). Nortel Networks' BayStack 450 Switches also disclose a "Fail-Safe Stack Application." BayStack 450 Manual at 48 of 290.

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No.	'904 Patent Claim 19	The BayStack 450 Switches
		More specifically, Nortel Networks' BayStack 450 Switches disclose that "Figure 1-9 shows an example of eight BayStack 450 switches that are stacked together as a single managed unit. If any single unit in the stack fails, the remaining stack remains operational, without interruption." BayStack 450 Manual at 48 of 290. Figure 1-9 of the BayStack 450 Manual depicts a plurality of slaves and is shown below.

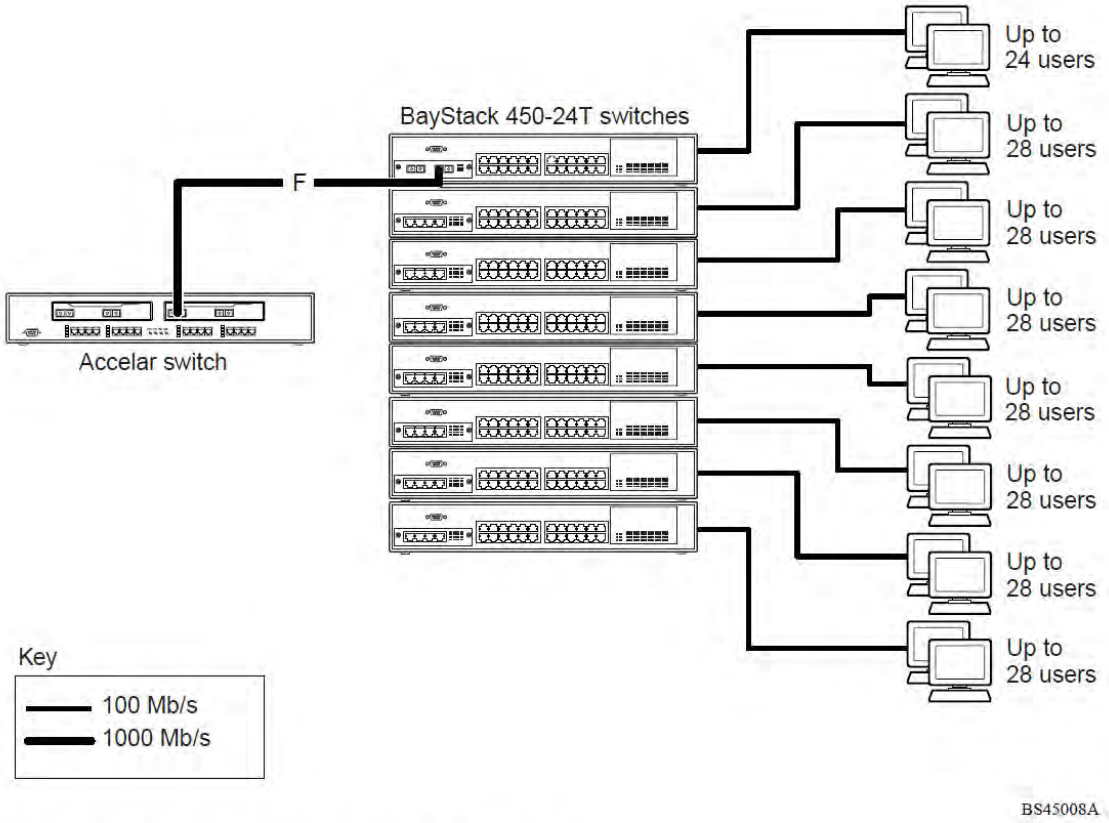


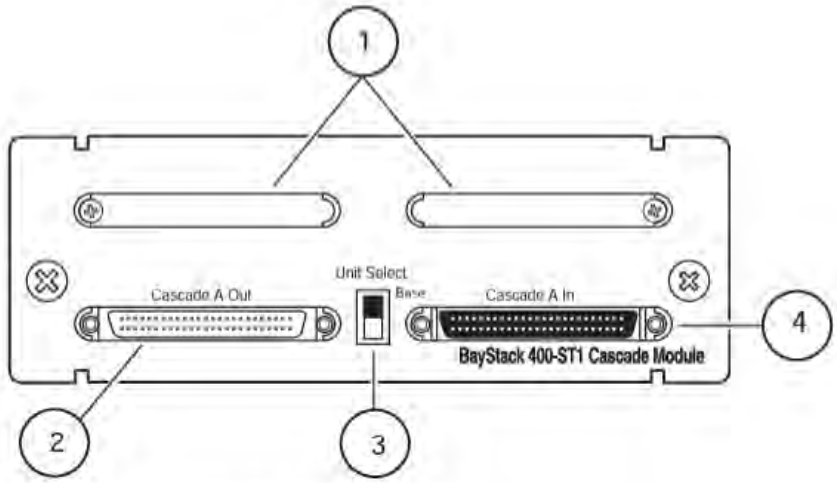
Figure 1-9. Fail-Safe Stack Example

BayStack 450 Manual at 48 of 290, FIG. 1-9.

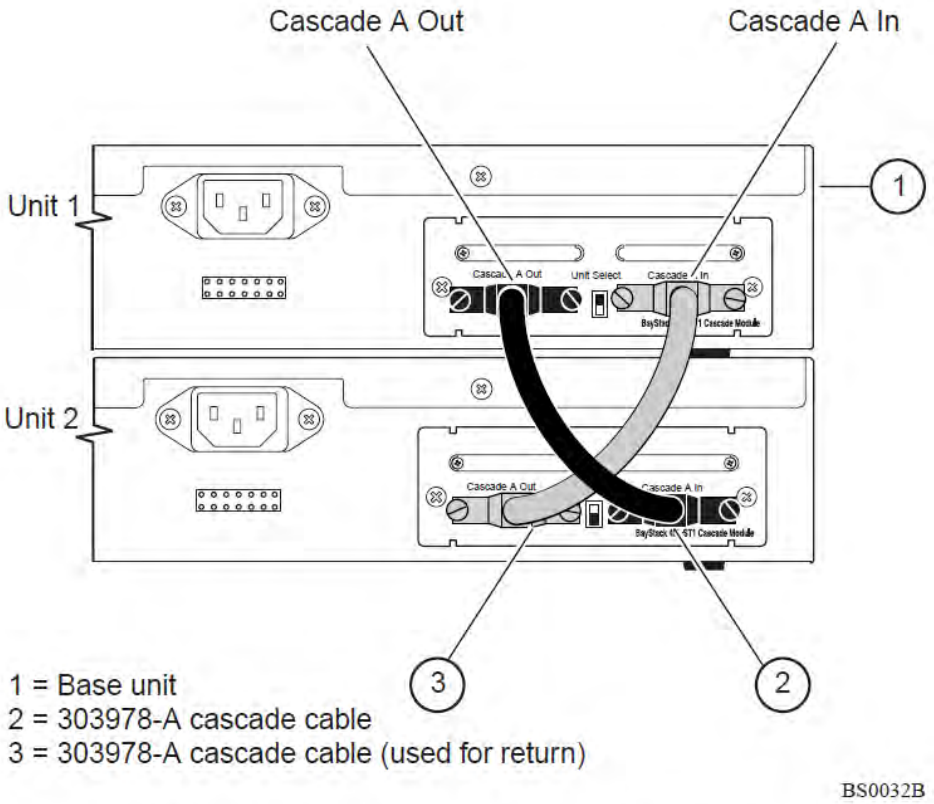
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No.	'904 Patent Claim 19	The BayStack 450 Switches
		Nortel Networks' BayStack 450 Switches further disclose that "[a]s shown in Figure 1-9, the Accelar 1100 switch is used as a backbone switch, connecting to the BayStack 450 switch with an optional gigabit (1000BASE-SX) MDA for maximum bandwidth. This configuration uses optional BayStack 400-ST1 Cascade Modules to connect the switches in the fail-safe stack." BayStack 450 Manual at 48 of 290. Nortel Networks' BayStack 450 Switches disclose that "[f]or an overview of the fail-safe stacking feature that is available for the BayStack 450 switches, see 'Stack Operation' following this section." BayStack 450 Manual at 48 of 290. Indeed, Nortel Networks' BayStack 450 Switches provide an overview of the fail-safe stacking feature, which discloses "BayStack 450 switches that are configured with BayStack 450 software version V1.1.0 or later provide fail-safe stackability when you install the optional BayStack 400-ST1 Cascade Module. You can connect up to eight switches to provide uninterrupted connectivity for up to 224 ports (see 'Fail-Safe Stack Application' on page 1-22). The entire stack is manageable as a single unit. Installation instructions are provided with the BayStack 400-ST1 Cascade Module (see your Nortel Networks sales representative for ordering information)." BayStack 450 Manual at 49 of 290. Further, Nortel Networks' BayStack 450 Switches disclose that the "BayStack 400-ST1 Cascade Module," which is shown in Figure 1-10 below. BayStack 450 Manual at 49 of 290.

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No.	'904 Patent Claim 19	The BayStack 450 Switches
		 **Figure 1-10. BayStack 400-ST1 Front-Panel Components** BayStack 450 Manual at 49 of 290, FIG. 1-10. In addition, Nortel Networks' BayStack 450 Switches disclose that the "Unit Select switch (up = Base) determines the base unit for the stack configuration (see "Base Unit " on page 1-25). The Unit Select switch status is displayed on the BayStack 450 LED display panel. When the Unit Select switch is in the Base (up) position, all other Unit Select switches in the stack configuration must be set to Off (down)." BayStack 450 Manual at 50 of 290. Further still, Nortel Networks' BayStack 450 Switches disclose a Cascade A In Connector that provides "an attachment point for accepting a cascade cable connection from an adjacent unit in the stack. A return cable from this unit's Cascade A Out connector to the adjacent

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No.	'904 Patent Claim 19	The BayStack 450 Switches
		unit's Cascade A In connector completes the stack connection (see the example shown in Figure 1-11)." BayStack 450 Manual at 50 of 290. Figure 1-11 is reproduced below. BayStack 450 Manual at 50 of 290, FIG. 1-11.  **Figure 1-11. Connecting Cascade Cables** To the extent that Orckit contends that the BayStack 450 Switches does not disclose this limitation, the BayStack 450 Switches in combination with (1) the knowledge of a person of ordinary skill in the art and/or in further combination with (2) Ding renders the claim, including the present limitation, obvious.

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No.	'904 Patent Claim 19	The BayStack 450 Switches
		For example, U.S. Patent No. 6,981,034 B2 to Ding et al. ("Ding") is titled "Decentralized Management Architecture for a Modular Communication System," was filed June 30, 1999, and issued on December 27, 2005. At filing and issuance, Ding was assigned to the same company, Nortel Networks, that made the BayStack 450 Switches. Ding, Cover. Indeed, Ding discloses that "[i]n a preferred embodiment of the present invention, each Ethernet Switching module is a particular device that is known as the BayStack™ 450 stackable Ethernet Switch." Thus, Ding discloses that its patented invention is embodied by the BayStack 450 Switches. And, as discussed below, Ding discloses a base module, switching modules, and stacking configuration that are substantially similar to the BayStack 450 Switches that the base unit, switching units, and fail-safe cascade stacking architecture, respectively. Moreover, as discussed below, Ding and the BayStack 450 Switches share many identical specifications, such as the ability to operate at 10 Mbps or 100 Mbps and the maximum throughput of 2.5 Gbps for wire-speed transmissions. Further, Ding discloses a dual ring bus having a bandwidth of 2.5 gigabits per second. ("In a preferred embodiment of the present invention, each Ethernet Switching module is a particular device that is known as the BayStackTM 450 stackable Ethernet Switch. The preferred Ethernet Switching module can be configured to operate as an independent Stand-alone device, or alternatively up to eight (8) Ethernet Switching modules can be interconnected in a Stack configuration, preferably by inter connecting the up to eight (8) Ethernet Switching modules through a dual ring bus having a bandwidth of 2.5 gigabits per Second. Within the Stack configuration, a particular Ethernet Switching module can be configured to operate in either a Stand-alone mode, in which the particular Ethernet Switching module performs Ethernet Switching independently of the other Ethernet Switching modules in the Stack, or a cooperating mode, in which the particular Ethernet Switching module performs Ethernet Switching in conjunction with other cooperating Ethernet Switching modules. Furthermore, a particular Ethernet Switching module in the Stack can be dynamically reconfigured between the stand alone mode and the cooperating mode without performing a System reset or power cycle of the particular Ethernet Switching module, and Ethernet Switching modules can be dynamically added to the Stack and removed from the

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No.	'904 Patent Claim 19	The BayStack 450 Switches
		Stack without performing a System reset or power cycle of the other Ethernet Switching modules in the Stack." Ding, 5:43-67.
19[a]	coupling first and second master units to interface with the network;	The BayStack 450 Switches disclose coupling first and second master units to interface with the network. *See supra* at 1[a].
19[b]	linking a plurality of slave units,	The BayStack 450 Switches disclose linking a plurality of slave units. *See supra* at 1[b], 1[d].
19[c]	each slave unit comprising one or more ports to respective subscriber lines, in a daisy chain between the first and second master units;	The BayStack 450 Switches disclose each slave unit comprising one or more ports to respective subscriber lines, in a daisy chain between the first and second master units. *See supra* at 1[c].
19[d]	conveying initial downstream data packets, received from the network by one of the master units, along the daisy chain in a first direction, so as to deliver the packets to the ports of the slave units; and	The BayStack 450 Switches disclose conveying initial downstream data packets, received from the network by one of the master units, along the daisy chain in a first direction, so as to deliver the packets to the ports of the slave units. *See supra* at 1[d], 1[e].
19[e]	in the event of a fault in the daisy chain, conveying further downstream data packets, received from the network by one of	The BayStack 450 Switches disclose in the event of a fault in the daisy chain, conveying further downstream data packets, received from the network by one of the master units, along the daisy chain in a second direction, opposite to the first direction, so as to deliver the further packets to the ports of at least some of the slave units. *See supra* at 7.

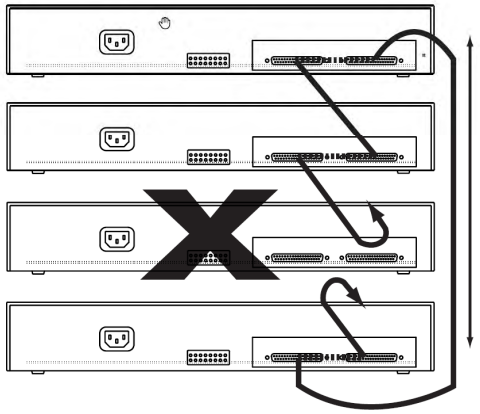
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No.	'904 Patent Claim 19	The BayStack 450 Switches
	the master units, along the daisy chain in a second direction, opposite to the first direction, so as to deliver the further packets to the ports of at least some of the slave units.	

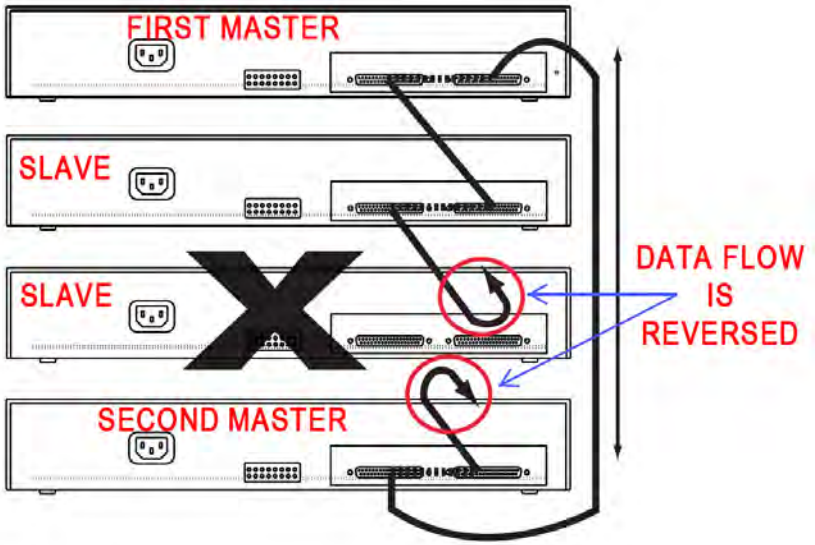
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No.	'904 Patent Claim 20	The BayStack 450 Switches
20	A method according to claim 19, wherein the initial and further downstream packets are received from the network by the first master unit, and wherein conveying the further downstream packets in the second direction comprises conveying the further downstream packets from the first master unit to the second master unit, and then conveying the further downstream packets from the second master unit to the daisy chain.	The BayStack 450 Switches disclose a method according to claim 19, wherein the initial and further downstream packets are received from the network by the first master unit, and wherein conveying the further downstream packets in the second direction comprises conveying the further downstream packets from the first master unit to the second master unit, and then conveying the further downstream packets from the second master unit to the daisy chain. For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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No.	'904 Patent Claim 20	The BayStack 450 Switches
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

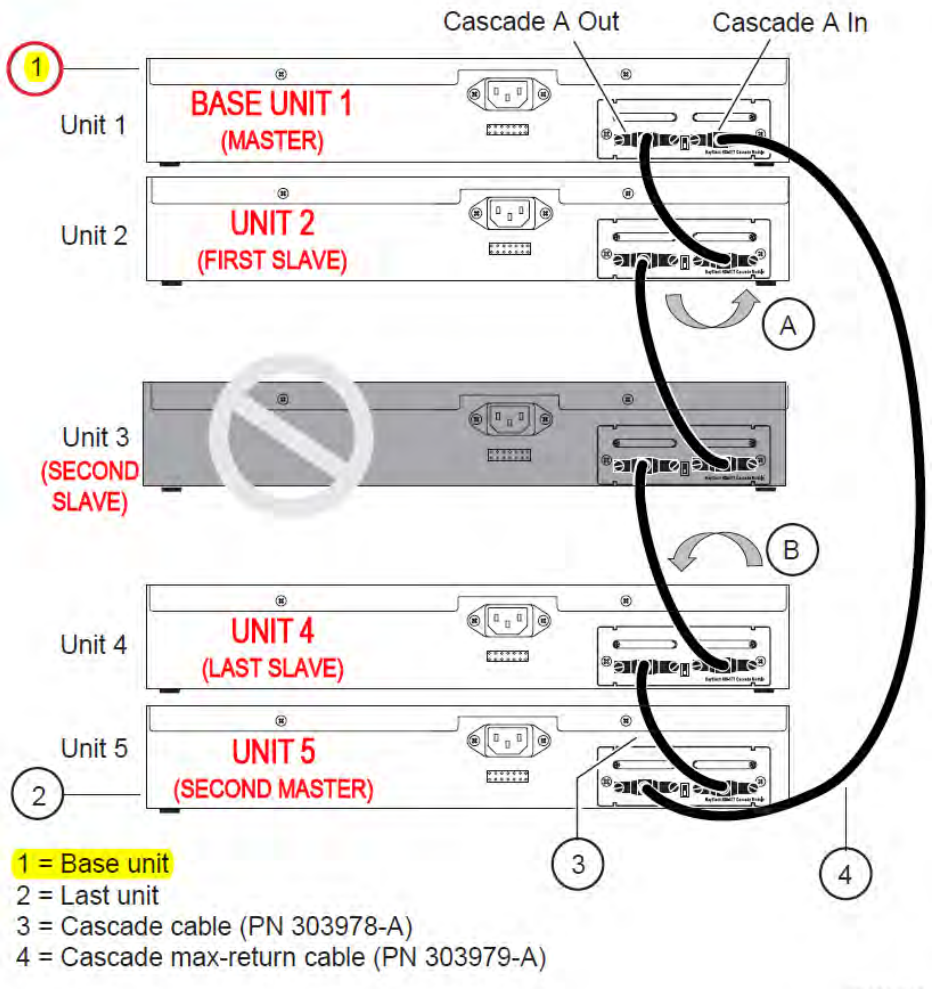
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No.	'904 Patent Claim 20	The BayStack 450 Switches
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290. Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1.

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No.	'904 Patent Claim 20	The BayStack 450 Switches
		As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

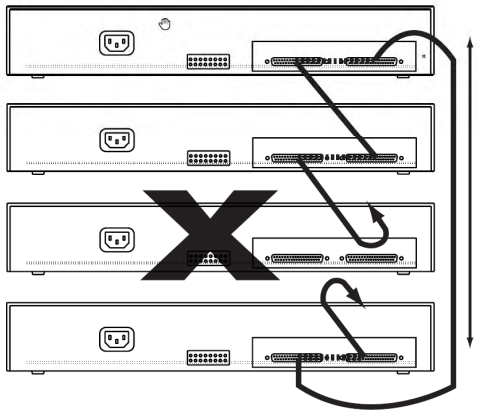
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No.	'904 Patent Claim 20	The BayStack 450 Switches
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

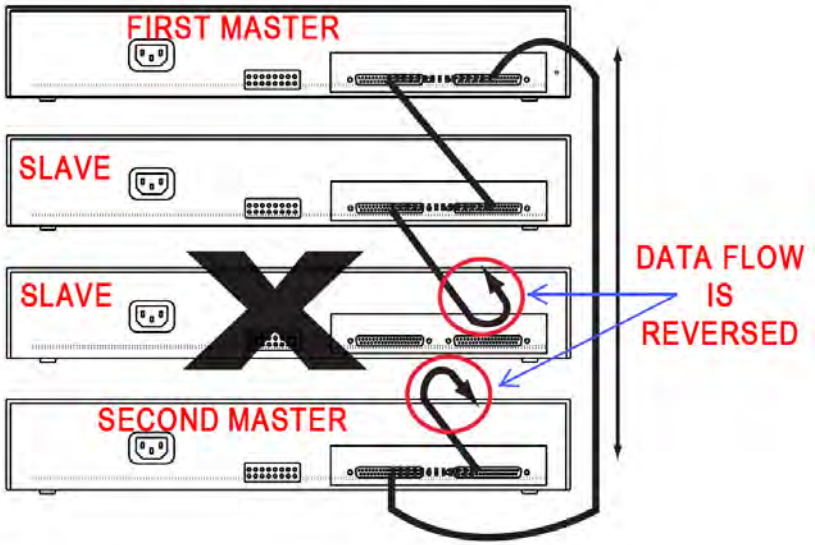
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No.	'904 Patent Claim 21	The BayStack 450 Switches
21	A method according to claim 20, wherein conveying the further downstream packets from the first master unit to the second master unit comprises linking further slave units in an additional daisy chain between the first and second master units, and conveying the further downstream packets from the first master unit to the second master unit over the additional daisy chain.	The BayStack 450 Switches disclose a method according to claim 20, conveying the further downstream packets from the first master unit to the second master unit comprises linking further slave units in an additional daisy chain between the first and second master units, and conveying the further downstream packets from the first master unit to the second master unit over the additional daisy chain. *See supra* at 8.

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No.	'904 Patent Claim 22	The BayStack 450 Switches
22[a]	A method according to claim 19, and comprising conveying initial upstream data packets, received by the slave units from the subscriber lines, along the daisy chain in the second direction so as to transmit the upstream data packets via the first master unit over the network,	The BayStack 450 Switches disclose a method according to claim 19, and comprising conveying initial upstream data packets, received by the slave units from the subscriber lines, along the daisy chain in the second direction so as to transmit the upstream data packets via the first master unit over the network. For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.*  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

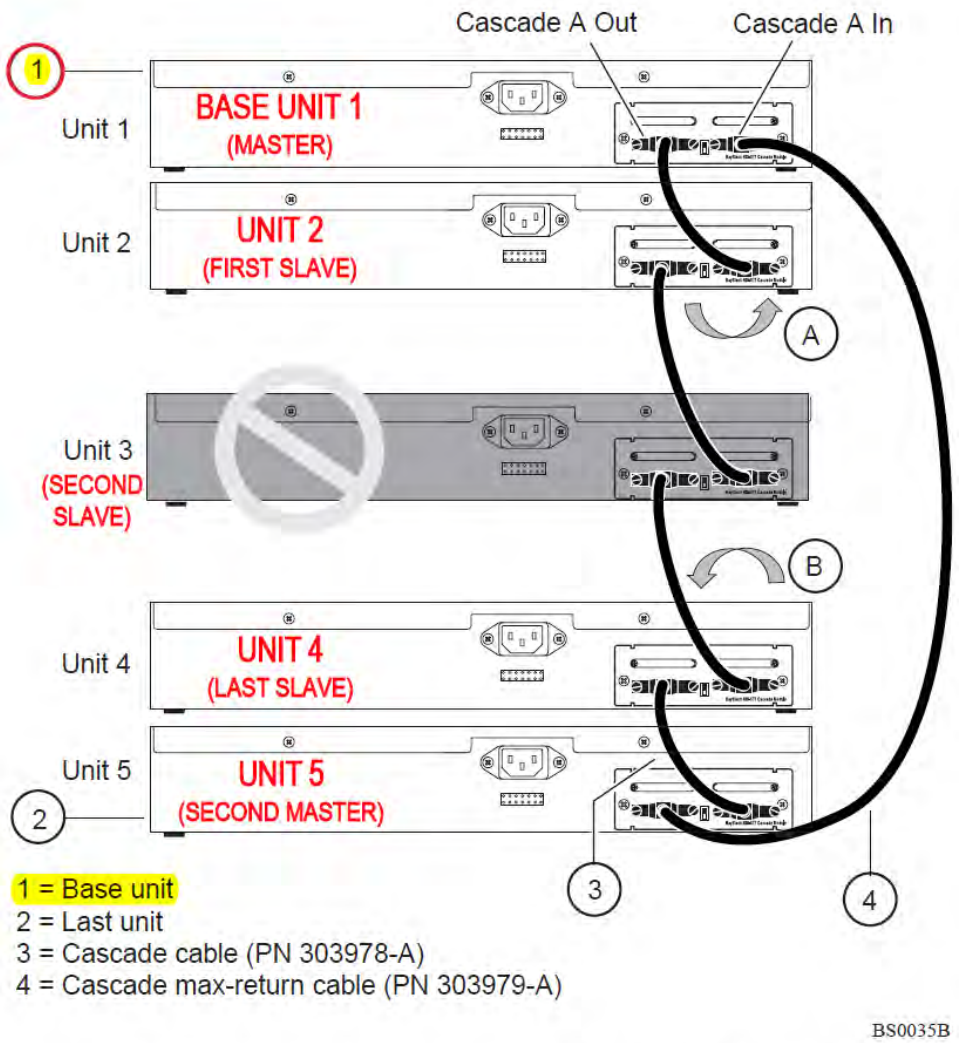
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No.	'904 Patent Claim 22	The BayStack 450 Switches
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290. Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1.

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No.	'904 Patent Claim 22	The BayStack 450 Switches
		As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

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No.	'904 Patent Claim 22	The BayStack 450 Switches
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

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No.	'904 Patent Claim 22	The BayStack 450 Switches
22[b]	and in the event of the fault, conveying further upstream data packets received by one or more of the slave units along the daisy chain in the first direction via the second master unit.	The BayStack 450 Switches disclose in the event of the fault, conveying further upstream data packets received by one or more of the slave units along the daisy chain in the first direction via the second master unit. *See supra* at 4[f], 22[a].

No.	'904 Patent Claim 23	The BayStack 450 Switches
23	A method according to claim 22, and comprising bicasting the upstream data packets from the first master unit to the network and to the second master unit, which transmits the bicast upstream data packets over the network.	The BayStack 450 Switches disclose a method according to claim 22, and comprising bicasting the upstream data packets from the first master unit to the network and to the second master unit, which transmits the bicast upstream data packets over the network. *See supra* at 6.

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No.	'904 Patent Claim 24	The BayStack 450 Switches
24	A method according to claim 19, wherein conveying the initial downstream data packets along the daisy chain comprises pre-switching the packets at each of the slave units, so that packets not addressed to any of the ports on the slave unit are passed to the next slave unit in the daisy chain, while packets that are addressed to one or more of the ports on the slave unit are passed to a switch fabric that directs the packets to the ports to which they are addressed.	The BayStack 450 Switches disclose a method according to claim 19, wherein conveying the initial downstream data packets along the daisy chain comprises pre-switching the packets at each of the slave units, so that packets not addressed to any of the ports on the slave unit are passed to the next slave unit in the daisy chain, while packets that are addressed to one or more of the ports on the slave unit are passed to a switch fabric that directs the packets to the ports to which they are addressed. *See supra* at 11[f].

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No.	'904 Patent Claim 25	The BayStack 450 Switches
25	A method according to claim 19, wherein the network comprises an asynchronous transfer mode (ATM) network.	The BayStack 450 Switches disclose a method according to claim 19, wherein the network comprises an asynchronous transfer mode (ATM) network. *See supra* Claim 2.

No.	'904 Patent Claim 26	The BayStack 450 Switches
26	A method according to claim 19, wherein the network comprises an Internet protocol (IP) network.	The BayStack 450 Switches disclose a method according to claim 19, wherein the network comprises an Internet protocol (IP) network. *See supra* Claim 3.

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Chart for U.S. Patent 6,680,904 ("the '904 Patent")
U.S. Patent No. 6,314,102 B1 to Czerwiec *et al.* ("Czerwiec")

As shown in the chart below, all Asserted Claims of the '904 Patent are invalid under (1) pre-AIA 35 U.S.C. §§ 102 (a), (b), and (e) because Czerwiec meets each element of those claims, and/or (2) 35 U.S.C. § 103 because Czerwiec renders those claims obvious either alone, or in combination with the knowledge of a person having ordinary skill in the art, and in further combination with the References specifically identified below and in the following claim chart and/or one or more References identified in Defendant's Preliminary Invalidity Contentions. The following quotations and diagrams come from Czerwiec titled "Telecommunications System For Providing Both Narrowband And Broadband Services To Subscribers", which was filed on July 10, 1997, and issued on November 6, 2001.

Motivations to combine the disclosures in Czerwiec with disclosures in other publications known in the art, as explained in this chart, include at least the similarity in subject matter between the References to the extent they concern methods of stacking switches within a network. Insofar as the References cite other patents or publications, or suggest additional changes, one of ordinary skill in the art would look beyond a single Czerwiec to other References in the field.

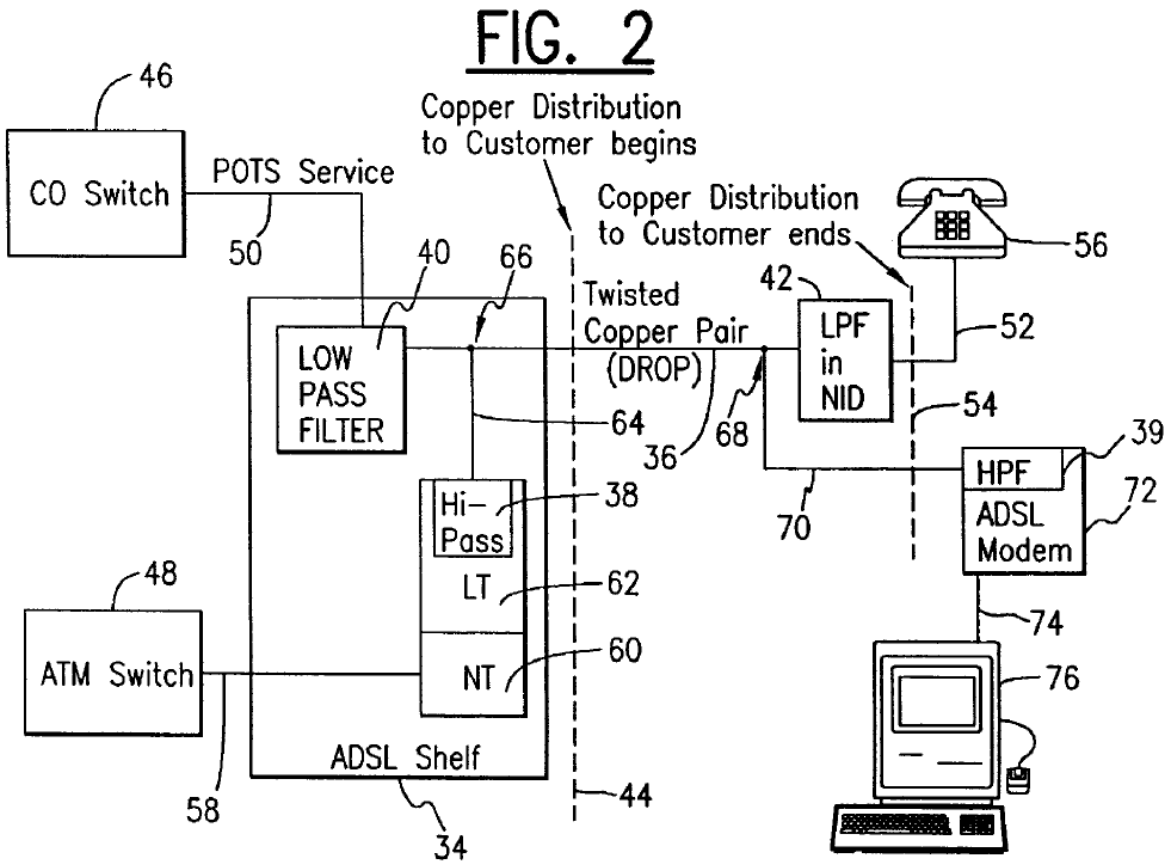
These invalidity contentions are based on Defendant's present understanding of the Asserted Claims, and Orckit's apparent construction of the claims in its November 3, 2022 Disclosure of Asserted Claims and Infringement Contentions Pursuant to P.R. 3-1, and Orckit's January 19, 2023 First Amended Disclosure of Asserted Claims and Infringement Contentions Pursuant to P.R. 3-1 (Orckit's "Infringement Disclosures"), which is deficient at least insofar as it fails to cite any documents or identify accused structures, acts, or materials in the Accused Products with particularity. Defendant does not agree with Orckit's application of the claims, or that the claims satisfy the requirements of 35 U.S.C. § 112. Defendant's contentions herein are not, and should in no way be seen as, admissions or adoptions as to any particular claim scope or construction, or as any admission that any particular element is met by any accused product in any particular way. Defendant objects to any attempt to imply claim construction from this chart. Defendant's prior art invalidity contentions are made in a variety of alternatives and do not represent Defendant's agreement or view as to the meaning, definiteness, written description support for, or enablement of any claim contained therein.

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The following contentions are subject to revision and amendment pursuant to Federal Rule of Civil Procedure 26(e), the Local Rules, and the Orders of record in this matter subject to further investigation and discovery regarding the prior art and the Court's construction of the claims at issue.

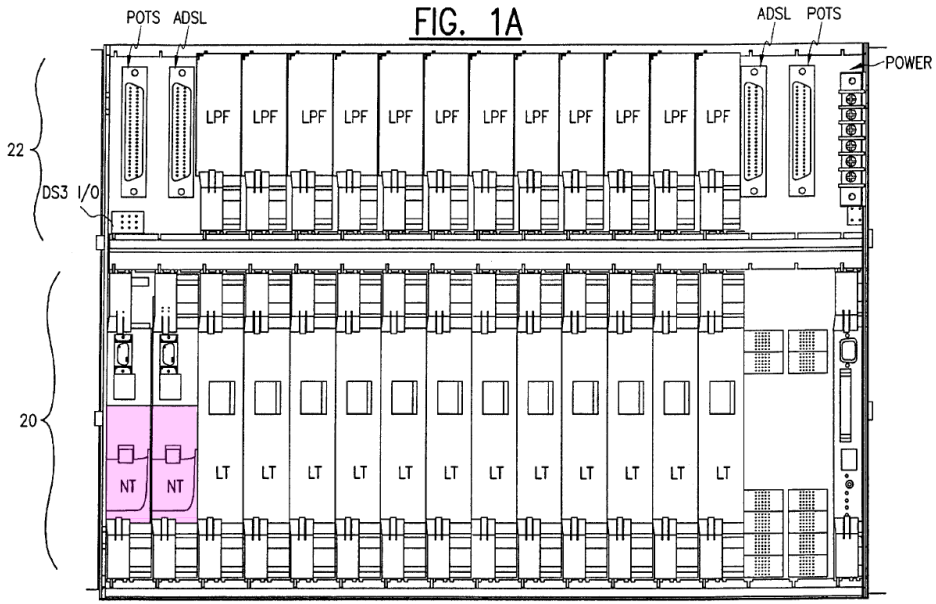
No.	'904 Patent Claim 1	Czerwiec
1[pre]	Network access apparatus, comprising:	To the extent the preamble is found to be limiting, Czerwiec discloses a network access apparatus. For example, Czerwiec discloses a shelf for connecting a PSTN network to an ATM network. *See, e.g.*, "a telecommunications system for providing both narrowband and broadband services to a plurality of subscriber premises comprises at least one shelf for connection to a public switched telephone network (PSTN) and for connection to an asynchronous transfer mode (ATM) network for connecting the PSTN and the ATM network to the plurality of subscriber premises via a corresponding plurality of twisted copper pairs, and a plurality of subscriber modems for connection to the corresponding plurality of twisted copper pairs, wherein each of the twisted copper pairs is for providing a digital subscriber line that accommodates both plain old telephone service (POTS) and digital channels in an ATM format." Czerwiec, 1:58-2:3. Czerwiec further discloses that "FIG. 2 shows a functional block diagram of the present invention whereby high speed packetized data in, e.g., ATM format is combined with traditional POTS service, e.g., in an xDSL shelf which may be an ADSL shelf in the embodiment illustrated for providing the means whereby POTS lifeline services on a twisted copper pair are overlaid with high speed digital services for communicating high bandwidth services to a customer's premises." Czerwiec, 7:16-23.

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No.	'904 Patent Claim 1	Czerwiec
		

Czerwiec, FIG. 2.

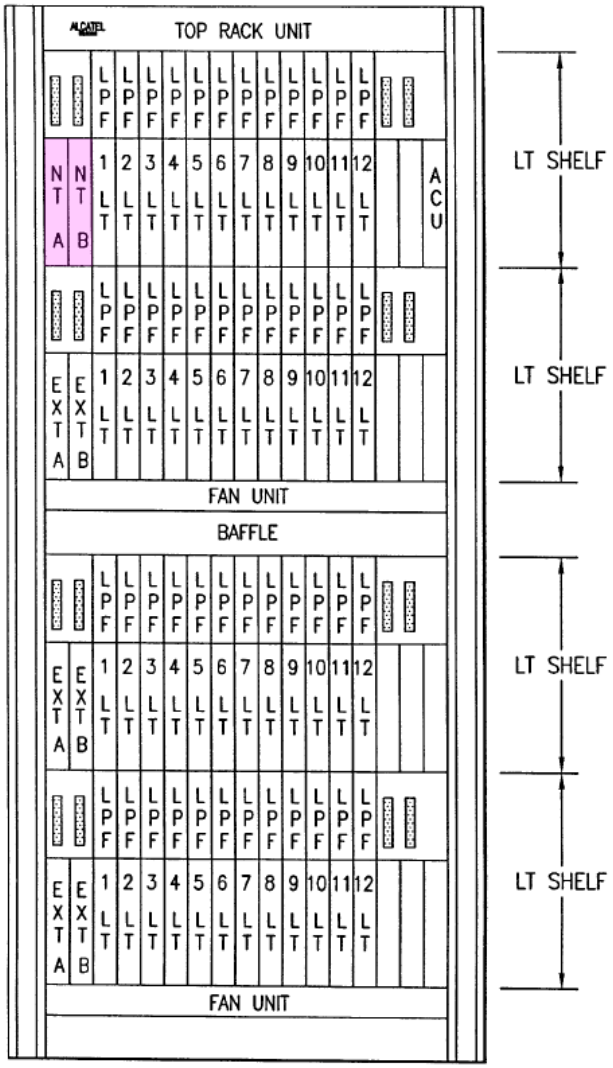
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No.	'904 Patent Claim 1	Czerwiec
1[a]	first and second master units, each comprising a physical interface to a packet-switched network;	Czerwiec discloses first and second master units, each comprising a physical interface to a packet-switched network. For example, Czerwiec discloses redundant NT cards that serve as first and second master units. Czerwiec further discloses that these redundant NT cards are connected to a packet-switched network. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Czerwiec discloses several embodiments that include a first and second master unit. **Example One**: Specifically, in a first example, Czerwiec discloses adjacent, redundant NT cards that are a first master and a second master unit, stating "FIG. 1A shows a front view of an actual shelf with redundant NT cards…." Czerwiec, 9:66-67.  Czerwiec, FIG. 1A (annotated).

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No.	'904 Patent Claim 1	Czerwiec
		Further, Czerwiec discloses that these redundant NT cards are connected by physical interfaces (e.g., connectors installed on the backplane that mate connectors on the cards with connectors in the NT card slots). Czerwiec's redundant NT cards provide a physical interface that via these connectors that enables communication through a packet switched network (e.g., the ADSL packet switched network), providing connectivity for 192 ADSL lines per shelf. For instance, Czerwiec describes the physical interface, stating "FIG. 1B shows a plurality of shelves mounted in a central office rack, such as shown in FIG. 1E, in a standard configuration for serving 192 ADSL lines. Up to four adjacent racks can share the same feeder by using extension units installed in place of NTs, as explained below in connection with FIG. 6. In that case, a single, optionally-protected NT card can support up to 576 ADSL lines. FIG. 1C shows the shelf of FIG. 1A without any cards installed and shows the connectors installed in the backplane, into which mating connectors on the cards are insertable by sliding the cards into the slots shown. In this way, front-access-only is achieved. A side view of the shelf is shown in FIG. 1D." Czerwiec, 10:1-13.

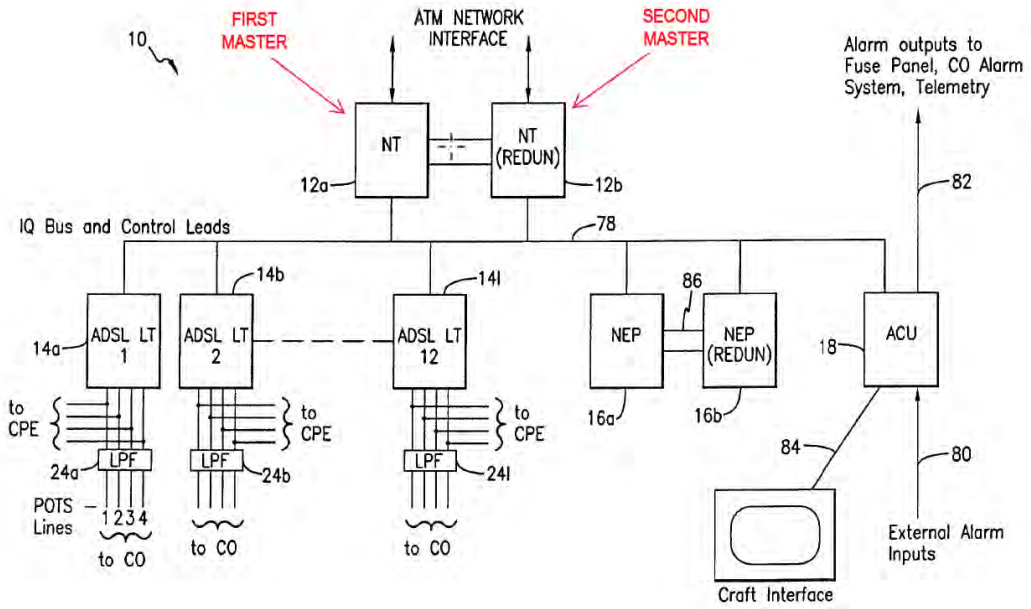
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No.	'904 Patent Claim 1	Czerwiec
		FIG. 1B  Czerwiec, FIG. 1B (annotated).

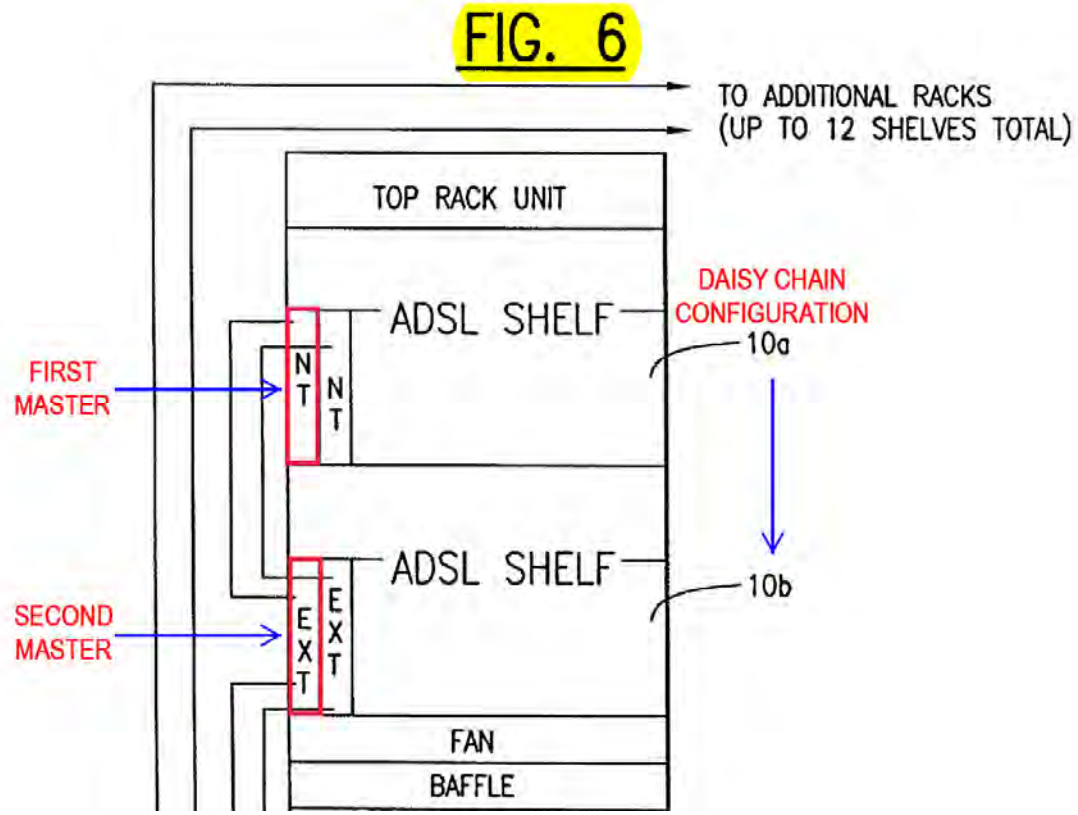
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No.	'904 Patent Claim 1	Czerwiec
		Example Two: In a second example, Czerwiec discloses that the first and second master may be a redundant or non-redundant NT configuration. For instance, Czerwiec discloses: "As shown in both FIGS. 1 and 3, the NTs 12 a, 12 b can be provided in either a redundant or non-redundant configuration. In this architecture, the normal NE processing is performed by the NT, and the NT can be provided as either a SONET User Network Interface (UNI) interface, a DS-3 UNI interface or later, a DS1 inverse multiplex UNI interface. If SONET NTs are provided as redundant pairs, Automatic Protection Switching (APS) is provided using the normal 1+1 switchover mechanism detailed in Bellcore document GR-253. On SONET NTs, the physical interface (fiber) is located on the faceplate of the NT itself (see FIGS. 14C and 14D), with no need of additional interface circuitry. If, however, NTs are provided as DS-3 ports, equipment protection (without cable protection) is provided using the DS-3 I/O board 32 shown in FIG. 1 installed above the NTs in the shelf, allowing the single DS-3 facility (coax cable Tx/Rx pair) to be split and accessed by either NT (inter-NT communication arbitrates which one is active)." Czerwiec, 12:66-13:16. Czerwiec further illustrates the first and second master in FIG. 3, shown below.

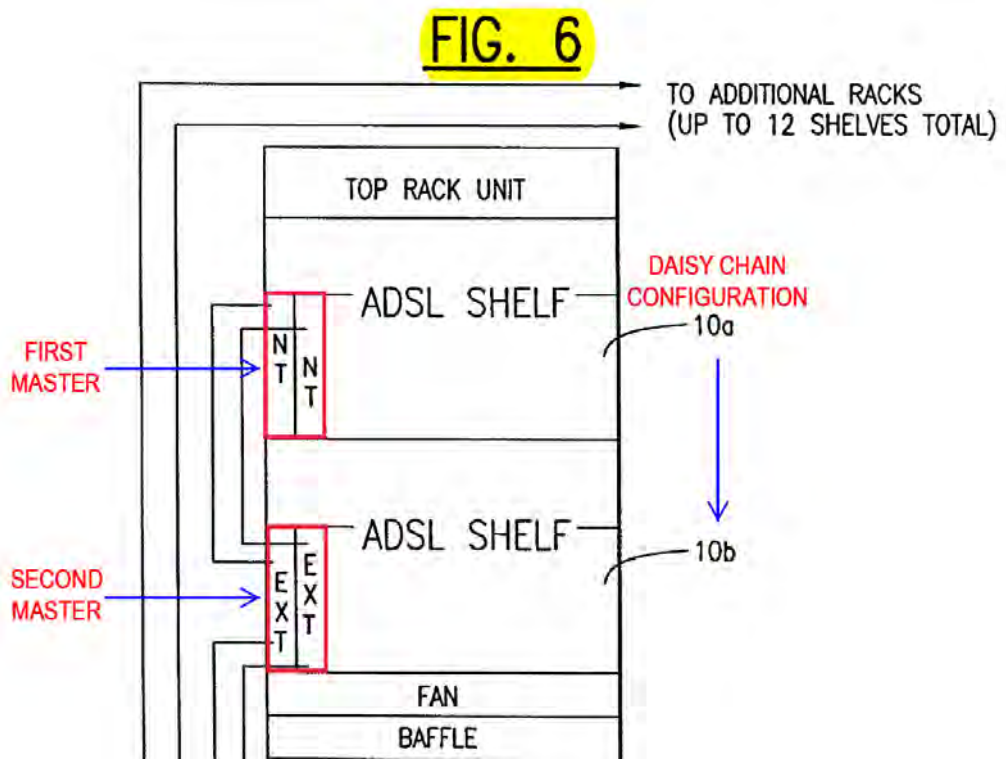
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No.	'904 Patent Claim 1	Czerwiec
		FIG. 3  Czerwiec, FIG. 3 (annotated). Czerwiec describes the basic shelf architecture depicted in Figure 3. Czerwiec, 11:57-59. Czerwiec further explains that the packet based network connectivity provided by the first and second redundant NT card masters may include quality of service classes that can be linked to access levels for subscribers, which are generally allocated by different bit rates. These bit rates may be implemented using a Guaranteed Cell Rate ("GCR") or Non-Guaranteed Cell Rate ("NGCR"). *See* Czerwiec, 11:59-12:33; *see also id.*, FIG. 3A. "An ACU [alarm collection unit] is provided per NT (or redundant NT pair) when multiple systems reside in a given rack. Multiple systems reside in a given rack when a very wide bandwidth is to be served by, e.g., a single shelf. In such a case, a single shelf may use up the entire bandwidth of an OC-3 or DS-3 cable." Czerwiec, 13:52-53.

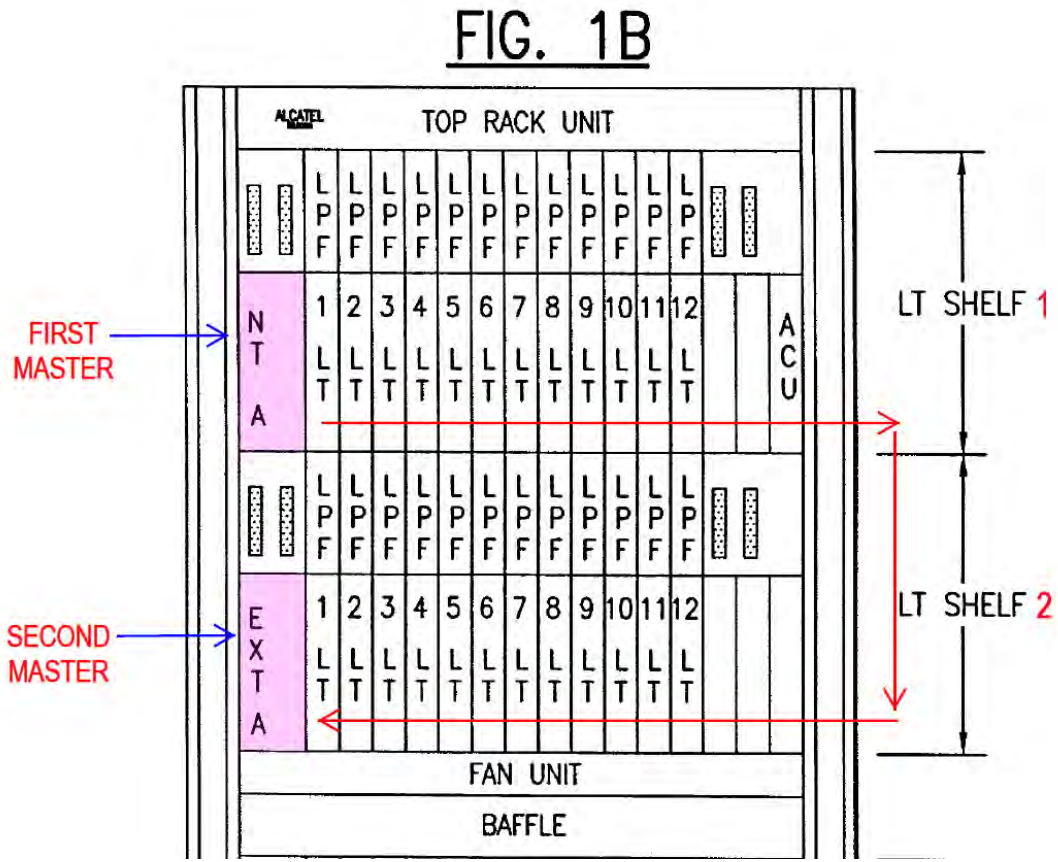
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No.	'904 Patent Claim 1	Czerwiec
		Example Three: In a third example, Czerwiec discloses that the first and second master may be (1) redundant NT cards or a non-redundant NT card in communication with (2) redundant EXT cards or a non-redundant EXT card configuration. For example, Czerwiec describes that the ADSL shelves can be daisy chained together. *See, e.g.*, Czerwiec, 16:15-35. In the simplest example, a first master (NT card) connects to a second master (EXT card), which is shown below.  Czerwiec, FIG. 6 (annotated).

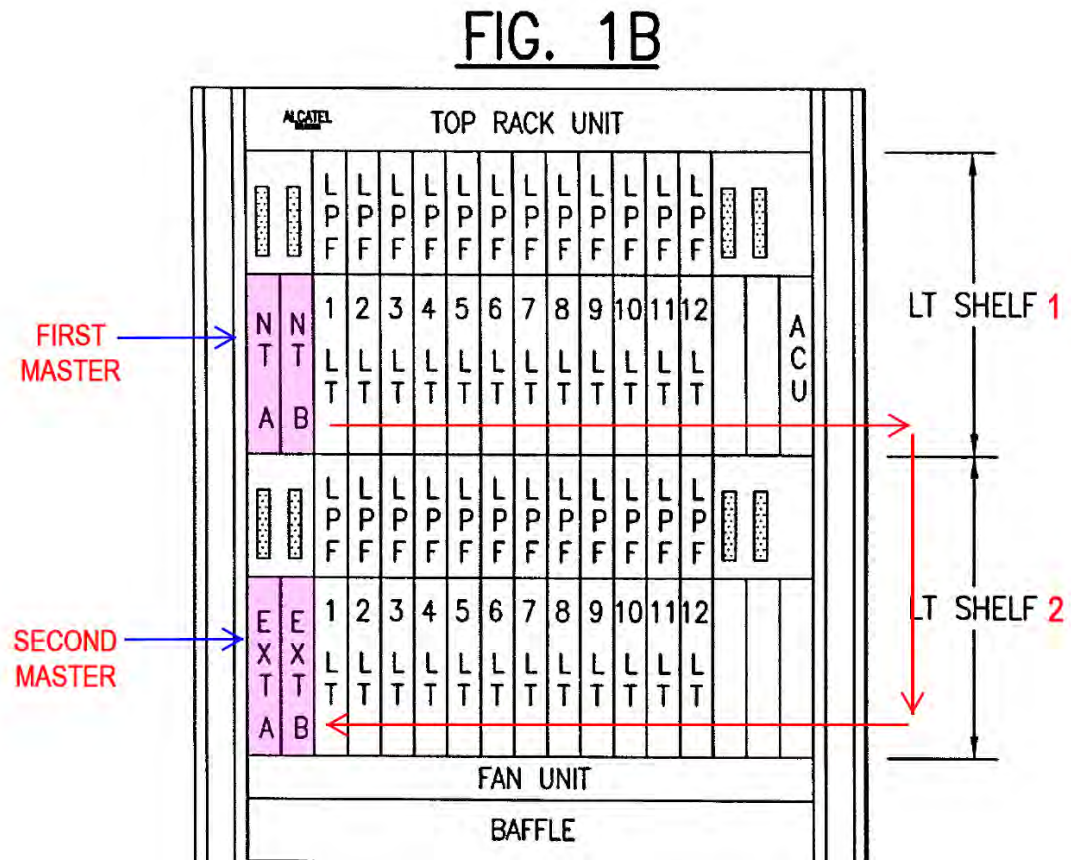
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No.	'904 Patent Claim 1	Czerwiec
		Alternatively, a POSITA would have recognized that Czerwiec's first and second master may include the redundant pair of NT and EXT cards. *See, e.g.*, Czerwiec, 16:15-35.  Czerwiec, FIG. 6 (annotated). Additionally, the POSITA would have understood that the first and second masters could serially connected in a daisy chain with slave units in between. For instance, Czerwiec's exemplary two shelves above may be implemented in a chain as shown below in annotated Figure 1B, where the masters are highlighted in purple and the red lines indicate a downstream direction of traffic between the first master (LT Shelf 1, NT A or A/B), the first slave (LT Shelf 1, LT 1), the second slave (LT Shelf 1, LT 2), the last slave (LT Shelf 2, LT 1), and the second master (LT Shelf 1, EXT A or A/B).

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No.	'904 Patent Claim 1	Czerwiec
		Non-redundant masters:  Czerwiec, FIG. 1B (annotated).

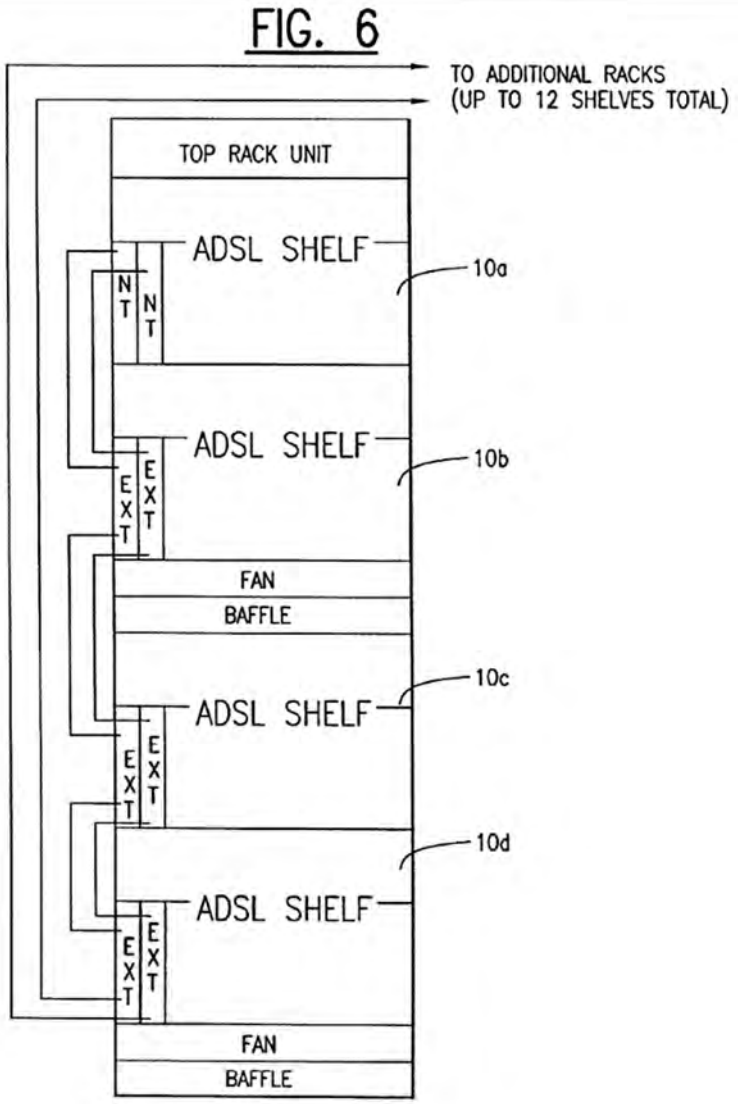
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No.	'904 Patent Claim 1	Czerwiec
		Redundant masters:  Czerwiec, FIG. 1B (annotated).

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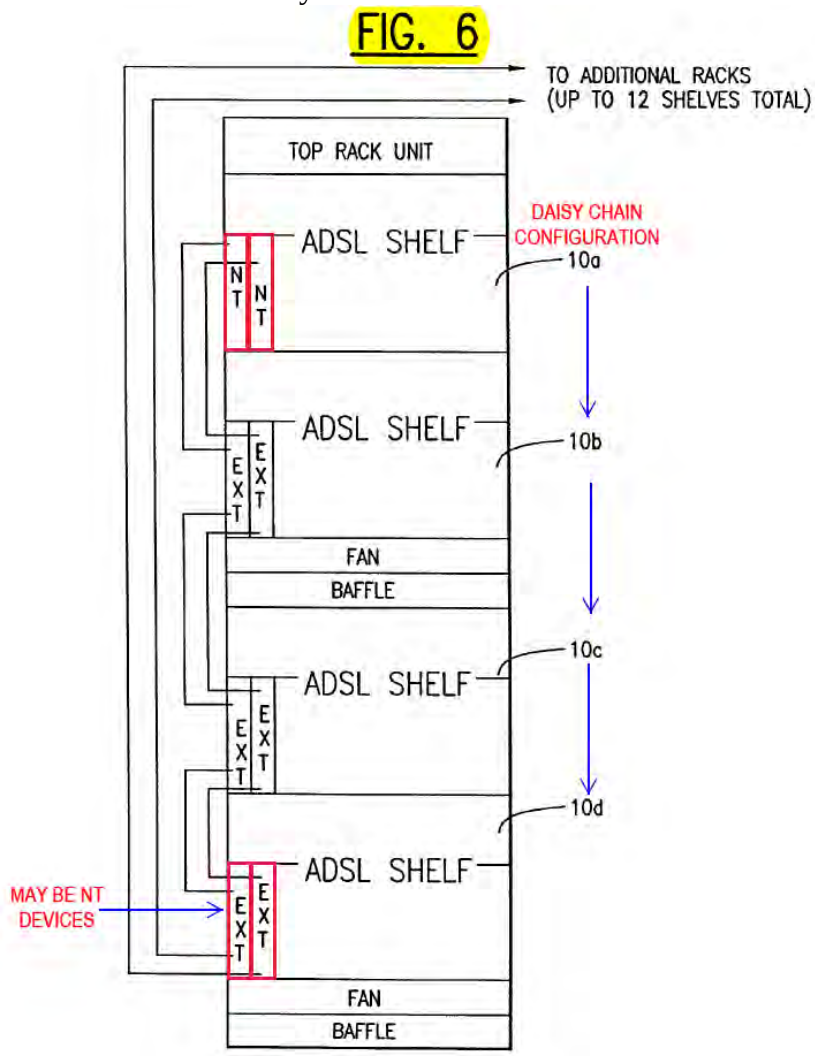
No.	'904 Patent Claim 1	Czerwiec
		Example Four: Czerwiec discloses "FIG. 6 shows in detail the above-mentioned feature of the present architecture whereby a plurality of ADSL shelves 10 a, 10 b, 10 c, 10 d such as shown in FIG. 1 can be daisy-chained together in a rack by means of an extender card (EXT) in each subsequent shelf. The extender card function is to effectively extend the IQ bus from shelf to shelf (daisy-chained, e.g., to a maximum of twelve shelves altogether), allowing up to, e.g., 576 ADSL subscribers accessed to the system. In other words, the extender card allows an NT card in a first shelf to act as an NT card for another shelf or a plurality of other shelves. I.e., in this case, three racks with altogether twelve daisy-chained shelves. The extender cards can be mounted as shown in FIG. 6 in the NT slots of subsequent shelves and may be redundant. In that case, any failure of an NT or extender card bank switches all LTs from the "A" NT/extender string to the "B" string. The active string then assumes control of each shelf's IQ bus. The IQ bus itself (within each shelf) is not redundant, but meets reliability requirements, as the NT has the ability to remove each LT from the IQ bus (disable) to isolate a fault and remove it from service." Czerwiec, 16:15-35. Figure 6, having redundant NT cards in ADSL shelf 10a is shown below.

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No.	'904 Patent Claim 1	Czerwiec
		 Czerwiec, FIG. 6.

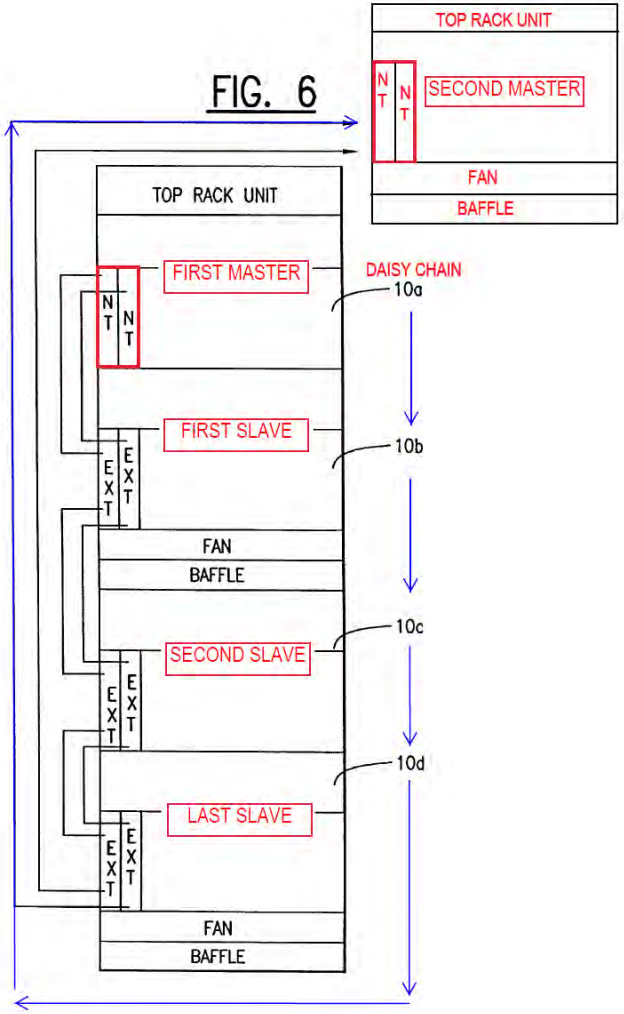
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No.	'904 Patent Claim 1	Czerwiec
		In another example, annotated Figure 6 shows ADSL shelves that are daisy chained, where the EXT cards in ADSL shelf 10d may act as a redundant master.

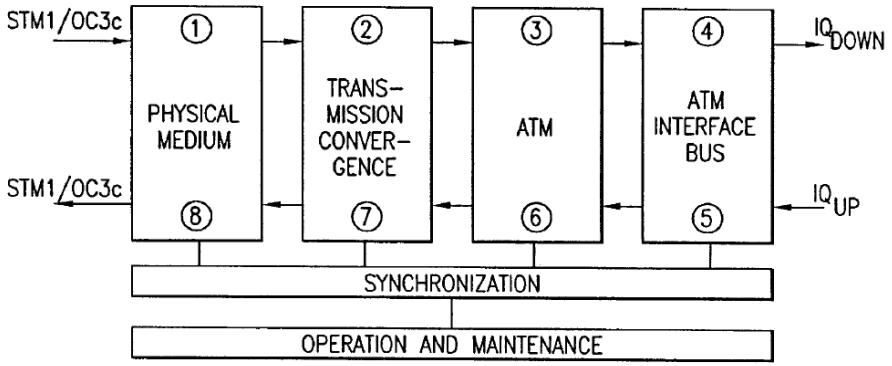


Czerwiec, FIG. 6 (annotated).

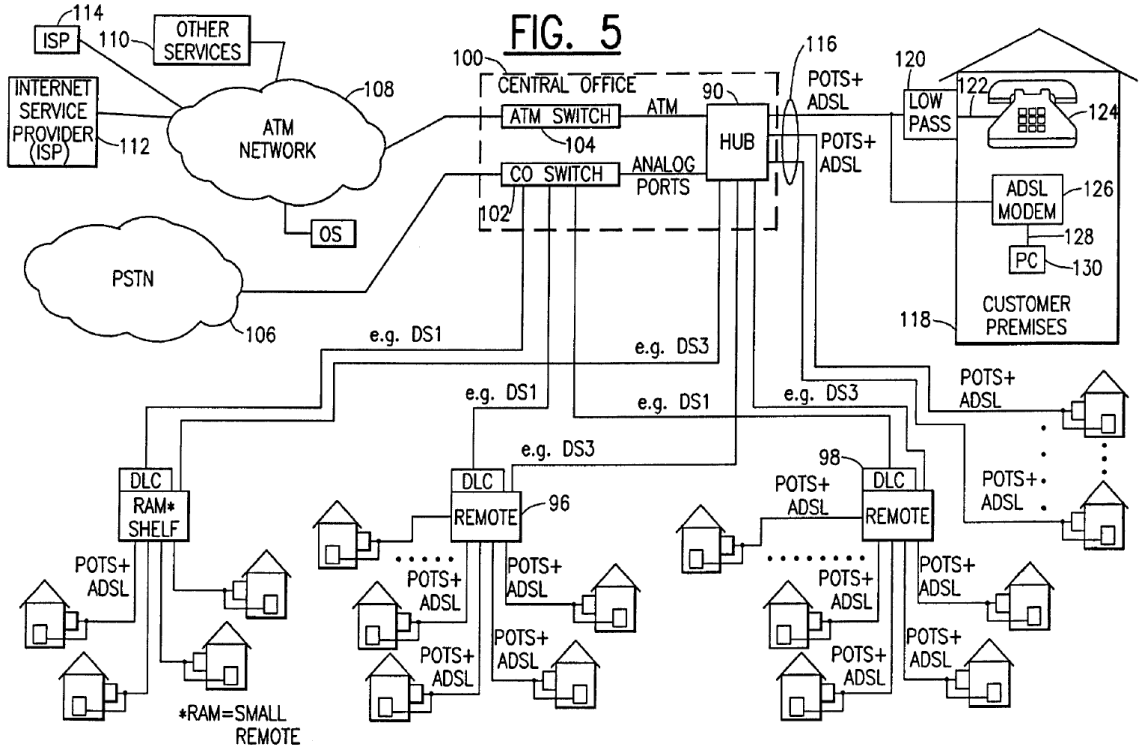
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No.	'904 Patent Claim 1	Czerwiec
		Example Five: In yet another example, annotated Figure 6 shows ADSL shelves that are daisy chained, where the daisy chain is connected to redundant NT cards in an ADSL shelf of another rack.  Czerwiec, FIG. 6 (annotated).

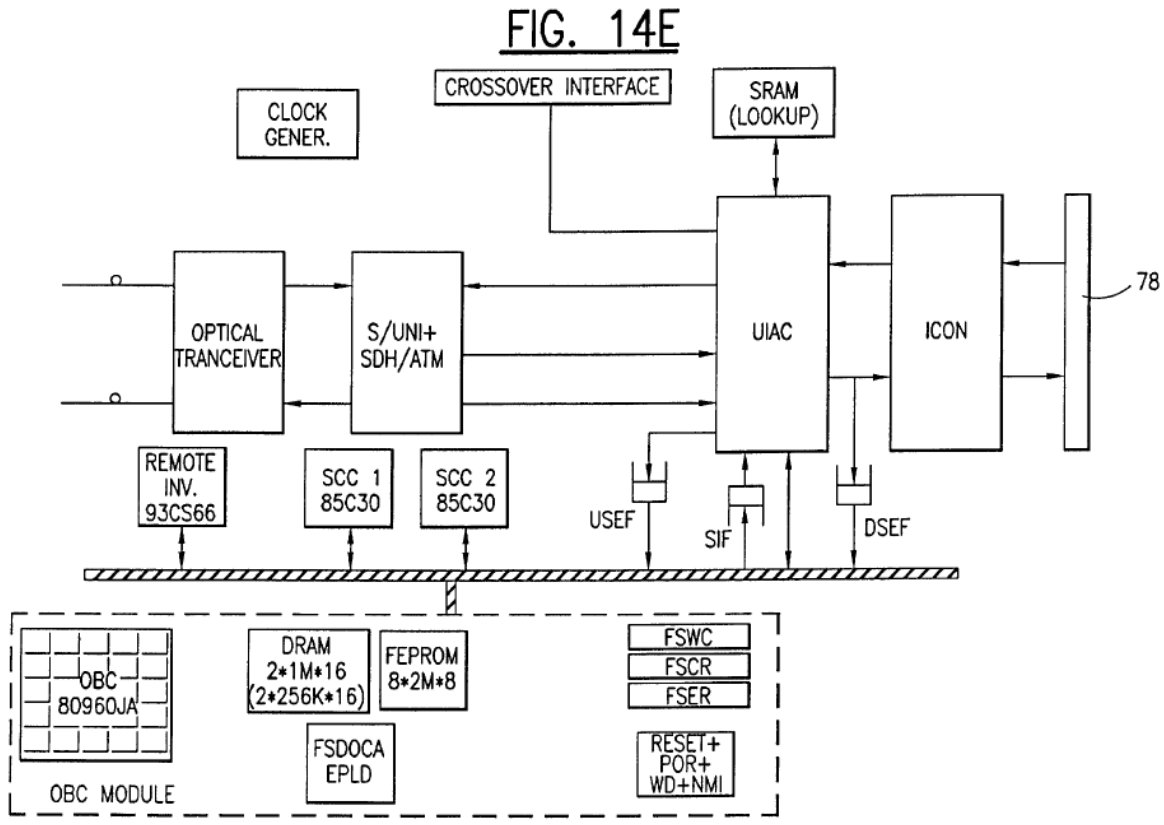
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No.	'904 Patent Claim 1	Czerwiec
		Czerwiec discloses "FIG. 14A shows a simplified block diagram of an embodiment of an NT card, according to the present invention. It provides a high-speed optical or electrical access to a Synchronous Optical Network (SONET) transport system. It converts Asynchronous Transfer Mode (ATM) cells to SONET packets (i.e., frames) and vice versa. Thus, the NT card adapts ATM cells carried on the IQ bus to the SONET transmission system and vice versa. It also includes necessary functions as listed in the table of FIG. 14B for operating and maintaining the ATM subscriber access multiplexer of the present invention." Czerwiec, 21:13-24. FIG. 14A  Czerwiec, FIG. 14A. Czerwiec discloses "In regard to the physical medium block, this can be an optical interface for interfacing an optical transport system with a receive and transmit optical fiber carrying signals, e.g., with a nominal bit rate of 155.52 Mbps. The interface is symmetric, i.e., it has the same bit rate in both directions and could operate, e.g., at a wavelength of 1.3 μm. This signal can be a SONET (Synchronous Optical Network) signal at the OC-3 level for conversion to STM-1/STS-3c in the electrical domain. This is a serial signal which the physical medium interface block converts to parallel form at a slower rate for processing on the NT card, with the parallel downstream output locked on to the received clock." Czerwiec, 21:36-47.

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No.	'904 Patent Claim 1	Czerwiec
		Czerwiec further discloses "The NT card is managed by an ADSL workstation (AWS) which may be located in an operating system (OS) as shown in FIG. 5. Such an OS may communicate through an ATM network and an ATM switch in a central office with the NT card in the shelf." Czerwiec, 23:41-52. Figure 5 of Czerwiec is reproduced below.  Czerwiec, FIG. 5.

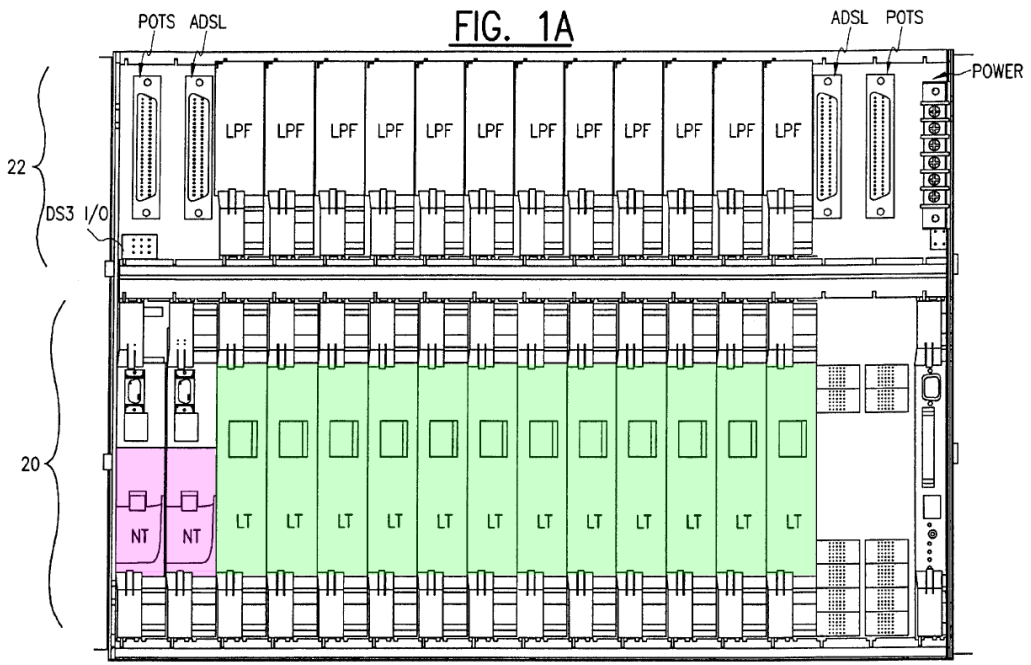
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No.	'904 Patent Claim 1	Czerwiec
		Czerwiec discloses "FIG. 14E shows a more detailed functional block diagram of an NT card 12 a of FIG. 1." Czerwiec, 23:53-54.  Czerwiec, FIG. 14E.

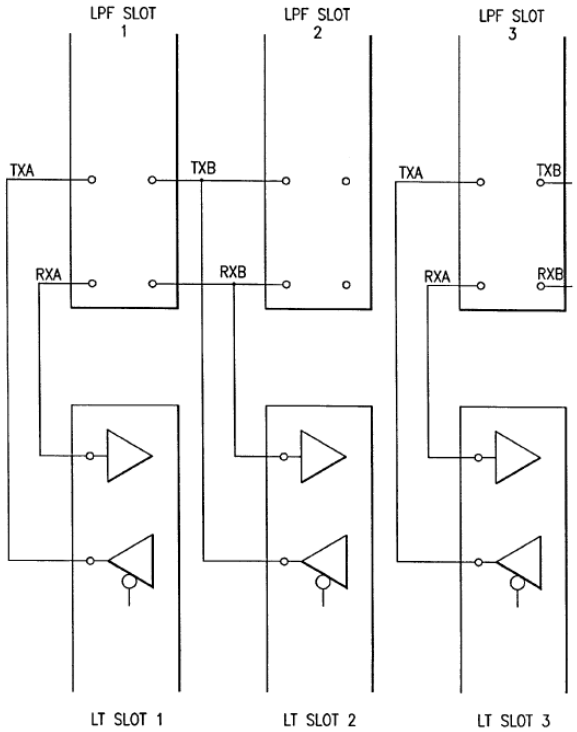
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No.	'904 Patent Claim 1	Czerwiec
1[b]	a plurality of slave units,	Czerwiec discloses a plurality of slave units. For example, Czerwiec discloses multiple ADSL shelves having LT cards. Generally, Czerwiec discloses "Although the internal bus of the shelf is shown in a non-redundant embodiment, an increased level of equipment protection can be provided by placing one half of a redundant equipment pair in one shelf and the other half in the other shelf and sharing network termination equipment between such shelves." Czerwiec, Abstract. "The shelf 10 is populated by at least one or a redundant pair of network termination (NT) cards 12 a, 12 b, up to twelve xDSL, in this case ADSL (Asynchronous Digital Subscriber Line), line termination (LT) cards 14, an equal number of Low Pass Filter (LPF) 15 cards 24, an optional Network Element Processor (NEP) 16 a (or an optional redundant pair 16 a, 16 b), and an Alarm Collection Unit (ACU) 18." Czerwiec, 9:14-20. "FIG. 1A shows a front view of an actual shelf with redundant NT cards, 12 LT cards, 12 corresponding LPF cards, and an ACU card all inserted therein. FIG. 1B shows a plurality of shelves mounted in a central office rack, such as shown in FIG. 1E, in a standard configuration for serving 192 ADSL lines." Czerwiec, 9:66-10:4.

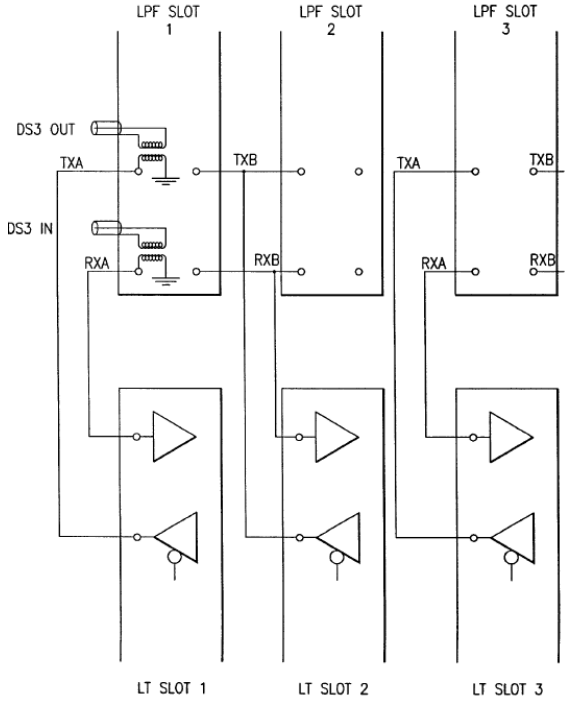
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No.	'904 Patent Claim 1	Czerwiec
		 Czerwiec, FIG. 1A (annotated). "According to a tenth aspect of the present invention, a telecommunications rack for connection to an upstream network service provider for providing said service to downstream subscriber equipment also for connection to said rack comprises a plurality of shelves, at least one shelf for connection to said upstream network service provider by means of network termination equipment, each shelf for connection to different equipment of said downstream subscriber equipment by means of line termination equipment, wherein each of said plurality of shelves has a same nonredundant feature, at least one pair of redundant line termination equipment, one line termination equipment of said pair for use in said at least one shelf in association with said same nonredundant feature thereof and a remaining line termination equipment of said pair for use in another shelf of said plurality of shelves in association with said same nonredundant feature thereof, and means for connecting said at least one shelf and said another shelf for providing said same nonredundant feature redundantly." Czerwiec, 5:63-6:14.

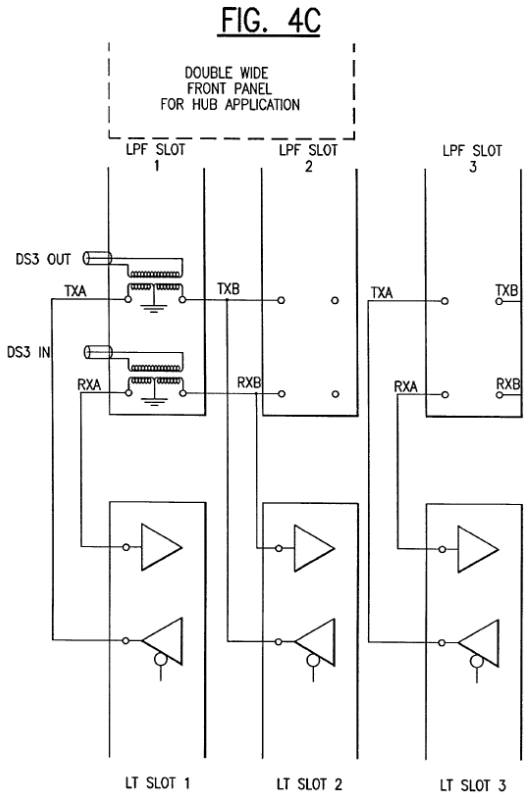
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No.	'904 Patent Claim 1	Czerwiec
		In one example, Czerwiec discloses "4A shows LT-LPF BPA wiring and LT-BPA transceivers for supporting the 'hub' applications with DS-3 links to 'remote' shelves, according to the present invention." Czerwiec, 7:36-39. Czerwiec describes that "[a]s shown in FIG. 4A, the LT-LPF backplane wiring is shown with LT transceivers. In this case, the LPF and LT cards can be configured for redundancy of the LT cards to be inserted in the LT slots in either a same shelf or in separate shelves. Czerwiec, 14:43-47. FIG. 4A  Czerwiec, FIG. 4A.

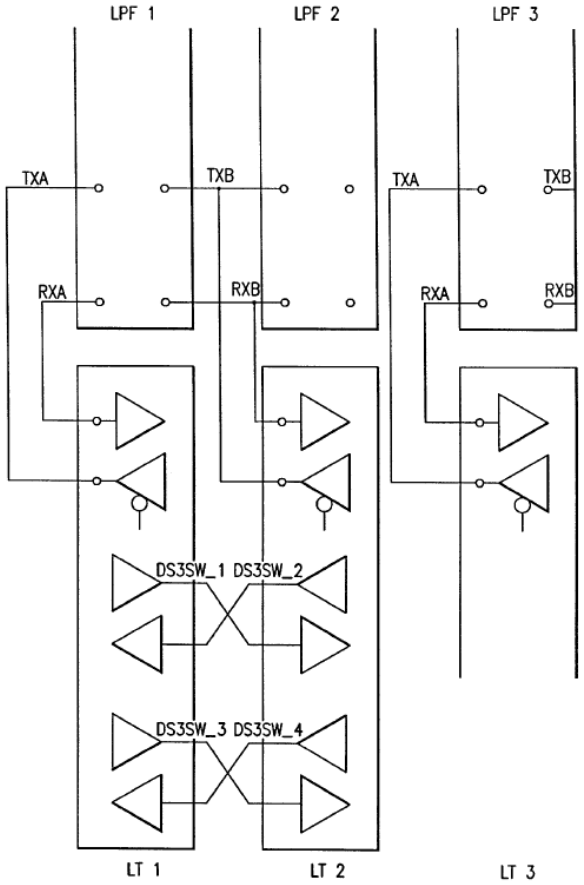
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No.	'904 Patent Claim 1	Czerwiec
		In another example, Czerwiec discloses "4B shows wiring with non-redundant DS-3 LT card installed for the 'hub' application, according to the present invention." Czerwiec, 7:40-42. "For example, in FIG. 4B, a non-redundant option LT is shown with a DS-3 interface inserted in LPF slot 1, wherein input and output DS-3 coax cables from a CO switch are connected to a DS-3 interface card for insertion in LPF slot 1, which is connected through the backplane to a DS-3-LT card for insertion in LT slot 1, such as the DS-3-LT card 92 of FIG. 4. The lowpass filter function is carried out at the remote shelf 96 of FIG. 4 where a DLC is available. The configuration shown in FIG. 4B for LT slot 1 and LPF slot 1 could also be used in connection with FIG. 4E, as explained below." Czerwiec, 14:47-57. FIG. 4B  Czerwiec, FIG. 4B.

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No.	'904 Patent Claim 1	Czerwiec
		In another example, Czerwiec discloses "FIG. 4C shows redundant DS-3 LTs on the same shelf in a 'hub' application, according to the present invention." Czerwiec, 7:43-45.  Czerwiec, FIG. 4C. Czerwiec explains that "FIG. 4C shows an application with redundant DS-3-LT cards for insertion, e.g., in LT slot 1 and LT slot 2 of a given shelf. In that case, a different kind of DS-3 I/O card is used, double wide as shown, with a center tapped transformer on the card which is connected both to the transmit (TXA/TXB) and to the receive (RXA/RXB) backplane wiring associated with both LPF slot 1 and LPF slot 2. The NT controls which LT slot is to be active." Czerwiec, 14:58-65.

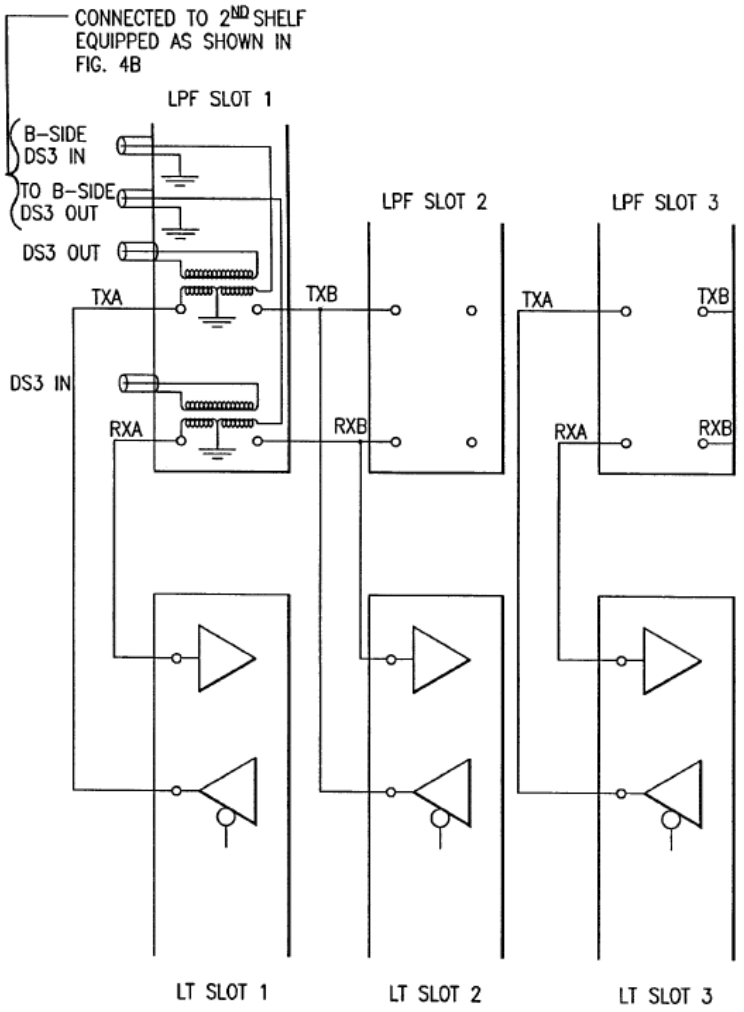
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No.	'904 Patent Claim 1	Czerwiec
		In yet another example, Czerwiec discloses "FIG. 4D shows switch signal wiring for redundant DS-3 LTs in the same shelf for a 'hub' application, according to the present invention." Czerwiec, 7:45-47. Czerwiec further discloses that "FIG. 4D is similar to FIG. 4A but additionally shows arbitration interfaces between redundant DS-3-LTs." Czerwiec, 14:66-67. FIG. 4D  Czerwiec, FIG. 4D.

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No.	'904 Patent Claim 1	Czerwiec
		In yet another example, Czerwiec discloses "4E shows a solution for DS-3 LT card redundancy in separate shelves for a 'hub' application, so as to provide IQ bus redundancy, according to the present invention, where only a single IQ bus is provided per shelf." Czerwiec, 7:48-51. Further, Czerwiec discloses "[a]s suggested above, since there is only one nonredundant IQ bus per shelf, the equipment protection implied by FIG. 4C with A and B redundant DS-3-LT cards in slots 1 and 2 will be ineffective if the IQ bus itself has a failure. If it is desired to avoid this sort of failure, a different kind of redundancy in the DS-3 cards can be provided, as shown in FIG. 4E. In that case, half of the transmit and receive signals are used in the shelf, and the other half can be routed to a different shelf, instead of slot 2 in the same shelf. The top two cables shown in FIG. 4E would thus be routed to another shelf and be connected into, e.g., the DS-3 out and DS-3 in transformers shown in FIG. 4B in another shelf. The DS-3 out and DS-3 in cables of FIG. 4E would go to the CO switch or other network element." Czerwiec, 15:1-14. Moreover, Czerwiec discloses "[a]s will be observed in FIG. 4, an ADSL shelf 90 may have both ADSL-LTs 14a and aggregate type LTs such as the DS-3-LTs 92, 94 shown. Service classes in both cases are provided for subscribers by separate buffers per service class (CBR, VBR, UBR, etc.), each contending for upstream access to the IQ bus via the control leads and the grant mechanism based in part on the priority assigned to each upstream cell. In the case of aggregate LTs, such as shown in the hub 90 of FIG. 4, the service class buffers have a cell priority equal to the sum of the aggregate cell priorities in each buffer (or even some percentage), in order that the remote subscribers are assigned a fair share of the hub's operating bandwidth. In times of bursty upstream traffic, congestion and DS-3-LT buffer overflow is managed by limiting the DS-3 link bandwidth and allowing temporary buffer fill in the remote ADSL-LTs (until such time that the traffic peak subsides). It is noted that POTS interfaces are not shown in FIG. 4 but would normally be provided, e.g., by DLCs adjacent or incorporated in the Remotes 96, 98." Czerwiec, 15:15-33.

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No.	'904 Patent Claim 1	Czerwiec
		FIG. 4E  Czerwiec, FIG. 4E.

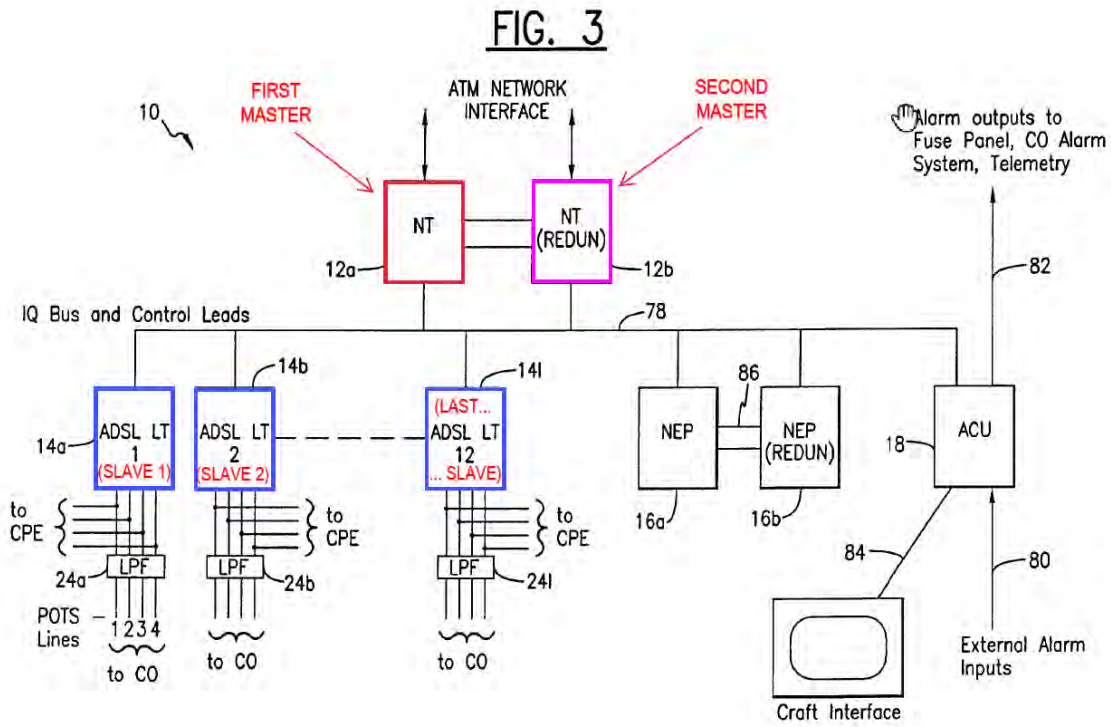
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No.	'904 Patent Claim 1	Czerwiec
1[c]	each slave unit comprising one or more ports to respective subscriber lines; and	Czerwiec discloses each slave unit comprising one or more ports to respective subscriber lines. For example, Czerwiec discloses that the one or more ADSL shelves connected to ordinary residences and businesses through subscriber lines. *See, e.g.*, "present invention relates to providing high-speed communications services to ordinary residences and small businesses on digital subscriber lines." Czerwiec, 1:8-10. Czerwiec discloses that "[a]ccording to a sixth aspect of the present invention, subscriber equipment for use in a telecommunications system having a shelf for connection both to a telephone network and to a wideband network and **having a plurality of subscriber lines for connection to subscriber equipment at a plurality of subscriber premises**, wherein each subscriber equipment comprises a lowpass filter for use at a subscriber's premises, responsive to a telephony signal occupying a baseband position in a frequency division multiplexed signal also having a wideband signal occupying a position above baseband, for only providing said telephony signal between said lowpass filter and a subscriber's telephone for use in voice communications between said subscriber's premises and said telephone network, and a digital subscriber line modem for use at the subscriber's premises, for connection to said frequency division multiplexed signal for only providing said wideband signal between said digital subscriber line modem and a subscriber's data terminal for use in digital communications between said subscriber's premises and said wideband network." Czerwiec, 4:54-5:6 (emphasis added). Czerwiec discloses that "[a]ccording to an eighth aspect of the present invention, line termination equipment for use in a shelf of a telecommunications system, said line termination equipment for connection to a plurality of subscriber lines for connection to a corresponding plurality of subscriber equipment at a plurality of subscriber premises, wherein said line termination equipment comprises plural subscriber channels, each comprising a hybrid circuit for connection to a corresponding twisted pair from a corresponding subscriber premises, each channel comprising a highpass filter for isolating a telephony signal occupying a baseband position in a frequency-division multiplexed signal from a wideband signal

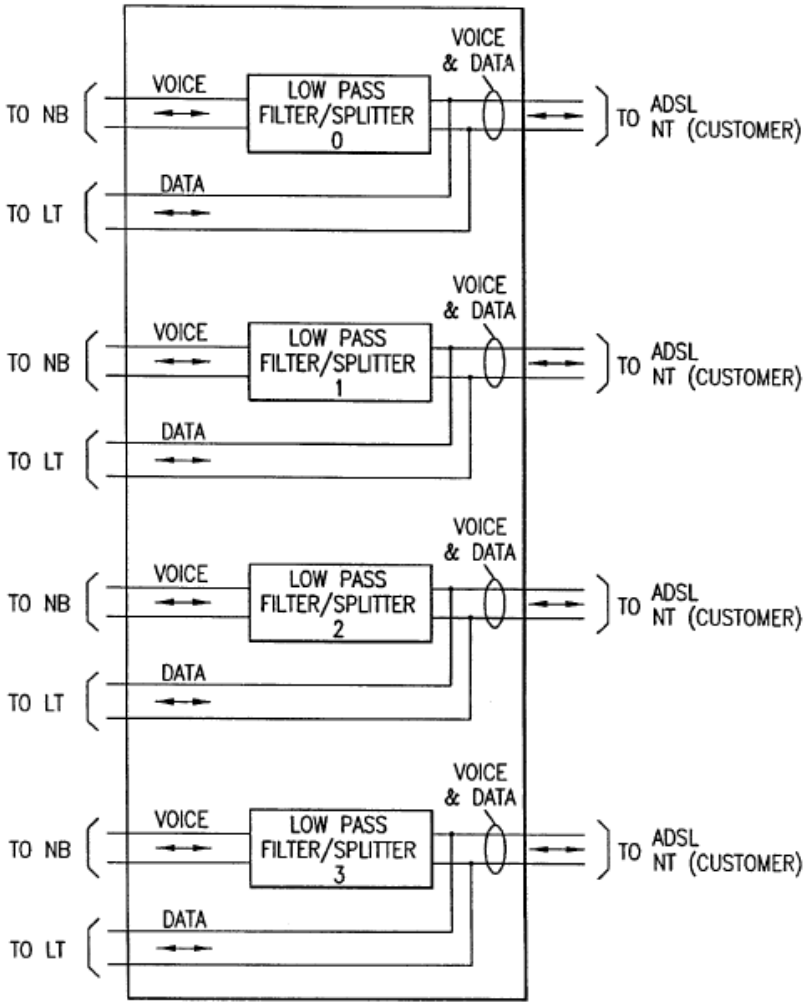
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No.	'904 Patent Claim 1	Czerwiec
		occupying a position above baseband, a modulator/encoder, responsive to said wideband signal for providing an encoded and modulated wideband signal to said hybrid circuit for providing said encoded and modulated wideband signal on said twisted copper pair in said position above baseband, and a demodulator/decoder, responsive to a wideband signal from said subscriber premises for providing a demodulated and decoded wideband signal to said wideband network." Czerwiec, 5:28-48 (emphasis added). Czerwiec discloses that "[a]ccording to a ninth aspect of the present invention, a replaceable printed board assembly for use in a shelf of a telecommunications system, wherein said shelf is for connection both to a telephone network and to a wideband network and having a plurality of subscriber lines for connection to subscriber equipment at a plurality of subscriber premises, wherein said replaceable PBA comprises a corresponding plurality of lowpass filters, each having a first port for connection to a plain old telephone service interface comprising a plurality of twisted copper pairs, and a second port for connection to a corresponding second plurality of twisted copper pairs for connection to said corresponding plurality of customer premises and to said wideband network via a wideband multiplex bus of said shelf." Czerwiec, 5:49-62 (emphasis added). Further, Czerwiec discloses "FIG. 1A shows a front view of an actual shelf with redundant NT cards, 12 LT cards, 12 corresponding LPF cards, and an ACU card all inserted therein. FIG. 1B shows a plurality of shelves mounted in a central office rack, such as shown in FIG. 1E, in a standard configuration for serving 192 ADSL lines." Czerwiec, 9:66-10:4.

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No.	'904 Patent Claim 1	Czerwiec
		 Czerwiec, FIG. 3 (annotated). Czerwiec further discloses that "FIG. 7A shows a lowpass filter card, such as one of the LPF cards 24 shown in FIG. 1 in schematic block diagram form. Four different lowpass filters/splitters are shown on the card. To the left of each card is a voice port for connection to the narrowband (NB) network via the CO switch 46 via the line 50. On the righthand side of each lowpass filter/splitter is a port which is connected both to the twisted copper pair 36 to the subscriber and to the highpass filter 38 of the LT 62 (see FIG. 2). A side view of the physical dimensions of such a four-channel LPF card is shown in FIG. 7B, while a front view is shown in FIG. 7C." Czerwiec, 16:42-52.

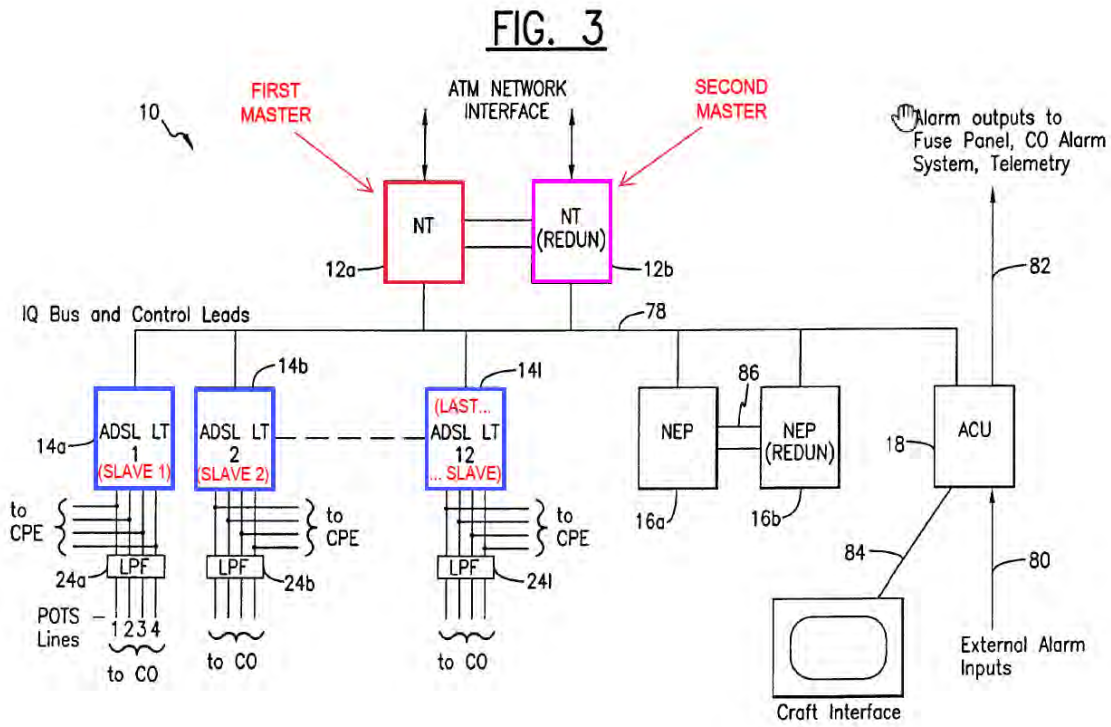
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No.	'904 Patent Claim 1	Czerwiec
		FIG. 7A  Czerwiec, FIG. 7A.

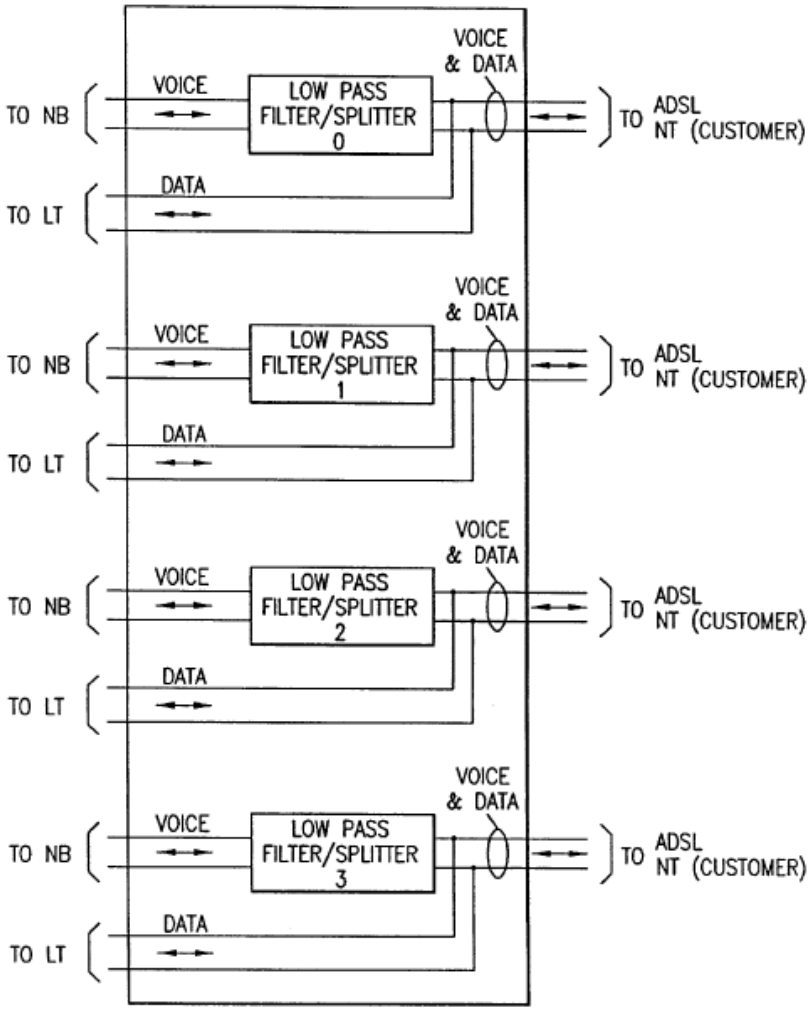
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No.	'904 Patent Claim 1	Czerwiec
1[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	Czerwiec discloses a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. For example, Czerwiec discloses that the one or more ADSL shelves are physically connected via lines to other ADSL shelves in series that do not loop. Czerwiec further discloses that each shelf contains at least two of these series connections for redundancy. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See, e.g.*, "FIG. 1A shows a front view of an actual shelf with redundant NT cards, 12 LT cards, 12 corresponding LPF cards, and an ACU card all inserted therein. FIG. 1B shows a plurality of shelves mounted in a central office rack, such as shown in FIG. 1E, in a standard configuration for serving 192 ADSL lines." Czerwiec, 9:66-10:4.

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No.	'904 Patent Claim 1	Czerwiec
		 Czerwiec, FIG. 3 (annotated). Czerwiec further discloses that "FIG. 7A shows a lowpass filter card, such as one of the LPF cards 24 shown in FIG. 1 in schematic block diagram form. Four different lowpass filters/splitters are shown on the card. To the left of each card is a voice port for connection to the narrowband (NB) network via the CO switch 46 via the line 50. On the righthand side of each lowpass filter/splitter is a port which is connected both to the twisted copper pair 36 to the subscriber and to the highpass filter 38 of the LT 62 (see FIG. 2). A side view of the physical dimensions of such a four-channel LPF card is shown in FIG. 7B, while a front view is shown in FIG. 7C." Czerwiec, 16:42-52.

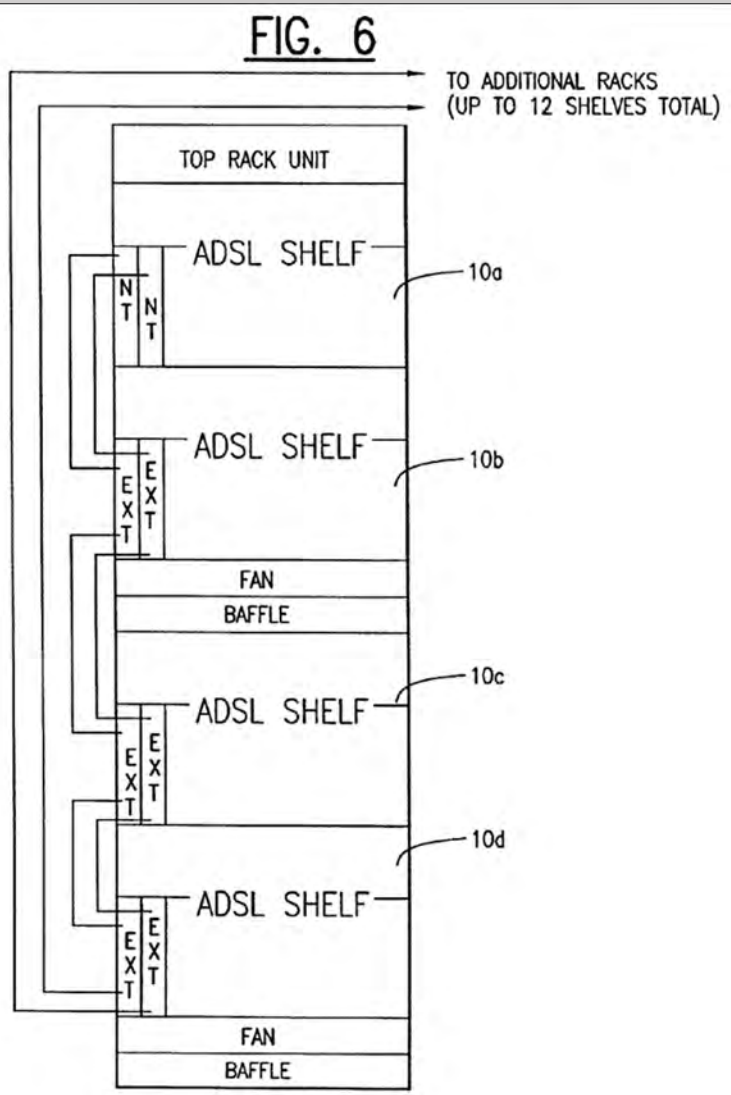
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No.	'904 Patent Claim 1	Czerwiec
		FIG. 7A  Czerwiec, FIG. 7A.

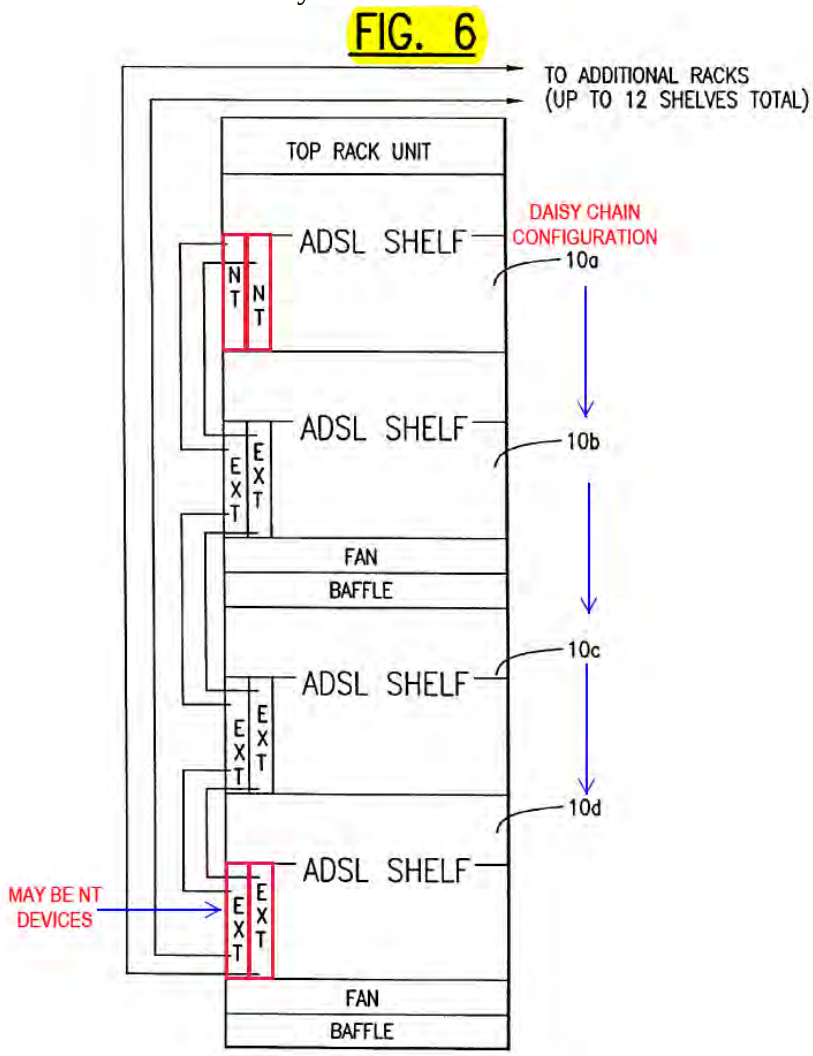
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No.	'904 Patent Claim 1	Czerwiec
		Czerwiec further discloses "FIG. 6 shows in detail the above-mentioned feature of the present architecture whereby a plurality of ADSL shelves 10 a, 10 b, 10 c, 10 d such as shown in FIG. 1 can be daisy-chained together in a rack by means of an extender card (EXT) in each subsequent shelf. The extender card function is to effectively extend the IQ bus from shelf to shelf (**daisy-chained**, e.g., to a maximum of twelve shelves altogether), allowing up to, e.g., 576 ADSL subscribers accessed to the system. In other words, the extender card allows an NT card in a first shelf to act as an NT card for another shelf or a plurality of other shelves. I.e., in this case, three racks with altogether twelve daisy-chained shelves. The extender cards can be mounted as shown in FIG. 6 in the NT slots of subsequent shelves and may be redundant. In that case, any failure of an NT or extender card bank switches all LTs from the "A" NT/extender string to the "B" string. The active string then assumes control of each shelf's IQ bus. The IQ bus itself (within each shelf) is not redundant, but meets reliability requirements, as the NT has the ability to remove each LT from the IQ bus (disable) to isolate a fault and remove it from service." Czerwiec, 16:15-35 (emphasis added). Figure 6, having redundant NT cards in ADSL shelf 10a is shown below.

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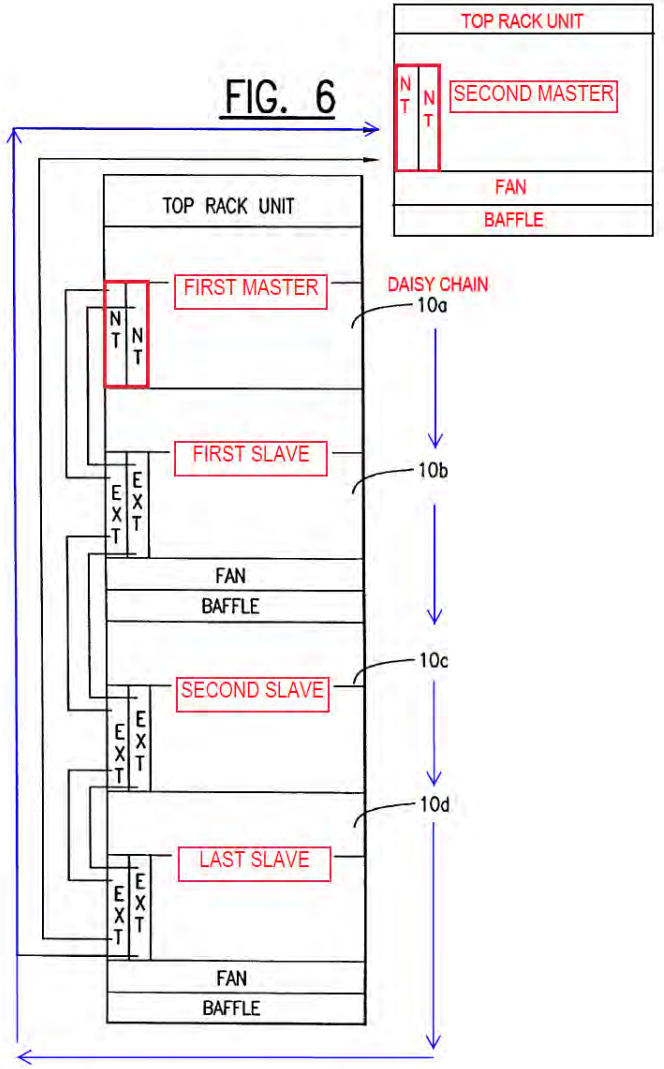
No.	'904 Patent Claim 1	Czerwiec
		 Czerwiec, FIG. 6.

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No.	'904 Patent Claim 1	Czerwiec
		In another example, annotated Figure 6 shows ADSL shelves that are daisy chained, where the EXT cards in ADSL shelf 10d may act as a redundant master.  Czerwiec, FIG. 6 (annotated).

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No.	'904 Patent Claim 1	Czerwiec
		In yet another example, annotated Figure 6 shows ADSL shelves that are daisy chained, where the daisy chain is connected to redundant NT cards in an ADSL shelf of another rack.



Czerwiec, FIG. 6 (annotated).

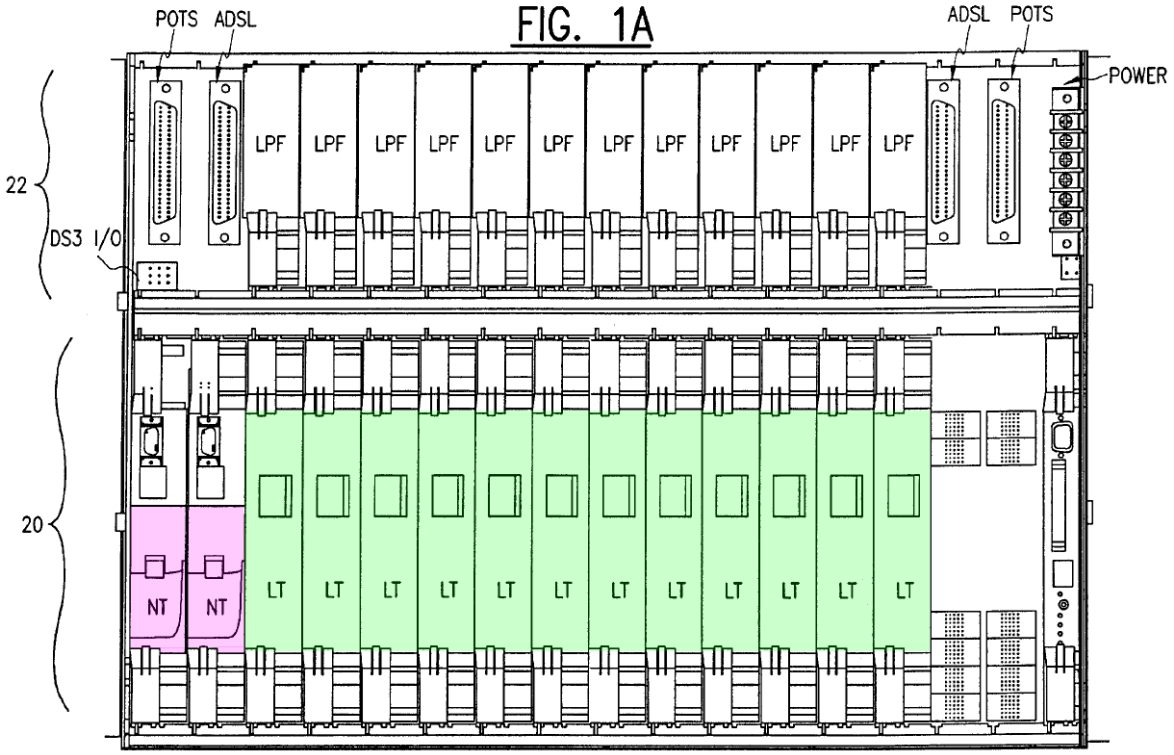
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No.	'904 Patent Claim 1	Czerwiec
1[e]	each daisy chain comprising at least a first slave unit connected one of the physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit.	Czerwiec discloses each daisy chain comprising at least a first slave unit connected one of the physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit. For example, Czerwiec discloses that each group of ADSL shelves connected in series includes a first ADSL shelf and a last ADSL shelf. Czerwiec further discloses that the first ADSL shelf is connected to the first NT card but not the second NT card. Czerwiec further discloses that the last ADSL shelf is connected to the second NT card but not the first NT card. To the extent that Czerweic is found to not meet this limitation, each daisy chain comprising at least a first slave unit connected one of the physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit would have been obvious to a person having ordinary skill in the art, as explained below. *See, e.g.*, "[a]ccording to a tenth aspect of the present invention, a telecommunications rack for connection to an upstream network service provider for providing said service to downstream subscriber equipment also for connection to said rack comprises a plurality of shelves, at least one shelf for connection to said upstream network service provider by means of network termination equipment, each shelf for connection to different equipment of said downstream subscriber equipment by means of line termination equipment, wherein each of said plurality of shelves has a same nonredundant feature, at least one pair of redundant line termination equipment, one line termination equipment of said pair for use in said at least one shelf in association with said same nonredundant feature thereof and a remaining line termination equipment of said pair for use in another shelf of said plurality of shelves in association with said same nonredundant feature thereof, and means for connecting said at least one shelf and said another shelf for providing said same nonredundant feature redundantly." Czerwiec, 5:63-6:14.

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No.	'904 Patent Claim 1	Czerwiec
		According to Czerwiec, "FIG. 1 shows a new shelf arrangement 10 for use in a subscriber access multiplexer system according to the invention. The embodiment shown is for use in an ATM subscriber access multiplexer (ASAM) system, but it should be understood that the invention is not limited to ATM embodiments. The shelf 10 is populated by at least one or a redundant pair of network termination (NT) cards 12 a, 12 b, up to twelve xDSL, in this case ADSL (Asynchronous Digital Subscriber Line), line termination (LT) cards 14, an equal number of Low Pass Filter (LPF) 15 cards 24, an optional Network Element Processor (NEP) 16 a (or an optional redundant pair 16 a, 16 b), and an Alarm Collection Unit (ACU) 18. An LT card is described in more detail below in connection with FIG. 10, while a network termination card is described in more detail below in connection with FIGS. 14A-14E. A lowpass filter card is disclosed in more detail below in connection with FIGS. 7A, 7B and 7C. An alarm collection unit (ACU) 18 is shown in block diagram form in FIG. 15, and a physical embodiment is shown in FIG. 16." Czerwiec, 9:9-26. Further, Czerwiec discloses that "[t]hese cards can be mounted as shown in FIG. 1 in a bottom section 20 of the shelf 10 and **can be, e.g., six rack spaces in height where one rack space equals 1.75 inches (4.45 cm). An upper portion 22 of the shelf can be, e.g., three rack spaces in height for containing up to, e.g., twelve lowpass filter (LPF) cards 24, with each LPF card dedicated to an associated ADSL-LT directly below it**. Also in the upper portion 22 of the shelf 10 may be located connections 26 for POTS (plain old telephone service) interfaces and connections 28 for drop tip/ring leads, connections 30 for power, and a small board 32 for DS-3-NT equipment protection as explained below. The POTS can, but need not, be in analog baseband form. It could take other forms, such as ISDN. Note that the lowpass filters 24 are grouped in the center of the upper portion 22 of the shelf, with the connections 26 for POTS and connections 28 for drop tip/ring leads for location at ends 33 of the upper portion 22 of the shelf. Since the lowpass filters plug into the backplane upon insertion in slots of the shelf and do not connect to cables, they are positioned in the center of the upper portion 22. The connections 26, 28, 30 and 32, on the other hand, require cabling access and are positioned, according to the present invention, at the ends 33 to facilitate such connections near the periphery of the shelf 10, rather than requiring cables passing over central portions of the shelf. Similarly, the LT cards 14 are positioned in the center of the lower section 20 of the shelf 10, since they do not require cabling and are connected to other

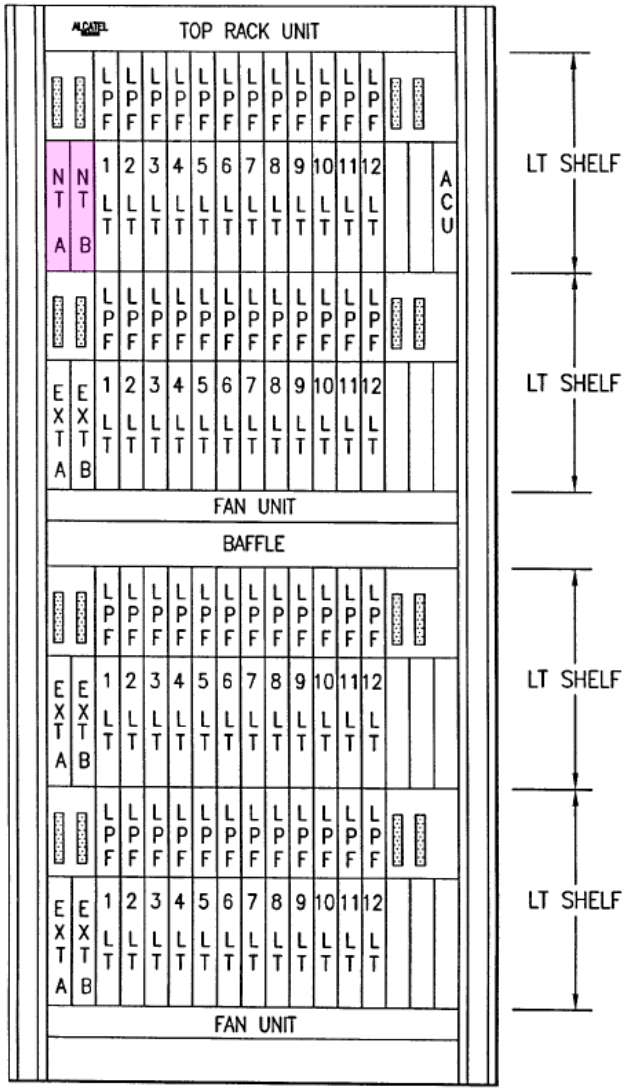
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No.	'904 Patent Claim 1	Czerwiec
		modules by the backplane, to which they are connected via a connector upon insertion. Thus, the NTs 12A, 12B, the NEPs 16A, 16B and the ACU 18 are positioned at ends 35 of the lower section 20 to provide easy cable access. It is also noted that the shelf is designed entirely for front access. The shelf 10 can be dimensioned to fit both U.S. and European equipment racks, e.g., being 498 mm wide and 285 mm deep." Czerwiec, 9:27-62 (emphasis added). Czerwiec discloses redundant NT cards that serve as first and second master units to a plurality of daisy-chained LT units. Specifically, Czerwiec discloses that "FIG. 1A shows a front view of an actual shelf with redundant NT cards…." Czerwiec, 9:66-67.  Czerwiec, FIG. 1A (annotated).

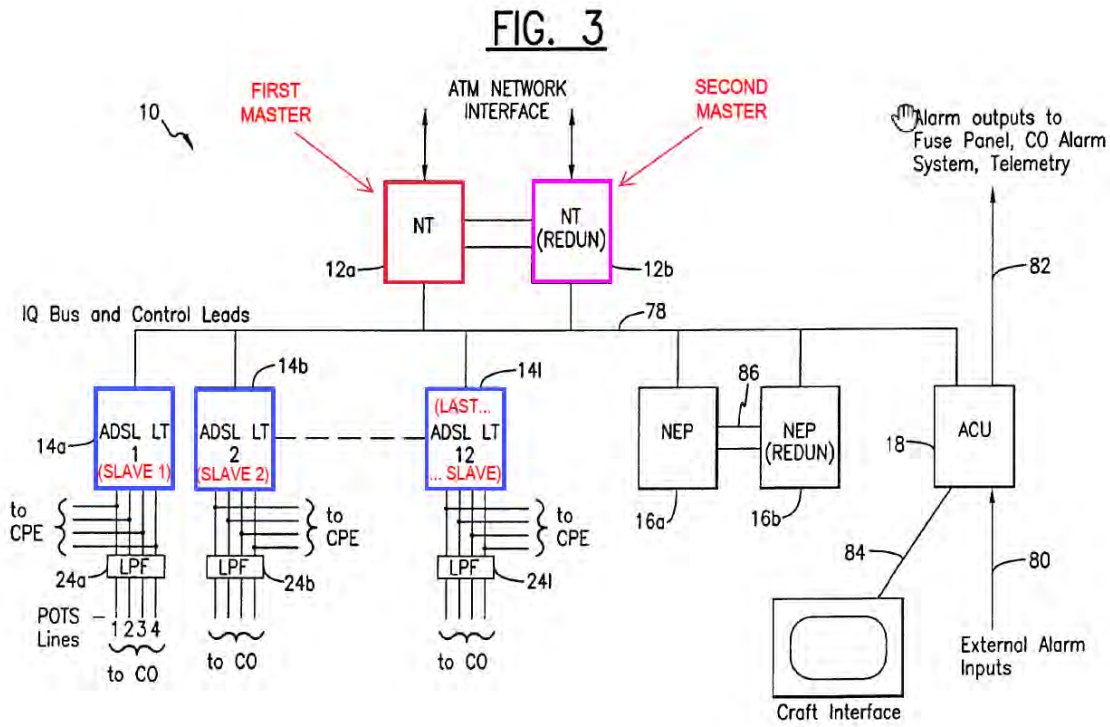
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No.	'904 Patent Claim 1	Czerwiec
		Further, Czerwiec discloses "FIG. 1B shows a plurality of shelves mounted in a central office rack, such as shown in FIG. 1E, in a standard configuration for serving 192 ADSL lines. Up to four adjacent racks can share the same feeder by using extension units installed in place of NTs, as explained below in connection with FIG. 6. In that case, a single, optionally-protected NT card can support up to 576 ADSL lines. FIG. 1C shows the shelf of FIG. 1A without any cards installed and shows the connectors installed in the backplane, into which mating connectors on the cards are insertable by sliding the cards into the slots shown. In this way, front-access-only is achieved. A side view of the shelf is shown in FIG. 1D." Czerwiec, 10:1-13.

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No.	'904 Patent Claim 1	Czerwiec
		FIG. 1B  Czerwiec, FIG. 1B (annotated).

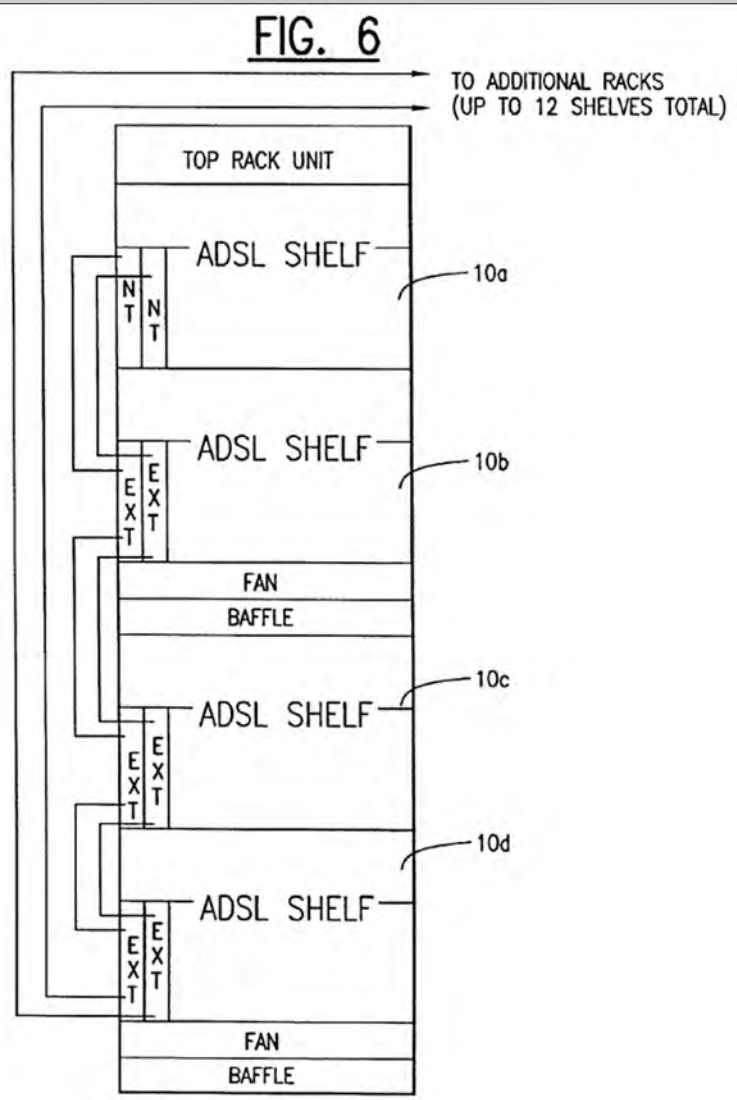
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No.	'904 Patent Claim 1	Czerwiec
		 Czerwiec, FIG. 3 (annotated). Czerwiec also discloses "FIG. 6 shows four xDSL shelves in one rack of an ASAM system; the shelves may be ADSL shelves as illustrated, for use with redundant IQ bus extender cards (EXT) in an "A/B" bank switchover scheme to extend the IQ bus to additional shelves to serve, e.g., with three such racks, up to 576 subscribers." Czerwiec, 7:56-60. Further, Czerwiec discloses "FIG. 6 shows in detail the above-mentioned feature of the present architecture whereby a plurality of ADSL shelves 10 a, 10 b, 10 c, 10 d such as shown in FIG. 1 can be daisy-chained together in a rack by means of an extender card (EXT) in each subsequent shelf. The extender card function is to effectively extend the IQ bus from shelf to shelf (**daisy-chained**, e.g., to a maximum of twelve shelves altogether), allowing up to, e.g.,

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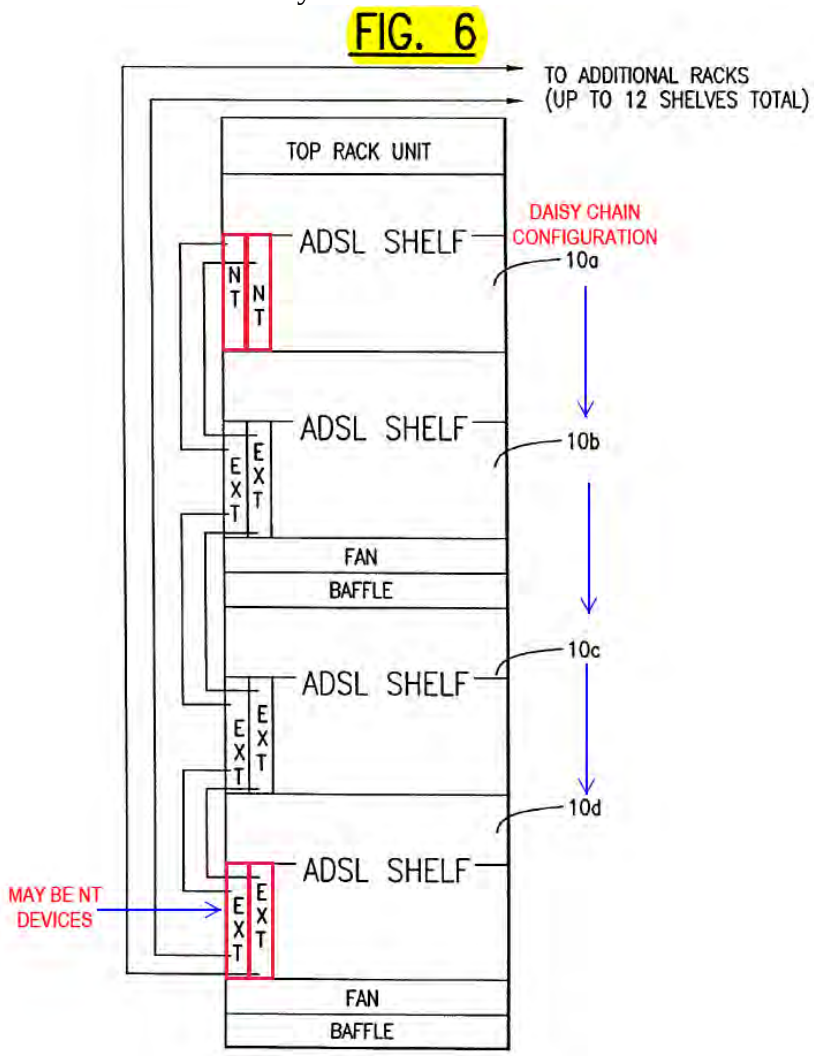
No.	'904 Patent Claim 1	Czerwiec
		576 ADSL subscribers accessed to the system. In other words, the extender card allows an NT card in a first shelf to act as an NT card for another shelf or a plurality of other shelves. I.e., in this case, three racks with altogether twelve daisy-chained shelves. The extender cards can be mounted as shown in FIG. 6 in the NT slots of subsequent shelves and may be redundant. In that case, any failure of an NT or extender card bank switches all LTs from the "A" NT/extender string to the "B" string. The active string then assumes control of each shelf's IQ bus. The IQ bus itself (within each shelf) is not redundant, but meets reliability requirements, as the NT has the ability to remove each LT from the IQ bus (disable) to isolate a fault and remove it from service." Czerwiec, 16:15-35 (emphasis added). Figure 6, having redundant NT cards in ADSL shelf 10a is shown below.

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No.	'904 Patent Claim 1	Czerwiec
		 Czerwiec, FIG. 6.

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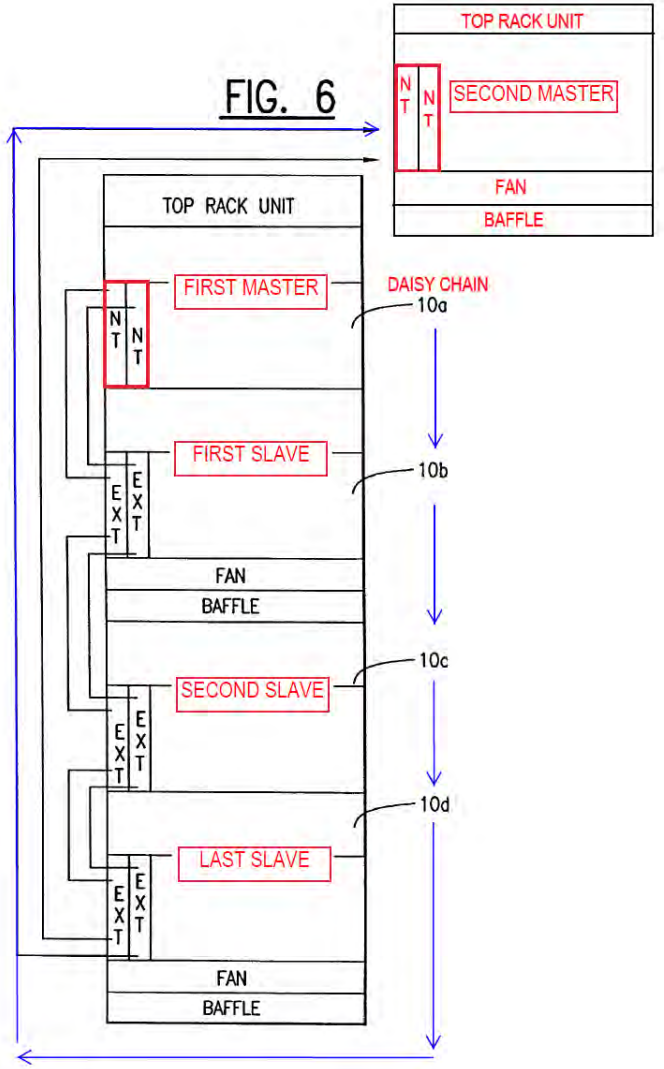
No.	'904 Patent Claim 1	Czerwiec
		In another example, annotated Figure 6 shows ADSL shelves that are daisy chained, where the EXT cards in ADSL shelf 10d may act as a redundant master.



Czerwiec, FIG. 6 (annotated).

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No.	'904 Patent Claim 1	Czerwiec
		In yet another example, annotated Figure 6 shows ADSL shelves that are daisy chained, where the daisy chain is connected to redundant NT cards in an ADSL shelf of another rack.

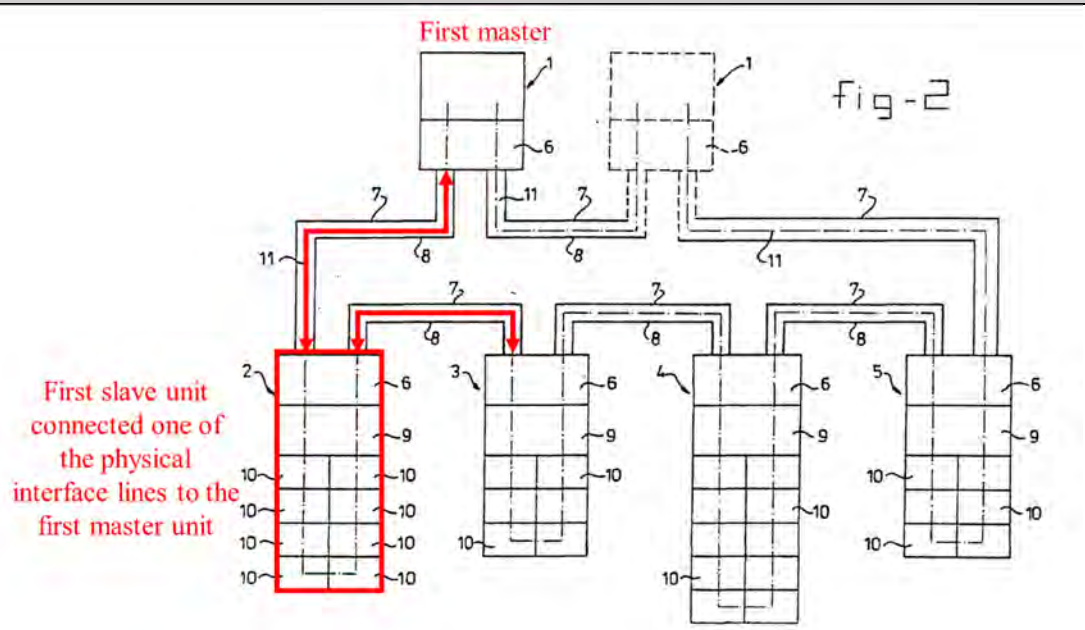


Czerwiec, FIG. 6 (annotated).

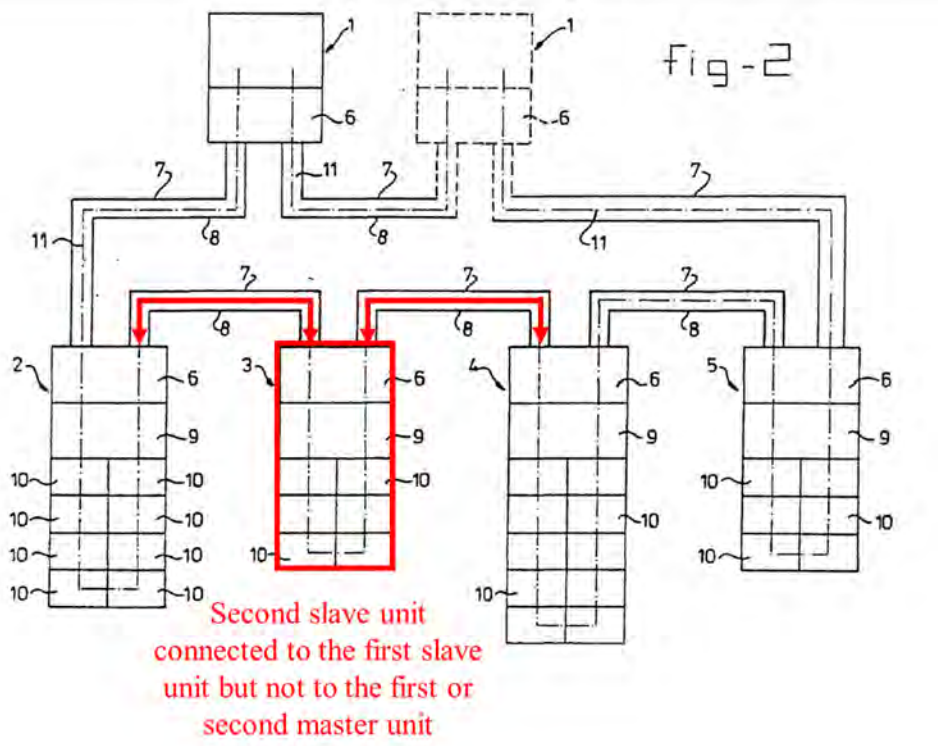
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No.	'904 Patent Claim 1	Czerwiec
		Moreover, Czerwiec expressly discloses "A shelf can be used as a hub for connecting to a remote shelf that includes the line termination equipment for connection to subscribers. Although the internal bus of the shelf is shown in a non-redundant embodiment, an increased level of equipment protection can be provided by placing one half of a redundant equipment pair in one shelf and the other half in the other shelf and sharing network termination equipment between such shelves." Czerwiec, Abstract (emphasis added). Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Czerweic in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 1[e] of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Vink '324 discloses, due to the nature of the cascade and/or shift register arrangement, that substations and masters are only connection to a single substation or master in the upstream direction, and a single substation or master in the downstream direction. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

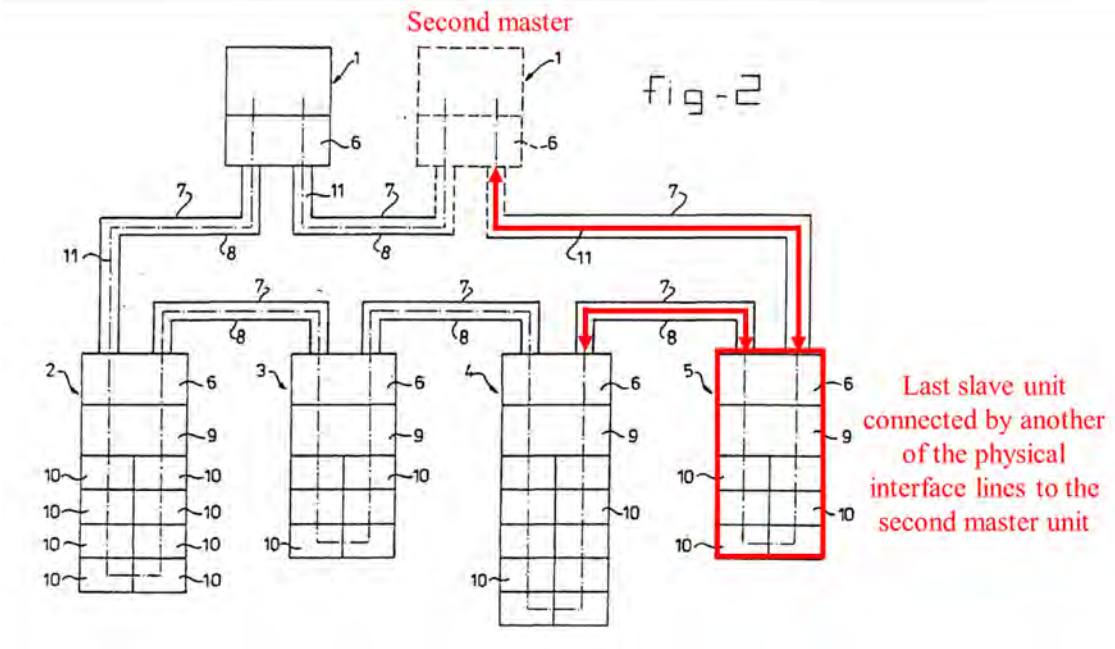
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No.	'904 Patent Claim 1	Czerwiec
		 Vink, FIG. 2 (annotated).

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No.	'904 Patent Claim 1	Czerwiec
		 Vink, FIG. 2 (annotated).

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No.	'904 Patent Claim 1	Czerwiec
		 Vink, FIG. 2 (annotated). Further, U.S. Patent No. 6,981,034 B2 to Ding et al. ("Ding") is titled "Decentralized Management Architecture for a Modular Communication System," was filed June 30, 1999, and issued on December 27, 2005. Indeed, Ding discloses that "[i]n a preferred embodiment of the present invention, each Ethernet Switching module is a particular device that is known as the BayStack™ 450 stackable Ethernet Switch." Thus, Ding discloses that its patented invention is embodied by the BayStack 450 Switches. And, as discussed below, Ding discloses a base module, switching modules, and stacking configuration that are substantially similar to the BayStack 450 Switches that the base unit, switching units, and fail-safe cascade stacking architecture, respectively. Moreover, as discussed below, Ding and the BayStack 450 Switches share many

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No.	'904 Patent Claim 1	Czerwiec
		identical specifications, such as the ability to operate at 10 Mbps or 100 Mbps and the maximum throughput of 2.5 Gbps for wire-speed transmissions. Ding discloses network a dual ring bus network where the base module monitors network management objects in the ring, such as through parameters for a trap event. ("Also as described above, the base module is responsible for generating "trap' messages on behalf of the Stack. FIG. 6 is a logic flow diagram showing exemplary management/ control logic (115, 125, 135) logic for generating "trap" messages. The logic begins in step 602. If the Ethernet Switching module is operating as the base module (YES in step 604), then the management/control logic (115, 125, 135) monitors the network management objects and param eters for a network management trap event, in Step 606. Upon detecting a network management trap event (YES in step 608), the management/control logic (115, 125, 135) sends a "trap' message, in step 610, and returns to step 606 to continue monitoring for network management trap events." Ding, 15:23-35. *See also supra* Claim 1[d].

No.	'904 Patent Claim 2	Czerwiec
2	Apparatus according to claim 1, wherein the network comprises an asynchronous transfer mode (ATM) network.	Czerwiec discloses apparatus according to claim 1, wherein the network comprises an asynchronous transfer mode (ATM) network. For example, Czerwiec discloses an "object of the present invention is to solve the management problems described above by combining the data management features of ATM (Asynchronous Transfer Mode) with the physical-layer transmission flexibility of xDSL." Czerwiec, 1:39-43. Czerwiec discloses "a telecommunications system for providing both narrowband and broadband services to a plurality of subscriber premises comprises at least one shelf for connection to a public switched telephone network (PSTN) and for connection to an asynchronous transfer mode (ATM) network for connecting the PSTN and the ATM network to the plurality of subscriber premises via a corresponding plurality of twisted copper pairs, and a plurality of subscriber modems for connection to the corresponding plurality of twisted

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No.	'904 Patent Claim 2	Czerwiec
		copper pairs, wherein each of the twisted copper pairs is for providing a digital subscriber line that accommodates both plain old telephone service (POTS) and digital channels in an ATM format." Czerwiec, 1:58-2:3. Czerwiec discloses the "preferred embodiment described below overlays adaptive-rate ADSL-coded, ATM-formatted data on existing copper pairs, but it should be realized that the system architecture described below can incorporate any kind of packet network and/or any of a variety of Digital Subscriber Line (DSL) transmission technologies, including ADSL, VDSL, HDSL, SDSL, and ISDN-BRA." Czerwiec, 3:18-30. Czerwiec discloses "multiple ATM service classes and their respective Quality of Service (QoS) parameters are supported, allowing customers to subscribe to CBR (Constant Bit Rate), VBRrt (Variable Bit Rate-real time), VBRnrt (Variable Bit Rate-not real time) and UBR (Unspecified Bit Rate) services, as well as a new service called UBR+ which allows a minimum bandwidth to be reserved for UBR traffic." Czerwiec, 3:31-39. Czerwiec discloses the "architecture disclosed herein applies an ATM mux function and a unique 'IQ' bus invention disclosed in detail in a related U.S. provisional patent application entitled 'Method For Prioritized Data Transmission and Data Transmission Arrangement', having U.S. Ser. No. Ser. No. 60/052,125, filed on even date herewith, now U.S. Pat. No. application Ser. No. 09/084,750, filed May 26, 1998, to allocate traffic within required parameters, based on a priority scheme using weighted service offerings and a cell aging mechanism. The 'IQ' bus concept itself is an improvement over an 'I*' bus access mechanism, as disclosed in U.S. Pat. No. 6,105,084; entitled 'Priority-Based Access Control Method and Arrangement', filed on even date herewith, now allowed U.S. patent application Ser. No. 09/022,177filed Feb. 11, 1998, and which is based on European Patent Application 97400303, filed on Feb. 11, 1997, and which can also be used in selected embodiments of the present invention." Czerwiec, 3:40-57. Czerwiec discloses "an eleventh aspect of the present invention, a network termination equipment for use in a shelf of a telecommunications system, said network termination equipment for connection to an asynchronous transfer mode network and to a plurality of line

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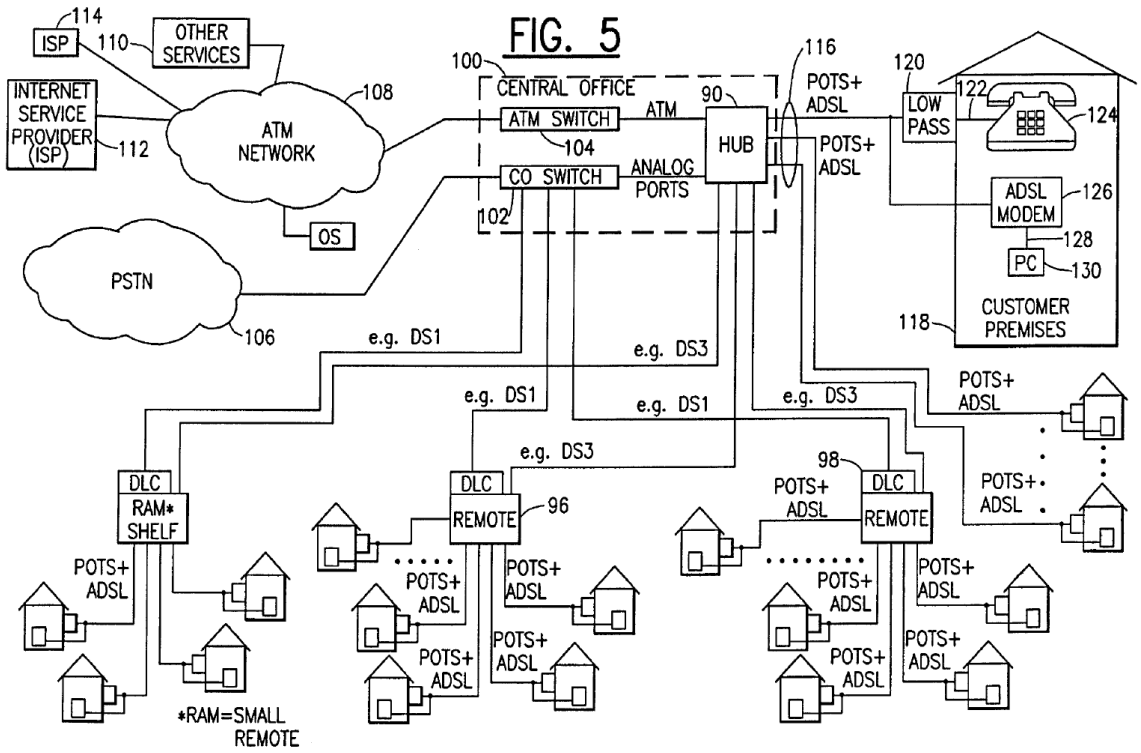
No.	'904 Patent Claim 2	Czerwiec
		termination equipment also for use in said shelf for connection to subscriber equipment, wherein said network termination equipment comprises physical medium termination equipment for interfacing to a physical medium by means of a serial input/output connection to said ATM network for providing a parallel input/output transmission conveyance means connected to said parallel input/output for recovering/mapping ATM cells from/to frames of a transport format of said serial input/output, ATM layer processing means connected to said transmission conveyance means for layer processing downstream ATM cells recovered by said transmission conveyance means and for providing upstream ATM cells to said transmission conveyance means, and an ATM bus interface responsive to downstream ATM cells from said ATM layer processing means for providing said downstream ATM cells with a guard byte for an ATM bus in said shelf and responsive to upstream ATM cells with a guard byte for providing said upstream cells to said ATM layer processing means without said guard byte." Czerwiec, 6:15-36. Czerwiec discloses "the present invention provides a high-speed digital access communications system, covering a wide range of configurations and applications, using new packet and xDSL technologies with the possibility to offer subscribers the variety of QoS classes defined, for example, in the various ATM Forum specifications." Czerwiec, 1:8-10.

No.	'904 Patent Claim 3	Czerwiec
3	Apparatus according to claim 1, wherein the network comprises an Internet protocol (IP) network.	Czerwiec discloses apparatus according to claim 1, wherein the network comprises an Internet protocol (IP) network. For example, Czerwiec discloses the "sudden emergence of the Internet has produced an urgent demand for high-speed communications services to ordinary residences and small businesses." Czerwiec, 1:12-14. Czerwiec discloses that "[n]ew LSI (large-scale integration) and DSP (digital signal processing) technologies have now made ADSL practical at multi-megabit per second rates, and the demand for high-speed data services (particularly Internet access) has made it necessary. Local telcos are also under tremendous pressure to relieve existing telephone

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No.	'904 Patent Claim 3	Czerwiec
		switching systems from the overwhelming Internet/modem traffic they were never designed to handle." Czerwiec, 2:14-19. Czerwiec discloses that the "key to these and other aspects of the present invention is a unique system architecture and a novel combination of xDSL and packet technology that work together to economically deliver services such as Internet access at speeds more than 100 times faster than conventional analog modems." Czerwiec, 3:5-9. Czerwiec discloses that the "ATM switch 48 is for connection to an ATM network which provides connection to various services, including Internet Service Providers (ISPs) and other high bandwidth service providers." Czerwiec, 15:13-16. Czerwiec discloses that "FIG. 5 shows the hub 90 of FIG. 4 located in a central office 100 which may also include a CO switch 102 and an ATM switch 104. The CO switch is connected to a public switched telephone network (PSTN) 106 and the ATM switch to an ATM network 108 which is, in turn, connected to other services 110 which may include various Internet service providers 112, . . . , 114." Czerwiec, 15:34-40. Figure 5 of Czerwiec is reproduced below.

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No.	'904 Patent Claim 3	Czerwiec
		 Czerwiec, FIG. 5. Czerwiec discloses a "second copper pair connected before the lowpass filter, as shown, is provided to an ADSL modem 126 which, after highpass filtering, demodulates and decodes the ADSL signal and provides output bits on a line 128 to a user terminal 130 such as a personal computer, Internet computer, etc., e.g., for Internet access or for access to other high bandwidth services 110." Czerwiec, 15:66-16:6.

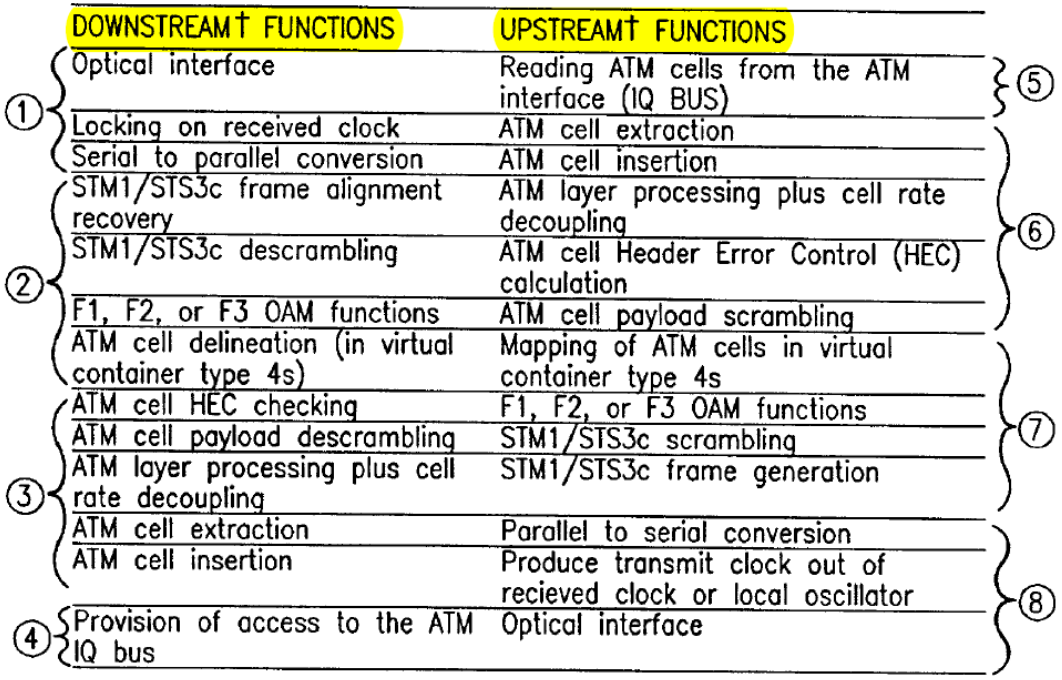
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No.	'904 Patent Claim 4	Czerwiec
4[pre]	Network access apparatus, comprising:	To the extent the preamble is found to be limiting, Czerwiec discloses a network access apparatus. *See supra* at 1[pre].
4[a]	first and second master units, each comprising a physical interface to a packet-switched network;	Czerwiec discloses first and second master units, each comprising a physical interface to a packet-switched network. *See supra* at 1[a].
4[b]	a plurality of slave units,	Czerwiec discloses a plurality of slave units. *See supra* at 1[b].
4[c]	each slave unit comprising one or more ports to respective subscriber lines; and	Czerwiec discloses each slave unit comprising one or more ports to respective subscriber lines. *See supra* at 1[c].
4[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	Czerwiec discloses a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. *See supra* at 1[d].

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No.	'904 Patent Claim 4	Czerwiec
4[e]	each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit,	Czerwiec discloses each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit. *See supra* at 1[e].
4[f]	wherein in normal operation, downstream data packets received from the network are passed from the first master unit to each of the daisy chains via the first slave unit in each chain, and upstream data packets received by the slaves in each chain from the subscriber lines are passed via the first slave unit in the chain to the first master unit for transmission over the network.	Czerwiec discloses in normal operation, downstream data packets received from the network are passed from the first master unit to each of the daisy chains via the first slave unit in each chain, and upstream data packets received by the slaves in each chain from the subscriber lines are passed via the first slave unit in the chain to the first master unit for transmission over the network. For example, Czerwiec discloses "an eleventh aspect of the present invention, a network termination equipment for use in a shelf of a telecommunications system, said network termination equipment for connection to an asynchronous transfer mode network and to a plurality of line termination equipment also for use in said shelf for connection to subscriber equipment, wherein said network termination equipment comprises physical medium termination equipment for interfacing to a physical medium by means of a serial input/output connection to said ATM network for providing a parallel input/output transmission conveyance means connected to said parallel input/output for recovering/mapping ATM cells from/to frames of a transport format of said serial input/output, ATM layer processing means connected to said transmission conveyance means for layer processing downstream ATM cells recovered by said transmission conveyance means and for providing upstream ATM cells to said transmission conveyance means, and an ATM bus interface responsive to downstream ATM cells from said ATM layer processing means for providing said downstream ATM cells with a guard byte for an ATM bus in said shelf and responsive to upstream ATM cells with a guard byte for providing said upstream cells to said ATM layer

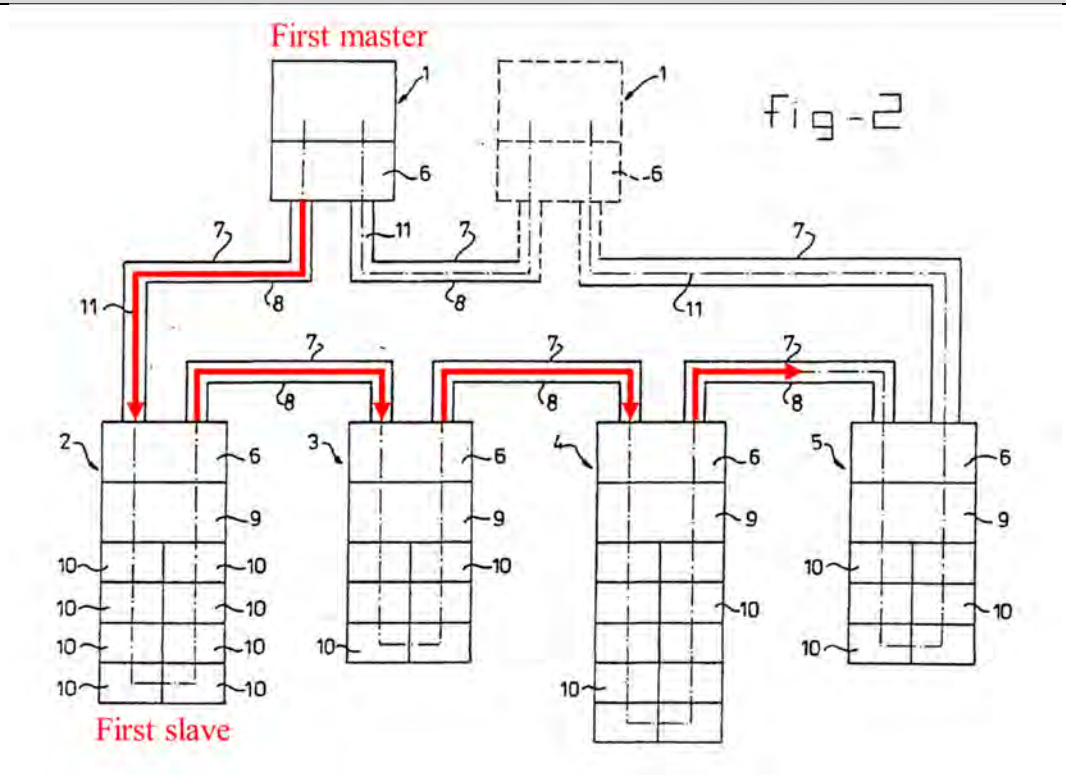
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No.	'904 Patent Claim 4	Czerwiec
		processing means without said guard byte." Czerwiec, 6:15-36. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Czerweic is found to not meet this limitation, wherein in normal operation, downstream data packets received from the network are passed from the first master unit to each of the daisy chains via the first slave unit in each chain, and upstream data packets received by the slaves in each chain from the subscriber lines are passed via the first slave unit in the chain to the first master unit for transmission over the network would have been obvious to a person having ordinary skill in the art, as explained below. FIG. 14B  Czerwiec, FIG. 14B (annotated).

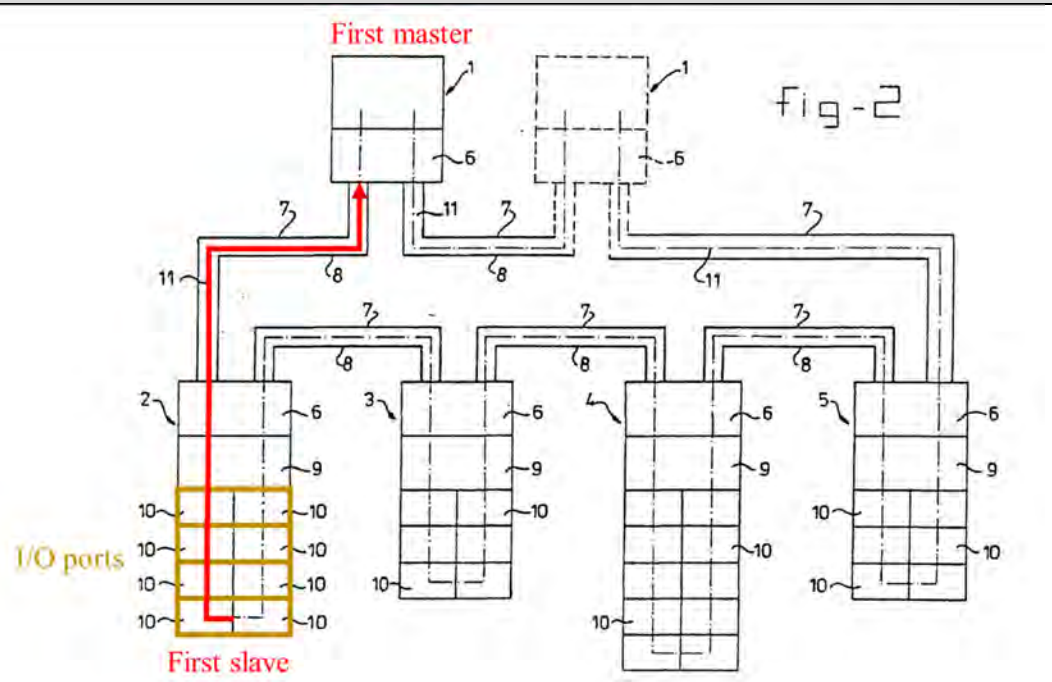
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No.	'904 Patent Claim 4	Czerwiec
		Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Czerweic in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 4[f] of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Vink '324 discloses each master and slave with a transmission line and a receiving line, where the first master's transmission line passes from the first master to the receiving line of the first slave, and the first slave passes information through a transmission line in the reverse direction to a receiving line in the first master. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Vink '324 21:10-16 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly."). Vink '324 15:28-35 ("Figure 2 shows diagrammatically the architecture of a more extensive communication system according to the invention, comprising a master station (master) 1 and a plurality of substations (slaves) 2, 3, 4, 5. The master 1 and the slaves 2, 3, 4, 5 are mutually connected via a double-ring transmission system composed of transmitting/ receiving units 6 and transmission lines 7, 8. The transmission lines 7, 8 may, for example, consist of coaxial cable, optical fibre cable and the like."). Vink '324 Claim 14 ("Communication system according to Claim 13, wherein the at least one master (1) and the slaves (2, 3, 4, 5) are arranged to transmit or receive data bits via a transmission ring (7, 8) in one and/or the other direction.").

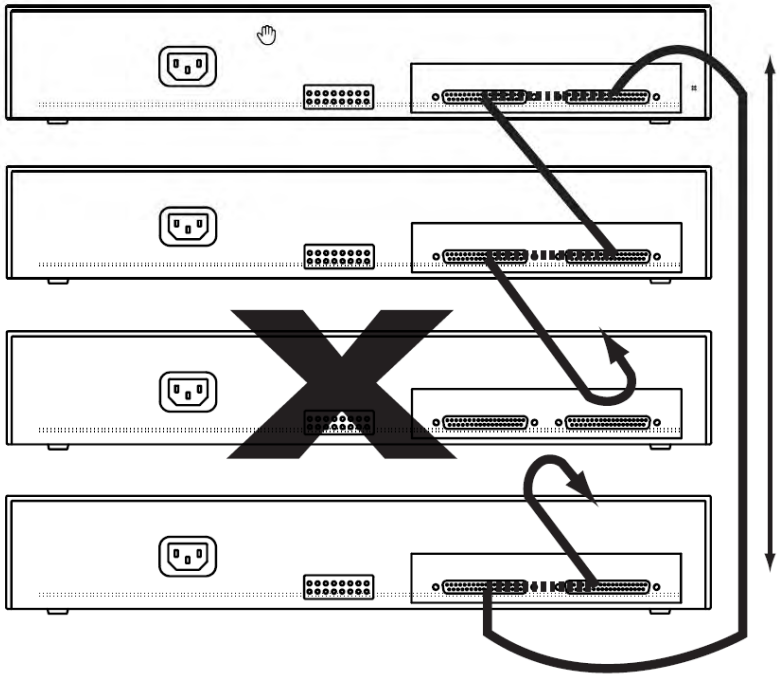
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No.	'904 Patent Claim 4	Czerwiec
		 Vink, FIG. 2 (annotated).

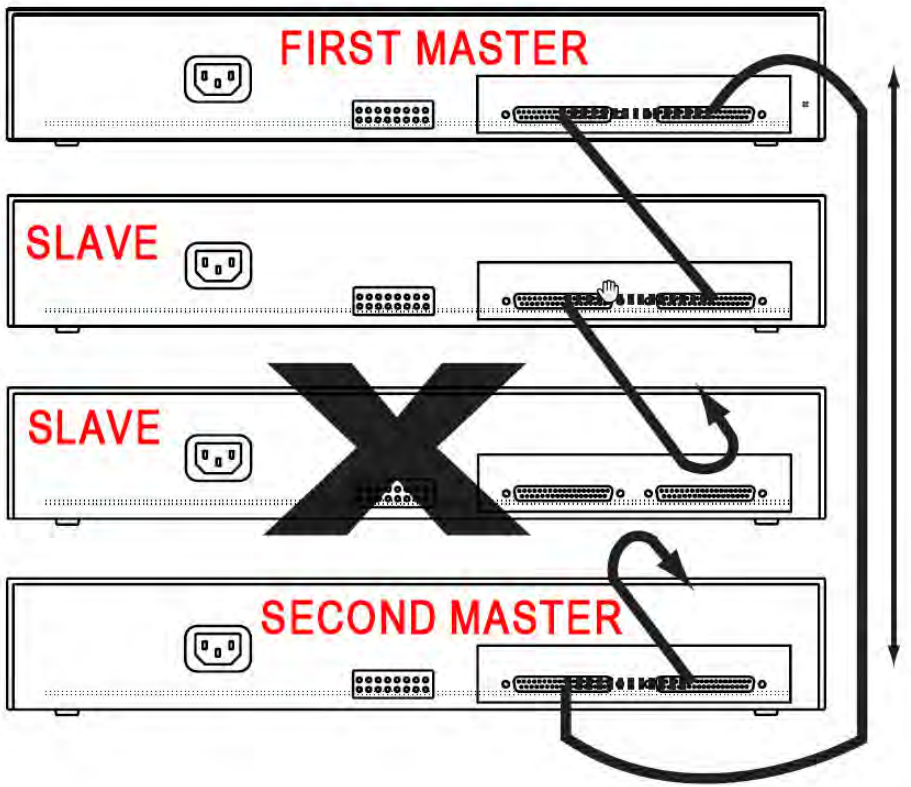
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No.	'904 Patent Claim 4	Czerwiec
		 Vink, FIG. 2 (annotated). Nortel Networks' BayStack 450 Switches are configured in normal operation to broadcast data to each unit, as shown below, with which data packets received from the network by the first master unit are transmitted via the first slave unit in each chain. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Nortel Networks' BayStack 450 Switches disclose that "BayStack 450 Switches are available in 24- and 12-port configurations, each with a Media Dependent Adapter (MDA) slot, as well as a cascade stacking module slot." BayStack 450 Data Sheet at 2 of 8.

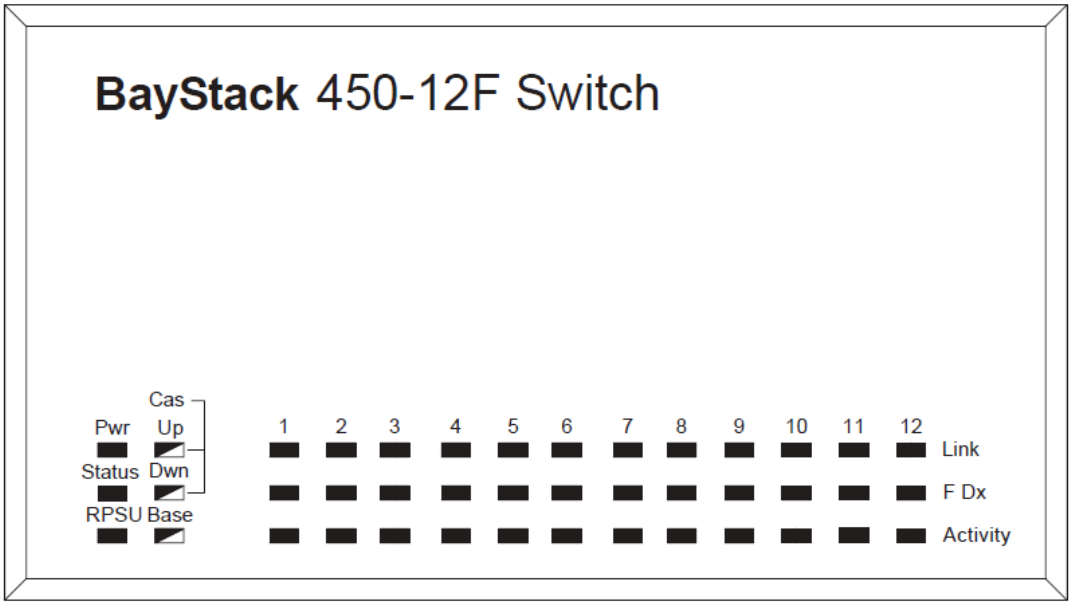
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No.	'904 Patent Claim 4	Czerwiec
		Nortel Networks' BayStack 450 Switches disclose that "[u]nlike other stacking switches, BayStack 450 Switches are designed with a fail-safe cascade stacking architecture (see Figure 1)." BayStack 450 Data Sheet at 2 of 8. *Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.*  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

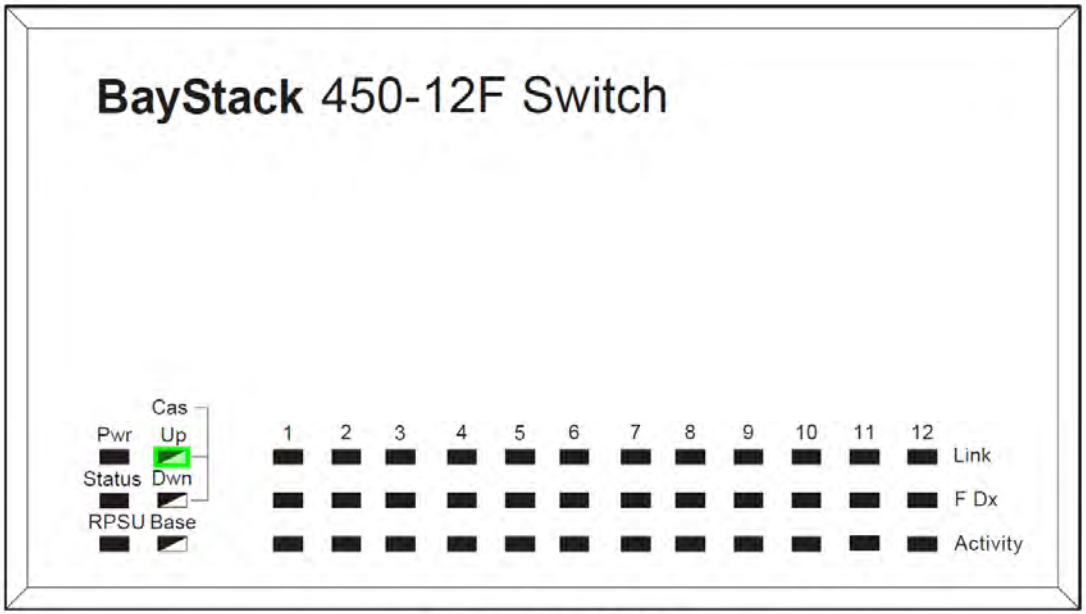
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No.	'904 Patent Claim 4	Czerwiec
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). Nortel Networks' BayStack 450 Switches disclose that "[c]ascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption." BayStack 450 Data Sheet at 2 of 8. Nortel Networks' BayStack 450 Switches depict the BayStack 450-12F LED Display Panel, for example, in Figure 1-4 of the BayStack 450 Manual shown below.

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No.	'904 Patent Claim 4	Czerwiec
		 BayStack 450-12F = Dual color LED BS45071A **Figure 1-4. BayStack 450-12F LED Display Panel** BayStack 450 Manual at 32 of 290, FIG. 1-4. Nortel Networks' BayStack 450 Switches disclose when the Cas Up is shown as green, then "[t]he switch is connected to the upstream unit's Cascade A In connector." BayStack 450 Manual at 32 of 290.

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No.	'904 Patent Claim 4	Czerwiec
		Nortel Networks' BayStack 450 Switches depicts the Cas Up (highlighted in green below).  BayStack 450-12F = Dual color LED BS45071A **Figure 1-4. BayStack 450-12F LED Display Panel** BayStack 450 Manual at 32 of 290, FIG. 1-4 (annotated). Nortel Networks' BayStack 450 Switches disclose when the Cas Down ("Dwn") is shown as green, then "[t]he switch is connected to the downstream unit's Cascade A Out connector." BayStack 450 Manual at 33 of 290.

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No.	'904 Patent Claim 4	Czerwiec
		Nortel Networks' BayStack 450 Switches depicts the Cas Down (highlighted in green below).

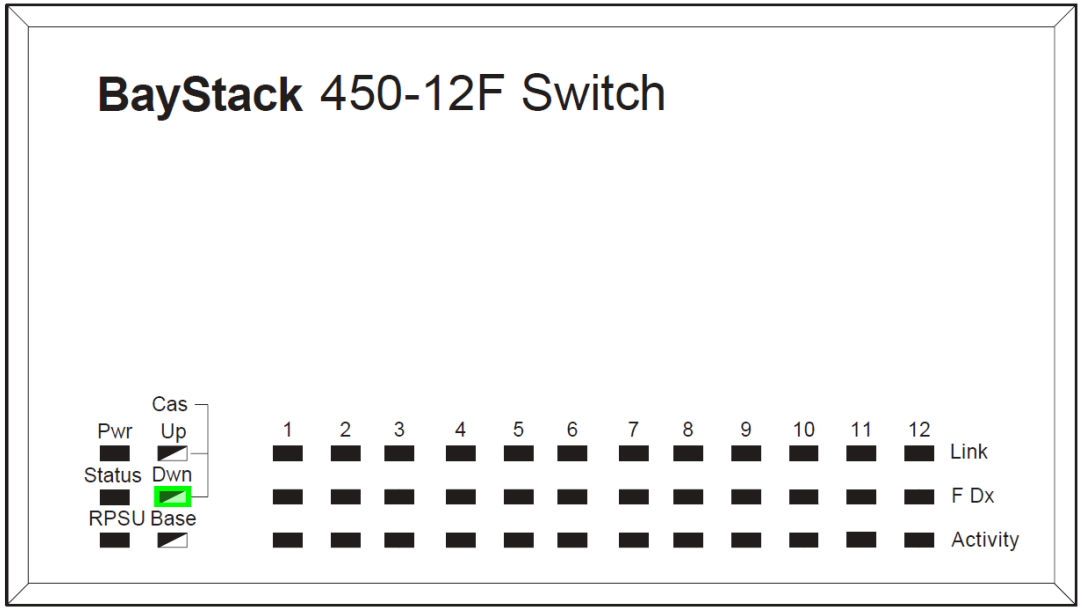


Figure 1-4. BayStack 450-12F LED Display Panel

BayStack 450 Manual at 32 of 290, FIG. 1-4 (annotated).

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No.	'904 Patent Claim 5	Czerwiec
5	Apparatus according to claim 4, and comprising a protection interface, which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault.	Czerwiec discloses apparatus according to claim 4, and comprising a protection interface, which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault. For example, Czerwiec discloses "A shelf can be used as a hub for connecting to a remote shelf that includes the line termination equipment for connection to subscribers. Although the internal bus of the shelf is shown in a non-redundant embodiment, an increased level of equipment protection can be provided by placing one half of a redundant equipment pair in one shelf and the other half in the other shelf and sharing network termination equipment between such shelves." Czerwiec, Abstract (emphasis added). To the extent that Czerweic is found to not meet this limitation, apparatus according to claim 4, and comprising a protection interface, which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault would have been obvious to a person having ordinary skill in the art, as explained below. Czerwiec discloses that "[t]hese cards can be mounted as shown in FIG. 1 in a bottom section 20 of the shelf 10 and can be, e.g., six rack spaces in height where one rack space equals 1.75 inches (4.45 cm). An upper portion 22 of the shelf can be, e.g., three rack spaces in height for containing up to, e.g., twelve lowpass filter (LPF) cards 24, with each LPF card dedicated to an associated ADSL-LT directly below it. Also in the upper portion 22 of the shelf 10 may be located connections 26 for POTS (plain old telephone service) interfaces and connections 28 for drop tip/ring leads, connections 30 for power, and a small board 32 for DS-3-NT equipment protection as explained below. The POTS can, but need not, be in analog baseband form. It could take other forms, such as ISDN. Note that the lowpass filters 24 are grouped in the center of the upper portion 22 of the shelf, with the connections 26 for POTS and connections 28 for drop tip/ring leads for location at ends 33 of the upper portion 22 of the shelf. Since the lowpass filters plug into the backplane upon insertion in slots of the shelf and do not connect to cables, they are positioned in the center of the upper portion 22. The connections 26, 28, 30 and 32, on the other hand, require cabling access and are positioned, according to the present invention, at the ends 33 to facilitate such connections near the periphery of the shelf 10, rather than requiring cables passing over central portions of the shelf. Similarly, the LT cards 14 are positioned in the center of the lower section 20 of the

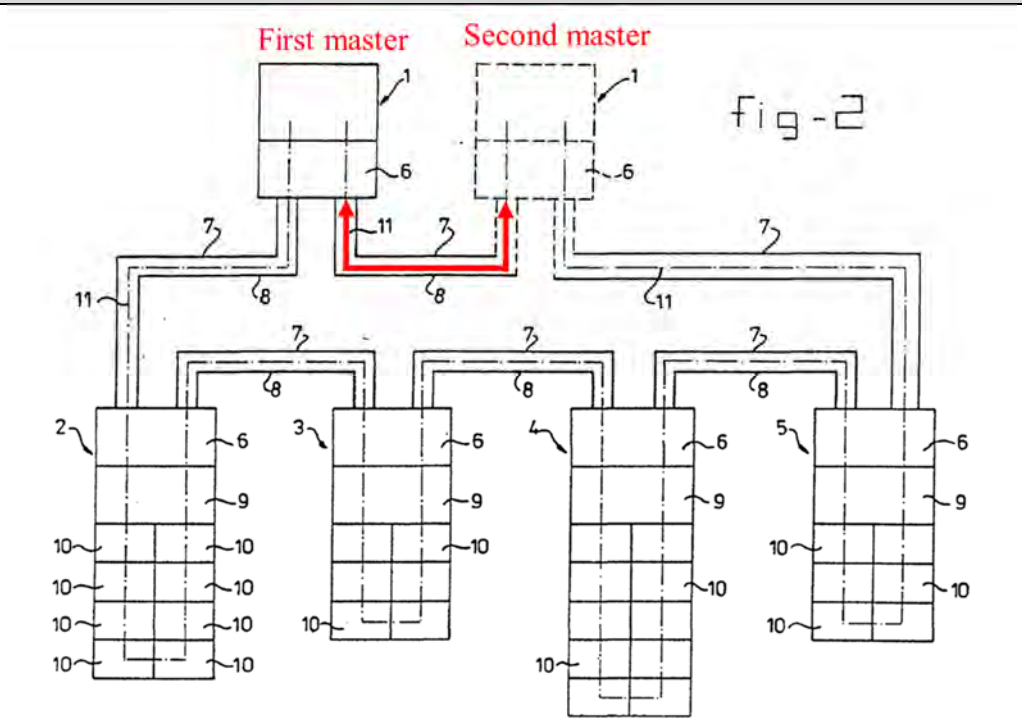
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No.	'904 Patent Claim 5	Czerwiec
		shelf 10, since they do not require cabling and are connected to other modules by the backplane, to which they are connected via a connector upon insertion. Thus, the NTs 12A, 12B, the NEPs 16A, 16B and the ACU 18 are positioned at ends 35 of the lower section 20 to provide easy cable access. It is also noted that the shelf is designed entirely for front access. The shelf 10 can be dimensioned to fit both U.S. and European equipment racks, e.g., being 498 mm wide and 285 mm deep." Czerwiec, 9:27-62 (emphasis added). "As shown in both FIGS. 1 and 3, the NTs 12 a, 12 b can be provided in either a redundant or non-redundant configuration. In this architecture, the normal NE processing is performed by the NT, and the NT can be provided as either a SONET User Network Interface (UNI) interface, a DS-3 UNI interface or later, a DS1 inverse multiplex UNI interface. If SONET NTs are provided as redundant pairs, Automatic Protection Switching (APS) is provided using the normal 1+1 switchover mechanism detailed in Bellcore document GR-253. On SONET NTs, the physical interface (fiber) is located on the faceplate of the NT itself (see FIGS. 14C and 14D), with no need of additional interface circuitry. If, however, NTs are provided as DS-3 ports, equipment protection (without cable protection) is provided using the DS-3 I/O board 32 shown in FIG. 1 installed above the NTs in the shelf, allowing the single DS-3 facility (coax cable Tx/Rx pair) to be split and accessed by either NT (inter-NT communication arbitrates which one is active)." Czerwiec, 12:66-13:16. Further, Czerwiec discloses "[a]s suggested above, since there is only one nonredundant IQ bus per shelf, the equipment protection implied by FIG. 4C with A and B redundant DS-3-LT cards in slots 1 and 2 will be ineffective if the IQ bus itself has a failure. If it is desired to avoid this sort of failure, a different kind of redundancy in the DS-3 cards can be provided, as shown in FIG. 4E. In that case, half of the transmit and receive signals are used in the shelf, and the other half can be routed to a different shelf, instead of slot 2 in the same shelf. The top two cables shown in FIG. 4E would thus be routed to another shelf and be connected into, e.g., the DS-3 out and DS-3 in transformers shown in FIG. 4B in another shelf. The DS-3 out and DS-3 in cables of FIG. 4E would go to the CO switch or other network element." Czerwiec, 15:1-14.

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No.	'904 Patent Claim 5	Czerwiec
		Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Czerweic in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element [ ] of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Vink '324 discloses a physical interface that joins the first and second master to assist in transferring packets across the system in the event of a fault which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault. Vink '324 16:19-17:2 ("The shift register principle is also of advantage with respect to use, for example for reliability reasons, of a plurality of masters as is illustrated in Figure 2 by the broken lines. In such a multi-master concept, one of the masters is in general active in relation to data exchange, while one or more other masters only have a passive role therein. All the masters are so designed that they can assume the function of the active master, for example in the event of faults. The passive masters are easily able to detect errors of the active master because, as a consequence of their cascade arrangement and the serial transfer of data bits in the communication system according to the invention, they receive all the information which is intended for the active master. Consequently, no separate communication path is required between the various masters to keep the passive masters abreast of the operations, instruction etc. carried out by the active master. Such a "hot stand-by" mode is of importance, in particular, in industrial process measurement and control in which failure or delay in the production process may, inter alia, have serious financial consequences. It is obvious that, in such a multi-master concept, the conditions under which, and the manner in which, the tasks of a master are assumed by another master have to be specified in advance.").

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No.	'904 Patent Claim 5	Czerwiec
		 Vink, FIG. 2 (annotated). The BayStack 450 Switches further disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290.

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No.	'904 Patent Claim 5	Czerwiec
		Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

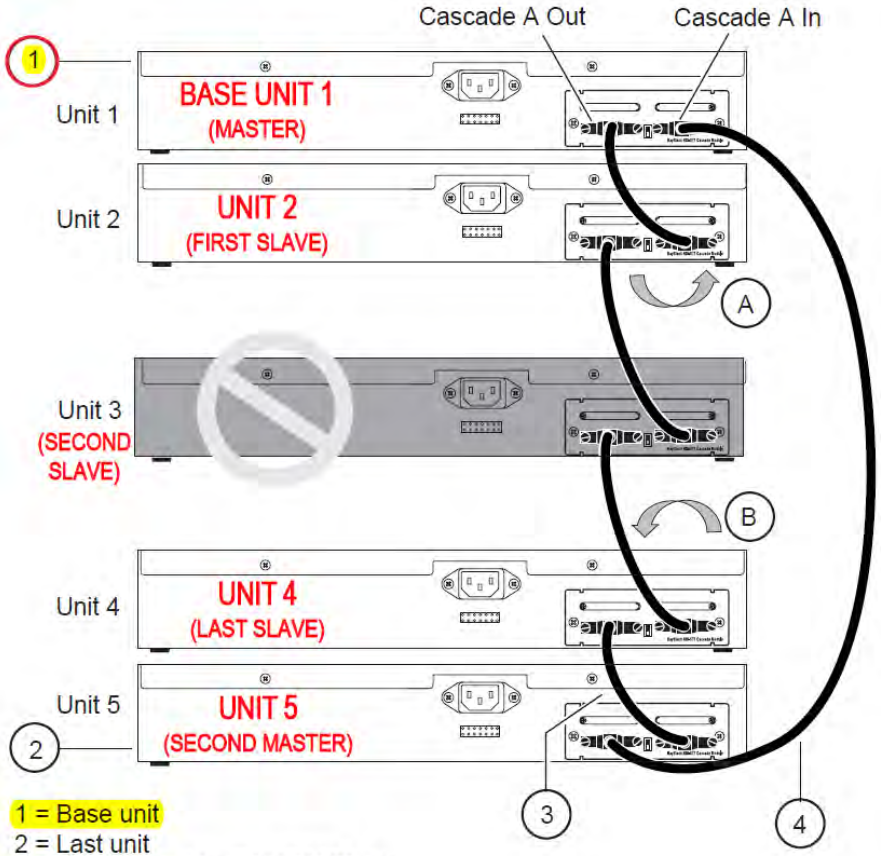


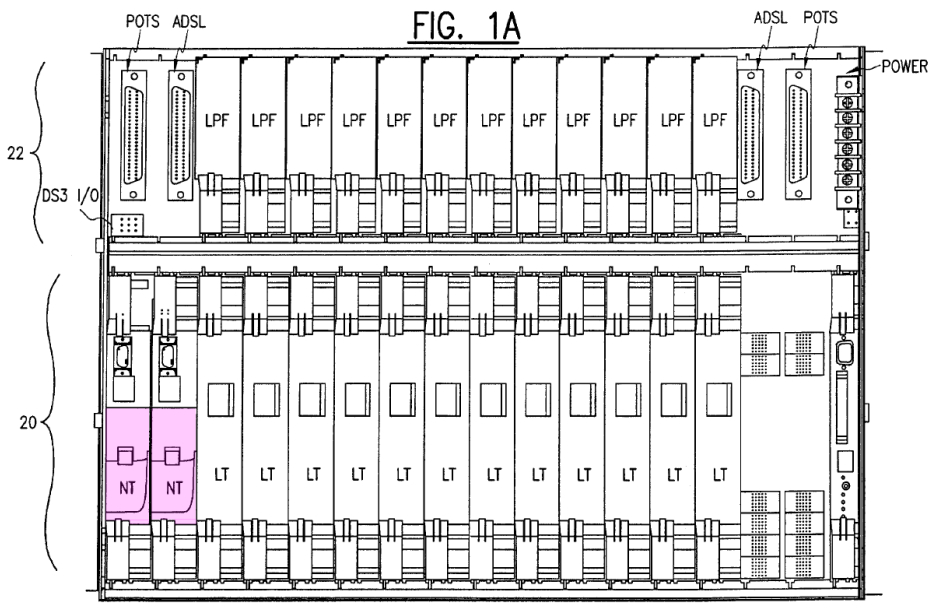
Figure 1-14. Redundant Cascade Stacking Feature

BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

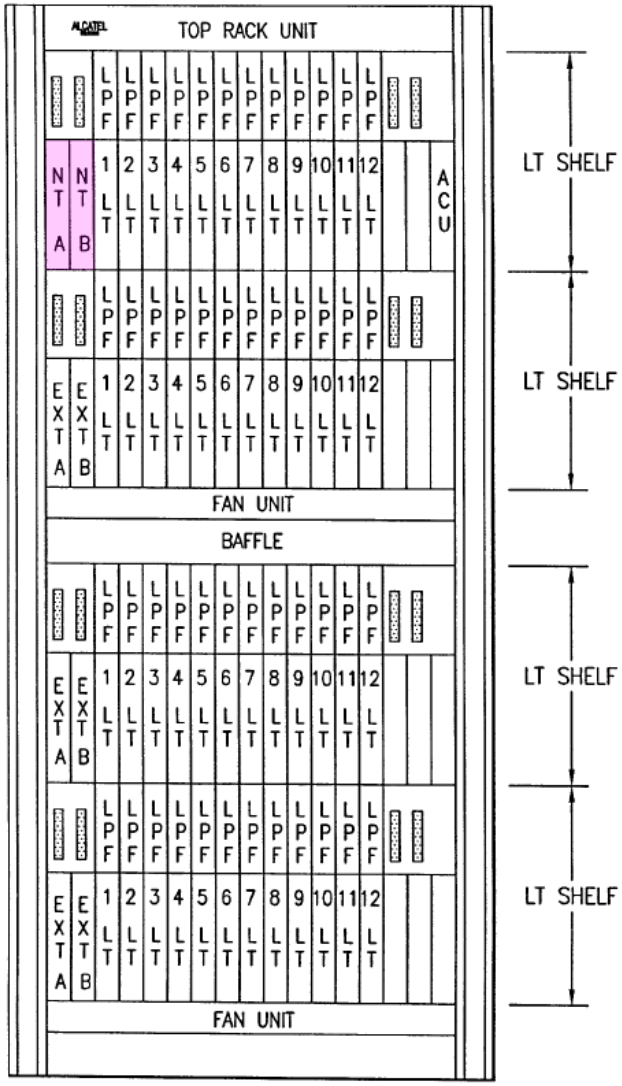
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No.	'904 Patent Claim 6	Czerwiec
6	Apparatus according to claim 5, wherein the first master unit bicasts the upstream data packets that it receives from the slave units to the network and, via the protection interface, to the second master unit, which transmits the upstream data packets to the network.	Czerwiec discloses apparatus according to claim 5, wherein the first master unit bicasts the upstream data packets that it receives from the slave units to the network and, via the protection interface, to the second master unit, which transmits the upstream data packets to the network. For example, Czerwiec discloses exchange of data packets both downstream and upstream data packets that it receives from the slave units to the network and that equipment protection can be provided by placing one half of a redundant equipment pair in one shelf and the other half in the other shelf and sharing network termination equipment between such shelves. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Czerwiec is found to not meet this limitation, apparatus according to claim 5, wherein the first master unit bicasts the upstream data packets that it receives from the slave units to the network and, via the protection interface, to the second master unit, which transmits the upstream data packets to the network would have been obvious to a person having ordinary skill in the art, as explained below. Czerwiec discloses several embodiments that include such a master. **Example One**: Specifically, in a first example, Czerwiec discloses adjacent, redundant NT cards that are a first master and a second master unit, stating "FIG. 1A shows a front view of an actual shelf with redundant NT cards…." Czerwiec, 9:66-67.

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No.	'904 Patent Claim 6	Czerwiec
		 Czerwiec, FIG. 1A (annotated). Further, Czerwiec discloses that these redundant NT cards are connected by physical interfaces (e.g., connectors installed on the backplane that mate connectors on the cards with connectors in the NT card slots). Czerwiec's redundant NT cards provide a physical interface that via these connectors that enables communication through a packet switched network (e.g., the ADSL packet switched network), providing connectivity for 192 ADSL lines per shelf. For instance, Czerwiec describes the physical interface, stating "FIG. 1B shows a plurality of shelves mounted in a central office rack, such as shown in FIG. 1E, in a standard configuration for serving 192 ADSL lines. Up to four adjacent racks can share the same feeder by using extension units installed in place of NTs, as explained below in connection with FIG. 6. In that case, a single, optionally-protected NT card can support up to 576 ADSL lines. FIG. 1C shows the shelf of FIG. 1A without any cards installed and shows the connectors installed in the backplane, into which mating connectors on the cards are insertable by sliding the cards into the slots shown. In this way, front-access-only is achieved. A side view of the shelf is shown in FIG. 1D." Czerwiec, 10:1-13.

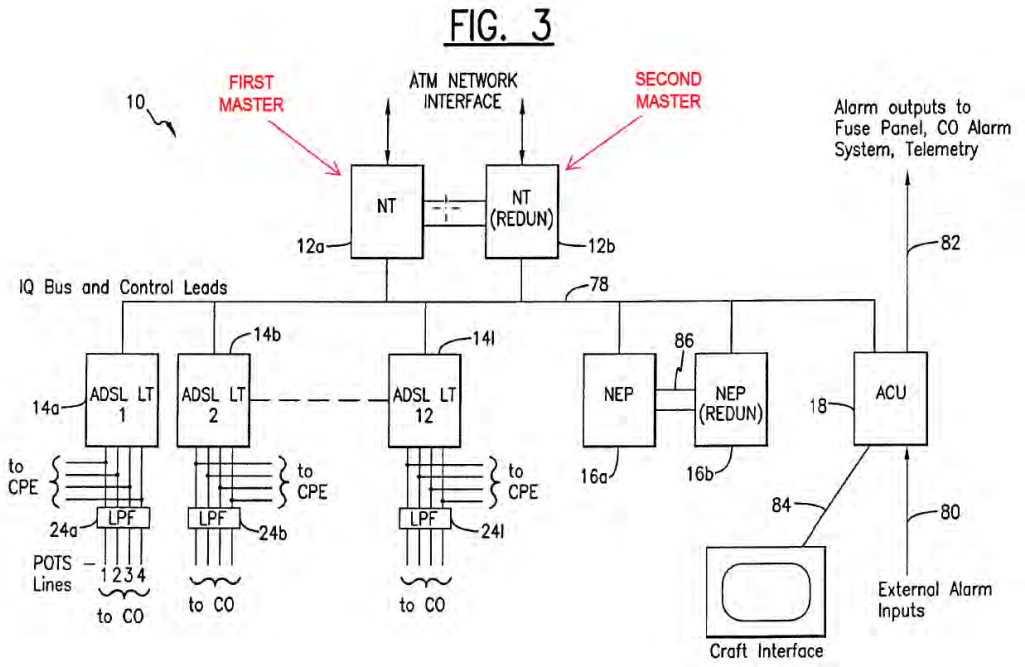
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No.	'904 Patent Claim 6	Czerwiec
		FIG. 1B  Czerwiec, FIG. 1B (annotated).

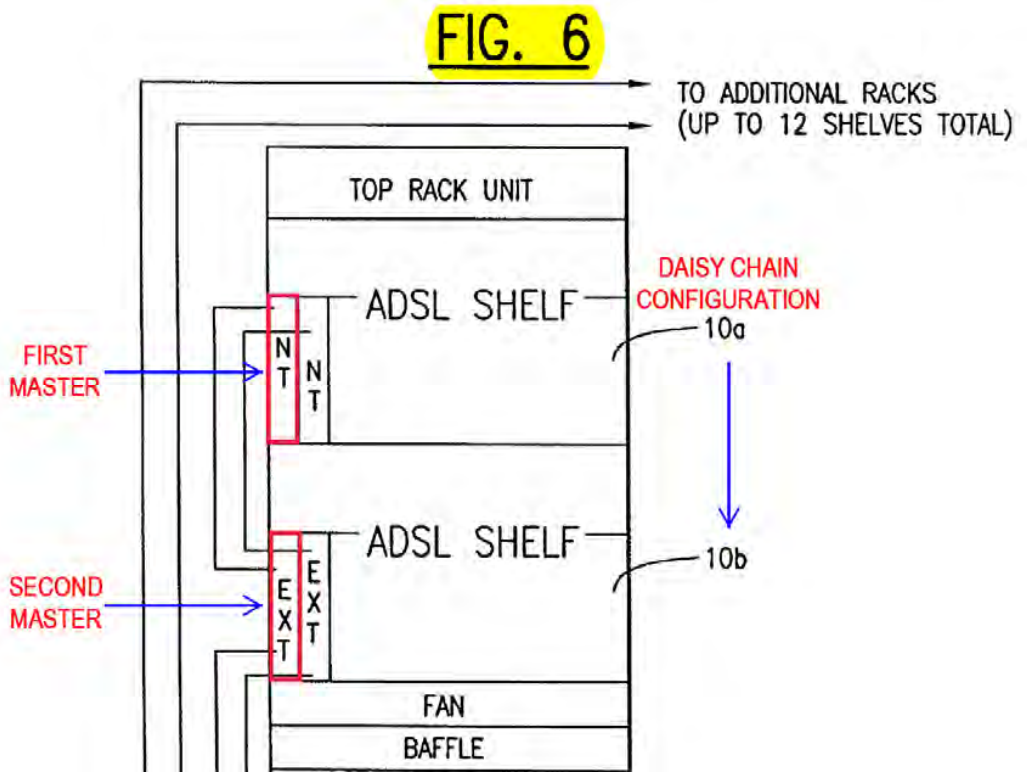
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No.	'904 Patent Claim 6	Czerwiec
		Example Two: In a second example, Czerwiec discloses that the first and second master may be a redundant or non-redundant NT configuration. For instance, Czerwiec discloses: "As shown in both FIGS. 1 and 3, the NTs 12 a, 12 b can be provided in either a redundant or non-redundant configuration. In this architecture, the normal NE processing is performed by the NT, and the NT can be provided as either a SONET User Network Interface (UNI) interface, a DS-3 UNI interface or later, a DS1 inverse multiplex UNI interface. If SONET NTs are provided as redundant pairs, Automatic Protection Switching (APS) is provided using the normal 1+1 switchover mechanism detailed in Bellcore document GR-253. On SONET NTs, the physical interface (fiber) is located on the faceplate of the NT itself (see FIGS. 14C and 14D), with no need of additional interface circuitry. If, however, NTs are provided as DS-3 ports, equipment protection (without cable protection) is provided using the DS-3 I/O board 32 shown in FIG. 1 installed above the NTs in the shelf, allowing the single DS-3 facility (coax cable Tx/Rx pair) to be split and accessed by either NT (inter-NT communication arbitrates which one is active)." Czerwiec, 12:66-13:16. Czerwiec further illustrates the first and second master in FIG. 3, shown below.

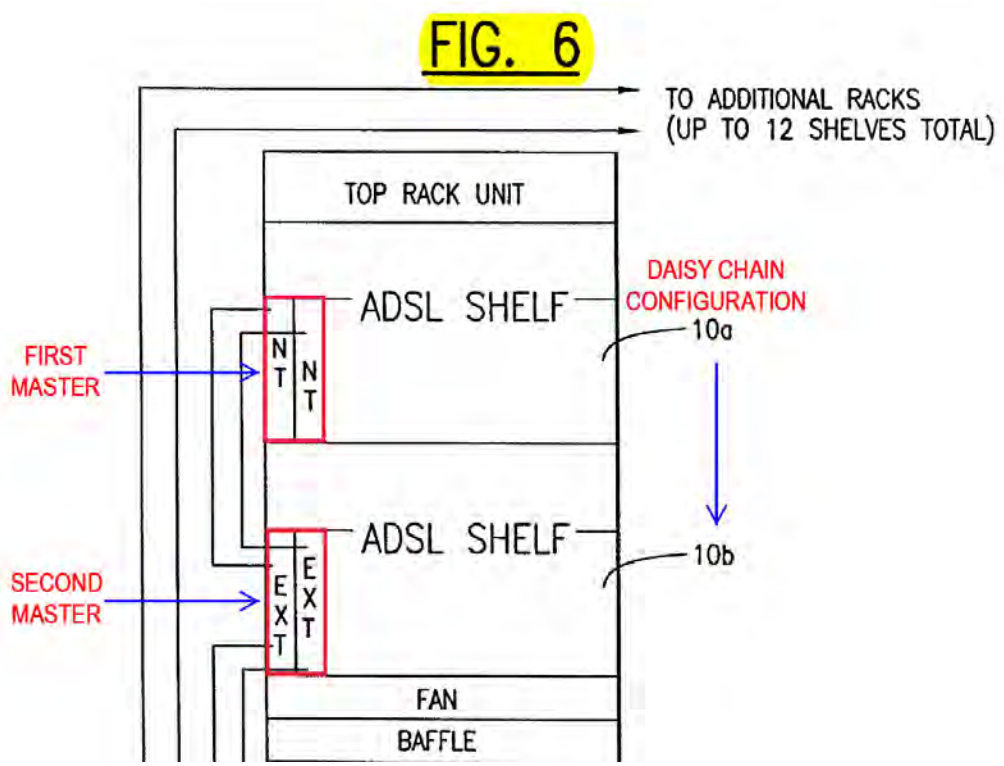
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No.	'904 Patent Claim 6	Czerwiec
		 Czerwiec, FIG. 3 (annotated). Czerwiec's basic shelf architecture is depicted in Figure 3. Czerwiec, 11:57-59. Czerwiec explains that the packet based network connectivity provided by the first and second redundant NT card masters may include quality of service classes that can be linked to access levels for subscribers, which are generally allocated by different bit rates. These bit rates may be implemented using a Guaranteed Cell Rate ("GCR") or Non-Guaranteed Cell Rate ("NGCR"). *See generally* Czerwiec, 11:59-12:33; *see also id.*, FIG. 3A. "An ACU [alarm collection unit] is provided per NT (or redundant NT pair) when multiple systems reside in a given rack. Multiple systems reside in a given rack when a very wide bandwidth is to be served by, e.g., a single shelf. In such a case, a single shelf may use up the entire bandwidth of an OC-3 or DS-3 cable." Czerwiec, 13:52-53.

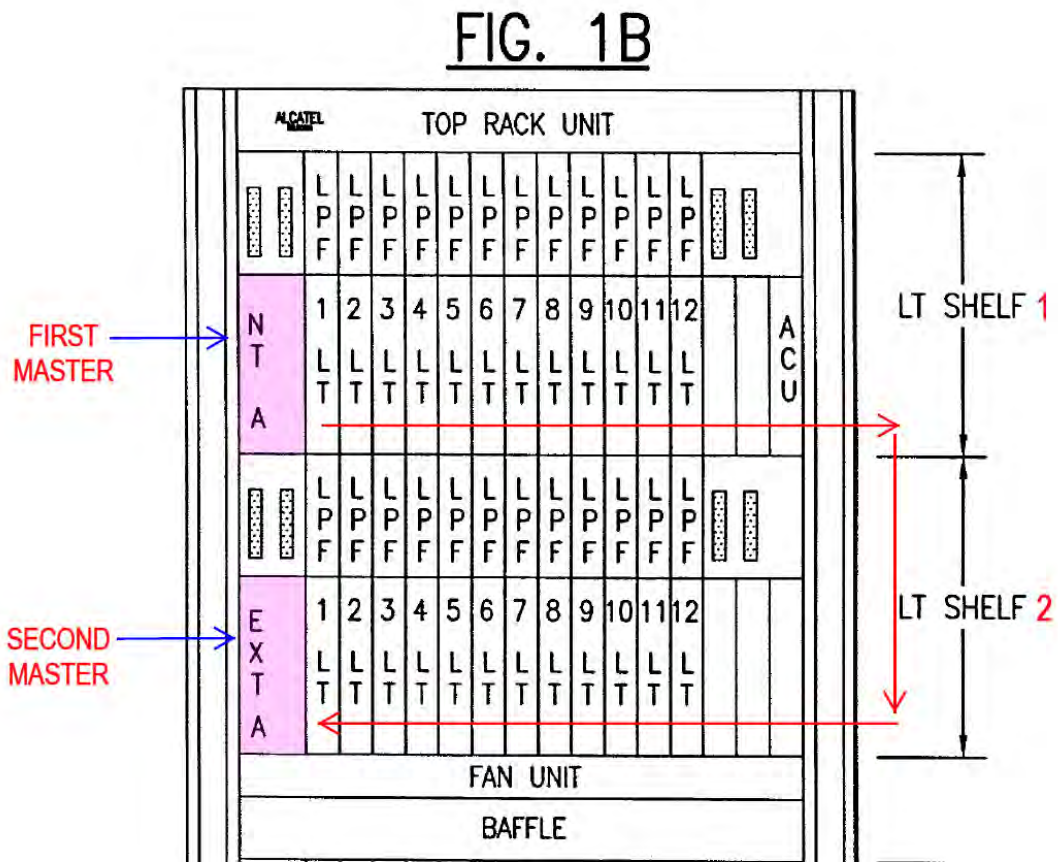
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No.	'904 Patent Claim 6	Czerwiec
		Example Three: In a third example, Czerwiec discloses that the first and second master may be (1) redundant NT cards or a non-redundant NT card in communication with (2) redundant EXT cards or a non-redundant EXT card configuration. For example, Czerwiec describes that the ADSL shelves can be daisy chained together. *See, e.g.*, Czerwiec, 16:15-35. In the simplest example, a first master (NT card) connects to a second master (EXT card), which is shown below.  Czerwiec, FIG. 6 (annotated).

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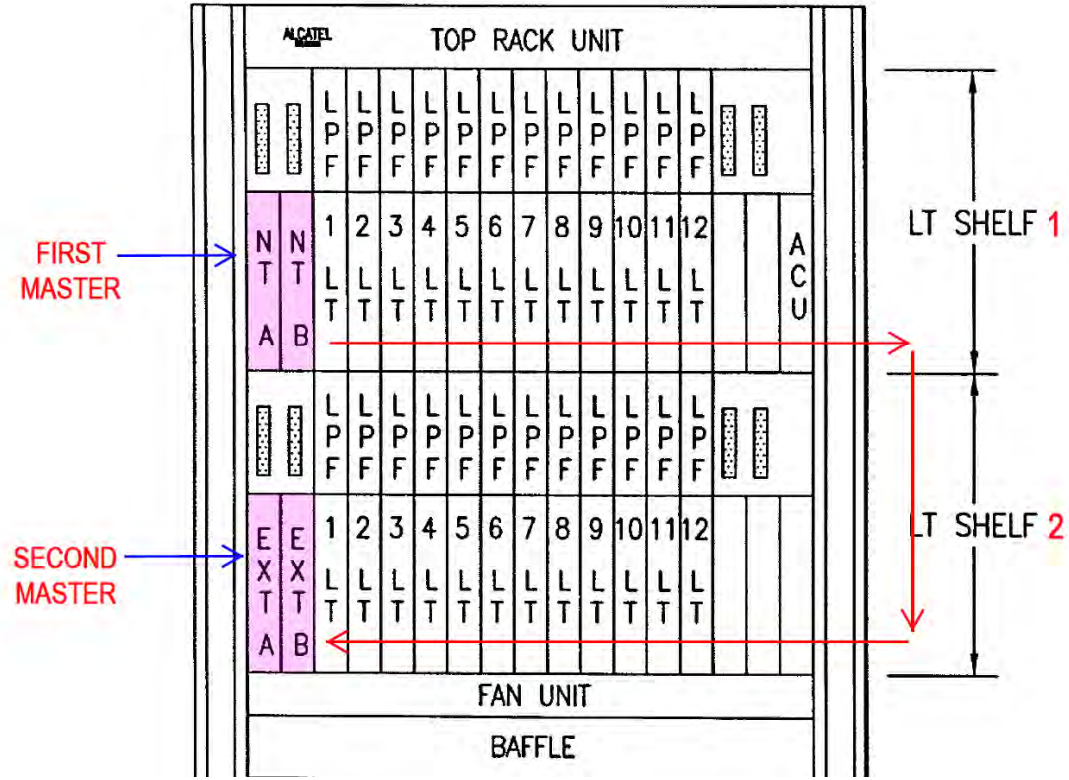
No.	'904 Patent Claim 6	Czerwiec
		Alternatively, a POSITA would have recognized that Czerwiec's first and second master may include the redundant pair of NT and EXT cards. *See, e.g.*, Czerwiec, 16:15-35.  Czerwiec, FIG. 6 (annotated). Additionally, the POSITA would have understood that the first and second masters could serially connected in a daisy chain with slave units in between. For instance, Czerwiec's exemplary two shelves above may be implemented in a chain as shown below in annotated Figure 1B, where the masters are highlighted in purple and the red lines indicate a downstream direction of traffic between the first master (LT Shelf 1, NT A or A/B), the first slave (LT Shelf 1, LT 1), the second slave (LT Shelf 1, LT 2), the last slave (LT Shelf 2, LT 1), and the second master (LT Shelf 1, EXT A or A/B).

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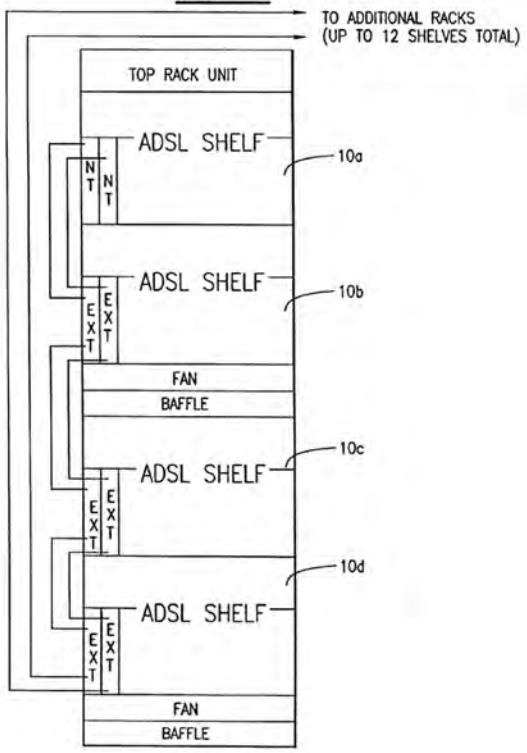
No.	'904 Patent Claim 6	Czerwiec
		

Czerwiec, FIG. 1B (annotated).

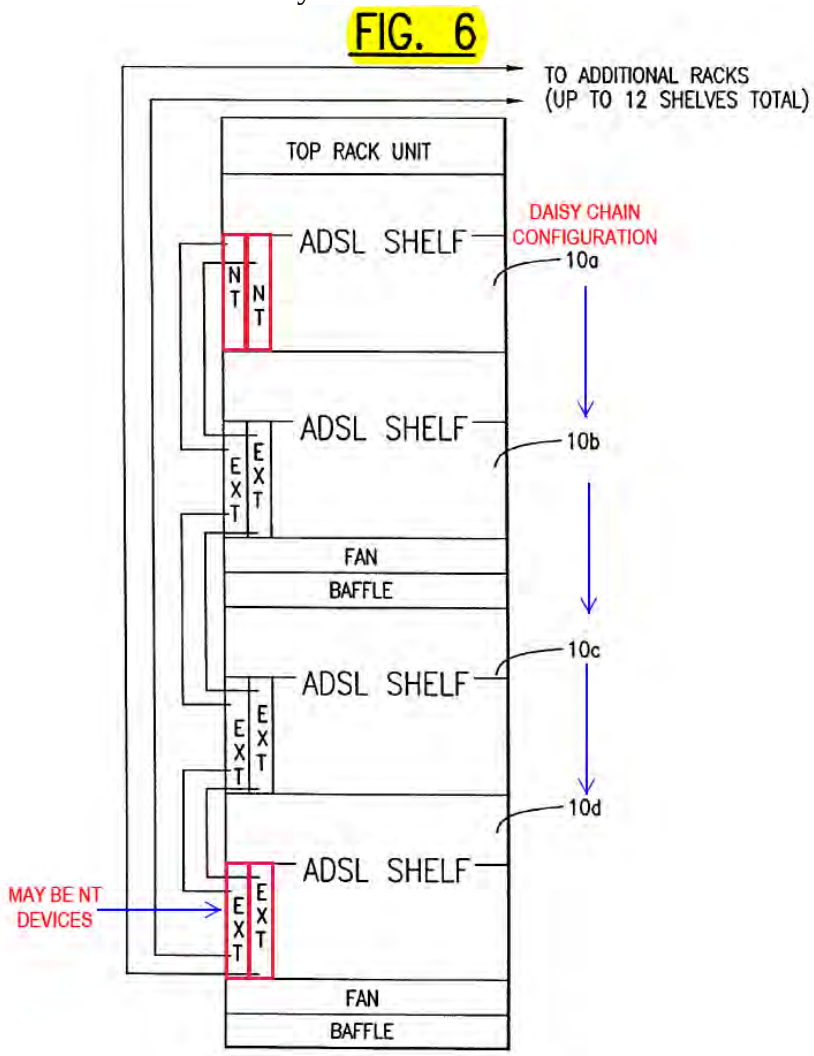
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No.	'904 Patent Claim 6	Czerwiec
		FIG. 1B  Czerwiec, FIG. 1B (annotated). **Example Four**: Czerwiec discloses "FIG. 6 shows in detail the above-mentioned feature of the present architecture whereby a plurality of ADSL shelves 10 a, 10 b, 10 c, 10 d such as shown in FIG. 1 can be daisy-chained together in a rack by means of an extender card (EXT) in each subsequent shelf. The extender card function is to effectively extend the IQ bus from shelf to shelf (daisy-chained, e.g., to a maximum of twelve shelves altogether), allowing up to, e.g., 576 ADSL subscribers accessed to the system. In other words, the extender card allows an

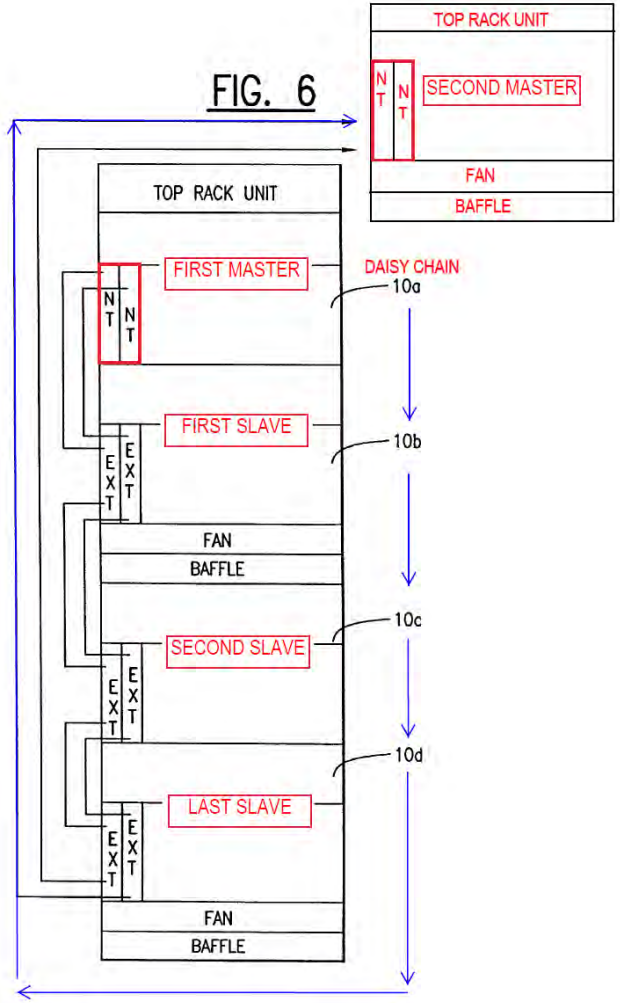
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No.	'904 Patent Claim 6	Czerwiec
		NT card in a first shelf to act as an NT card for another shelf or a plurality of other shelves. I.e., in this case, three racks with altogether twelve daisy-chained shelves. The extender cards can be mounted as shown in FIG. 6 in the NT slots of subsequent shelves and may be redundant. In that case, any failure of an NT or extender card bank switches all LTs from the "A" NT/extender string to the "B" string. The active string then assumes control of each shelf's IQ bus. The IQ bus itself (within each shelf) is not redundant, but meets reliability requirements, as the NT has the ability to remove each LT from the IQ bus (disable) to isolate a fault and remove it from service." Czerwiec, 16:15-35. Figure 6, having redundant NT cards in ADSL shelf 10a is shown below. FIG. 6  Czerwiec, FIG. 6.

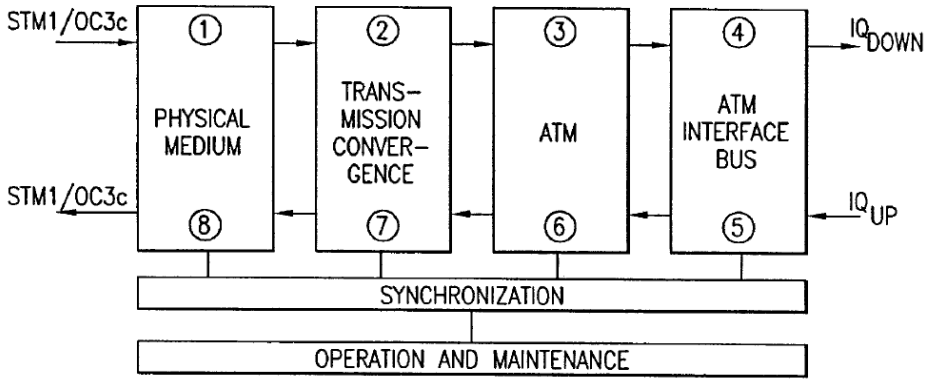
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No.	'904 Patent Claim 6	Czerwiec
		In another example, annotated Figure 6 shows ADSL shelves that are daisy chained, where the EXT cards in ADSL shelf 10d may act as a redundant master.  Czerwiec, FIG. 6 (annotated).

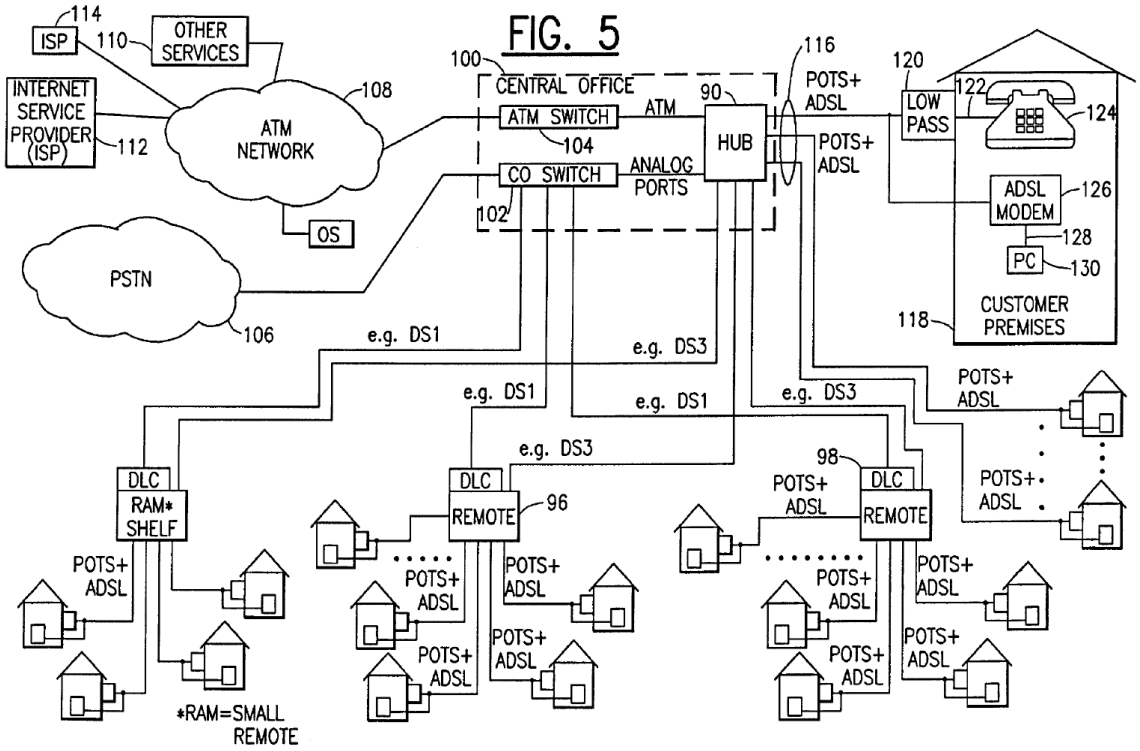
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No.	'904 Patent Claim 6	Czerwiec
		Example Five: In yet another example, annotated Figure 6 shows ADSL shelves that are daisy chained, where the daisy chain is connected to redundant NT cards in an ADSL shelf of another rack.  Czerwiec, FIG. 6 (annotated).

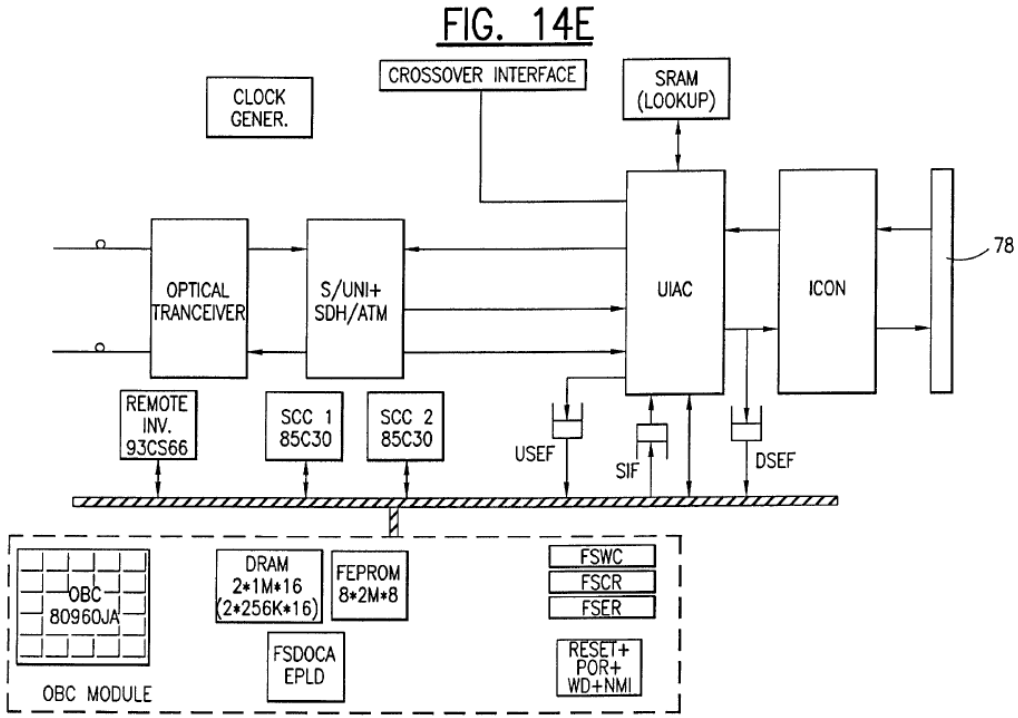
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No.	'904 Patent Claim 6	Czerwiec
		Czerwiec discloses "FIG. 14A shows a simplified block diagram of an embodiment of an NT card, according to the present invention. It provides a high-speed optical or electrical access to a Synchronous Optical Network (SONET) transport system. It converts Asynchronous Transfer Mode (ATM) cells to SONET packets (i.e., frames) and vice versa. Thus, the NT card adapts ATM cells carried on the IQ bus to the SONET transmission system and vice versa. It also includes necessary functions as listed in the table of FIG. 14B for operating and maintaining the ATM subscriber access multiplexer of the present invention." Czerwiec, 21:13-24. FIG. 14A  Czerwiec, FIG. 14A. Czerwiec discloses "In regard to the physical medium block, this can be an optical interface for interfacing an optical transport system with a receive and transmit optical fiber carrying signals, e.g., with a nominal bit rate of 155.52 Mbps. The interface is symmetric, i.e., it has the same bit rate in both directions and could operate, e.g., at a wavelength of 1.3 μm. This signal can be a SONET (Synchronous Optical Network) signal at the OC-3 level for conversion to STM-1/STS-3c in the electrical domain. This is a serial signal which the physical medium interface block converts to parallel form at a slower rate for processing on the NT card, with the parallel downstream output locked on to the received clock." Czerwiec, 21:36-47.

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No.	'904 Patent Claim 6	Czerwiec
		For example, Czerwiec discloses "The NT card is managed by an ADSL workstation (AWS) which may be located in an operating system (OS) as shown in FIG. 5. Such an OS may communicate through an ATM network and an ATM switch in a central office with the NT card in the shelf. See copending and co-owned U.S. patent application Ser. No. 08/189,259, filed Jul. 10, 1997 entitled "ASAM Network Management System with Open Loop Flow Control", filed on even date herewith for further details, and which is hereby incorporated by reference. FIG. 14C shows a front view and FIG. 14D a side view of an NT card, such as may be used in a slot of a shelf of FIG. 1." Czerwiec, 23:42-52. Figure 5 of Czerwiec is reproduced below.  Czerwiec, FIG. 5.

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No.	'904 Patent Claim 6	Czerwiec
		Czerwiec discloses "FIG. 14E shows a more detailed functional block diagram of an NT card 12 a of FIG. 1." Czerwiec, 23:53-54.  Czerwiec, FIG. 14E. *See also*: "The UIAC component is an LCA device which is programmed during "power-on-reset" from a serial PROM. It uses three synchronous 512×9 bit FIFOs for cell insertion and extraction and one 128K×8 bit SRAM for routing. The UIAC module has a SCI/PHY (Utopia-like) interface to the S/UNI+ component. ATM cell insertion in both the direction of the network (SDH/SONET) and in the direction of the LTs is handled by a 1 SIF (signaling insertion FIFO) buffer. An OBC bus is connected directly to the eight data inputs of the FIFO. The direction of cell insertion is specified by the OBC by writing into an additional UIAC register. The

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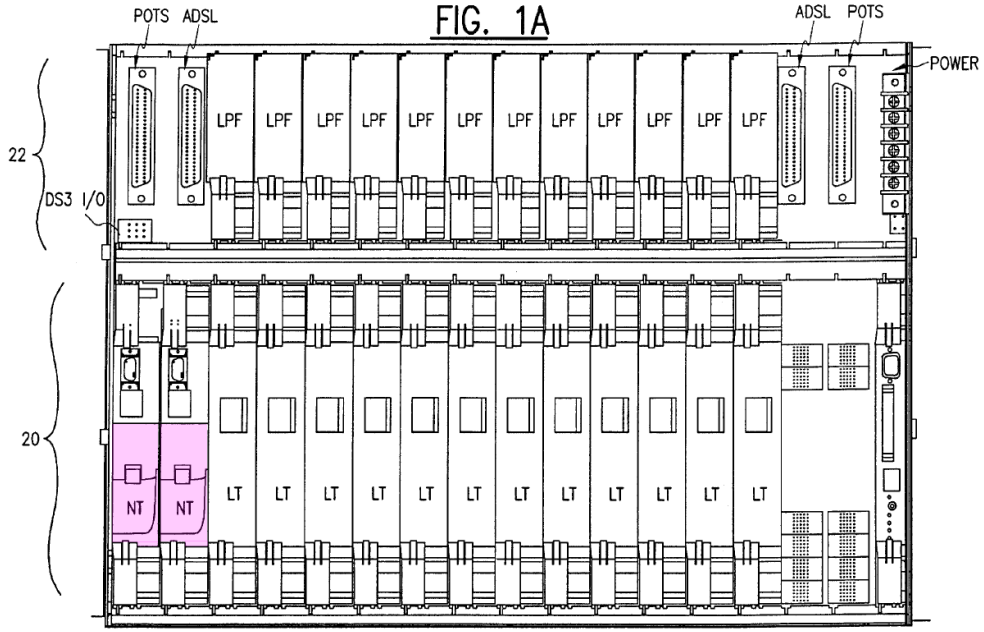
No.	'904 Patent Claim 6	Czerwiec
		ninth bit of the FIFO is used for cell synchronization and insertion direction specification. A RAM lookup table is used for cell filtering on VPI/VCI combinations. The RAM has 128K entries of eight bits." Czerwiec, 24:16-31. "Downstream cell extraction is performed by a downstream signaling extraction FIFO (DSEF). The eight-bit output data of this buffer is connected to a peripheral bus. All cells which are extracted are copied by default to the downstream traffic stream. This can be disabled, however, by a traffic control register in the UIAC." Czerwiec, 24:32-37. "Upstream cell extraction is performed via the USEF (upstream signal extraction FIFO). The eight-bit output data of this buffer is connected to the peripheral bus. A cell received on the upstream IQ interface is sent either to the OBC or to the upstream SDH/SONET interface. All cells which are extracted are copied by default to the upstream traffic stream. This can be disabled, however, by the traffic control register in the UIAC." Czerwiec, 24:38-45. "In the downstream direction, ATM cells are transferred to an ICOM interface. In the upstream direction, ATM cells are received from the ICOM." Czerwiec, 24:16-48. Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Czerweic in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 6 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. Dowling also discloses network devices where each network device sends periodic messages to a multicast address, and multicasting to a group of stations. For example: Dowling at 2:58-3:12 ("Ethernet uses variable-length frames of data to transmit information from a source to one or more destinations. Every Ethernet frame has two fields defined as the source and destination addresses, which indicate the MAC addresses of the network devices where a frame originated and where it is ultimately destined, respectively. . . . Special addresses allow for multicasting to a group of Stations and for broadcasting to all Stations on the network.")

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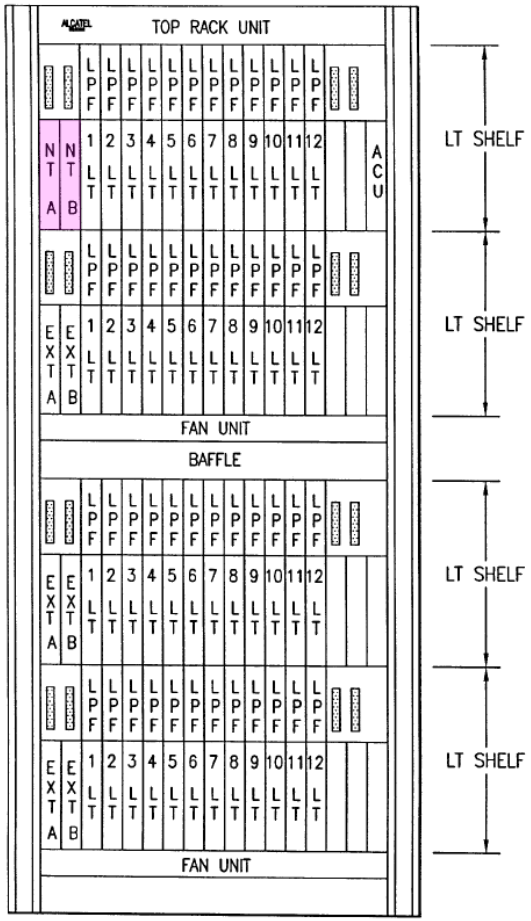
No.	'904 Patent Claim 6	Czerwiec
		Dowling at 11:1-9 ("It is to be understood that the present invention is not limited to devices that are compatible with CDP. CDP runs on all media that support the Subnetwork Access Protocol ("SNAP"), including LAN and Frame Relay. CDP runs over the data link layer only. Each network device sends periodic messages to a multicast address and listens to the periodic messages Sent by others in order to learn about neighboring devices and determine when their interfaces to the media go up or down.")

No.	'904 Patent Claim 7	Czerwiec
7	Apparatus according to claim 4, wherein in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit.	Czerwiec discloses apparatus according to claim 4, wherein in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit. For example, Czerwiec discloses "an eleventh aspect of the present invention, a network termination equipment for use in a shelf of a telecommunications system, said network termination equipment for connection to an asynchronous transfer mode network and to a plurality of line termination equipment also for use in said shelf for connection to subscriber equipment, wherein said network termination equipment comprises physical medium termination equipment for interfacing to a physical medium by means of a serial input/output connection to said ATM network for providing a parallel input/output transmission conveyance means connected to said parallel input/output for recovering/mapping ATM cells from/to frames of a transport format of said serial input/output, ATM layer processing means connected to said transmission conveyance means for layer processing downstream ATM cells recovered by said transmission conveyance means and for providing upstream ATM cells to said transmission conveyance means, and an ATM bus interface responsive to downstream ATM cells from said ATM layer processing means for providing said downstream ATM cells with a guard byte for an ATM bus in said shelf and responsive to upstream ATM cells with a guard byte for providing said upstream cells to said ATM layer processing means without said guard byte." Czerwiec, 6:15-36.

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No.	'904 Patent Claim 7	Czerwiec
		Czerwiec discloses adjacent, redundant NT cards that are a first master and a second master unit, stating "FIG. 1A shows a front view of an actual shelf with redundant NT cards…." Czerwiec, 9:66-67.  Czerwiec, FIG. 1A (annotated). Further, Czerwiec discloses that these redundant NT cards are connected by physical interfaces (e.g., connectors installed on the backplane that mate connectors on the cards with connectors in the NT card slots). Czerwiec's redundant NT cards provide a physical interface that via these connectors that enables communication through a packet switched network (e.g., the ADSL packet switched network), providing connectivity for 192 ADSL lines per shelf. For instance, Czerwiec describes the physical interface, stating "FIG. 1B shows a plurality of shelves mounted in a central office rack, such as shown in FIG. 1E, in a standard configuration for serving 192 ADSL lines. Up to four adjacent racks can share the same feeder by using extension units installed in place of NTs, as explained below in connection

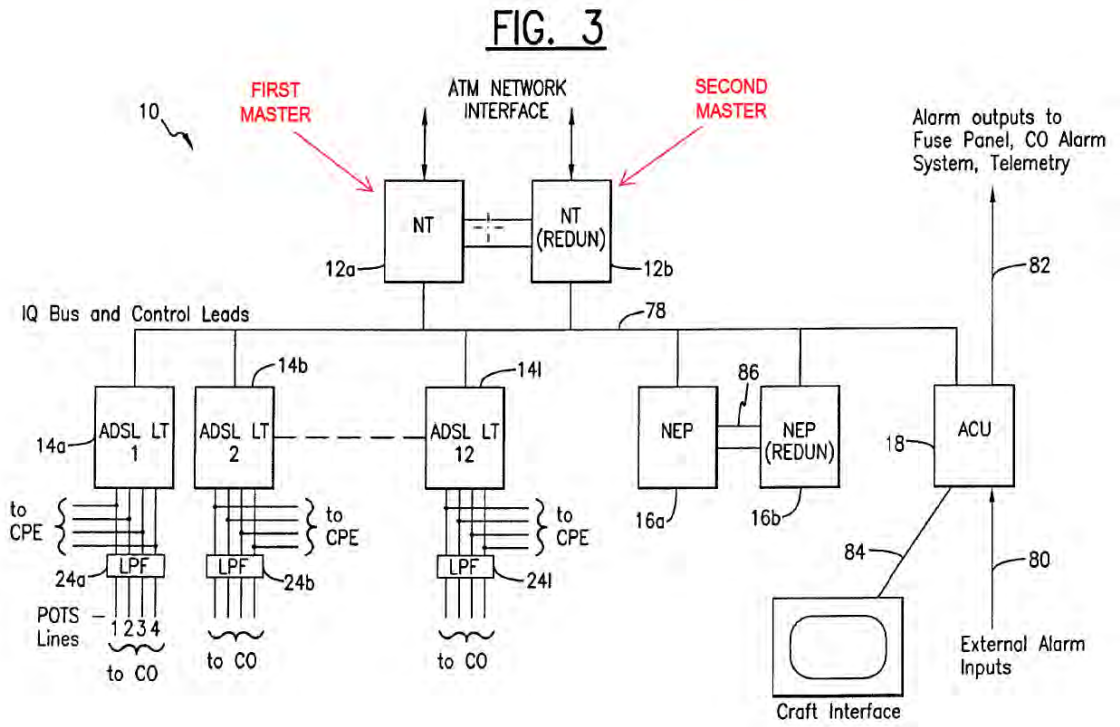
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No.	'904 Patent Claim 7	Czerwiec
		with FIG. 6. In that case, a single, optionally-protected NT card can support up to 576 ADSL lines. FIG. 1C shows the shelf of FIG. 1A without any cards installed and shows the connectors installed in the backplane, into which mating connectors on the cards are insertable by sliding the cards into the slots shown. In this way, front-access-only is achieved. A side view of the shelf is shown in FIG. 1D." Czerwiec, 10:1-13. FIG. 1B  Czerwiec, FIG. 1B (annotated).

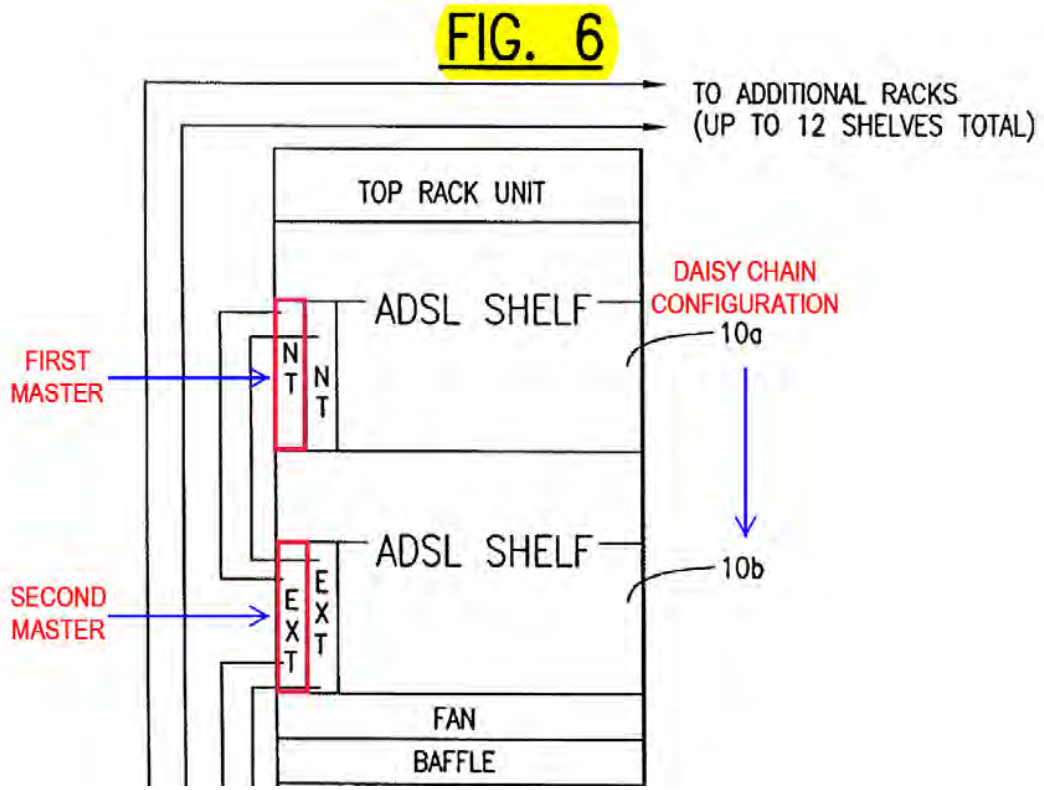
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No.	'904 Patent Claim 7	Czerwiec
		Czerwiec further discloses that the first and second master may be a redundant or non-redundant NT configuration. For instance, Czerwiec discloses: "As shown in both FIGS. 1 and 3, the NTs 12 a, 12 b can be provided in either a redundant or non-redundant configuration. In this architecture, the normal NE processing is performed by the NT, and the NT can be provided as either a SONET User Network Interface (UNI) interface, a DS-3 UNI interface or later, a DS1 inverse multiplex UNI interface. If SONET NTs are provided as redundant pairs, Automatic Protection Switching (APS) is provided using the normal 1+1 switchover mechanism detailed in Bellcore document GR-253. On SONET NTs, the physical interface (fiber) is located on the faceplate of the NT itself (see FIGS. 14C and 14D), with no need of additional interface circuitry. If, however, NTs are provided as DS-3 ports, equipment protection (without cable protection) is provided using the DS-3 I/O board 32 shown in FIG. 1 installed above the NTs in the shelf, allowing the single DS-3 facility (coax cable Tx/Rx pair) to be split and accessed by either NT (inter-NT communication arbitrates which one is active)." Czerwiec, 12:66-13:16. Czerwiec further illustrates the first and second master in FIG. 3, shown below.

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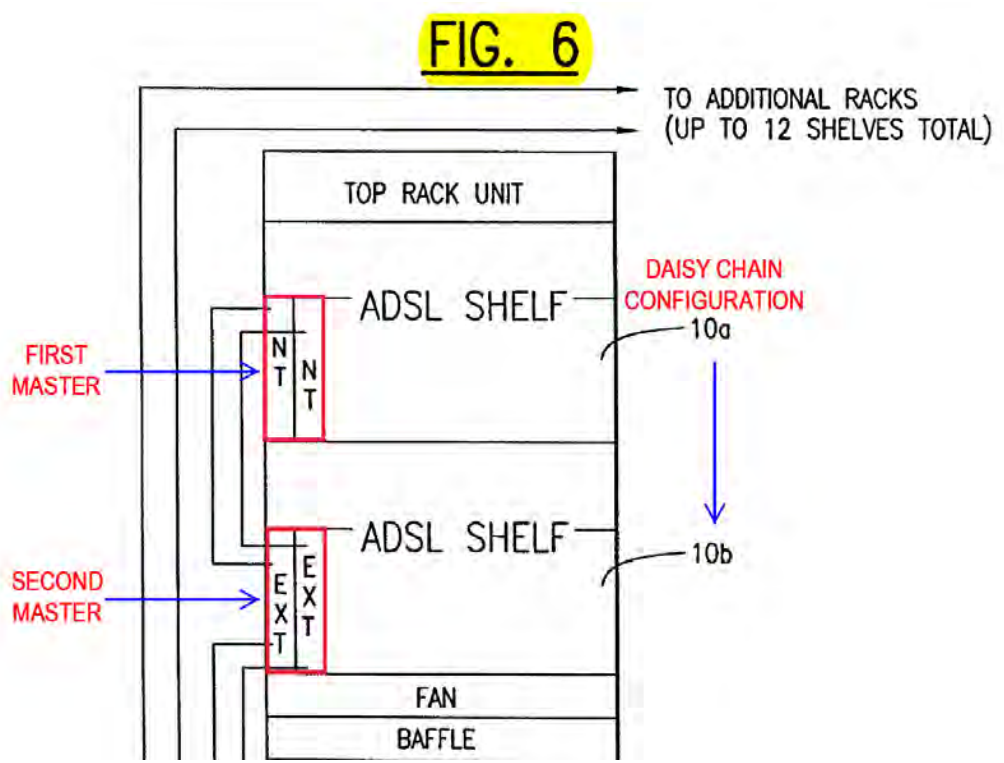
No.	'904 Patent Claim 7	Czerwiec
		 Czerwiec, FIG. 3 (annotated). Czerwiec's basic shelf architecture is depicted in Figure 3. Czerwiec, 11:57-59. Czerwiec further explains that the packet based network connectivity provided by the first and second redundant NT card masters may include quality of service classes that can be linked to access levels for subscribers, which are generally allocated by different bit rates. These bit rates may be implemented using a Guaranteed Cell Rate ("GCR") or Non-Guaranteed Cell Rate ("NGCR"). *See generally* Czerwiec, 11:59-12:33; *see also id.*, FIG. 3A. "An ACU [alarm collection unit] is provided per NT (or redundant NT pair) when multiple systems reside in a given rack. Multiple systems reside in a given rack when a very wide

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No.	'904 Patent Claim 7	Czerwiec
		bandwidth is to be served by, e.g., a single shelf. In such a case, a single shelf may use up the entire bandwidth of an OC-3 or DS-3 cable." Czerwiec, 13:52-53. Czerwiec discloses that the first and second master may be (1) redundant NT cards or a non-redundant NT card in communication with (2) redundant EXT cards or a non-redundant EXT card configuration. For example, Czerwiec describes that the ADSL shelves can be daisy chained together. *See, e.g.*, Czerwiec, 16:15-35. In the simplest example, a first master (NT card) connects to a second master (EXT card), which is shown below.  Czerwiec, FIG. 6 (annotated).

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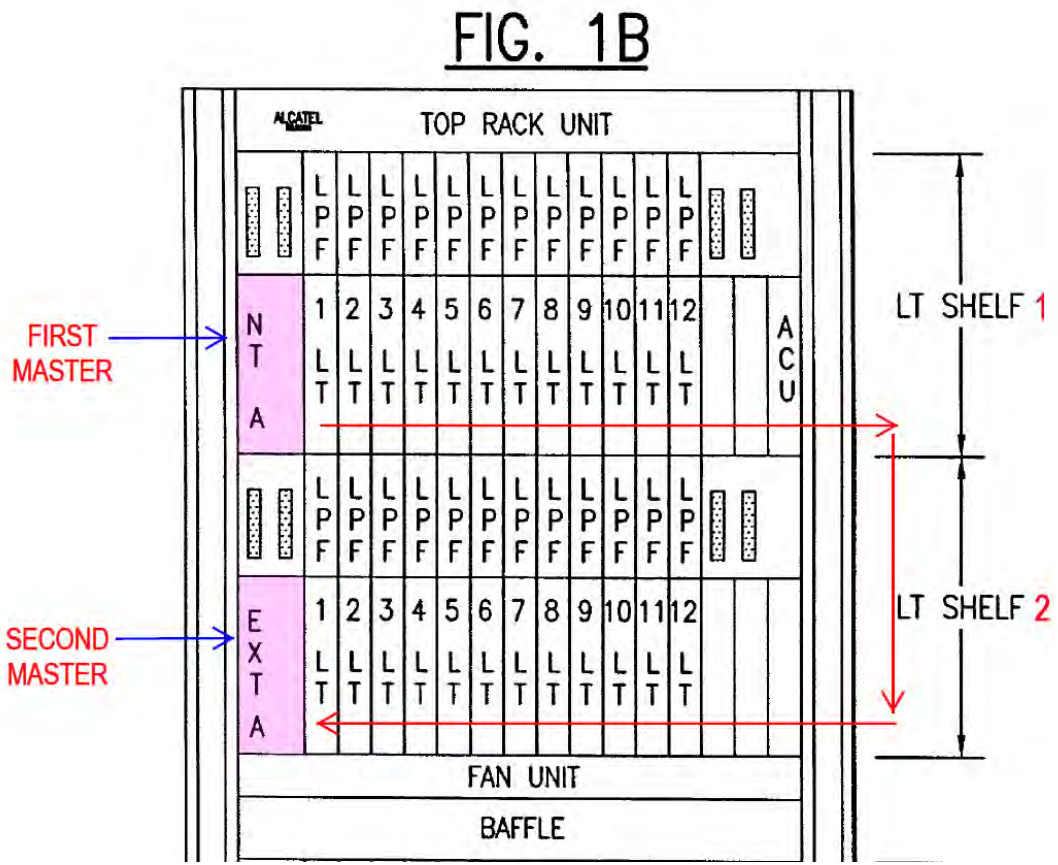
No.	'904 Patent Claim 7	Czerwiec
		Alternatively, a POSITA would have recognized that Czerwiec's first and second master may include the redundant pair of NT and EXT cards. *See, e.g.*, Czerwiec, 16:15-35.



Czerwiec, FIG. 6 (annotated).

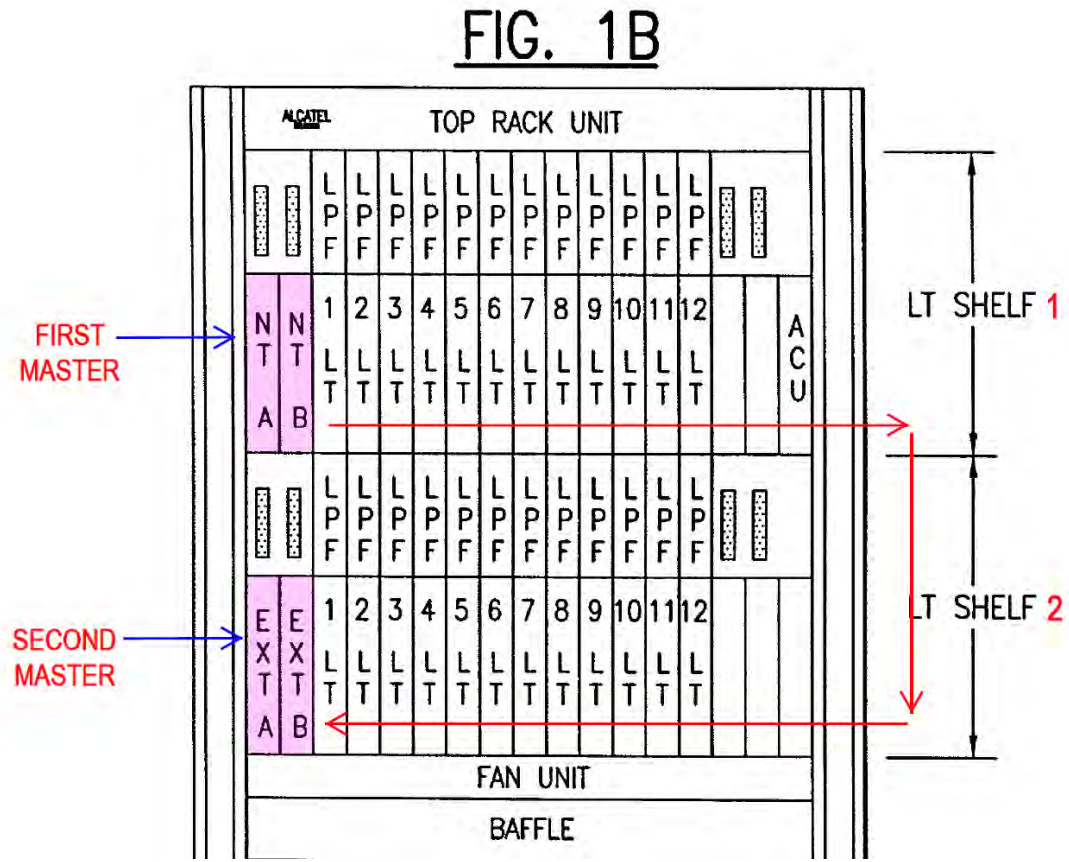
Additionally, the POSITA would have understood that the first and second masters could serially connected in a daisy chain with slave units in between. For instance, Czerwiec's exemplary two shelves above may be implemented in a chain as shown below in annotated Figure 1B, where the masters are highlighted in purple and the red lines indicate a downstream direction of traffic between the first master (LT Shelf 1, NT A or A/B), the first slave (LT Shelf 1, LT 1), the second slave (LT Shelf 1, LT 2), the last slave (LT Shelf 2, LT 1), and the second master (LT Shelf 1, EXT A or A/B).

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No.	'904 Patent Claim 7	Czerwiec
		

Czerwiec, FIG. 1B (annotated).

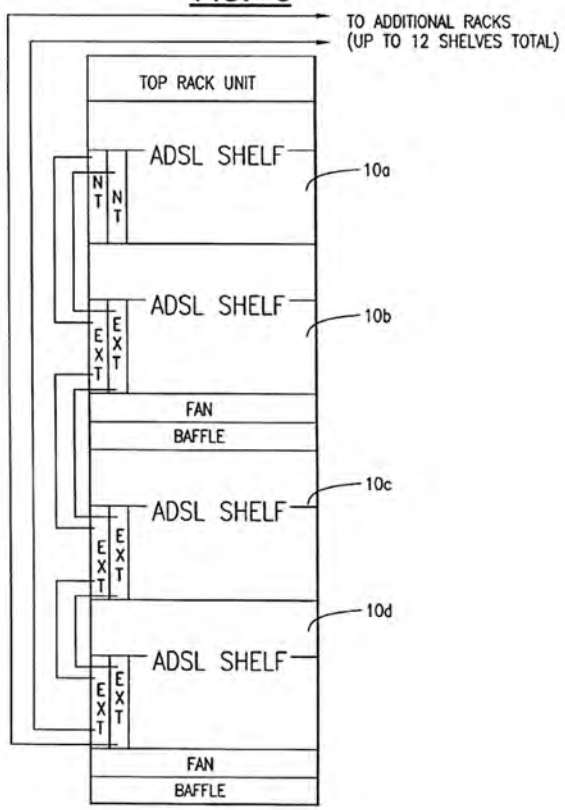
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No.	'904 Patent Claim 7	Czerwiec
		 Czerwiec, FIG. 1B (annotated). Czerwiec discloses "FIG. 6 shows in detail the above-mentioned feature of the present architecture whereby a plurality of ADSL shelves 10 a, 10 b, 10 c, 10 d such as shown in FIG. 1 can be daisy-chained together in a rack by means of an extender card (EXT) in each subsequent shelf. The extender card function is to effectively extend the IQ bus from shelf to shelf (daisy-chained, e.g., to a maximum of twelve shelves altogether), allowing up to, e.g., 576 ADSL subscribers accessed to the system. In other words, the extender card allows an NT card in a first shelf to act as an NT card for another shelf or a plurality of other shelves.

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No.	'904 Patent Claim 7	Czerwiec
		I.e., in this case, three racks with altogether twelve daisy-chained shelves. The extender cards can be mounted as shown in FIG. 6 in the NT slots of subsequent shelves and may be redundant. In that case, any failure of an NT or extender card bank switches all LTs from the "A" NT/extender string to the "B" string. The active string then assumes control of each shelf's IQ bus. The IQ bus itself (within each shelf) is not redundant, but meets reliability requirements, as the NT has the ability to remove each LT from the IQ bus (disable) to isolate a fault and remove it from service." Czerwiec, 16:15-35. Figure 6, having redundant NT cards in ADSL shelf 10a is shown below.

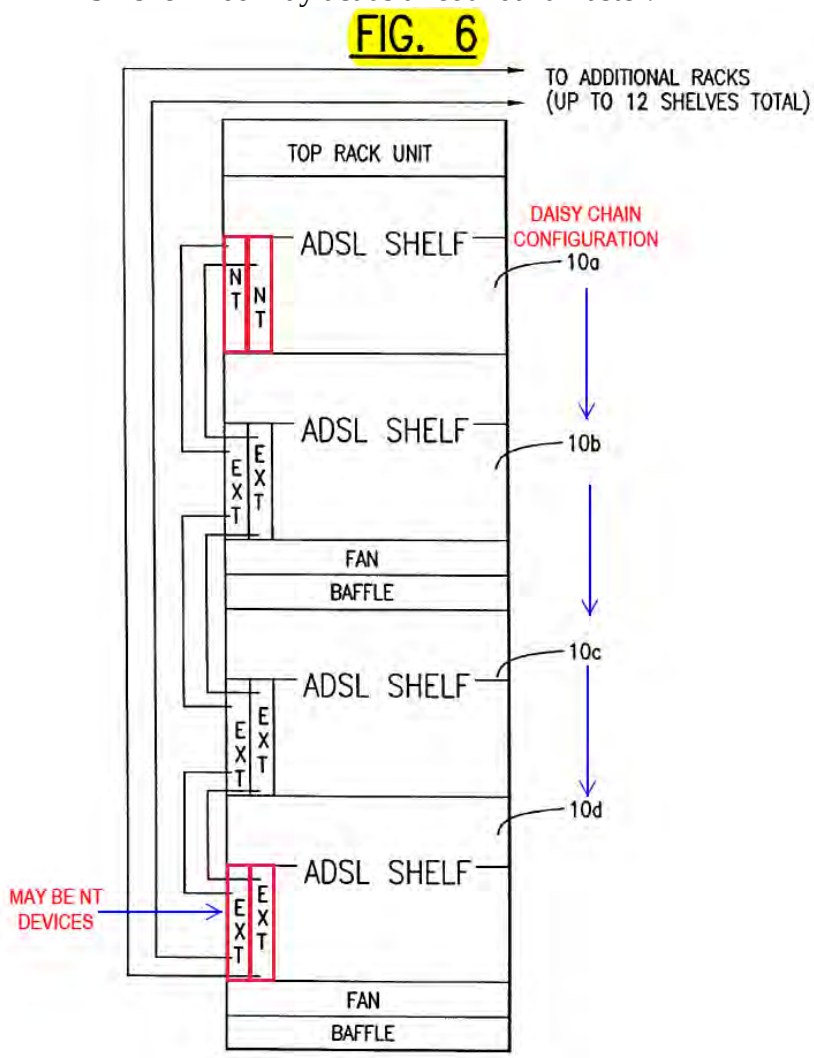
FIG. 6



Czerwiec, FIG. 6.

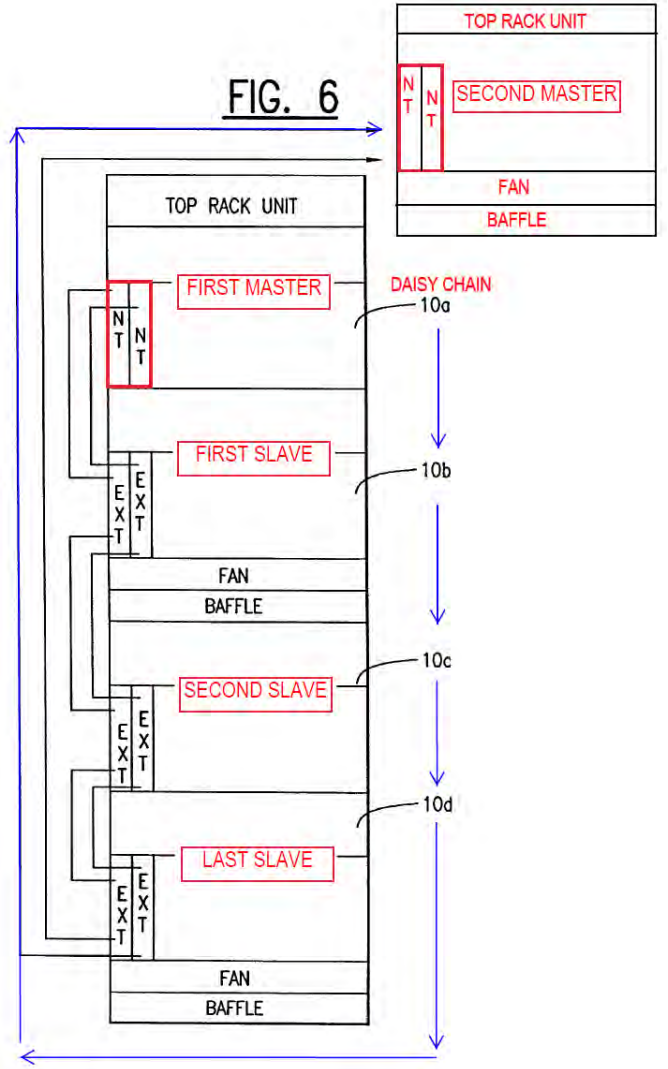
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No.	'904 Patent Claim 7	Czerwiec
		In another example, annotated Figure 6 shows ADSL shelves that are daisy chained, where the EXT cards in ADSL shelf 10d may act as a redundant master.

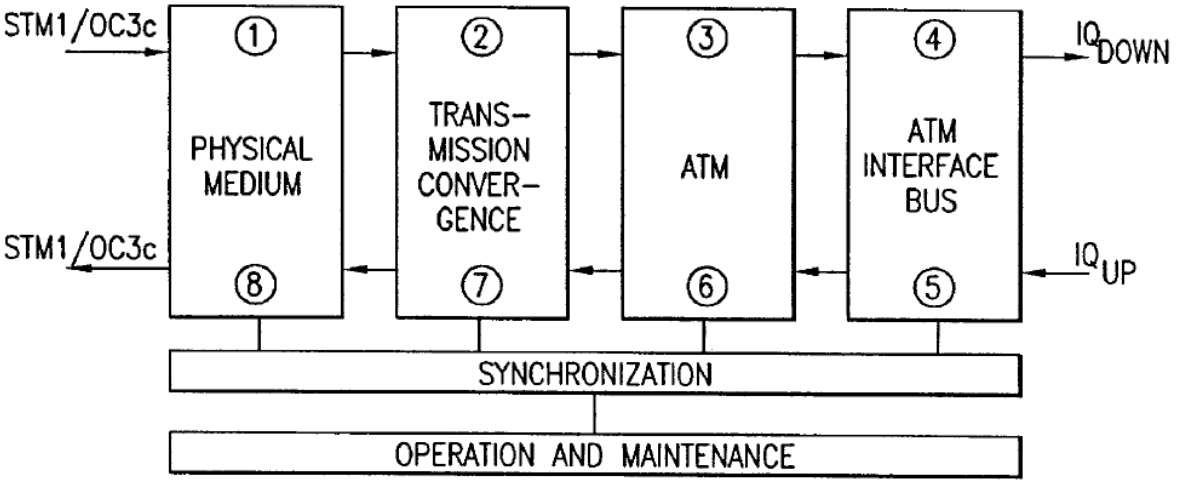


Czerwiec, FIG. 6 (annotated).

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No.	'904 Patent Claim 7	Czerwiec
		In yet another example, annotated Figure 6 shows ADSL shelves that are daisy chained, where the daisy chain is connected to redundant NT cards in an ADSL shelf of another rack.  Czerwiec, FIG. 6 (annotated).

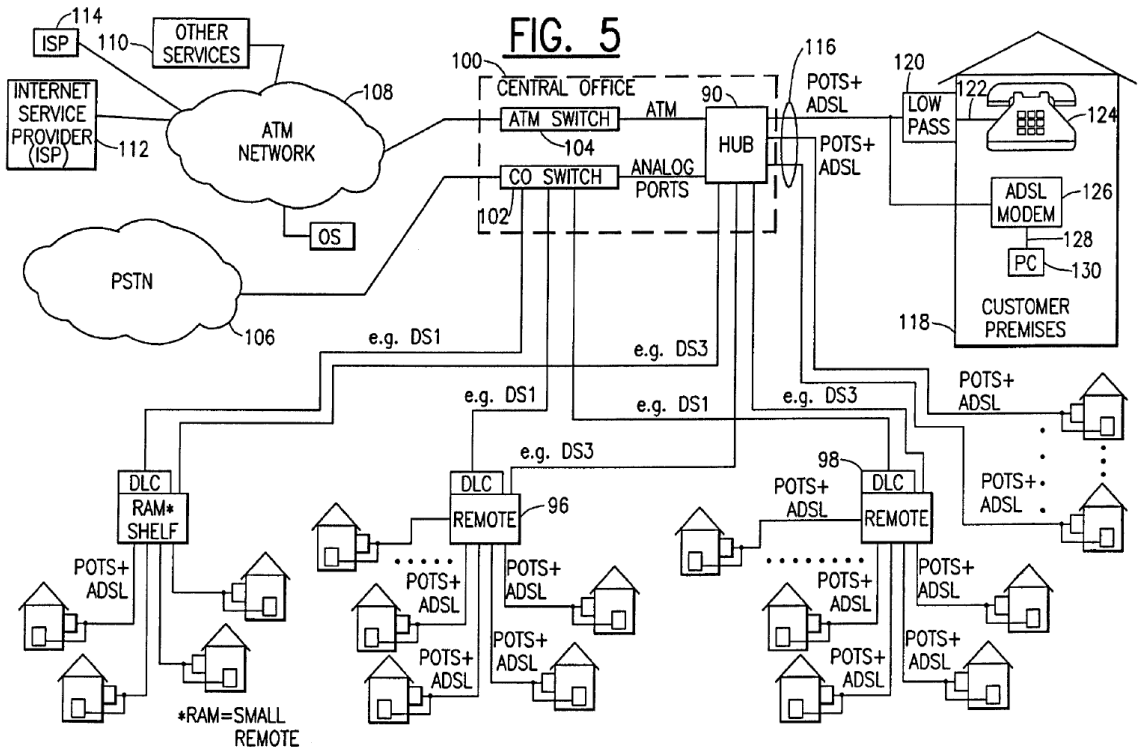
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No.	'904 Patent Claim 7	Czerwiec
		Czerwiec discloses "FIG. 14A shows a simplified block diagram of an embodiment of an NT card, according to the present invention. It provides a high-speed optical or electrical access to a Synchronous Optical Network (SONET) transport system. It converts Asynchronous Transfer Mode (ATM) cells to SONET packets (i.e., frames) and vice versa. Thus, the NT card adapts ATM cells carried on the IQ bus to the SONET transmission system and vice versa. It also includes necessary functions as listed in the table of FIG. 14B for operating and maintaining the ATM subscriber access multiplexer of the present invention." Czerwiec, 21:13-24. FIG. 14A  Czerwiec, FIG. 14A. Czerwiec discloses "In regard to the physical medium block, this can be an optical interface for interfacing an optical transport system with a receive and transmit optical fiber carrying signals, e.g., with a nominal bit rate of 155.52 Mbps. The interface is symmetric, i.e., it has

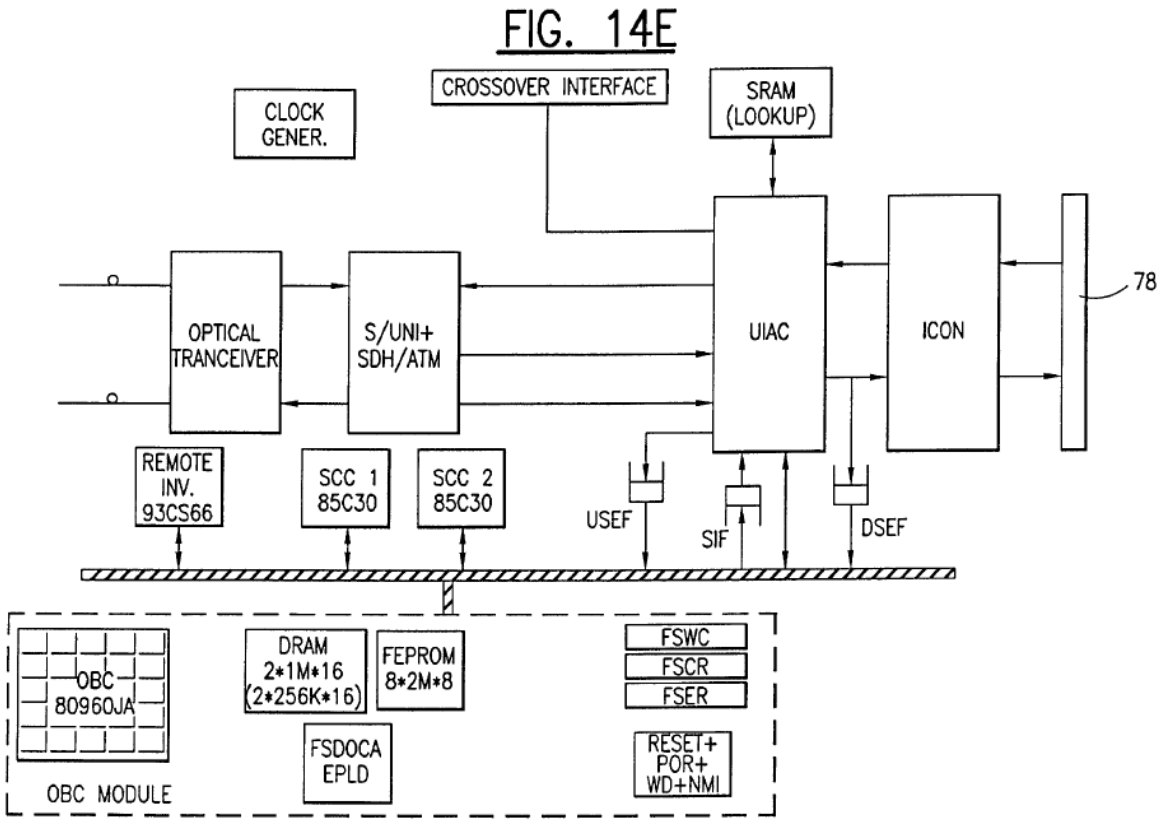
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No.	'904 Patent Claim 7	Czerwiec
		the same bit rate in both directions and could operate, e.g., at a wavelength of 1.3 μm. This signal can be a SONET (Synchronous Optical Network) signal at the OC-3 level for conversion to STM-1/STS-3c in the electrical domain. This is a serial signal which the physical medium interface block converts to parallel form at a slower rate for processing on the NT card, with the parallel downstream output locked on to the received clock." Czerwiec, 21:36-47. For example, Czerwiec discloses "The NT card is managed by an ADSL workstation (AWS) which may be located in an operating system (OS) as shown in FIG. 5. Such an OS may communicate through an ATM network and an ATM switch in a central office with the NT card in the shelf. See copending and co-owned U.S. patent application Ser. No. 08/189,259, filed Jul. 10, 1997 entitled "ASAM Network Management System with Open Loop Flow Control", filed on even date herewith for further details, and which is hereby incorporated by reference. FIG. 14C shows a front view and FIG. 14D a side view of an NT card, such as may be used in a slot of a shelf of FIG. 1." Czerwiec, 23:42-52. Figure 5 of Czerwiec is reproduced below.

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No.	'904 Patent Claim 7	Czerwiec
		 Czerwiec, FIG. 5. Czerwiec discloses "FIG. 14E shows a more detailed functional block diagram of an NT card 12 a of FIG. 1." Czerwiec, 23:53-54.

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No.	'904 Patent Claim 7	Czerwiec
		 Czerwiec, FIG. 14E. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Czerwiec is found to not meet this limitation, apparatus according to claim 4, wherein in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit would have been obvious to a person having ordinary skill in the art, as explained below.

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No.	'904 Patent Claim 7	Czerwiec

FIG. 14B

	DOWNSTREAM† FUNCTIONS	UPSTREAM† FUNCTIONS	
①	Optical interface	Reading ATM cells from the ATM interface (IQ BUS)	⑤
①	Locking on received clock	ATM cell extraction	⑥
①	Serial to parallel conversion	ATM cell insertion	⑥
②	STM1/STS3c frame alignment recovery	ATM layer processing plus cell rate decoupling	⑥
②	STM1/STS3c descrambling	ATM cell Header Error Control (HEC) calculation	⑥
②	F1, F2, or F3 OAM functions	ATM cell payload scrambling	⑥
②	ATM cell delineation (in virtual container type 4s)	Mapping of ATM cells in virtual container type 4s	⑦
③	ATM cell HEC checking	F1, F2, or F3 OAM functions	⑦
③	ATM cell payload descrambling	STM1/STS3c scrambling	⑦
③	ATM layer processing plus cell rate decoupling	STM1/STS3c frame generation	⑦
③	ATM cell extraction	Parallel to serial conversion	⑧
③	ATM cell insertion	Produce transmit clock out of recieved clock or local oscillator	⑧
④	Provision of access to the ATM IQ bus	Optical interface	⑧

Note †Upstream is in the direction of the transport system and downstream is in the direction of the ATM IQ interface.

Czerwiec, FIG. 14B (annotated).

Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Czerwiec in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the

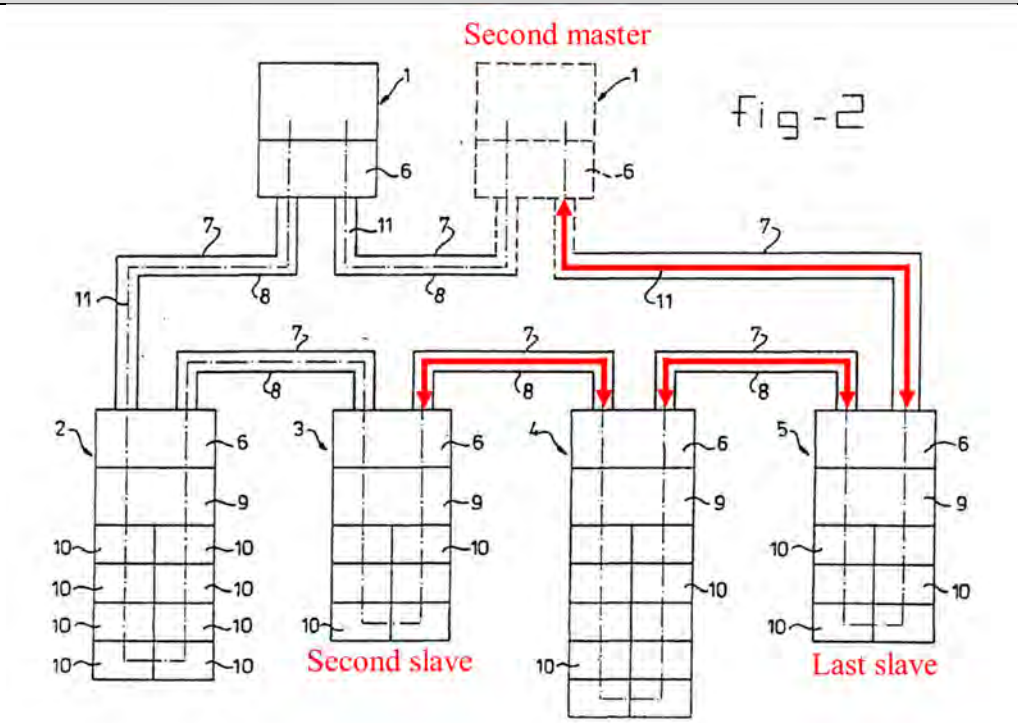
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No.	'904 Patent Claim 7	Czerwiec
		references identified in element 7 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Vink '324 discloses reversing direction of packet flow in the chain in the event of a fault, so that the slaves can still communicate with a master on either side of the fault. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Vink '324 16:19-17:2 ("The shift register principle is also of advantage with respect to use, for example for reliability reasons, of a plurality of masters as is illustrated in Figure 2 by the broken lines. In such a multi-master concept, one of the masters is in general active in relation to data exchange, while one or more other masters only have a passive role therein. All the masters are so designed that they can assume the function of the active master, for example in the event of faults. The passive masters are easily able to detect errors of the active master because, as a consequence of their cascade arrangement and the serial transfer of data bits in the communication system according to the invention, they receive all the information which is intended for the active master. Consequently, no separate communication path is required between the various masters to keep the passive masters abreast of the operations, instruction etc. carried out by the active master. Such a "hot stand-by" mode is of importance, in particular, in industrial process measurement and control in which failure or delay in the production process may, inter alia, have serious financial consequences. It is obvious that, in such a multi-master concept, the conditions under which, and the manner in which, the tasks of a master are assumed by another master have to be specified in advance."). Vink '324 14:2-27 ("In particular, with implicit addressing of the I/O modules, that is to say, if the sequence of the data bits corresponds to the sequence of the I/O modules of the relevant slave, errors in the transmission system and/or the local data bus can give rise to undesirable responses. To prevent this as far as possible, in an embodiment of the communication system according to the invention, a slave is provided with means for monitoring the serial transfer of data bits via the transmission system and/or the local data bus. A complete monitoring of the data exchange is achieved in that the at least one master is provided with means for detecting error situations in the transmission system. When a transmission error is detected,

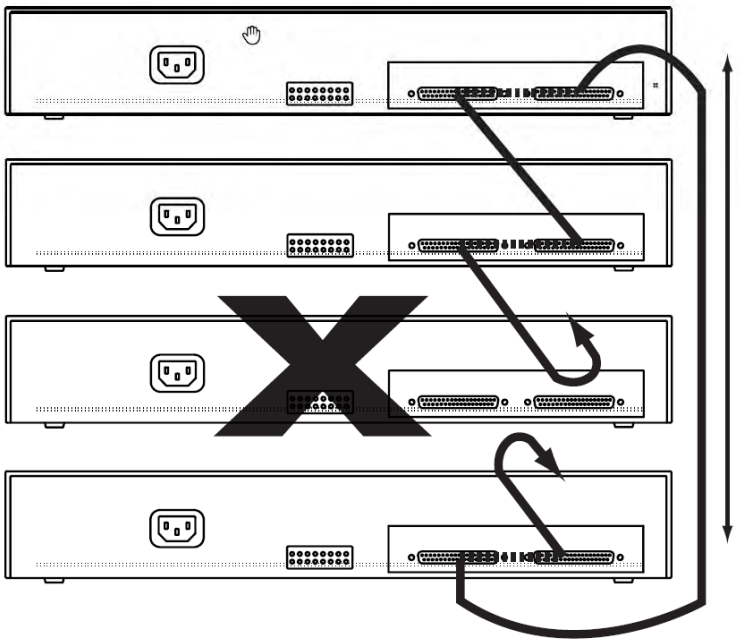
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No.	'904 Patent Claim 7	Czerwiec
		the control module of a slave will not accept the data received, nor will it transmit new data. The data bits received are then transferred further unchanged. The master then receives back the data bits despatched, possibly with transmission errors. By checking the transmitted and received data, information can be obtained about a transmission fault. If necessary, the relevant data bits can, for example, be transmitted again. Owing to the serial transfer down to the level of the I/O modules, the nodes in the communication system according to the invention are particularly suitable for use in a ring network configuration. Making use of this, the slaves in a further embodiment of the invention are connected to the at least one master via a multiple ring transmission system, the at least one master and the slaves being provided with means for change-over of a transmission system ring."). Vink '324 14:28-38 "A very flexible system is obtained in an embodiment of the invention in that the at least one master and slaves are designed to transmit or receive packets of data bits via a transmission system ring in one and/or the other direction. Master and/or slaves constructed in this way are capable of functioning as a switching centre so that, for example, the master is able to reach as many connected slaves as possible in a fault situation. The invention also relates to an I/O module, a substation (slave) and a master station (master) corresponding to, and suitable for, use in the communication system according to one or more of the preceding embodiments."). Vink '324 21:3-17 ("The transmitting/receiving unit 6 provides for the monitoring of the transmission and the control computer 38 provides for and monitors the correct sequence of the data bits for a relevant slave, related to the sequence in which the I/O modules are arranged. The information about this sequence is extracted by the control unit 36 from the status information received from the relevant slaves. In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about whether the connection to the transmission system is or is not operating correctly. For use in the communication system according to Figure 1 the unit 6 can be omitted.")

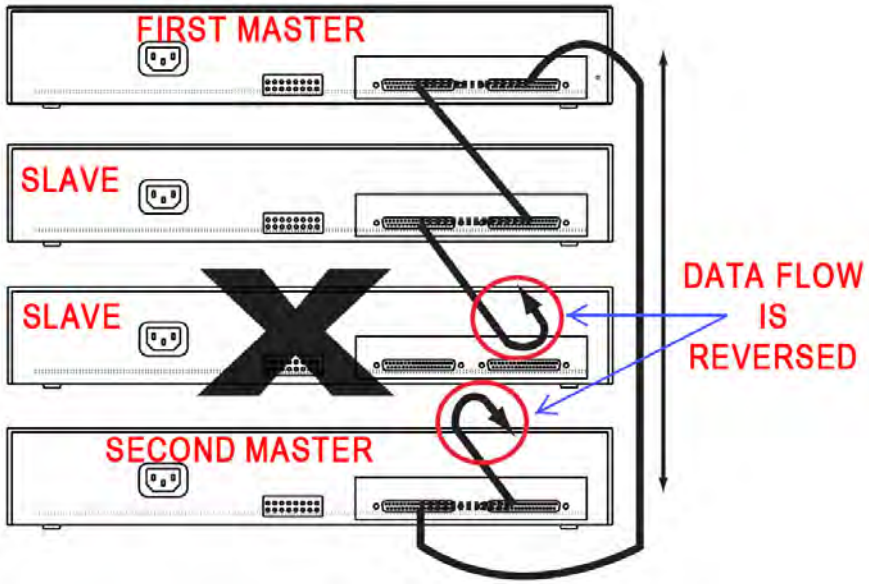
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No.	'904 Patent Claim 7	Czerwiec
		 Vink, FIG. 2 (annotated). For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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No.	'904 Patent Claim 7	Czerwiec
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

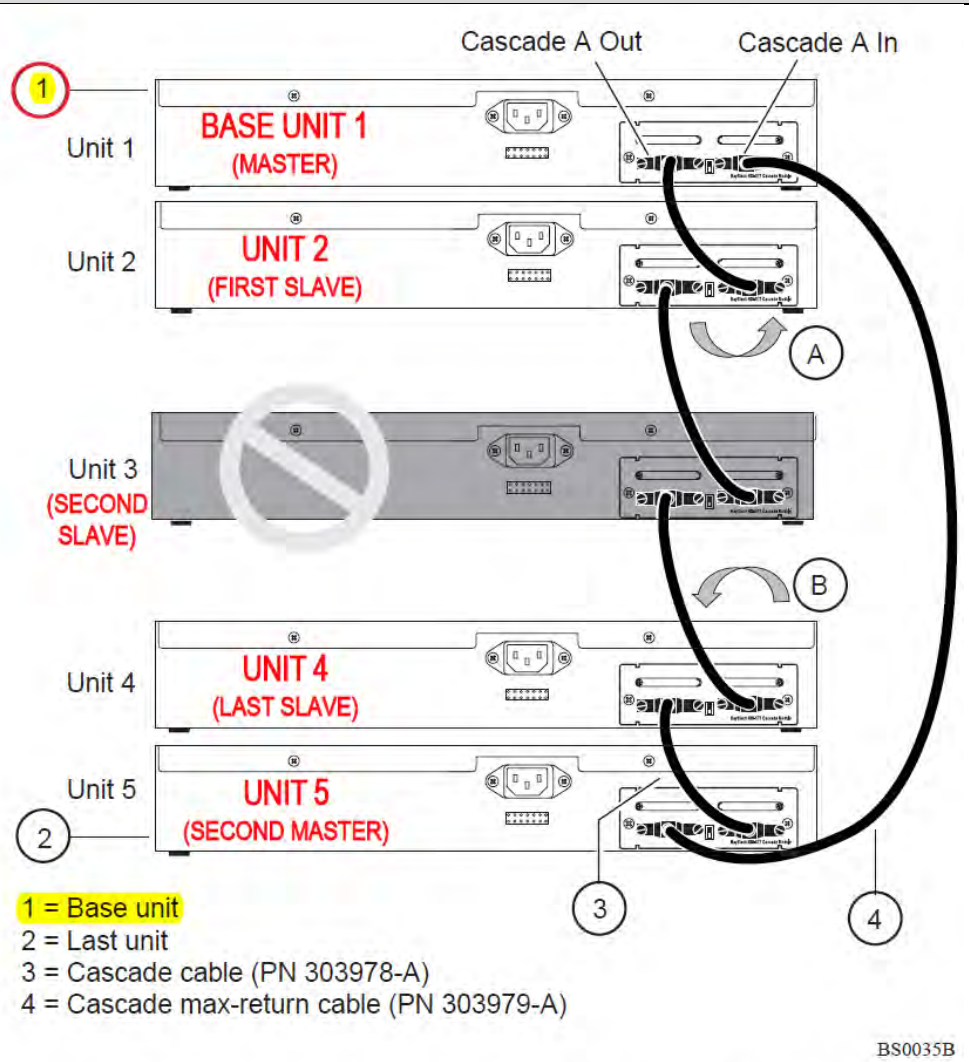
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No.	'904 Patent Claim 7	Czerwiec
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In the event of a failure, the BayStack 450 Switches disclose a Temporary Base Unit as being a second master unit. See, e.g., BayStack 450 Manual at 33, 52, 230 of 290. For instance, the BayStack 450 Manual states that "[i]f an assigned base unit fails, the next unit in the stack order automatically becomes the new temporary base unit. This change is indicated by the Base LED on the temporary base unit's LED display panel turning on (amber). For detailed information about the base LED, see Table 1-1 on page 1-6." BayStack 450 Manual at 52 of 290.

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No.	'904 Patent Claim 7	Czerwiec
		Further, in this alternative example, the BayStack 450 Manual describes that "[t]his automatic failover is a temporary safeguard only. If the stack configuration loses power, the temporary base unit will not power up as the base unit when power is restored. For this reason, you should always assign the temporary base unit as the base unit (set the Unit Select switch to Base) until the failed unit is repaired or replaced." BayStack 450 Manual at 52 of 290. In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290. Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

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No.	'904 Patent Claim 7	Czerwiec
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

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No.	'904 Patent Claim 8	Czerwiec
8	Apparatus according to claim 7, wherein the downstream packets for the slave units in the portion of the daisy chain between the location of the fault and the second master unit are conveyed to the second master unit from the first master unit via another one of the daisy chains.	Czerwiec discloses apparatus according to claim 7, wherein the downstream packets for the slave units in the portion of the daisy chain between the location of the fault and the second master unit are conveyed to the second master unit from the first master unit via another one of the daisy chains. For example, Czerwiec discloses "an eleventh aspect of the present invention, a network termination equipment for use in a shelf of a telecommunications system, said network termination equipment for connection to an asynchronous transfer mode network and to a plurality of line termination equipment also for use in said shelf for connection to subscriber equipment, wherein said network termination equipment comprises physical medium termination equipment for interfacing to a physical medium by means of a serial input/output connection to said ATM network for providing a parallel input/output transmission conveyance means connected to said parallel input/output for recovering/mapping ATM cells from/to frames of a transport format of said serial input/output, ATM layer processing means connected to said transmission conveyance means for layer processing downstream ATM cells recovered by said transmission conveyance means and for providing upstream ATM cells to said transmission conveyance means, and an ATM bus interface responsive to downstream ATM cells from said ATM layer processing means for providing said downstream ATM cells with a guard byte for an ATM bus in said shelf and responsive to upstream ATM cells with a guard byte for providing said upstream cells to said ATM layer processing means without said guard byte." Czerwiec, 6:15-36. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Czerwiec is found to not meet this limitation, apparatus according to claim 7, wherein the downstream packets for the slave units in the portion of the daisy chain between the location of the fault and the second master unit are conveyed to the second master unit from the first master unit via another one of the daisy chains would have been obvious to a person having ordinary skill in the art, as explained below.

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No.	'904 Patent Claim 8	Czerwiec

FIG. 14B

	DOWNSTREAM† FUNCTIONS	UPSTREAM† FUNCTIONS	
①	Optical interface	Reading ATM cells from the ATM interface (IQ BUS)	⑤
①	Locking on received clock	ATM cell extraction	⑥
①	Serial to parallel conversion	ATM cell insertion	⑥
②	STM1/STS3c frame alignment recovery	ATM layer processing plus cell rate decoupling	⑥
②	STM1/STS3c descrambling	ATM cell Header Error Control (HEC) calculation	⑥
②	F1, F2, or F3 OAM functions	ATM cell payload scrambling	⑥
②	ATM cell delineation (in virtual container type 4s)	Mapping of ATM cells in virtual container type 4s	⑦
③	ATM cell HEC checking	F1, F2, or F3 OAM functions	⑦
③	ATM cell payload descrambling	STM1/STS3c scrambling	⑦
③	ATM layer processing plus cell rate decoupling	STM1/STS3c frame generation	⑦
③	ATM cell extraction	Parallel to serial conversion	⑧
③	ATM cell insertion	Produce transmit clock out of recieved clock or local oscillator	⑧
④	Provision of access to the ATM IQ bus	Optical interface	⑧

Note †Upstream is in the direction of the transport system and downstream is in the direction of the ATM IQ interface.

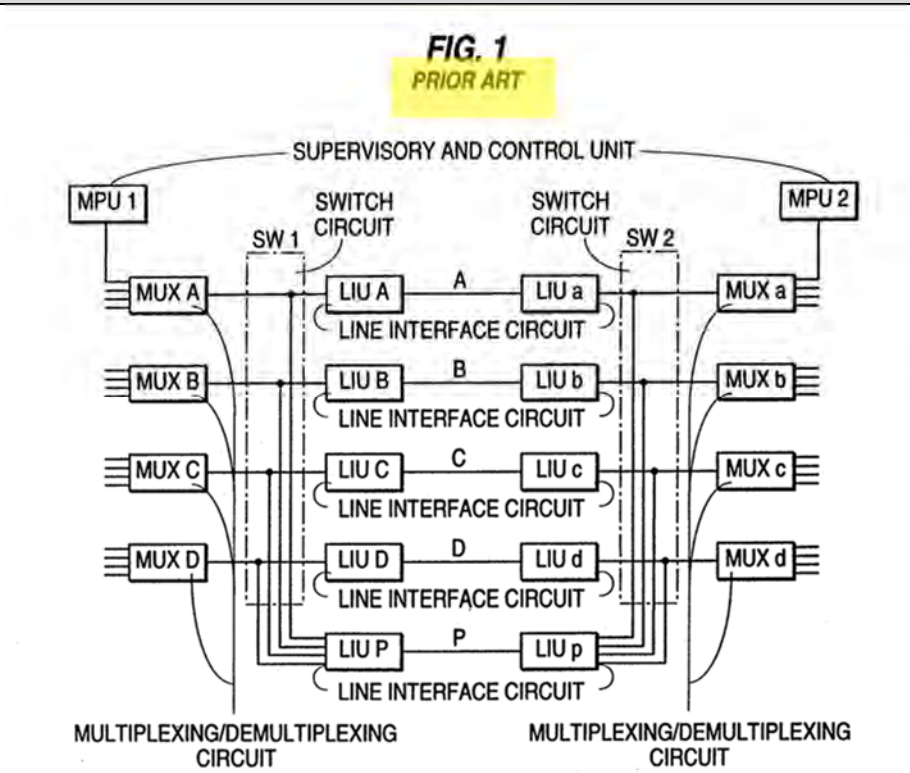
Czerwiec, FIG. 14B (annotated).

Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Czerwiec in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the

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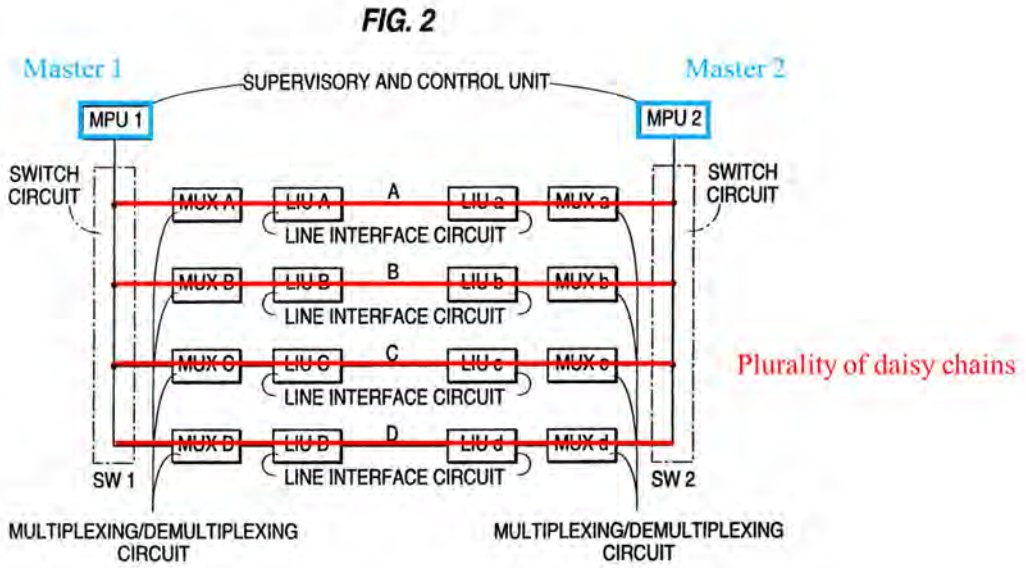
No.	'904 Patent Claim 8	Czerwiec
		references identified in element 8 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Sugawara ''456 discloses multiple daisy chains between two masters where, in the case of a fault, packets are routed through a different chain. Sugawara '456, 1:26-45 ("FIG. 1 illustrates a conventional data link protecting system. A through D designate normal lines and P designates a backup line. LIUA through LIUD and LIUa through LIUd denote line interface circuits having functions of communicating with opposed devices, detecting the error rate of received signals, detecting abnormalities in main signals, such as signal interruption, and feeding intermediate repeaters. MUXA through MUXD and MUXa through MUXd designate multiplexing/demultiplexing circuits, and SW1 and SW2 denote switch circuits adapted to switch an abnormal line to the backup line. MPU1 and MPU2 denote supervisory and control units which control their associated devices, supervise the line interface circuits LIUs to switch the switch circuits SW as needed and perform data link communication with opposed devices. Note that the FIG. 1 illustrates only the arrangement for data transmission in one direction. The arrangement for data transmission in the opposite direction is the same as above.").

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No.	'904 Patent Claim 8	Czerwiec
		 Sugawara '456, FIG. 1 (annotated). Sugawara '456, 3:24-39 ("When a failure of the line A is detected, the data link communication is switched from the line A to another, for example, the line B. This switching is made as follows. That is, a line failure is usually detected as a failure in reception. When detecting the line failure in terms of error rate by way of example, the line interface circuit LIUa on the receiving side informs the supervisory and control unit MPU2 via MUXa of the detection of the line failure. Upon being informed of the line failure, MPU2 informs MPU1 of the failure of the line A via another line, for example, another line of B directed from MPU2 to MPU1 not shown. Responsive to this, the supervisory and control unit MPU1

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No.	'904 Patent Claim 8	Czerwiec
		switches switch circuit SW1 to connect MPU1 to another line, for example, the line B. Thereby, the data link communication becomes effected over the line B.").



Sugawara '456, FIG. 2 (annotated).

For example, Quoc discloses that "because networks tend to constantly change and expand with network devices being added, it would be highly advantageous if, in addition to the Class II feature of allowing two repeaters in a collision domain, it were also possible that each of the two repeaters were expandable or Stackable. Additional ports could be added to a first repeater Stack that functions as one Class II repeater and then a Second Stack could be included as the Second Class II repeater. Thus, Stackability combined with cascadability would provide even greater flexibility for network expansion." Quoc at 4:32-42. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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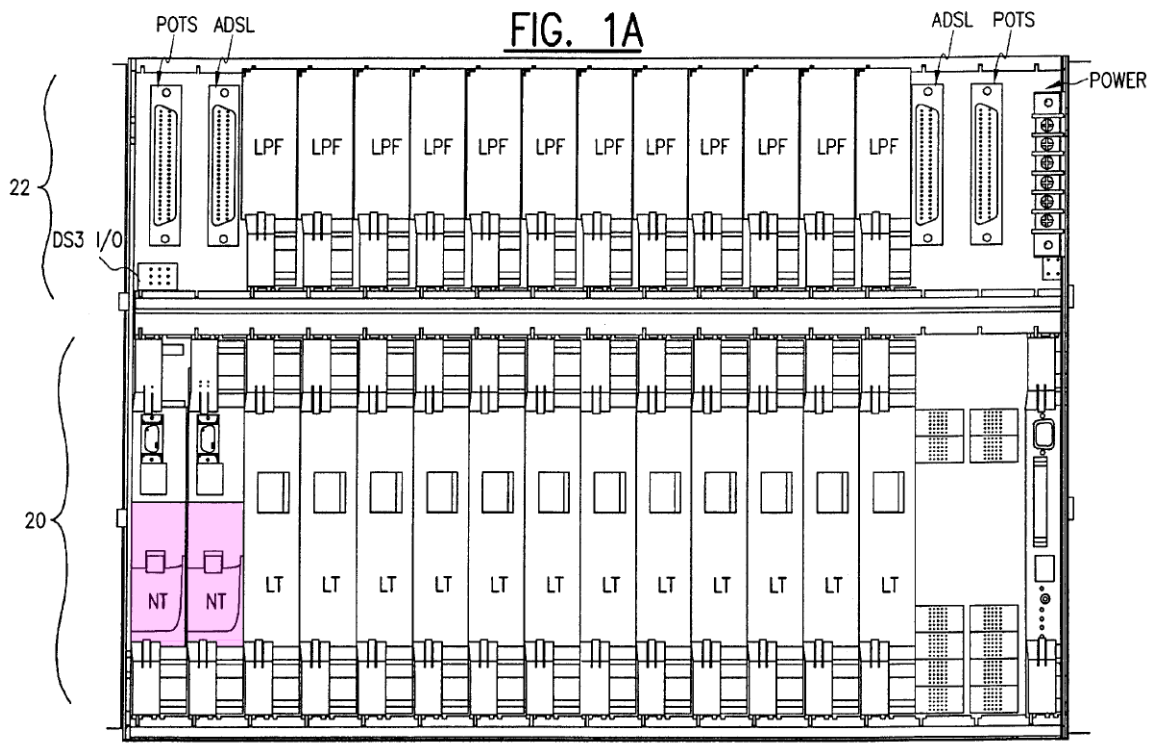
No.	'904 Patent Claim 8	Czerwiec
		Quoc discloses "In a preferred embodiment, network management mod ules (NMMs), preferably one for each repeater unit, may be provided in a Single repeater Stack. FIG. 2 shows a repeater stack 200 having four NMMs 202, 204, 206 and 208. The modules 202, 204, 206 and 208 of the repeater stack 200 communicate using a management bus 210. The modules communicate on the management bus210 by Sending Small messages, referred to as "frames." The modules are also connected to a stack bus 220 which provides the main pathway for data transmission between repeaters and other nodes on the network (not shown)." Quoc, 6:19-29.

No.	'904 Patent Claim 9	Czerwiec
9[pre]	Network access apparatus, comprising:	To the extent the preamble is found to be limiting, Czerwiec discloses a network access apparatus. *See supra* at 1[pre].
9[a]	first and second master units, each comprising a physical interface to a packet-switched network;	Czerwiec discloses first and second master units, each comprising a physical interface to a packet-switched network. *See supra* at 1[a].
9[b]	a plurality of slave units,	Czerwiec discloses a plurality of slave units. *See supra* at 1[b].
9[c]	each slave unit comprising one or more ports to respective subscriber lines; and	Czerwiec discloses each slave unit comprising one or more ports to respective subscriber lines. *See supra* at 1[c].
9[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the	Czerwiec discloses a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. *See supra* at 1[d].

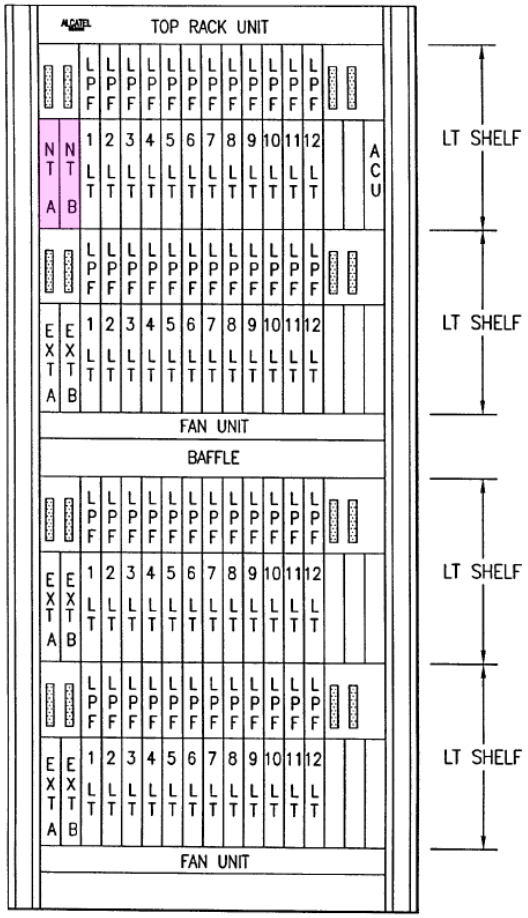
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No.	'904 Patent Claim 9	Czerwiec
	slave units are mutually connected in series by the physical interface lines therebetween,	
9[e]	each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit, wherein each of the first and second master units comprises:	Czerwiec discloses each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit. *See supra* at 1[e].
9[f]	a switch, configured to route data packets between the respective physical interface and the one or more daisy chains; and	Czerwiec discloses a switch, configured to route data packets between the respective physical interface and the one or more daisy chains. Czerwiec discloses several embodiments that include such a switch. **Example One**: Specifically, in a first example, Czerwiec discloses adjacent, redundant NT cards that are a first master and a second master unit, stating "FIG. 1A shows a front view of an actual shelf with redundant NT cards…." Czerwiec, 9:66-67.

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No.	'904 Patent Claim 9	Czerwiec
		 Czerwiec, FIG. 1A (annotated). Further, Czerwiec discloses that these redundant NT cards are connected by physical interfaces (e.g., connectors installed on the backplane that mate connectors on the cards with connectors in the NT card slots). Czerwiec's redundant NT cards provide a physical interface that via these connectors that enables communication through a packet switched network (e.g., the ADSL packet switched network), providing connectivity for 192 ADSL lines per shelf. For instance, Czerwiec describes the physical interface, stating "FIG. 1B shows a plurality of shelves mounted in a central office rack, such as shown in FIG. 1E, in a standard configuration for serving 192 ADSL lines. Up to four adjacent racks can share the same feeder by using extension units installed in place of NTs, as explained below in connection

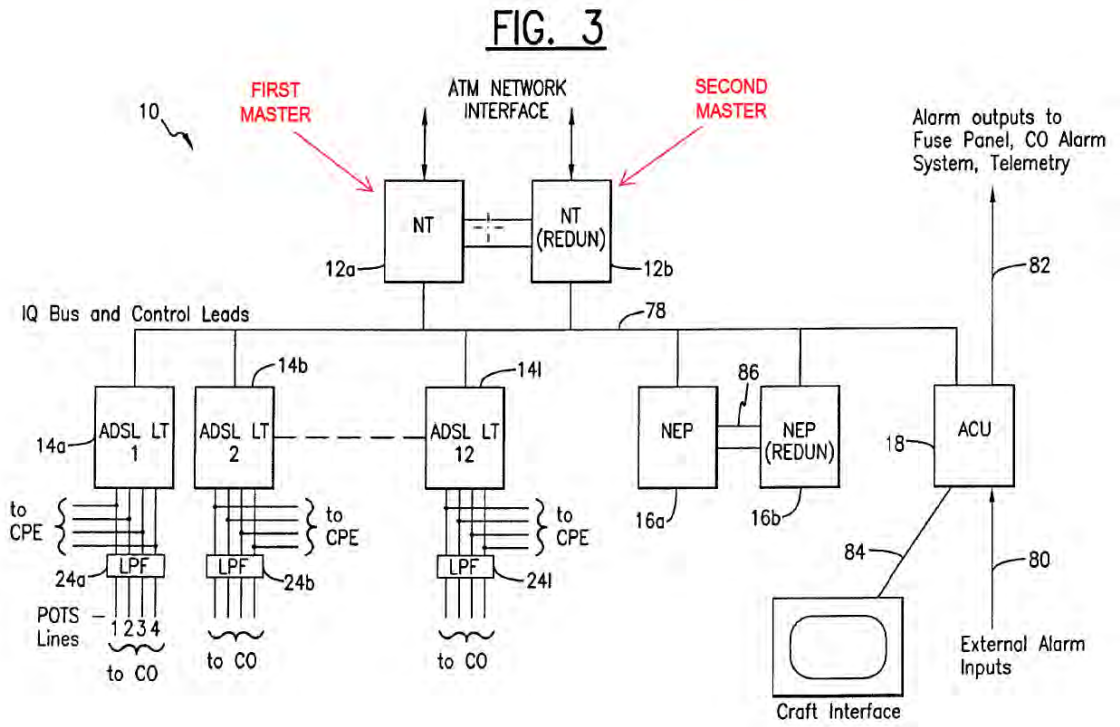
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No.	'904 Patent Claim 9	Czerwiec
		with FIG. 6. In that case, a single, optionally-protected NT card can support up to 576 ADSL lines. FIG. 1C shows the shelf of FIG. 1A without any cards installed and shows the connectors installed in the backplane, into which mating connectors on the cards are insertable by sliding the cards into the slots shown. In this way, front-access-only is achieved. A side view of the shelf is shown in FIG. 1D." Czerwiec, 10:1-13. FIG. 1B  Czerwiec, FIG. 1B (annotated).

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No.	'904 Patent Claim 9	Czerwiec
		Example Two: In a second example, Czerwiec discloses that the first and second master may be a redundant or non-redundant NT configuration. For instance, Czerwiec discloses: "As shown in both FIGS. 1 and 3, the NTs 12 a, 12 b can be provided in either a redundant or non-redundant configuration. In this architecture, the normal NE processing is performed by the NT, and the NT can be provided as either a SONET User Network Interface (UNI) interface, a DS-3 UNI interface or later, a DS1 inverse multiplex UNI interface. If SONET NTs are provided as redundant pairs, Automatic Protection Switching (APS) is provided using the normal 1+1 switchover mechanism detailed in Bellcore document GR-253. On SONET NTs, the physical interface (fiber) is located on the faceplate of the NT itself (see FIGS. 14C and 14D), with no need of additional interface circuitry. If, however, NTs are provided as DS-3 ports, equipment protection (without cable protection) is provided using the DS-3 I/O board 32 shown in FIG. 1 installed above the NTs in the shelf, allowing the single DS-3 facility (coax cable Tx/Rx pair) to be split and accessed by either NT (inter-NT communication arbitrates which one is active)." Czerwiec, 12:66-13:16. Czerwiec further illustrates the first and second master in FIG. 3, shown below.

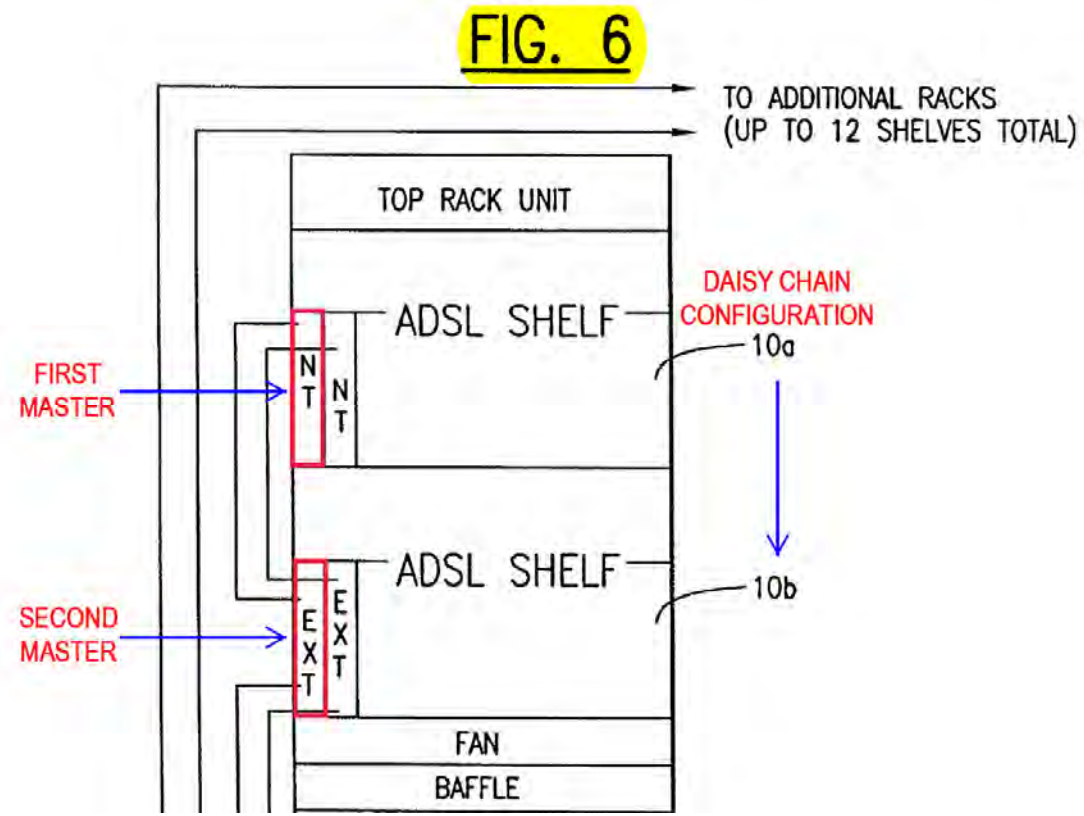
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No.	'904 Patent Claim 9	Czerwiec
		 Czerwiec, FIG. 3 (annotated). Czerwiec explains that the basic shelf architecture is depicted in Figure 3. Czerwiec, 11:57-59. Czerwiec further explains that the packet based network connectivity provided by the first and second redundant NT card masters may include quality of service classes that can be linked to access levels for subscribers, which are generally allocated by different bit rates. These bit rates may be implemented using a Guaranteed Cell Rate ("GCR") or Non-Guaranteed Cell Rate ("NGCR"). *See generally* Czerwiec, 11:59-12:33; *see also id.*, FIG. 3A.

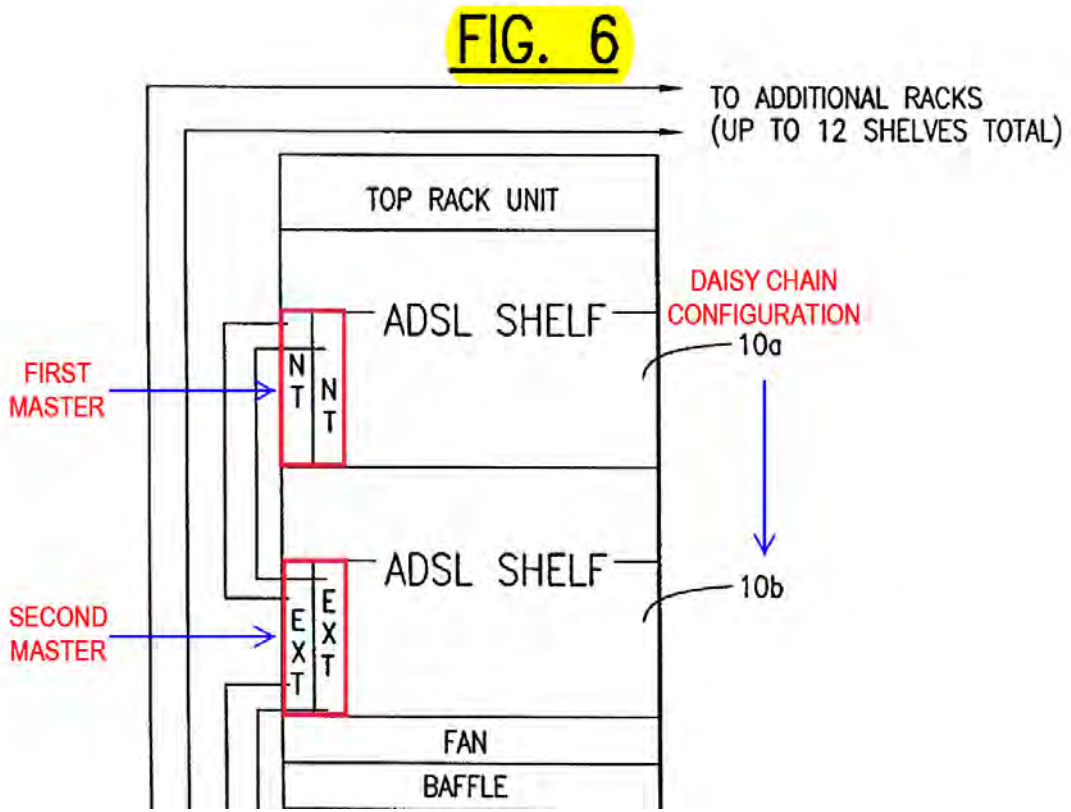
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No.	'904 Patent Claim 9	Czerwiec
		"An ACU [alarm collection unit] is provided per NT (or redundant NT pair) when multiple systems reside in a given rack. Multiple systems reside in a given rack when a very wide bandwidth is to be served by, e.g., a single shelf. In such a case, a single shelf may use up the entire bandwidth of an OC-3 or DS-3 cable." Czerwiec, 13:52-53. **Example Three**: In a third example, Czerwiec discloses that the first and second master may be (1) redundant NT cards or a non-redundant NT card in communication with (2) redundant EXT cards or a non-redundant EXT card configuration. For example, Czerwiec describes that the ADSL shelves can be daisy chained together. *See, e.g.*, Czerwiec, 16:15-35. In the simplest example, a first master (NT card) connects to a second master (EXT card), which is shown below.

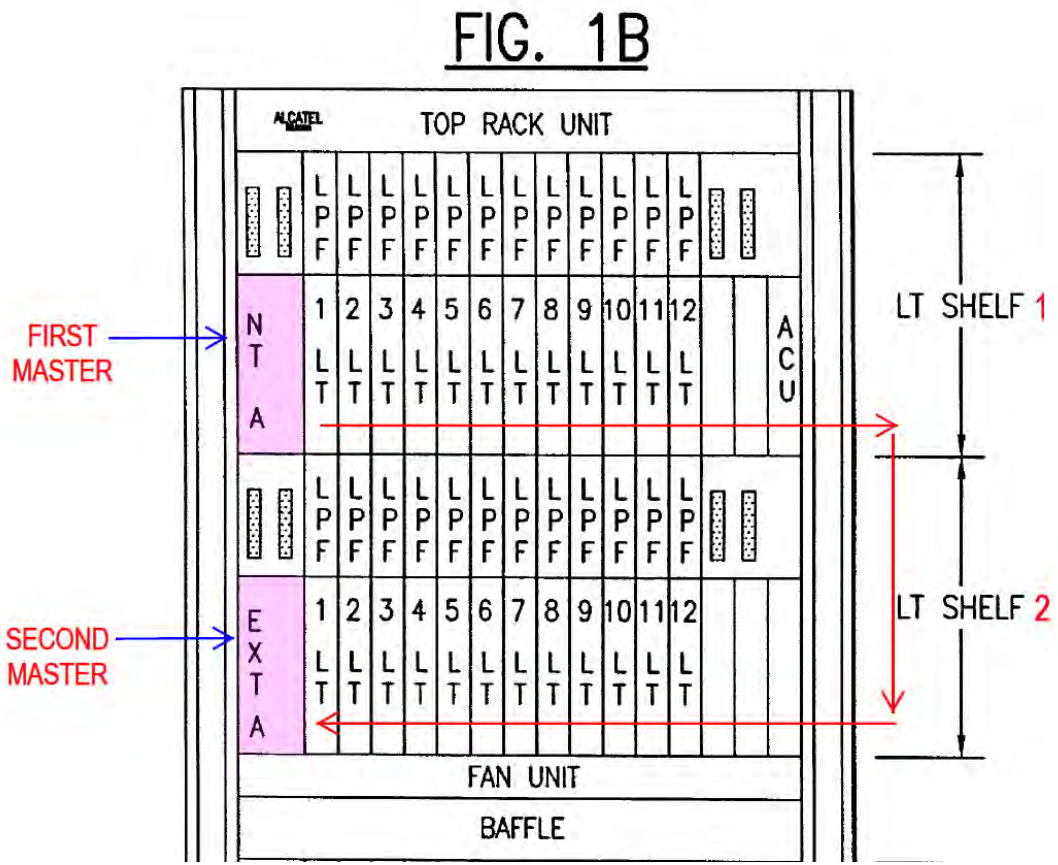
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No.	'904 Patent Claim 9	Czerwiec
		 Czerwiec, FIG. 6 (annotated). Alternatively, a POSITA would have recognized that Czerwiec's first and second master may include the redundant pair of NT and EXT cards. *See, e.g.*, Czerwiec, 16:15-35.

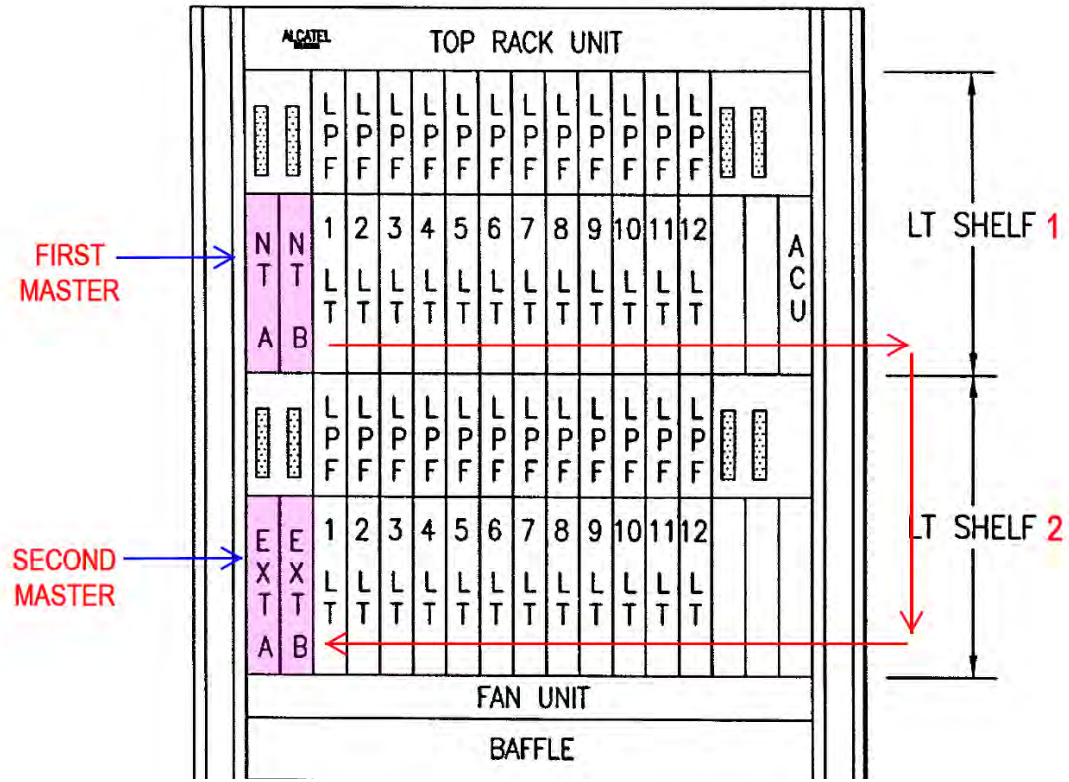
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No.	'904 Patent Claim 9	Czerwiec
		 Czerwiec, FIG. 6 (annotated). Additionally, the POSITA would have understood that the first and second masters could serially connected in a daisy chain with slave units in between. For instance, Czerwiec's exemplary two shelves above may be implemented in a chain as shown below in annotated Figure 1B, where the masters are highlighted in purple and the red lines indicate a downstream direction of traffic between the first master (LT Shelf 1, NT A or A/B), the first slave (LT Shelf 1, LT 1), the second slave (LT Shelf 1, LT 2), the last slave (LT Shelf 2, LT 1), and the second master (LT Shelf 1, EXT A or A/B).

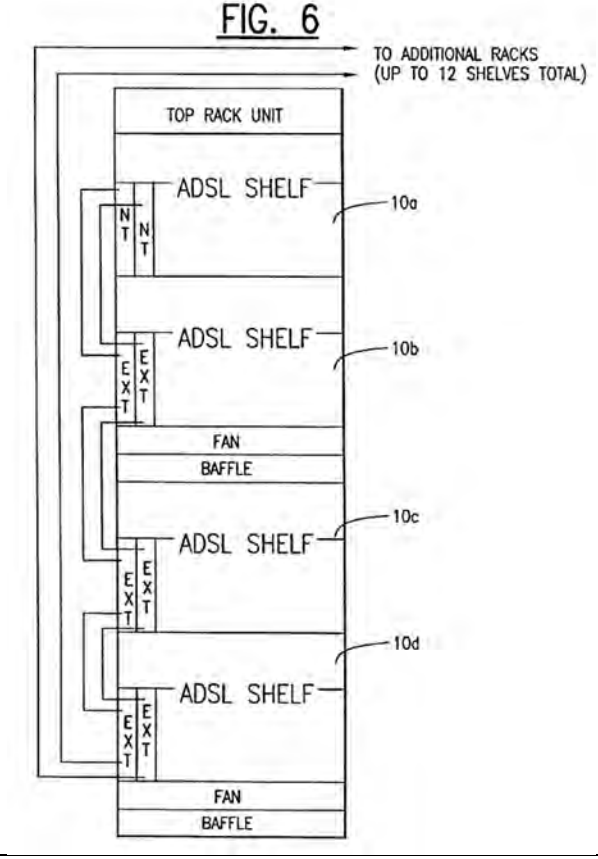
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No.	'904 Patent Claim 9	Czerwiec
		 Czerwiec, FIG. 1B (annotated).

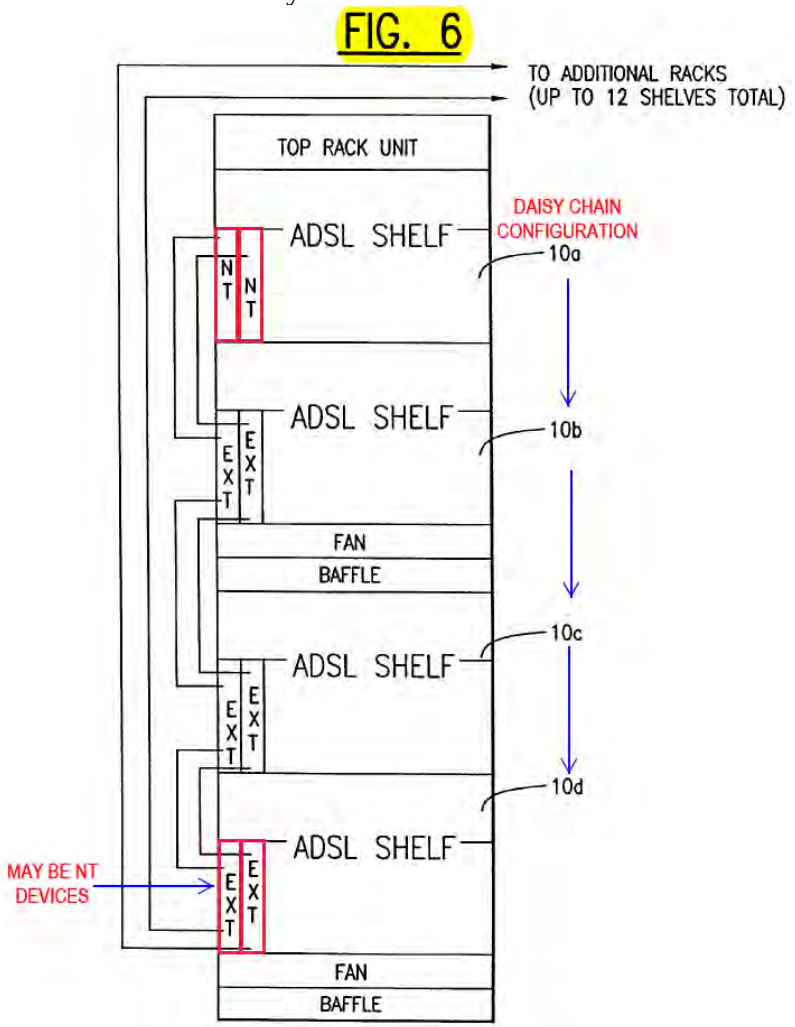
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No.	'904 Patent Claim 9	Czerwiec
		FIG. 1B  Czerwiec, FIG. 1B (annotated). **Example Four**: Czerwiec discloses "FIG. 6 shows in detail the above-mentioned feature of the present architecture whereby a plurality of ADSL shelves 10 a, 10 b, 10 c, 10 d such as shown in FIG. 1 can be daisy-chained together in a rack by means of an extender card (EXT) in each subsequent shelf. The extender card function is to effectively extend the IQ bus from shelf to shelf (daisy-chained, e.g., to a maximum of twelve shelves altogether), allowing up to, e.g., 576 ADSL subscribers accessed to the system. In other words, the extender card allows an

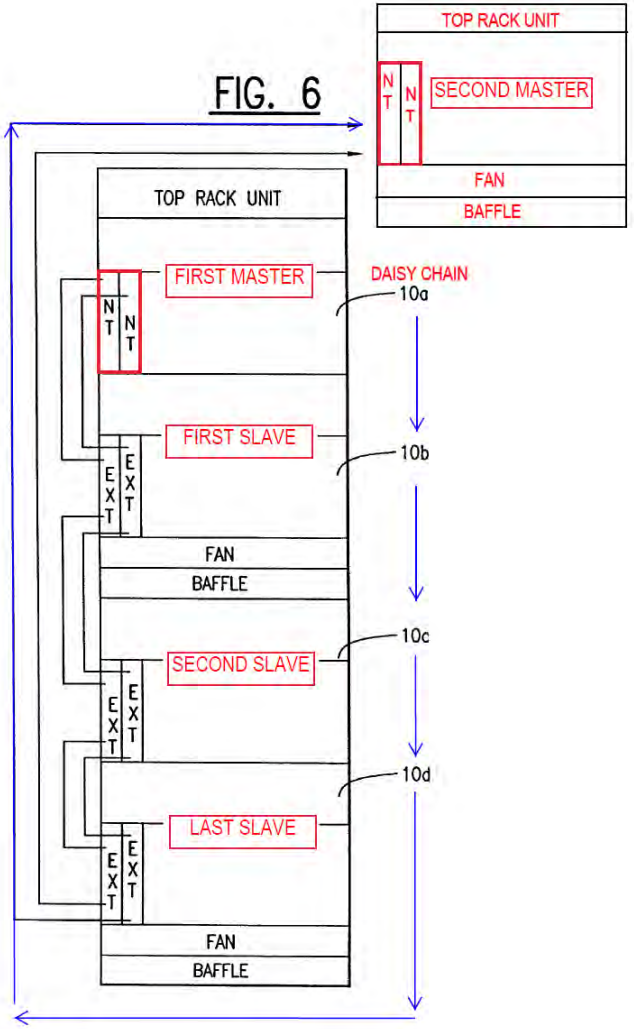
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No.	'904 Patent Claim 9	Czerwiec
		NT card in a first shelf to act as an NT card for another shelf or a plurality of other shelves. I.e., in this case, three racks with altogether twelve daisy-chained shelves. The extender cards can be mounted as shown in FIG. 6 in the NT slots of subsequent shelves and may be redundant. In that case, any failure of an NT or extender card bank switches all LTs from the "A" NT/extender string to the "B" string. The active string then assumes control of each shelf's IQ bus. The IQ bus itself (within each shelf) is not redundant, but meets reliability requirements, as the NT has the ability to remove each LT from the IQ bus (disable) to isolate a fault and remove it from service." Czerwiec, 16:15-35. Figure 6, having redundant NT cards in ADSL shelf 10a is shown below. FIG. 6 

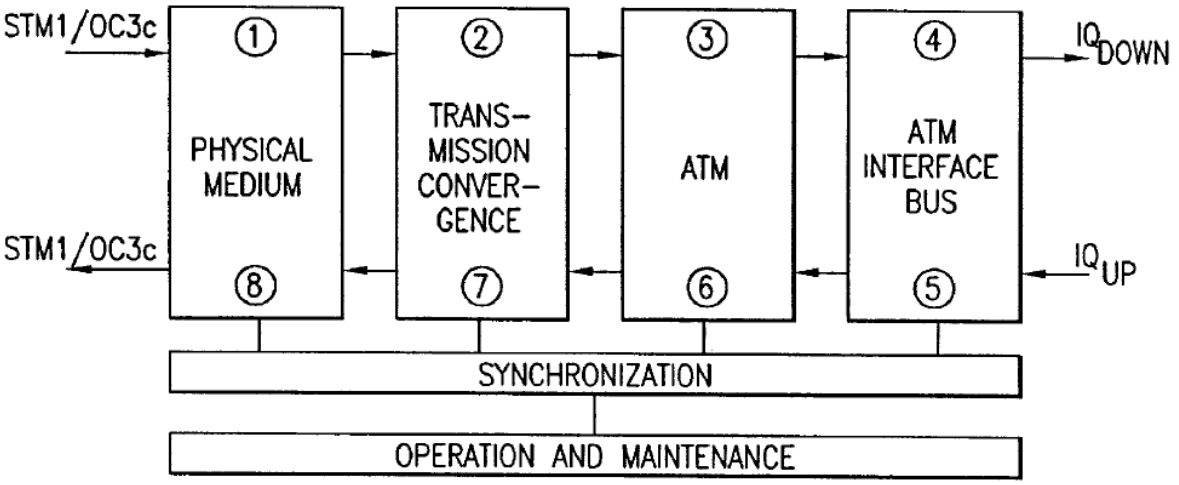
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No.	'904 Patent Claim 9	Czerwiec
		Czerwiec, FIG. 6. In another example, annotated Figure 6 shows ADSL shelves that are daisy chained, where the EXT cards in ADSL shelf 10d may act as a redundant master.  Czerwiec, FIG. 6 (annotated).

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No.	'904 Patent Claim 9	Czerwiec
		Example Five: In yet another example, annotated Figure 6 shows ADSL shelves that are daisy chained, where the daisy chain is connected to redundant NT cards in an ADSL shelf of another rack.  Czerwiec, FIG. 6 (annotated).

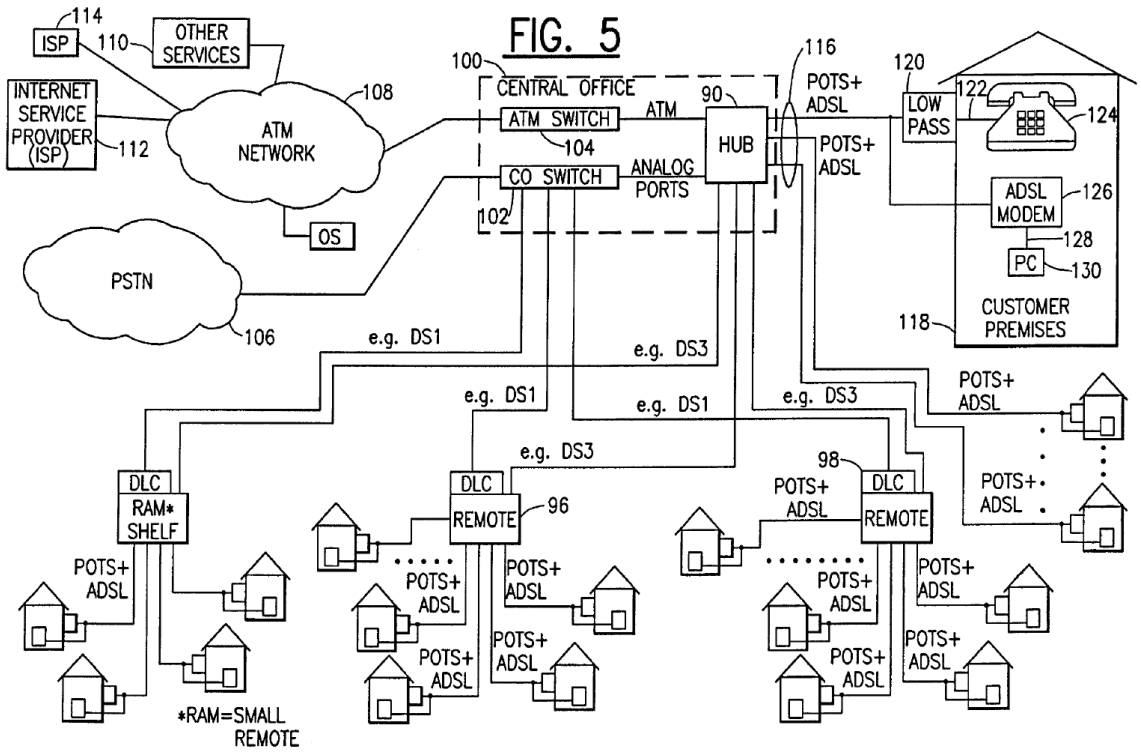
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No.	'904 Patent Claim 9	Czerwiec
		Czerwiec discloses "FIG. 14A shows a simplified block diagram of an embodiment of an NT card, according to the present invention. It provides a high-speed optical or electrical access to a Synchronous Optical Network (SONET) transport system. It converts Asynchronous Transfer Mode (ATM) cells to SONET packets (i.e., frames) and vice versa. Thus, the NT card adapts ATM cells carried on the IQ bus to the SONET transmission system and vice versa. It also includes necessary functions as listed in the table of FIG. 14B for operating and maintaining the ATM subscriber access multiplexer of the present invention." Czerwiec, 21:13-24. FIG. 14A  Czerwiec, FIG. 14A.

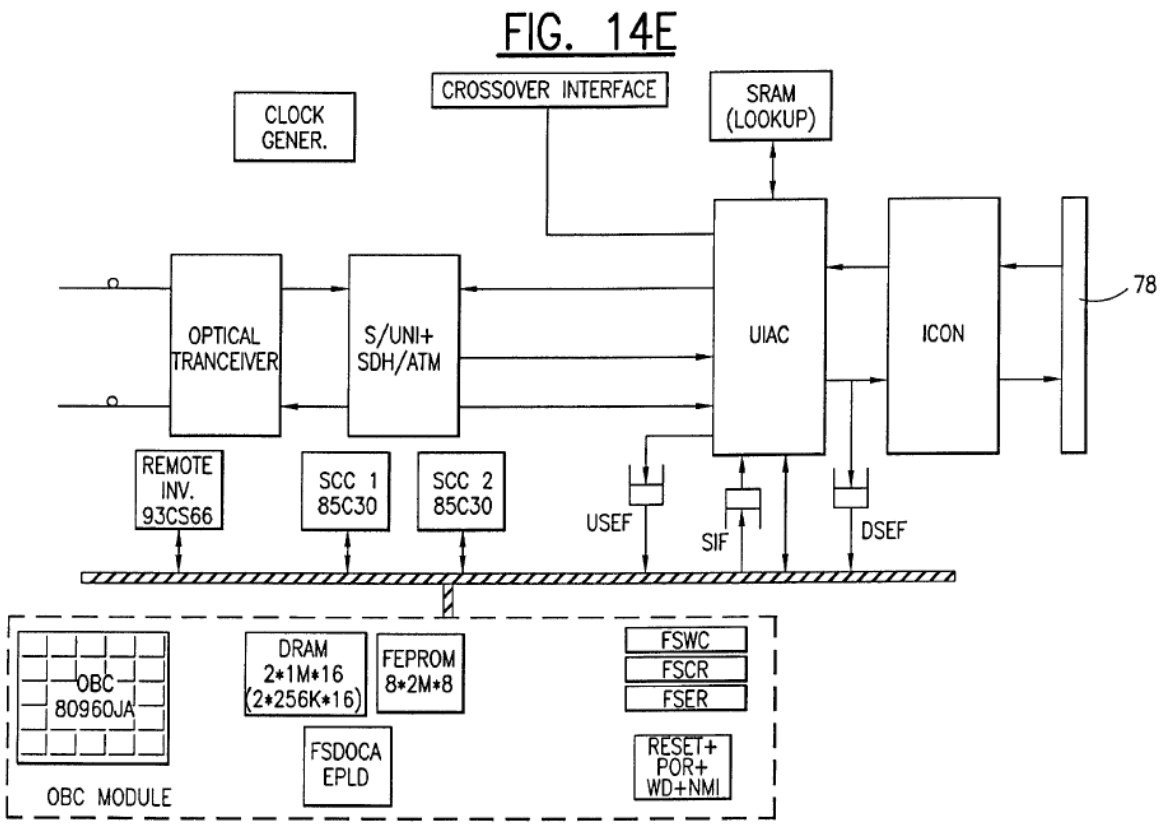
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No.	'904 Patent Claim 9	Czerwiec
		Czerwiec discloses "In regard to the physical medium block, this can be an optical interface for interfacing an optical transport system with a receive and transmit optical fiber carrying signals, e.g., with a nominal bit rate of 155.52 Mbps. The interface is symmetric, i.e., it has the same bit rate in both directions and could operate, e.g., at a wavelength of 1.3 μm. This signal can be a SONET (Synchronous Optical Network) signal at the OC-3 level for conversion to STM-1/STS-3c in the electrical domain. This is a serial signal which the physical medium interface block converts to parallel form at a slower rate for processing on the NT card, with the parallel downstream output locked on to the received clock." Czerwiec, 21:36-47. For example, Czerwiec discloses "The NT card is managed by an ADSL workstation (AWS) which may be located in an operating system (OS) as shown in FIG. 5. Such an OS may communicate through an ATM network and an ATM switch in a central office with the NT card in the shelf. See copending and co-owned U.S. patent application Ser. No. 08/189,259, filed Jul. 10, 1997 entitled "ASAM Network Management System with Open Loop Flow Control", filed on even date herewith for further details, and which is hereby incorporated by reference. FIG. 14C shows a front view and FIG. 14D a side view of an NT card, such as may be used in a slot of a shelf of FIG. 1." Czerwiec, 23:42-52. Figure 5 of Czerwiec is reproduced below.

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No.	'904 Patent Claim 9	Czerwiec
		 Czerwiec, FIG. 5. Czerwiec discloses "FIG. 14E shows a more detailed functional block diagram of an NT card 12 a of FIG. 1." Czerwiec, 23:53-54.

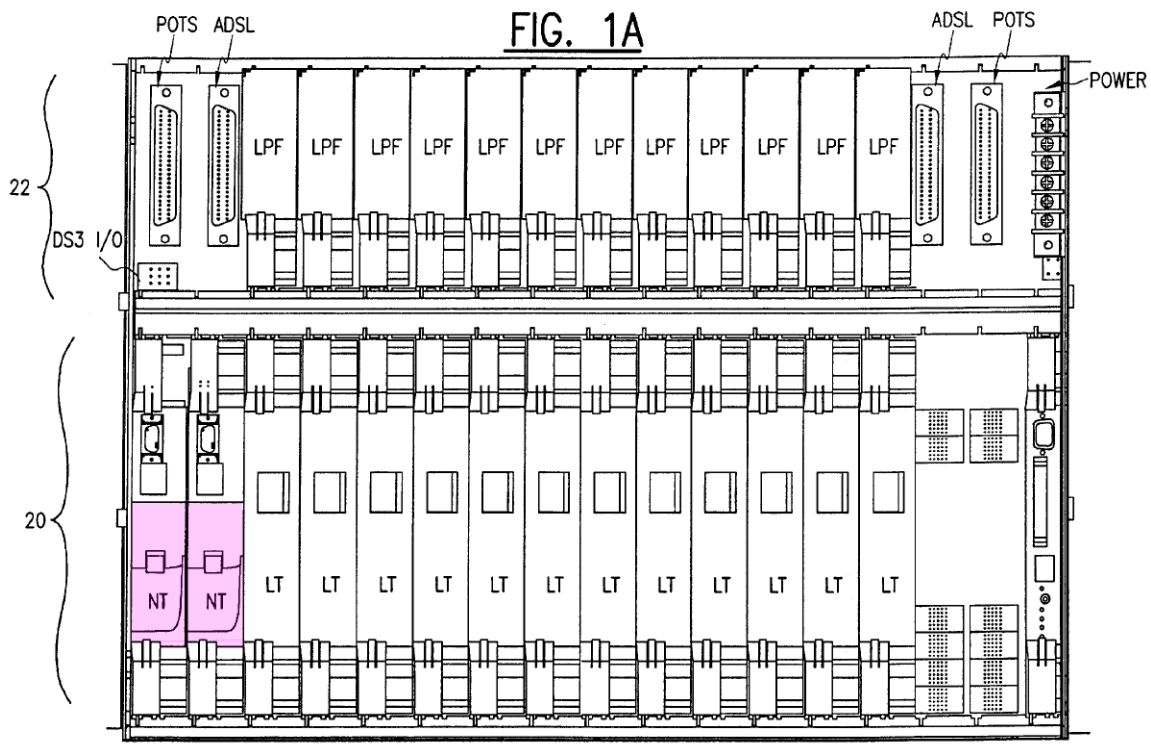
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No.	'904 Patent Claim 9	Czerwiec
		 Czerwiec, FIG. 14E.
9[g]	a pre-switch, which in the event of a fault at a location in one of the daisy chains, re-routes at least a portion of the data packets exchanged with one or more of the slaves in	Czerwiec discloses a pre-switch, which in the event of a fault at a location in one of the daisy chains, re-routes at least a portion of the data packets exchanged with one or more of the slaves in the daisy chain in which the fault has occurred through another one of the daisy chains. For example, Czerwiec discloses "As suggested above, since there is only one nonredundant IQ bus per shelf, the equipment protection implied by FIG. 4C with A and B redundant DS-3-LT cards in slots 1 and 2 will be ineffective if the IQ bus itself has a failure. If it is desired

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No.	'904 Patent Claim 9	Czerwiec
	the daisy chain in which the fault has occurred through another one of the daisy chains.	to avoid this sort of failure, a different kind of redundancy in the DS-3 cards can be provided, as shown in FIG. 4E. In that case, half of the transmit and receive signals are used in the shelf, and the other half can be routed to a different shelf, instead of slot 2 in the same shelf. The top two cables shown in FIG. 4E would thus be routed to another shelf and be connected into, e.g., the DS-3 out and DS-3 in transformers shown in FIG. 4B in another shelf. The DS-3 out and DS-3 in cables of FIG. 4E would go to the CO switch or other network element." Czerwiec, 23:42-52 (emphasis added). Czerwiec discloses several embodiments that include such a pre-switch. **Example One**: Specifically, in a first example, Czerwiec discloses adjacent, redundant NT cards that are a first master and a second master unit, stating "FIG. 1A shows a front view of an actual shelf with redundant NT cards…." Czerwiec, 9:66-67.

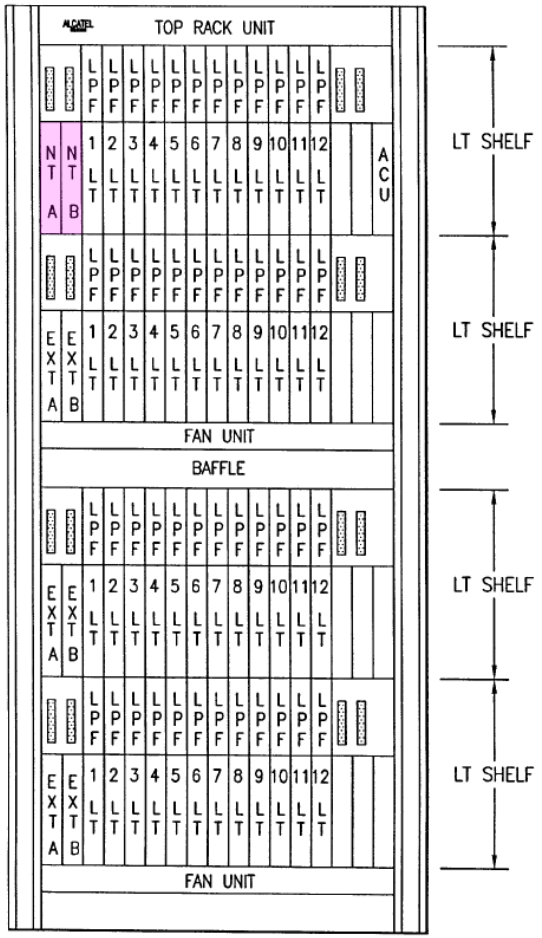
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No.	'904 Patent Claim 9	Czerwiec
		 Czerwiec, FIG. 1A (annotated). Further, Czerwiec discloses that these redundant NT cards are connected by physical interfaces (e.g., connectors installed on the backplane that mate connectors on the cards with connectors in the NT card slots). Czerwiec's redundant NT cards provide a physical interface that via these connectors that enables communication through a packet switched network (e.g., the ADSL packet switched network), providing connectivity for 192 ADSL lines per shelf. For instance, Czerwiec describes the physical interface, stating "FIG. 1B shows a plurality of shelves mounted in a central office rack, such as shown in FIG. 1E, in a standard configuration for serving 192 ADSL lines. Up to four adjacent racks can share the same feeder by using extension units installed in place of NTs, as explained below in connection with FIG. 6. In that case, a single, optionally-protected NT card can support up to 576 ADSL

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No.	'904 Patent Claim 9	Czerwiec
		lines. FIG. 1C shows the shelf of FIG. 1A without any cards installed and shows the connectors installed in the backplane, into which mating connectors on the cards are insertable by sliding the cards into the slots shown. In this way, front-access-only is achieved. A side view of the shelf is shown in FIG. 1D." Czerwiec, 10:1-13.

FIG. 1B

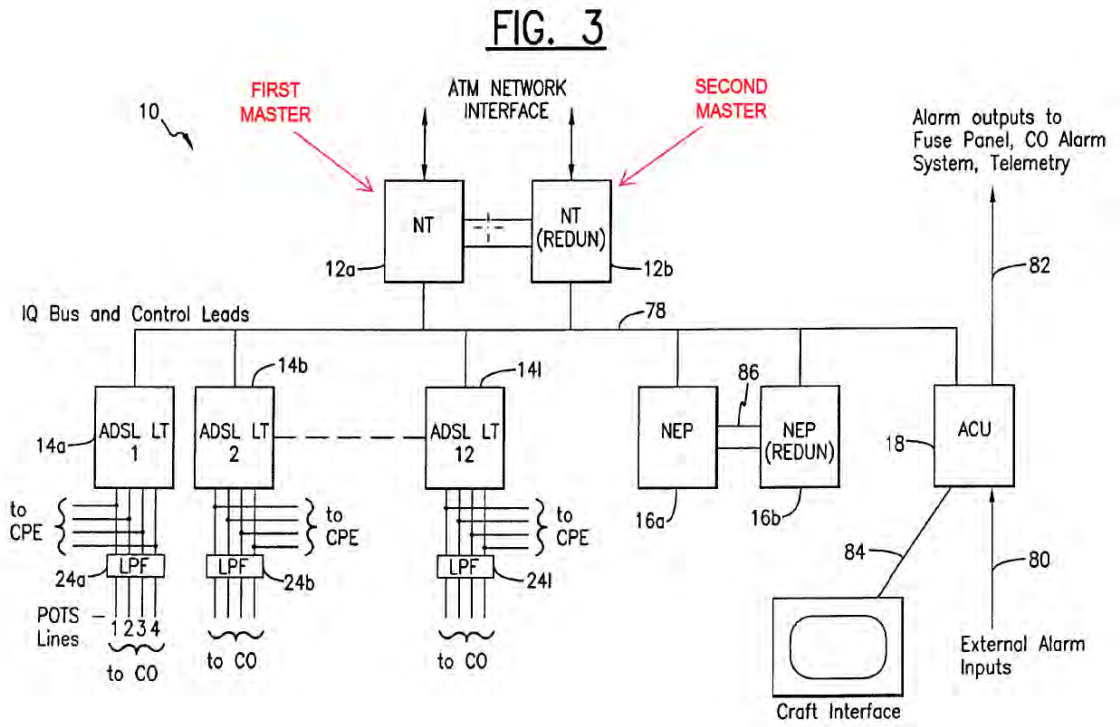


Czerwiec, FIG. 1B (annotated).

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No.	'904 Patent Claim 9	Czerwiec
		Example Two: In a second example, Czerwiec discloses that the first and second master may be a redundant or non-redundant NT configuration. For instance, Czerwiec discloses: "As shown in both FIGS. 1 and 3, the NTs 12 a, 12 b can be provided in either a redundant or non-redundant configuration. In this architecture, the normal NE processing is performed by the NT, and the NT can be provided as either a SONET User Network Interface (UNI) interface, a DS-3 UNI interface or later, a DS1 inverse multiplex UNI interface. If SONET NTs are provided as redundant pairs, Automatic Protection Switching (APS) is provided using the normal 1+1 switchover mechanism detailed in Bellcore document GR-253. On SONET NTs, the physical interface (fiber) is located on the faceplate of the NT itself (see FIGS. 14C and 14D), with no need of additional interface circuitry. If, however, NTs are provided as DS-3 ports, equipment protection (without cable protection) is provided using the DS-3 I/O board 32 shown in FIG. 1 installed above the NTs in the shelf, allowing the single DS-3 facility (coax cable Tx/Rx pair) to be split and accessed by either NT (inter-NT communication arbitrates which one is active)." Czerwiec, 12:66-13:16. Czerwiec further illustrates the first and second master in FIG. 3, shown below.

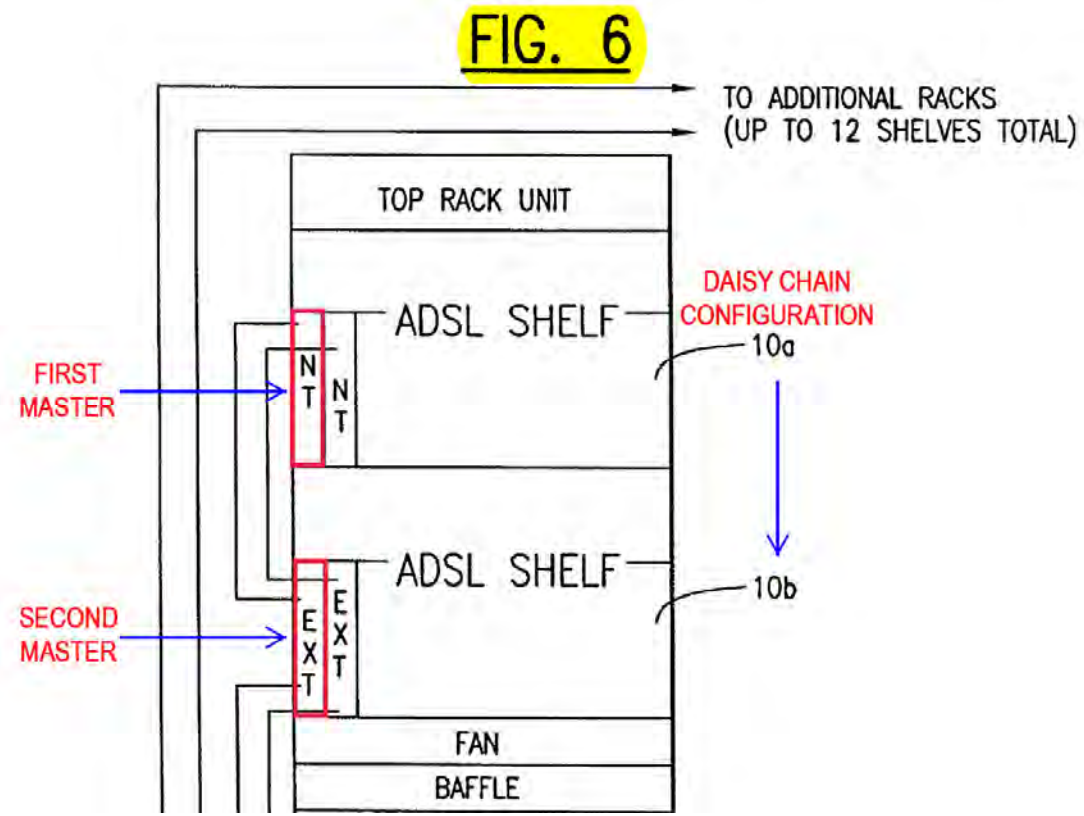
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No.	'904 Patent Claim 9	Czerwiec
		 Czerwiec, FIG. 3 (annotated). Czerwiec explains that the basic shelf architecture is depicted in Figure 3. Czerwiec, 11:57-59. Czerwiec further explains that the packet based network connectivity provided by the first and second redundant NT card masters may include quality of service classes that can be linked to access levels for subscribers, which are generally allocated by different bit rates. These bit rates may be implemented using a Guaranteed Cell Rate ("GCR") or Non-Guaranteed Cell Rate ("NGCR"). *See generally* Czerwiec, 11:59-12:33; *see also id.*, FIG. 3A.

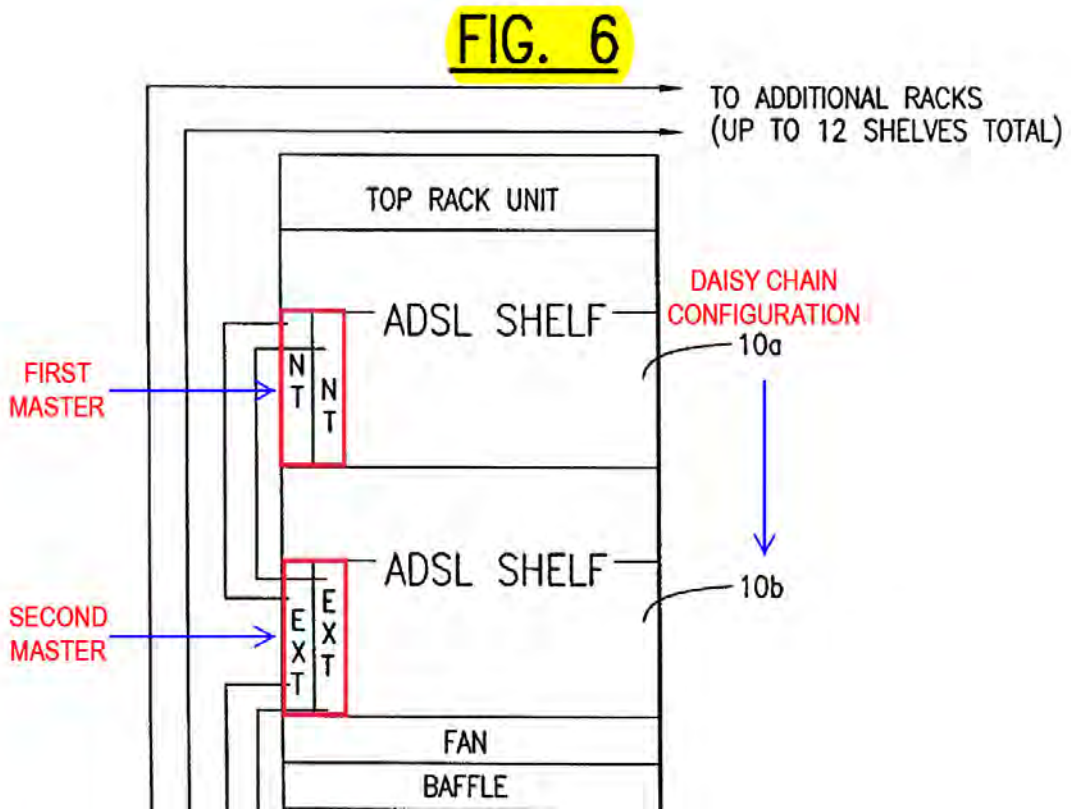
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No.	'904 Patent Claim 9	Czerwiec
		"An ACU [alarm collection unit] is provided per NT (or redundant NT pair) when multiple systems reside in a given rack. Multiple systems reside in a given rack when a very wide bandwidth is to be served by, e.g., a single shelf. In such a case, a single shelf may use up the entire bandwidth of an OC-3 or DS-3 cable." Czerwiec, 13:52-53. **Example Three**: In a third example, Czerwiec discloses that the first and second master may be (1) redundant NT cards or a non-redundant NT card in communication with (2) redundant EXT cards or a non-redundant EXT card configuration. For example, Czerwiec describes that the ADSL shelves can be daisy chained together. *See, e.g.*, Czerwiec, 16:15-35. In the simplest example, a first master (NT card) connects to a second master (EXT card), which is shown below.

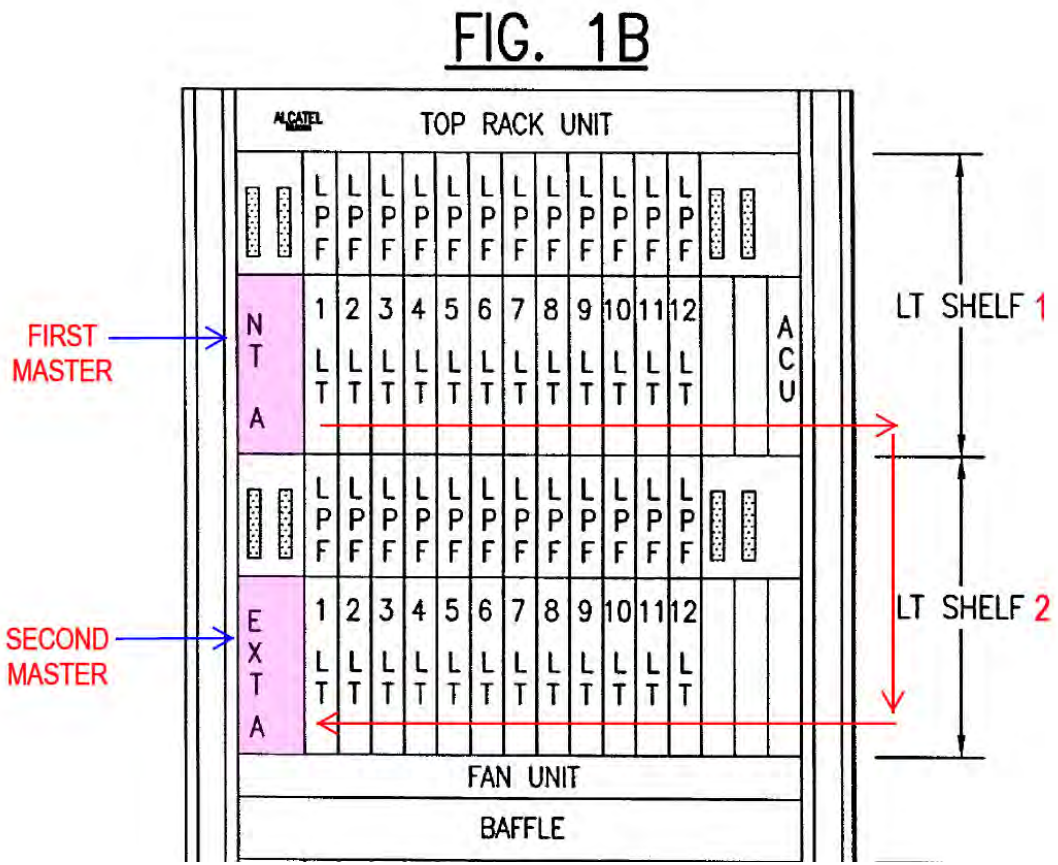
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No.	'904 Patent Claim 9	Czerwiec
		 Czerwiec, FIG. 6 (annotated). Alternatively, a POSITA would have recognized that Czerwiec's first and second master may include the redundant pair of NT and EXT cards. *See, e.g.*, Czerwiec, 16:15-35.

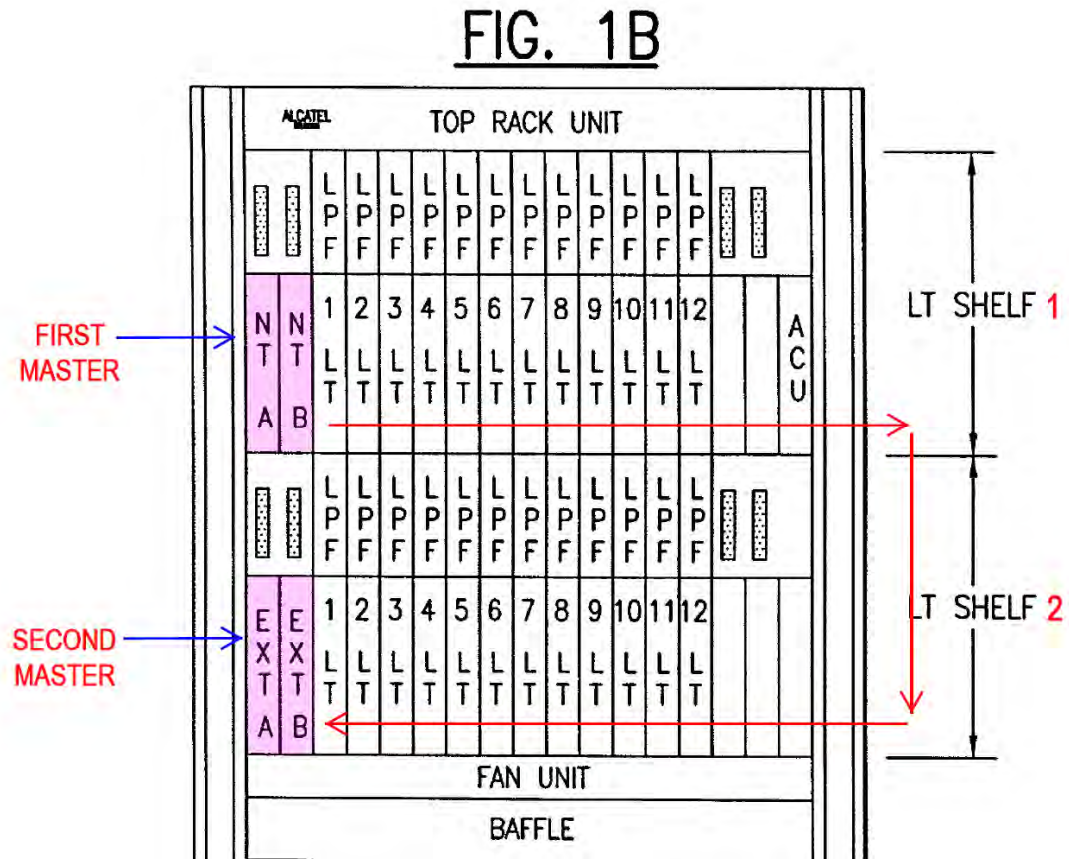
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No.	'904 Patent Claim 9	Czerwiec
		 Czerwiec, FIG. 6 (annotated). Additionally, the POSITA would have understood that the first and second masters could serially connected in a daisy chain with slave units in between. For instance, Czerwiec's exemplary two shelves above may be implemented in a chain as shown below in annotated Figure 1B, where the masters are highlighted in purple and the red lines indicate a downstream direction of traffic between the first master (LT Shelf 1, NT A or A/B), the first slave (LT Shelf 1, LT 1), the second slave (LT Shelf 1, LT 2), the last slave (LT Shelf 2, LT 1), and the second master (LT Shelf 1, EXT A or A/B).

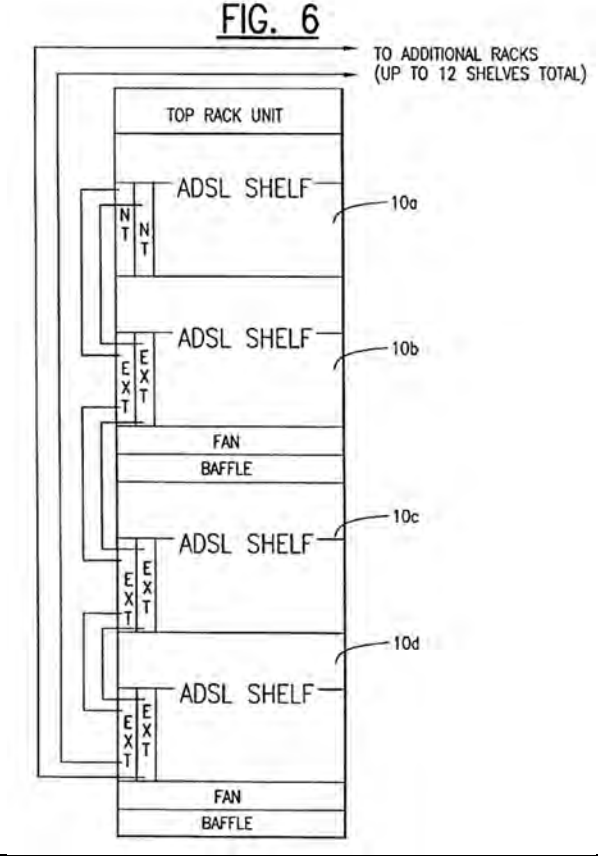
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No.	'904 Patent Claim 9	Czerwiec
		 Czerwiec, FIG. 1B (annotated).

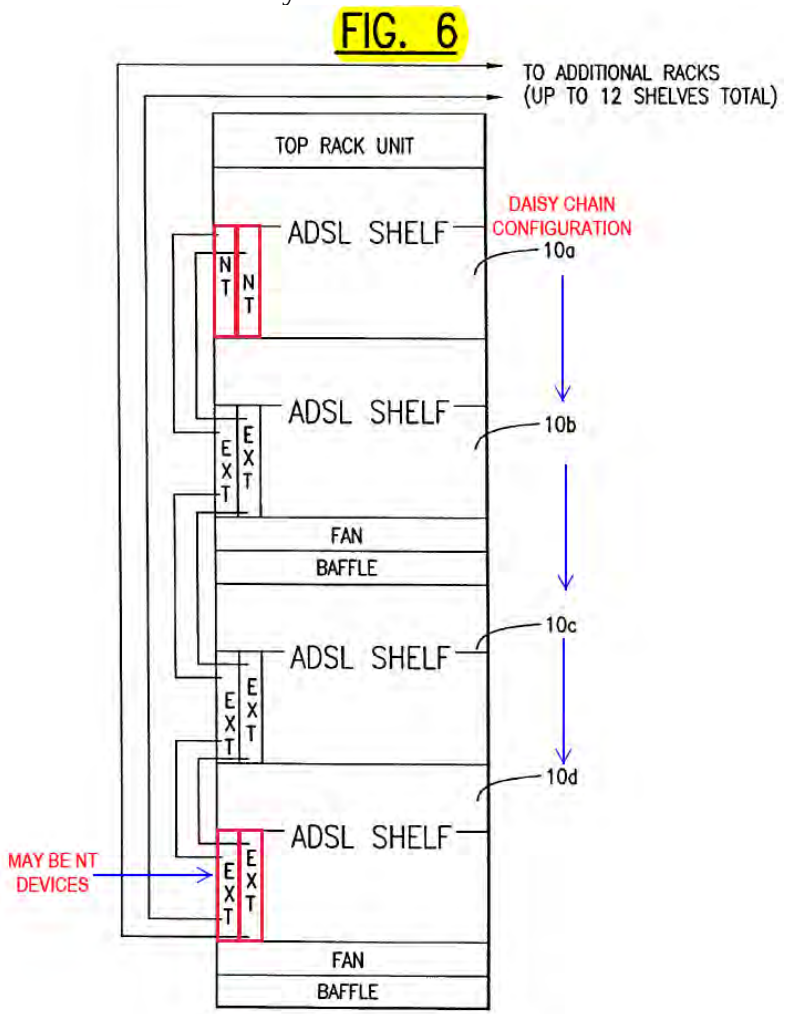
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No.	'904 Patent Claim 9	Czerwiec
		 Czerwiec, FIG. 1B (annotated). **Example Four**: Czerwiec discloses "FIG. 6 shows in detail the above-mentioned feature of the present architecture whereby a plurality of ADSL shelves 10 a, 10 b, 10 c, 10 d such as shown in FIG. 1 can be daisy-chained together in a rack by means of an extender card (EXT) in each subsequent shelf. The extender card function is to effectively extend the IQ bus from shelf to shelf (daisy-chained, e.g., to a maximum of twelve shelves altogether), allowing up to, e.g., 576 ADSL subscribers accessed to the system. In other words, the extender card allows an

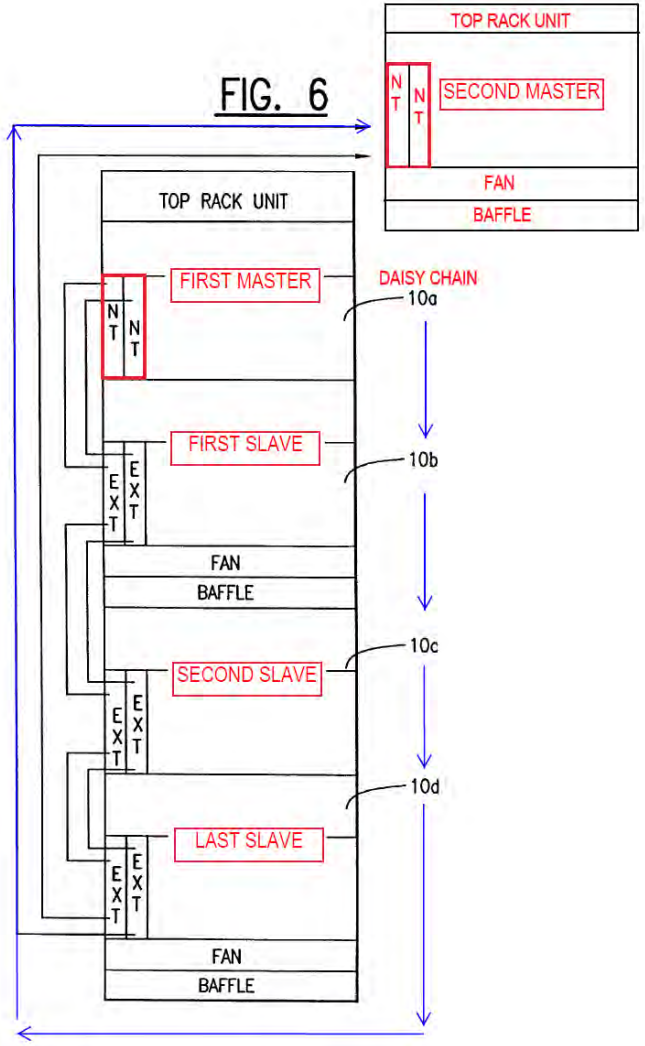
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No.	'904 Patent Claim 9	Czerwiec
		NT card in a first shelf to act as an NT card for another shelf or a plurality of other shelves. I.e., in this case, three racks with altogether twelve daisy-chained shelves. The extender cards can be mounted as shown in FIG. 6 in the NT slots of subsequent shelves and may be redundant. In that case, any failure of an NT or extender card bank switches all LTs from the "A" NT/extender string to the "B" string. The active string then assumes control of each shelf's IQ bus. The IQ bus itself (within each shelf) is not redundant, but meets reliability requirements, as the NT has the ability to remove each LT from the IQ bus (disable) to isolate a fault and remove it from service." Czerwiec, 16:15-35. Figure 6, having redundant NT cards in ADSL shelf 10a is shown below. FIG. 6 

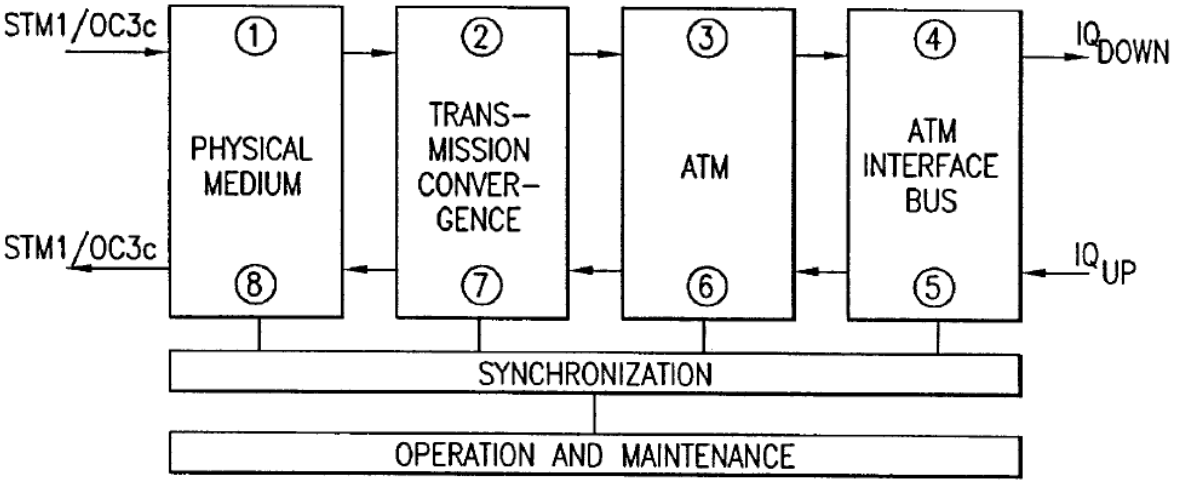
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No.	'904 Patent Claim 9	Czerwiec
		Czerwiec, FIG. 6. In another example, annotated Figure 6 shows ADSL shelves that are daisy chained, where the EXT cards in ADSL shelf 10d may act as a redundant master.  Czerwiec, FIG. 6 (annotated).

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No.	'904 Patent Claim 9	Czerwiec
		Example Five: In yet another example, annotated Figure 6 shows ADSL shelves that are daisy chained, where the daisy chain is connected to redundant NT cards in an ADSL shelf of another rack.  Czerwiec, FIG. 6 (annotated).

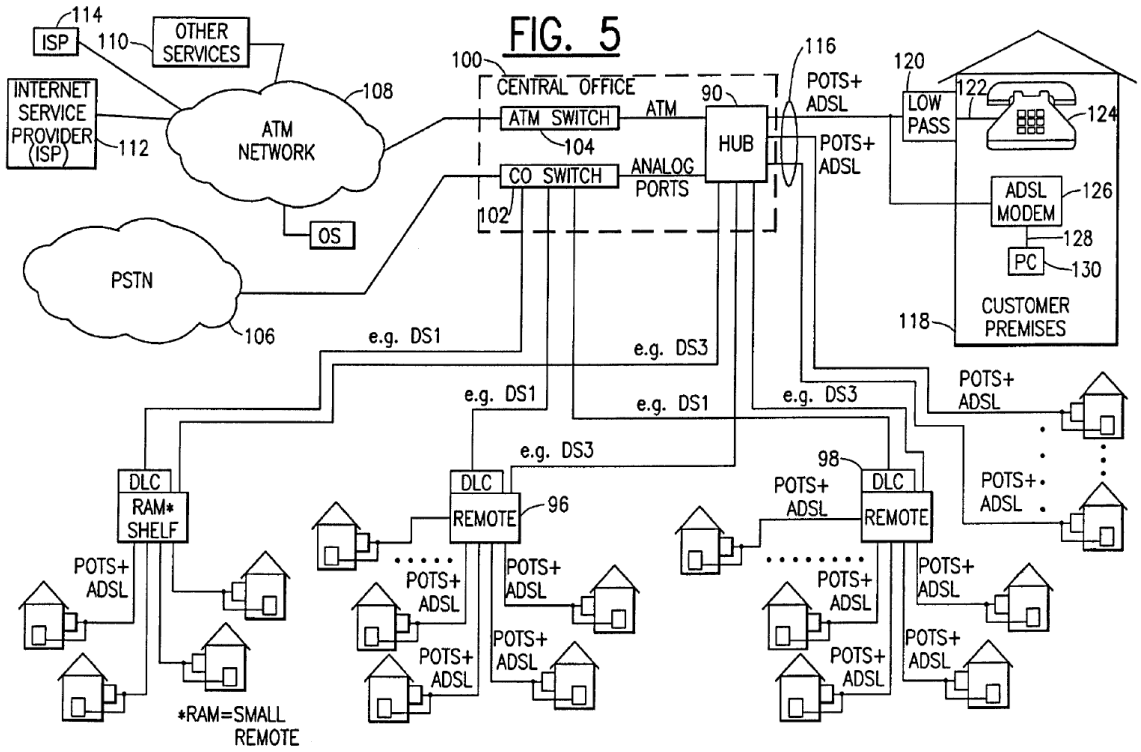
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No.	'904 Patent Claim 9	Czerwiec
		Czerwiec discloses "FIG. 14A shows a simplified block diagram of an embodiment of an NT card, according to the present invention. It provides a high-speed optical or electrical access to a Synchronous Optical Network (SONET) transport system. It converts Asynchronous Transfer Mode (ATM) cells to SONET packets (i.e., frames) and vice versa. Thus, the NT card adapts ATM cells carried on the IQ bus to the SONET transmission system and vice versa. It also includes necessary functions as listed in the table of FIG. 14B for operating and maintaining the ATM subscriber access multiplexer of the present invention." Czerwiec, 21:13-24. FIG. 14A  Czerwiec, FIG. 14A. Czerwiec discloses "In regard to the physical medium block, this can be an optical interface for interfacing an optical transport system with a receive and transmit optical fiber carrying signals, e.g., with a nominal bit rate of 155.52 Mbps. The interface is symmetric, i.e., it has

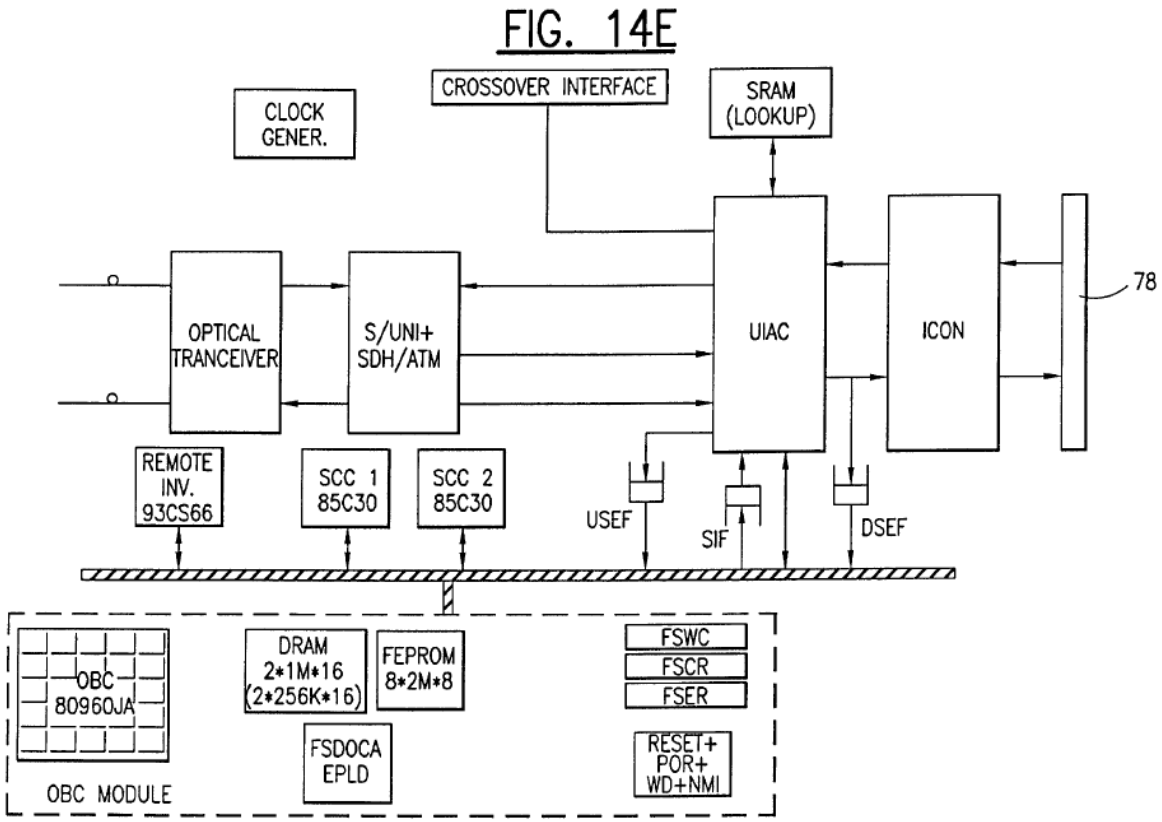
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No.	'904 Patent Claim 9	Czerwiec
		the same bit rate in both directions and could operate, e.g., at a wavelength of 1.3 μm. This signal can be a SONET (Synchronous Optical Network) signal at the OC-3 level for conversion to STM-1/STS-3c in the electrical domain. This is a serial signal which the physical medium interface block converts to parallel form at a slower rate for processing on the NT card, with the parallel downstream output locked on to the received clock." Czerwiec, 21:36-47. For example, Czerwiec discloses "The NT card is managed by an ADSL workstation (AWS) which may be located in an operating system (OS) as shown in FIG. 5. Such an OS may communicate through an ATM network and an ATM switch in a central office with the NT card in the shelf. See copending and co-owned U.S. patent application Ser. No. 08/189,259, filed Jul. 10, 1997 entitled "ASAM Network Management System with Open Loop Flow Control", filed on even date herewith for further details, and which is hereby incorporated by reference. FIG. 14C shows a front view and FIG. 14D a side view of an NT card, such as may be used in a slot of a shelf of FIG. 1." Czerwiec, 23:42-52. Figure 5 of Czerwiec is reproduced below.

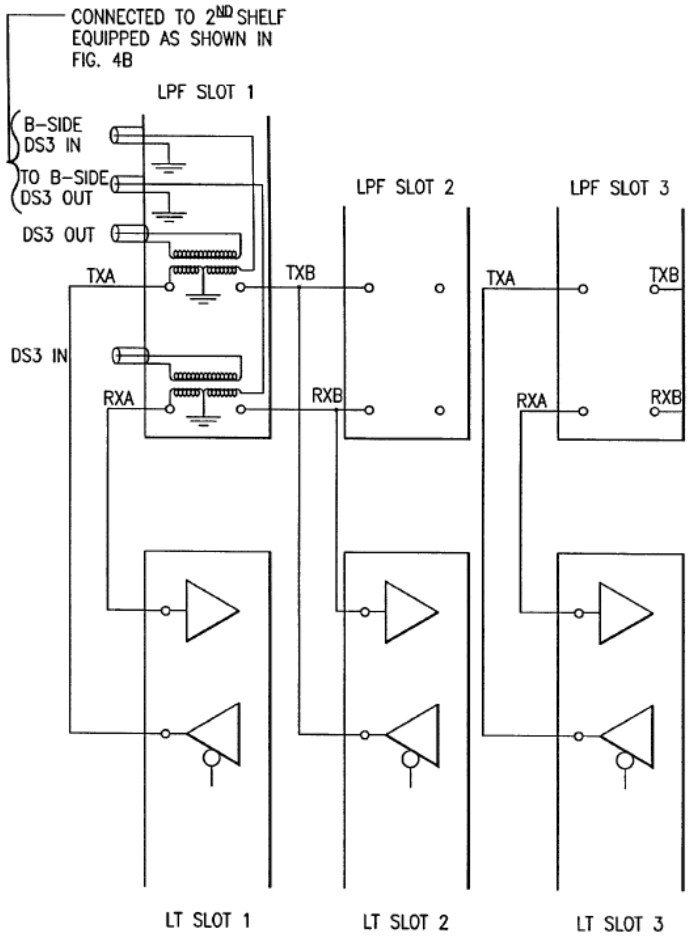
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No.	'904 Patent Claim 9	Czerwiec
		 Czerwiec, FIG. 5. Czerwiec discloses "FIG. 14E shows a more detailed functional block diagram of an NT card 12 a of FIG. 1." Czerwiec, 23:53-54.

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No.	'904 Patent Claim 9	Czerwiec
		 Czerwiec, FIG. 14E. To the extent that Czerwiec is found to not meet this limitation, a pre-switch, which in the event of a fault at a location in one of the daisy chains, re-routes at least a portion of the data packets exchanged with one or more of the slaves in the daisy chain in which the fault has occurred through another one of the daisy chains would have been obvious to a person having ordinary skill in the art, as explained below.

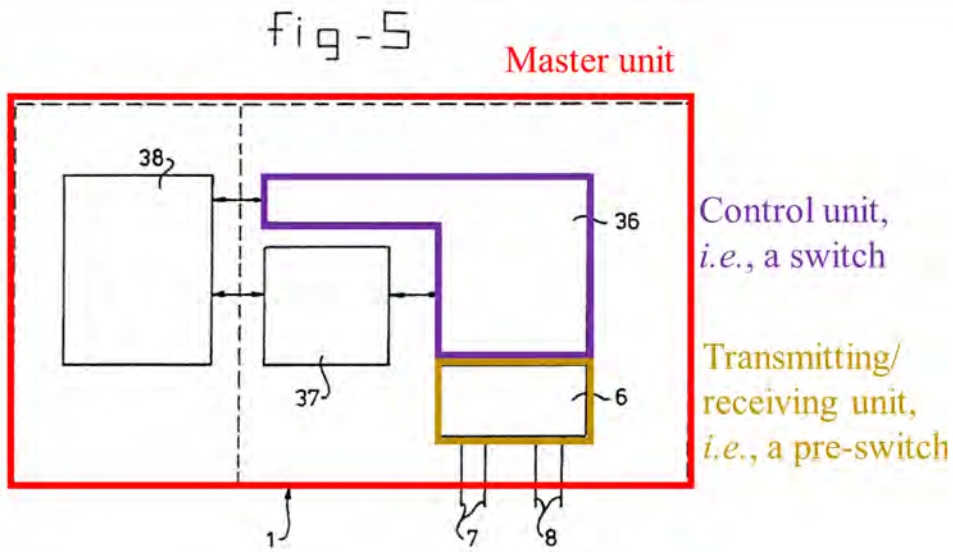
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No.	'904 Patent Claim 9	Czerwiec
		FIG. 4E  Czerwiec, FIG. 4E. Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Czerwiec in combination with (1) the knowledge of a person of ordinary skill in the art, alone

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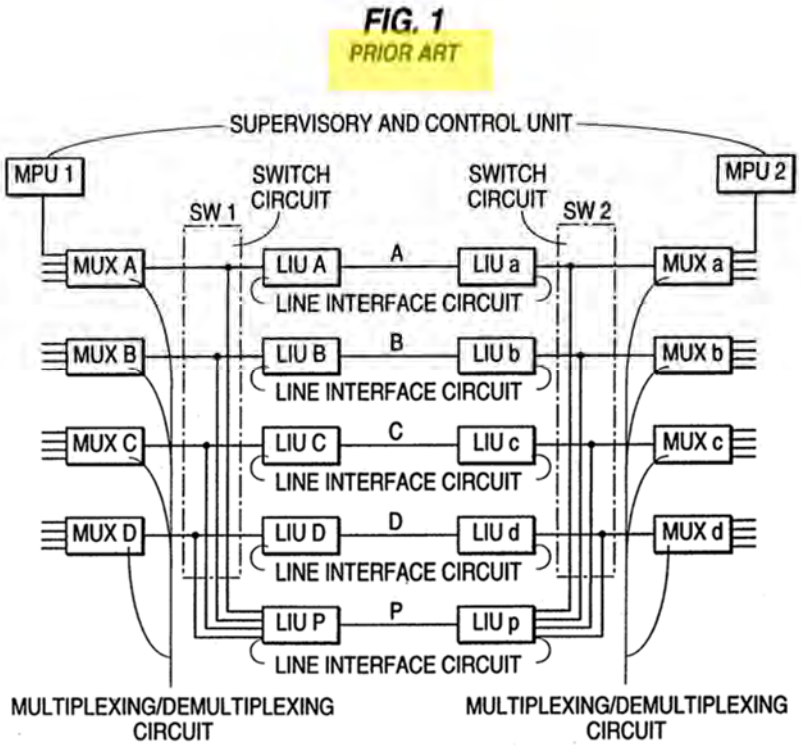
No.	'904 Patent Claim 9	Czerwiec
		or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 9[g] of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Vink '324 discloses a transmitting/receiving unit that provides for the switching of the transmission ring or of the communication direction of the data flow across the chain which in the event of a fault at a location in one of the chains, re-routes at least a portion of the data packets exchanged with one or more of the slaves in the chain in which the fault has occurred through another one of the chains. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Vink '324 21:10-16 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly."). Vink '324, 21:18-23 ("The transmitting/receiving unit 6 can be constructed in a similar way to that shown in Figure 3. A practical embodiment of the master is achieved with a microprocessor of type MC 68020, manufactured by Motorola, as control computer and with a programmable logical device of the type EPM 5128, manufactured by Altera, as control unit 36.").

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No.	'904 Patent Claim 9	Czerwiec
		 Vink '324, FIG. 5 (annotated). In the alternative, control module 38 serves as the switch and 36 & 6 serves as the pre-switch. For example, Sugawara '456 discloses multiple daisy chains between two masters where, in the case of a fault, packets are routed through a different chain. Sugawara '456, 1:26-45 ("FIG. 1 illustrates a conventional data link protecting system. A through D designate normal lines and P designates a backup line. LIUA through LIUD and LIUa through LIUd denote line interface circuits having functions of communicating with opposed devices, detecting the error rate of received signals, detecting abnormalities in main signals, such as signal interruption, and feeding intermediate repeaters. MUXA through MUXD and MUXa through MUXd designate multiplexing/demultiplexing circuits, and SW1 and SW2 denote switch circuits adapted to switch an abnormal line to the backup line. MPU1 and MPU2 denote supervisory and control units which control their associated devices, supervise the line interface circuits LIUs to switch the switch circuits SW as needed and

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No.	'904 Patent Claim 9	Czerwiec
		perform data link communication with opposed devices. Note that the FIG. 1 illustrates only the arrangement for data transmission in one direction. The arrangement for data transmission in the opposite direction is the same as above.").

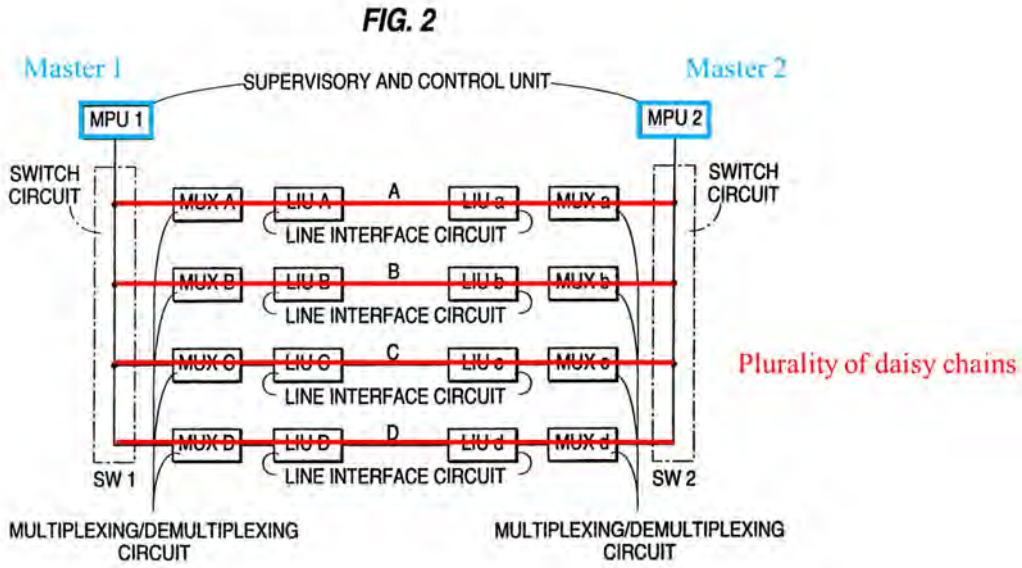


Sugawara '456, FIG. 1 (annotated).

Sugawara '456, 3:24-39 ("When a failure of the line A is detected, the data link communication is switched from the line A to another, for example, the line B. This switching is made as follows. That is, a line failure is usually detected as a failure in reception. When detecting the line failure in terms of error rate by way of example, the line interface circuit LIUa on the receiving side informs the supervisory and control unit MPU2 via MUXa of the

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No.	'904 Patent Claim 9	Czerwiec
		detection of the line failure. Upon being informed of the line failure, MPU2 informs MPU1 of the failure of the line A via another line, for example, another line of B directed from MPU2 to MPU1 not shown. Responsive to this, the supervisory and control unit MPU1 switches switch circuit SW1 to connect MPU1 to another line, for example, the line B. Thereby, the data link communication becomes effected over the line B.").



Sugawara '456, FIG. 2 (annotated).

No.	'904 Patent Claim 10	Czerwiec
10	Apparatus according to claim 9, wherein the pre-switch re-routes the data packets such that substantially no reconfiguration of the	Czerwiec discloses apparatus according to claim 9, wherein the pre-switch re-routes the data packets such that substantially no reconfiguration of the switch is required responsive to the fault. For example, Czerwiec discloses "As suggested above, since there is only one nonredundant IQ bus per shelf, the equipment protection implied by FIG. 4C with A and B redundant DS-

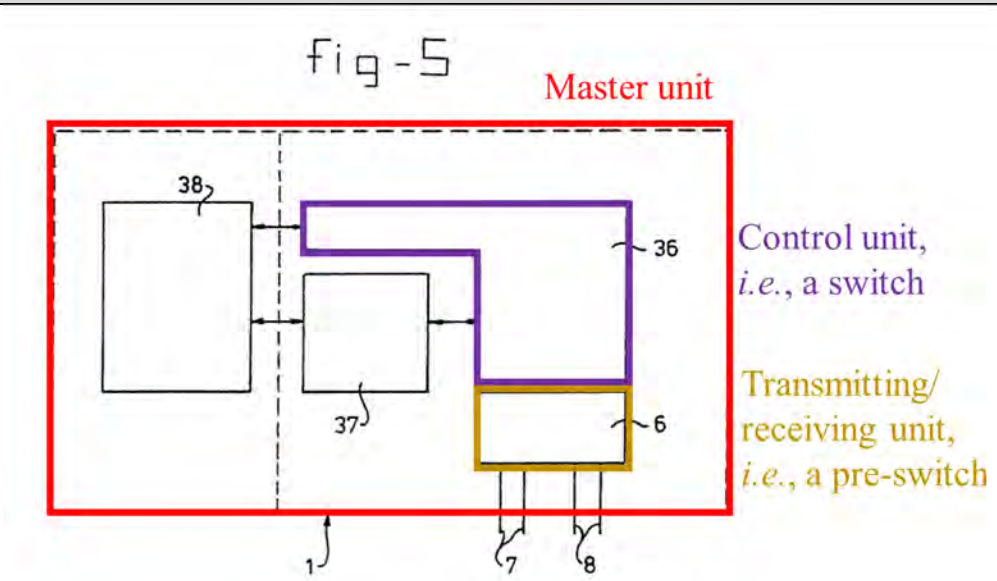
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No.	'904 Patent Claim 10	Czerwiec
	switch is required responsive to the fault.	3-LT cards in slots 1 and 2 will be ineffective if the IQ bus itself has a failure. If it is desired to avoid this sort of failure, a different kind of redundancy in the DS-3 cards can be provided, as shown in FIG. 4E. In that case, half of the transmit and receive signals are used in the shelf, and the other half can be routed to a different shelf, instead of slot 2 in the same shelf. The top two cables shown in FIG. 4E would thus be routed to another shelf and be connected into, e.g., the DS-3 out and DS-3 in transformers shown in FIG. 4B in another shelf. The DS-3 out and DS-3 in cables of FIG. 4E would go to the CO switch or other network element." Czerwiec, 23:42-52 (emphasis added). To the extent that Czerwiec is found to not meet this limitation, apparatus according to claim 9, wherein the pre-switch re-routes the data packets such that substantially no reconfiguration of the switch is required responsive to the fault would have been obvious to a person having ordinary skill in the art, as explained below. In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, Czerwiec in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 10 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. For example, Vink '324 discloses a transmitting/receiving unit that changes the direction of the data flow (*i.e.*, re-routes packets) in the case of a fault by switching which transmission ring the packets are being transmitted over. Disclosed is a transmitting/receiving and control unit which can switch the direction of the data flow. Vink '324, 21:10-16 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the

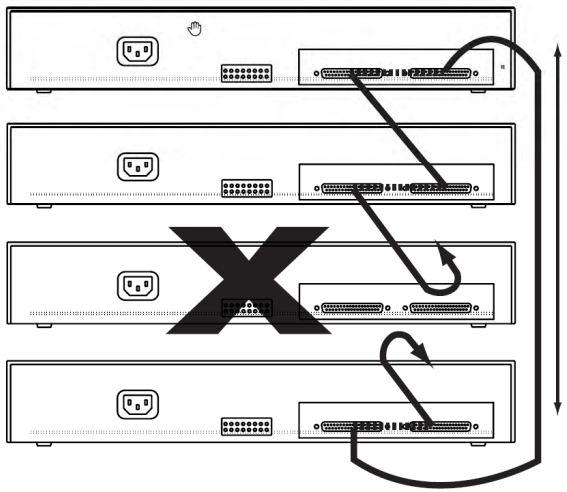
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No.	'904 Patent Claim 10	Czerwiec
		data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly."). Vink '324, 20:30-21:2 ("The software for controlling the communication system according to the invention is essentially concentrated in the master 1 which comprises, in an exemplary embodiment of the invention as shown in Figure 5, a control unit 36 for controlling the data flow via the transmission system 7, 8, with an associated memory 37 for storing and exchanging information with a control computer 38 which contains the calculations and background information necessary for the process to be controlled via the I/0 modules. Further peripheral equipment, for example a further computer (not shown) for supporting the control computer 38, may be connected to said control computer 38."). Vink '324, 17:3-12 ("Figure 3 shows a block diagram of an exemplary embodiment of a portion of a slave 2, 3, 4, 5. Data bits are transported via connections provided with an arrow. The transmitting/receiving unit 6 comprises a multiplexer 12 consisting of two modems 13, 14 which are respectively connected to the first transmission ring 7 and to the second transmission ring 8. For the transmission of the data via the transmission system, signal coding techniques known per se in practice may be used. The operation of the relevant transmission ring 7, 8 can be monitored by means of line error detectors 15.").

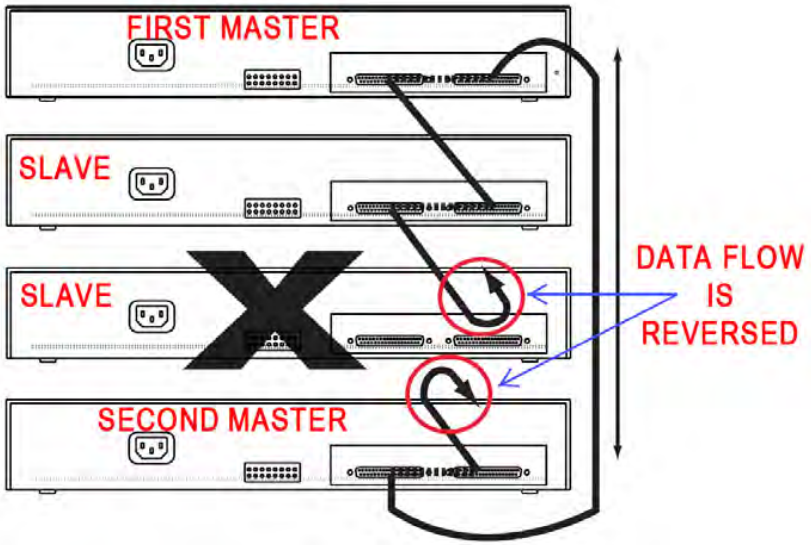
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No.	'904 Patent Claim 10	Czerwiec
		 Vink '324, FIG. 5 (annotated). Vink '324, 16:19-17:2 ("The shift register principle is also of advantage with respect to use, for example for reliability reasons, of a plurality of masters as is illustrated in Figure 2 by the broken lines. In such a multi-master concept, one of the masters is in general active in relation to data exchange, while one or more other masters only have a passive role therein. All the masters are so designed that they can assume the function of the active master, for example in the event of faults. The passive masters are easily able to detect errors of the active master because, as a consequence of their cascade arrangement and the serial transfer of data bits in the communication system according to the invention, they receive all the information which is intended for the active master. Consequently, no separate communication path is required between the various masters to keep the passive masters abreast of the operations, instruction etc. carried out by the active master. Such a "hot stand-by" mode is of importance, in particular, in industrial process measurement and control in which failure or delay in the production process may, inter alia, have serious financial consequences. It is obvious that, in

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No.	'904 Patent Claim 10	Czerwiec
		such a multi-master concept, the conditions under which, and the manner in which, the tasks of a master are assumed by another master have to be specified in advance."). For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.*  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

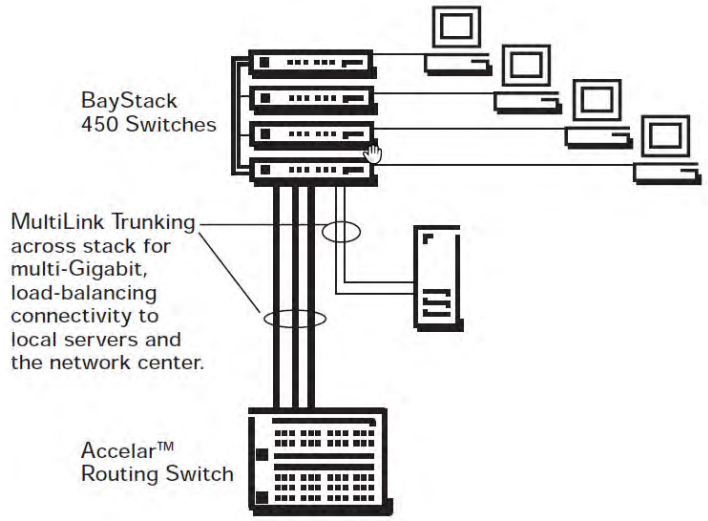
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No.	'904 Patent Claim 10	Czerwiec
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. In this example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features where "[e]ach unit in the stack has a full copy of the stack configuration so in the unlikely event of any unit failure, operation of the stack continues without affecting application connectivity." BayStack 450 Data Sheet at 3 of 8.

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No.	'904 Patent Claim 10	Czerwiec
		In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches further disclose its fail-safe design features includes that "[e]ach switch includes a Redundant Power Supply Unit connection. Should the switch's built-in power supply fail, the Bay Networks RPSU (sold separately) will automatically supply power to the switch for uninterrupted operation." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below.

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No.	'904 Patent Claim 10	Czerwiec
		Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.  BayStack 450 Data Sheet at 4 of 8, FIG. 2. And Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. In one example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the bottom of the stack in an aptly-named "Stack Up Configuration." BayStack 450 Manual at 54 of 290.

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No.	'904 Patent Claim 10	Czerwiec

Stack Up Configurations

In Figure 1-12, data flows from the base unit (unit 1) to the next switch, which is assigned as unit 2, and continues until the last switch in the stack is assigned as unit 8. The physical order of the switches is *from bottom to top* (unit 1 to unit 8).

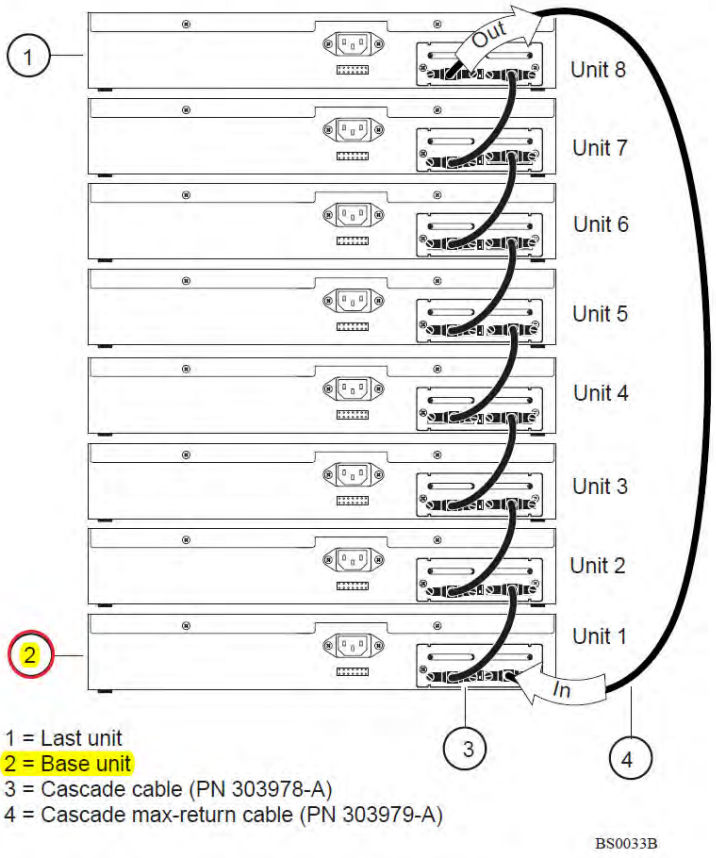


Figure 1-12. Stack Up Configuration Example

BayStack 450 Manual at 54 of 290, FIG. 1-12 (annotated).

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No.	'904 Patent Claim 10	Czerwiec
		In another example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the top of the stack in the also aptly-named "Stack Down Configuration." BayStack 450 Manual at 55 of 290.

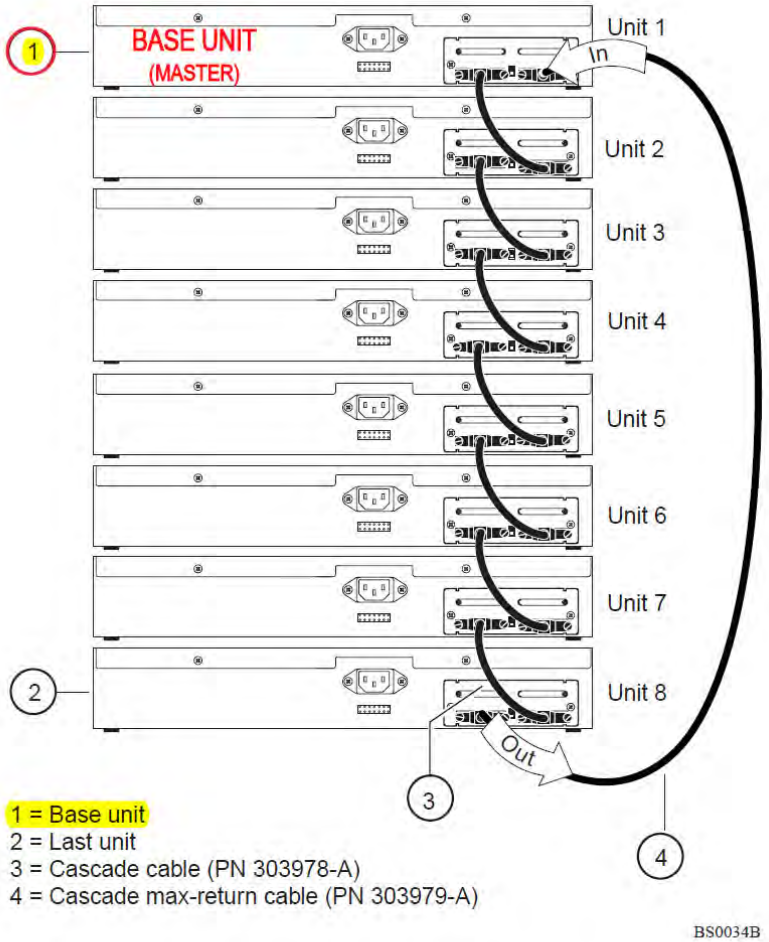


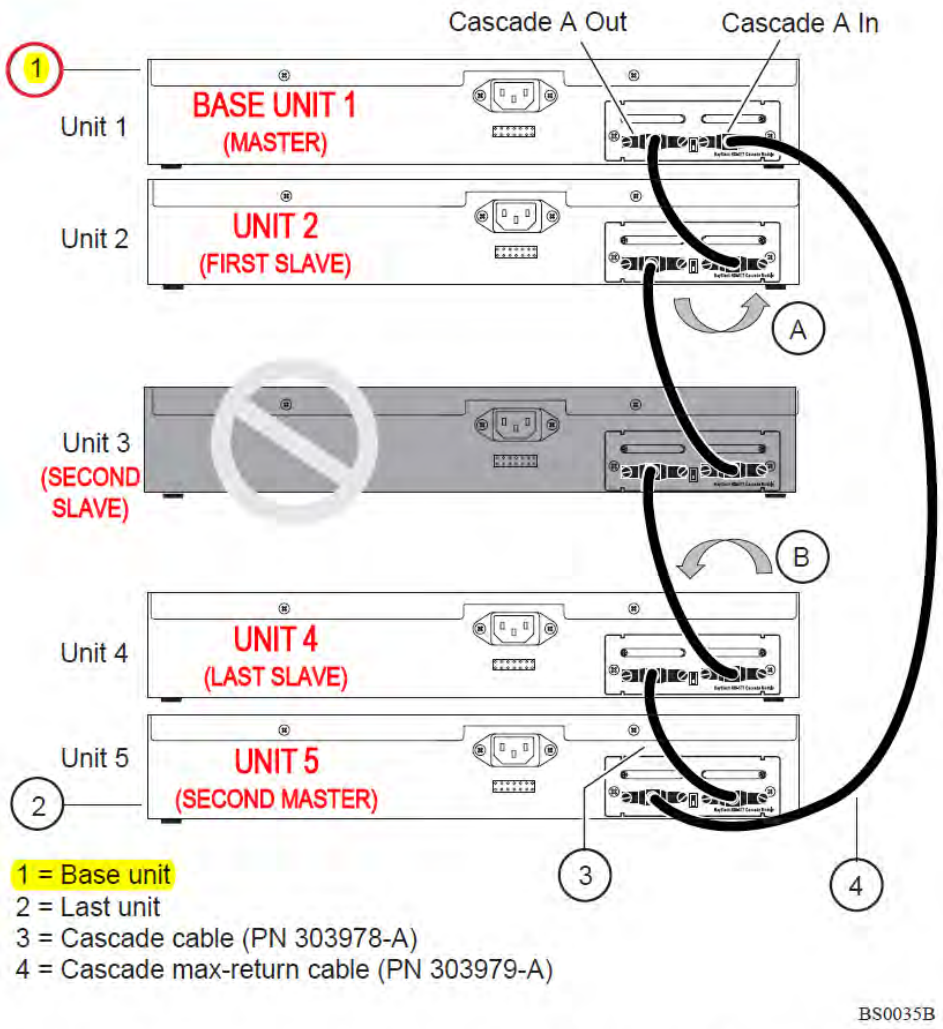
Figure 1-13. Stack Down Configuration Example

BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

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No.	'904 Patent Claim 10	Czerwiec
		In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290. Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

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No.	'904 Patent Claim 10	Czerwiec
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

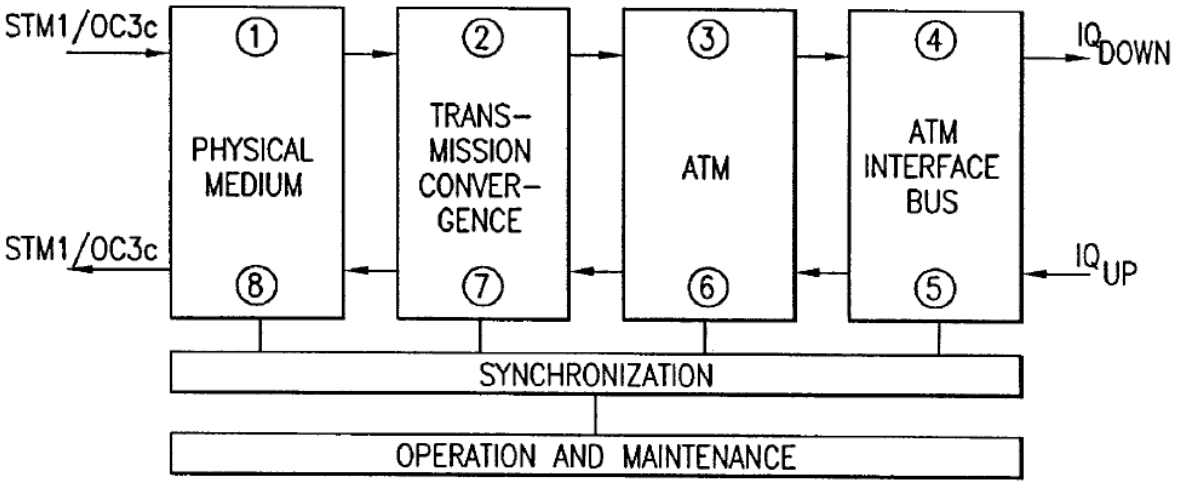
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No.	'904 Patent Claim 11	Czerwiec
11[pre]	Network access apparatus, comprising:	To the extent the preamble is found to be limiting, Czerwiec discloses a network access apparatus. *See supra* at 1[pre].
11[a]	first and second master units, each comprising a physical interface to a packet-switched network;	Czerwiec discloses first and second master units, each comprising a physical interface to a packet-switched network. *See supra* at 1[a].
11[b]	a plurality of slave units,	Czerwiec discloses a plurality of slave units. *See supra* at 1[b].
11[c]	each slave unit comprising one or more ports to respective subscriber lines; and	Czerwiec discloses each slave unit comprising one or more ports to respective subscriber lines. *See supra* at 1[c].
11[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	Czerwiec discloses a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. *See supra* at 1[d].
11[e]	each daisy chain comprising at least a first slave unit connected by one of	Czerwiec discloses each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit.

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No.	'904 Patent Claim 11	Czerwiec
	the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit,	*See supra* at 1[e].
11[f]	wherein each of the slave units comprises: a switch fabric comprising one or more switches, which convey data packets to respective ports on the switch to which the packets are addressed; and	Czerwiec discloses each of the slave units comprises: a switch fabric comprising one or more switches, which convey data packets to respective ports on the switch to which the packets are addressed. For example, each of the slave units is a switch with several ports to which data is routed through switch circuitry. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. For example, Czerwiec discloses "FIG. 14A shows a simplified block diagram of an embodiment of an NT card, according to the present invention. It provides a high-speed optical or electrical access to a Synchronous Optical Network (SONET) transport system. It converts Asynchronous Transfer Mode (ATM) cells to SONET packets (i.e., frames) and vice versa. Thus, the NT card adapts ATM cells carried on the IQ bus to the SONET transmission system and vice versa. It also includes necessary functions as listed in the table of FIG. 14B for operating and maintaining the ATM subscriber access multiplexer of the present invention." Czerwiec, 21:13-24.

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No.	'904 Patent Claim 11	Czerwiec
		FIG. 14A  Czerwiec, FIG. 14A.

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No.	'904 Patent Claim 11	Czerwiec

FIG. 14B

	DOWNSTREAM† FUNCTIONS	UPSTREAM† FUNCTIONS	
①	Optical interface	Reading ATM cells from the ATM interface (IQ BUS)	⑤
①	Locking on received clock	ATM cell extraction	⑥
①	Serial to parallel conversion	ATM cell insertion	⑥
②	STM1/STS3c frame alignment recovery	ATM layer processing plus cell rate decoupling	⑥
②	STM1/STS3c descrambling	ATM cell Header Error Control (HEC) calculation	⑥
②	F1, F2, or F3 OAM functions	ATM cell payload scrambling	⑥
②	ATM cell delineation (in virtual container type 4s)	Mapping of ATM cells in virtual container type 4s	⑦
③	ATM cell HEC checking	F1, F2, or F3 OAM functions	⑦
③	ATM cell payload descrambling	STM1/STS3c scrambling	⑦
③	ATM layer processing plus cell rate decoupling	STM1/STS3c frame generation	⑦
③	ATM cell extraction	Parallel to serial conversion	⑧
③	ATM cell insertion	Produce transmit clock out of recieved clock or local oscillator	⑧
④	Provision of access to the ATM IQ bus	Optical interface	⑧

Note †Upstream is in the direction of the transport system and downstream is in the direction of the ATM IQ interface.

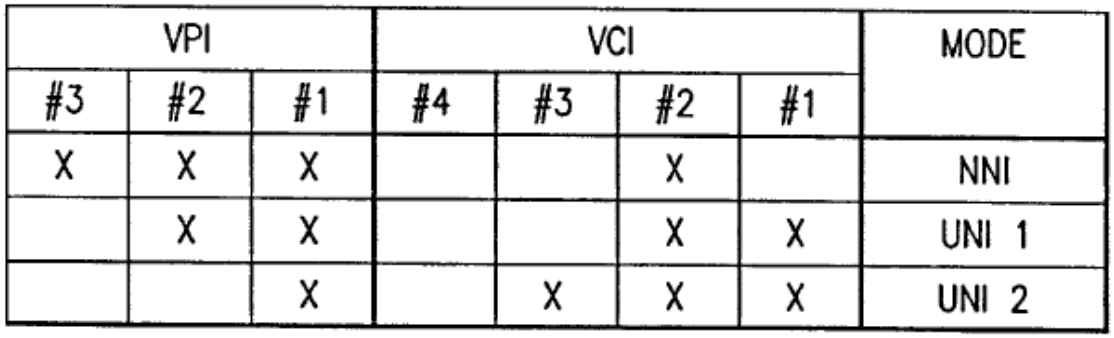
Czerwiec, FIG. 14B (annotated).

Czerwiec further discloses "For downstream ATM layer processing in the ATM block of FIG. 14A, each VC-4/SPE carries the equivalent of 44.151 cells (53 octets) which are octet-aligned and floating within the VC-4/SPE. The ATM cell delineation uses the correlation between the Header Error Control (HEC) in the cell header and the cell header itself. The cell delineation mechanism, as recommended by ITU-T Recommendation I.432, "B-ISDN User-Network Interface-Physical Layer Specification", is used. When the ATM cell boundary identification in octet H4 is used, the cell delineation will start searching at the octet indicated by H4. If not,

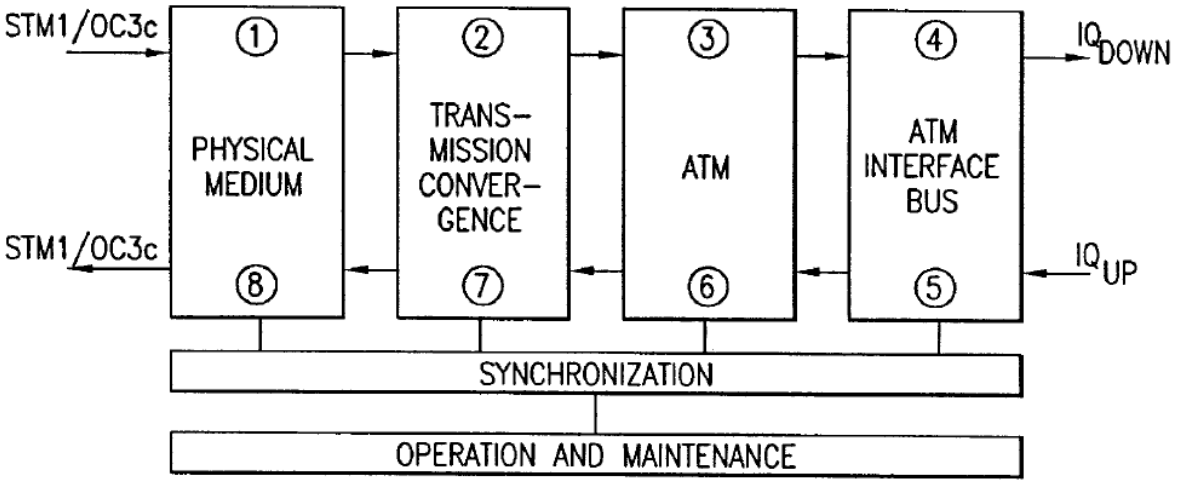
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No.	'904 Patent Claim 11	Czerwiec
		the search will start at the first octet of the payload period. The ATM cell information fields are descrambled according to the self-synchronizing scrambling/descrambling scheme recommended by ITU-T." Czerwiec, 22:4-19. "Valid non-idle cells, each with its confirmed HEC octet and descrambled information field, are sent to the IQ down interface, which is the last block shown in FIG. 14A. In that block, idle cell periods are added to adapt a received bit rate of up to 149.76 Mbit/s to 152.64 Mbit/s." Czerwiec, 22:20-24. "The routing of received ATM cells depends upon the VPI, VCI and PTI (payload type identifier) bits in the cell header. In total, 16 bits or four nibbles of VPI/VCI combinations can be checked, according to the modes shown in FIG. 14G. In each mentioned mode, different nibbles of VPI/VCI are selected. The selected VPI/VCI nibble combination corresponds with a specific data channel to be extracted. Cells can be extracted by looking only at the VPI/VCI combination or by looking at the VPI/VCI combination and at the PTI bits. In the second case, each PTI (23 in total) can be marked for extraction. This marking will then be used for all VPI/VCI combinations for which extraction is indicated, with the inclusion of the PTI check. All valid cells received in the virtual container or synchronous payload envelope, independent of their VPI/VCI combination, are transmitted downstream on the IQ down interface (cells marked for extraction are also sent to the ATM interface bus)." Czerwiec, 22:25-41.

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No.	'904 Patent Claim 11	Czerwiec
		FIG. 14G  Czerwiec, FIG. 14G. "ATM cell insertion and extraction is provided at the NT both in the direction of the network and in the direction of the IQ bus, in order to provide for the transmission and reception of Operation And Maintenance and signaling cells. Cell insertion and extraction is under control of an On-Board Controller (OBC)." Czerwiec, 22:42-47.
11[g]	a pre-switch, which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of	Czerwiec discloses a pre-switch, which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines. For example, Czerwiec discloses "FIG. 14A shows a simplified block diagram of an embodiment of an NT card, according to the present invention. It provides a high-speed optical or electrical access to a Synchronous Optical Network (SONET) transport system. It converts Asynchronous Transfer Mode (ATM) cells to SONET packets (i.e., frames) and vice versa. Thus, the NT card adapts ATM cells carried on the IQ bus to the SONET transmission system and vice versa. It also includes necessary functions as listed in the table of FIG. 14B

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No.	'904 Patent Claim 11	Czerwiec
	the ports on the slave unit for output through another of the physical interface lines.	for operating and maintaining the ATM subscriber access multiplexer of the present invention." Czerwiec, 21:13-24. FIG. 14A  Czerwiec, FIG. 14A.

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No.	'904 Patent Claim 11	Czerwiec

FIG. 14B

	DOWNSTREAM† FUNCTIONS	UPSTREAM† FUNCTIONS	
①	Optical interface	Reading ATM cells from the ATM interface (IQ BUS)	⑤
①	Locking on received clock	ATM cell extraction	⑥
①	Serial to parallel conversion	ATM cell insertion	⑥
②	STM1/STS3c frame alignment recovery	ATM layer processing plus cell rate decoupling	⑥
②	STM1/STS3c descrambling	ATM cell Header Error Control (HEC) calculation	⑥
②	F1, F2, or F3 OAM functions	ATM cell payload scrambling	⑥
②	ATM cell delineation (in virtual container type 4s)	Mapping of ATM cells in virtual container type 4s	⑦
③	ATM cell HEC checking	F1, F2, or F3 OAM functions	⑦
③	ATM cell payload descrambling	STM1/STS3c scrambling	⑦
③	ATM layer processing plus cell rate decoupling	STM1/STS3c frame generation	⑦
③	ATM cell extraction	Parallel to serial conversion	⑧
③	ATM cell insertion	Produce transmit clock out of recieved clock or local oscillator	⑧
④	Provision of access to the ATM IQ bus	Optical interface	⑧

Note †Upstream is in the direction of the transport system and downstream is in the direction of the ATM IQ interface.

Czerwiec, FIG. 14B (annotated).

Further, Czerwiec discloses "For downstream ATM layer processing in the ATM block of FIG. 14A, each VC-4/SPE carries the equivalent of 44.151 cells (53 octets) which are octet-aligned and floating within the VC-4/SPE. The ATM cell delineation uses the correlation between the Header Error Control (HEC) in the cell header and the cell header itself. The cell delineation mechanism, as recommended by ITU-T Recommendation I.432, "B-ISDN User-Network Interface-Physical Layer Specification", is used. When the ATM cell boundary identification in octet H4 is used, the cell delineation will start searching at the octet indicated

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No.	'904 Patent Claim 11	Czerwiec
		by H4. If not, the search will start at the first octet of the payload period. The ATM cell information fields are descrambled according to the self-synchronizing scrambling/descrambling scheme recommended by ITU-T." Czerwiec, 22:4-19. "Valid non-idle cells, each with its confirmed HEC octet and descrambled information field, are sent to the IQ down interface, which is the last block shown in FIG. 14A. In that block, idle cell periods are added to adapt a received bit rate of up to 149.76 Mbit/s to 152.64 Mbit/s." Czerwiec, 22:20-24. "The routing of received ATM cells depends upon the VPI, VCI and PTI (payload type identifier) bits in the cell header. In total, 16 bits or four nibbles of VPI/VCI combinations can be checked, according to the modes shown in FIG. 14G. In each mentioned mode, different nibbles of VPI/VCI are selected. The selected VPI/VCI nibble combination corresponds with a specific data channel to be extracted. Cells can be extracted by looking only at the VPI/VCI combination or by looking at the VPI/VCI combination and at the PTI bits. In the second case, each PTI (23 in total) can be marked for extraction. This marking will then be used for all VPI/VCI combinations for which extraction is indicated, with the inclusion of the PTI check. All valid cells received in the virtual container or synchronous payload envelope, independent of their VPI/VCI combination, are transmitted downstream on the IQ down interface (cells marked for extraction are also sent to the ATM interface bus)." Czerwiec, 22:25-41.

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No.	'904 Patent Claim 11	Czerwiec

FIG. 14G

VPI			VCI				MODE
#3	#2	#1	#4	#3	#2	#1	
X	X	X			X		NNI
	X	X			X	X	UNI 1
		X		X	X	X	UNI 2

Czerwiec, FIG. 14G.

"ATM cell insertion and extraction is provided at the NT both in the direction of the network and in the direction of the IQ bus, in order to provide for the transmission and reception of Operation And Maintenance and signaling cells. Cell insertion and extraction is under control of an On-Board Controller (OBC)." Czerwiec, 22:42-47.

Czerwiec further discloses that "As suggested above, since there is only one nonredundant IQ bus per shelf, the equipment protection implied by FIG. 4C with A and B redundant DS-3-LT cards in slots 1 and 2 will be ineffective if the IQ bus itself has a failure. If it is desired to avoid this sort of failure, a different kind of redundancy in the DS-3 cards can be provided, as shown in FIG. 4E. In that case, half of the transmit and receive signals are used in the shelf, and the other half can be routed to a different shelf, instead of slot 2 in the same shelf. The top two cables shown in FIG. 4E would thus be routed to another shelf and be connected into, e.g., the DS-3 out and DS-3 in transformers shown in FIG. 4B in another shelf. The DS-3 out and DS-3 in cables of FIG. 4E would go to the CO switch or other network element." Czerwiec, 23:42-52.

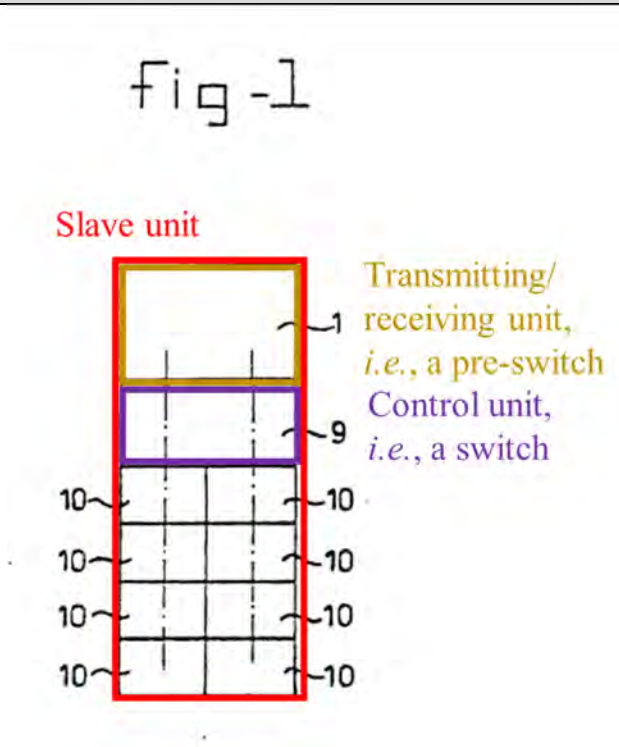
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No.	'904 Patent Claim 11	Czerwiec
		Czerwiec further discloses "The UIAC component is an LCA device which is programmed during "power-on-reset" from a serial PROM. It uses three synchronous 512×9 bit FIFOs for cell insertion and extraction and one 128K×8 bit SRAM for routing. The UIAC module has a SCI/PHY (Utopia-like) interface to the S/UNI+ component. ATM cell insertion in both the direction of the network (SDH/SONET) and in the direction of the LTs is handled by a 1 SIF (signaling insertion FIFO) buffer. An OBC bus is connected directly to the eight data inputs of the FIFO. The direction of cell insertion is specified by the OBC by writing into an additional UIAC register. The ninth bit of the FIFO is used for cell synchronization and insertion direction specification. A RAM lookup table is used for cell filtering on VPI/VCI combinations. The RAM has 128K entries of eight bits." Czerwiec, 24:16-30. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Czerwiec is found to not meet this limitation, a pre-switch, which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines would have been obvious to a person having ordinary skill in the art, as explained below. Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Czerwiec in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 11[g] of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Vink '324, discloses a transmitting/receiving unit that routes information across the system, including accepting information received across a transmission or receiving line by a substation and, if the address information of the packet corresponds to the address allocated to the relevant substation, initiating an exchange, and in the absence of address coincidence, not altering the packet information as it passes through the chain which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch

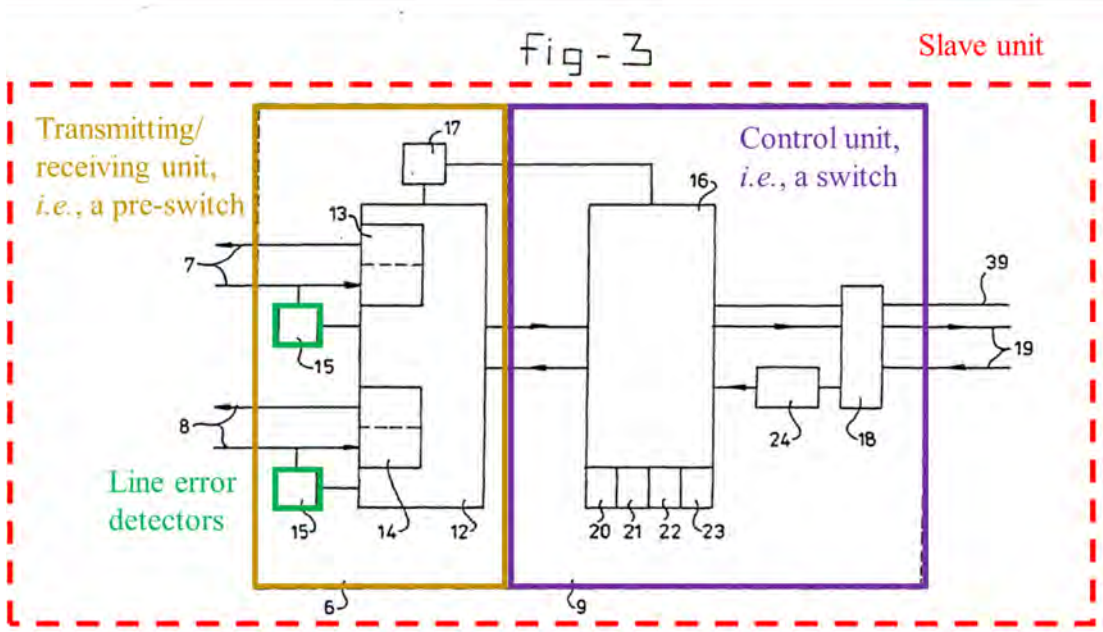
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No.	'904 Patent Claim 11	Czerwiec
		fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines. Vink '324, Claim 8 ("Communication system according to one or more of Claims 7 to 10 inclusive, wherein a slave (2, 3, 4, 5) is provided with means (15, 18, 23) for monitoring the serial transfer of data bits via the transmission system (7, 8) and/or the local data bus (19)."). Vink '324, 3:35-4:10 ("European Patent Application 0,253,381 discloses a communication system in which the data bits are transferred serially up to I/O level. In this process, address information is added to the data bits intended for a particular substation. Information received by a-substation and transmitted under the control of a master station is investigated for address coincidence. In the case of a positive result, that is to say, when the address information added to a group of data bits corresponds to the address allocated to the relevant substation, exchange is initiated. In this process, the data bits intended for a substation are replaced in the same format by data bits originating from the relevant substation and intended for the master station. In the absence of address coincidence, the information concerned is not altered.").

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No.	'904 Patent Claim 11	Czerwiec
		 Vink '324, FIG. 1 (annotated). Vink '324, 17:3-12 "Figure 3 shows a block diagram of an exemplary embodiment of a portion of a slave 2, 3, 4, 5. Data bits are transported via connections provided with an arrow. The transmitting/receiving unit 6 comprises a multiplexer 12 consisting of two moderns 13, 14 which are respectively connected to the first transmission ring 7 and to the second transmission ring 8. For the transmission of the data via the transmission system, signal coding techniques known per se in practice may be used. The operation of the relevant transmission ring 7, 8 can be monitored by means of line error detectors 15.").

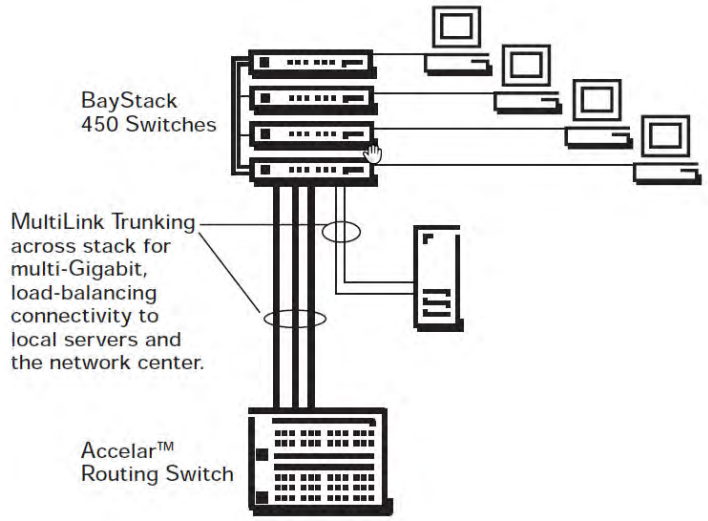
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No.	'904 Patent Claim 11	Czerwiec
		 Vink '324, FIG. 3 (annotated). Vink '324, 17:38-18:13 ("As already discussed in the introduction, every slave can be provided with an unambiguous address and the addressing of the separate I/0 modules 10 can take place on the bases of their sequence in the cascade arrangement. Consequently, a unit 20 which is capable of decoding the address of a slave, a unit 21 which is capable of detecting information about the number of data bits for a relevant slave and, if necessary, a unit 22 which is capable of reading out information about the type coding of the I/O modules connected to the local data bus, for example a module having only an input side or a module having only an output side, are provided. A further unit 23 is provided for a content check of the data bits received, for example on the basis of error detection techniques known per se. The relevant units 20, 21, 22, 23 are all connected to the unit 16 or form part thereof.").

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No.	'904 Patent Claim 11	Czerwiec
		In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. In addition, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below.

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No.	'904 Patent Claim 11	Czerwiec
		Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.  BayStack 450 Data Sheet at 4 of 8, FIG. 2. Further, Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. Nortel Networks' BayStack 450 Switches disclose a BootP Automatic IP/MAC Address: "The BayStack 450 switch has a unique 48-bit hardware address, or MAC address, that is printed on a label on the back panel. You use this MAC address when you configure the network BootP server to recognize the BayStack 450 switch BootP requests. A properly configured BootP server enables the switch to automatically learn its assigned IP address,

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No.	'904 Patent Claim 11	Czerwiec
		subnet mask, IP address of the default router (default gateway), and software image file name. When the switch is participating in a stack configuration, a Stack MAC address is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If another unit in the stack is assigned as the base unit, the MAC address of the new base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit." BayStack 450 Manual at 43 of 290.

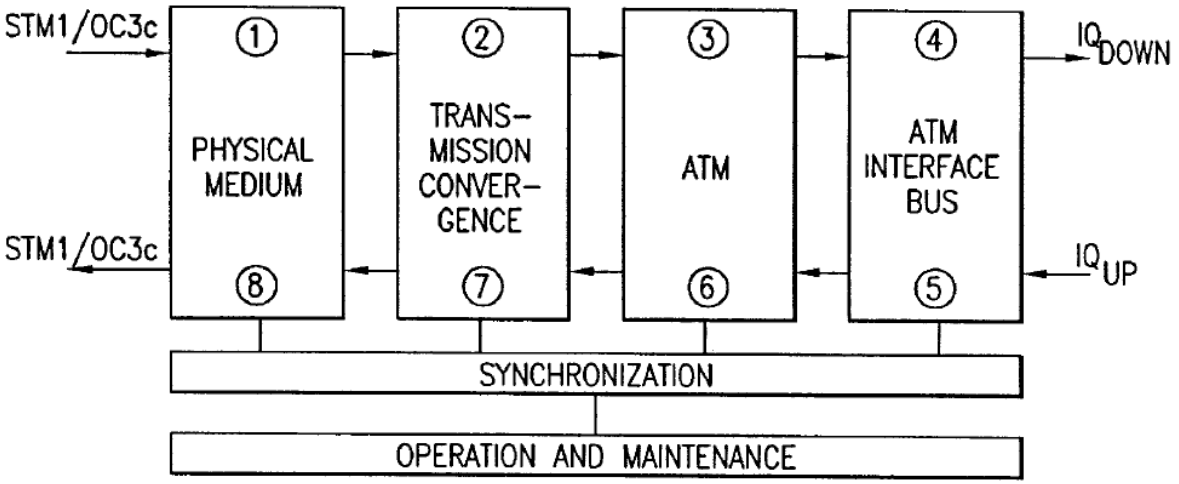
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No.	'904 Patent Claim 11	Czerwiec
		Stack MAC Address The *Stack MAC address* is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If you designate another unit in the stack as the base unit, the MAC address of the *new* base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit. BayStack 450 Manual at 52 of 290. Nortel Networks' BayStack 450 Switches provide an overview of the fail-safe stacking feature, which discloses "BayStack 450 switches that are configured with BayStack 450 software version V1.1.0 or later provide fail-safe stackability when you install the optional BayStack 400-ST1 Cascade Module. You can connect up to eight switches to provide uninterrupted connectivity for up to 224 ports (see 'Fail-Safe Stack Application' on page 1-22). The entire stack is manageable as a single unit. Installation instructions are provided with the BayStack 400-ST1 Cascade Module (see your Nortel Networks sales representative for ordering information)." BayStack 450 Manual at 49 of 290.

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No.	'904 Patent Claim 12	Czerwiec
12	Apparatus according to claim 11, wherein each of the slave units is coupled to receive packets transferred thereto from the first and second master units over first and second ones of the physical interface lines, respectively, and wherein the pre-switch passes the packets received through the first and second physical interface line and addressed to any of the ports on the slave unit to respective first and second addresses in the switch fabric.	Czerwiec discloses apparatus according to claim 11, wherein each of the slave units is coupled to receive packets transferred thereto from the first and second master units over first and second ones of the physical interface lines, respectively, and wherein the pre-switch passes the packets received through the first and second physical interface line and addressed to any of the ports on the slave unit to respective first and second addresses in the switch fabric. For example, Czerwiec discloses "FIG. 14A shows a simplified block diagram of an embodiment of an NT card, according to the present invention. It provides a high-speed optical or electrical access to a Synchronous Optical Network (SONET) transport system. It converts Asynchronous Transfer Mode (ATM) cells to SONET packets (i.e., frames) and vice versa. Thus, the NT card adapts ATM cells carried on the IQ bus to the SONET transmission system and vice versa. It also includes necessary functions as listed in the table of FIG. 14B for operating and maintaining the ATM subscriber access multiplexer of the present invention." Czerwiec, 21:13-24.

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No.	'904 Patent Claim 12	Czerwiec
		FIG. 14A  Czerwiec, FIG. 14A.

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No.	'904 Patent Claim 12	Czerwiec

FIG. 14B

	DOWNSTREAM† FUNCTIONS	UPSTREAM† FUNCTIONS	
①	Optical interface	Reading ATM cells from the ATM interface (IQ BUS)	⑤
①	Locking on received clock	ATM cell extraction	⑥
①	Serial to parallel conversion	ATM cell insertion	⑥
②	STM1/STS3c frame alignment recovery	ATM layer processing plus cell rate decoupling	⑥
②	STM1/STS3c descrambling	ATM cell Header Error Control (HEC) calculation	⑥
②	F1, F2, or F3 OAM functions	ATM cell payload scrambling	⑥
②	ATM cell delineation (in virtual container type 4s)	Mapping of ATM cells in virtual container type 4s	⑦
③	ATM cell HEC checking	F1, F2, or F3 OAM functions	⑦
③	ATM cell payload descrambling	STM1/STS3c scrambling	⑦
③	ATM layer processing plus cell rate decoupling	STM1/STS3c frame generation	⑦
③	ATM cell extraction	Parallel to serial conversion	⑧
③	ATM cell insertion	Produce transmit clock out of recieved clock or local oscillator	⑧
④	Provision of access to the ATM IQ bus	Optical interface	⑧

Note †Upstream is in the direction of the transport system and downstream is in the direction of the ATM IQ interface.

Czerwiec, FIG. 14B (annotated).

Further, Czerwiec discloses "For downstream ATM layer processing in the ATM block of FIG. 14A, each VC-4/SPE carries the equivalent of 44.151 cells (53 octets) which are octet-aligned and floating within the VC-4/SPE. The ATM cell delineation uses the correlation between the Header Error Control (HEC) in the cell header and the cell header itself. The cell delineation mechanism, as recommended by ITU-T Recommendation I.432, "B-ISDN User-Network Interface-Physical Layer Specification", is used. When the ATM cell boundary identification in octet H4 is used, the cell delineation will start searching at the octet indicated

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No.	'904 Patent Claim 12	Czerwiec
		by H4. If not, the search will start at the first octet of the payload period. The ATM cell information fields are descrambled according to the self-synchronizing scrambling/descrambling scheme recommended by ITU-T." Czerwiec, 22:4-19. "Valid non-idle cells, each with its confirmed HEC octet and descrambled information field, are sent to the IQ down interface, which is the last block shown in FIG. 14A. In that block, idle cell periods are added to adapt a received bit rate of up to 149.76 Mbit/s to 152.64 Mbit/s." Czerwiec, 22:20-24. "The routing of received ATM cells depends upon the VPI, VCI and PTI (payload type identifier) bits in the cell header. In total, 16 bits or four nibbles of VPI/VCI combinations can be checked, according to the modes shown in FIG. 14G. In each mentioned mode, different nibbles of VPI/VCI are selected. The selected VPI/VCI nibble combination corresponds with a specific data channel to be extracted. Cells can be extracted by looking only at the VPI/VCI combination or by looking at the VPI/VCI combination and at the PTI bits. In the second case, each PTI (23 in total) can be marked for extraction. This marking will then be used for all VPI/VCI combinations for which extraction is indicated, with the inclusion of the PTI check. All valid cells received in the virtual container or synchronous payload envelope, independent of their VPI/VCI combination, are transmitted downstream on the IQ down interface (cells marked for extraction are also sent to the ATM interface bus)." Czerwiec, 22:25-41.

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No.	'904 Patent Claim 12	Czerwiec

FIG. 14G

VPI			VCI				MODE
#3	#2	#1	#4	#3	#2	#1	
X	X	X			X		NNI
	X	X			X	X	UNI 1
		X		X	X	X	UNI 2

Czerwiec, FIG. 14G.

"ATM cell insertion and extraction is provided at the NT both in the direction of the network and in the direction of the IQ bus, in order to provide for the transmission and reception of Operation And Maintenance and signaling cells. Cell insertion and extraction is under control of an On-Board Controller (OBC)." Czerwiec, 22:42-47.

Czerwiec further discloses that "As suggested above, since there is only one nonredundant IQ bus per shelf, the equipment protection implied by FIG. 4C with A and B redundant DS-3-LT cards in slots 1 and 2 will be ineffective if the IQ bus itself has a failure. If it is desired to avoid this sort of failure, a different kind of redundancy in the DS-3 cards can be provided, as shown in FIG. 4E. In that case, half of the transmit and receive signals are used in the shelf, and the other half can be routed to a different shelf, instead of slot 2 in the same shelf. The top two cables shown in FIG. 4E would thus be routed to another shelf and be connected into, e.g., the DS-3 out and DS-3 in transformers shown in FIG. 4B in another shelf. The DS-3 out and DS-3 in cables of FIG. 4E would go to the CO switch or other network element." Czerwiec, 23:42-52.

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No.	'904 Patent Claim 12	Czerwiec
		Czerwiec further discloses "The UIAC component is an LCA device which is programmed during "power-on-reset" from a serial PROM. It uses three synchronous 512×9 bit FIFOs for cell insertion and extraction and one 128K×8 bit SRAM for routing. The UIAC module has a SCI/PHY (Utopia-like) interface to the S/UNI+ component. ATM cell insertion in both the direction of the network (SDH/SONET) and in the direction of the LTs is handled by a 1 SIF (signaling insertion FIFO) buffer. An OBC bus is connected directly to the eight data inputs of the FIFO. The direction of cell insertion is specified by the OBC by writing into an additional UIAC register. The ninth bit of the FIFO is used for cell synchronization and insertion direction specification. A RAM lookup table is used for cell filtering on VPI/VCI combinations. The RAM has 128K entries of eight bits." Czerwiec, 24:16-30. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See also supra* at 11[f].

No.	'904 Patent Claim 13	Czerwiec
13	Apparatus according to claim 12, wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second addresses are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required.	Czerwiec discloses apparatus according to claim 12, wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second addresses are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required. For example, Czerwiec discloses "As suggested above, since there is only one nonredundant IQ bus per shelf, the equipment protection implied by FIG. 4C with A and B redundant DS-3-LT cards in slots 1 and 2 will be ineffective if the IQ bus itself has a failure. If it is desired to avoid this sort of failure, a different kind of redundancy in the DS-3 cards can be provided, as shown in FIG. 4E. In that case, half of the transmit and receive signals are used in the shelf, and the other half can be routed to a different shelf, instead of slot 2 in the same shelf. The top two cables shown in FIG. 4E would thus be routed to another shelf and be connected into, e.g., the DS-3 out and DS-3 in transformers shown in FIG. 4B in another shelf. The DS-3 out and DS-3 in cables of FIG. 4E would go to the CO switch or other network element." Czerwiec, 23:42-52. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Czerwiec is found to not meet this limitation, Apparatus according to claim 12, wherein in response to a reversal of a

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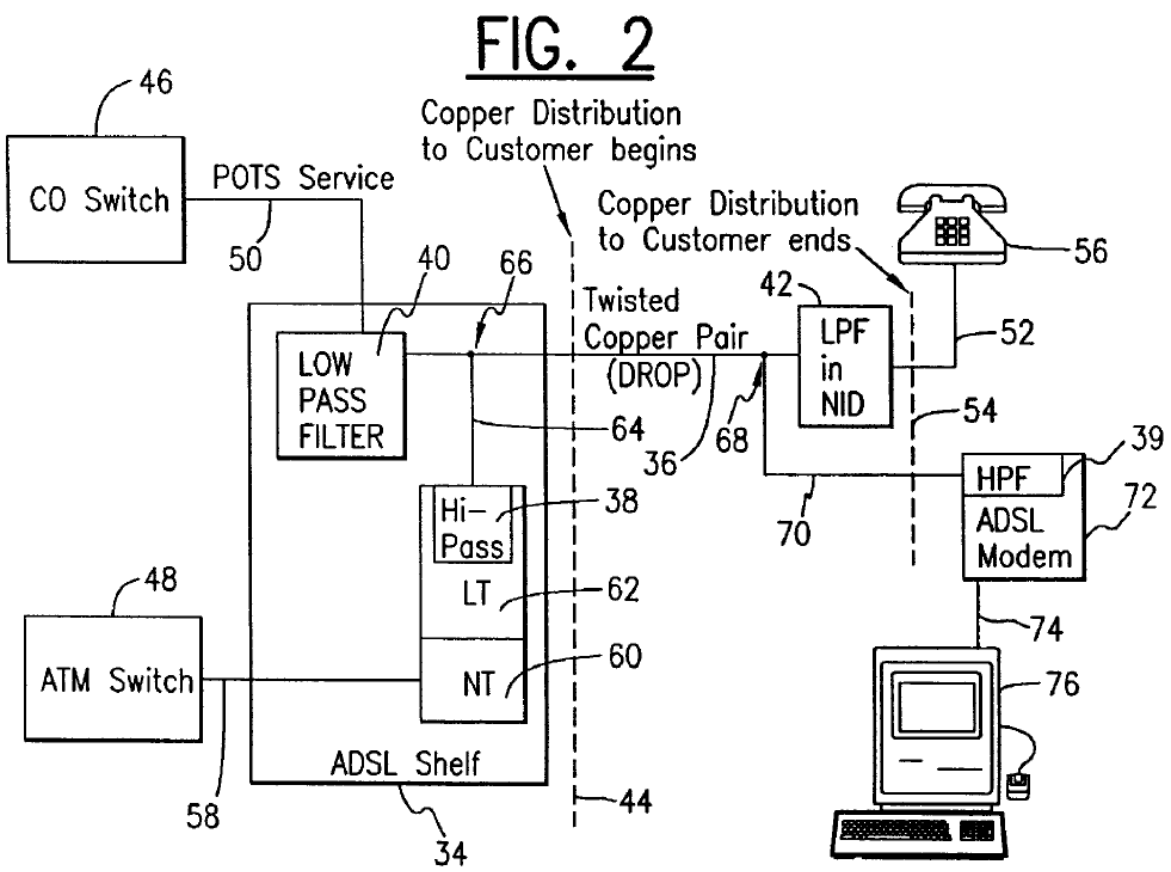
No.	'904 Patent Claim 13	Czerwiec
		direction of data flow in the daisy chain, the first and second addresses are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required would have been obvious to a person having ordinary skill in the art, as explained below. Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Czerwiec in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 13 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Vink '324, discloses directing the packet to a different transmission ring in one and/or the other direction so that substantially no reconfiguration of the switch fabric is required. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Vink '324, Claim 14 ("Communication system according to Claim 13, wherein the at least one master (1) and the slaves (2, 3, 4, 5) are arranged to transmit or receive data bits via a transmission ring (7, 8) in one and/or the other direction."). Vink '324, 21:3-9 ("The transmitting/receiving unit 6 provides for the monitoring of the transmission and the control computer 38 provides for and monitors the correct sequence of the data bits for a relevant slave, related to the sequence in which the I/O modules are arranged. The information about this sequence is extracted by the control unit 36 from the status information received from the relevant slaves. In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about whether the connection to the transmission system is or is not operating correctly."). Further, Ding discloses, in the event of a failover where another unit takes over for the first, the same IP address continues to be used. ("An eleventh case involves "fail-over" to an

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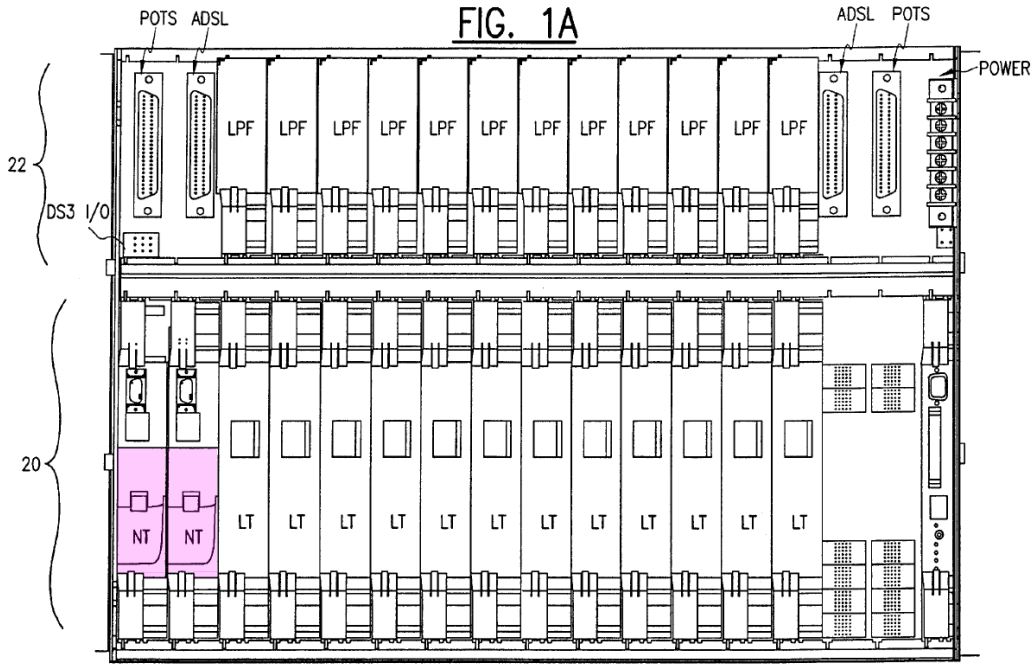
No.	'904 Patent Claim 13	Czerwiec
		alternate base module when the designated base module fails. In a preferred embodiment of the present invention, when the designated base module fails, the next upstream Ethernet switching modules takes over as the base module for the stack. When this occurs, it is preferable to continue using the same IP address, since various devices in the network are configured to use that IP address for communicating with the stack. However, the MAC address of the stack changes to a MAC address associated with the new base module. Therefore, when the new base module reconfigures the stack, the new base module broadcasts an ARP request including the stack IP address and the new MAC address." Ding, 13:3-15.

No.	'904 Patent Claim 14	Czerwiec
14[pre]	In a network access multiplexing system,	To the extent the preamble is found to be limiting, Czerwiec discloses a network access multiplexing system. For example, Czerwiec discloses "a telecommunications system for providing both narrowband and broadband services to a plurality of subscriber premises comprises at least one shelf for connection to a public switched telephone network (PSTN) and for connection to an asynchronous transfer mode (ATM) network for connecting the PSTN and the ATM network to the plurality of subscriber premises via a corresponding plurality of twisted copper pairs, and a plurality of subscriber modems for connection to the corresponding plurality of twisted copper pairs, wherein each of the twisted copper pairs is for providing a digital subscriber line that accommodates both plain old telephone service (POTS) and digital channels in an ATM format." Czerwiec, 1:58-2:3. Czerwiec further discloses that "FIG. 2 shows a functional block diagram of the present invention whereby high speed packetized data in, e.g., ATM format is combined with traditional POTS service, e.g., in an xDSL shelf which may be an ADSL shelf in the embodiment illustrated for providing the means whereby POTS lifeline services on a twisted copper pair are overlaid with high speed digital services for communicating high bandwidth services to a customer's premises." Czerwiec, 7:16-23.

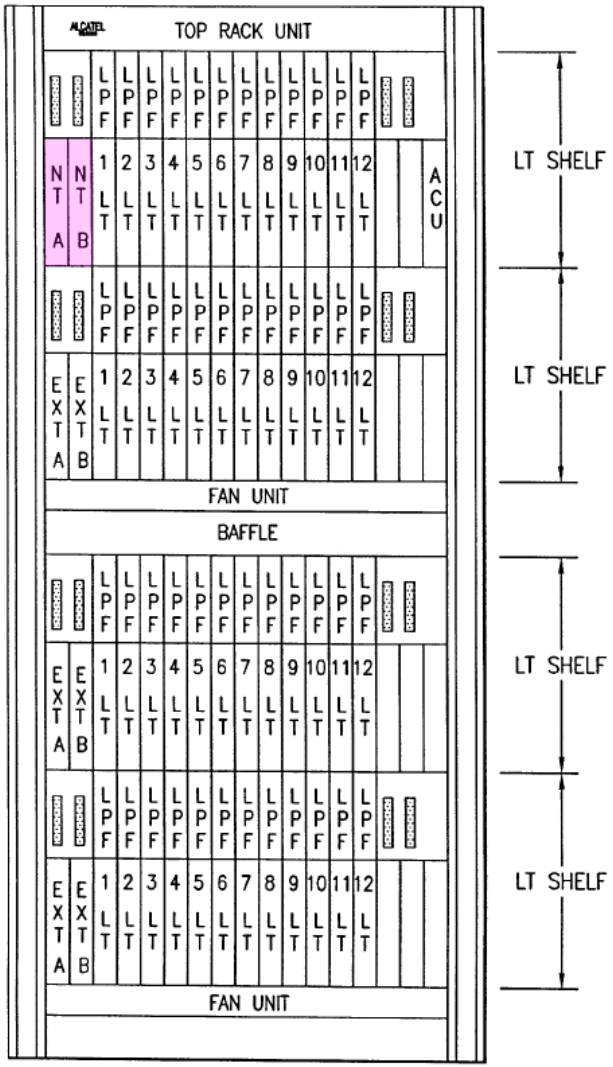
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No.	'904 Patent Claim 14	Czerwiec
		 Czerwiec, FIG. 2.
14[a]	in which a master unit is connected by a physical interface to a packet-switched network,	Czerwiec discloses a master unit is connected by a physical interface to a packet-switched network.

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No.	'904 Patent Claim 14	Czerwiec
		For example, Czerwiec discloses redundant NT cards that serve as first and second master units. Specifically, Czerwiec discloses that "FIG. 1A shows a front view of an actual shelf with redundant NT cards…." Czerwiec, 9:66-67.  Czerwiec, FIG. 1A (annotated). Further, Czerwiec discloses "FIG. 1B shows a plurality of shelves mounted in a central office rack, such as shown in FIG. 1E, in a standard configuration for serving 192 ADSL lines. Up to four adjacent racks can share the same feeder by using extension units installed in place of NTs, as explained below in connection with FIG. 6. In that case, a single, optionally-protected NT card can support up to 576 ADSL lines. FIG. 1C shows the shelf of FIG. 1A without any cards installed and shows the connectors installed in the backplane, into which mating connectors on the cards are insertable by sliding the cards into the slots shown. In this way, front-access-only is achieved. A side view of the shelf is shown in FIG. 1D." Czerwiec, 10:1-13.

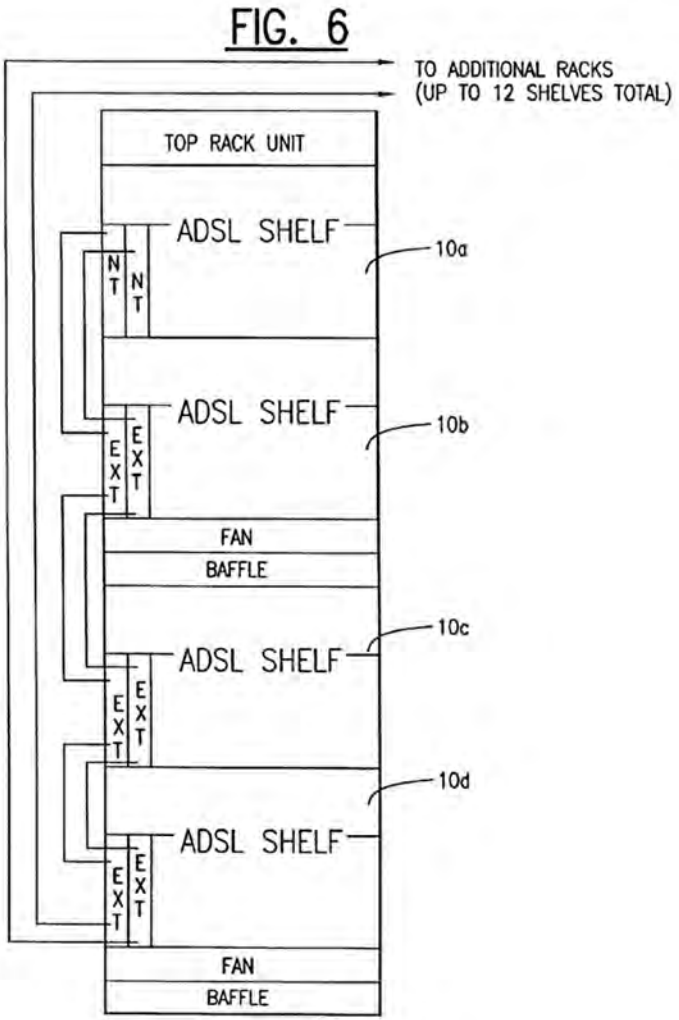
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No.	'904 Patent Claim 14	Czerwiec
		FIG. 1B  Czerwiec, FIG. 1B (annotated).

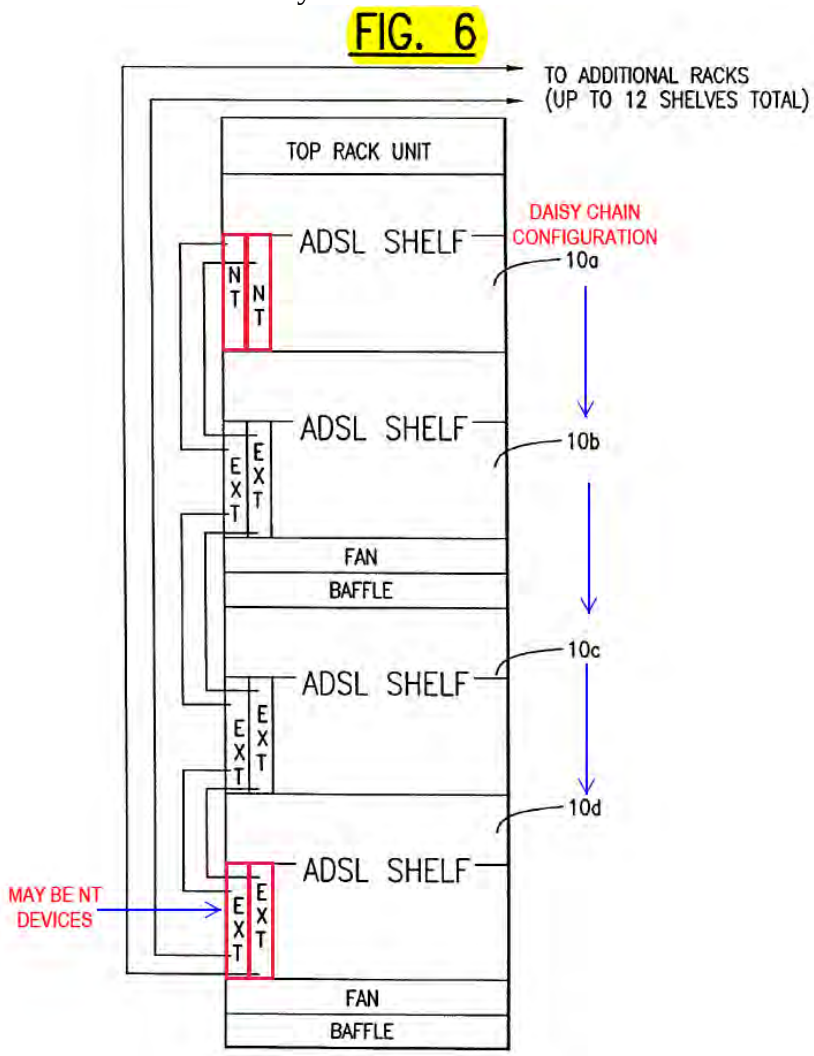
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No.	'904 Patent Claim 14	Czerwiec
		"As shown in both FIGS. 1 and 3, the NTs 12 a, 12 b can be provided in either a redundant or non-redundant configuration. In this architecture, the normal NE processing is performed by the NT, and the NT can be provided as either a SONET User Network Interface (UNI) interface, a DS-3 UNI interface or later, a DS1 inverse multiplex UNI interface. If SONET NTs are provided as redundant pairs, Automatic Protection Switching (APS) is provided using the normal 1+1 switchover mechanism detailed in Bellcore document GR-253. On SONET NTs, the physical interface (fiber) is located on the faceplate of the NT itself (see FIGS. 14C and 14D), with no need of additional interface circuitry. If, however, NTs are provided as DS-3 ports, equipment protection (without cable protection) is provided using the DS-3 I/O board 32 shown in FIG. 1 installed above the NTs in the shelf, allowing the single DS-3 facility (coax cable Tx/Rx pair) to be split and accessed by either NT (inter-NT communication arbitrates which one is active)." Czerwiec, 12:66-13:16. "An ACU [alarm collection unit] is provided per NT (or redundant NT pair) when multiple systems reside in a given rack. Multiple systems reside in a given rack when a very wide bandwidth is to be served by, e.g., a single shelf. In such a case, a single shelf may use up the entire bandwidth of an OC-3 or DS-3 cable." Czerwiec, 13:52-53. Czerwiec discloses "FIG. 6 shows in detail the above-mentioned feature of the present architecture whereby a plurality of ADSL shelves 10 a, 10 b, 10 c, 10 d such as shown in FIG. 1 can be daisy-chained together in a rack by means of an extender card (EXT) in each subsequent shelf. The extender card function is to effectively extend the IQ bus from shelf to shelf (daisy-chained, e.g., to a maximum of twelve shelves altogether), allowing up to, e.g., 576 ADSL subscribers accessed to the system. In other words, the extender card allows an NT card in a first shelf to act as an NT card for another shelf or a plurality of other shelves. I.e., in this case, three racks with altogether twelve daisy-chained shelves. The extender cards can be mounted as shown in FIG. 6 in the NT slots of subsequent shelves and may be redundant. In that case, any failure of an NT or extender card bank switches all LTs from the "A" NT/extender string to the "B" string. The active string then assumes control of each shelf's IQ bus. The IQ bus itself (within each shelf) is not redundant, but meets reliability requirements, as the NT has the ability to remove each LT from the IQ bus (disable) to isolate

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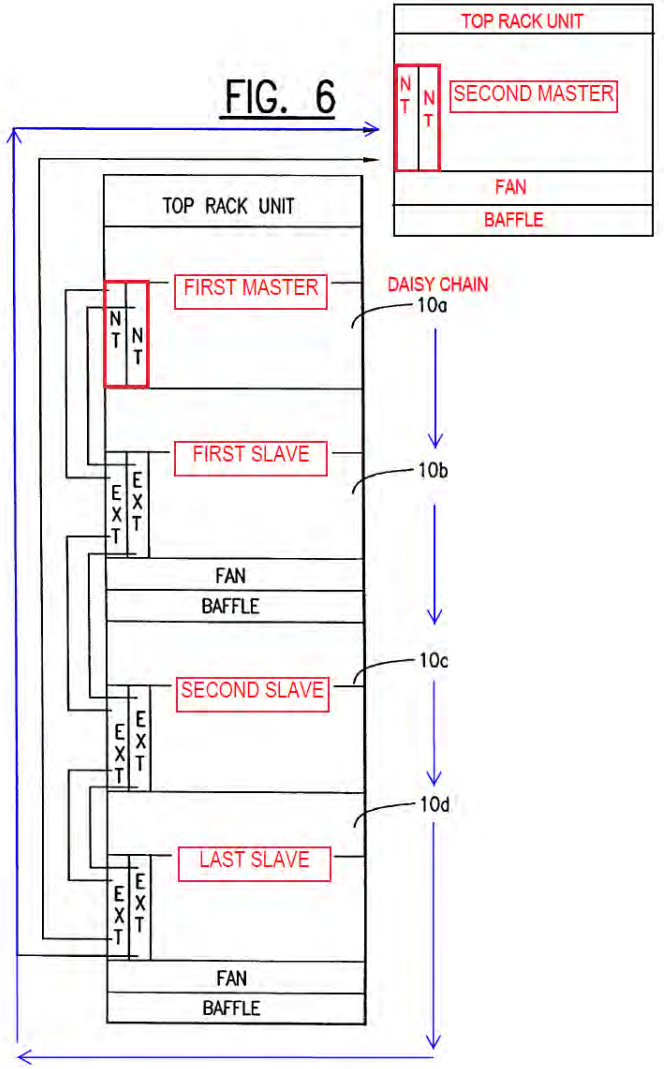
No.	'904 Patent Claim 14	Czerwiec
		a fault and remove it from service." Czerwiec, 16:15-35. Figure 6, having redundant NT cards in ADSL shelf 10a is shown below.  Czerwiec, FIG. 6.

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No.	'904 Patent Claim 14	Czerwiec
		In another example, annotated Figure 6 shows ADSL shelves that are daisy chained, where the EXT cards in ADSL shelf 10d may act as a redundant master.  Czerwiec, FIG. 6 (annotated).

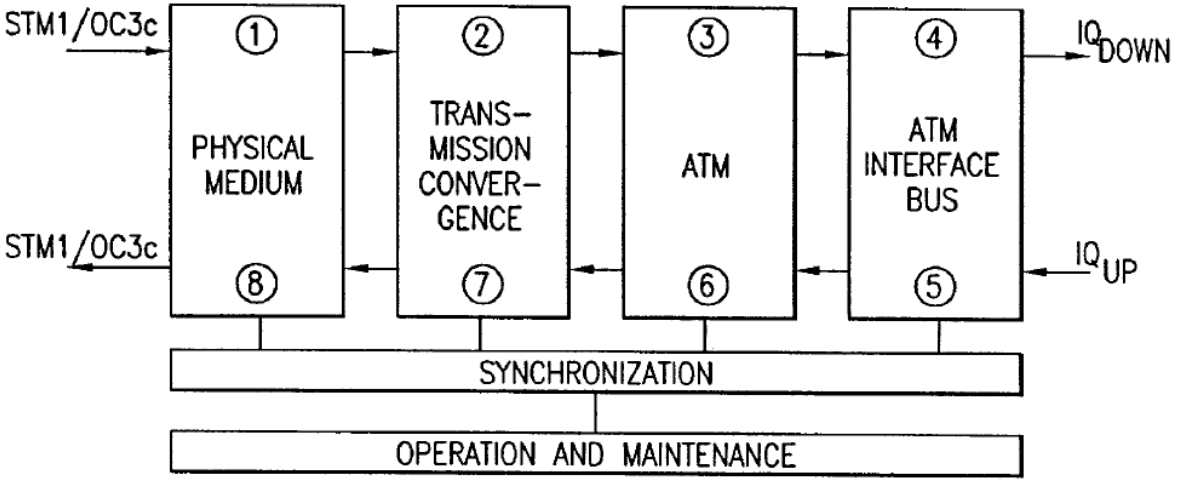
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No.	'904 Patent Claim 14	Czerwiec
		In yet another example, annotated Figure 6 shows ADSL shelves that are daisy chained, where the daisy chain is connected to redundant NT cards in an ADSL shelf of another rack.

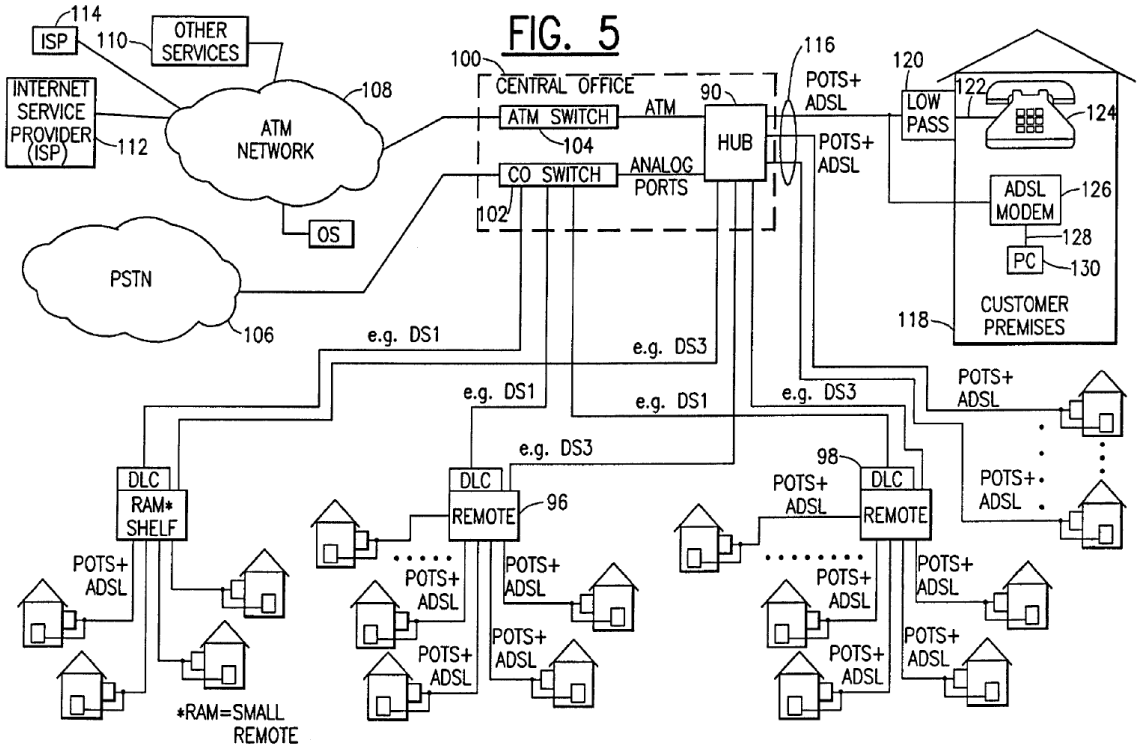


Czerwiec, FIG. 6 (annotated).

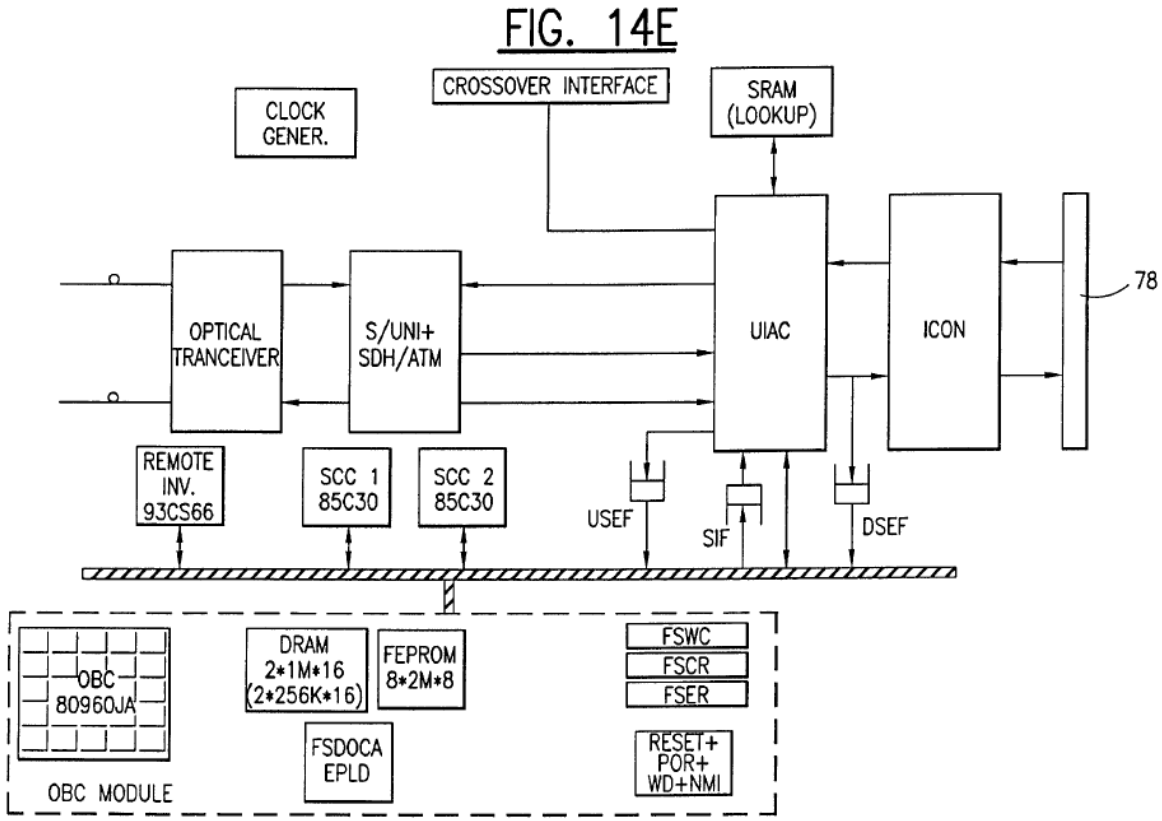
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No.	'904 Patent Claim 14	Czerwiec
		Czerwiec discloses "FIG. 14A shows a simplified block diagram of an embodiment of an NT card, according to the present invention. It provides a high-speed optical or electrical access to a Synchronous Optical Network (SONET) transport system. It converts Asynchronous Transfer Mode (ATM) cells to SONET packets (i.e., frames) and vice versa. Thus, the NT card adapts ATM cells carried on the IQ bus to the SONET transmission system and vice versa. It also includes necessary functions as listed in the table of FIG. 14B for operating and maintaining the ATM subscriber access multiplexer of the present invention." Czerwiec, 21:13-24. FIG. 14A  Czerwiec, FIG. 14A. Czerwiec discloses "In regard to the physical medium block, this can be an optical interface for interfacing an optical transport system with a receive and transmit optical fiber carrying signals, e.g., with a nominal bit rate of 155.52 Mbps. The interface is symmetric, i.e., it has

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No.	'904 Patent Claim 14	Czerwiec
		the same bit rate in both directions and could operate, e.g., at a wavelength of 1.3 μm. This signal can be a SONET (Synchronous Optical Network) signal at the OC-3 level for conversion to STM-1/STS-3c in the electrical domain. This is a serial signal which the physical medium interface block converts to parallel form at a slower rate for processing on the NT card, with the parallel downstream output locked on to the received clock." Czerwiec, 21:36-47. Czerwiec further discloses "The NT card is managed by an ADSL workstation (AWS) which may be located in an operating system (OS) as shown in FIG. 5. Such an OS may communicate through an ATM network and an ATM switch in a central office with the NT card in the shelf." Czerwiec, 23:41-52. Figure 5 of Czerwiec is reproduced below. 

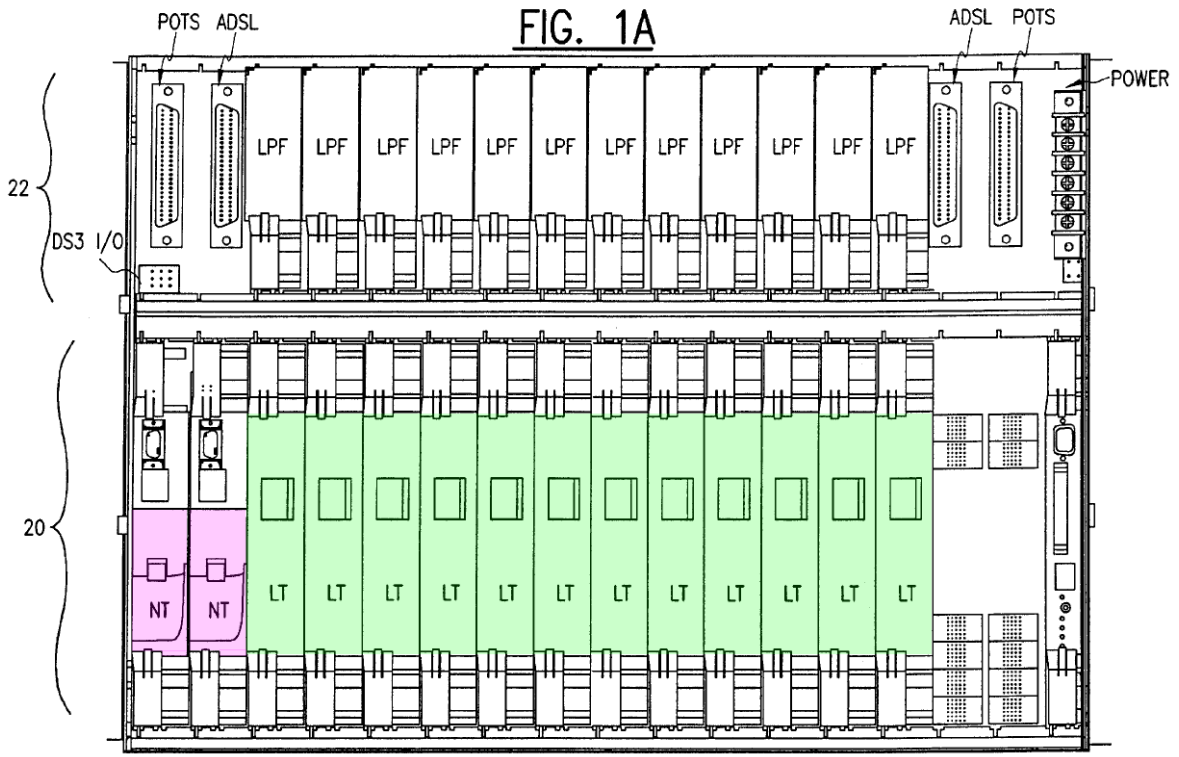
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No.	'904 Patent Claim 14	Czerwiec
		Czerwiec, FIG. 5. Czerwiec discloses "FIG. 14E shows a more detailed functional block diagram of an NT card 12 a of FIG. 1." Czerwiec, 23:53-54.  Czerwiec, FIG. 14E.
14[b]	a slave unit configured to be coupled to the master unit in a daisy chain of such slave	Czerwiec discloses a slave unit configured to be coupled to the master unit in a daisy chain of such slave units. For example, Czerwiec discloses a plurality of slave ADSL shelves having LT cards.

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No.	'904 Patent Claim 14	Czerwiec
	units, the slave unit comprising:	Generally, Czerwiec discloses "Although the internal bus of the shelf is shown in a non-redundant embodiment, an increased level of equipment protection can be provided by placing one half of a redundant equipment pair in one shelf and the other half in the other shelf and sharing network termination equipment between such shelves." Czerwiec, Abstract. "The shelf 10 is populated by at least one or a redundant pair of network termination (NT) cards 12 a, 12 b, up to twelve xDSL, in this case ADSL (Asynchronous Digital Subscriber Line), line termination (LT) cards 14, an equal number of Low Pass Filter (LPF) 15 cards 24, an optional Network Element Processor (NEP) 16 a (or an optional redundant pair 16 a, 16 b), and an Alarm Collection Unit (ACU) 18." Czerwiec, 9:14-20. "FIG. 1A shows a front view of an actual shelf with redundant NT cards, 12 LT cards, 12 corresponding LPF cards, and an ACU card all inserted therein. FIG. 1B shows a plurality of shelves mounted in a central office rack, such as shown in FIG. 1E, in a standard configuration for serving 192 ADSL lines." Czerwiec, 9:66-10:4.

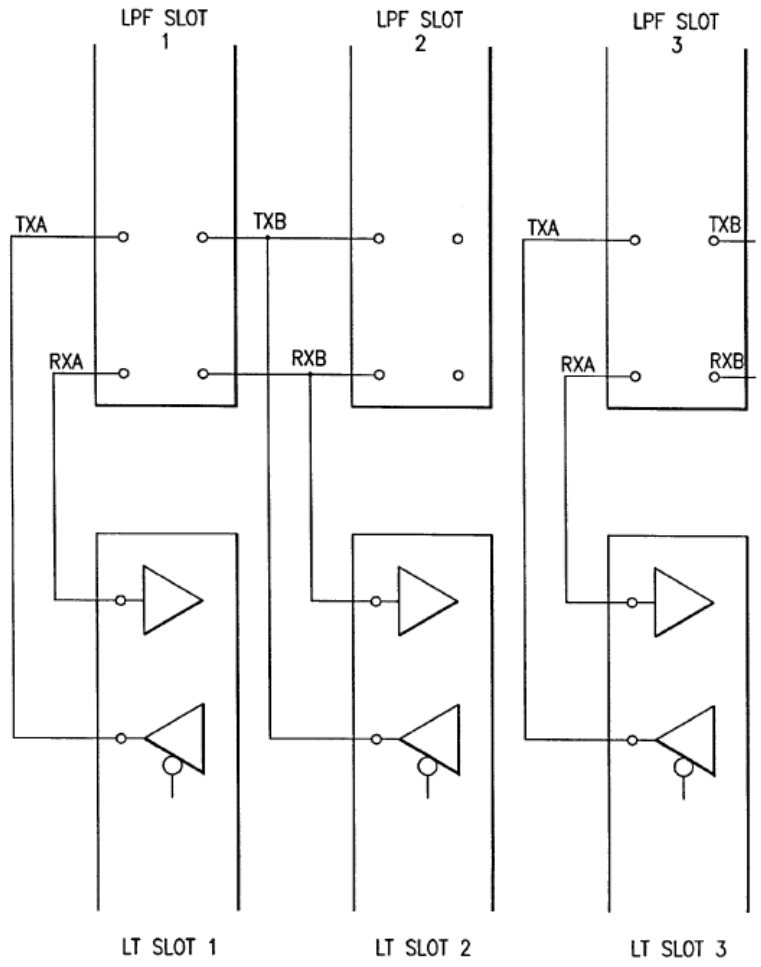
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No.	'904 Patent Claim 14	Czerwiec
		 Czerwiec, FIG. 1A (annotated). "According to a tenth aspect of the present invention, a telecommunications rack for connection to an upstream network service provider for providing said service to downstream subscriber equipment also for connection to said rack comprises a plurality of shelves, at least one shelf for connection to said upstream network service provider by means of network termination equipment, each shelf for connection to different equipment of said downstream subscriber equipment by means of line termination equipment, wherein each of said plurality of shelves has a same nonredundant feature, at least one pair of redundant line termination equipment, one line termination equipment of said pair for use in said at least one shelf in association with said same nonredundant feature thereof and a remaining line termination equipment of said pair for use in another shelf of said plurality of shelves in association with

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No.	'904 Patent Claim 14	Czerwiec
		said same nonredundant feature thereof, and means for connecting said at least one shelf and said another shelf for providing said same nonredundant feature redundantly." Czerwiec, 5:63-6:14. In one example, Czerwiec discloses "4A shows LT-LPF BPA wiring and LT-BPA transceivers for supporting the 'hub' applications with DS-3 links to 'remote' shelves, according to the present invention." Czerwiec, 7:36-39. Czerwiec describes that "[a]s shown in FIG. 4A, the LT-LPF backplane wiring is shown with LT transceivers. In this case, the LPF and LT cards can be configured for redundancy of the LT cards to be inserted in the LT slots in either a same shelf or in separate shelves. Czerwiec, 14:43-47.

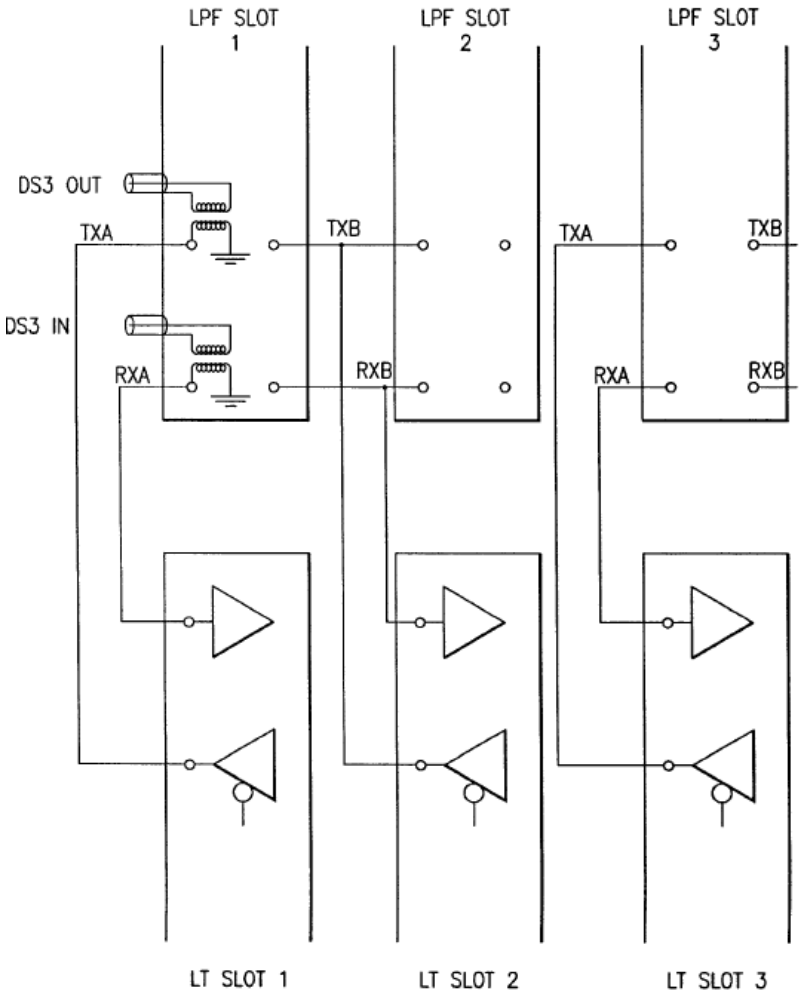
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No.	'904 Patent Claim 14	Czerwiec
		FIG. 4A  Czerwiec, FIG. 4A.

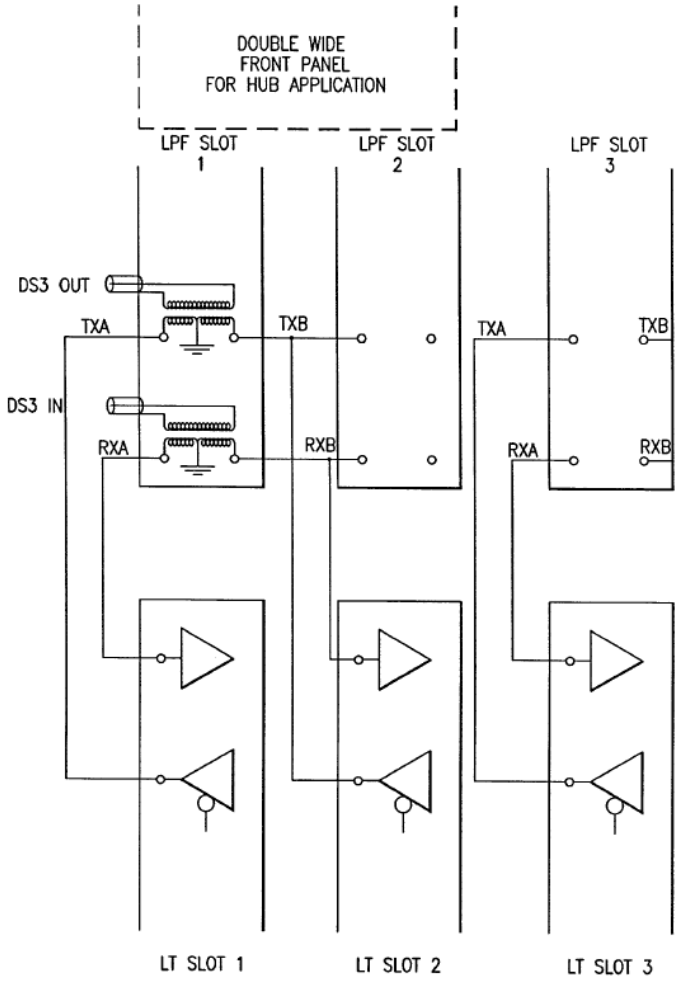
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No.	'904 Patent Claim 14	Czerwiec
		In another example, Czerwiec discloses "4B shows wiring with non-redundant DS-3 LT card installed for the 'hub' application, according to the present invention." Czerwiec, 7:40-42. "For example, in FIG. 4B, a non-redundant option LT is shown with a DS-3 interface inserted in LPF slot 1, wherein input and output DS-3 coax cables from a CO switch are connected to a DS-3 interface card for insertion in LPF slot 1, which is connected through the backplane to a DS-3-LT card for insertion in LT slot 1, such as the DS-3-LT card 92 of FIG. 4. The lowpass filter function is carried out at the remote shelf 96 of FIG. 4 where a DLC is available. The configuration shown in FIG. 4B for LT slot 1 and LPF slot 1 could also be used in connection with FIG. 4E, as explained below." Czerwiec, 14:47-57.

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No.	'904 Patent Claim 14	Czerwiec
		FIG. 4B  Czerwiec, FIG. 4B.

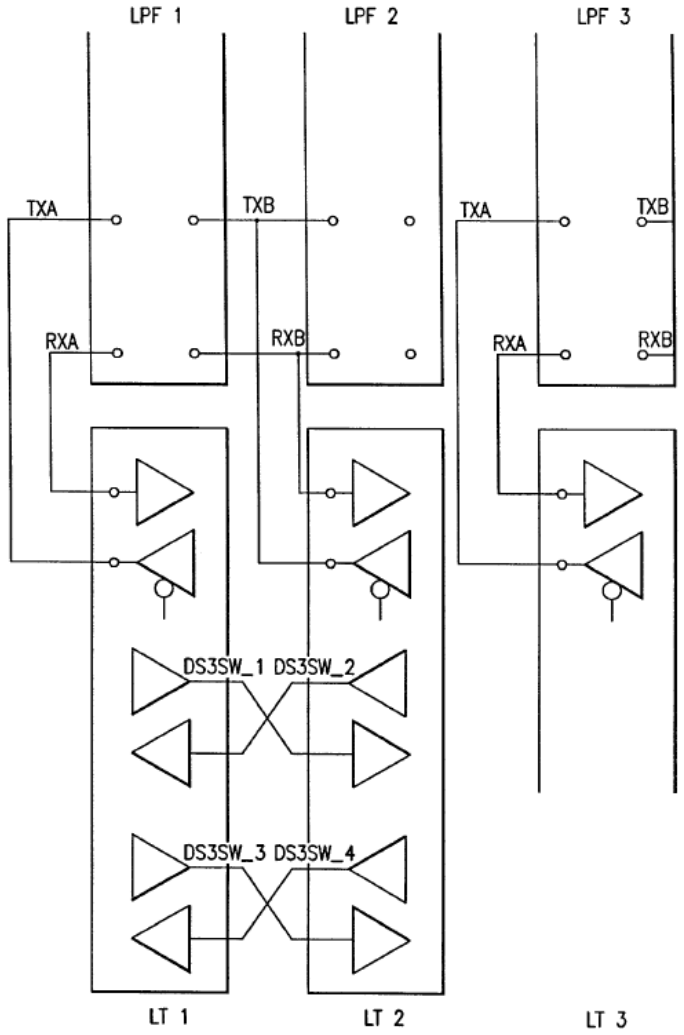
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No.	'904 Patent Claim 14	Czerwiec
		In another example, Czerwiec discloses "FIG. 4C shows redundant DS-3 LTs on the same shelf in a 'hub' application, according to the present invention." Czerwiec, 7:43-45. FIG. 4C  Czerwiec, FIG. 4C.

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No.	'904 Patent Claim 14	Czerwiec
		Czerwiec explains that "FIG. 4C shows an application with redundant DS-3-LT cards for insertion, e.g., in LT slot 1 and LT slot 2 of a given shelf. In that case, a different kind of DS-3 I/O card is used, double wide as shown, with a center tapped transformer on the card which is connected both to the transmit (TXA/TXB) and to the receive (RXA/RXB) backplane wiring associated with both LPF slot 1 and LPF slot 2. The NT controls which LT slot is to be active." Czerwiec, 14:58-65. In yet another example, Czerwiec discloses "FIG. 4D shows switch signal wiring for redundant DS-3 LTs in the same shelf for a 'hub' application, according to the present invention." Czerwiec, 7:45-47. Czerwiec discloses that "FIG. 4D is similar to FIG. 4A but additionally shows arbitration interfaces between redundant DS-3-LTs." Czerwiec, 14:66-67.

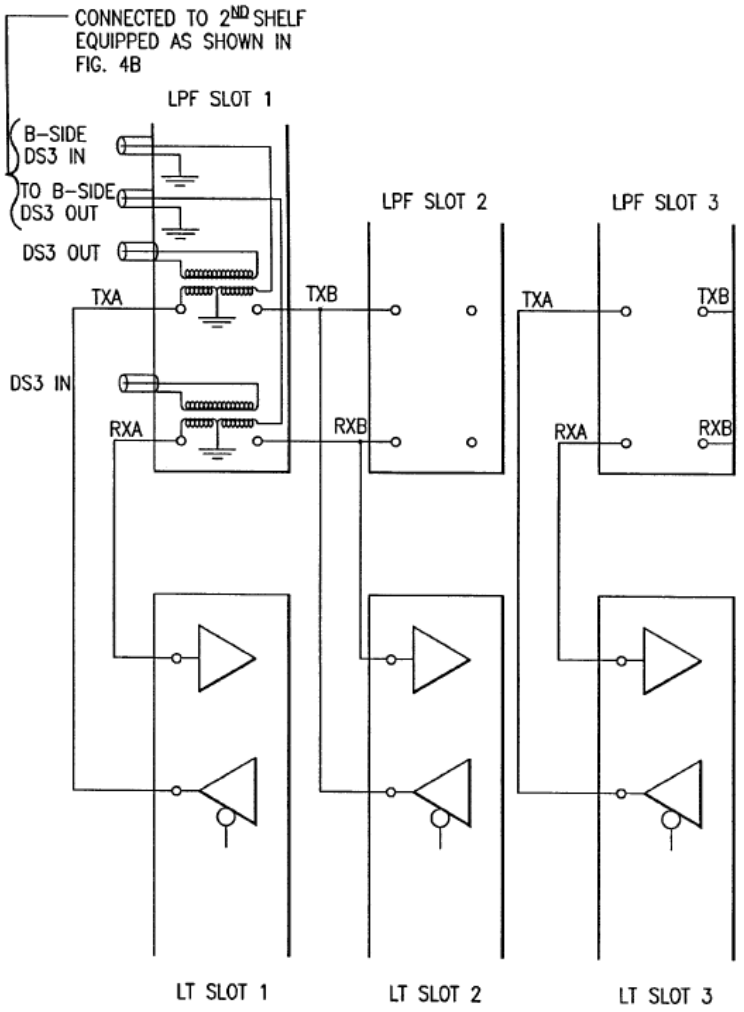
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No.	'904 Patent Claim 14	Czerwiec
		FIG. 4D  Czerwiec, FIG. 4D.

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No.	'904 Patent Claim 14	Czerwiec
		In yet another example, Czerwiec discloses "4E shows a solution for DS-3 LT card redundancy in separate shelves for a 'hub' application, so as to provide IQ bus redundancy, according to the present invention, where only a single IQ bus is provided per shelf." Czerwiec, 7:48-51. Further, Czerwiec discloses "[a]s suggested above, since there is only one nonredundant IQ bus per shelf, the equipment protection implied by FIG. 4C with A and B redundant DS-3-LT cards in slots 1 and 2 will be ineffective if the IQ bus itself has a failure. If it is desired to avoid this sort of failure, a different kind of redundancy in the DS-3 cards can be provided, as shown in FIG. 4E. In that case, half of the transmit and receive signals are used in the shelf, and the other half can be routed to a different shelf, instead of slot 2 in the same shelf. The top two cables shown in FIG. 4E would thus be routed to another shelf and be connected into, e.g., the DS-3 out and DS-3 in transformers shown in FIG. 4B in another shelf. The DS-3 out and DS-3 in cables of FIG. 4E would go to the CO switch or other network element." Czerwiec, 15:1-14. Moreover, Czerwiec discloses "[a]s will be observed in FIG. 4, an ADSL shelf 90 may have both ADSL-LTs 14a and aggregate type LTs such as the DS-3-LTs 92, 94 shown. Service classes in both cases are provided for subscribers by separate buffers per service class (CBR, VBR, UBR, etc.), each contending for upstream access to the IQ bus via the control leads and the grant mechanism based in part on the priority assigned to each upstream cell. In the case of aggregate LTs, such as shown in the hub 90 of FIG. 4, the service class buffers have a cell priority equal to the sum of the aggregate cell priorities in each buffer (or even some percentage), in order that the remote subscribers are assigned a fair share of the hub's operating bandwidth. In times of bursty upstream traffic, congestion and DS-3-LT buffer overflow is managed by limiting the DS-3 link bandwidth and allowing temporary buffer fill in the remote ADSL-LTs (until such time that the traffic peak subsides). It is noted that POTS interfaces are not shown in FIG. 4 but would normally be provided, e.g., by DLCs adjacent or incorporated in the Remotes 96, 98." Czerwiec, 15:15-33.

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No.	'904 Patent Claim 14	Czerwiec
		FIG. 4E  Czerwiec, FIG. 4E.

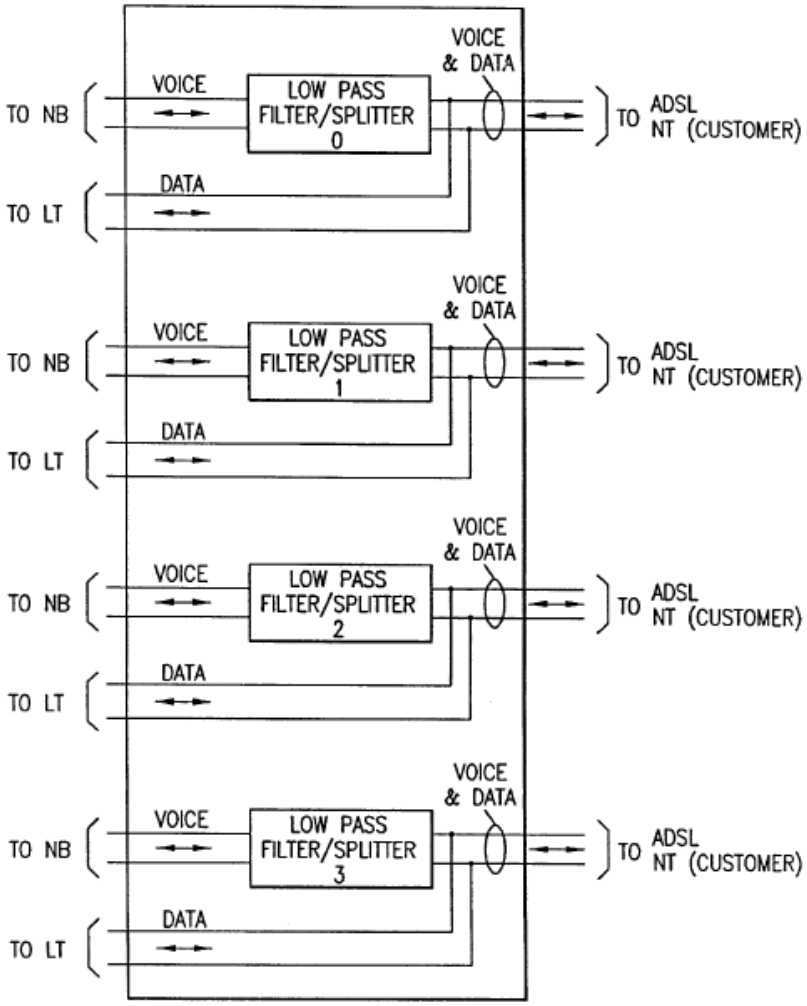
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No.	'904 Patent Claim 14	Czerwiec
14[c]	a plurality of ports, for coupling the slave unit to respective subscriber lines;	Czerwiec discloses a plurality of ports, for coupling the slave unit to respective subscriber lines. For example, Czerwiec discloses the "present invention relates to providing high-speed communications services to ordinary residences and small businesses on digital subscriber lines." Czerwiec, 1:8-10. Czerwiec discloses that "[a]ccording to a sixth aspect of the present invention, subscriber equipment for use in a telecommunications system having a shelf for connection both to a telephone network and to a wideband network and having a plurality of subscriber lines for connection to subscriber equipment at a plurality of subscriber premises, wherein each subscriber equipment comprises a lowpass filter for use at a subscriber's premises, responsive to a telephony signal occupying a baseband position in a frequency division multiplexed signal also having a wideband signal occupying a position above baseband, for only providing said telephony signal between said lowpass filter and a subscriber's telephone for use in voice communications between said subscriber's premises and said telephone network, and a digital subscriber line modem for use at the subscriber's premises, for connection to said frequency division multiplexed signal for only providing said wideband signal between said digital subscriber line modem and a subscriber's data terminal for use in digital communications between said subscriber's premises and said wideband network." Czerwiec, 4:54-5:6. Czerwiec discloses that "[a]ccording to an eighth aspect of the present invention, line termination equipment for use in a shelf of a telecommunications system, said line termination equipment for connection to a plurality of subscriber lines for connection to a corresponding plurality of subscriber equipment at a plurality of subscriber **premises**, wherein said line termination equipment comprises plural subscriber channels, each comprising a hybrid circuit for connection to a corresponding twisted pair from a corresponding subscriber premises, each channel comprising a highpass filter for isolating a telephony signal occupying a baseband position in a frequency-division multiplexed signal from a wideband signal occupying a position above baseband, a modulator/encoder, responsive to said wideband signal for providing an encoded and modulated wideband signal to said hybrid circuit for providing said encoded and modulated wideband signal on said twisted copper pair in said

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No.	'904 Patent Claim 14	Czerwiec
		position above baseband, and a demodulator/decoder, responsive to a wideband signal from said subscriber premises for providing a demodulated and decoded wideband signal to said wideband network." Czerwiec, 5:28-48. Czerwiec discloses that "[a]ccording to a ninth aspect of the present invention, a replaceable printed board assembly for use in a shelf of a telecommunications system, wherein said shelf is for connection both to a telephone network and to a wideband network and having a plurality of subscriber lines for connection to subscriber equipment at a plurality of subscriber premises, wherein said replaceable PBA comprises a corresponding plurality of lowpass filters, each having a first port for connection to a plain old telephone service interface comprising a plurality of twisted copper pairs, and a second port for connection to a corresponding second plurality of twisted copper pairs for connection to said corresponding plurality of customer premises and to said wideband network via a wideband multiplex bus of said shelf." Czerwiec, 5:49-62. Further, Czerwiec discloses "FIG. 1A shows a front view of an actual shelf with redundant NT cards, 12 LT cards, 12 corresponding LPF cards, and an ACU card all inserted therein. FIG. 1B shows a plurality of shelves mounted in a central office rack, such as shown in FIG. 1E, in a standard configuration for serving 192 ADSL lines." Czerwiec, 9:66-10:4. Czerwiec further discloses that "FIG. 7A shows a lowpass filter card, such as one of the LPF cards 24 shown in FIG. 1 in schematic block diagram form. Four different lowpass filters/splitters are shown on the card. To the left of each card is a voice port for connection to the narrowband (NB) network via the CO switch 46 via the line 50. On the righthand side of each lowpass filter/splitter is a port which is connected both to the twisted copper pair 36 to the subscriber and to the highpass filter 38 of the LT 62 (see FIG. 2). A side view of the physical dimensions of such a four-channel LPF card is shown in FIG. 7B, while a front view is shown in FIG. 7C." Czerwiec, 16:42-52.

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No.	'904 Patent Claim 14	Czerwiec
		FIG. 7A  Czerwiec, FIG. 7A.

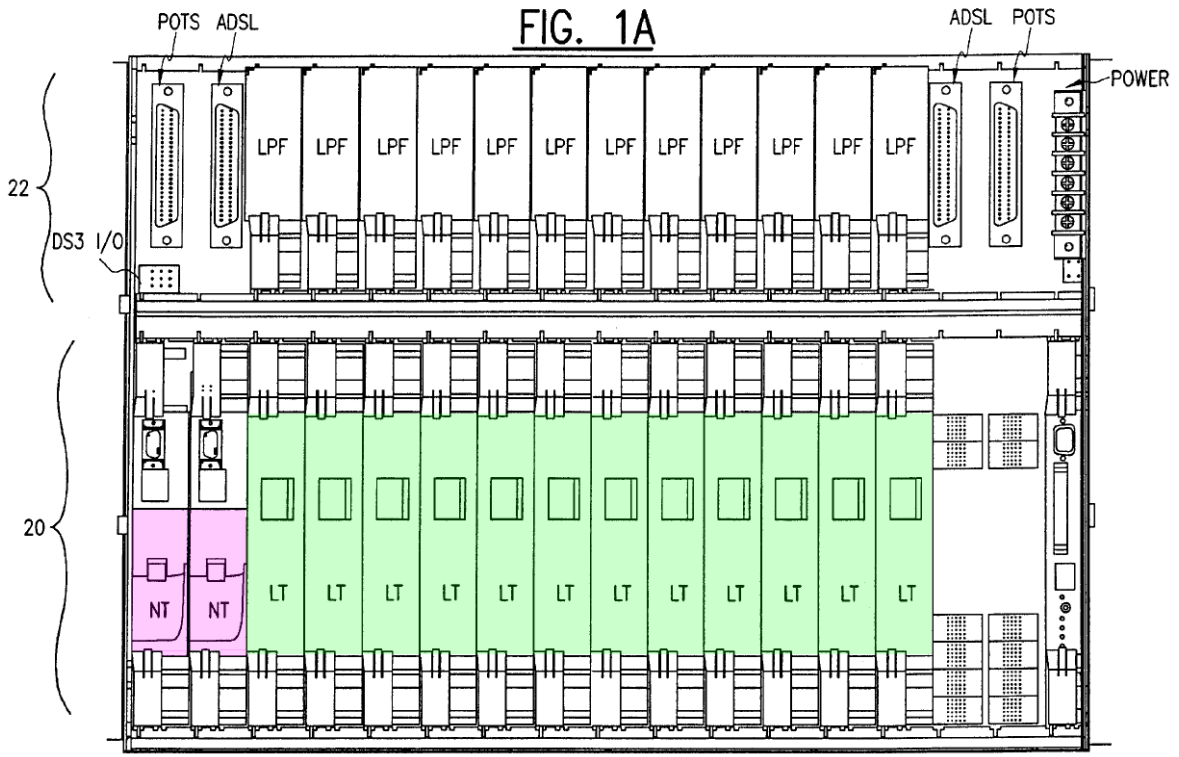
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No.	'904 Patent Claim 14	Czerwiec
14[d]	first and second physical interfaces, coupled to exchange packets with preceding and succeeding units, respectively, along the daisy chain;	Czerwiec discloses first and second physical interfaces, coupled to exchange packets with preceding and succeeding units, respectively, along the daisy chain. For example, Czerwiec discloses "[a]ccording to a tenth aspect of the present invention, a telecommunications rack for connection to an upstream network service provider for providing said service to downstream subscriber equipment also for connection to said rack comprises a plurality of shelves, at least one shelf for connection to said upstream network service provider by means of network termination equipment, each shelf for connection to different equipment of said downstream subscriber equipment by means of line termination equipment, wherein each of said plurality of shelves has a same nonredundant feature, at least one pair of redundant line termination equipment, one line termination equipment of said pair for use in said at least one shelf in association with said same nonredundant feature thereof and a remaining line termination equipment of said pair for use in another shelf of said plurality of shelves in association with said same nonredundant feature thereof, and means for connecting said at least one shelf and said another shelf for providing said same nonredundant feature redundantly." Czerwiec, 5:63-6:14. According to Czerwiec, "FIG. 1 shows a new shelf arrangement 10 for use in a subscriber access multiplexer system according to the invention. The embodiment shown is for use in an ATM subscriber access multiplexer (ASAM) system, but it should be understood that the invention is not limited to ATM embodiments. The shelf 10 is populated by at least one or a redundant pair of network termination (NT) cards 12 a, 12 b, up to twelve xDSL, in this case ADSL (Asynchronous Digital Subscriber Line), line termination (LT) cards 14, an equal number of Low Pass Filter (LPF) 15 cards 24, an optional Network Element Processor (NEP) 16 a (or an optional redundant pair 16 a, 16 b), and an Alarm Collection Unit (ACU) 18. An LT card is described in more detail below in connection with FIG. 10, while a network termination card is described in more detail below in connection with FIGS. 14A-14E. A lowpass filter card is disclosed in more detail below in connection with FIGS. 7A, 7B and 7C. An alarm collection unit (ACU) 18 is shown in block diagram form in FIG. 15, and a physical embodiment is shown in FIG. 16." Czerwiec, 9:9-26.

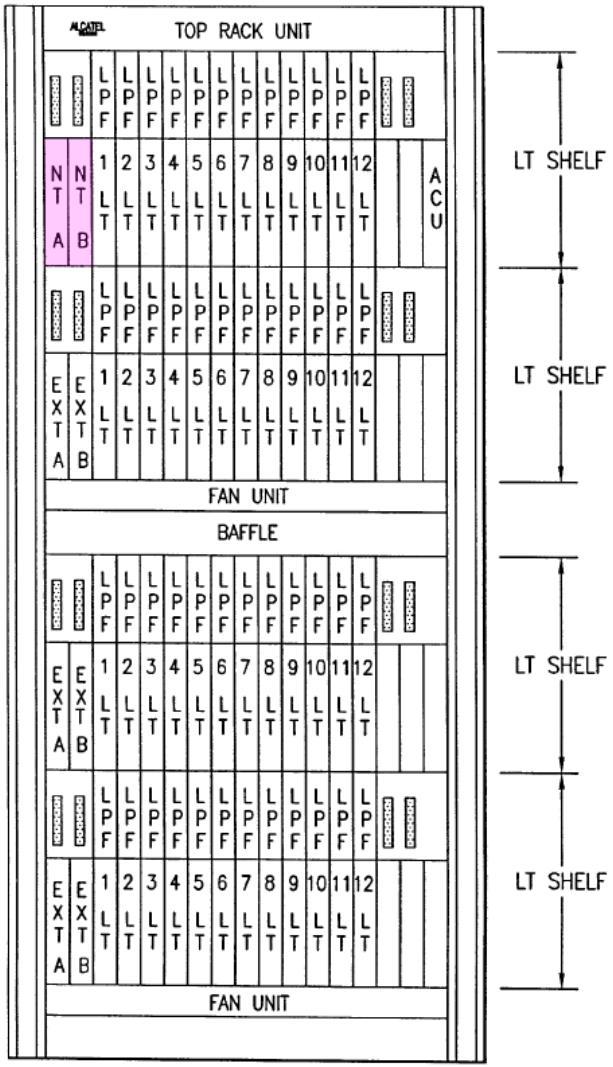
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No.	'904 Patent Claim 14	Czerwiec
		Further, Czerwiec discloses that "[t]hese cards can be mounted as shown in FIG. 1 in a bottom section 20 of the shelf 10 and can be, e.g., six rack spaces in height where one rack space equals 1.75 inches (4.45 cm). An upper portion 22 of the shelf can be, e.g., three rack spaces in height for containing up to, e.g., twelve lowpass filter (LPF) cards 24, with each LPF card dedicated to an associated ADSL-LT directly below it. Also in the upper portion 22 of the shelf 10 may be located connections 26 for POTS (plain old telephone service) interfaces and connections 28 for drop tip/ring leads, connections 30 for power, and a small board 32 for DS-3-NT equipment protection as explained below. The POTS can, but need not, be in analog baseband form. It could take other forms, such as ISDN. Note that the lowpass filters 24 are grouped in the center of the upper portion 22 of the shelf, with the connections 26 for POTS and connections 28 for drop tip/ring leads for location at ends 33 of the upper portion 22 of the shelf. Since the lowpass filters plug into the backplane upon insertion in slots of the shelf and do not connect to cables, they are positioned in the center of the upper portion 22. The connections 26, 28, 30 and 32, on the other hand, require cabling access and are positioned, according to the present invention, at the ends 33 to facilitate such connections near the periphery of the shelf 10, rather than requiring cables passing over central portions of the shelf. Similarly, the LT cards 14 are positioned in the center of the lower section 20 of the shelf 10, since they do not require cabling and are connected to other modules by the backplane, to which they are connected via a connector upon insertion. Thus, the NTs 12A, 12B, the NEPs 16A, 16B and the ACU 18 are positioned at ends 35 of the lower section 20 to provide easy cable access. It is also noted that the shelf is designed entirely for front access. The shelf 10 can be dimensioned to fit both U.S. and European equipment racks, e.g., being 498 mm wide and 285 mm deep." Czerwiec, 9:27-62. Czerwiec discloses redundant NT cards that serve as first and second master units to a plurality of daisy-chained LT units. Specifically, Czerwiec discloses that "FIG. 1A shows a front view of an actual shelf with redundant NT cards…." Czerwiec, 9:66-67.

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No.	'904 Patent Claim 14	Czerwiec
		 Czerwiec, FIG. 1A (annotated). Further, Czerwiec discloses "FIG. 1B shows a plurality of shelves mounted in a central office rack, such as shown in FIG. 1E, in a standard configuration for serving 192 ADSL lines. Up to four adjacent racks can share the same feeder by using extension units installed in place of NTs, as explained below in connection with FIG. 6. In that case, a single, optionally-protected NT card can support up to 576 ADSL lines. FIG. 1C shows the shelf of FIG. 1A without any cards installed and shows the connectors installed in the backplane, into which mating connectors on the cards are insertable by sliding the cards into the slots shown. In this way, front-access-only is achieved. A side view of the shelf is shown in FIG. 1D." Czerwiec, 10:1-13.

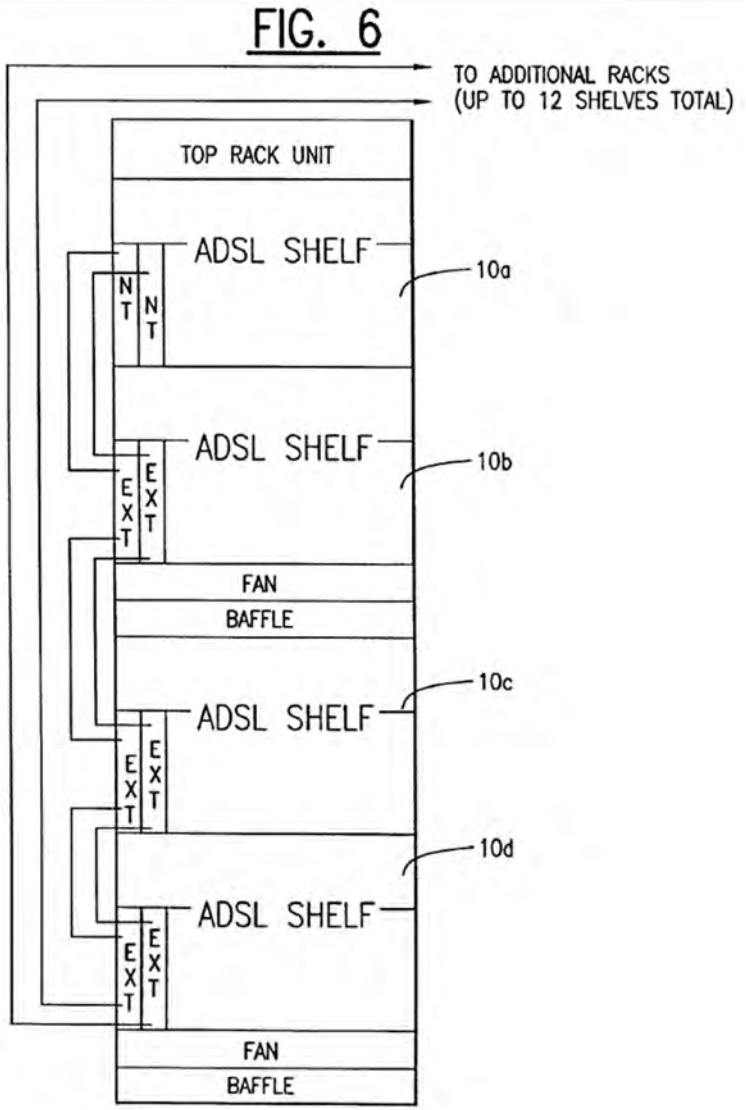
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No.	'904 Patent Claim 14	Czerwiec
		FIG. 1B  Czerwiec, FIG. 1B (annotated).

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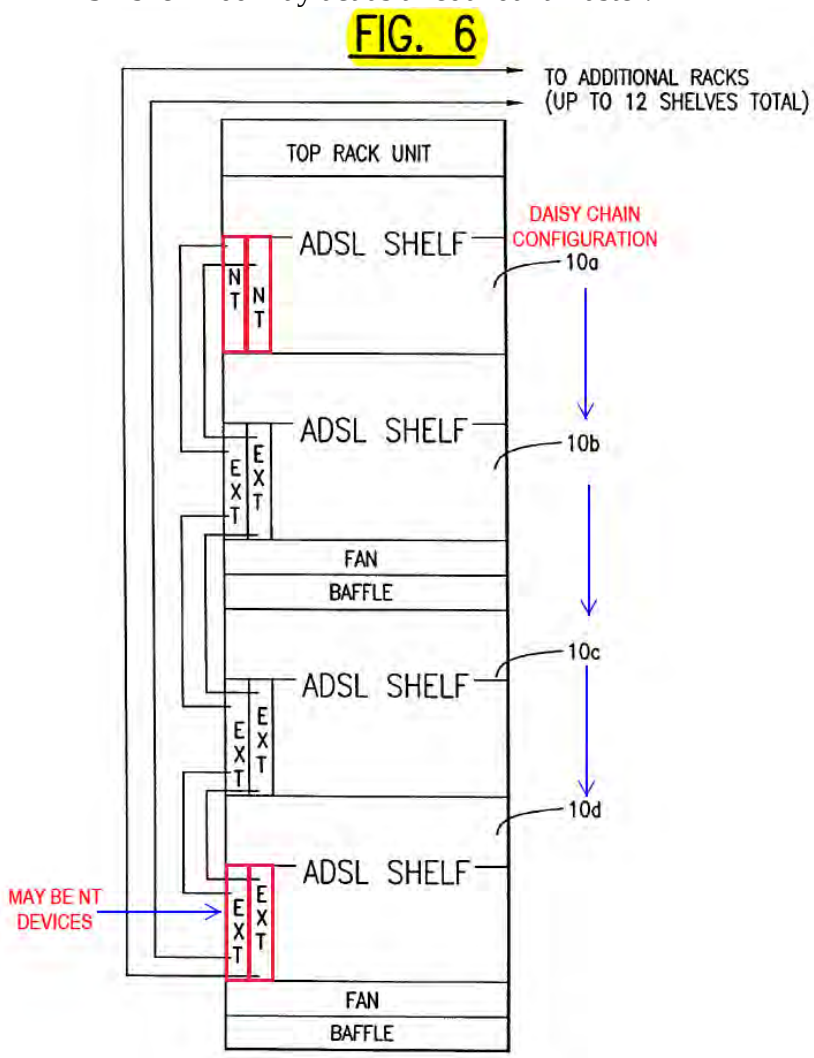
No.	'904 Patent Claim 14	Czerwiec
		Czerwiec also discloses "FIG. 6 shows four xDSL shelves in one rack of an ASAM system; the shelves may be ADSL shelves as illustrated, for use with redundant IQ bus extender cards (EXT) in an "A/B" bank switchover scheme to extend the IQ bus to additional shelves to serve, e.g., with three such racks, up to 576 subscribers." Czerwiec, 7:56-60. Further, Czerwiec discloses "FIG. 6 shows in detail the above-mentioned feature of the present architecture whereby a plurality of ADSL shelves 10 a, 10 b, 10 c, 10 d such as shown in FIG. 1 can be daisy-chained together in a rack by means of an extender card (EXT) in each subsequent shelf. The extender card function is to effectively extend the IQ bus from shelf to shelf (daisy-chained, e.g., to a maximum of twelve shelves altogether), allowing up to, e.g., 576 ADSL subscribers accessed to the system. In other words, the extender card allows an NT card in a first shelf to act as an NT card for another shelf or a plurality of other shelves. I.e., in this case, three racks with altogether twelve daisy-chained shelves. The extender cards can be mounted as shown in FIG. 6 in the NT slots of subsequent shelves and may be redundant. In that case, any failure of an NT or extender card bank switches all LTs from the "A" NT/extender string to the "B" string. The active string then assumes control of each shelf's IQ bus. The IQ bus itself (within each shelf) is not redundant, but meets reliability requirements, as the NT has the ability to remove each LT from the IQ bus (disable) to isolate a fault and remove it from service." Czerwiec, 16:15-35 (emphasis added). Figure 6, having redundant NT cards in ADSL shelf 10a is shown below.

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No.	'904 Patent Claim 14	Czerwiec
		 Czerwiec, FIG. 6.

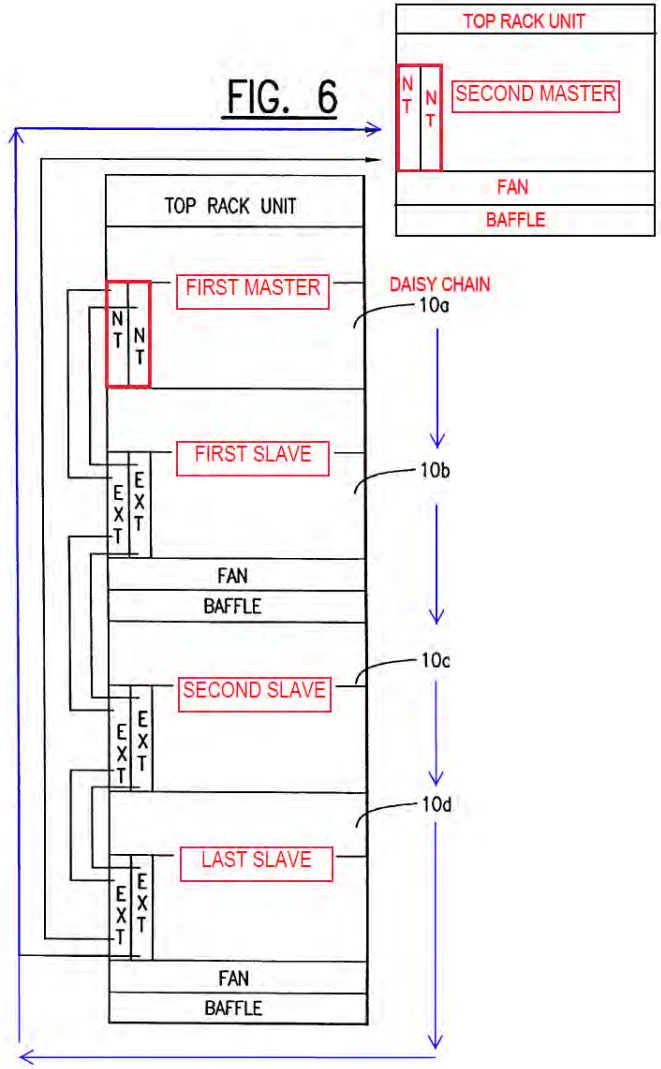
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No.	'904 Patent Claim 14	Czerwiec
		In another example, annotated Figure 6 shows ADSL shelves that are daisy chained, where the EXT cards in ADSL shelf 10d may act as a redundant master.



Czerwiec, FIG. 6 (annotated).

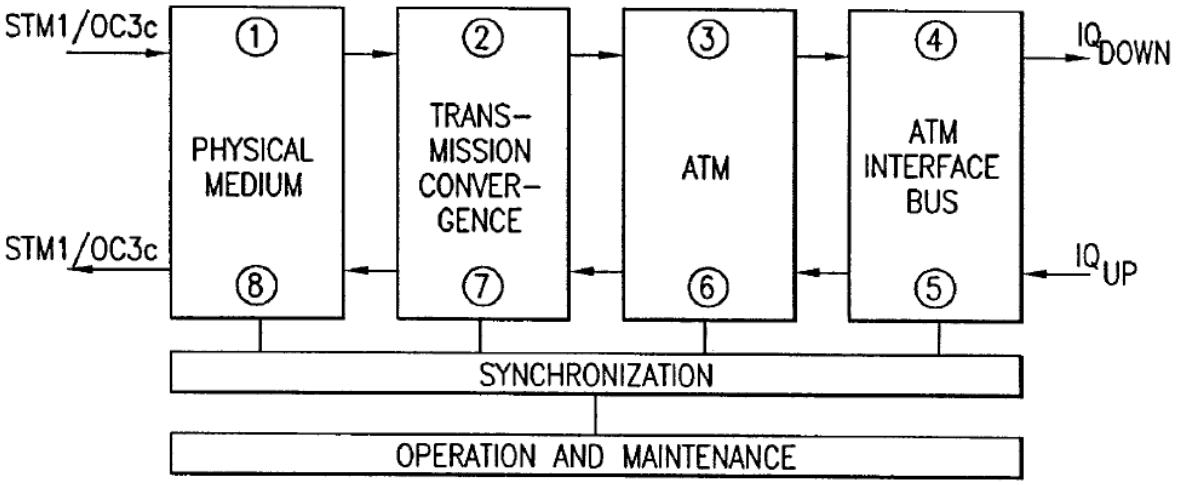
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No.	'904 Patent Claim 14	Czerwiec
		In yet another example, annotated Figure 6 shows ADSL shelves that are daisy chained, where the daisy chain is connected to redundant NT cards in an ADSL shelf of another rack.  Czerwiec, FIG. 6 (annotated).

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No.	'904 Patent Claim 14	Czerwiec
		Moreover, Czerwiec expressly discloses "A shelf can be used as a hub for connecting to a remote shelf that includes the line termination equipment for connection to subscribers. Although the internal bus of the shelf is shown in a non-redundant embodiment, an increased level of equipment protection can be provided by placing one half of a redundant equipment pair in one shelf and the other half in the other shelf and sharing network termination equipment between such shelves." Czerwiec, Abstract (emphasis added).
14[e]	a pre-switch, coupled to receive packets from the first physical interface and responsive to address data carried by the packets, to sort the packets such that packets addressed to the slave unit are retained, and packets addressed to the succeeding units are passed to the second physical interface; and	Czerwiec discloses a pre-switch, coupled to receive packets from the first physical interface and responsive to address data carried by the packets, to sort the packets such that packets addressed to the slave unit are retained, and packets addressed to the succeeding units are passed to the second physical interface. For example, Czerwiec discloses "FIG. 14A shows a simplified block diagram of an embodiment of an NT card, according to the present invention. It provides a high-speed optical or electrical access to a Synchronous Optical Network (SONET) transport system. It converts Asynchronous Transfer Mode (ATM) cells to SONET packets (i.e., frames) and vice versa. Thus, the NT card adapts ATM cells carried on the IQ bus to the SONET transmission system and vice versa. It also includes necessary functions as listed in the table of FIG. 14B for operating and maintaining the ATM subscriber access multiplexer of the present invention." Czerwiec, 21:13-24.

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No.	'904 Patent Claim 14	Czerwiec
		FIG. 14A  Czerwiec, FIG. 14A.

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No.	'904 Patent Claim 14	Czerwiec

FIG. 14B

	DOWNSTREAM† FUNCTIONS	UPSTREAM† FUNCTIONS	
①	Optical interface	Reading ATM cells from the ATM interface (IQ BUS)	⑤
①	Locking on received clock	ATM cell extraction	⑥
①	Serial to parallel conversion	ATM cell insertion	⑥
②	STM1/STS3c frame alignment recovery	ATM layer processing plus cell rate decoupling	⑥
②	STM1/STS3c descrambling	ATM cell Header Error Control (HEC) calculation	⑥
②	F1, F2, or F3 OAM functions	ATM cell payload scrambling	⑥
②	ATM cell delineation (in virtual container type 4s)	Mapping of ATM cells in virtual container type 4s	⑦
③	ATM cell HEC checking	F1, F2, or F3 OAM functions	⑦
③	ATM cell payload descrambling	STM1/STS3c scrambling	⑦
③	ATM layer processing plus cell rate decoupling	STM1/STS3c frame generation	⑦
③	ATM cell extraction	Parallel to serial conversion	⑧
③	ATM cell insertion	Produce transmit clock out of recieved clock or local oscillator	⑧
④	Provision of access to the ATM IQ bus	Optical interface	⑧

Note †Upstream is in the direction of the transport system and downstream is in the direction of the ATM IQ interface.

Czerwiec, FIG. 14B (annotated).

Further, Czerwiec discloses "For downstream ATM layer processing in the ATM block of FIG. 14A, each VC-4/SPE carries the equivalent of 44.151 cells (53 octets) which are octet-aligned and floating within the VC-4/SPE. The ATM cell delineation uses the correlation between the Header Error Control (HEC) in the cell header and the cell header itself. The cell delineation mechanism, as recommended by ITU-T Recommendation I.432, "B-ISDN User-Network Interface-Physical Layer Specification", is used. When the ATM cell boundary identification in octet H4 is used, the cell delineation will start searching at the octet indicated

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No.	'904 Patent Claim 14	Czerwiec
		by H4. If not, the search will start at the first octet of the payload period. The ATM cell information fields are descrambled according to the self-synchronizing scrambling/descrambling scheme recommended by ITU-T." Czerwiec, 22:4-19. "Valid non-idle cells, each with its confirmed HEC octet and descrambled information field, are sent to the IQ down interface, which is the last block shown in FIG. 14A. In that block, idle cell periods are added to adapt a received bit rate of up to 149.76 Mbit/s to 152.64 Mbit/s." Czerwiec, 22:20-24. "The routing of received ATM cells depends upon the VPI, VCI and PTI (payload type identifier) bits in the cell header. In total, 16 bits or four nibbles of VPI/VCI combinations can be checked, according to the modes shown in FIG. 14G. In each mentioned mode, different nibbles of VPI/VCI are selected. The selected VPI/VCI nibble combination corresponds with a specific data channel to be extracted. Cells can be extracted by looking only at the VPI/VCI combination or by looking at the VPI/VCI combination and at the PTI bits. In the second case, each PTI (23 in total) can be marked for extraction. This marking will then be used for all VPI/VCI combinations for which extraction is indicated, with the inclusion of the PTI check. All valid cells received in the virtual container or synchronous payload envelope, independent of their VPI/VCI combination, are transmitted downstream on the IQ down interface (cells marked for extraction are also sent to the ATM interface bus)." Czerwiec, 22:25-41.

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No.	'904 Patent Claim 14	Czerwiec

FIG. 14G

VPI			VCI				MODE
#3	#2	#1	#4	#3	#2	#1	
X	X	X			X		NNI
	X	X			X	X	UNI 1
		X		X	X	X	UNI 2

Czerwiec, FIG. 14G.

"ATM cell insertion and extraction is provided at the NT both in the direction of the network and in the direction of the IQ bus, in order to provide for the transmission and reception of Operation And Maintenance and signaling cells. Cell insertion and extraction is under control of an On-Board Controller (OBC)." Czerwiec, 22:42-47.

Czerwiec further discloses that "As suggested above, since there is only one nonredundant IQ bus per shelf, the equipment protection implied by FIG. 4C with A and B redundant DS-3-LT cards in slots 1 and 2 will be ineffective if the IQ bus itself has a failure. If it is desired to avoid this sort of failure, a different kind of redundancy in the DS-3 cards can be provided, as shown in FIG. 4E. In that case, half of the transmit and receive signals are used in the shelf, and the other half can be routed to a different shelf, instead of slot 2 in the same shelf. The top two cables shown in FIG. 4E would thus be routed to another shelf and be connected into, e.g., the DS-3 out and DS-3 in transformers shown in FIG. 4B in another shelf. The DS-3 out and DS-3 in cables of FIG. 4E would go to the CO switch or other network element." Czerwiec, 23:42-52.

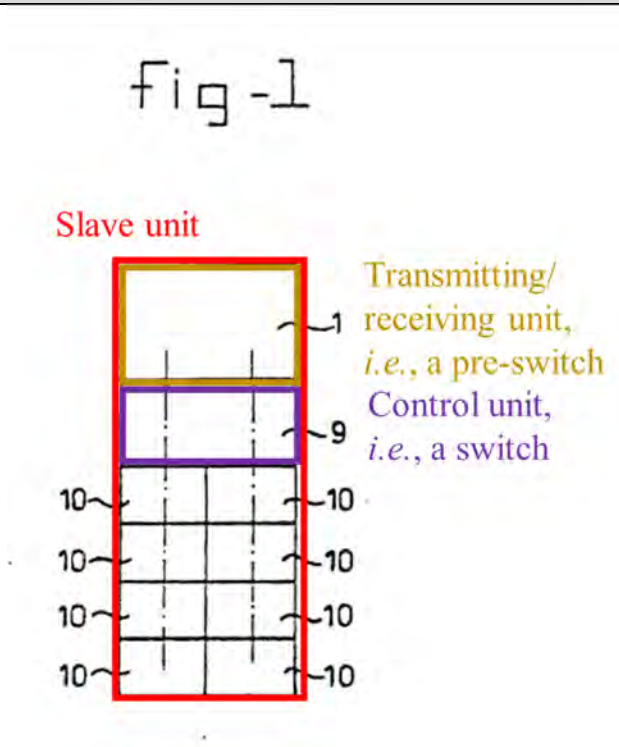
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No.	'904 Patent Claim 14	Czerwiec
		Czerwiec further discloses "The UIAC component is an LCA device which is programmed during "power-on-reset" from a serial PROM. It uses three synchronous 512×9 bit FIFOs for cell insertion and extraction and one 128K×8 bit SRAM for routing. The UIAC module has a SCI/PHY (Utopia-like) interface to the S/UNI+ component. ATM cell insertion in both the direction of the network (SDH/SONET) and in the direction of the LTs is handled by a 1 SIF (signaling insertion FIFO) buffer. An OBC bus is connected directly to the eight data inputs of the FIFO. The direction of cell insertion is specified by the OBC by writing into an additional UIAC register. The ninth bit of the FIFO is used for cell synchronization and insertion direction specification. A RAM lookup table is used for cell filtering on VPI/VCI combinations. The RAM has 128K entries of eight bits." Czerwiec, 24:16-30. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Czerwiec is found to not meet this limitation, a pre-switch, which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines would have been obvious to a person having ordinary skill in the art, as explained below. Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Czerwiec in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 14[e] of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Vink '324 discloses a transmission/receiving unit that receives packets from the receiving line that when received by a substation, if there is address coincidence, exchange is initiated, and in the absence of address coincidence, the information is not altered and is passed along. Vink '324, Claim 8 ("Communication system according to one or more of Claims 7 to 10 inclusive, wherein a slave (2, 3, 4, 5) is provided with means(15, 18, 23) for monitoring the

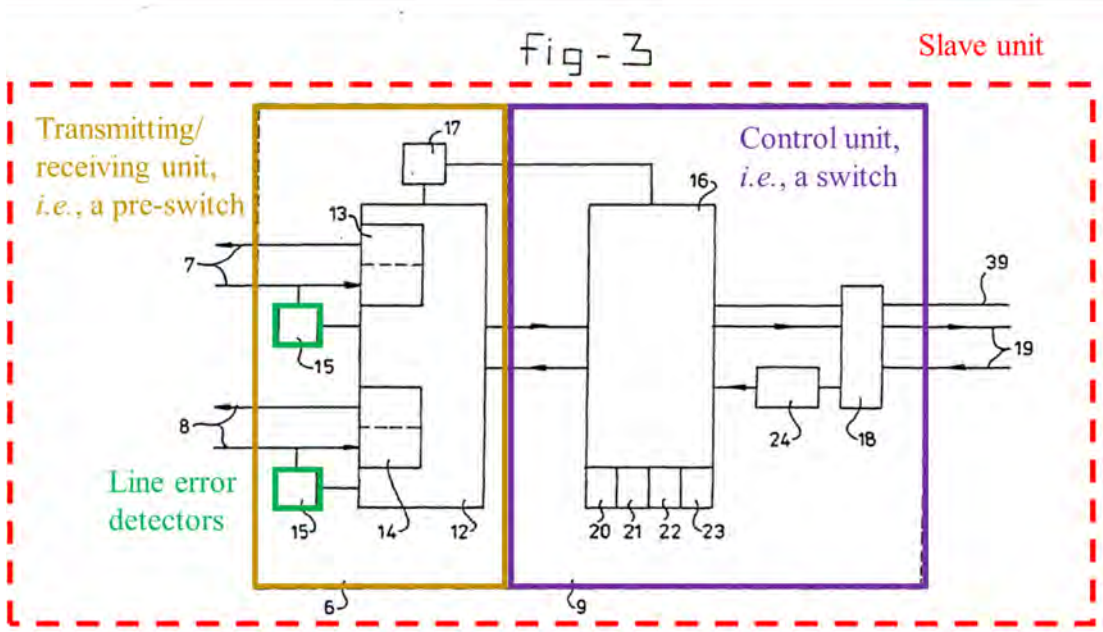
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No.	'904 Patent Claim 14	Czerwiec
		serial transfer of data bits via the transmission system (7, 8) and/or the local data bus (19)."). Vink '324, 3:35-4:10 ("European Patent Application 0,253,381 discloses a communication system in which the data bits are transferred serially up to I/O level. In this process, address information is added to the data bits intended for a particular substation. Information received by a-substation and transmitted under the control of a master station is investigated for address coincidence. In the case of a positive result, that is to say, when the address information added to a group of data bits corresponds to the address allocated to the relevant substation, exchange is initiated. In this process, the data bits intended for a substation are replaced in the same format by data bits originating from the relevant substation and intended for the master station. In the absence of address coincidence, the information concerned is not altered.").

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No.	'904 Patent Claim 14	Czerwiec
		 Vink '324, FIG. 1 (annotated). Vink '324, 17:3-12 ("Figure 3 shows a block diagram of an exemplary embodiment of a portion of a slave 2, 3, 4, 5. Data bits are transported via connections provided with an arrow. The transmitting/receiving unit 6 comprises a multiplexer 12 consisting of two moderns 13, 14 which are respectively connected to the first transmission ring 7 and to the second transmission ring 8. For the transmission of the data via the transmission system, signal coding techniques known per se in practice may be used. The operation of the relevant transmission ring 7, 8 can be monitored by means of line error detectors 15.").

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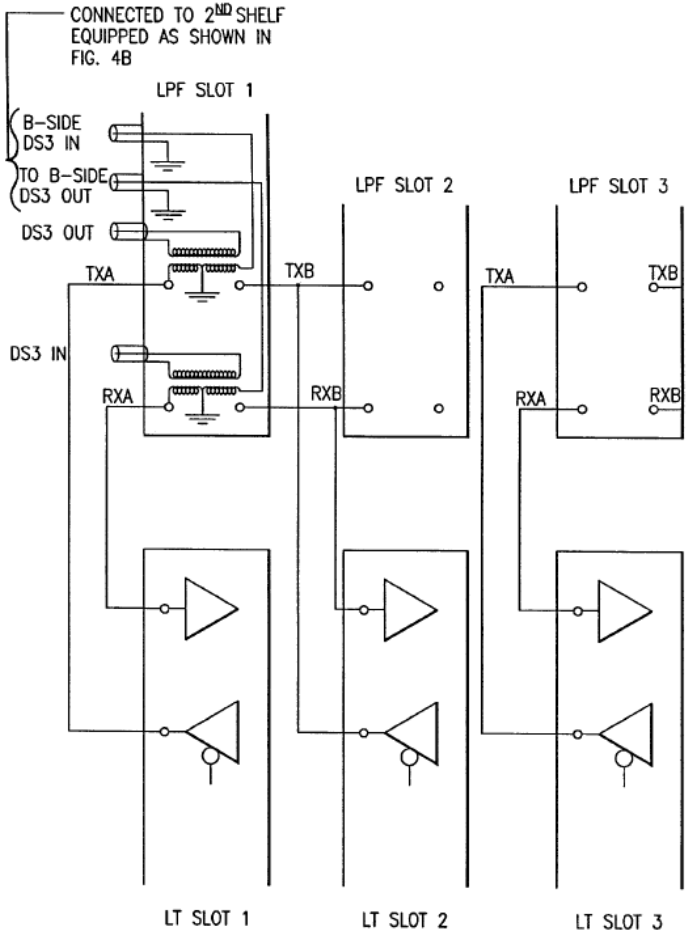
No.	'904 Patent Claim 14	Czerwiec
		 Vink '324, FIG. 3 (annotated). Vink '324, 17:38-18:13 ("As already discussed in the introduction, every slave can be provided with an unambiguous address and the addressing of the separate I/0 modules 10 can take place on the bases of their sequence in the cascade arrangement. Consequently, a unit 20 which is capable of decoding the address of a slave, a unit 21 which is capable of detecting information about the number of data bits for a relevant slave and, if necessary, a unit 22 which is capable of reading out information about the type coding of the I/O modules connected to the local data bus, for example a module having only an input side or a module having only an output side, are provided. A further unit 23 is provided for a content check of the data bits received, for example on the basis of error detection techniques known per se. The relevant units 20, 21, 22, 23 are all connected to the unit 16 or form part thereof.").
14[f]	a fabric of one or more switches, which	Czerwiec discloses a fabric of one or more switches, which convey the retained packets to the ports, responsive to the address data.

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No.	'904 Patent Claim 14	Czerwiec
	convey the retained packets to the ports, responsive to the address data.	*See supra* at 11[f].

No.	'904 Patent Claim 15	Czerwiec
15	The slave unit according to claim 14, wherein the pre-switch is further coupled to receive packets transferred thereto from the second physical interface and to sort the packets in like manner to the packets received through the first physical interface.	Czerwiec discloses the slave unit according to claim 14, wherein the pre-switch is further coupled to receive packets transferred thereto from the second physical interface and to sort the packets in like manner to the packets received through the first physical interface. For example, Czerwiec discloses that data flow is bidirectional along the daisy chain, so that upstream data packets can also be sent along the daisy chain via the second master unit. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. For example, Czerwiec discloses "As suggested above, since there is only one nonredundant IQ bus per shelf, the equipment protection implied by FIG. 4C with A and B redundant DS-3-LT cards in slots 1 and 2 will be ineffective if the IQ bus itself has a failure. If it is desired to avoid this sort of failure, a different kind of redundancy in the DS-3 cards can be provided, as shown in FIG. 4E. In that case, half of the transmit and receive signals are used in the shelf, and the other half can be routed to a different shelf, instead of slot 2 in the same shelf. The top two cables shown in FIG. 4E would thus be routed to another shelf and be connected into, e.g., the DS-3 out and DS-3 in transformers shown in FIG. 4B in another shelf. The DS-3 out and DS-3 in cables of FIG. 4E would go to the CO switch or other network element." Czerwiec, 23:42-52.

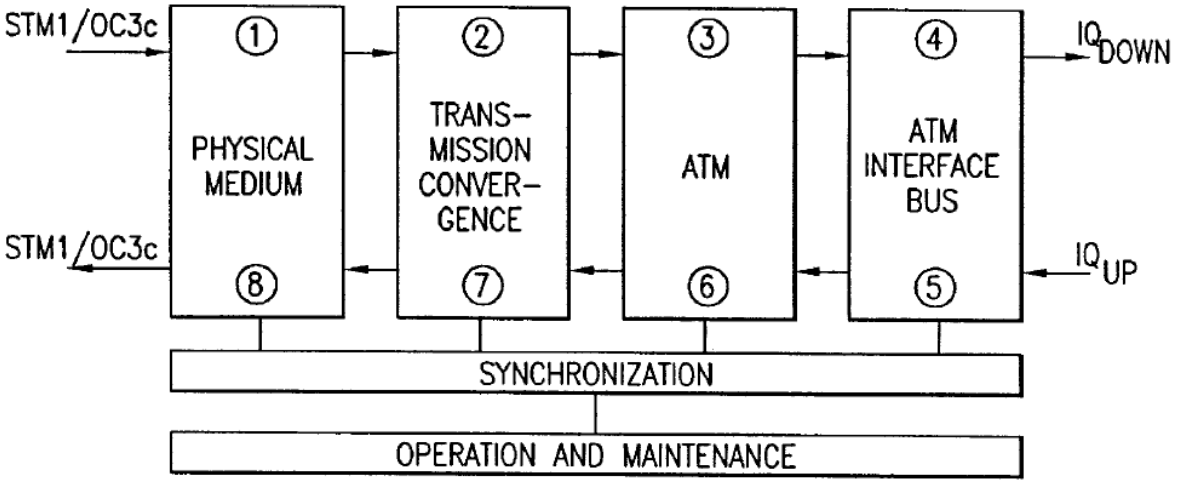
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No.	'904 Patent Claim 15	Czerwiec
		FIG. 4E  Czerwiec, FIG. 4E. *See also supra* at 4[f], 22[a].

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No.	'904 Patent Claim 16	Czerwiec
16[a]	The slave unit according to claim 15, wherein the retained packets that were received from the first and second physical interfaces and are passed by the pre-switch to the switch fabric are identified by respective first and second port numbers,	Czerwiec discloses the slave unit according to claim 15, wherein the retained packets that were received from the first and second physical interfaces and are passed by the pre-switch to the switch fabric are identified by respective first and second port numbers. *See supra* at 14[e].
16[b]	and wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second port numbers are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required in response to the reversal.	Czerwiec discloses in response to a reversal of a direction of data flow in the daisy chain, the first and second port numbers are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required in response to the reversal. For example, Czerwiec discloses "As suggested above, since there is only one nonredundant IQ bus per shelf, the equipment protection implied by FIG. 4C with A and B redundant DS-3-LT cards in slots 1 and 2 will be ineffective if the IQ bus itself has a failure. If it is desired to avoid this sort of failure, a different kind of redundancy in the DS-3 cards can be provided, as shown in FIG. 4E. In that case, half of the transmit and receive signals are used in the shelf, and the other half can be routed to a different shelf, instead of slot 2 in the same shelf. The top two cables shown in FIG. 4E would thus be routed to another shelf and be connected into, e.g., the DS-3 out and DS-3 in transformers shown in FIG. 4B in another shelf. The DS-3 out and DS-3 in cables of FIG. 4E would go to the CO switch or other network element." Czerwiec, 23:42-52. *See supra* at 10.

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No.	'904 Patent Claim 17	Czerwiec
17	The slave unit according to claim 14, wherein when one of the packets received by the pre-switch comprises a multicast packet addressed to one or more of the ports on the slave unit, the pre-switch sorts the multicast packet such that one copy of the packet is retained and another copy of the packet is passed to the second physical interface.	Czerwiec discloses the slave unit according to claim 14, wherein when one of the packets received by the pre-switch comprises a multicast packet addressed to one or more of the ports on the slave unit, the pre-switch sorts the multicast packet such that one copy of the packet is retained and another copy of the packet is passed to the second physical interface. For example, Czerwiec discloses "FIG. 14A shows a simplified block diagram of an embodiment of an NT card, according to the present invention. It provides a high-speed optical or electrical access to a Synchronous Optical Network (SONET) transport system. It converts Asynchronous Transfer Mode (ATM) cells to SONET packets (i.e., frames) and vice versa. Thus, the NT card adapts ATM cells carried on the IQ bus to the SONET transmission system and vice versa. It also includes necessary functions as listed in the table of FIG. 14B for operating and maintaining the ATM subscriber access multiplexer of the present invention." Czerwiec, 21:13-24. FIG. 14A  Czerwiec, FIG. 14A.

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No.	'904 Patent Claim 17	Czerwiec

FIG. 14B

	DOWNSTREAM† FUNCTIONS	UPSTREAM† FUNCTIONS	
①	Optical interface	Reading ATM cells from the ATM interface (IQ BUS)	⑤
①	Locking on received clock	ATM cell extraction	⑥
①	Serial to parallel conversion	ATM cell insertion	⑥
②	STM1/STS3c frame alignment recovery	ATM layer processing plus cell rate decoupling	⑥
②	STM1/STS3c descrambling	ATM cell Header Error Control (HEC) calculation	⑥
②	F1, F2, or F3 OAM functions	ATM cell payload scrambling	⑥
②	ATM cell delineation (in virtual container type 4s)	Mapping of ATM cells in virtual container type 4s	⑦
③	ATM cell HEC checking	F1, F2, or F3 OAM functions	⑦
③	ATM cell payload descrambling	STM1/STS3c scrambling	⑦
③	ATM layer processing plus cell rate decoupling	STM1/STS3c frame generation	⑦
③	ATM cell extraction	Parallel to serial conversion	⑧
③	ATM cell insertion	Produce transmit clock out of recieved clock or local oscillator	⑧
④	Provision of access to the ATM IQ bus	Optical interface	⑧

Note †Upstream is in the direction of the transport system and downstream is in the direction of the ATM IQ interface.

Czerwiec, FIG. 14B (annotated).

Further, Czerwiec discloses "For downstream ATM layer processing in the ATM block of FIG. 14A, each VC-4/SPE carries the equivalent of 44.151 cells (53 octets) which are octet-aligned and floating within the VC-4/SPE. The ATM cell delineation uses the correlation between the Header Error Control (HEC) in the cell header and the cell header itself. The cell delineation mechanism, as recommended by ITU-T Recommendation I.432, "B-ISDN User-Network Interface-Physical Layer Specification", is used. When the ATM cell boundary identification in octet H4 is used, the cell delineation will start searching at the octet indicated

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No.	'904 Patent Claim 17	Czerwiec
		by H4. If not, the search will start at the first octet of the payload period. The ATM cell information fields are descrambled according to the self-synchronizing scrambling/descrambling scheme recommended by ITU-T." Czerwiec, 22:4-19. "Valid non-idle cells, each with its confirmed HEC octet and descrambled information field, are sent to the IQ down interface, which is the last block shown in FIG. 14A. In that block, idle cell periods are added to adapt a received bit rate of up to 149.76 Mbit/s to 152.64 Mbit/s." Czerwiec, 22:20-24. "The routing of received ATM cells depends upon the VPI, VCI and PTI (payload type identifier) bits in the cell header. In total, 16 bits or four nibbles of VPI/VCI combinations can be checked, according to the modes shown in FIG. 14G. In each mentioned mode, different nibbles of VPI/VCI are selected. The selected VPI/VCI nibble combination corresponds with a specific data channel to be extracted. Cells can be extracted by looking only at the VPI/VCI combination or by looking at the VPI/VCI combination and at the PTI bits. In the second case, each PTI (23 in total) can be marked for extraction. This marking will then be used for all VPI/VCI combinations for which extraction is indicated, with the inclusion of the PTI check. All valid cells received in the virtual container or synchronous payload envelope, independent of their VPI/VCI combination, are transmitted downstream on the IQ down interface (cells marked for extraction are also sent to the ATM interface bus)." Czerwiec, 22:25-41.

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No.	'904 Patent Claim 17	Czerwiec

FIG. 14G

VPI			VCI				MODE
#3	#2	#1	#4	#3	#2	#1	
X	X	X			X		NNI
	X	X			X	X	UNI 1
		X		X	X	X	UNI 2

Czerwiec, FIG. 14G.

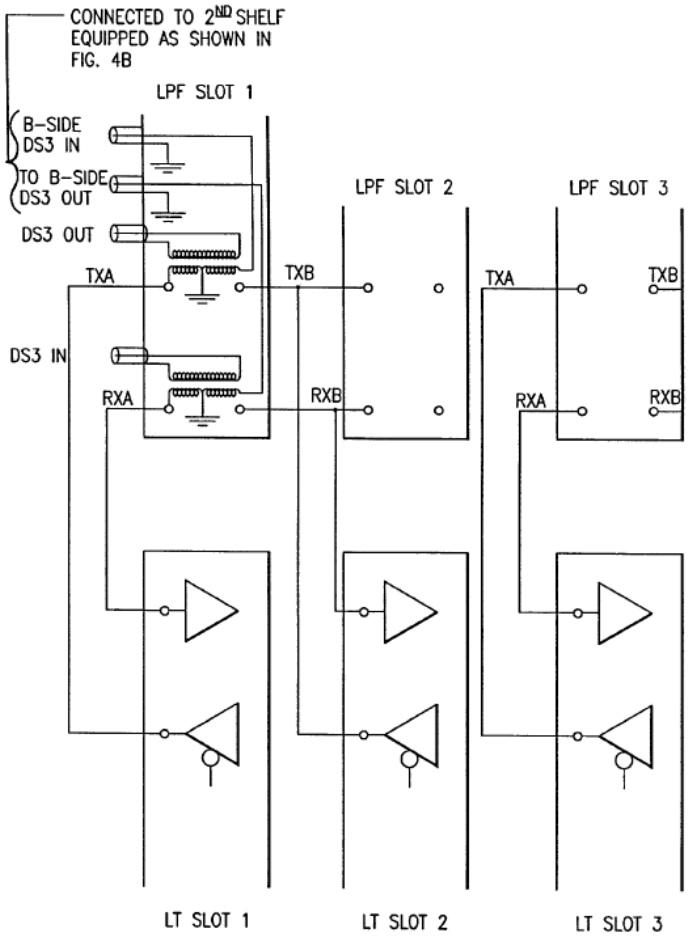
"ATM cell insertion and extraction is provided at the NT both in the direction of the network and in the direction of the IQ bus, in order to provide for the transmission and reception of Operation And Maintenance and signaling cells. Cell insertion and extraction is under control of an On-Board Controller (OBC)." Czerwiec, 22:42-47.

Czerwiec further discloses that "As suggested above, since there is only one nonredundant IQ bus per shelf, the equipment protection implied by FIG. 4C with A and B redundant DS-3-LT cards in slots 1 and 2 will be ineffective if the IQ bus itself has a failure. If it is desired to avoid this sort of failure, a different kind of redundancy in the DS-3 cards can be provided, as shown in FIG. 4E. In that case, half of the transmit and receive signals are used in the shelf, and the other half can be routed to a different shelf, instead of slot 2 in the same shelf. The top two cables shown in FIG. 4E would thus be routed to another shelf and be connected into, e.g., the DS-3 out and DS-3 in transformers shown in FIG. 4B in another shelf. The DS-3 out and DS-3 in cables of FIG. 4E would go to the CO switch or other network element." Czerwiec, 23:42-52.

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No.	'904 Patent Claim 17	Czerwiec
		Czerwiec further discloses "The UIAC component is an LCA device which is programmed during "power-on-reset" from a serial PROM. It uses three synchronous 512×9 bit FIFOs for cell insertion and extraction and one 128K×8 bit SRAM for routing. The UIAC module has a SCI/PHY (Utopia-like) interface to the S/UNI+ component. ATM cell insertion in both the direction of the network (SDH/SONET) and in the direction of the LTs is handled by a 1 SIF (signaling insertion FIFO) buffer. An OBC bus is connected directly to the eight data inputs of the FIFO. The direction of cell insertion is specified by the OBC by writing into an additional UIAC register. The ninth bit of the FIFO is used for cell synchronization and insertion direction specification. A RAM lookup table is used for cell filtering on VPI/VCI combinations. The RAM has 128K entries of eight bits." Czerwiec, 24:16-30.

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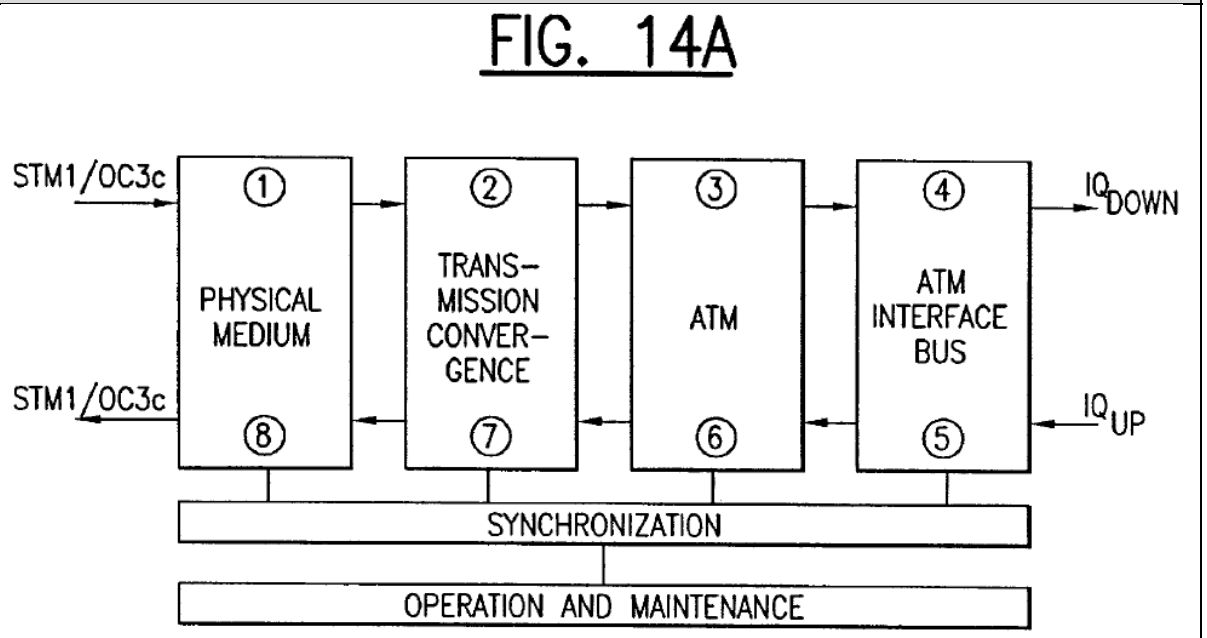
No.	'904 Patent Claim 17	Czerwiec
		FIG. 4E  Czerwiec, FIG. 4E. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Czerwiec is found to not meet this limitation, a pre-

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No.	'904 Patent Claim 17	Czerwiec
		switch, which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines would have been obvious to a person having ordinary skill in the art, as explained below. *See also supra* at 14[e].

No.	'904 Patent Claim 18	Czerwiec
18	The slave unit according to claim 14, wherein in the event of a fault in the switch fabric, the pre-switch continues to pass the packets addressed to the succeeding units on to the succeeding units without significant interruption.	Czerwiec discloses the slave unit according to claim 14, wherein in the event of a fault in the switch fabric, the pre-switch continues to pass the packets addressed to the succeeding units on to the succeeding units without significant interruption. For example, Czerwiec discloses "FIG. 14A shows a simplified block diagram of an embodiment of an NT card, according to the present invention. It provides a high-speed optical or electrical access to a Synchronous Optical Network (SONET) transport system. It converts Asynchronous Transfer Mode (ATM) cells to SONET packets (i.e., frames) and vice versa. Thus, the NT card adapts ATM cells carried on the IQ bus to the SONET transmission system and vice versa. It also includes necessary functions as listed in the table of FIG. 14B for operating and maintaining the ATM subscriber access multiplexer of the present invention." Czerwiec, 21:13-24.

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No.	'904 Patent Claim 18	Czerwiec
		 Czerwiec, FIG. 14A.

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No.	'904 Patent Claim 18	Czerwiec

FIG. 14B

	DOWNSTREAM† FUNCTIONS	UPSTREAM† FUNCTIONS	
①	Optical interface	Reading ATM cells from the ATM interface (IQ BUS)	⑤
①	Locking on received clock	ATM cell extraction	⑥
①	Serial to parallel conversion	ATM cell insertion	⑥
②	STM1/STS3c frame alignment recovery	ATM layer processing plus cell rate decoupling	⑥
②	STM1/STS3c descrambling	ATM cell Header Error Control (HEC) calculation	⑥
②	F1, F2, or F3 OAM functions	ATM cell payload scrambling	⑥
②	ATM cell delineation (in virtual container type 4s)	Mapping of ATM cells in virtual container type 4s	⑦
③	ATM cell HEC checking	F1, F2, or F3 OAM functions	⑦
③	ATM cell payload descrambling	STM1/STS3c scrambling	⑦
③	ATM layer processing plus cell rate decoupling	STM1/STS3c frame generation	⑦
③	ATM cell extraction	Parallel to serial conversion	⑧
③	ATM cell insertion	Produce transmit clock out of recieved clock or local oscillator	⑧
④	Provision of access to the ATM IQ bus	Optical interface	⑧

Note †Upstream is in the direction of the transport system and downstream is in the direction of the ATM IQ interface.

Czerwiec, FIG. 14B (annotated).

Further, Czerwiec discloses "For downstream ATM layer processing in the ATM block of FIG. 14A, each VC-4/SPE carries the equivalent of 44.151 cells (53 octets) which are octet-aligned and floating within the VC-4/SPE. The ATM cell delineation uses the correlation between the Header Error Control (HEC) in the cell header and the cell header itself. The cell delineation mechanism, as recommended by ITU-T Recommendation I.432, "B-ISDN User-Network Interface-Physical Layer Specification", is used. When the ATM cell boundary identification in octet H4 is used, the cell delineation will start searching at the octet indicated

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No.	'904 Patent Claim 18	Czerwiec
		by H4. If not, the search will start at the first octet of the payload period. The ATM cell information fields are descrambled according to the self-synchronizing scrambling/descrambling scheme recommended by ITU-T." Czerwiec, 22:4-19. "Valid non-idle cells, each with its confirmed HEC octet and descrambled information field, are sent to the IQ down interface, which is the last block shown in FIG. 14A. In that block, idle cell periods are added to adapt a received bit rate of up to 149.76 Mbit/s to 152.64 Mbit/s." Czerwiec, 22:20-24. "The routing of received ATM cells depends upon the VPI, VCI and PTI (payload type identifier) bits in the cell header. In total, 16 bits or four nibbles of VPI/VCI combinations can be checked, according to the modes shown in FIG. 14G. In each mentioned mode, different nibbles of VPI/VCI are selected. The selected VPI/VCI nibble combination corresponds with a specific data channel to be extracted. Cells can be extracted by looking only at the VPI/VCI combination or by looking at the VPI/VCI combination and at the PTI bits. In the second case, each PTI (23 in total) can be marked for extraction. This marking will then be used for all VPI/VCI combinations for which extraction is indicated, with the inclusion of the PTI check. All valid cells received in the virtual container or synchronous payload envelope, independent of their VPI/VCI combination, are transmitted downstream on the IQ down interface (cells marked for extraction are also sent to the ATM interface bus)." Czerwiec, 22:25-41.

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No.	'904 Patent Claim 18	Czerwiec

FIG. 14G

VPI			VCI				MODE
#3	#2	#1	#4	#3	#2	#1	
X	X	X			X		NNI
	X	X			X	X	UNI 1
		X		X	X	X	UNI 2

Czerwiec, FIG. 14G.

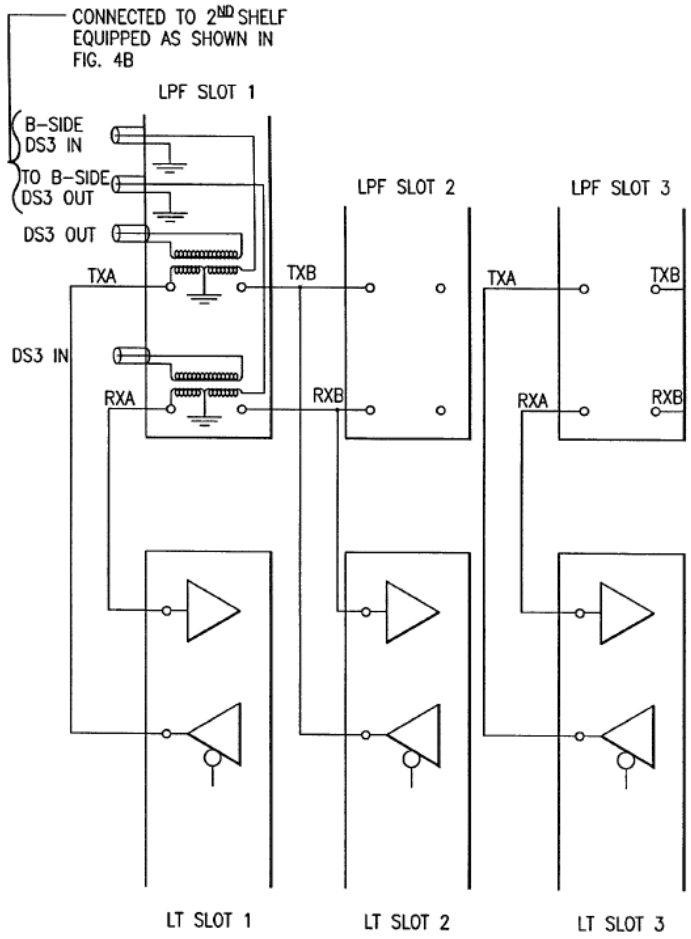
"ATM cell insertion and extraction is provided at the NT both in the direction of the network and in the direction of the IQ bus, in order to provide for the transmission and reception of Operation And Maintenance and signaling cells. Cell insertion and extraction is under control of an On-Board Controller (OBC)." Czerwiec, 22:42-47.

Czerwiec further discloses that "As suggested above, since there is only one nonredundant IQ bus per shelf, the equipment protection implied by FIG. 4C with A and B redundant DS-3-LT cards in slots 1 and 2 will be ineffective if the IQ bus itself has a failure. If it is desired to avoid this sort of failure, a different kind of redundancy in the DS-3 cards can be provided, as shown in FIG. 4E. In that case, half of the transmit and receive signals are used in the shelf, and the other half can be routed to a different shelf, instead of slot 2 in the same shelf. The top two cables shown in FIG. 4E would thus be routed to another shelf and be connected into, e.g., the DS-3 out and DS-3 in transformers shown in FIG. 4B in another shelf. The DS-3 out and DS-3 in cables of FIG. 4E would go to the CO switch or other network element." Czerwiec, 23:42-52.

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No.	'904 Patent Claim 18	Czerwiec
		Czerwiec further discloses "The UIAC component is an LCA device which is programmed during "power-on-reset" from a serial PROM. It uses three synchronous 512×9 bit FIFOs for cell insertion and extraction and one 128K×8 bit SRAM for routing. The UIAC module has a SCI/PHY (Utopia-like) interface to the S/UNI+ component. ATM cell insertion in both the direction of the network (SDH/SONET) and in the direction of the LTs is handled by a 1 SIF (signaling insertion FIFO) buffer. An OBC bus is connected directly to the eight data inputs of the FIFO. The direction of cell insertion is specified by the OBC by writing into an additional UIAC register. The ninth bit of the FIFO is used for cell synchronization and insertion direction specification. A RAM lookup table is used for cell filtering on VPI/VCI combinations. The RAM has 128K entries of eight bits." Czerwiec, 24:16-30.

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No.	'904 Patent Claim 18	Czerwiec
		FIG. 4E  Czerwiec, FIG. 4E. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Czerwiec is found to not meet this limitation, a pre-

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No.	'904 Patent Claim 18	Czerwiec
		switch, which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines would have been obvious to a person having ordinary skill in the art, as explained below. Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Czerwiec in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 18 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Vink '324 discloses, in the event of a fault, having the transmitting/receiving unit pass on the packets to further units without altering them. Vink '324, 3:35-4:10 ("European Patent Application 0,253,381 discloses a communication system in which the data bits are transferred serially up to I/O level. In this process, address information is added to the data bits intended for a particular substation. Information received by a-substation and transmitted under the control of a master station is investigated for address coincidence. In the case of a positive result, that is to say, when the address information added to a group of data bits corresponds to the address allocated to the relevant substation, exchange is initiated. In this process, the data bits intended for a substation are replaced in the same format by data bits originating from the relevant substation and intended for the master station. In the absence of address coincidence, the information concerned is not altered."). For example, Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. Nortel Networks' BayStack 450 Switches disclose a BootP Automatic IP/MAC Address:

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No.	'904 Patent Claim 18	Czerwiec
		"The BayStack 450 switch has a unique 48-bit hardware address, or MAC address, that is printed on a label on the back panel. You use this MAC address when you configure the network BootP server to recognize the BayStack 450 switch BootP requests. A properly configured BootP server enables the switch to automatically learn its assigned IP address, subnet mask, IP address of the default router (default gateway), and software image file name. When the switch is participating in a stack configuration, a Stack MAC address is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If another unit in the stack is assigned as the base unit, the MAC address of the new base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit." BayStack 450 Manual at 43 of 290.

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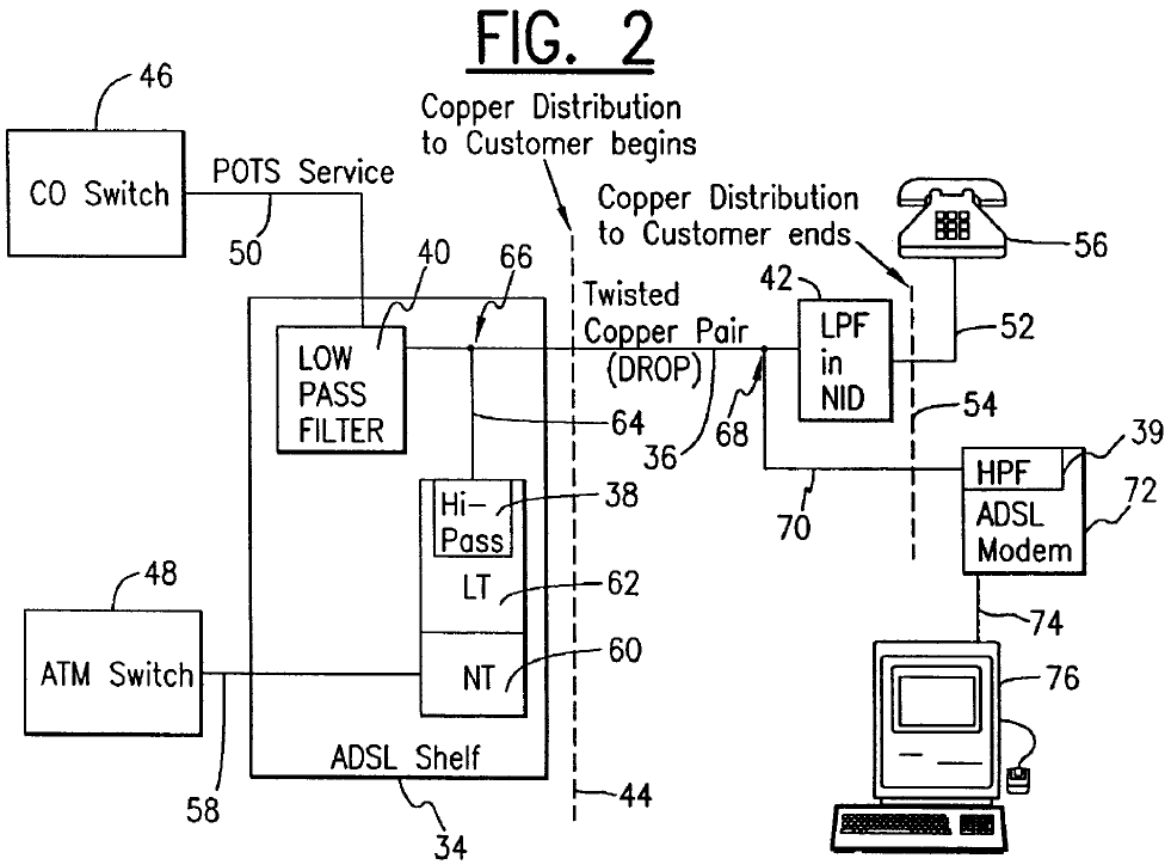
No.	'904 Patent Claim 18	Czerwiec
		Stack MAC Address The *Stack MAC address* is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If you designate another unit in the stack as the base unit, the MAC address of the *new* base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit. BayStack 450 Manual at 52 of 290.

No.	'904 Patent Claim 19	Czerwiec
19[pre]	A method for providing access to a network, comprising:	To the extent the preamble is found to be limiting, Czerwiec discloses a method for providing access to a network. For example, Czerwiec discloses "a telecommunications system for providing both narrowband and broadband services to a plurality of subscriber premises comprises at least one shelf for connection to a public switched telephone network (PSTN) and for connection to an asynchronous transfer mode (ATM) network for connecting the PSTN and the ATM network to the plurality of subscriber premises via a corresponding plurality of twisted copper pairs, and a plurality of subscriber modems for connection to the corresponding plurality of twisted copper pairs, wherein each of the twisted copper pairs is for providing a digital

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No.	'904 Patent Claim 19	Czerwiec
		subscriber line that accommodates both plain old telephone service (POTS) and digital channels in an ATM format." Czerwiec, 1:58-2:3. Czerwiec further discloses that "FIG. 2 shows a functional block diagram of the present invention whereby high speed packetized data in, e.g., ATM format is combined with traditional POTS service, e.g., in an xDSL shelf which may be an ADSL shelf in the embodiment illustrated for providing the means whereby POTS lifeline services on a twisted copper pair are overlaid with high speed digital services for communicating high bandwidth services to a customer's premises." Czerwiec, 7:16-23.

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No.	'904 Patent Claim 19	Czerwiec
		 Czerwiec, FIG. 2.
19[a]	coupling first and second master units to interface with the network;	Czerwiec discloses coupling first and second master units to interface with the network. *See supra* at 1[a].
19[b]	linking a plurality of slave units,	Czerwiec discloses linking a plurality of slave units.

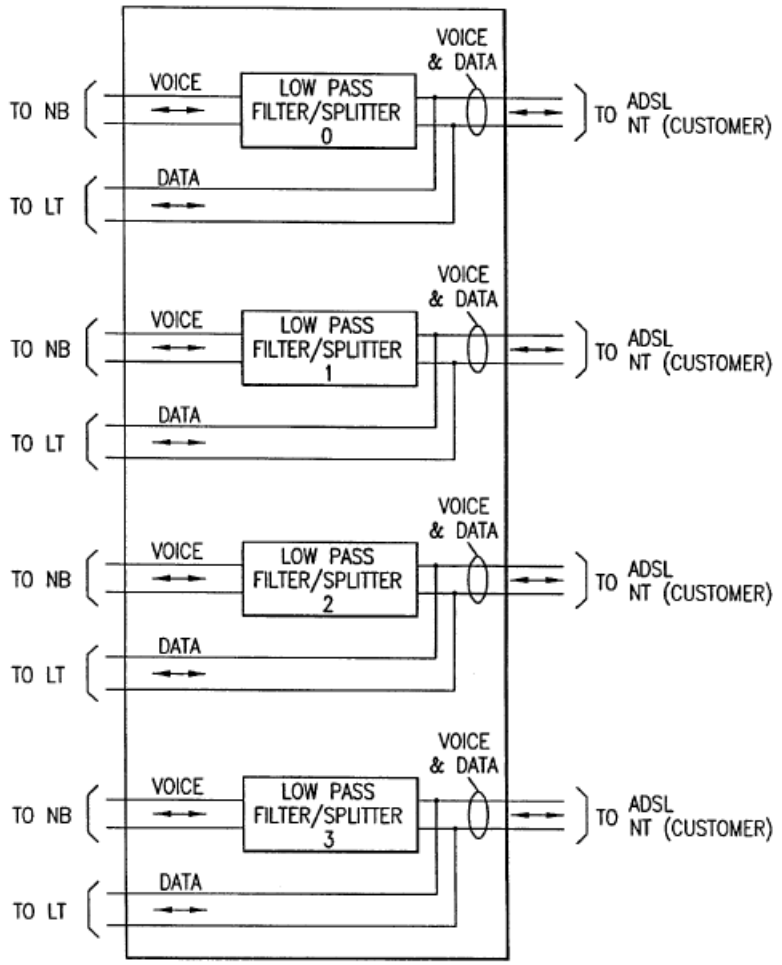
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No.	'904 Patent Claim 19	Czerwiec
		See supra at 1[b], 1[d].
19[c]	each slave unit comprising one or more ports to respective subscriber lines, in a daisy chain between the first and second master units;	Czerwiec discloses each slave unit comprising one or more ports to respective subscriber lines, in a daisy chain between the first and second master units. For example, Czerwiec discloses the "present invention relates to providing high-speed communications services to ordinary residences and small businesses on digital subscriber lines." Czerwiec, 1:8-10. Czerwiec discloses that "[a]ccording to a sixth aspect of the present invention, subscriber equipment for use in a telecommunications system having a shelf for connection both to a telephone network and to a wideband network and having a plurality of subscriber lines for connection to subscriber equipment at a plurality of subscriber premises, wherein each subscriber equipment comprises a lowpass filter for use at a subscriber's premises, responsive to a telephony signal occupying a baseband position in a frequency division multiplexed signal also having a wideband signal occupying a position above baseband, for only providing said telephony signal between said lowpass filter and a subscriber's telephone for use in voice communications between said subscriber's premises and said telephone network, and a digital subscriber line modem for use at the subscriber's premises, for connection to said frequency division multiplexed signal for only providing said wideband signal between said digital subscriber line modem and a subscriber's data terminal for use in digital communications between said subscriber's premises and said wideband network." Czerwiec, 4:54-5:6. Czerwiec discloses that "[a]ccording to an eighth aspect of the present invention, line termination equipment for use in a shelf of a telecommunications system, said line termination equipment for connection to a plurality of subscriber lines for connection to a corresponding plurality of subscriber equipment at a plurality of subscriber premises, wherein said line termination equipment comprises plural subscriber channels, each comprising a hybrid circuit for connection to a corresponding twisted pair from a corresponding subscriber premises, each channel comprising a highpass filter for isolating a telephony signal occupying a baseband position in a frequency-division multiplexed signal from a wideband signal occupying a position above baseband, a modulator/encoder, responsive to said wideband signal for providing an encoded and modulated wideband signal to said hybrid circuit for

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No.	'904 Patent Claim 19	Czerwiec
		providing said encoded and modulated wideband signal on said twisted copper pair in said position above baseband, and a demodulator/decoder, responsive to a wideband signal from said subscriber premises for providing a demodulated and decoded wideband signal to said wideband network." Czerwiec, 5:28-48. Czerwiec discloses that "[a]ccording to a ninth aspect of the present invention, a replaceable printed board assembly for use in a shelf of a telecommunications system, wherein said shelf is for connection both to a telephone network and to a wideband network and having a plurality of subscriber lines for connection to subscriber equipment at a plurality of subscriber premises, wherein said replaceable PBA comprises a corresponding plurality of lowpass filters, each having a first port for connection to a plain old telephone service interface comprising a plurality of twisted copper pairs, and a second port for connection to a corresponding second plurality of twisted copper pairs for connection to said corresponding plurality of customer premises and to said wideband network via a wideband multiplex bus of said shelf." Czerwiec, 5:49-62. Further, Czerwiec discloses "FIG. 1A shows a front view of an actual shelf with redundant NT cards, 12 LT cards, 12 corresponding LPF cards, and an ACU card all inserted therein. FIG. 1B shows a plurality of shelves mounted in a central office rack, such as shown in FIG. 1E, in a standard configuration for serving 192 ADSL lines." Czerwiec, 9:66-10:4. Czerwiec further discloses that "FIG. 7A shows a lowpass filter card, such as one of the LPF cards 24 shown in FIG. 1 in schematic block diagram form. Four different lowpass filters/splitters are shown on the card. To the left of each card is a voice port for connection to the narrowband (NB) network via the CO switch 46 via the line 50. On the righthand side of each lowpass filter/splitter is a port which is connected both to the twisted copper pair 36 to the subscriber and to the highpass filter 38 of the LT 62 (see FIG. 2). A side view of the physical dimensions of such a four-channel LPF card is shown in FIG. 7B, while a front view is shown in FIG. 7C." Czerwiec, 16:42-52.

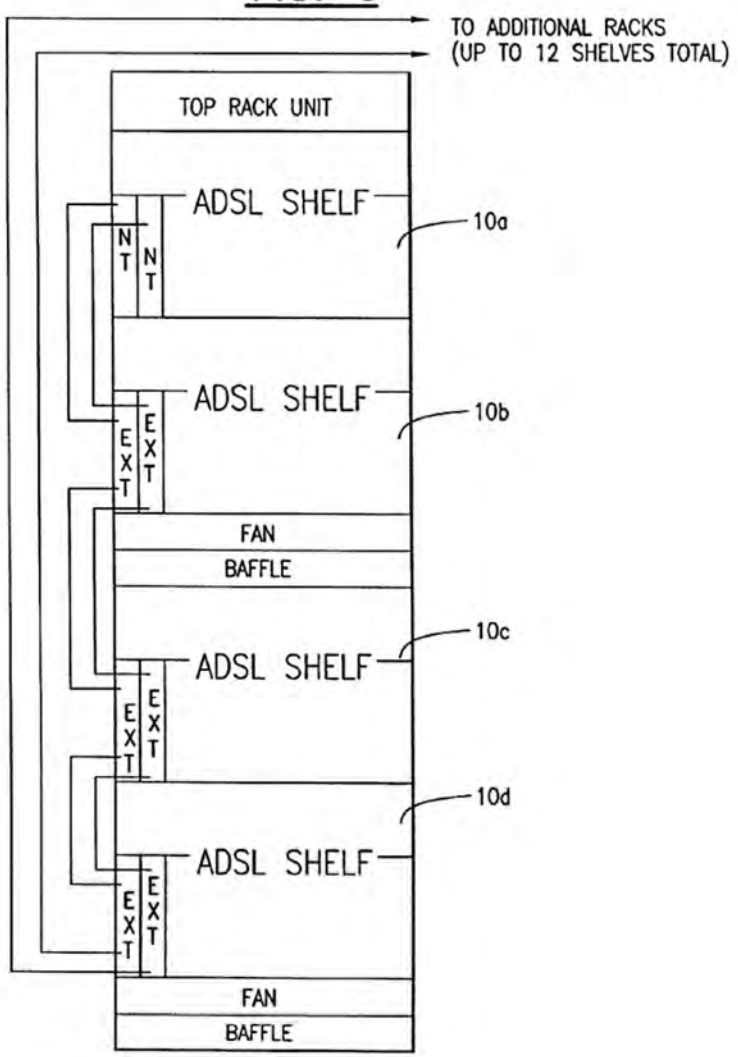
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No.	'904 Patent Claim 19	Czerwiec
		FIG. 7A  Czerwiec, FIG. 7A.

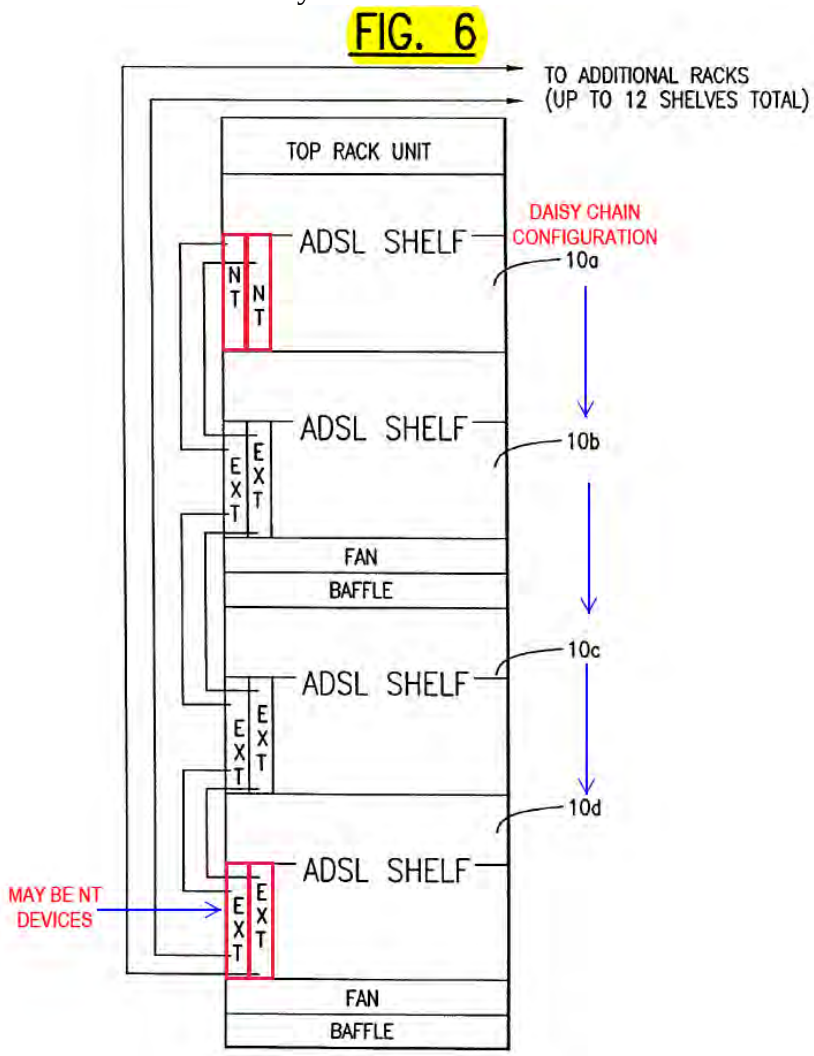
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No.	'904 Patent Claim 19	Czerwiec
		Czerwiec further discloses "FIG. 6 shows in detail the above-mentioned feature of the present architecture whereby a plurality of ADSL shelves 10 a, 10 b, 10 c, 10 d such as shown in FIG. 1 can be daisy-chained together in a rack by means of an extender card (EXT) in each subsequent shelf. The extender card function is to effectively extend the IQ bus from shelf to shelf (daisy-chained, e.g., to a maximum of twelve shelves altogether), allowing up to, e.g., 576 ADSL subscribers accessed to the system. In other words, the extender card allows an NT card in a first shelf to act as an NT card for another shelf or a plurality of other shelves. I.e., in this case, three racks with altogether twelve daisy-chained shelves. The extender cards can be mounted as shown in FIG. 6 in the NT slots of subsequent shelves and may be redundant. In that case, any failure of an NT or extender card bank switches all LTs from the "A" NT/extender string to the "B" string. The active string then assumes control of each shelf's IQ bus. The IQ bus itself (within each shelf) is not redundant, but meets reliability requirements, as the NT has the ability to remove each LT from the IQ bus (disable) to isolate a fault and remove it from service." Czerwiec, 16:15-35. Figure 6, having redundant NT cards in ADSL shelf 10a is shown below.

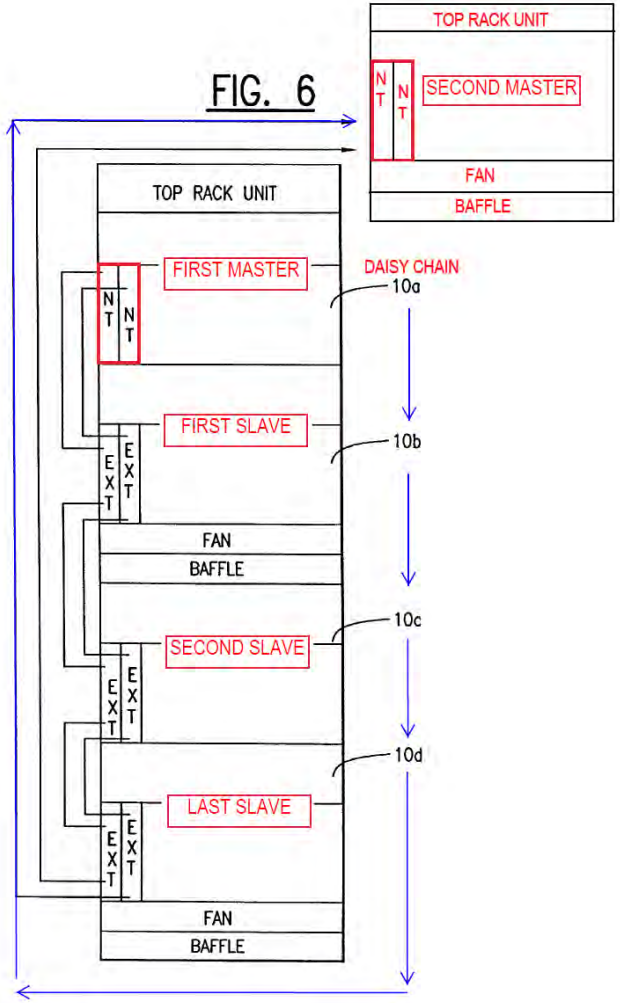
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No.	'904 Patent Claim 19	Czerwiec
		FIG. 6  Czerwiec, FIG. 6.

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No.	'904 Patent Claim 19	Czerwiec
		In another example, annotated Figure 6 shows ADSL shelves that are daisy chained, where the EXT cards in ADSL shelf 10d may act as a redundant master.  Czerwiec, FIG. 6 (annotated).

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No.	'904 Patent Claim 19	Czerwiec
		In yet another example, annotated Figure 6 shows ADSL shelves that are daisy chained, where the daisy chain is connected to redundant NT cards in an ADSL shelf of another rack.  Czerwiec, FIG. 6 (annotated). *See also supra* at 1[c].

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No.	'904 Patent Claim 19	Czerwiec
19[d]	conveying initial downstream data packets, received from the network by one of the master units, along the daisy chain in a first direction, so as to deliver the packets to the ports of the slave units; and	Czerwiec discloses conveying initial downstream data packets, received from the network by one of the master units, along the daisy chain in a first direction, so as to deliver the packets to the ports of the slave units. *See supra* at 1[d], 1[e].
19[e]	in the event of a fault in the daisy chain, conveying further downstream data packets, received from the network by one of the master units, along the daisy chain in a second direction, opposite to the first direction, so as to deliver the further packets to the ports of at least some of the slave units.	Czerwiec discloses in the event of a fault in the daisy chain, conveying further downstream data packets, received from the network by one of the master units, along the daisy chain in a second direction, opposite to the first direction, so as to deliver the further packets to the ports of at least some of the slave units. *See supra* at 7.

No.	'904 Patent Claim 20	Czerwiec
20	A method according to claim 19, wherein the initial and further downstream packets are received from the	Czerwiec discloses a method according to claim 19, wherein the initial and further downstream packets are received from the network by the first master unit, and wherein conveying the further downstream packets in the second direction comprises conveying the further downstream packets from the first master unit to the second master unit, and then conveying the further downstream packets from the second master unit to the daisy chain.

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No.	'904 Patent Claim 20	Czerwiec
	network by the first master unit, and wherein conveying the further downstream packets in the second direction comprises conveying the further downstream packets from the first master unit to the second master unit, and then conveying the further downstream packets from the second master unit to the daisy chain.	For example, Czerwiec discloses "an eleventh aspect of the present invention, a network termination equipment for use in a shelf of a telecommunications system, said network termination equipment for connection to an asynchronous transfer mode network and to a plurality of line termination equipment also for use in said shelf for connection to subscriber equipment, wherein said network termination equipment comprises physical medium termination equipment for interfacing to a physical medium by means of a serial input/output connection to said ATM network for providing a parallel input/output transmission conveyance means connected to said parallel input/output for recovering/mapping ATM cells from/to frames of a transport format of said serial input/output, ATM layer processing means connected to said transmission conveyance means for layer processing downstream ATM cells recovered by said transmission conveyance means and for providing upstream ATM cells to said transmission conveyance means, and an ATM bus interface responsive to downstream ATM cells from said ATM layer processing means for providing said downstream ATM cells with a guard byte for an ATM bus in said shelf and responsive to upstream ATM cells with a guard byte for providing said upstream cells to said ATM layer processing means without said guard byte." Czerwiec, 6:15-36.

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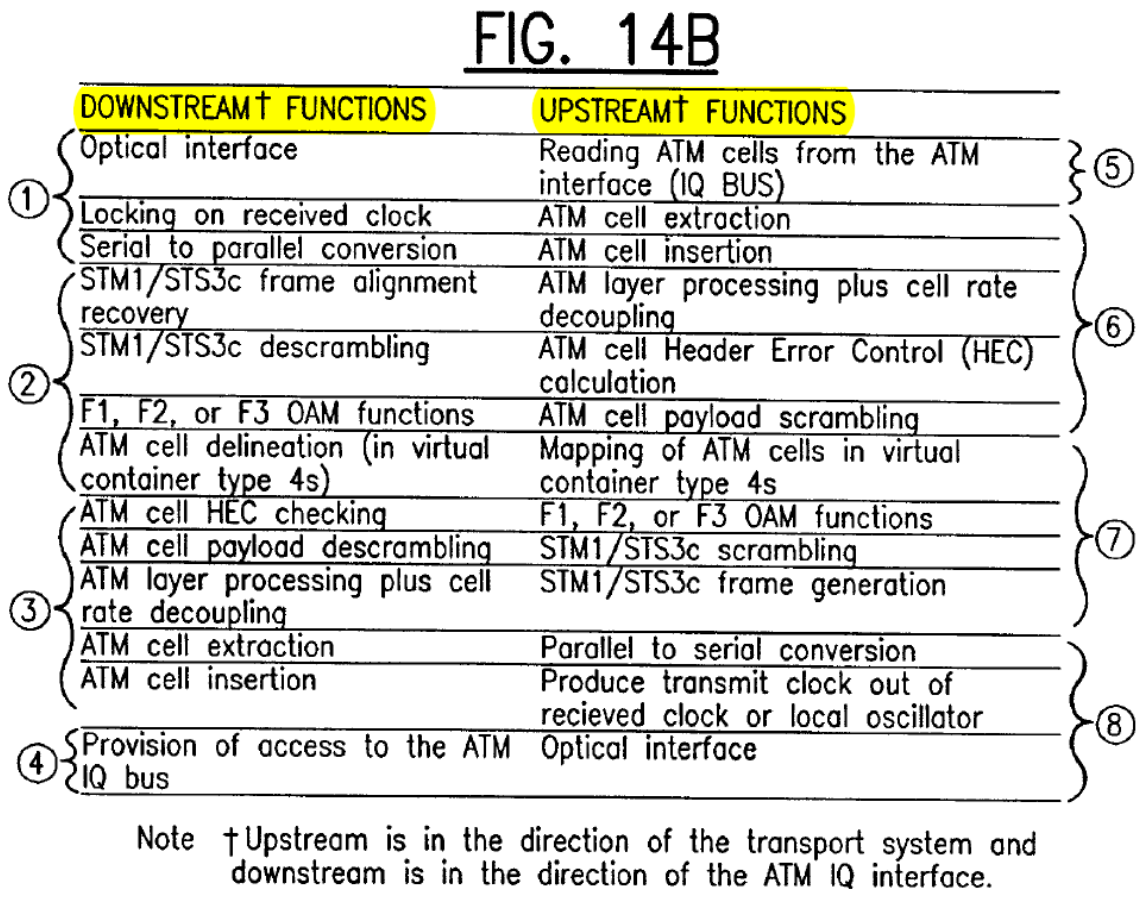
No.	'904 Patent Claim 20	Czerwiec
		

FIG. 14B

	DOWNSTREAM† FUNCTIONS	UPSTREAM† FUNCTIONS	
①	Optical interface	Reading ATM cells from the ATM interface (IQ BUS)	⑤
①	Locking on received clock	ATM cell extraction	⑥
①	Serial to parallel conversion	ATM cell insertion	⑥
②	STM1/STS3c frame alignment recovery	ATM layer processing plus cell rate decoupling	⑥
②	STM1/STS3c descrambling	ATM cell Header Error Control (HEC) calculation	⑥
②	F1, F2, or F3 OAM functions	ATM cell payload scrambling	⑥
②	ATM cell delineation (in virtual container type 4s)	Mapping of ATM cells in virtual container type 4s	⑦
③	ATM cell HEC checking	F1, F2, or F3 OAM functions	⑦
③	ATM cell payload descrambling	STM1/STS3c scrambling	⑦
③	ATM layer processing plus cell rate decoupling	STM1/STS3c frame generation	⑦
③	ATM cell extraction	Parallel to serial conversion	⑧
③	ATM cell insertion	Produce transmit clock out of recieved clock or local oscillator	⑧
④	Provision of access to the ATM IQ bus	Optical interface	⑧

Note †Upstream is in the direction of the transport system and downstream is in the direction of the ATM IQ interface.

Czerwiec, FIG. 14B (annotated).

No.	'904 Patent Claim 21	Czerwiec
21	A method according to claim 20, wherein conveying the further	Czerwiec discloses a method according to claim 20, wherein conveying the further downstream packets from the first master unit to the second master unit comprises linking further slave units in an additional daisy chain between the first and second master units, and

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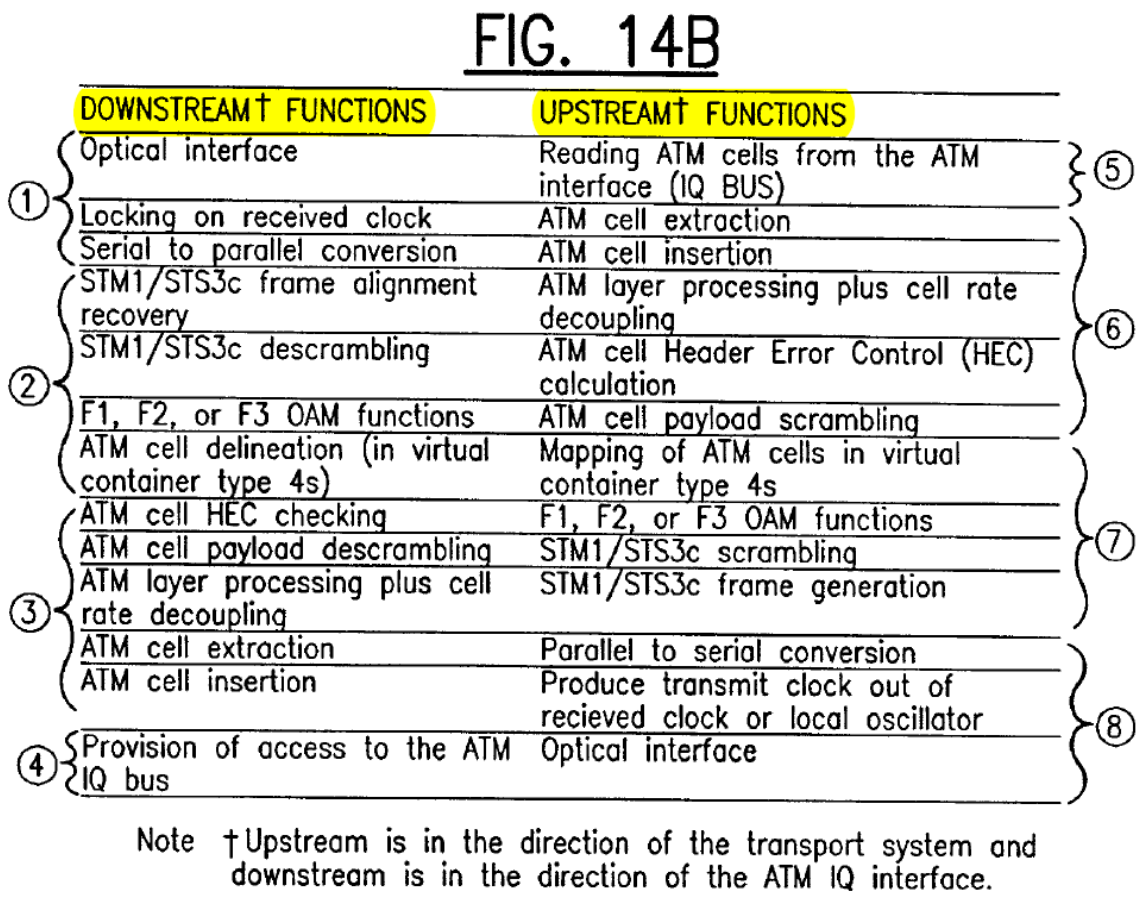
No.	'904 Patent Claim 21	Czerwiec
	downstream packets from the first master unit to the second master unit comprises linking further slave units in an additional daisy chain between the first and second master units, and conveying the further downstream packets from the first master unit to the second master unit over the additional daisy chain.	conveying the further downstream packets from the first master unit to the second master unit over the additional daisy chain. *See supra* at 8.

No.	'904 Patent Claim 22	Czerwiec
22[a]	A method according to claim 19, and comprising conveying initial upstream data packets, received by the slave units from the subscriber lines, along the daisy chain in the second direction so as to transmit the upstream data packets via the first master unit over the network, and	Czerwiec discloses a method according to claim 19, and comprising conveying initial upstream data packets, received by the slave units from the subscriber lines, along the daisy chain in the second direction so as to transmit the upstream data packets via the first master unit over the network. For example, Czerwiec discloses transmission conveyance means for layer processing downstream ATM cells recovered by said transmission conveyance means and for providing upstream ATM cells to said transmission conveyance means. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. For example, Czerwiec discloses "an eleventh aspect of the present invention, a network termination equipment for use in a shelf of a telecommunications system, said network termination equipment for connection to an asynchronous transfer mode network and to a plurality of line termination equipment also for use in said shelf for connection to subscriber equipment, wherein said network termination equipment comprises physical medium

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No.	'904 Patent Claim 22	Czerwiec
		termination equipment for interfacing to a physical medium by means of a serial input/output connection to said ATM network for providing a parallel input/output transmission conveyance means connected to said parallel input/output for recovering/mapping ATM cells from/to frames of a transport format of said serial input/output, ATM layer processing means connected to said transmission conveyance means for layer processing downstream ATM cells recovered by said transmission conveyance means and for providing upstream ATM cells to said transmission conveyance means, and an ATM bus interface responsive to downstream ATM cells from said ATM layer processing means for providing said downstream ATM cells with a guard byte for an ATM bus in said shelf and responsive to upstream ATM cells with a guard byte for providing said upstream cells to said ATM layer processing means without said guard byte." Czerwiec, 6:15-36.

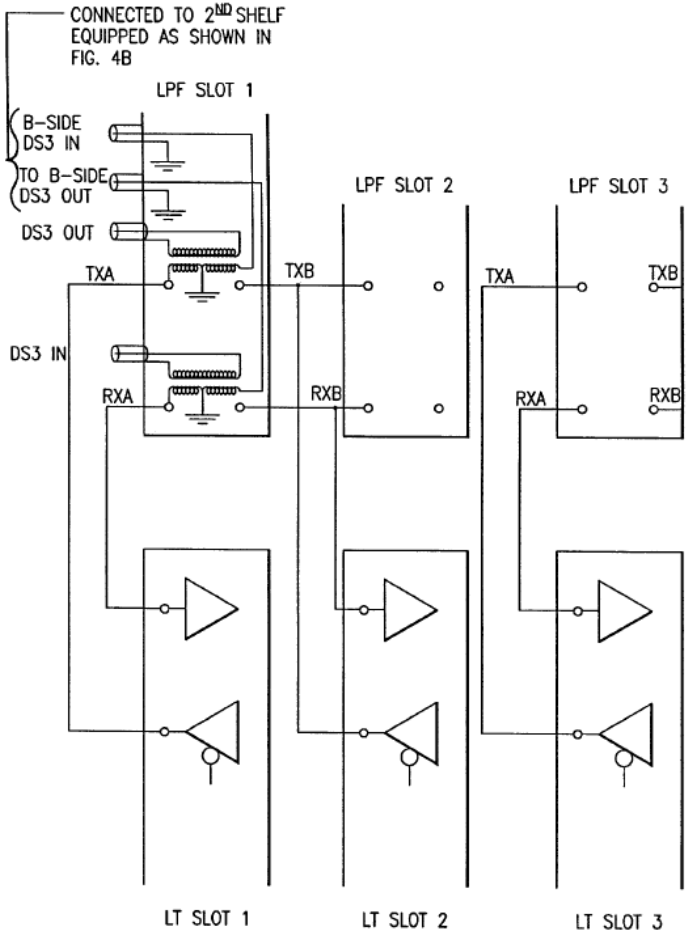
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No.	'904 Patent Claim 22	Czerwiec
		 Czerwiec, FIG. 14B (annotated).
22[b]	in the event of the fault, conveying further upstream data packets received by one or more of the slave units along the	Czerwiec discloses in the event of the fault, conveying further upstream data packets received by one or more of the slave units along the daisy chain in the first direction via the second master unit.

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No.	'904 Patent Claim 22	Czerwiec
	daisy chain in the first direction via the second master unit.	Czierwiec discloses that data flow is bidirectional along the daisy chain, so that upstream data packets can also be sent along the daisy chain via the second master unit. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. For example, Czerwiec discloses "As suggested above, since there is only one nonredundant IQ bus per shelf, the equipment protection implied by FIG. 4C with A and B redundant DS-3-LT cards in slots 1 and 2 will be ineffective if the IQ bus itself has a failure. If it is desired to avoid this sort of failure, a different kind of redundancy in the DS-3 cards can be provided, as shown in FIG. 4E. In that case, half of the transmit and receive signals are used in the shelf, and the other half can be routed to a different shelf, instead of slot 2 in the same shelf. The top two cables shown in FIG. 4E would thus be routed to another shelf and be connected into, e.g., the DS-3 out and DS-3 in transformers shown in FIG. 4B in another shelf. The DS-3 out and DS-3 in cables of FIG. 4E would go to the CO switch or other network element." Czerwiec, 23:42-52.

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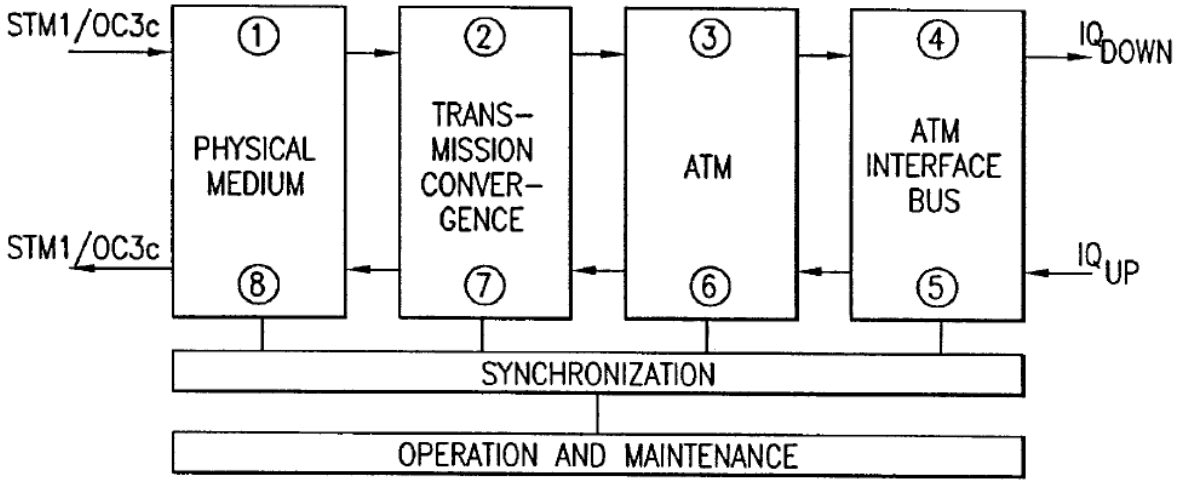
No.	'904 Patent Claim 22	Czerwiec
		FIG. 4E  Czerwiec, FIG. 4E. *See also supra* at 4[f], 22[a].

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No.	'904 Patent Claim 23	Czerwiec
23	A method according to claim 22, and comprising bicasting the upstream data packets from the first master unit to the network and to the second master unit, which transmits the bicast upstream data packets over the network.	Czerwiec discloses a method according to claim 22, and comprising bicasting the upstream data packets from the first master unit to the network and to the second master unit, which transmits the bicast upstream data packets over the network. *See supra* at 6.

No.	'904 Patent Claim 24	Czerwiec
24	A method according to claim 19, wherein conveying the initial downstream data packets along the daisy chain comprises pre-switching the packets at each of the slave units, so that packets not addressed to any of the ports on the slave unit are passed to the next slave unit in the daisy chain, while packets that are addressed to one or more of the ports on the slave unit	Czerwiec discloses a method according to claim 19, wherein conveying the initial downstream data packets along the daisy chain comprises pre-switching the packets at each of the slave units, so that packets not addressed to any of the ports on the slave unit are passed to the next slave unit in the daisy chain, while packets that are addressed to one or more of the ports on the slave unit are passed to a switch fabric that directs the packets to the ports to which they are addressed. For example, Czerwiec discloses "an eleventh aspect of the present invention, a network termination equipment for use in a shelf of a telecommunications system, said network termination equipment for connection to an asynchronous transfer mode network and to a plurality of line termination equipment also for use in said shelf for connection to subscriber equipment, wherein said network termination equipment comprises physical medium termination equipment for interfacing to a physical medium by means of a serial input/output connection to said ATM network for providing a parallel input/output transmission conveyance means connected to said parallel input/output for recovering/mapping ATM cells from/to frames of a transport format of said serial input/output, ATM layer processing means connected to said transmission conveyance means for layer processing downstream ATM cells recovered by said transmission conveyance means and for providing upstream ATM

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No.	'904 Patent Claim 24	Czerwiec
	are passed to a switch fabric that directs the packets to the ports to which they are addressed.	cells to said transmission conveyance means, and an ATM bus interface responsive to downstream ATM cells from said ATM layer processing means for providing said downstream ATM cells with a guard byte for an ATM bus in said shelf and responsive to upstream ATM cells with a guard byte for providing said upstream cells to said ATM layer processing means without said guard byte." Czerwiec, 6:15-36. For example, Czerwiec discloses "FIG. 14A shows a simplified block diagram of an embodiment of an NT card, according to the present invention. It provides a high-speed optical or electrical access to a Synchronous Optical Network (SONET) transport system. It converts Asynchronous Transfer Mode (ATM) cells to SONET packets (i.e., frames) and vice versa. Thus, the NT card adapts ATM cells carried on the IQ bus to the SONET transmission system and vice versa. It also includes necessary functions as listed in the table of FIG. 14B for operating and maintaining the ATM subscriber access multiplexer of the present invention." Czerwiec, 21:13-24. FIG. 14A  Czerwiec, FIG. 14A.

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No.	'904 Patent Claim 24	Czerwiec

FIG. 14B

	DOWNSTREAM† FUNCTIONS	UPSTREAM† FUNCTIONS	
①	Optical interface	Reading ATM cells from the ATM interface (IQ BUS)	⑤
①	Locking on received clock	ATM cell extraction	⑥
①	Serial to parallel conversion	ATM cell insertion	⑥
②	STM1/STS3c frame alignment recovery	ATM layer processing plus cell rate decoupling	⑥
②	STM1/STS3c descrambling	ATM cell Header Error Control (HEC) calculation	⑥
②	F1, F2, or F3 OAM functions	ATM cell payload scrambling	⑥
②	ATM cell delineation (in virtual container type 4s)	Mapping of ATM cells in virtual container type 4s	⑦
③	ATM cell HEC checking	F1, F2, or F3 OAM functions	⑦
③	ATM cell payload descrambling	STM1/STS3c scrambling	⑦
③	ATM layer processing plus cell rate decoupling	STM1/STS3c frame generation	⑦
③	ATM cell extraction	Parallel to serial conversion	⑧
③	ATM cell insertion	Produce transmit clock out of recieved clock or local oscillator	⑧
④	Provision of access to the ATM IQ bus	Optical interface	⑧

Note †Upstream is in the direction of the transport system and downstream is in the direction of the ATM IQ interface.

Czerwiec, FIG. 14B (annotated).

Further, Czerwiec discloses "For downstream ATM layer processing in the ATM block of FIG. 14A, each VC-4/SPE carries the equivalent of 44.151 cells (53 octets) which are octet-aligned and floating within the VC-4/SPE. The ATM cell delineation uses the correlation between the Header Error Control (HEC) in the cell header and the cell header itself. The cell delineation mechanism, as recommended by ITU-T Recommendation I.432, "B-ISDN User-Network Interface-Physical Layer Specification", is used. When the ATM cell boundary identification in octet H4 is used, the cell delineation will start searching at the octet indicated

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No.	'904 Patent Claim 24	Czerwiec
		by H4. If not, the search will start at the first octet of the payload period. The ATM cell information fields are descrambled according to the self-synchronizing scrambling/descrambling scheme recommended by ITU-T." Czerwiec, 22:4-19. "Valid non-idle cells, each with its confirmed HEC octet and descrambled information field, are sent to the IQ down interface, which is the last block shown in FIG. 14A. In that block, idle cell periods are added to adapt a received bit rate of up to 149.76 Mbit/s to 152.64 Mbit/s." Czerwiec, 22:20-24. "The routing of received ATM cells depends upon the VPI, VCI and PTI (payload type identifier) bits in the cell header. In total, 16 bits or four nibbles of VPI/VCI combinations can be checked, according to the modes shown in FIG. 14G. In each mentioned mode, different nibbles of VPI/VCI are selected. The selected VPI/VCI nibble combination corresponds with a specific data channel to be extracted. Cells can be extracted by looking only at the VPI/VCI combination or by looking at the VPI/VCI combination and at the PTI bits. In the second case, each PTI (23 in total) can be marked for extraction. This marking will then be used for all VPI/VCI combinations for which extraction is indicated, with the inclusion of the PTI check. All valid cells received in the virtual container or synchronous payload envelope, independent of their VPI/VCI combination, are transmitted downstream on the IQ down interface (cells marked for extraction are also sent to the ATM interface bus)." Czerwiec, 22:25-41.

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No.	'904 Patent Claim 24	Czerwiec

FIG. 14G

VPI			VCI				MODE
#3	#2	#1	#4	#3	#2	#1	
X	X	X			X		NNI
	X	X			X	X	UNI 1
		X		X	X	X	UNI 2

Czerwiec, FIG. 14G.

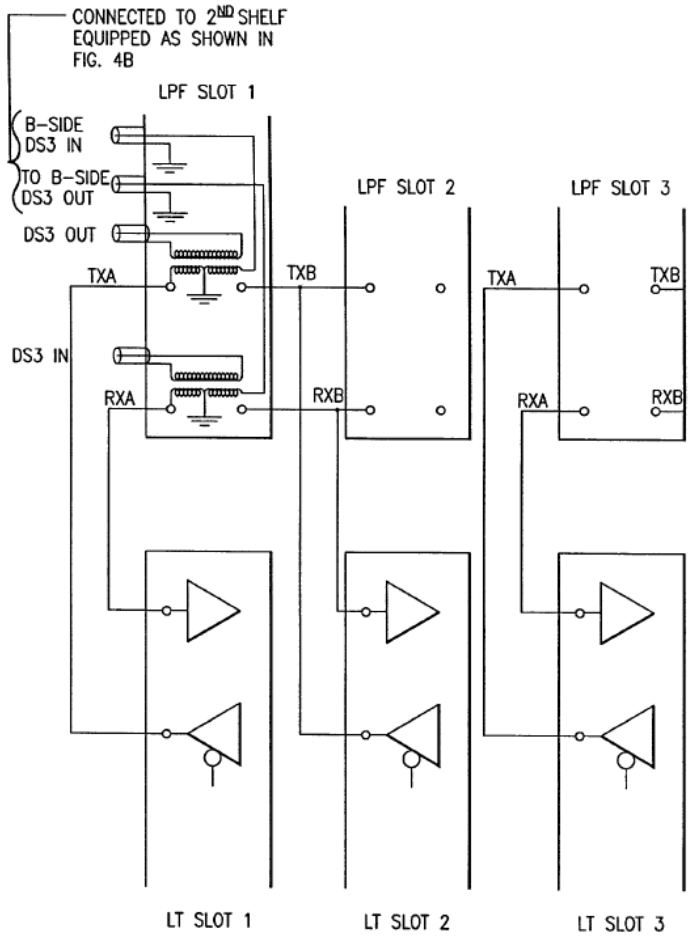
"ATM cell insertion and extraction is provided at the NT both in the direction of the network and in the direction of the IQ bus, in order to provide for the transmission and reception of Operation And Maintenance and signaling cells. Cell insertion and extraction is under control of an On-Board Controller (OBC)." Czerwiec, 22:42-47.

Czerwiec further discloses that "As suggested above, since there is only one nonredundant IQ bus per shelf, the equipment protection implied by FIG. 4C with A and B redundant DS-3-LT cards in slots 1 and 2 will be ineffective if the IQ bus itself has a failure. If it is desired to avoid this sort of failure, a different kind of redundancy in the DS-3 cards can be provided, as shown in FIG. 4E. In that case, half of the transmit and receive signals are used in the shelf, and the other half can be routed to a different shelf, instead of slot 2 in the same shelf. The top two cables shown in FIG. 4E would thus be routed to another shelf and be connected into, e.g., the DS-3 out and DS-3 in transformers shown in FIG. 4B in another shelf. The DS-3 out and DS-3 in cables of FIG. 4E would go to the CO switch or other network element." Czerwiec, 23:42-52.

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No.	'904 Patent Claim 24	Czerwiec
		Czerwiec further discloses "The UIAC component is an LCA device which is programmed during "power-on-reset" from a serial PROM. It uses three synchronous 512×9 bit FIFOs for cell insertion and extraction and one 128K×8 bit SRAM for routing. The UIAC module has a SCI/PHY (Utopia-like) interface to the S/UNI+ component. ATM cell insertion in both the direction of the network (SDH/SONET) and in the direction of the LTs is handled by a 1 SIF (signaling insertion FIFO) buffer. An OBC bus is connected directly to the eight data inputs of the FIFO. The direction of cell insertion is specified by the OBC by writing into an additional UIAC register. The ninth bit of the FIFO is used for cell synchronization and insertion direction specification. A RAM lookup table is used for cell filtering on VPI/VCI combinations. The RAM has 128K entries of eight bits." Czerwiec, 24:16-30.

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No.	'904 Patent Claim 24	Czerwiec
		FIG. 4E  Czerwiec, FIG. 4E. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Czerwiec is found to not meet this limitation, a pre-

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No.	'904 Patent Claim 24	Czerwiec
		switch, which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines would have been obvious to a person having ordinary skill in the art, as explained below. *See also supra* at 11[f].

No.	'904 Patent Claim 25	Czerwiec
25	A method according to claim 19, wherein the network comprises an asynchronous transfer mode (ATM) network.	Czerwiec discloses a method according to claim 19, wherein the network comprises an asynchronous transfer mode (ATM) network. *See supra* Claim 2.

No.	'904 Patent Claim 26	Czerwiec
26	A method according to claim 19, wherein the network comprises an Internet protocol (IP) network.	Czerwiec discloses a method according to claim 19, wherein the network comprises an Internet protocol (IP) network. *See supra* Claim 3.

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Chart for U.S. Patent 6,680,904 ("the '904 Patent")
U.S. Patent No. 6,092,214 to Quoc *et al.* ("Quoc")

As shown in the chart below, all Asserted Claims of the '904 Patent are invalid under (1) 35 U.S.C. §§ 102 (a), (b), and (e) because Quoc meets each element of those claims, and/or (2) 35 U.S.C. § 103 because Quoc renders those claims obvious either alone, or in combination with the knowledge of a person having ordinary skill in the art, and in further combination with the References specifically identified below and in the following claim chart and/or one or more References identified in Defendant's Preliminary Invalidity Contentions. The following quotations and diagrams come from Quoc titled "Redundant Network Management System for a Stackable Fast Ethernet Repeater", which was filed on November 6, 1997, claims priority to September 10, 1997, and issued on July 18, 2000.

Motivations to combine the disclosures in Quoc with disclosures in other publications known in the art, as explained in this chart, include at least the similarity in subject matter between the References to the extent they concern stacking switches within a network. Insofar as the References cite other patents or publications, or suggest additional changes, one of ordinary skill in the art would look beyond Quoc to other References in the field.

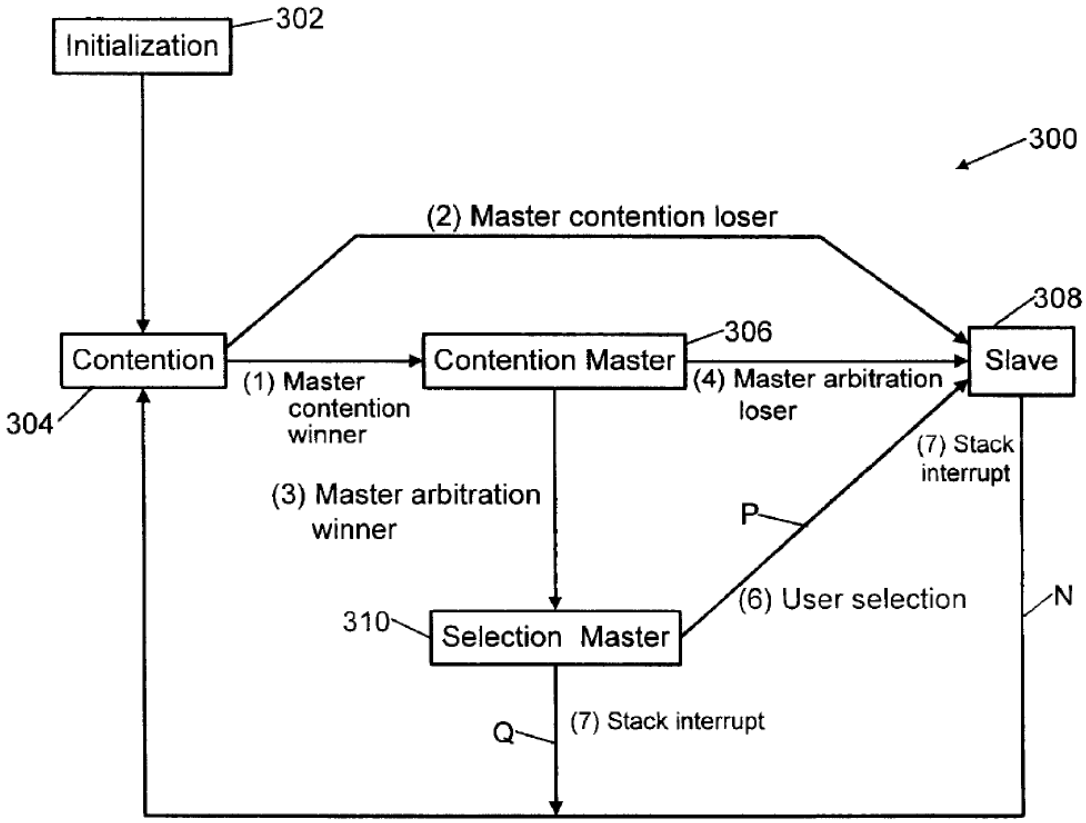
These invalidity contentions are based on Defendant's present understanding of the Asserted Claims, and Orckit's apparent construction of the claims in its November 3, 2022 Disclosure of Asserted Claims and Infringement Contentions Pursuant to P.R. 3-1, and Orckit's January 19, 2023 First Amended Disclosure of Asserted Claims and Infringement Contentions Pursuant to P.R. 3-1 (Orckit's "Infringement Disclosures"), which is deficient at least insofar as it fails to cite any documents or identify accused structures, acts, or materials in the Accused Products with particularity. Defendant does not agree with Orckit's application of the claims, or that the claims satisfy the requirements of 35 U.S.C. § 112. Defendant's contentions herein are not, and should in no way be seen as, admissions or adoptions as to any particular claim scope or construction, or as any admission that any particular element is met by any accused product in any particular way. Defendant objects to any attempt to imply claim construction from this chart. Defendant's prior art invalidity contentions are made in a variety of alternatives and do not represent Defendant's agreement or view as to the meaning, definiteness, written description support for, or enablement of any claim contained therein.

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The following contentions are subject to revision and amendment pursuant to Federal Rule of Civil Procedure 26(e), the Local Rules, and the Orders of record in this matter subject to further investigation and discovery regarding the prior art and the Court's construction of the claims at issue.

No.	'904 Patent Claim 1	Quoc
1[pre]	Network access apparatus, comprising:	To the extent the preamble is found to be limiting, Quoc discloses a network access apparatus. For example, Quoc discloses a network management system comprising network management modules that communicate to a network via a network management bus. *See, e.g.*, Quoc is titled "Redundant network management system for a stackable fast ethernet repeater." Quoc, Cover. Quoc discloses "Provided is a redundant network management system. Several network management modules (NMMs), preferably one for each repeater unit, are provided in a single repeater stack. The NMMs of the repeater stack communicate using a management bus. The modules communicate on the management bus by sending small messages, referred to as 'frames.' In a preferred embodiment, the present invention is preferably used in conjunction with a relatively simple and economical 8-bit management bus. This low cost implementation allows only one NMM to access the bus at any given time, and makes use of protocols by which multiple NMMs may use the management bus to communicate while ensuring that no two modules attempt to use the bus at the same time. Moreover, according to the present invention, only one NMM (referred to as the 'master') will perform all of the network management functions for the stack at any one time. The remaining modules operate in 'slave' mode. When in slave mode, the modules are on stand-by, ready to take the role of master if necessary. This master/slave relationship provides a level of fault tolerance and redundancy to the user in a seamless manner, thereby improving network performance and reliability." Quoc, Abstract.

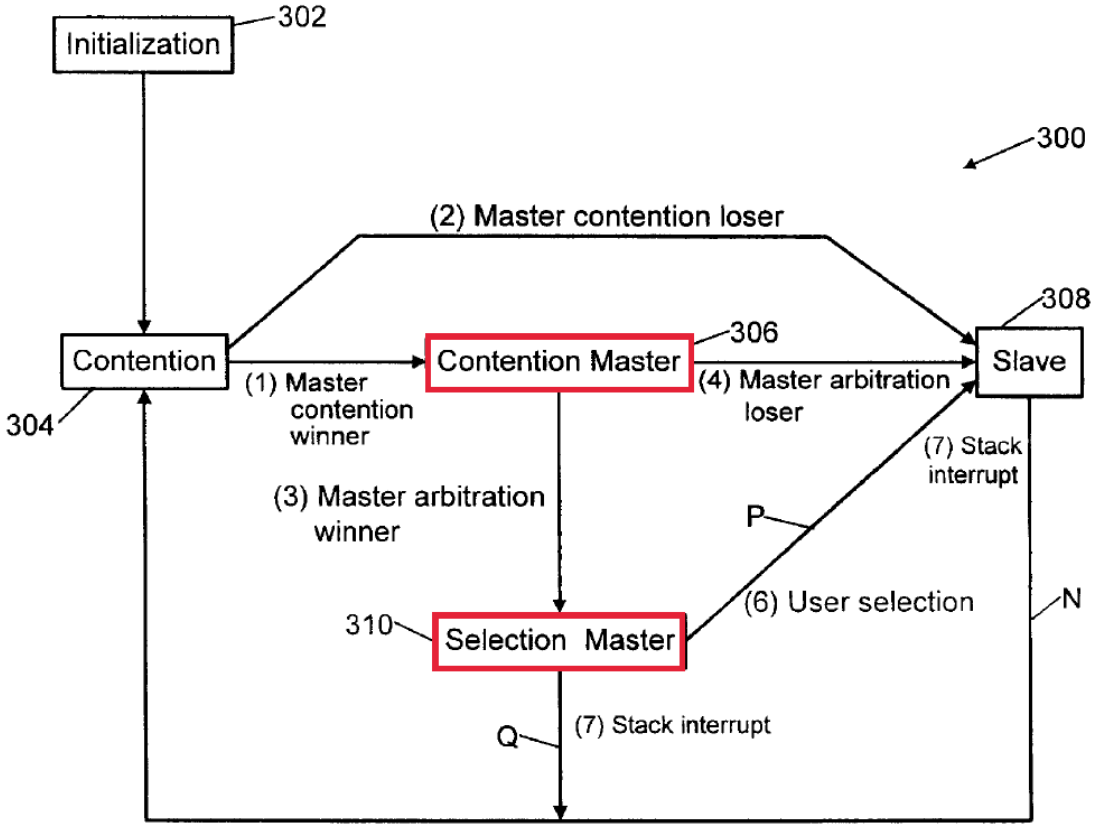
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No.	'904 Patent Claim 1	Quoc
		 Quoc, FIG. 3.
1[a]	first and second master units, each comprising a physical interface to a packet-switched network;	Quoc discloses first and second master units, each comprising a physical interface to a packet-switched network. For example, Quoc discloses a plurality of network management modules such as a "selection master" and a "contention master that communicated frames over a network using a network management bus." Quoc also discloses that the slaves are on stand-by, ready to take the role of master if necessary. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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No.	'904 Patent Claim 1	Quoc
		See, e.g., "Provided is a redundant network management system. Several network management modules (NMMs), preferably one for each repeater unit, are provided in a single repeater stack. The NMMs of the repeater stack communicate using a management bus. The modules communicate on the management bus by sending small messages, referred to as 'frames.' In a preferred embodiment, the present invention is preferably used in conjunction with a relatively simple and economical 8-bit management bus. This low cost implementation allows only one NMM to access the bus at any given time, and makes use of protocols by which multiple NMMs may use the management bus to communicate while ensuring that no two modules attempt to use the bus at the same time. Moreover, according to the present invention, only one NMM (referred to as the 'master') will perform all of the network management functions for the stack at any one time. The remaining modules operate in 'slave' mode. When in slave mode, the modules are on stand-by, ready to take the role of master if necessary. This master/slave relationship provides a level of fault tolerance and redundancy to the user in a seamless manner, thereby improving network performance and reliability." Quoc, Abstract.

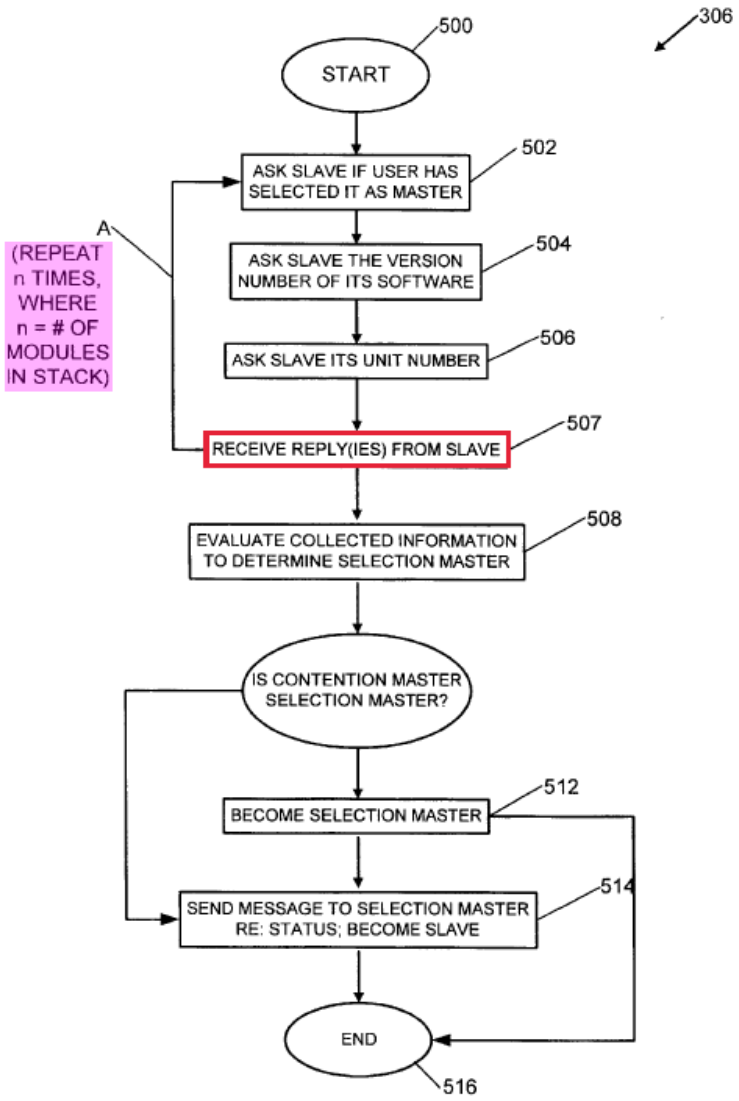
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No.	'904 Patent Claim 1	Quoc
		 Quoc, FIG. 3. (annotated). Further, Quoc discloses "According to a preferred embodiment of the present invention, there are five modes in which a management module can be operating at any one time: Initialization, Contention, Contention Master, Selection Master, and Slave. These five modes of operation are represented in FIG. 3, which is a state diagram of a redundant network management system according to a preferred embodiment of the present invention." Quoc, 6:46-53.

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No.	'904 Patent Claim 1	Quoc
		Quoc further discloses "As shown in state diagram 300 in FIG. 3, the states resulting from the Contention are the Contention Master state 306 and the Slave state 308. As described above, the losers of the Contention enter the Slave state 308, while the winner becomes the Contention Master. The details of Contention Master mode 306 are illustrated in a process flow in FIG. 5. Following conclusion of the Contention, the Contention Master initiates a master arbitration process to select the proper master to perform the network management functions (the 'Selection Master')." Quoc, 7:54-64.
1[b]	a plurality of slave units,	Quoc discloses a plurality of slave units. For example, Quoc discloses a plurality of "slave" network management modules that are controlled by the "contention master" and/or "selection master" network management modules. *See, e.g.*, "Contention Master mode 306 begins at 500, and at a step 502 the Contention Master sends a master selection arbitration query to each slave in the stack." Quoc, 7:64-67. Specifically, Quoc discloses that "[a]t a step 502, the Contention Master asks a slave (by sending a query frame on the management bus) if it has been selected by a user as master. At a step 504, the Contention Master asks the slave for the version number of its software. And at a step 506, the Contention Master asks the slave its unit number. Each of these queries may be combined into a single query frame or may be sent as individual frames. The slave modules then respond and the master receives the requested information in one or more reply frames at a step 507." Quoc, 8:9-19 (emphasis added).

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No.	'904 Patent Claim 1	Quoc
		 FIG. 5 Quoc, FIG. 5.

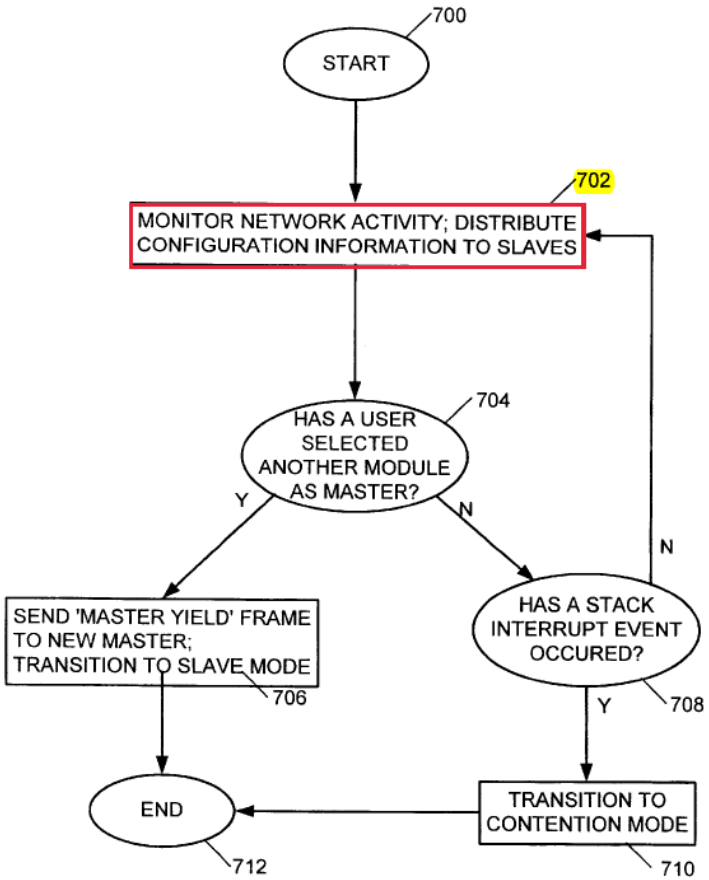
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No.	'904 Patent Claim 1	Quoc
		Quoc explains that the "query/reply process is repeated for each module in the stack, as represented by the loop arrow A linking step 207 to 202. Once each slave has been queried and its response received, at a step 508 the Contention Master evaluates the information received, compares it to its own relevant selection data, and determines the arbitration winner, i.e., which module should be the Selection Master for the stack." Quoc, 8:26-33.
1[c]	each slave unit comprising one or more ports to respective subscriber lines; and	Quoc discloses each slave unit comprising one or more ports to respective subscriber lines. For example, Quoc describes that the one or more "slave" network management modules send and receive frames. Quoc further describes that that its network devices communicate over a network. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Quoc is not found to meet this limitation, each slave unit comprising one or more ports to respective subscriber lines would have been obvious to a person of ordinary skill in the art. Specifically, Quoc discloses that an "Ethernet repeater is a device that serves as a central station for plugging-in network devices included in an Ethernet network, hence the term 'hub.' The Ethernet repeater receives messages from the network devices that are plugged into it and broadcasts (or 'repeats') the message to all of the other devices on the network along a network bus, if no collision is detected. The repeater monitors network traffic in its collision domain and assumes the responsibility for collision detection. The network devices thus simply broadcast messages to the repeater and do not need to first listen before sending messages. If the repeater has already assigned the network bus to a device, then it notifies the device that tried to broadcast that a collision has occurred so that the network device may try again later. The amount of time that it takes for the repeater to receive a data signal and repeat that data signal out to every port on which the data signal is to be broadcast is referred to as the latency of the repeater." Quoc, 3:39-56 Further, Quoc discloses that network flexibility in the IEEE 802.3 specification involves a "Class II requirement, which allows more than one repeater to be included in a single collision domain, significantly adds flexibility to network topology. Expanding the number of ports

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No.	'904 Patent Claim 1	Quoc
		available on a network may be accomplished by simply adding a second repeater in the same collision domain as a single existing repeater." Quoc, 4:19-25. Quoc explains that "[a]dditional ports could be added to a first repeater stack that functions as one Class II repeater and then a second stack could be included as the second Class II repeater. Thus, stackability combined with cascadability would provide even greater flexibility for network expansion." Quoc, 4:37-42. Quoc further discloses that "FIG. 7 provides a process flow for a module operating in Selection Master mode, represented by Selection master state 310 in FIG. 3. The Selection Master is responsible for handling all management activities for the stack. This management feature of the Selection master is represented by a step 702 in FIG. 7. For example, the master module monitors and coordinates all communication between work stations on the network, sends alerts to a system administrator when appropriate, and monitors and controls the status of I/O ports for all management modules." Quoc, 9:4-13.

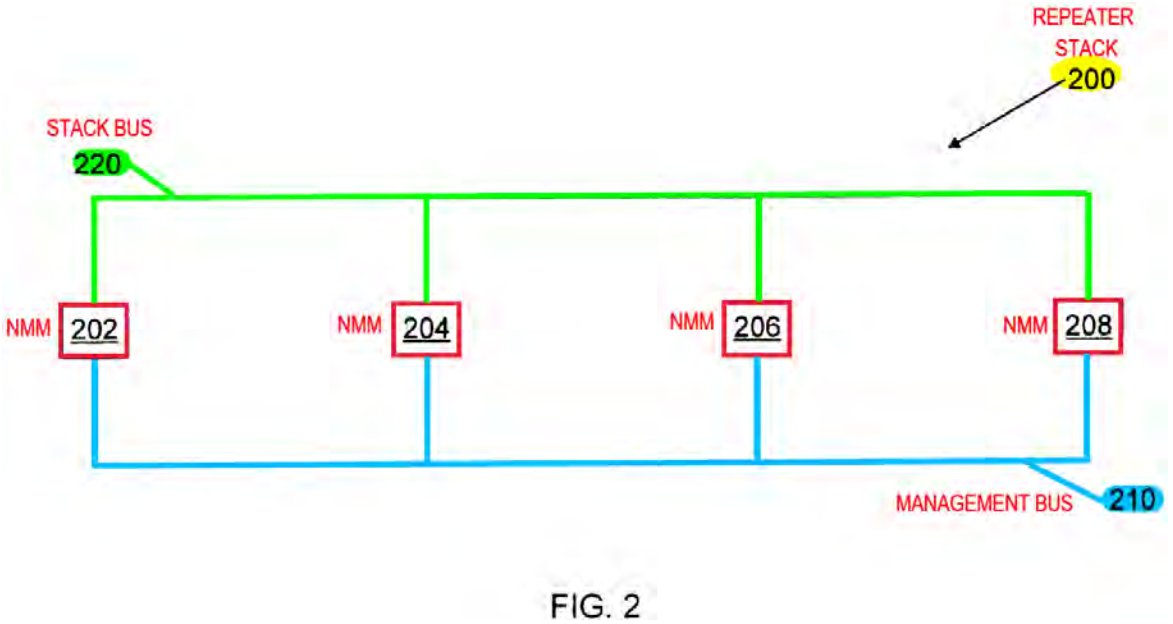
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No.	'904 Patent Claim 1	Quoc
		 Quoc, FIG. 7 (annotated).
1[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually	Quoc discloses a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. For example, Quoc discloses connecting devices over a network bus and/or repeater and/or hub and/or cables. Thus, at least under the apparent claim scope alleged by Orckit's

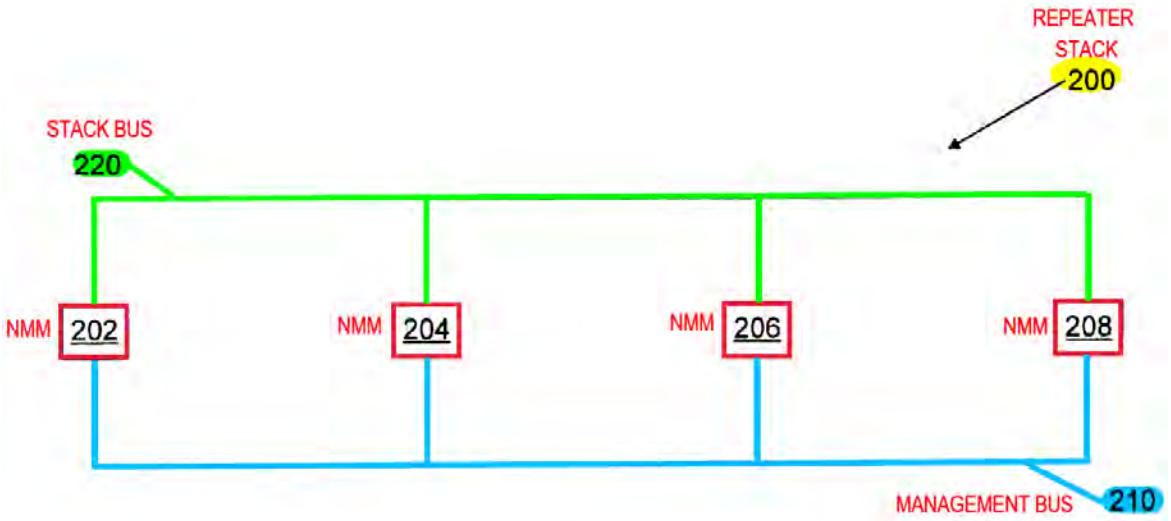
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No.	'904 Patent Claim 1	Quoc
	connected in series by the physical interface lines therebetween,	Infringement Disclosures, this limitation is met. To the extent that Quoc is not found to meet this limitation, a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween would have been obvious to a person of ordinary skill in the art. *See, e.g.*, "While some Ethernet applications connect numerous network devices to a network bus that is literally a cable connecting the network devices, it is often more desirable to connect network devices using a repeater or hub. It should be noted that in the following description the term 'hub' and the term 'repeater' are used interchangeably." Quoc, 3:24-29 (emphasis added). Quoc further discloses that the "802.3 specification contains maximum latency requirements that cannot be exceeded by a conforming repeater. The maximum permissible latency, combined with the requirements for maximum cable length and restrictions on the number and type of other devices allowed within a collision domain, limits the amount of time that it takes to notify a network device that a collision has occurred, ensuring that the overall 802.3 design criteria is met that all collisions are detected before a complete 64 byte frame is transmitted." Quoc, 3:57-66. Quoc discloses that by "July 1993, a group of networking companies joined to form the Fast Ethernet Alliance. The charter of the group was to draft the 802.3u 100BaseT specification of the Institute of Electrical and Electronics Engineers (IEEE) and to accelerate market acceptance of Fast Ethernet technology. The final IEEE 802.3 specification was approved in June 1995. Among the other goals of the Fast Ethernet Alliance are: To maintain the Ethernet transmission protocol Carrier Sense Multiple Access Collision Detection (CSMA/CD); to support popular cabling schemes; and to ensure that Fast Ethernet technology will not require changes to the upper-layer protocols and software that run on LAN workstations. For example, no changes are necessary to Simple Network Management Protocol (SNMP) management software or Management Information Bases (MIBs) in order to implement Fast Ethernet." Quoc, 1:46-61 (emphasis added).

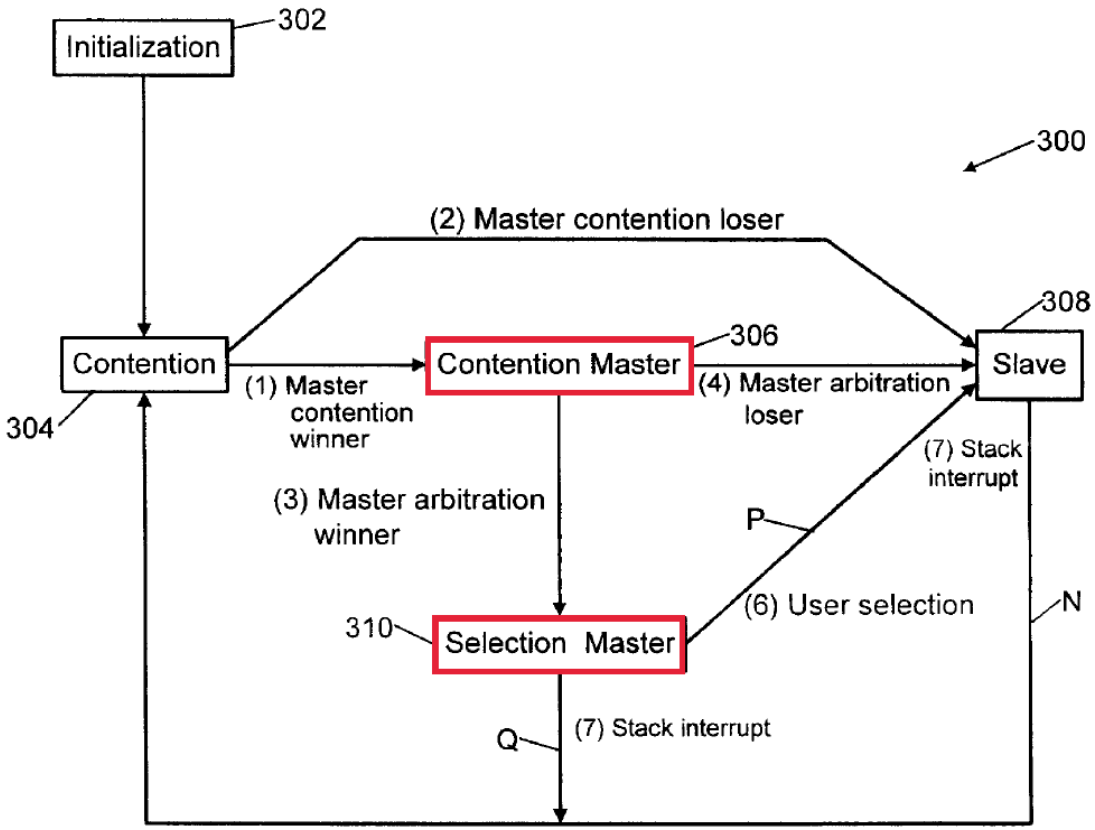
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No.	'904 Patent Claim 1	Quoc
		Quoc discloses that "FIG. 2 shows a repeater stack 200 having four NMMs 202, 204, 206 and 208. The modules 202, 204, 206 and 208 of the repeater stack 200 communicate using a management bus 210. The modules communicate on the management bus 210 by sending small messages, referred to as 'frames.' The modules are also connected to a stack bus 220 which provides the main pathway for data transmission between repeaters and other nodes on the network (not shown)." Quoc, 6:21-24.  FIG. 2 Quoc, FIG. 2 (annotated). As shown above, the NMMs 202, 204, 206, and 208 in FIG. 2 are connected in a daisy chain.
1[e]	each daisy chain comprising at least a first slave unit connected one of the physical interface lines	Quoc discloses each daisy chain comprising at least a first slave unit connected one of the physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit.

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No.	'904 Patent Claim 1	Quoc
	to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit.	For example, Quoc discloses that "FIG. 2 shows a repeater stack 200 having four NMMs 202, 204, 206 and 208. The modules 202, 204, 206 and 208 of the repeater stack 200 communicate using a management bus 210. The modules communicate on the management bus 210 by sending small messages, referred to as 'frames.' The modules are also connected to a stack bus 220 which provides the main pathway for data transmission between repeaters and other nodes on the network (not shown)." Quoc, 6:21-24.  FIG. 2 Quoc, FIG. 2 (annotated). As shown above, the NMMs 202, 204, 206, and 208 in FIG. 2 are connected in a daisy chain. According to Quoc, "there are five modes in which a management module can be operating at any one time: Initialization, Contention, Contention Master, Selection Master, and Slave. These five modes of operation are represented in FIG. 3, which is a state diagram of a

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No.	'904 Patent Claim 1	Quoc
		redundant network management system according to a preferred embodiment of the present invention." Quoc, 6:46-53.  Quoc, FIG. 3. (annotated). As shown above in Figure 3 of Quoc, the stackable repeaters includes first and second masters: a contention master and a selection master.

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No.	'904 Patent Claim 1	Quoc
		Quoc further discloses that "Following initialization or a stack interrupt, each management module participates in a master Contention process. The Contention process 304 begins at 400, and at a step 402 a unit number for each module is determined. The unit number is an integer value based on a module's position in the stack and is unique to that module. For example, the units may be numbered consecutively starting from the top of the stack." Quoc, 7:11-18. Thus, a person of ordinary skill in the art ("POSITA") would have readily recognized that Quoc's stack of switches shown in FIG. 2 may include slaves that are numbered according to their position within the stack. Moreover, a POSITA would have understood that the contention master and selection master may be a part of a stack having the two masters at the end of daisy chain of three slave devices shown in FIG. 2. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

No.	'904 Patent Claim 2	Quoc
2	Apparatus according to claim 1, wherein the network comprises an asynchronous transfer mode (ATM) network.	Quoc discloses apparatus according to claim 1, wherein the network comprises an asynchronous transfer mode (ATM) network. For example, Quoc discloses "user preference has driven the industry's decision to specify a higher-speed Ethernet that operates at 100 Mbps. This higher-speed Ethernet is known as Fast Ethernet." Quoc, 1:42-45. Further, Quoc discloses "Other high-speed technologies, such as 100VG-AnyLAN and Asynchronous Transfer Mode (ATM), achieve data rates in excess of 100 Mbps by implementing different protocols that require translation when data moves to and from 10BaseT." Quoc, 1:62-66. Thus, Quoc discloses "a redundant network management system. Several network management modules (NMMs), preferably one for each repeater unit, are provided in a single repeater stack. The NMMs of the repeater stack communicate using a management bus. The modules communicate on the management bus by sending small messages, referred to as 'frames.' In a preferred embodiment, the present invention is preferably used in conjunction

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No.	'904 Patent Claim 2	Quoc
		with a relatively simple and economical 8-bit management bus. This low cost implementation allows only one NMM to access the bus at any given time, and makes use of protocols by which multiple NMMs may use the management bus to communicate while ensuring that no two modules attempt to use the bus at the same time." Quoc, Abstract, 4:62-5:7.

No.	'904 Patent Claim 3	Quoc
3	Apparatus according to claim 1, wherein the network comprises an Internet protocol (IP) network.	Quoc discloses apparatus according to claim 1, wherein the network comprises an Internet protocol (IP) network. It is well known that IEEE 802.3 is a collection of networking standards that includes LAN and WAN protocols, such as IP. Further, Quoc discloses that by "July 1993, a group of networking companies joined to form the Fast Ethernet Alliance. The charter of the group was to draft the 802.3u 100BaseT specification of the Institute of Electrical and Electronics Engineers (IEEE) and to accelerate market acceptance of Fast Ethernet technology. The final IEEE 802.3 specification was approved in June 1995." Quoc, 1:46-52.

No.	'904 Patent Claim 4	Quoc
4[pre]	Network access apparatus, comprising:	To the extent the preamble is found to be limiting, Quoc discloses a network access apparatus. *See supra* at 1[pre].
4[a]	first and second master units, each comprising a physical interface to a packet-switched network;	Quoc discloses first and second master units, each comprising a physical interface to a packet-switched network. *See supra* at 1[a].
4[b]	a plurality of slave units,	Quoc discloses a plurality of slave units. *See supra* at 1[b].
4[c]	each slave unit comprising one or more ports to	Quoc discloses each slave unit comprising one or more ports to respective subscriber lines. *See supra* at 1[c].

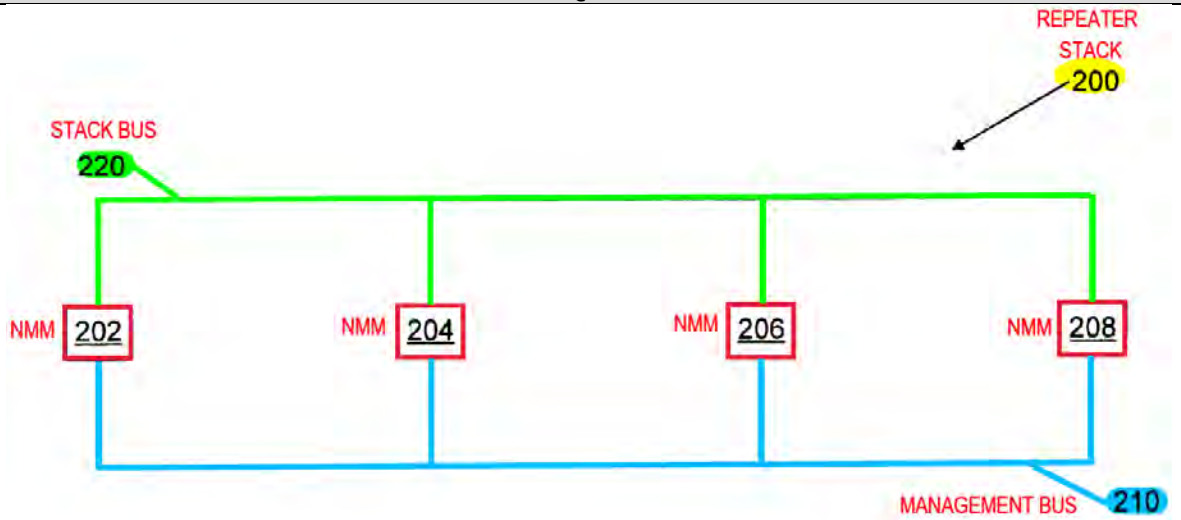
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No.	'904 Patent Claim 4	Quoc
	respective subscriber lines; and	
4[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	Quoc discloses a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. *See supra* at 1[d].
4[e]	each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit,	Quoc discloses each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit. *See supra* at 1[e].
4[f]	wherein in normal operation, downstream data packets received from the network are passed from the first master unit to each of the daisy chains via the first slave unit in each chain, and	Quoc discloses in normal operation, downstream data packets received from the network are passed from the first master unit to each of the daisy chains via the first slave unit in each chain, and upstream data packets received by the slaves in each chain from the subscriber lines are passed via the first slave unit in the chain to the first master unit for transmission over the network. For example, Quoc discloses that using physical interface lines, such as cables, was a well known technique for implementing network buses. "While some Ethernet applications connect numerous network devices to a network bus that is literally a cable connecting the

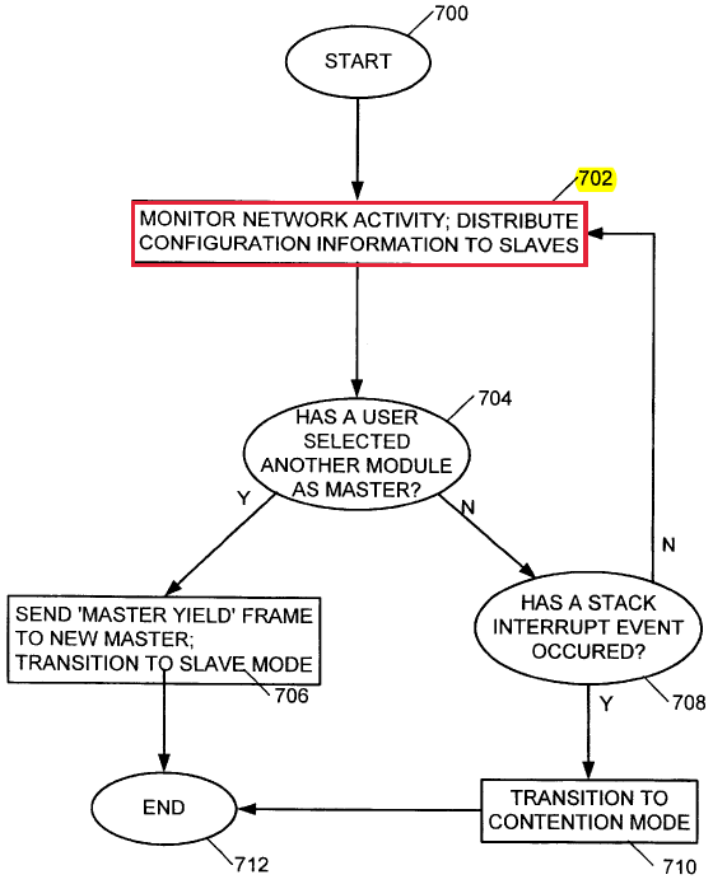
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No.	'904 Patent Claim 4	Quoc
	upstream data packets received by the slaves in each chain from the subscriber lines are passed via the first slave unit in the chain to the first master unit for transmission over the network.	network devices, it is often more desirable to connect network devices using a repeater or hub. It should be noted that in the following description the term 'hub' and the term 'repeater' are used interchangeably." Quoc, 3:24-29. Quoc further discloses that the "802.3 specification contains maximum latency requirements that cannot be exceeded by a conforming repeater. The maximum permissible latency, combined with the requirements for maximum cable length and restrictions on the number and type of other devices allowed within a collision domain, limits the amount of time that it takes to notify a network device that a collision has occurred, ensuring that the overall 802.3 design criteria is met that all collisions are detected before a complete 64 byte frame is transmitted." Quoc, 3:57-66. Quoc discloses that by "July 1993, a group of networking companies joined to form the Fast Ethernet Alliance. The charter of the group was to draft the 802.3u 100BaseT specification of the Institute of Electrical and Electronics Engineers (IEEE) and to accelerate market acceptance of Fast Ethernet technology. The final IEEE 802.3 specification was approved in June 1995. Among the other goals of the Fast Ethernet Alliance are: To maintain the Ethernet transmission protocol Carrier Sense Multiple Access Collision Detection (CSMA/CD); **to support popular cabling schemes**; and to ensure that Fast Ethernet technology will not require changes to the upper-layer protocols and software that run on LAN workstations. For example, no changes are necessary to Simple Network Management Protocol (SNMP) management software or Management Information Bases (MIBs) in order to implement Fast Ethernet." Quoc, 1:46-61. Quoc discloses that "FIG. 2 shows a repeater stack 200 having four NMMs 202, 204, 206 and 208. The modules 202, 204, 206 and 208 of the repeater stack 200 communicate using a management bus 210. The modules communicate on the management bus 210 by sending small messages, referred to as 'frames.' The modules are also connected to a stack bus 220 which provides the main pathway for data transmission between repeaters and other nodes on the network (not shown)." Quoc, 6:21-24.

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No.	'904 Patent Claim 4	Quoc
		 FIG. 2 Quoc, FIG. 2 (annotated). As shown above, the NMMs 202, 204, 206, and 208 in FIG. 2 are connected in a daisy chain. Quoc discloses that "FIG. 7 provides a process flow for a module operating in Selection Master mode, represented by Selection master state 310 in FIG. 3. The Selection Master is responsible for handling all management activities for the stack. This management feature of the Selection master is represented by a step 702 in FIG. 7. For example, the master module monitors and coordinates all communication between work stations on the network, sends alerts to a system administrator when appropriate, and monitors and controls the status of I/O ports for all management modules. An important management function of the Selection Master is the distribution of configuration parameters. The Selection Master distributes its configuration image to the slave modules in the stack by broadcasting, that is sending a frame of information to all modules on the management bus, a configuration frame. Slave modules receiving configuration a frame extract the configuration information from the frame and store the new information in their local configuration databases. The Selection Master

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No.	'904 Patent Claim 4	Quoc
		distributes configuration frames if any one of the following events occurs: 1) an NMM transitions to the Selection Master state in a stack containing more than one NMM; 2) a new NMM is detected in the stack by the current Selection Master; and 3) the user modifies one or more of the current Selection Master's configuration parameters. In this way, the slave modules maintain a current configuration so that they are able to seamlessly transition to master mode, if necessary." Quoc, 9:4-30.  Quoc, FIG. 7 (annotated).

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No.	'904 Patent Claim 5	Quoc
5	Apparatus according to claim 4, and comprising a protection interface, which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault.	Quoc discloses apparatus according to claim 4, and comprising a protection interface, which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault. For example, Quoc discloses "the modules are on Stand-by, ready to take the role of master if necessary," and its "redundant management system permits an ordered, seamless transition between network management modules in the event of module removal or failure or system Software upgrades." Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Quoc is not found to meet this limitation a protection interface, which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault would have been obvious to a person of ordinary skill in the art as explained below. Quoc discloses "provided is a redundant network management System. Several network management modules (NMMs), preferably one for each repeater unit, are provided in a Single repeater Stack. The NMMs of the repeater stack communicate using a management bus. The modules communicate on the management bus by Sending Small messages, referred to as "frames." In a preferred embodiment, the present invention is preferably used in conjunction with a relatively simple and economical 8-bit management bus. . . . The remaining modules operate in "slave" mode. When in Slave mode, the modules are on Stand-by, ready to take the role of master if necessary. This master/slave relationship provides a level of fault tolerance and redundancy to the user in a Seamless manner, thereby improving network performance and reliability." Quoc, Abstract. Quoc discloses that "when in Slave mode, the modules are on Standby, ready to take the role of master if necessary. This master/slave relationship provides a level of fault tolerance and redundancy to the user in a Seamless manner, thereby improving network performance and reliability." Quoc, 5:11-16. Quoc discloses "If the Slave detects management activity during its poll time, the decision step 604 will be answered in the affirmative and the module replies to requests from the master

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<table>
<tr><th>No.</th><th>’904 Patent Claim 5</th><th>Quoc</th></tr>
<tr><td></td><td></td><td>management module, including requests to harmonize its configuration with that of the master. Once the master's request has been complied with, the Slave resumes monitoring the bus, as indicated by arrow K of FIG. 6.” Quoc, 8:56-62.

Quoc discloses that “the redundant management System of the present invention permits an ordered, Seamless transition between network management modules in the event of module removal or failure or System Software upgrades. The System avoids inadvertent System shutdowns due to management module failure and the need to shut down a network in order to replace the management module. Thus, the present invention improves the performance and reliability of networks using Stacked repeaters.” Quoc, 9:56-65.

Under at least the apparent claim scope alleged by Orckit’s Infringement Disclosures, Quoc in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 5 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references.

For example, the Catalyst XL Switches disclose “Hapuna is a software release developed specifically for the 8Mb Catalyst 2900 XL and the Catalyst 3500 XL. However, this software release should be flexible enough to provide a foundation to support other devices (specifically the Vegas L3 products) in the future. With Hapuna we will also consolidate the software for the 2900 and 3500 into one image that will have all the Enterprise Edition features as well as Command Switch functionality integrated. The 2900/3500 product management team is also eliminating the distinction between the –A and –EN version prior to Hapuna release, thus minimizing the number of SKUs and simplifying our marketing message. We will also post the new image on CCO in the free/public area to address the upgrade needs of installed base.” October 8, 1999 Hapuna Product Requirements Document (“Hapuna”) at 4.

The Catalyst XL Switches disclose a product description of Hapuna in the table shown below.
<table>
<tr><th>Acronym</th><th>Description</th></tr>
<tr><td>Alcatraz</td><td>GBIC based Gigabit Ethernet Module</td></tr>
</table>
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No.	'904 Patent Claim 5	Quoc

CDP	Cisco Discovery Protocol
CLI	Command Line Interface
CVSM	Cisco Visual Switch Manager
Deep Space	12.0(5)XP release of software
HSRP	Hot Standby Router Protocol
HTTP	Hyper Text Transfer Protocol
Merlin	Enhancement of Lava Deux
QoS	Quality of Service
RPS2000	New redundant power supply
Vegas	Next Gen L3 3500 XL switches
UDLD	UniDirectional Link Detection

Hapuna at 4.

Further, the Catalyst XL Switches disclose "Upon FCS, Hapuna software will be available for free via CCO for all customers. We will post it in the public area of CCO to address the upgrade needs of the installed base. This will allow us to end-of-life the current upgrade SKUs for 2900 XL." Hapuna at 9.

The Catalyst XL Switches also disclose "feedback from customers has been that there are certain key features, such as redundant commander and extended candidate discovery, are still missing from the current implementation of Switch Clustering and needs to be addressed." Hapuna at 9.

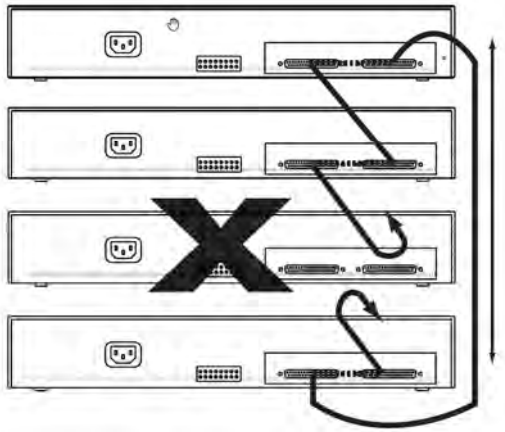
Consequently, the Catalyst XL Switches disclose "Hapuna release has the following objectives: The ability to create and manage robust and fault tolerant switch clusters. The focus is on providing - Redundant command switch support and plug-and-play GigaStack loop back." Hapuna at 3.

As a result, the Catalyst XL Switches disclose switch clustering features for such a redundant command switch, noting that "Hapuna will deliver Redundant command switch capability using HSRP as a template. The Cluster HSRP group will consist of two or more Command switch capable devices that share the same virtual Cluster HSRP MAC and IP address. There

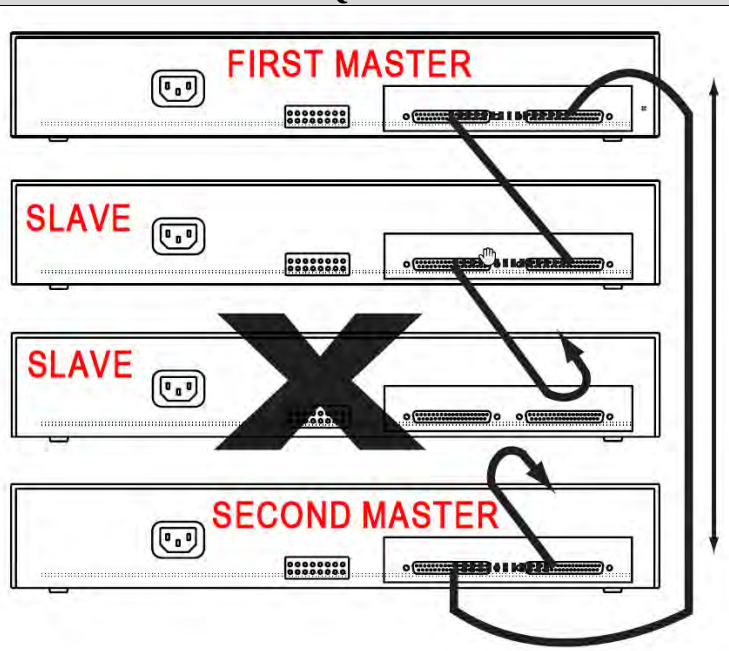
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No.	'904 Patent Claim 5	Quoc
		can only be one active Command Switch at any given time. Failover between the active Command Switch and the backup Command switch should occur within 30 seconds and be transparent to the network administrator. However, this failover should generate SNMP traps informing the network administrator. Hapuna should also report candidate and member switches that are most qualified to be part of the HSRP group and set precedence order within the HSRP group based on a predefined matrix. The precedence is determined based on connectivity as well as device capabilities. *Redundant cabling is not a part of the scope of this Hapuna feature and does not need to be addressed via software*. Creation of the HSRP group should also not break an existing Switch Cluster." Hapuna at 4-5. Further, the Catalyst XL Switches disclose the redundant command switch will require updates to Merlin, stating that Merlin Requirements include "Identify[ing] members of the HSRP group and Draw Redundant Links." Hapuna at 6. "Since Hapuna will add support for the Cluster HSRP group, Merlin needs to graphically identify and display members of the Cluster HSRP group, specifically the Active and Backup Command Switches. Cluster Builder should also diagram any redundant (blocked) links within the cluster. In addition, Razor links should be uniquely identified in Cluster Builder." Hapuna at 6. As another example, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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No.	'904 Patent Claim 5	Quoc
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

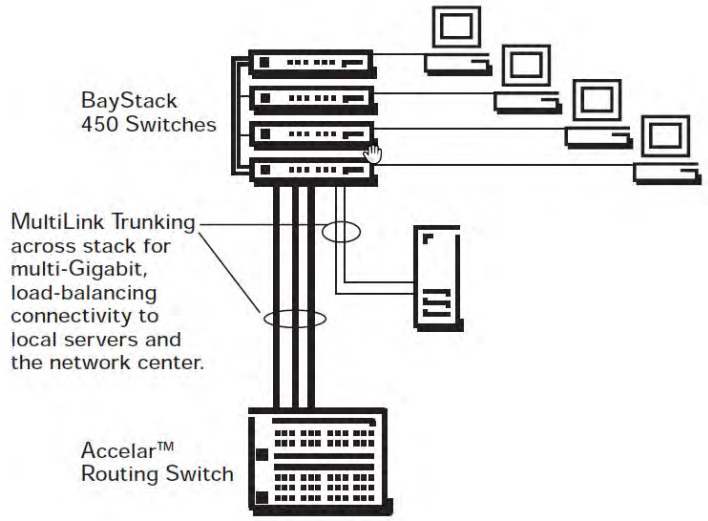
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No.	'904 Patent Claim 5	Quoc
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. In this example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features where "[e]ach unit in the stack has a full copy of the stack configuration so in the unlikely event of any unit failure, operation of the stack continues without affecting application connectivity." BayStack 450 Data Sheet at 3 of 8. In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the

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No.	'904 Patent Claim 5	Quoc
		redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches further disclose its fail-safe design features includes that "[e]ach switch includes a Redundant Power Supply Unit connection. Should the switch's built-in power supply fail, the Bay Networks RPSU (sold separately) will automatically supply power to the switch for uninterrupted operation." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below.

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No.	'904 Patent Claim 5	Quoc
		Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.  BayStack 450 Data Sheet at 4 of 8, FIG. 2. The BayStack 450 Switches further disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290.

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No.	'904 Patent Claim 5	Quoc
		Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

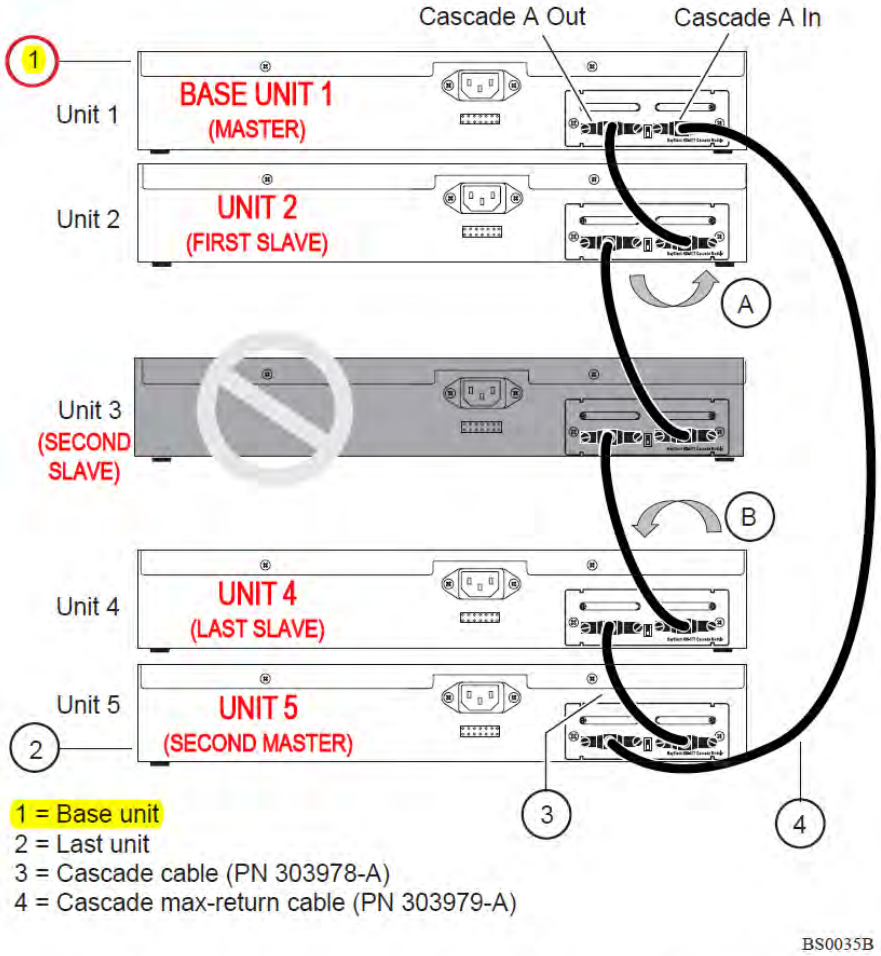


Figure 1-14. Redundant Cascade Stacking Feature

BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

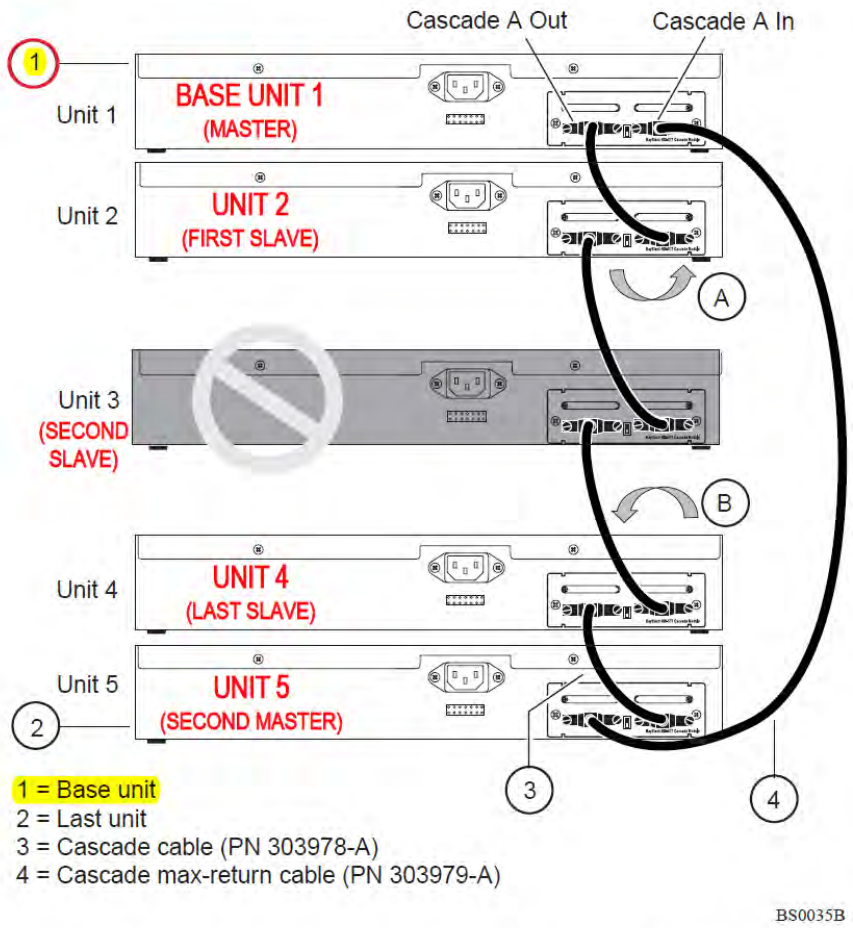
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No.	'904 Patent Claim 6	Quoc
6	Apparatus according to claim 5, wherein the first master unit bicasts the upstream data packets that it receives from the slave units to the network and, via the protection interface, to the second master unit, which transmits the upstream data packets to the network.	Quoc discloses apparatus according to claim 5, wherein the first master unit bicasts the upstream data packets that it receives from the slave units to the network and, via the protection interface, to the second master unit, which transmits the upstream data packets to the network. For example, Quoc discloses "the modules are on stand-by, ready to take the role of master if necessary," and its "redundant management system permits an ordered, seamless transition between network management modules in the event of module removal or failure or system Software upgrades." Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Quoc is not found to meet this limitation, each slave unit comprising one or more ports to respective subscriber lines would have been obvious to a person of ordinary skill in the art as explained below. Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Quoc in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 6 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Dowling discloses network devices where each network device sends periodic messages to a multicast address, and multicasting to a group of stations. See, e.g., Dowling at 2:58-3:12 ("Ethernet uses variable-length frames of data to transmit information from a source to one or more destinations. Every Ethernet frame has two fields defined as the source and destination addresses, which indicate the MAC addresses of the network devices where a frame originated and where it is ultimately destined, respectively. . . . Special addresses allow for multicasting to a group of Stations and for broadcasting to all Stations on the network.")

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No.	'904 Patent Claim 6	Quoc
		Dowling at 11:1-9 ("It is to be understood that the present invention is not limited to devices that are compatible with CDP. CDP runs on all media that support the Subnetwork Access Protocol ("SNAP"), including LAN and Frame Relay. CDP runs over the data link layer only. Each network device sends periodic messages to a multicast address and listens to the periodic messages Sent by others in order to learn about neighboring devices and determine when their interfaces to the media go up or down.") For example, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. The BayStack 450 Switches further disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

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No.	'904 Patent Claim 6	Quoc
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated). Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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<table>
<tr><th>No.</th><th>’904 Patent Claim 6</th><th>Quoc</th></tr>
<tr><td></td><td></td><td>As another example, the July 6, 1999 Release Notes (and June 11, 1999 Release Notes) of the Cisco Catalyst XL Switches discloses that the a problem may be experienced when traffic flows in one direction. A person of ordinary skill in the art would understand from this disclosure that traffic can flow in two directions, e.g., an upstream and downstream direction. Additionally, based upon information and belief, The Catalyst XL Switches allow traffic flow in two directions, e.g., an upstream and downstream direction. Thus, at least under the apparent claim scope alleged by Orckit’s Infringement Disclosures, this limitation is met.

“With IOS Release 11.2(8.1)SA6, you might experience a problem with traffic flow in one direction when you insert a cable. To determine if this problem exists, use the ping command on a station located on one end of the stack to verify connectivity to a station on the other end of the stack.” July 6, 1999 at 4.

For example, the Catalyst XL Switches disclose “Hapuna is a software release developed specifically for the 8Mb Catalyst 2900 XL and the Catalyst 3500 XL. However, this software release should be flexible enough to provide a foundation to support other devices (specifically the Vegas L3 products) in the future. With Hapuna we will also consolidate the software for the 2900 and 3500 into one image that will have all the Enterprise Edition features as well as Command Switch functionality integrated. The 2900/3500 product management team is also eliminating the distinction between the –A and –EN version prior to Hapuna release, thus minimizing the number of SKUs and simplifying our marketing message. We will also post the new image on CCO in the free/public area to address the upgrade needs of installed base.” October 8, 1999 Hapuna Product Requirements Document (“Hapuna”) at 4.

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No.	'904 Patent Claim 6	Quoc

HSRP	Hot Standby Router Protocol
HTTP	Hyper Text Transfer Protocol
Merlin	Enhancement of Lava Deux
QoS	Quality of Service
RPS2000	New redundant power supply
Vegas	Next Gen L3 3500 XL switches
UDLD	UniDirectional Link Detection

Hapuna at 4.

Further, the Catalyst XL Switches disclose "Upon FCS, Hapuna software will be available for free via CCO for all customers. We will post it in the public area of CCO to address the upgrade needs of the installed base. This will allow us to end-of-life the current upgrade SKUs for 2900 XL." Hapuna at 9.

The Catalyst XL Switches also disclose "feedback from customers has been that there are certain key features, such as redundant commander and extended candidate discovery, are still missing from the current implementation of Switch Clustering and needs to be addressed." Hapuna at 9.

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As a result, the Catalyst XL Switches disclose switch clustering features for such a redundant command switch, noting that "Hapuna will deliver Redundant command switch capability using HSRP as a template. The Cluster HSRP group will consist of two or more Command switch capable devices that share the same virtual Cluster HSRP MAC and IP address. There can only be one active Command Switch at any given time. Failover between the active Command Switch and the backup Command switch should occur within 30 seconds and be transparent to the network administrator. However, this failover should generate SNMP traps informing the network administrator. Hapuna should also report candidate and member

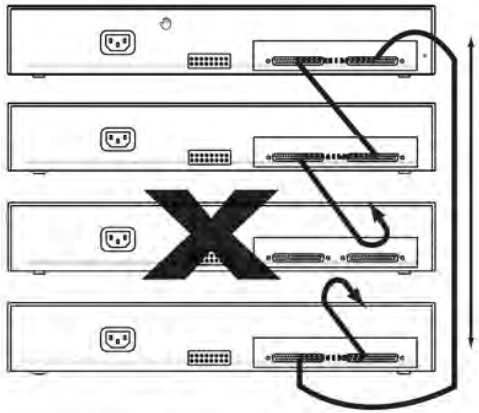
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No.	'904 Patent Claim 6	Quoc
		switches that are most qualified to be part of the HSRP group and set precedence order within the HSRP group based on a predefined matrix. The precedence is determined based on connectivity as well as device capabilities. *Redundant cabling is not a part of the scope of this Hapuna feature and does not need to be addressed via software*. Creation of the HSRP group should also not break an existing Switch Cluster." Hapuna at 4-5. Further, the Catalyst XL Switches disclose the redundant command switch will require updates to Merlin, stating that Merlin Requirements include "Identify[ing] members of the HSRP group and Draw Redundant Links." Hapuna at 6. "Since Hapuna will add support for the Cluster HSRP group, Merlin needs to graphically identify and display members of the Cluster HSRP group, specifically the Active and Backup Command Switches. Cluster Builder should also diagram any redundant (blocked) links within the cluster. In addition, Razor links should be uniquely identified in Cluster Builder." Hapuna at 6.

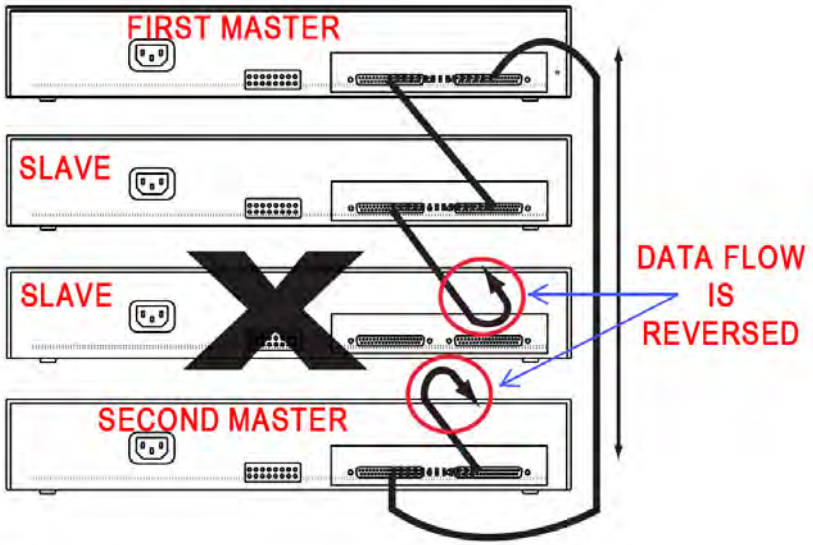
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No.	'904 Patent Claim 7	Quoc
7	Apparatus according to claim 4, wherein in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit.	Quoc discloses in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit. For example, Quoc discloses "In a preferred embodiment, network management mod ules (NMMs), preferably one for each repeater unit, may be provided in a Single repeater Stack. FIG. 2 shows a repeater stack 200 having four NMMs 202, 204, 206 and 208. The modules 202, 204, 206 and 208 of the repeater stack 200 communicate using a management bus 210. The modules communicate on the management bus210 by Sending Small messages, referred to as "frames." The modules are also connected to a stack bus 220 which provides the main pathway for data transmission between repeaters and other nodes on the network (not shown)." Quoc, 6:19-29. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Quoc is found to not meet this limitation, apparatus according to claim 4, wherein in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit would have been obvious to a person having ordinary skill in the art, as explained below. Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Quoc in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 7 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a

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No.	'904 Patent Claim 7	Quoc
		self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.*  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

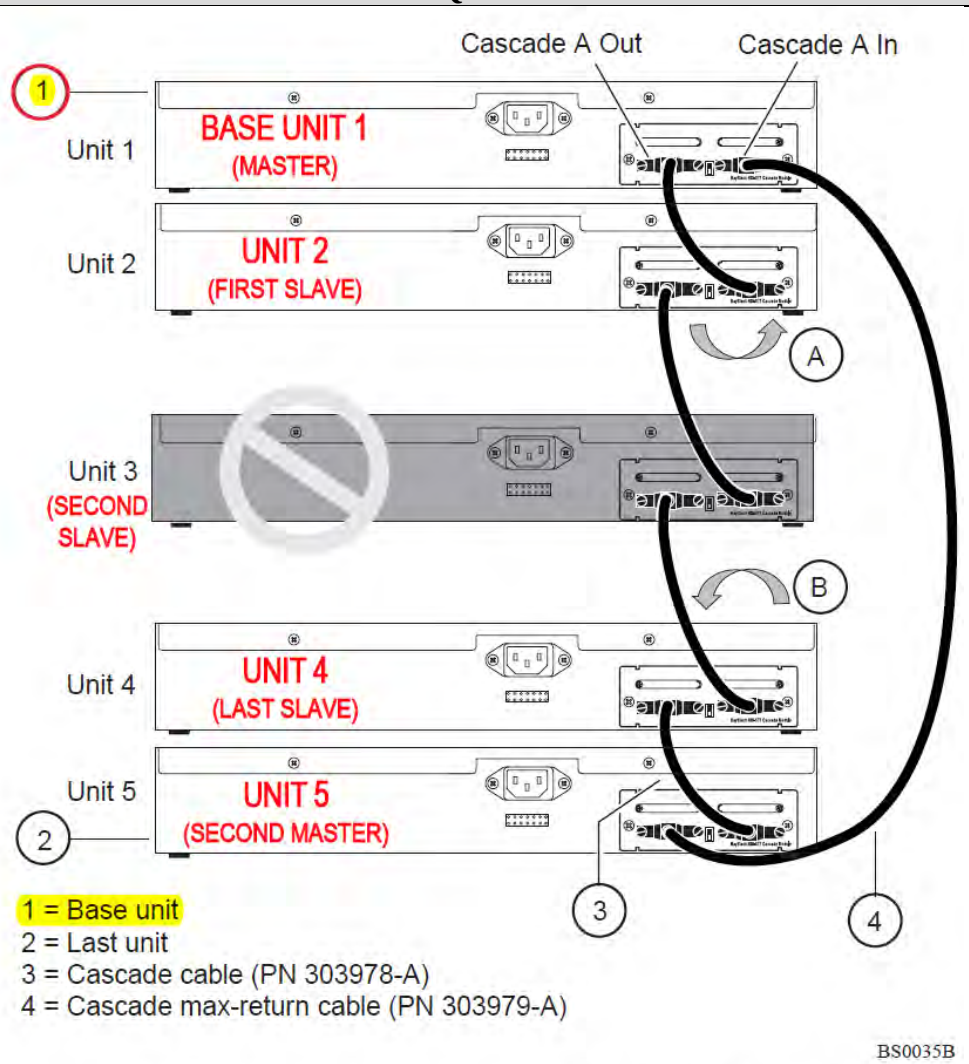
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No.	'904 Patent Claim 7	Quoc
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In the event of a failure, the BayStack 450 Switches disclose a Temporary Base Unit as being a second master unit. See, e.g., BayStack 450 Manual at 33, 52, 230 of 290. For instance, the BayStack 450 Manual states that "[i]f an assigned base unit fails, the next unit in the stack order automatically becomes the new temporary base unit. This change is indicated by the Base LED on the temporary base unit's LED display panel turning on (amber). For detailed information about the base LED, see Table 1-1 on page 1-6." BayStack 450 Manual at 52 of 290. Further, in this alternative example, the BayStack 450 Manual describes that "[t]his automatic failover is a temporary safeguard only. If the stack configuration loses power, the temporary

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No.	'904 Patent Claim 7	Quoc
		base unit will not power up as the base unit when power is restored. For this reason, you should always assign the temporary base unit as the base unit (set the Unit Select switch to Base) until the failed unit is repaired or replaced." BayStack 450 Manual at 52 of 290. In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290. Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

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		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

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No.	'904 Patent Claim 7	Quoc
		The Baystack 450 Switches in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) Ding renders the claim, including the present limitation, obvious. Ding discloses failure protection. ("In order to coordinate management and control operations across the various cooperating Ethernet Switching modules in the Stack, one of the cooperating Ethernet Switching modules operates as the base module for the Stack. In a preferred embodiment of the present invention, a particular Ethernet Switching module is configured as the base module through a user-controlled toggle Switch on the Ethernet Switching module. If that Ethernet Switching module fails, then another Ethernet switching module (preferably the next upstream Ethernet Switching module in the Stack) automatically reconfigures itself to become the base module for the Stack. The base module is responsible for coordinating management and control for the Stack. Specifically, the base module manages the Stack configuration by ensuring that the Stack is initialized in an orderly manner, handling Stack configuration changes Such as module insertion and removal, and verifying stack integrity. The base module also coordinates certain Stack management functions that require synchronization or mutual exclusion among the various cooperating Ethernet switching modules in the stack." Ding, 8:9-30. As another example, the Catalyst XL Switches disclose "Hapuna is a software release developed specifically for the 8Mb Catalyst 2900 XL and the Catalyst 3500 XL. However, this software release should be flexible enough to provide a foundation to support other devices (specifically the Vegas L3 products) in the future. With Hapuna we will also consolidate the software for the 2900 and 3500 into one image that will have all the Enterprise Edition features as well as Command Switch functionality integrated. The 2900/3500 product management team is also eliminating the distinction between the –A and –EN version prior to Hapuna release, thus minimizing the number of SKUs and simplifying our marketing message. We will also post the new image on CCO in the free/public area to address the upgrade needs of installed base." October 8, 1999 Hapuna Product Requirements Document ("Hapuna") at 4. The Catalyst XL Switches disclose a product description of Hapuna in the table shown below.

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No.	'904 Patent Claim 7	Quoc

Acronym	Description
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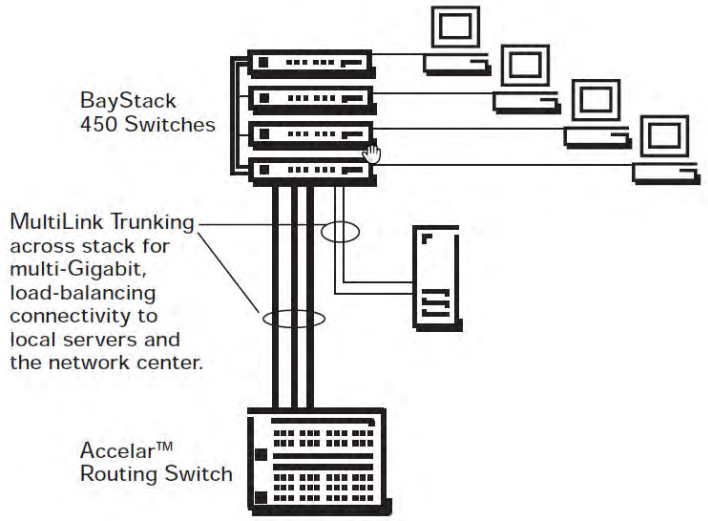
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No.	'904 Patent Claim 8	Quoc
8	Apparatus according to claim 7, wherein the downstream packets for the slave units in the portion of the daisy chain between the location of the fault and the second master unit are	Quoc discloses apparatus according to claim 7, wherein the downstream packets for the slave units in the portion of the daisy chain between the location of the fault and the second master unit are conveyed to the second master unit from the first master unit via another one of the daisy chains. For example, Quoc discloses that "because networks tend to constantly change and expand with network devices being added, it would be highly advantageous if, in addition to the Class II feature of allowing two repeaters in a collision domain, it were also possible that each of the two repeaters were expandable or Stackable. Additional ports could be added to a first

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No.	'904 Patent Claim 8	Quoc
	conveyed to the second master unit from the first master unit via another one of the daisy chains.	repeater Stack that functions as one Class II repeater and then a Second Stack could be included as the Second Class II repeater. Thus, Stackability combined with cascadability would provide even greater flexibility for network expansion." Quoc at 4:32-42. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Quoc is found to not meet this limitation, the location of the fault and the second master unit are conveyed to the second master unit from the first master unit via another one of the daisy chains would have been obvious to a person having ordinary skill in the art, as explained below. Quoc discloses "In a preferred embodiment, network management mod ules (NMMs), preferably one for each repeater unit, may be provided in a Single repeater Stack. FIG. 2 shows a repeater stack 200 having four NMMs 202, 204, 206 and 208. The modules 202, 204, 206 and 208 of the repeater stack 200 communicate using a management bus 210. The modules communicate on the management bus210 by Sending Small messages, referred to as "frames." The modules are also connected to a stack bus 220 which provides the main pathway for data transmission between repeaters and other nodes on the network (not shown)." Quoc, 6:19-29. Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Quoc in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 8 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. In addition, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the

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No.	'904 Patent Claim 8	Quoc
		redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below. *Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.*  BayStack 450 Data Sheet at 4 of 8, FIG. 2.

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No.	'904 Patent Claim 8	Quoc
		upgrade needs of the installed base. This will allow us to end-of-life the current upgrade SKUs for 2900 XL." Hapuna at 9. The Catalyst XL Switches also disclose "feedback from customers has been that there are certain key features, such as redundant commander and extended candidate discovery, are still missing from the current implementation of Switch Clustering and needs to be addressed." Hapuna at 9. Consequently, the Catalyst XL Switches disclose "Hapuna release has the following objectives: The ability to create and manage robust and fault tolerant switch clusters. The focus is on providing - Redundant command switch support and plug-and-play GigaStack loop back." Hapuna at 3. As a result, the Catalyst XL Switches disclose switch clustering features for such a redundant command switch, noting that "Hapuna will deliver Redundant command switch capability using HSRP as a template. The Cluster HSRP group will consist of two or more Command switch capable devices that share the same virtual Cluster HSRP MAC and IP address. There can only be one active Command Switch at any given time. Failover between the active Command Switch and the backup Command switch should occur within 30 seconds and be transparent to the network administrator. However, this failover should generate SNMP traps informing the network administrator. Hapuna should also report candidate and member switches that are most qualified to be part of the HSRP group and set precedence order within the HSRP group based on a predefined matrix. The precedence is determined based on connectivity as well as device capabilities. *Redundant cabling is not a part of the scope of this Hapuna feature and does not need to be addressed via software*. Creation of the HSRP group should also not break an existing Switch Cluster." Hapuna at 4-5. Further, the Catalyst XL Switches disclose the redundant command switch will require updates to Merlin, stating that Merlin Requirements include "Identify[ing] members of the HSRP group and Draw Redundant Links." Hapuna at 6. "Since Hapuna will add support for the Cluster HSRP group, Merlin needs to graphically identify and display members of the Cluster HSRP group, specifically the Active and Backup Command Switches. Cluster

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No.	'904 Patent Claim 8	Quoc
		Builder should also diagram any redundant (blocked) links within the cluster. In addition, Razor links should be uniquely identified in Cluster Builder." Hapuna at 6. And the Catalyst XL Switches disclose Hapuna allows circular links on a razor daisy chain. Hapuna at 8. "This feature allows a standard one-meter loopback cable to be used to create a circular link on a Razor daisy chain. Hapuna will detect the loop and block the link typically within 30 seconds, with a worst case limit of 2 minutes. Hapuna should also be able to failover to this blocked link within 30 seconds when there is a link failure in the Razor daisy chain." Hapuna at 8. In addition, the Catalyst XL Switches disclose that Merlin provides a cluster builder and view that provides redundant commander support. Merlin at 33 of 114. Legend: Following legend describes the icon and label to distinguish various ***devices*** in the Cluster Builder/View screens: 1. **Command Switch:** Special Switch icon with ***green*** label. 2. **Standby Command Switch:** Special Switch icon with ***white*** label (the icon is same as that of the command switch). Merlin at 33 of 114. "Merlin will have the capability to support a redundant commander. The Cluster Builder will display the current Active Commander and the standby Commander. The Active Commander is designated by the command switch icon with green label and the Standby Commander will be designated by the command switch icon with white label. Please refer to the Legend section regarding the representation of various devices and links. The Standby command switch selection is possible from the Standby Command Configuration dialog in the Cluster Manager. Please refer to that section for further information on the criteria for selection of Standby Command Switch." Merlin at 33 of 114.

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No.	'904 Patent Claim 8	Quoc
		Standby Command Configuration How to launch: Main menu: Cluster->Standby Command Configuration Toolbar: *No toolbar icon.* This screen allows the user to configure cluster-command-capable members as standby command switch. If the active command switch goes down then the standby command switch will take over. This screen also helps the user to pick the most suitable standby command. It should display a list of suggested standby command (the most desirable is listed first). The most desirable standby candidate is: • The one with the most number of connections between itself and other cluster members. • It also has a fast processor. For example 3500 switches are faster than 2900 switches. WS-3524 takes precedence over WS-3548. User also need to provide a group number and a virtual IP address. Merlin at 51 of 114. Moreover, the Catalyst XL Switches disclose that Merlin provides support for "HSRP [Hot Standby Router Protocol] group configuration & Management VLAN switchover in Cluster Manager." Merlin at 8 of 114. In particular, the Catalyst XL Switches disclose that user's can access a Standby Command Configuration Dialog to select from among a "'Candidate(s)' list box will contain the list of all the members that can belong to a cluster HSRP group." Merlin at 52 of 114. Additionally, the Catalyst XL Switches disclose that Merlin provides support for Cisco Group Management Protocol (CGMP), explaining that "Clicking on the 'Management Groups' tab will bring up the management groups information to the front as shown in the figure below. It contains a table that shows the VLAN id, MAC address, and the interface id of the current

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No.	'904 Patent Claim 8	Quoc
		management groups. To delete an entry, select the row first and then click on the 'Remove' button. It is also possible to delete multiple entries using the same method." Merlin at 65 of 114. Further, the Catalyst XL Switches disclose that Merlin provides support for multiple virtual networks or multi-VLANs, where users can select VLAN commanders, members, for different virtual daisy chains and/or making these VLANs static. *See generally* Merlin at 80-82.

No.	'904 Patent Claim 9	Quoc
9[pre]	Network access apparatus, comprising:	To the extent the preamble is found to be limiting, Quoc discloses a network access apparatus. *See supra* at 1[pre].
9[a]	first and second master units, each comprising a physical interface to a packet-switched network;	Quoc discloses first and second master units, each comprising a physical interface to a packet-switched network. *See supra* at 1[a].
9[b]	a plurality of slave units,	Quoc discloses a plurality of slave units. *See supra* at 1[b].
9[c]	each slave unit comprising one or more ports to respective subscriber lines; and	Quoc discloses each slave unit comprising one or more ports to respective subscriber lines. *See supra* at 1[c].
9[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are	Quoc discloses a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. *See supra* at 1[d].

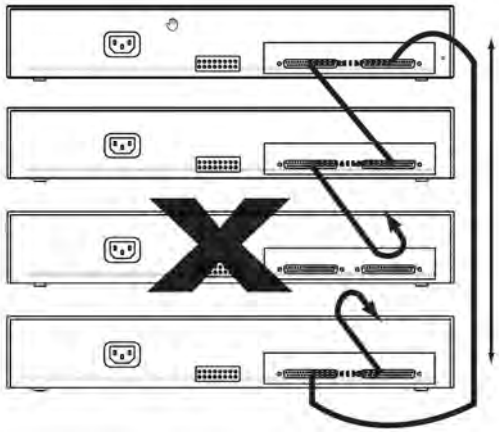
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No.	'904 Patent Claim 9	Quoc
	mutually connected in series by the physical interface lines therebetween,	
9[e]	each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit, wherein each of the first and second master units comprises:	Quoc discloses each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit. *See supra* at 1[e].
9[f]	a switch, configured to route data packets between the respective physical interface and the one or more daisy chains; and	Quoc discloses a switch, configured to route data packets between the respective physical interface and the one or more daisy chains. For example, Quoc discloses "In a preferred embodiment, network management mod ules (NMMs), preferably one for each repeater unit, may be provided in a Single repeater Stack. FIG. 2 shows a repeater stack 200 having four NMMs 202, 204, 206 and 208. The modules 202, 204, 206 and 208 of the repeater stack 200 communicate using a management bus 210. The modules communicate on the management bus210 by Sending Small messages, referred to as "frames." The modules are also connected to a stack bus 220 which provides the main pathway for data transmission between repeaters and other nodes on the network (not shown)." Quoc, 6:19-29. To the extent that Quoc is found to not meet this limitation, a switch, configured to route data packets between the respective physical interface and the one

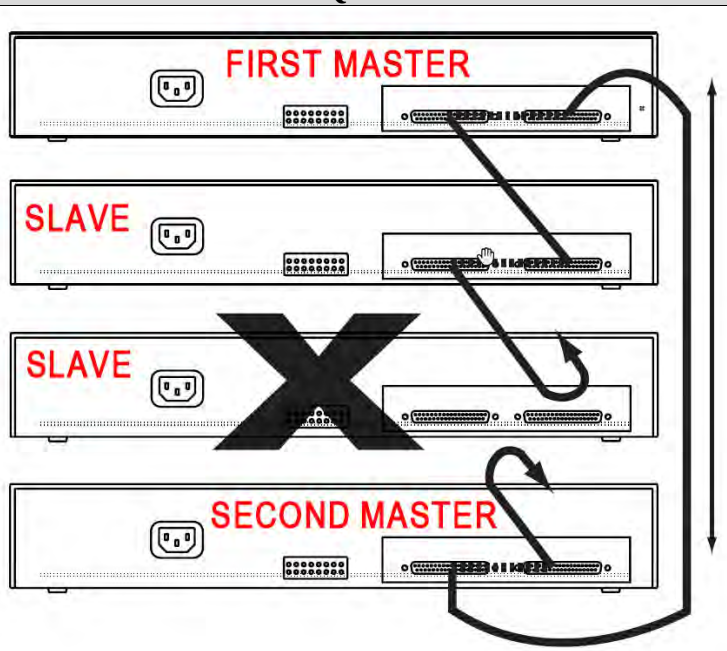
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No.	'904 Patent Claim 9	Quoc
		or more daisy chains would have been obvious to a person having ordinary skill in the art, as explained below. Quoc discloses "a redundant management system, comprising: a plurality of network management modules in a stacked repeater, including, a master network management module which is configured to perform network management functions, and at least one slave network management module which is configured to not perform network management functions, but which otherwise maintains the master module's configuration; a management bus providing a communication link between said network management modules; a protocol for determining the master and Slave relationships between said modules wherein Said protocol comprises: providing a Stacked repeater having a plurality of network management modules linked by a management bus, Selecting a provisional master module from among the plurality of management modules, Said provisional master module being configured to perform network management functions, by determining provisional master and slave designations for the plurality of modules based a module's position in the repeater Stack, polling the provisional Slave modules regarding a Set of preestablished master Selection criteria, evaluating data received from the slaves in reply to the poll, and determining the proper master based on the data; designating the remainder of the modules as Slaves, Said slaves being configured to not perform network management functions, and maintaining the same configuration between the master and the Slave modules during network operation; and a Stack bus capable of providing a communication link between the network management modules and other nodes of a computer network; wherein network management functions may be transferred from the master to one of the slaves without Substantial disruption of network operation.." Quoc, Claim 8. Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Quoc in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 9[f] of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references.

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No.	'904 Patent Claim 9	Quoc
		For example, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption." BayStack 450 Data Sheet at 2 of 8. Figure 1, shown below, illustrates the plurality of physical interface lines that link the slave units in a daisy chain, in which the slave units are mutually connected in series by the physical interface lines therebetween. *Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.*  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

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No.	'904 Patent Claim 9	Quoc
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In one example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the bottom of the stack in an aptly-named "Stack Up Configuration." BayStack 450 Manual at 54 of 290.

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No.	'904 Patent Claim 9	Quoc

Stack Up Configurations

In Figure 1-12, data flows from the base unit (unit 1) to the next switch, which is assigned as unit 2, and continues until the last switch in the stack is assigned as unit 8. The physical order of the switches is *from bottom to top* (unit 1 to unit 8).

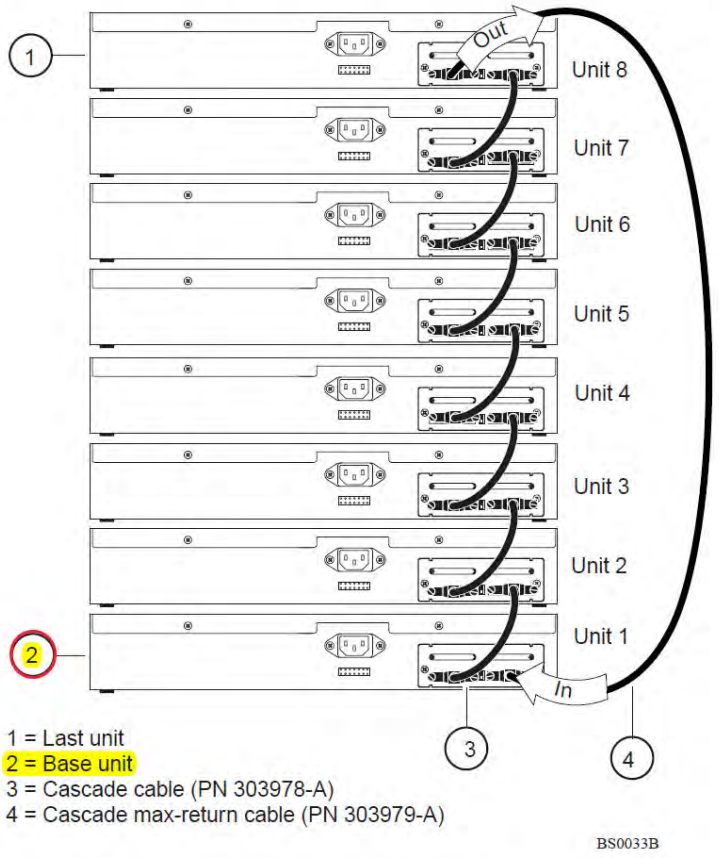


Figure 1-12. Stack Up Configuration Example

BayStack 450 Manual at 54 of 290, FIG. 1-12 (annotated).

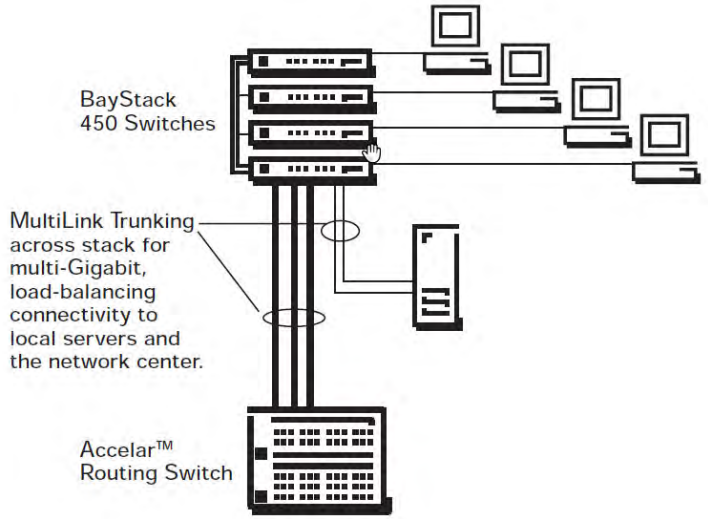
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No.	'904 Patent Claim 9	Quoc
9[g]	a pre-switch, which in the event of a fault at a location in one of the daisy chains, re-routes at least a portion of the data packets exchanged with one or more of the slaves in the daisy chain in which the fault has occurred through another one of the daisy chains.	Quoc discloses a pre-switch, which in the event of a fault at a location in one of the daisy chains, re-routes at least a portion of the data packets exchanged with one or more of the slaves in the daisy chain in which the fault has occurred through another one of the daisy chains. For example, Quoc discloses that "because networks tend to constantly change and expand with network devices being added, it would be highly advantageous if, in addition to the Class II feature of allowing two repeaters in a collision domain, it were also possible that each of the two repeaters were expandable or Stackable. Additional ports could be added to a first repeater Stack that functions as one Class II repeater and then a Second Stack could be included as the Second Class II repeater. Thus, Stackability combined with cascadability would provide even greater flexibility for network expansion." Quoc at 4:32-42. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Quoc is found to not meet this limitation, the location of the fault and the second master unit being conveyed to the second master unit from the first master unit via another one of the daisy chains would have been obvious to a person having ordinary skill in the art, as explained below. Quoc discloses "a redundant management system, comprising: a plurality of network management modules in a stacked repeater, including, a master network management module which is configured to perform network management functions, and at least one slave network management module which is configured to not perform network management functions, but which otherwise maintains the master module's configuration; a management bus providing a communication link between said network management modules; a protocol for determining the master and Slave relationships between said modules wherein Said protocol comprises: providing a Stacked repeater having a plurality of network management modules linked by a management bus, Selecting a provisional master module from among the plurality of management modules, Said provisional master module being configured to perform network management functions, by determining provisional master and slave designations for the plurality of modules based a module's position in the repeater Stack, polling the provisional Slave modules regarding a Set of preestablished master Selection criteria, evaluating data received from the slaves in reply to the poll, and determining the

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No.	'904 Patent Claim 9	Quoc
		proper master based on the data; designating the remainder of the modules as Slaves, Said slaves being configured to not perform network management functions, and maintaining the same configuration between the master and the Slave modules during network operation; and a Stack bus capable of providing a communication link between the network management modules and other nodes of a computer network; wherein network management functions may be transferred from the master to one of the slaves without Substantial disruption of network operation.." Quoc, Claim 8. Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Quoc in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 9[g] of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. In addition, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8.

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No.	'904 Patent Claim 9	Quoc
		Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below. *Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.*  BayStack 450 Data Sheet at 4 of 8, FIG. 2. The Baystack 450 Switches in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) Ding renders the claim, including the present limitation, obvious. Ding discloses failure protection. ("In order to coordinate management and control operations across the various cooperating Ethernet Switching modules in the Stack, one of the cooperating Ethernet Switching modules operates as the base module for the Stack. In a preferred embodiment of the present invention, a particular Ethernet Switching module is configured as the base module through a user-controlled toggle Switch on the Ethernet Switching module. If that Ethernet Switching module fails, then another Ethernet switching

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<table>
<tr><th>No.</th><th>’904 Patent Claim 9</th><th>Quoc</th></tr>
<tr><td></td><td></td><td>module (preferably the next upstream Ethernet Switching module in the Stack) automatically reconfigures itself to become the base module for the Stack. The base module is responsible for coordinating management and control for the Stack. Specifically, the base module manages the Stack configuration by ensuring that the Stack is initialized in an orderly manner, handling Stack configuration changes Such as module insertion and removal, and verifying stack integrity. The base module also coordinates certain Stack management functions that require synchronization or mutual exclusion among the various cooperating Ethernet switching modules in the stack.” Ding, 8:9-30.

As another example, the Catalyst XL Switches disclose “Hapuna is a software release developed specifically for the 8Mb Catalyst 2900 XL and the Catalyst 3500 XL. However, this software release should be flexible enough to provide a foundation to support other devices (specifically the Vegas L3 products) in the future. With Hapuna we will also consolidate the software for the 2900 and 3500 into one image that will have all the Enterprise Edition features as well as Command Switch functionality integrated. The 2900/3500 product management team is also eliminating the distinction between the –A and –EN version prior to Hapuna release, thus minimizing the number of SKUs and simplifying our marketing message. We will also post the new image on CCO in the free/public area to address the upgrade needs of installed base.” October 8, 1999 Hapuna Product Requirements Document (“Hapuna”) at 4.

The Catalyst XL Switches disclose a product description of Hapuna in the table shown below.
<table>
<tr><th>Acronym</th><th>Description</th></tr>
<tr><td>Alcatraz</td><td>GBIC based Gigabit Ethernet Module</td></tr>
<tr><td>CDP</td><td>Cisco Discovery Protocol</td></tr>
<tr><td>CLI</td><td>Command Line Interface</td></tr>
<tr><td>CVSM</td><td>Cisco Visual Switch Manager</td></tr>
<tr><td>Deep Space</td><td>12.0(5)XP release of software</td></tr>
<tr><td>HSRP</td><td>Hot Standby Router Protocol</td></tr>
<tr><td>HTTP</td><td>Hyper Text Transfer Protocol</td></tr>
<tr><td>Merlin</td><td>Enhancement of Lava Deux</td></tr>
<tr><td>QoS</td><td>Quality of Service</td></tr>
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No.	'904 Patent Claim 9	Quoc

RPS2000	New redundant power supply
Vegas	Next Gen L3 3500 XL switches
UDLD	UniDirectional Link Detection

Hapuna at 4.

Further, the Catalyst XL Switches disclose "Upon FCS, Hapuna software will be available for free via CCO for all customers. We will post it in the public area of CCO to address the upgrade needs of the installed base. This will allow us to end-of-life the current upgrade SKUs for 2900 XL." Hapuna at 9.

The Catalyst XL Switches also disclose "feedback from customers has been that there are certain key features, such as redundant commander and extended candidate discovery, are still missing from the current implementation of Switch Clustering and needs to be addressed." Hapuna at 9.

Consequently, the Catalyst XL Switches disclose "Hapuna release has the following objectives: The ability to create and manage robust and fault tolerant switch clusters. The focus is on providing - Redundant command switch support and plug-and-play GigaStack loop back." Hapuna at 3.

As a result, the Catalyst XL Switches disclose switch clustering features for such a redundant command switch, noting that "Hapuna will deliver Redundant command switch capability using HSRP as a template. The Cluster HSRP group will consist of two or more Command switch capable devices that share the same virtual Cluster HSRP MAC and IP address. There can only be one active Command Switch at any given time. Failover between the active Command Switch and the backup Command switch should occur within 30 seconds and be transparent to the network administrator. However, this failover should generate SNMP traps informing the network administrator. Hapuna should also report candidate and member switches that are most qualified to be part of the HSRP group and set precedence order within the HSRP group based on a predefined matrix. The precedence is determined based on connectivity as well as device capabilities. *Redundant cabling is not a part of the scope of*

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No.	'904 Patent Claim 9	Quoc
		this Hapuna feature and does not need to be addressed via software. Creation of the HSRP group should also not break an existing Switch Cluster." Hapuna at 4-5. Further, the Catalyst XL Switches disclose the redundant command switch will require updates to Merlin, stating that Merlin Requirements include "Identify[ing] members of the HSRP group and Draw Redundant Links." Hapuna at 6. "Since Hapuna will add support for the Cluster HSRP group, Merlin needs to graphically identify and display members of the Cluster HSRP group, specifically the Active and Backup Command Switches. Cluster Builder should also diagram any redundant (blocked) links within the cluster. In addition, Razor links should be uniquely identified in Cluster Builder." Hapuna at 6. And the Catalyst XL Switches disclose Hapuna allows circular links on a razor daisy chain. Hapuna at 8. "This feature allows a standard one-meter loopback cable to be used to create a circular link on a Razor daisy chain. Hapuna will detect the loop and block the link typically within 30 seconds, with a worst case limit of 2 minutes. Hapuna should also be able to failover to this blocked link within 30 seconds when there is a link failure in the Razor daisy chain." Hapuna at 8. In addition, the Catalyst XL Switches disclose that Merlin provides a cluster builder and view that provides redundant commander support. Merlin at 33 of 114. Legend: Following legend describes the icon and label to distinguish various ***devices*** in the Cluster Builder/View screens: 1. **Command Switch:** Special Switch icon with ***green*** label. 2. **Standby Command Switch:** Special Switch icon with ***white*** label (the icon is same as that of the command switch). Merlin at 33 of 114. "Merlin will have the capability to support a redundant commander. The Cluster Builder will display the current Active Commander and the standby Commander. The Active Commander is designated by the command switch icon with green label and the Standby Commander will

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No.	'904 Patent Claim 9	Quoc
		be designated by the command switch icon with white label. Please refer to the Legend section regarding the representation of various devices and links. The Standby command switch selection is possible from the Standby Command Configuration dialog in the Cluster Manager. Please refer to that section for further information on the criteria for selection of Standby Command Switch." Merlin at 33 of 114. Standby Command Configuration How to launch: Main menu: Cluster->Standby Command Configuration Toolbar: *No toolbar icon.* This screen allows the user to configure cluster-command-capable members as standby command switch. If the active command switch goes down then the standby command switch will take over. This screen also helps the user to pick the most suitable standby command. It should display a list of suggested standby command (the most desirable is listed first). The most desirable standby candidate is: • The one with the most number of connections between itself and other cluster members. • It also has a fast processor. For example 3500 switches are faster than 2900 switches. WS-3524 takes precedence over WS-3548. User also need to provide a group number and a virtual IP address. Merlin at 51 of 114. Moreover, the Catalyst XL Switches disclose that Merlin provides support for "HSRP [Hot Standby Router Protocol] group configuration & Management VLAN switchover in Cluster Manager." Merlin at 8 of 114. In particular, the Catalyst XL Switches disclose that user's can access a Standby Command Configuration Dialog to select from among a "'Candidate(s)' list box will contain the list of all the members that can belong to a cluster HSRP group." Merlin at 52 of 114.

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No.	'904 Patent Claim 9	Quoc
		Additionally, the Catalyst XL Switches disclose that Merlin provides support for Cisco Group Management Protocol (CGMP), explaining that "Clicking on the 'Management Groups' tab will bring up the management groups information to the front as shown in the figure below. It contains a table that shows the VLAN id, MAC address, and the interface id of the current management groups. To delete an entry, select the row first and then click on the 'Remove' button. It is also possible to delete multiple entries using the same method." Merlin at 65 of 114. Further, the Catalyst XL Switches disclose that Merlin provides support for multiple virtual networks or multi-VLANs, where users can select VLAN commanders, members, for different virtual daisy chains and/or making these VLANs static. *See generally* Merlin at 80-82.

No.	'904 Patent Claim 10	Quoc
10	Apparatus according to claim 9, wherein the pre-switch re-routes the data packets such that substantially no reconfiguration of the switch is required responsive to the fault.	Quoc discloses apparatus according to claim 9, wherein the pre-switch re-routes the data packets such that substantially no reconfiguration of the switch is required responsive to the fault. For example, Quoc discloses a redundant management system that is configured to re-route data in the case of a fault without substantial interruption of the network operation. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Quoc discloses "a redundant management system, comprising: a plurality of network management modules in a stacked repeater, including, a master network management module which is configured to perform network management functions, and at least one Slave network management module which is configured to not perform network management functions, but which otherwise maintains the master module's configuration; a management bus providing a communication link between said network management modules; a protocol

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No.	'904 Patent Claim 10	Quoc
		for determining the master and Slave relationships between said modules wherein Said protocol comprises: providing a Stacked repeater having a plurality of network management modules linked by a management bus, Selecting a provisional master module from among the plurality of management modules, Said provisional master module being configured to perform network management functions, by determining provisional master and slave designations for the plurality of modules based a module's position in the repeater Stack, polling the provisional Slave modules regarding a Set of preestablished master Selection criteria, evaluating data received from the slaves in reply to the poll, and determining the proper master based on the data; designating the remainder of the modules as Slaves, Said slaves being configured to not perform network management functions, and maintaining the same configuration between the master and the Slave modules during network operation; and a Stack bus capable of providing a communication link between the network management modules and other nodes of a computer network; wherein network management functions may be transferred from the master to one of the slaves without Substantial disruption of network operation.." Quoc, Claim 8.

No.	'904 Patent Claim 11	Quoc
11[pre]	Network access apparatus, comprising:	To the extent the preamble is found to be limiting, Quoc discloses a network access apparatus. *See supra* at 1[pre].
11[a]	first and second master units, each comprising a physical interface to a packet-switched network;	Quoc discloses first and second master units, each comprising a physical interface to a packet-switched network. *See supra* at 1[a].
11[b]	a plurality of slave units,	Quoc discloses a plurality of slave units. *See supra* at 1[b].
11[c]	each slave unit comprising one or more ports to	Quoc discloses each slave unit comprising one or more ports to respective subscriber lines. *See supra* at 1[c].

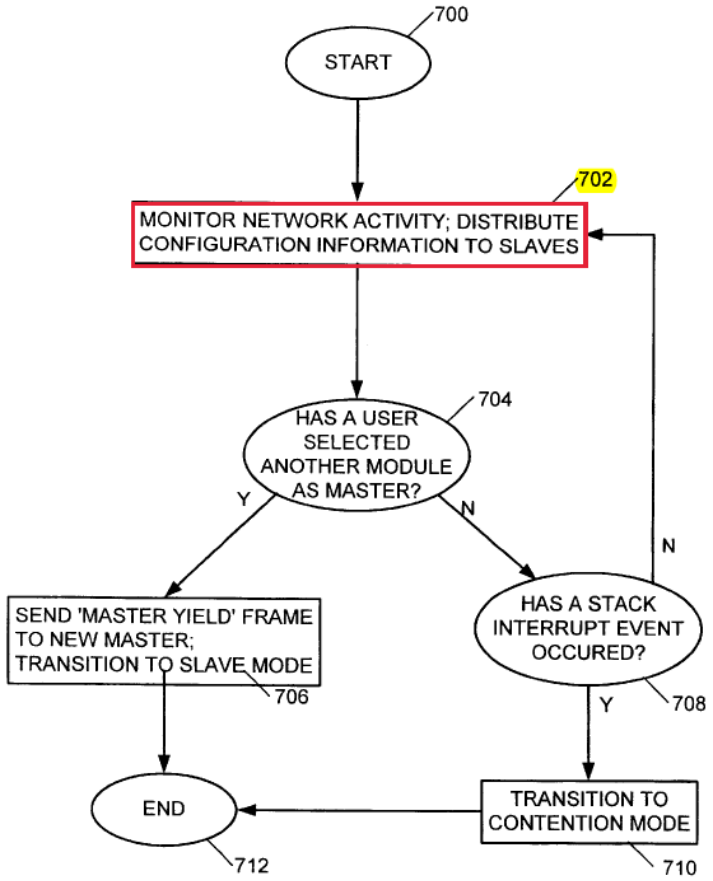
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No.	'904 Patent Claim 11	Quoc
	respective subscriber lines; and	
11[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	Quoc discloses a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. *See supra* at 1[d].
11[e]	each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit,	Quoc discloses each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit. *See supra* at 1[e].
11[f]	wherein each of the slave units comprises: a switch fabric comprising one or more switches, which convey data packets to respective ports on the switch to which the	Quoc discloses each of the slave units comprises: a switch fabric comprising one or more switches, which convey data packets to respective ports on the switch to which the packets are addressed. For example, Quoc describes that port connectivity was well known and was associated with network latency. Specifically, Quoc discloses that an "Ethernet repeater is a device that serves as a central station for plugging-in network devices included in an Ethernet network, hence the term 'hub.' The Ethernet repeater receives messages from the network devices that are plugged into it and broadcasts (or 'repeats') the message to all of the other devices on the

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No.	'904 Patent Claim 11	Quoc
	packets are addressed; and	network along a network bus, if no collision is detected. The repeater monitors network traffic in its collision domain and assumes the responsibility for collision detection. The network devices thus simply broadcast messages to the repeater and do not need to first listen before sending messages. If the repeater has already assigned the network bus to a device, then it notifies the device that tried to broadcast that a collision has occurred so that the network device may try again later. The amount of time that it takes for the repeater to receive a data signal and repeat that data signal out to every port on which the data signal is to be broadcast is referred to as the latency of the repeater." Quoc, 3:39-56. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Further, Quoc discloses that network flexibility in the IEEE 802.3 specification involves a "Class II requirement, which allows more than one repeater to be included in a single collision domain, significantly adds flexibility to network topology. Expanding the number of ports available on a network may be accomplished by simply adding a second repeater in the same collision domain as a single existing repeater." Quoc, 4:19-25. Quoc explains that "[a]dditional ports could be added to a first repeater stack that functions as one Class II repeater and then a second stack could be included as the second Class II repeater. Thus, stackability combined with cascadability would provide even greater flexibility for network expansion." Quoc, 4:37-42. Quoc further discloses that "FIG. 7 provides a process flow for a module operating in Selection Master mode, represented by Selection master state 310 in FIG. 3. The Selection Master is responsible for handling all management activities for the stack. This management feature of the Selection master is represented by a step 702 in FIG. 7. For example, the master module monitors and coordinates all communication between work stations on the network, sends alerts to a system administrator when appropriate, and monitors and controls the status of I/O ports for all management modules." Quoc, 9:4-13 (emphasis added).

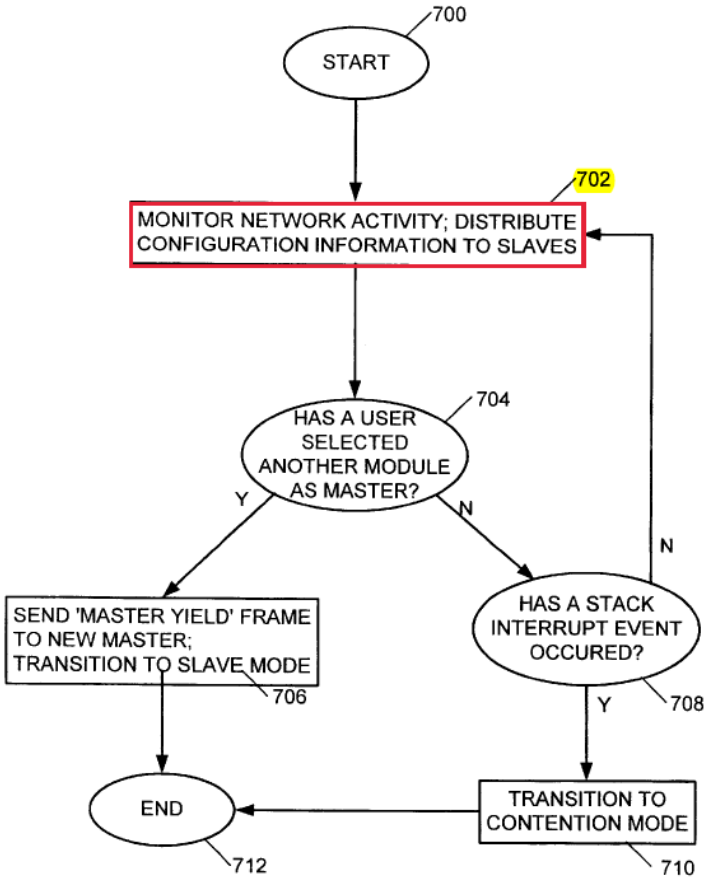
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No.	'904 Patent Claim 11	Quoc
		 Quoc, FIG. 7 (annotated).
11[g]	a pre-switch, which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data	Quoc discloses a pre-switch, which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines.

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No.	'904 Patent Claim 11	Quoc
	packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines.	For example, Quoc describes that port connectivity was well known and was associated with network latency. Specifically, Quoc discloses that an "Ethernet repeater is a device that serves as a central station for plugging-in network devices included in an Ethernet network, hence the term 'hub.' The Ethernet repeater receives messages from the network devices that are plugged into it and broadcasts (or 'repeats') the message to all of the other devices on the network along a network bus, if no collision is detected. The repeater monitors network traffic in its collision domain and assumes the responsibility for collision detection. The network devices thus simply broadcast messages to the repeater and do not need to first listen before sending messages. If the repeater has already assigned the network bus to a device, then it notifies the device that tried to broadcast that a collision has occurred so that the network device may try again later. The amount of time that it takes for the repeater to receive a data signal and repeat that data signal out to every port on which the data signal is to be broadcast is referred to as the latency of the repeater." Quoc, 3:39-56. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Further, Quoc discloses that network flexibility in the IEEE 802.3 specification involves a "Class II requirement, which allows more than one repeater to be included in a single collision domain, significantly adds flexibility to network topology. Expanding the number of ports available on a network may be accomplished by simply adding a second repeater in the same collision domain as a single existing repeater." Quoc, 4:19-25. Quoc explains that "[a]dditional ports could be added to a first repeater stack that functions as one Class II repeater and then a second stack could be included as the second Class II repeater. Thus, stackability combined with cascadability would provide even greater flexibility for network expansion." Quoc, 4:37-42. Quoc further discloses that "FIG. 7 provides a process flow for a module operating in Selection Master mode, represented by Selection master state 310 in FIG. 3. The Selection Master is responsible for handling all management activities for the stack. This management feature of the Selection master is represented by a step 702 in FIG. 7. For example, the master module monitors and coordinates all communication between work stations on the network, sends alerts to a system administrator when appropriate, and monitors and controls the status of I/O ports for all management modules." Quoc, 9:4-13.

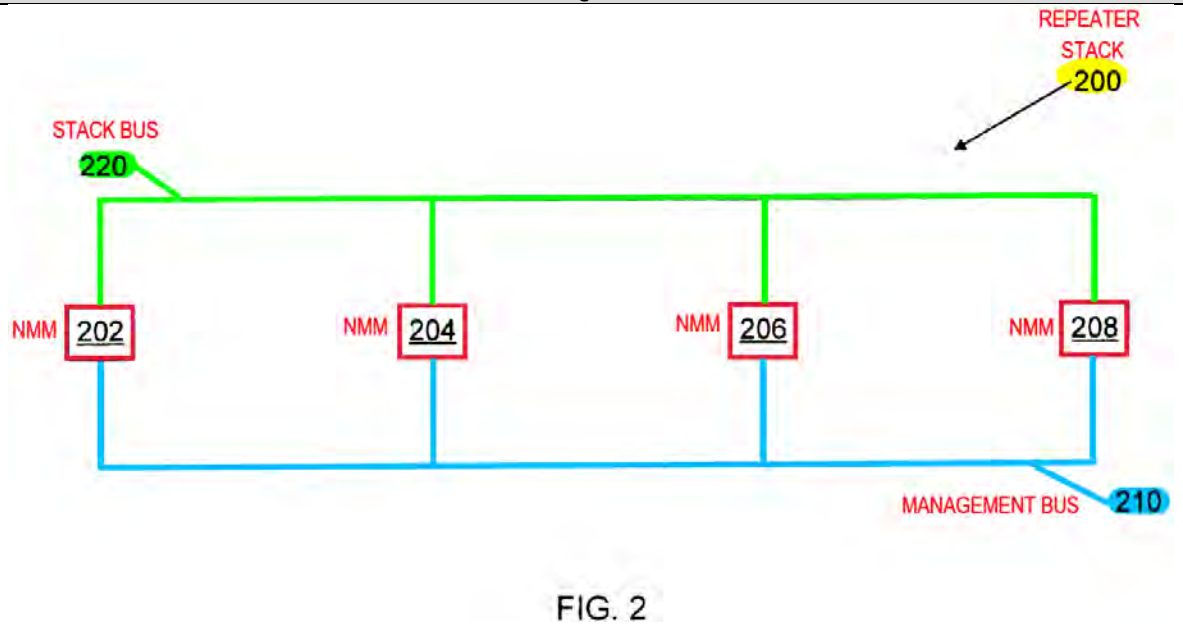
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No.	'904 Patent Claim 11	Quoc
		 Quoc, FIG. 7 (annotated). Quoc also discloses that using physical interface lines, such as cables, was a well known technique for implementing network buses. "While some Ethernet applications connect numerous network devices to **a network bus that is literally a cable connecting the network devices**, it is often more desirable to connect network devices using a repeater or hub. It should be noted that in the following description the term 'hub' and the term 'repeater' are used interchangeably." Quoc, 3:24-29 (emphasis added).

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No.	'904 Patent Claim 11	Quoc
		Quoc further discloses that the "802.3 specification contains maximum latency requirements that cannot be exceeded by a conforming repeater. The maximum permissible latency, combined with the requirements for maximum cable length and restrictions on the number and type of other devices allowed within a collision domain, limits the amount of time that it takes to notify a network device that a collision has occurred, ensuring that the overall 802.3 design criteria is met that all collisions are detected before a complete 64 byte frame is transmitted." Quoc, 3:57-66. Quoc discloses that by "July 1993, a group of networking companies joined to form the Fast Ethernet Alliance. The charter of the group was to draft the 802.3u 100BaseT specification of the Institute of Electrical and Electronics Engineers (IEEE) and to accelerate market acceptance of Fast Ethernet technology. The final IEEE 802.3 specification was approved in June 1995. Among the other goals of the Fast Ethernet Alliance are: To maintain the Ethernet transmission protocol Carrier Sense Multiple Access Collision Detection (CSMA/CD); **to support popular cabling schemes**; and to ensure that Fast Ethernet technology will not require changes to the upper-layer protocols and software that run on LAN workstations. For example, no changes are necessary to Simple Network Management Protocol (SNMP) management software or Management Information Bases (MIBs) in order to implement Fast Ethernet." Quoc, 1:46-61 (emphasis added). Quoc discloses that "FIG. 2 shows a repeater stack 200 having four NMMs 202, 204, 206 and 208. The modules 202, 204, 206 and 208 of the repeater stack 200 communicate using a management bus 210. The modules communicate on the management bus 210 by sending small messages, referred to as 'frames.' The modules are also connected to a stack bus 220 which provides the main pathway for data transmission between repeaters and other nodes on the network (not shown)." Quoc, 6:21-24.

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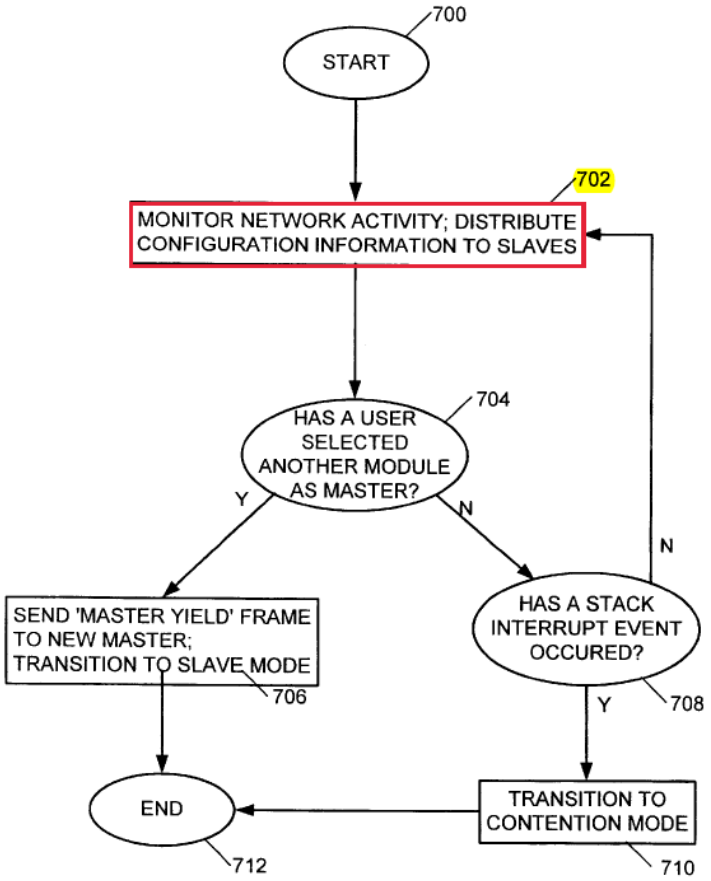
No.	'904 Patent Claim 11	Quoc
		 FIG. 2 Quoc, FIG. 2 (annotated). As shown above, the NMMs 202, 204, 206, and 208 in FIG. 2 are connected in a daisy chain.

No.	'904 Patent Claim 12	Quoc
12	Apparatus according to claim 11, wherein each of the slave units is coupled to receive packets transferred thereto from the first and second master units over first and second ones of the physical interface	Quoc discloses apparatus according to claim 11, wherein each of the slave units is coupled to receive packets transferred thereto from the first and second master units over first and second ones of the physical interface lines, respectively, and wherein the pre-switch passes the packets received through the first and second physical interface line and addressed to any of the ports on the slave unit to respective first and second addresses in the switch fabric. For example, Quoc describes that port connectivity was well known and was associated with network latency. Specifically, Quoc discloses that an "Ethernet repeater is a device that serves as a central station for plugging-in network devices included in an Ethernet network, hence the term 'hub.' The Ethernet repeater receives messages from the network devices that are

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No.	'904 Patent Claim 12	Quoc
	lines, respectively, and wherein the pre-switch passes the packets received through the first and second physical interface line and addressed to any of the ports on the slave unit to respective first and second addresses in the switch fabric.	plugged into it and broadcasts (or 'repeats') the message to all of the other devices on the network along a network bus, if no collision is detected. The repeater monitors network traffic in its collision domain and assumes the responsibility for collision detection. The network devices thus simply broadcast messages to the repeater and do not need to first listen before sending messages. If the repeater has already assigned the network bus to a device, then it notifies the device that tried to broadcast that a collision has occurred so that the network device may try again later. The amount of time that it takes for the repeater to receive a data signal and repeat that data signal out to every port on which the data signal is to be broadcast is referred to as the latency of the repeater." Quoc, 3:39-56. Further, Quoc discloses that network flexibility in the IEEE 802.3 specification involves a "Class II requirement, which allows more than one repeater to be included in a single collision domain, significantly adds flexibility to network topology. Expanding the number of ports available on a network may be accomplished by simply adding a second repeater in the same collision domain as a single existing repeater." Quoc, 4:19-25. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Quoc explains that "[a]dditional ports could be added to a first repeater stack that functions as one Class II repeater and then a second stack could be included as the second Class II repeater. Thus, stackability combined with cascadability would provide even greater flexibility for network expansion." Quoc, 4:37-42. Quoc further discloses that "FIG. 7 provides a process flow for a module operating in Selection Master mode, represented by Selection master state 310 in FIG. 3. The Selection Master is responsible for handling all management activities for the stack. **This management feature of the Selection master is represented by a step 702 in FIG. 7**. For example, **the master module** monitors and coordinates all communication between work stations on the network, sends alerts to a system administrator when appropriate, and **monitors and controls the status of I/O ports for all management modules**." Quoc, 9:4-13 (emphasis added).

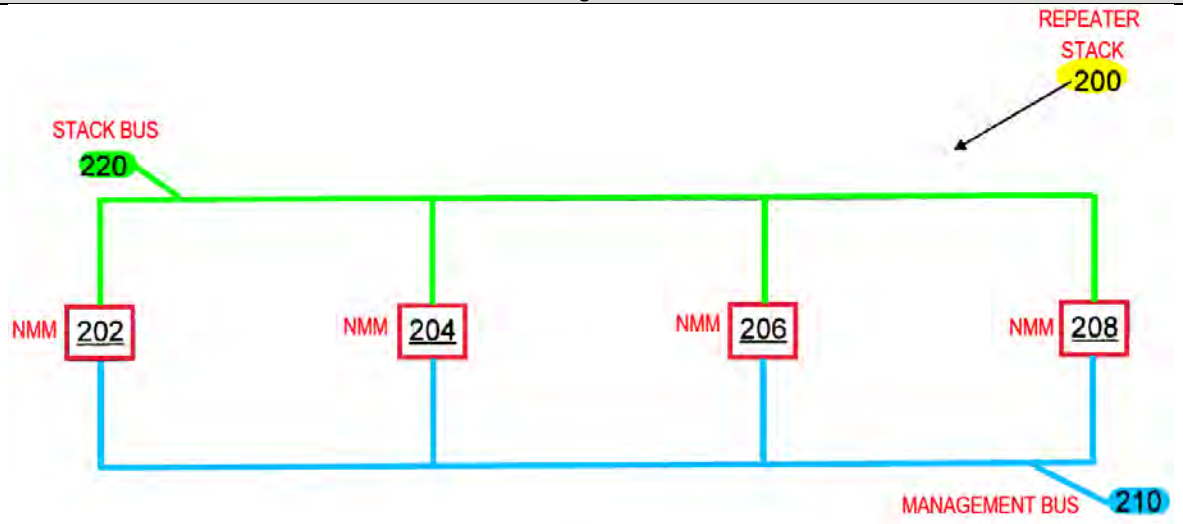
Orckit Exhibit 2016
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No.	'904 Patent Claim 12	Quoc
		 Quoc, FIG. 7 (annotated). Quoc also discloses that using physical interface lines, such as cables, was a well known technique for implementing network buses. "While some Ethernet applications connect numerous network devices to **a network bus that is literally a cable connecting the network devices**, it is often more desirable to connect network devices using a repeater or hub. It should be noted that in the following description the term 'hub' and the term 'repeater' are used interchangeably." Quoc, 3:24-29 (emphasis added).

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No.	'904 Patent Claim 12	Quoc
		Quoc further discloses that the "802.3 specification contains maximum latency requirements that cannot be exceeded by a conforming repeater. The maximum permissible latency, combined with the requirements for maximum cable length and restrictions on the number and type of other devices allowed within a collision domain, limits the amount of time that it takes to notify a network device that a collision has occurred, ensuring that the overall 802.3 design criteria is met that all collisions are detected before a complete 64 byte frame is transmitted." Quoc, 3:57-66. Quoc discloses that by "July 1993, a group of networking companies joined to form the Fast Ethernet Alliance. The charter of the group was to draft the 802.3u 100BaseT specification of the Institute of Electrical and Electronics Engineers (IEEE) and to accelerate market acceptance of Fast Ethernet technology. The final IEEE 802.3 specification was approved in June 1995. Among the other goals of the Fast Ethernet Alliance are: To maintain the Ethernet transmission protocol Carrier Sense Multiple Access Collision Detection (CSMA/CD); **to support popular cabling schemes**; and to ensure that Fast Ethernet technology will not require changes to the upper-layer protocols and software that run on LAN workstations. For example, no changes are necessary to Simple Network Management Protocol (SNMP) management software or Management Information Bases (MIBs) in order to implement Fast Ethernet." Quoc, 1:46-61 (emphasis added). Quoc discloses that "FIG. 2 shows a repeater stack 200 having four NMMs 202, 204, 206 and 208. The modules 202, 204, 206 and 208 of the repeater stack 200 communicate using a management bus 210. The modules communicate on the management bus 210 by sending small messages, referred to as 'frames.' The modules are also connected to a stack bus 220 which provides the main pathway for data transmission between repeaters and other nodes on the network (not shown)." Quoc, 6:21-24.

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No.	'904 Patent Claim 12	Quoc
		 FIG. 2 Quoc, FIG. 2 (annotated). As shown above, the NMMs 202, 204, 206, and 208 in FIG. 2 are connected in a daisy chain. *See also supra* at 11[f].

No.	'904 Patent Claim 13	Quoc
13	Apparatus according to claim 12, wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second addresses are swapped in the pre-	Quoc discloses apparatus according to claim 12, wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second addresses are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required. For example, Quoc discloses "Additional ports could be added to a first repeater Stack that functions as one Class II repeater and then a Second Stack could be included as the Second Class II repeater. Thus, stackability combined with cascadability would provide even greater flexibility for network expansion.." Quoc, 4:37-42 . To the extent that Quoc is found to not

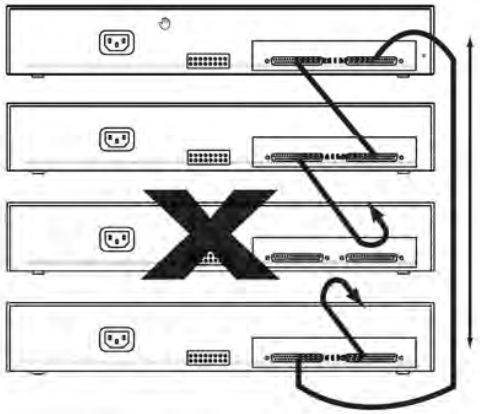
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No.	'904 Patent Claim 13	Quoc
	switch, so that substantially no reconfiguration of the switch fabric is required.	meet this limitation, apparatus according to claim 12, wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second addresses are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required would have been obvious to a person having ordinary skill in the art, as explained below. Quoc further discloses "when a Stack of repeaters is provided on a common bus So that they function as a Single repeater, it is necessary to have a network management module to manage the Stack. The failure of Such a network management module manag ing the Stack could potentially remove all of the repeaters in the stack from Service. Therefore it would be desirable if multiple network management modules could be provided in a Stack together with a Scheme for electing a primary network management module, and a backup network man agement module in the event of a failure of the primary module. Moreover, the reliability and flexibility of the network would be improved if the network management System could automatically detect the failure or absence of the primary module and elect a backup module to perform the System management function without Substantial disrup tion of network operation." Quoc at 4:43-59 Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Quoc in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 13 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Vink '324 discloses directing the packet to a different transmission ring in one and/or the other direction so that substantially no reconfiguration of the switch fabric is required. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Vink '324 Claim 14 ("Communication system according to Claim 13, wherein the at least one master (1) and the slaves (2, 3, 4, 5) are arranged to transmit or receive data bits via a transmission ring (7, 8) in one and/or the other direction.").

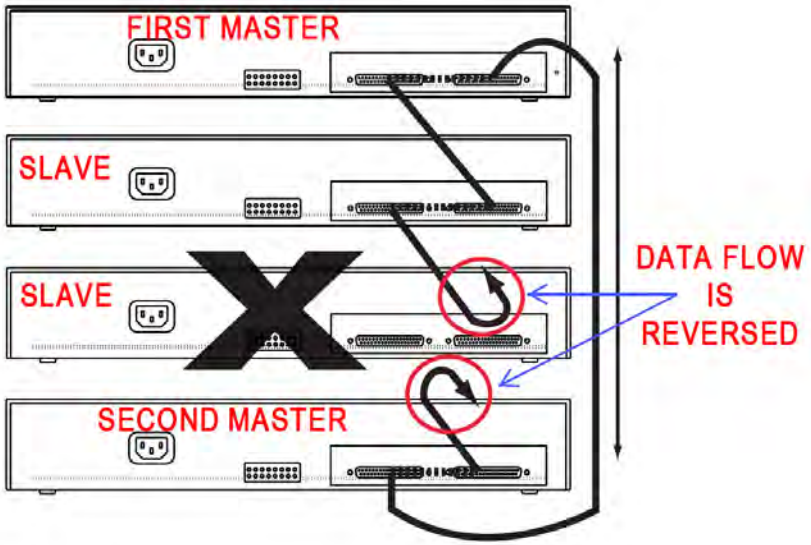
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No.	'904 Patent Claim 13	Quoc
		Vink '324 21:3-9 ("The transmitting/receiving unit 6 provides for the monitoring of the transmission and the control computer 38 provides for and monitors the correct sequence of the data bits for a relevant slave, related to the sequence in which the I/O modules are arranged. The information about this sequence is extracted by the control unit 36 from the status information received from the relevant slaves. In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about whether the connection to the transmission system is or is not operating correctly."). As another example, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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No.	'904 Patent Claim 13	Quoc
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

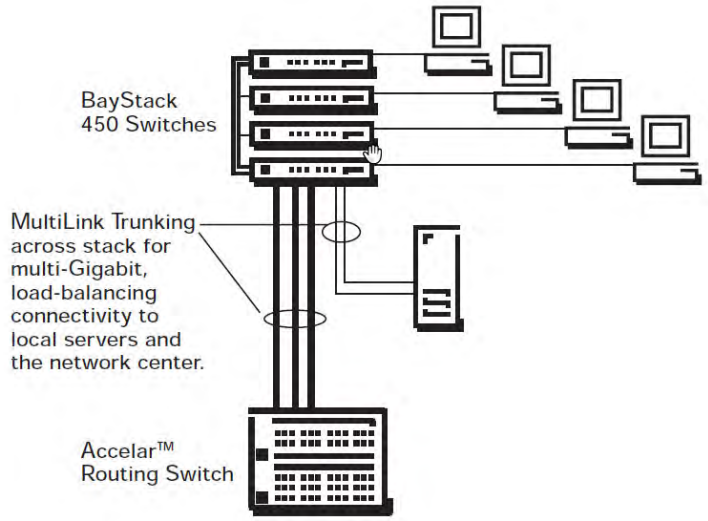
Orckit Exhibit 2016
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No.	'904 Patent Claim 13	Quoc
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. In this example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features where "[e]ach unit in the stack has a full copy of the stack configuration so in the unlikely event of any unit failure, operation of the stack continues without affecting application connectivity." BayStack 450 Data Sheet at 3 of 8.

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No.	'904 Patent Claim 13	Quoc
		In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches further disclose its fail-safe design features includes that "[e]ach switch includes a Redundant Power Supply Unit connection. Should the switch's built-in power supply fail, the Bay Networks RPSU (sold separately) will automatically supply power to the switch for uninterrupted operation." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below.

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No.	'904 Patent Claim 13	Quoc
		Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.  BayStack 450 Data Sheet at 4 of 8, FIG. 2. And Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. Nortel Networks' BayStack 450 Switches also disclose a "Fail-Safe Stack Application." BayStack 450 Manual at 48 of 290. More specifically, that Nortel Networks' BayStack 450 Switches disclose that "Figure 1-9 shows an example of eight BayStack 450 switches that are stacked together as a single managed unit. If any single unit in the stack fails, the remaining stack remains operational,

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No.	'904 Patent Claim 13	Quoc
		without interruption." BayStack 450 Manual at 48 of 290. Figure 1-9 of the BayStack 450 Manual depicts a plurality of slaves and is shown below.

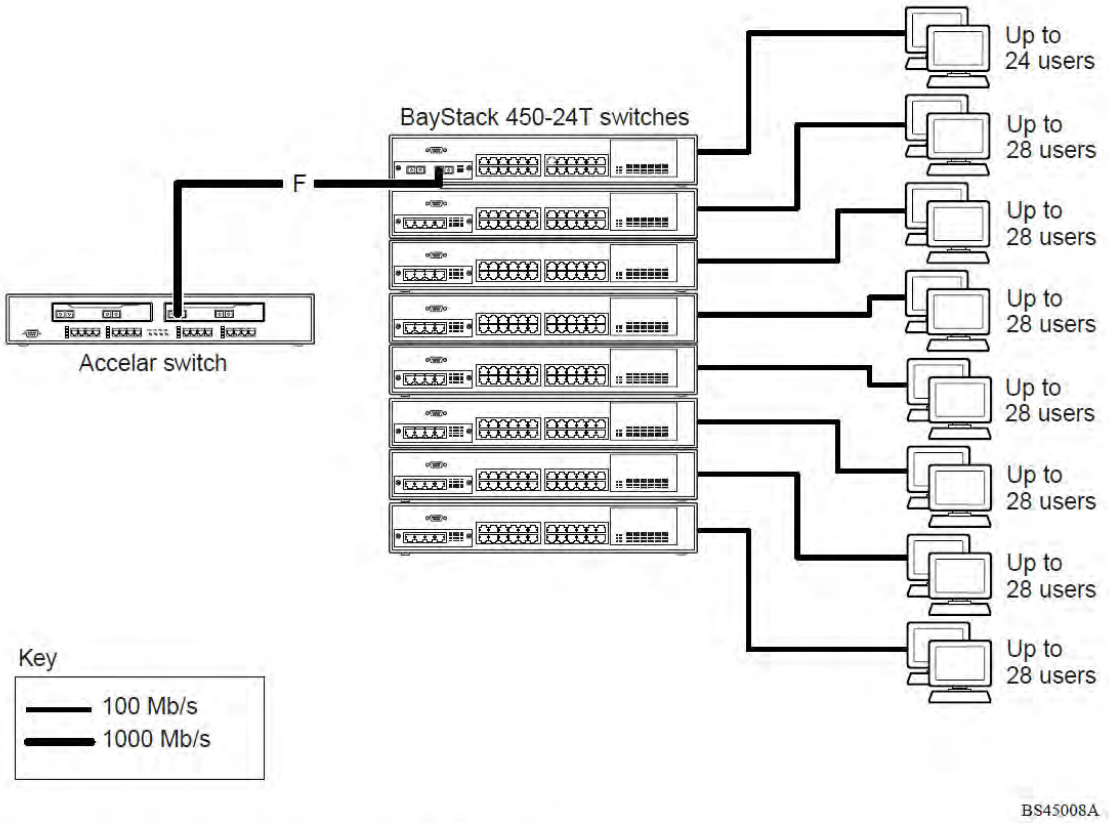


Figure 1-9. Fail-Safe Stack Example

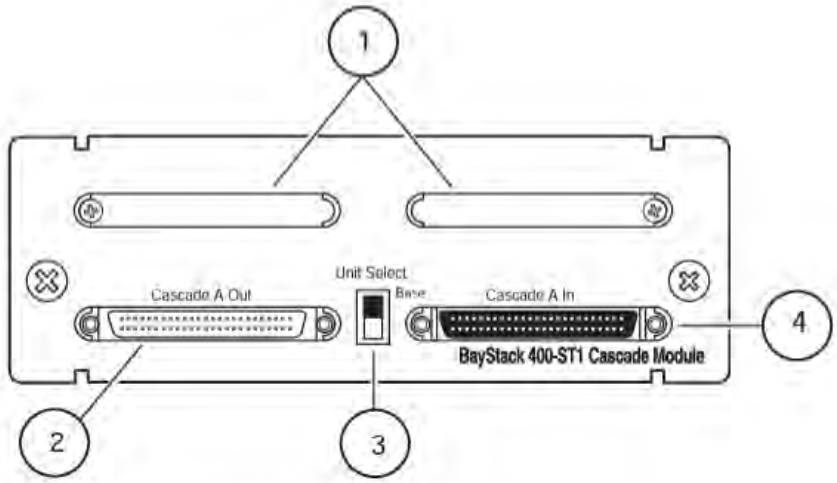
BayStack 450 Manual at 48 of 290, FIG. 1-9.

Nortel Networks' BayStack 450 Switches further disclose that "[a]s shown in Figure 1-9, the Accelar 1100 switch is used as a backbone switch, connecting to the BayStack 450 switch with an optional gigabit (1000BASE-SX) MDA for maximum bandwidth. This configuration

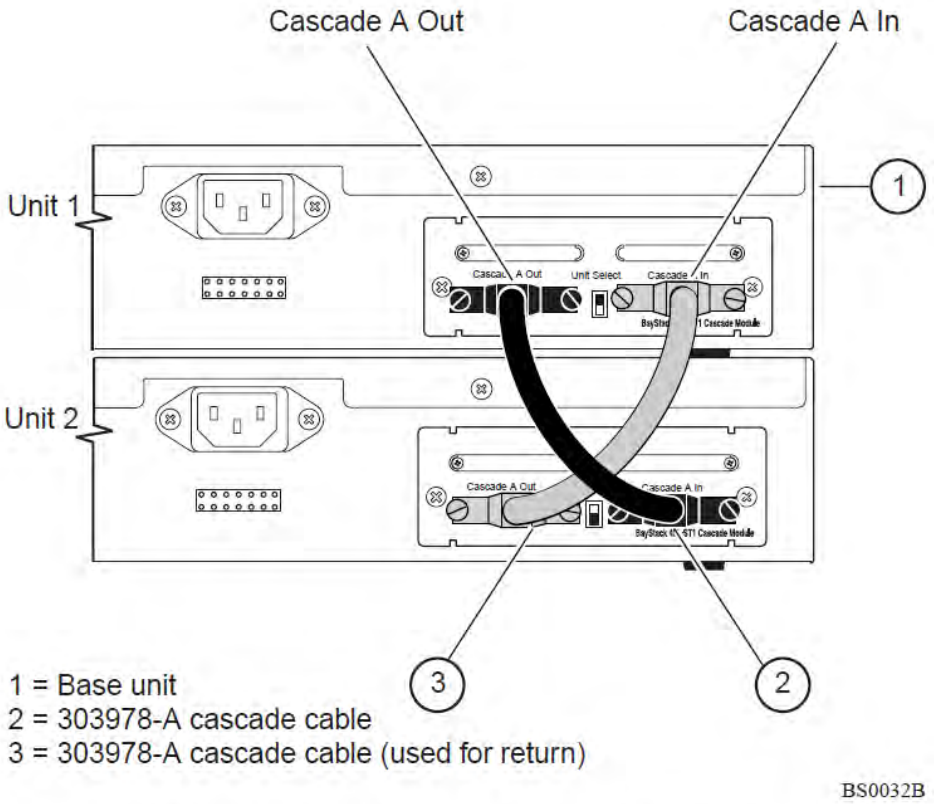
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No.	'904 Patent Claim 13	Quoc
		uses optional BayStack 400-ST1 Cascade Modules to connect the switches in the fail-safe stack." BayStack 450 Manual at 48 of 290. Nortel Networks' BayStack 450 Switches disclose that "[f]or an overview of the fail-safe stacking feature that is available for the BayStack 450 switches, see 'Stack Operation' following this section." BayStack 450 Manual at 48 of 290. Indeed, Nortel Networks' BayStack 450 Switches provide an overview of the fail-safe stacking feature, which discloses "BayStack 450 switches that are configured with BayStack 450 software version V1.1.0 or later provide fail-safe stackability when you install the optional BayStack 400-ST1 Cascade Module. You can connect up to eight switches to provide uninterrupted connectivity for up to 224 ports (see 'Fail-Safe Stack Application' on page 1-22). The entire stack is manageable as a single unit. Installation instructions are provided with the BayStack 400-ST1 Cascade Module (see your Nortel Networks sales representative for ordering information)." BayStack 450 Manual at 49 of 290. Further, Nortel Networks' BayStack 450 Switches disclose that the "BayStack 400-ST1 Cascade Module," which is shown in Figure 1-10 below. BayStack 450 Manual at 49 of 290.

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No.	'904 Patent Claim 13	Quoc
		 **Figure 1-10. BayStack 400-ST1 Front-Panel Components** BayStack 450 Manual at 49 of 290, FIG. 1-10. In addition, Nortel Networks' BayStack 450 Switches disclose that the "Unit Select switch (up = Base) determines the base unit for the stack configuration (see "Base Unit " on page 1-25). The Unit Select switch status is displayed on the BayStack 450 LED display panel. When the Unit Select switch is in the Base (up) position, all other Unit Select switches in the stack configuration must be set to Off (down)." BayStack 450 Manual at 50 of 290. Further still, Nortel Networks' BayStack 450 Switches disclose a Cascade A In Connector that provides "an attachment point for accepting a cascade cable connection from an adjacent unit in the stack. A return cable from this unit's Cascade A Out connector to the adjacent

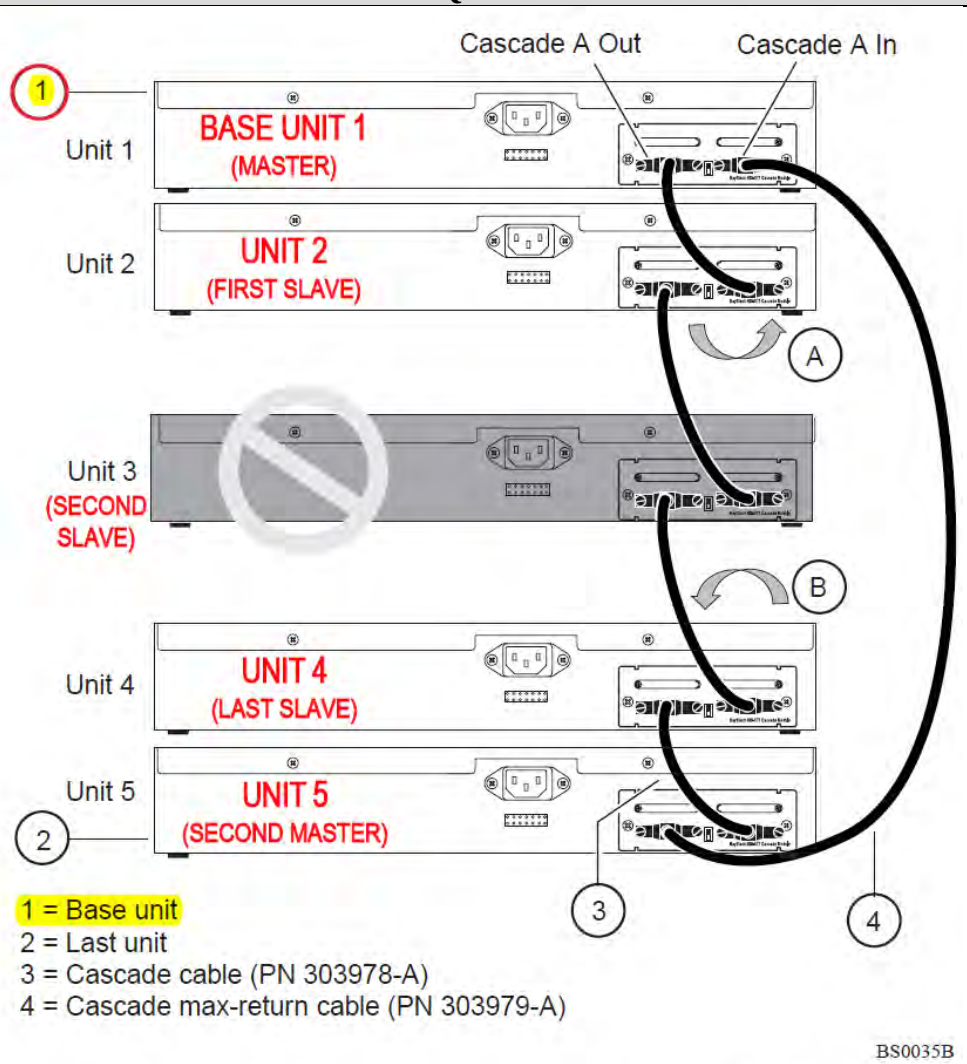
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No.	'904 Patent Claim 13	Quoc
		unit's Cascade A In connector completes the stack connection (see the example shown in Figure 1-11)." BayStack 450 Manual at 50 of 290. Figure 1-11 is reproduced below. BayStack 450 Manual at 50 of 290, FIG. 1-11.  **Figure 1-11. Connecting Cascade Cables** In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290.

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No.	'904 Patent Claim 13	Quoc
		Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

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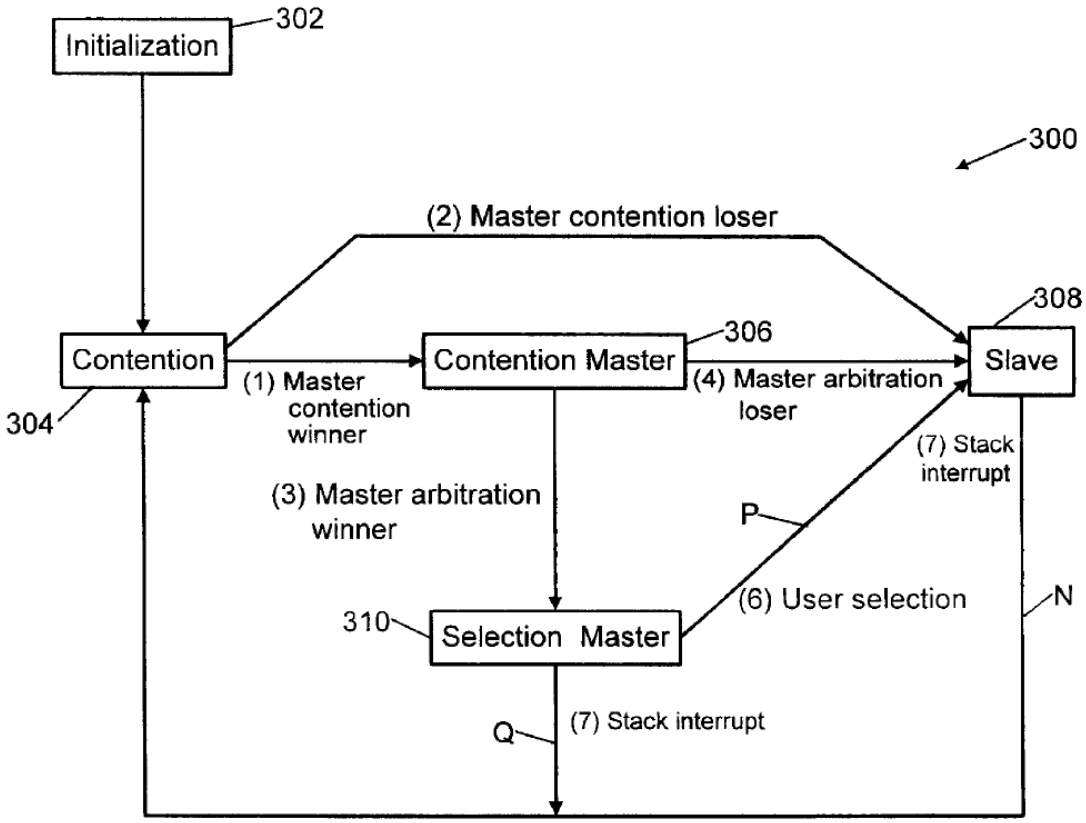
No.	'904 Patent Claim 13	Quoc
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

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No.	'904 Patent Claim 13	Quoc
		To the extent that Orckit contends that the BayStack 450 Switches does not disclose this limitation, the BayStack 450 Switches in combination with (1) the knowledge of a person of ordinary skill in the art and/or in further combination with (2) Ding renders the claim, including the present limitation, obvious. Further, Ding discloses, in the event of a failover where another unit takes over for the first, the same IP address continues to be used. ("An eleventh case involves "fail-over" to an alternate base module when the designated base module fails. In a preferred embodiment of the present invention, when the designated base module fails, the next upstream Ethernet switching modules takes over as the base module for the stack. When this occurs, it is preferable to continue using the same IP address, since various devices in the network are configured to use that IP address for communicating with the stack. However, the MAC address of the stack changes to a MAC address associated with the new base module. Therefore, when the new base module reconfigures the stack, the new base module broadcasts an ARP request including the stack IP address and the new MAC address." Ding, 13:3-15.

No.	'904 Patent Claim 14	Quoc
14[pre]	In a network access multiplexing system,	To the extent the preamble is found to be limiting, Quoc discloses a network access multiplexing system. For example, Quoc is titled "Redundant network management system for a stackable fast ethernet repeater." Quoc, Cover. Quoc discloses "Provided is a redundant network management system. Several network management modules (NMMs), preferably one for each repeater unit, are provided in a single repeater stack. The NMMs of the repeater stack communicate using a management bus. The modules communicate on the management bus by sending small messages, referred to as 'frames.' In a preferred embodiment, the present invention is preferably used in conjunction with a relatively simple and economical 8-bit management bus. This low cost implementation allows only one NMM to access the bus at any given time, and makes use of protocols by which multiple NMMs may use the management bus to communicate while ensuring that no two modules attempt to use the bus at the same time. Moreover, according to the present

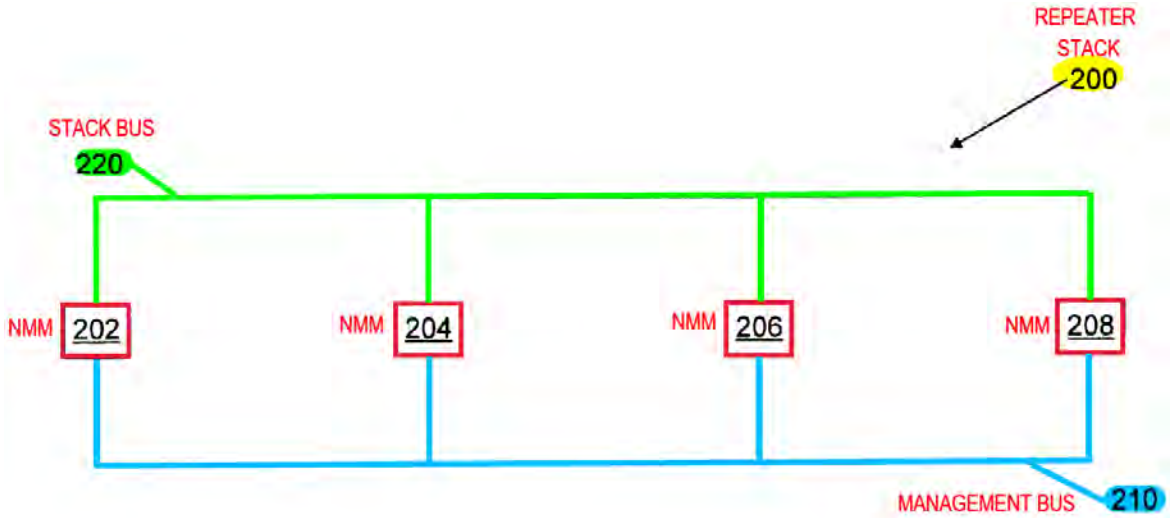
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No.	'904 Patent Claim 14	Quoc
		invention, only one NMM (referred to as the 'master') will perform all of the network management functions for the stack at any one time. The remaining modules operate in 'slave' mode. When in slave mode, the modules are on stand-by, ready to take the role of master if necessary. This master/slave relationship provides a level of fault tolerance and redundancy to the user in a seamless manner, thereby improving network performance and reliability." Quoc, Abstract.  Quoc, FIG. 3.

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No.	'904 Patent Claim 14	Quoc
14[a]	in which a master unit is connected by a physical interface to a packet-switched network,	Quoc discloses a master unit is connected by a physical interface to a packet-switched network. Quoc discloses that "FIG. 7 provides a process flow for a module operating in Selection Master mode, represented by Selection master state 310 in FIG. 3. The Selection Master is responsible for handling all management activities for the stack. This management feature of the Selection master is represented by a step 702 in FIG. 7. For example, the master module monitors and coordinates all communication between work stations on the network, sends alerts to a system administrator when appropriate, and monitors and controls the status of I/O ports for all management modules." Quoc, 9:4-13 Quoc discloses that "FIG. 2 shows a repeater stack 200 having four NMMs 202, 204, 206 and 208. The modules 202, 204, 206 and 208 of the repeater stack 200 communicate using a management bus 210. The modules communicate on the management bus 210 by sending small messages, referred to as 'frames.' The modules are also connected to a stack bus 220 which provides the main pathway for data transmission between repeaters and other nodes on the network (not shown)." Quoc, 6:21-24. Quoc further discloses that "FIG. 7 provides a process flow for a module operating in Selection Master mode, represented by Selection master state 310 in FIG. 3. The Selection Master is responsible for handling all management activities for the stack. This management feature of the Selection master is represented by a step 702 in FIG. 7. For example, the master module monitors and coordinates all communication between work stations on the network, sends alerts to a system administrator when appropriate, and monitors and controls the status of I/O ports for all management modules." Quoc, 9:4-13.
14[b]	a slave unit configured to be coupled to the master unit in a daisy chain of such slave units, the slave unit comprising:	Quoc discloses a slave unit configured to be coupled to the master unit in a daisy chain of such slave units. In one example, Quoc discloses "If any activity is seen on the bus during a polling Step 406 before the poll time has expired, decision step 412 will be answered in the affirmative, and the module will enter Slave mode at a Step 414. In Slave mode, a module operates in passive

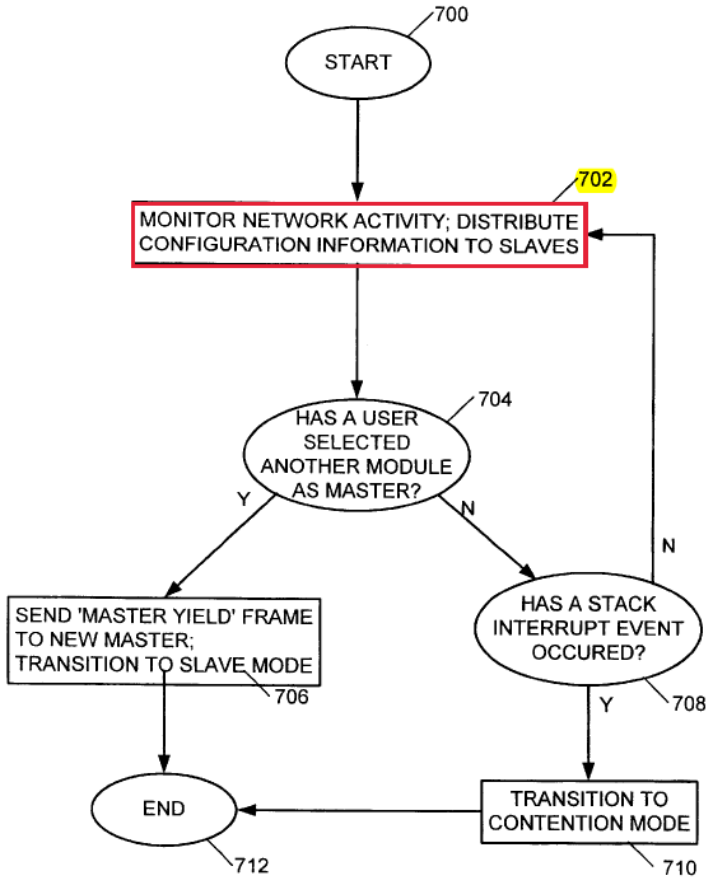
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No.	'904 Patent Claim 14	Quoc
		manner, monitoring the management bus and responding to various events that require action by a slave module, described in more detail below with reference to FIG. 6." Quoc, 7:36-44. Quoc discloses that "FIG. 2 shows a repeater stack 200 having four NMMs 202, 204, 206 and 208. The modules 202, 204, 206 and 208 of the repeater stack 200 communicate using a management bus 210. The modules communicate on the management bus 210 by sending small messages, referred to as 'frames.' The modules are also connected to a stack bus 220 which provides the main pathway for data transmission between repeaters and other nodes on the network (not shown)." Quoc, 6:21-24.  FIG. 2 Quoc, FIG. 2 (annotated). As shown above, the NMMs 202, 204, 206, and 208 in FIG. 2 are connected in a daisy chain.

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No.	'904 Patent Claim 14	Quoc
14[c]	a plurality of ports, for coupling the slave unit to respective subscriber lines;	Quoc discloses a plurality of ports, for coupling the slave unit to respective subscriber lines. For example, Quoc describes that port connectivity was well known and was associated with network latency. Specifically, Quoc discloses that an "Ethernet repeater is a device that serves as a central station for plugging-in network devices included in an Ethernet network, hence the term 'hub.' The Ethernet repeater receives messages from the network devices that are plugged into it and broadcasts (or 'repeats') the message to all of the other devices on the network along a network bus, if no collision is detected. The repeater monitors network traffic in its collision domain and assumes the responsibility for collision detection. The network devices thus simply broadcast messages to the repeater and do not need to first listen before sending messages. If the repeater has already assigned the network bus to a device, then it notifies the device that tried to broadcast that a collision has occurred so that the network device may try again later. The amount of time that it takes for the repeater to receive a data signal and repeat that data signal out to every port on which the data signal is to be broadcast is referred to as the latency of the repeater." Quoc, 3:39-56. Further, Quoc discloses that network flexibility in the IEEE 802.3 specification involves a "Class II requirement, which allows more than one repeater to be included in a single collision domain, significantly adds flexibility to network topology. Expanding the number of ports available on a network may be accomplished by simply adding a second repeater in the same collision domain as a single existing repeater." Quoc, 4:19-25. Quoc explains that "[a]dditional ports could be added to a first repeater stack that functions as one Class II repeater and then a second stack could be included as the second Class II repeater. Thus, stackability combined with cascadability would provide even greater flexibility for network expansion." Quoc, 4:37-42. Quoc further discloses that "FIG. 7 provides a process flow for a module operating in Selection Master mode, represented by Selection master state 310 in FIG. 3. The Selection Master is responsible for handling all management activities for the stack. This management feature of the Selection master is represented by a step 702 in FIG. 7. For example, the master module monitors and coordinates all communication between work stations on the network,

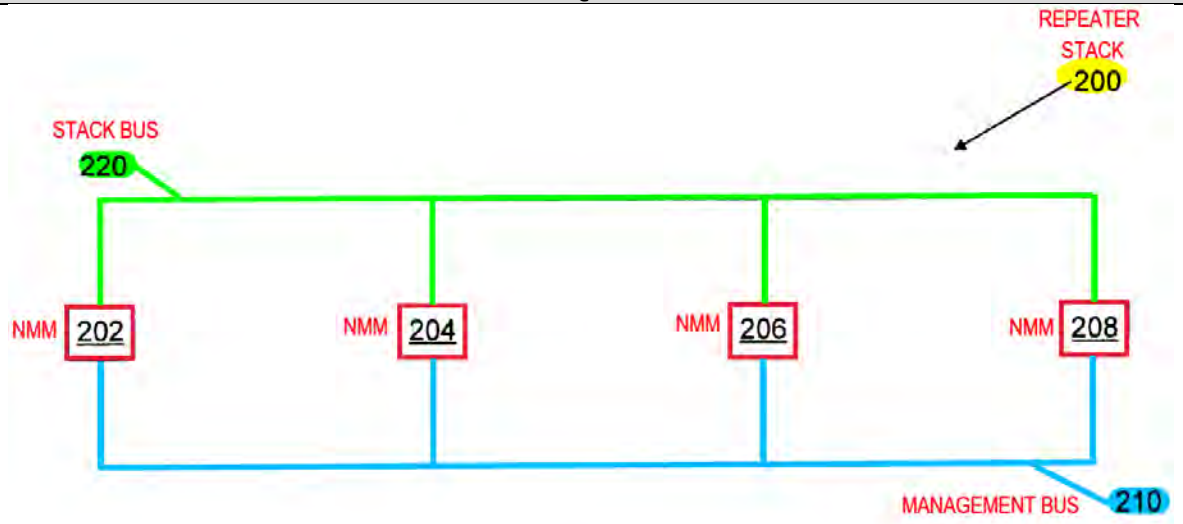
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No.	'904 Patent Claim 14	Quoc
		sends alerts to a system administrator when appropriate, and monitors and controls the status of I/O ports for all management modules." Quoc, 9:4-13.  Quoc, FIG. 7 (annotated).
14[d]	first and second physical interfaces, coupled to exchange packets with preceding and succeeding units,	Quoc discloses first and second physical interfaces, coupled to exchange packets with preceding and succeeding units, respectively, along the daisy chain. Quoc discloses that using physical interface lines, such as cables, was a well known technique for implementing network buses. "While some Ethernet applications connect numerous

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No.	'904 Patent Claim 14	Quoc
	respectively, along the daisy chain;	network devices to a network bus that is literally a cable connecting the network devices, it is often more desirable to connect network devices using a repeater or hub. It should be noted that in the following description the term 'hub' and the term 'repeater' are used interchangeably." Quoc, 3:24-29 (emphasis added). Quoc further discloses that the "802.3 specification contains maximum latency requirements that cannot be exceeded by a conforming repeater. The maximum permissible latency, combined with the requirements for maximum cable length and restrictions on the number and type of other devices allowed within a collision domain, limits the amount of time that it takes to notify a network device that a collision has occurred, ensuring that the overall 802.3 design criteria is met that all collisions are detected before a complete 64 byte frame is transmitted." Quoc, 3:57-66. Quoc discloses that by "July 1993, a group of networking companies joined to form the Fast Ethernet Alliance. The charter of the group was to draft the 802.3u 100BaseT specification of the Institute of Electrical and Electronics Engineers (IEEE) and to accelerate market acceptance of Fast Ethernet technology. The final IEEE 802.3 specification was approved in June 1995. Among the other goals of the Fast Ethernet Alliance are: To maintain the Ethernet transmission protocol Carrier Sense Multiple Access Collision Detection (CSMA/CD); **to support popular cabling schemes**; and to ensure that Fast Ethernet technology will not require changes to the upper-layer protocols and software that run on LAN workstations. For example, no changes are necessary to Simple Network Management Protocol (SNMP) management software or Management Information Bases (MIBs) in order to implement Fast Ethernet." Quoc, 1:46-61 (emphasis added). Quoc discloses that "FIG. 2 shows a repeater stack 200 having four NMMs 202, 204, 206 and 208. The modules 202, 204, 206 and 208 of the repeater stack 200 communicate using a management bus 210. The modules communicate on the management bus 210 by sending small messages, referred to as 'frames.' The modules are also connected to a stack bus 220 which provides the main pathway for data transmission between repeaters and other nodes on the network (not shown)." Quoc, 6:21-24.

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No.	'904 Patent Claim 14	Quoc
		 FIG. 2 Quoc, FIG. 2 (annotated). As shown above, the NMMs 202, 204, 206, and 208 in FIG. 2 are connected in a daisy chain.
14[e]	a pre-switch, coupled to receive packets from the first physical interface and responsive to address data carried by the packets, to sort the packets such that packets addressed to the slave unit are retained, and packets addressed to the succeeding units	Quoc discloses a pre-switch, coupled to receive packets from the first physical interface and responsive to address data carried by the packets, to sort the packets such that packets addressed to the slave unit are retained, and packets addressed to the succeeding units are passed to the second physical interface. For example, Quoc discloses "In a preferred embodiment, network management mod ules (NMMs), preferably one for each repeater unit, may be provided in a Single repeater Stack. FIG. 2 shows a repeater stack 200 having four NMMs 202, 204, 206 and 208. The modules 202, 204, 206 and 208 of the repeater stack 200 communicate using a management bus 210. The modules communicate on the management bus210 by Sending Small messages, referred to as "frames." The modules are also connected to a stack bus 220 which provides the main pathway for data transmission between repeaters and other nodes on the network (not

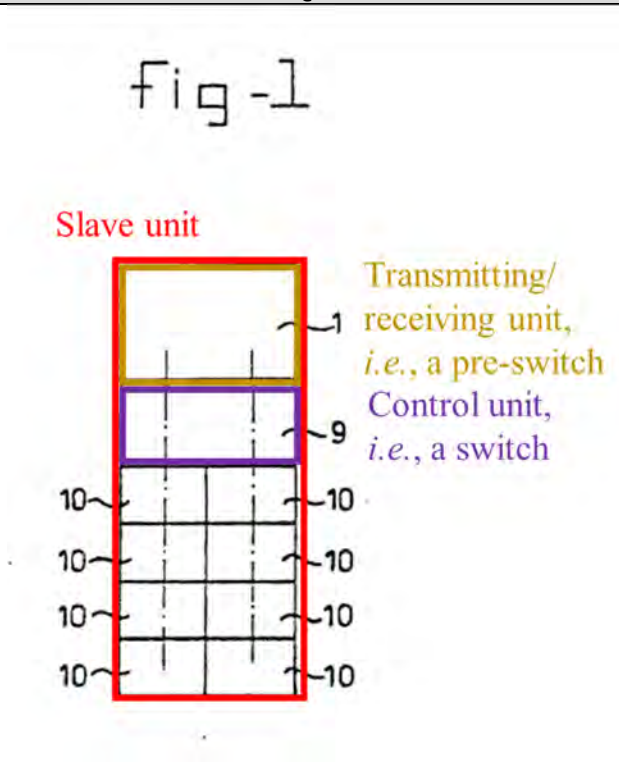
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No.	'904 Patent Claim 14	Quoc
	are passed to the second physical interface; and	shown)." Quoc, 6:19-29. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Quoc is found to not meet this limitation, a switch, configured to route data packets between the respective physical interface and the one or more daisy chains would have been obvious to a person having ordinary skill in the art, as explained below. Quoc discloses "a redundant management system, comprising: a plurality of network management modules in a stacked repeater, including, a master network management module which is configured to perform network management functions, and at least one slave network management module which is configured to not perform network management functions, but which otherwise maintains the master module's configuration; a management bus providing a communication link between said network management modules; a protocol for determining the master and Slave relationships between said modules wherein Said protocol comprises: providing a Stacked repeater having a plurality of network management modules linked by a management bus, Selecting a provisional master module from among the plurality of management modules, Said provisional master module being configured to perform network management functions, by determining provisional master and slave designations for the plurality of modules based a module's position in the repeater Stack, polling the provisional Slave modules regarding a Set of preestablished master Selection criteria, evaluating data received from the slaves in reply to the poll, and determining the proper master based on the data; designating the remainder of the modules as Slaves, Said slaves being configured to not perform network management functions, and maintaining the same configuration between the master and the Slave modules during network operation; and a Stack bus capable of providing a communication link between the network management modules and other nodes of a computer network; wherein network management functions may be transferred from the master to one of the slaves without Substantial disruption of network operation.." Quoc, Claim 8. Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Quoc in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the

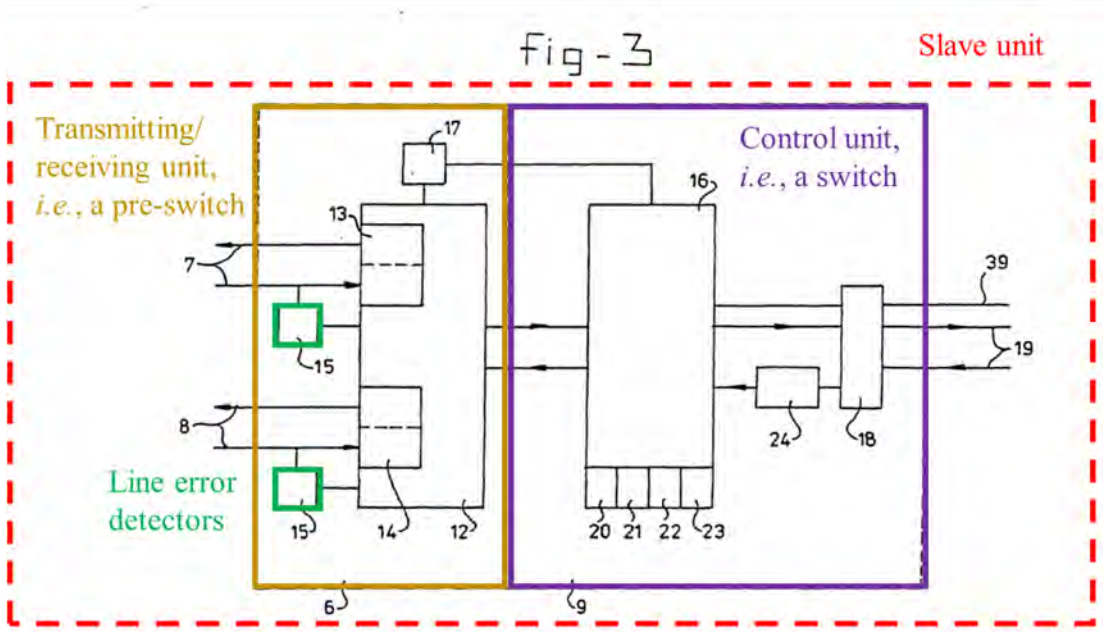
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No.	'904 Patent Claim 14	Quoc
		references identified in element 14[e] of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Vink '324 discloses a transmission/receiving unit that receives packets from the receiving line that when received by a substation, if there is address coincidence, exchange is initiated, and in the absence of address coincidence, the information is not altered and is passed along. Vink '324 Claim 8 ("Communication system according to one or more of Claims 7 to 10 inclusive, wherein a slave (2, 3, 4, 5) is provided with means(15, 18, 23) for monitoring the serial transfer of data bits via the transmission system (7, 8) and/or the local data bus (19)."). Vink '324 3:35-4:10 ("European Patent Application 0,253,381 discloses a communication system in which the data bits are transferred serially up to I/O level. In this process, address information is added to the data bits intended for a particular substation. Information received by a-substation and transmitted under the control of a master station is investigated for address coincidence. In the case of a positive result, that is to say, when the address information added to a group of data bits corresponds to the address allocated to the relevant substation, exchange is initiated. In this process, the data bits intended for a substation are replaced in the same format by data bits originating from the relevant substation and intended for the master station. In the absence of address coincidence, the information concerned is not altered.").

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No.	'904 Patent Claim 14	Quoc
		 Fig. 1 (annotation added) Vink '324 17:3-12 ("Figure 3 shows a block diagram of an exemplary embodiment of a portion of a slave 2, 3, 4, 5. Data bits are transported via connections provided with an arrow. The transmitting/receiving unit 6 comprises a multiplexer 12 consisting of two moderns 13, 14 which are respectively connected to the first transmission ring 7 and to the second transmission ring 8. For the transmission of the data via the transmission system, signal coding techniques known per se in practice may be used. The operation of the relevant transmission ring 7, 8 can be monitored by means of line error detectors 15.").

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No.	'904 Patent Claim 14	Quoc
		 Fig. 3 (annotation added) Vink '324 17:38-18:13 ("As already discussed in the introduction, every slave can be provided with an unambiguous address and the addressing of the separate I/0 modules 10 can take place on the bases of their sequence in the cascade arrangement. Consequently, a unit 20 which is capable of decoding the address of a slave, a unit 21 which is capable of detecting information about the number of data bits for a relevant slave and, if necessary, a unit 22 which is capable of reading out information about the type coding of the I/O modules connected to the local data bus, for example a module having only an input side or a module having only an output side, are provided. A further unit 23 is provided for a content check of the data bits received, for example on the basis of error detection techniques known per se. The relevant units 20, 21, 22, 23 are all connected to the unit 16 or form part thereof.").

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No.	'904 Patent Claim 14	Quoc
		As another example, Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Nortel Networks' BayStack 450 Switches disclose a BootP Automatic IP/MAC Address: "The BayStack 450 switch has a unique 48-bit hardware address, or MAC address, that is printed on a label on the back panel. You use this MAC address when you configure the network BootP server to recognize the BayStack 450 switch BootP requests. A properly configured BootP server enables the switch to automatically learn its assigned IP address, subnet mask, IP address of the default router (default gateway), and software image file name. When the switch is participating in a stack configuration, a Stack MAC address is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If another unit in the stack is assigned as the base unit, the MAC address of the new base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit." BayStack 450 Manual at 43 of 290.

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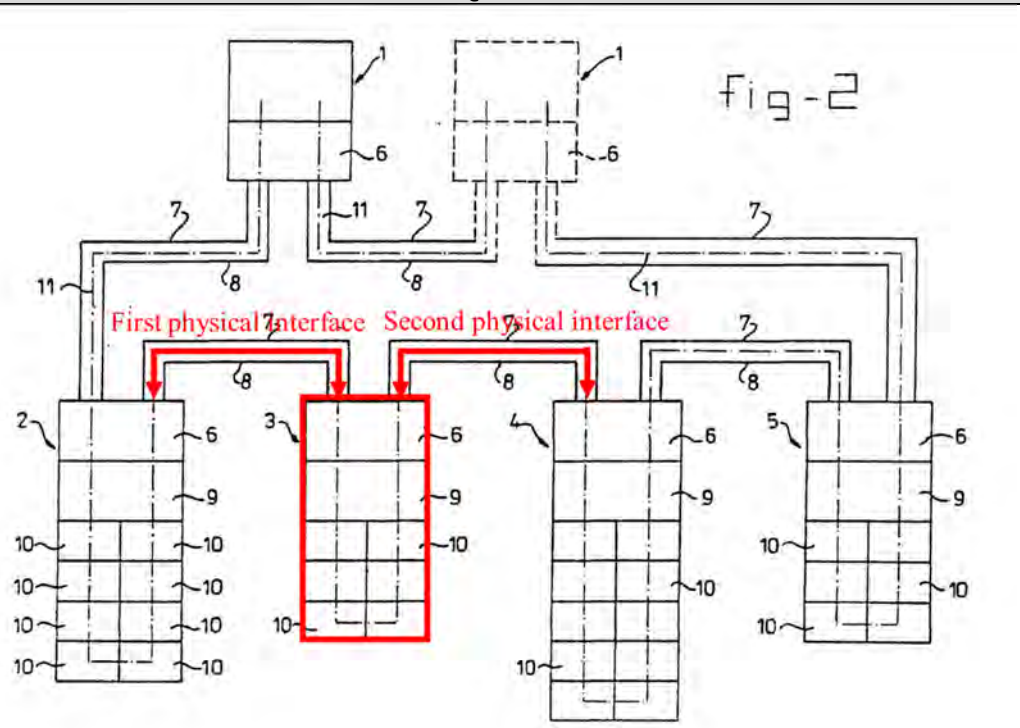
No.	'904 Patent Claim 14	Quoc
		Stack MAC Address The *Stack MAC address* is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If you designate another unit in the stack as the base unit, the MAC address of the *new* base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit. BayStack 450 Manual at 52 of 290.
14[f]	a fabric of one or more switches, which convey the retained packets to the ports, responsive to the address data.	Quoc discloses a fabric of one or more switches, which convey the retained packets to the ports, responsive to the address data. *See supra* at 11[f].

No.	'904 Patent Claim 15	Quoc
15	The slave unit according to claim 14, wherein the pre-switch is further coupled to	Quoc discloses the slave unit according to claim 14, wherein the pre-switch is further coupled to receive packets transferred thereto from the second physical interface and to sort the packets in like manner to the packets received through the first physical interface.

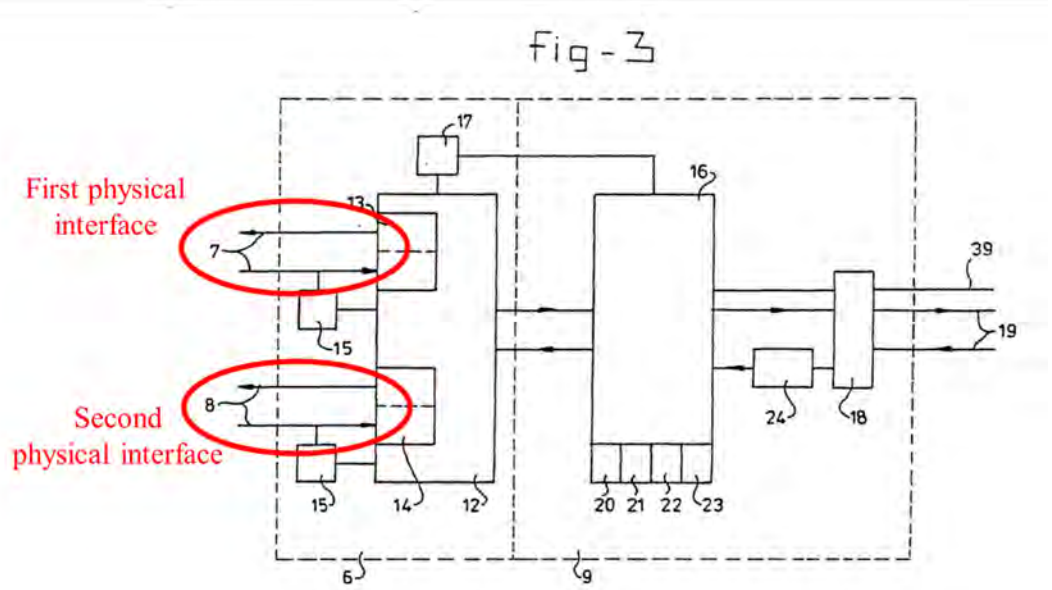
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No.	'904 Patent Claim 15	Quoc
	receive packets transferred thereto from the second physical interface and to sort the packets in like manner to the packets received through the first physical interface.	For example, Quoc discloses that the "slave" network management modules send and receive frames. Quoc further describes that that its network devices communicate over a network. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Quoc is not found to meet this limitation, each slave unit comprising one or more ports to respective subscriber lines would have been obvious to a person of ordinary skill in the art. To the extent that Quoc is found to not meet this limitation, the slave unit according to claim 14, wherein the pre-switch is further coupled to receive packets transferred thereto from the second physical interface and to sort the packets in like manner to the packets received through the first physical interface would have been obvious to a person having ordinary skill in the art, as explained below. Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Quoc in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 15 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Vink '324 discloses the capability to receive and transmit packets from both interface lines on either side of the slave, and once received by the slave in either direction, is analyzed for address coincidence by the transmitting/receiving unit. Vink '324 21:10-16 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly.").

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No.	'904 Patent Claim 15	Quoc
		 Fig. 2 (annotation added)

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No.	'904 Patent Claim 15	Quoc
		 Fig. 3 (annotation added) Vink '324 3:35-4:10 ("European Patent Application 0,253,381 discloses a communication system in which the data bits are transferred serially up to I/O level. In this process, address information is added to the data bits intended for a particular substation. Information received by a-substation and transmitted under the control of a master station is investigated for address coincidence. In the case of a positive result, that is to say, when the address information added to a group of data bits corresponds to the address allocated to the relevant substation, exchange is initiated. In this process, the data bits intended for a substation are replaced in the same format by data bits originating from the relevant substation and intended for the master station. In the absence of address coincidence, the information concerned is not altered."). In another example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290.

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No.	'904 Patent Claim 15	Quoc
		Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

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No.	'904 Patent Claim 15	Quoc

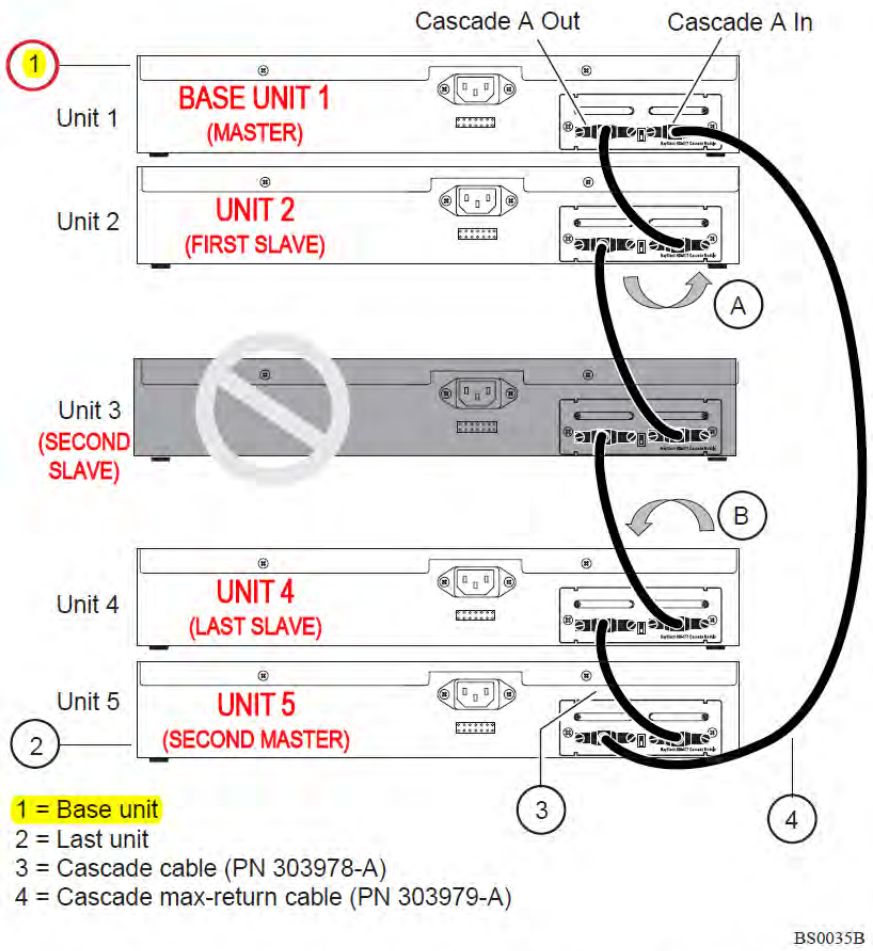


Figure 1-14. Redundant Cascade Stacking Feature

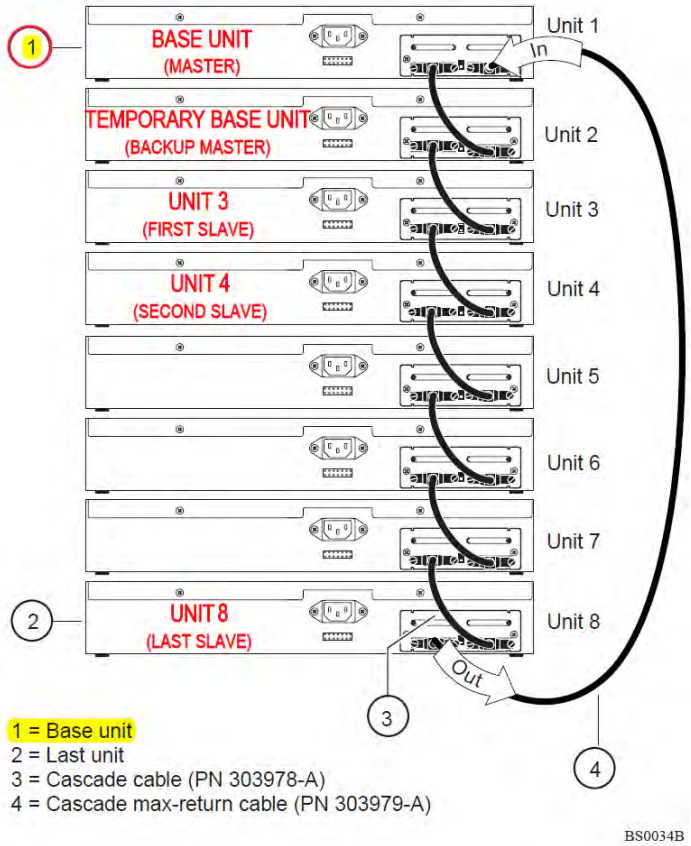
BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

In an alternative example, the BayStack 450 Switches disclose a Temporary Base Unit as being a second master unit. See, e.g., BayStack 450 Manual at 33, 52, 230 of 290. For

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No.	'904 Patent Claim 15	Quoc
		instance, the BayStack 450 Manual states that "[i]f an assigned base unit fails, the next unit in the stack order automatically becomes the new temporary base unit. This change is indicated by the Base LED on the temporary base unit's LED display panel turning on (amber). For detailed information about the base LED, see Table 1-1 on page 1-6." BayStack 450 Manual at 52 of 290. Further, in this alternative example, the BayStack 450 Manual describes that "[t]his automatic failover is a temporary safeguard only. If the stack configuration loses power, the temporary base unit will not power up as the base unit when power is restored. For this reason, you should always assign the temporary base unit as the base unit (set the Unit Select switch to Base) until the failed unit is repaired or replaced." BayStack 450 Manual at 52 of 290. The BayStack 450 Manual notes, in this alternative example, that "[i]f you do not reassign the temporary base unit as the new base unit, and the temporary base unit fails, the next unit directly downstream from this unit becomes the new temporary base unit. This process can continue until there are only two units left in the stack configuration." BayStack 450 Manual at 52 of 290. In this example, the BayStack 450 Switches disclose that the BayStack 450 Switch LED Descriptions include an amber light that indicates when "unit is operating as the stack configuration's temporary base unit." BayStack 450 Manual at 33 of 290. "This condition occurs automatically if the base unit (directly downstream from this unit) fails." *Id.* And the BayStack 450 Switches disclose that, in this case, the "two units directly upstream and directly downstream from the failed unit automatically wrap their cascade connectors and indicate this condition by lighting their Cas Up and Cas Dwn LEDs (see Cas Up and Cas Dwn description in this table)." BayStack 450 Manual at 33 of 290. But the BayStack 450 Switches also disclose, in this alternative example, that "[i]f the temporary base unit fails, the next unit directly downstream from this unit becomes the new temporary base unit. This process can continue until there are only two units left in the stack configuration." BayStack 450 Manual at 33 of 290.

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No.	'904 Patent Claim 15	Quoc
		As shown below, in the Stack Down Configuration, the second unit would become the temporary base unit if the base unit were to fail in this configuration.  **Figure 1-13. Stack Down Configuration Example** BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated). Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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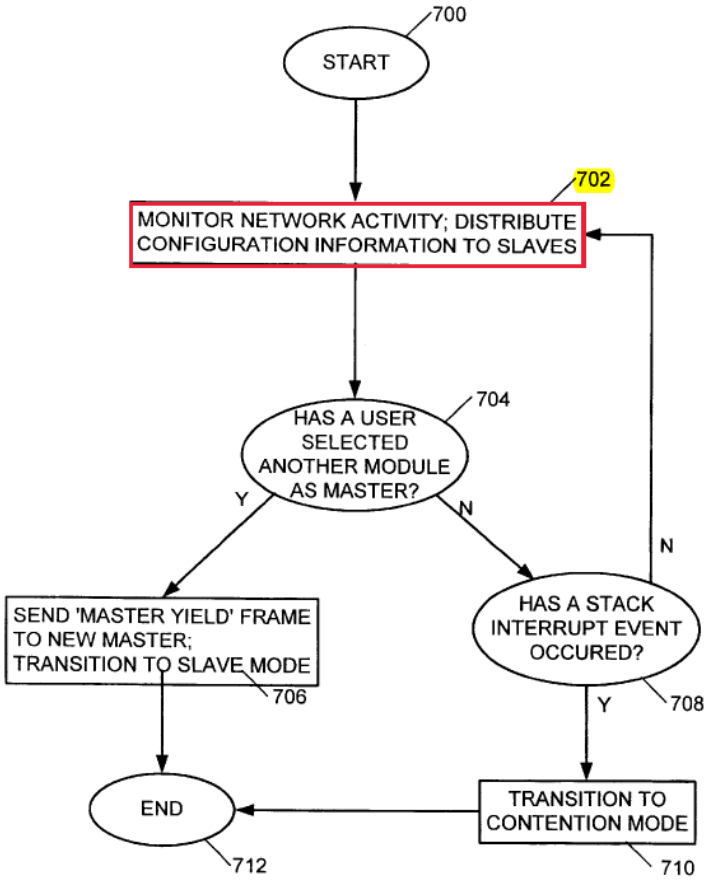
No.	'904 Patent Claim 16	Quoc
16[a]	The slave unit according to claim 15, wherein the retained packets that were received from the first and second physical interfaces and are passed by the pre-switch to the switch fabric are identified by respective first and second port numbers,	Quoc discloses the slave unit according to claim 15, wherein the retained packets that were received from the first and second physical interfaces and are passed by the pre-switch to the switch fabric are identified by respective first and second port numbers. *See supra* at 14[e].
16[b]	and wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second port numbers are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required in response to the reversal.	Quoc discloses in response to a reversal of a direction of data flow in the daisy chain, the first and second port numbers are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required in response to the reversal. *See supra* at 10.

No.	'904 Patent Claim 17	Quoc
17	The slave unit according to claim 14, wherein when one of the packets received by the pre-switch	Quoc discloses the slave unit according to claim 14, wherein when one of the packets received by the pre-switch comprises a multicast packet addressed to one or more of the ports on the slave unit, the pre-switch sorts the multicast packet such that one copy of the packet is retained and another copy of the packet is passed to the second physical interface.

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No.	'904 Patent Claim 17	Quoc
	comprises a multicast packet addressed to one or more of the ports on the slave unit, the pre-switch sorts the multicast packet such that one copy of the packet is retained and another copy of the packet is passed to the second physical interface.	For example, Quoc describes that port connectivity was well known and was associated with network latency. Specifically, Quoc discloses that an "Ethernet repeater is a device that serves as a central station for plugging-in network devices included in an Ethernet network, hence the term 'hub.' The Ethernet repeater receives messages from the network devices that are plugged into it and broadcasts (or 'repeats') the message to all of the other devices on the network along a network bus, if no collision is detected. The repeater monitors network traffic in its collision domain and assumes the responsibility for collision detection. The network devices thus simply broadcast messages to the repeater and do not need to first listen before sending messages. If the repeater has already assigned the network bus to a device, then it notifies the device that tried to broadcast that a collision has occurred so that the network device may try again later. The amount of time that it takes for the repeater to receive a data signal and repeat that data signal out to every port on which the data signal is to be broadcast is referred to as the latency of the repeater." Quoc, 3:39-56. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Further, Quoc discloses that network flexibility in the IEEE 802.3 specification involves a "Class II requirement, which allows more than one repeater to be included in a single collision domain, significantly adds flexibility to network topology. Expanding the number of ports available on a network may be accomplished by simply adding a second repeater in the same collision domain as a single existing repeater." Quoc, 4:19-25. Quoc explains that "[a]dditional ports could be added to a first repeater stack that functions as one Class II repeater and then a second stack could be included as the second Class II repeater. Thus, stackability combined with cascadability would provide even greater flexibility for network expansion." Quoc, 4:37-42. Quoc further discloses that "FIG. 7 provides a process flow for a module operating in Selection Master mode, represented by Selection master state 310 in FIG. 3. The Selection Master is responsible for handling all management activities for the stack. This management feature of the Selection master is represented by a step 702 in FIG. 7. For example, the master module monitors and coordinates all communication between work stations on the network,

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No.	'904 Patent Claim 17	Quoc
		sends alerts to a system administrator when appropriate, and monitors and controls the status of I/O ports for all management modules." Quoc, 9:4-13 (emphasis added).  Quoc, FIG. 7 (annotated). *See also supra* at 14[e].

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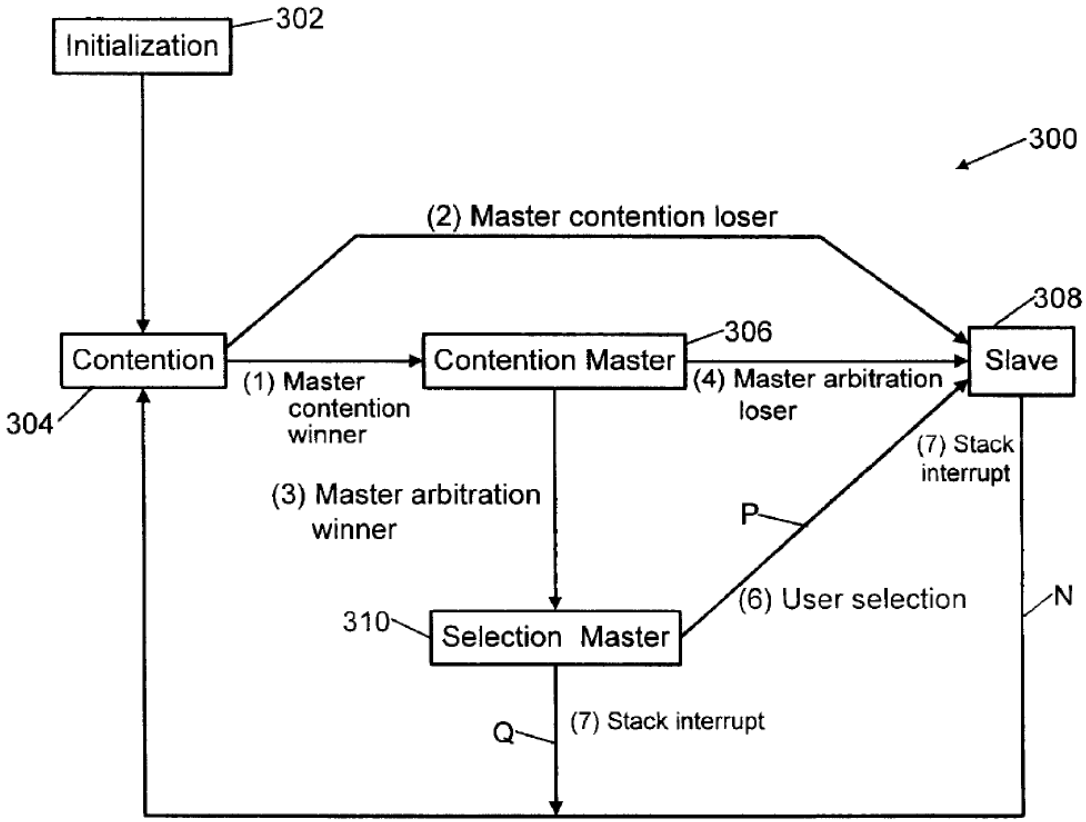
No.	'904 Patent Claim 18	Quoc
18	The slave unit according to claim 14, wherein in the event of a fault in the switch fabric, the pre-switch continues to pass the packets addressed to the succeeding units on to the succeeding units without significant interruption.	Quoc discloses the slave unit according to claim 14, wherein in the event of a fault in the switch fabric, the pre-switch continues to pass the packets addressed to the succeeding units on to the succeeding units without significant interruption. For example, Quoc discloses, "the redundant management system of the present invention permits an ordered, Seamless transition between network management modules in the event of module removal or failure or System Software upgrades." Quoc, 9:56-60. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Quoc discloses "Provided is a redundant network management system. Several network management modules (NMMs), preferably one for each repeater unit, are provided in a single repeater stack. The NMMs of the repeater stack communicate using a management bus. The modules communicate on the management bus by sending small messages, referred to as 'frames.' In a preferred embodiment, the present invention is preferably used in conjunction with a relatively simple and economical 8-bit management bus. This low cost implementation allows only one NMM to access the bus at any given time, and makes use of protocols by which multiple NMMs may use the management bus to communicate while ensuring that no two modules attempt to use the bus at the same time. Moreover, according to the present invention, only one NMM (referred to as the 'master') will perform all of the network management functions for the stack at any one time. The remaining modules operate in 'slave' mode. When in slave mode, the modules are on stand-by, ready to take the role of master if necessary. This master/slave relationship provides a level of fault tolerance and redundancy to the user in a seamless manner, thereby improving network performance and reliability." Quoc, Abstract.

No.	'904 Patent Claim 19	Quoc
19[pre]	A method for providing access to a network, comprising:	To the extent the preamble is found to be limiting, Quoc discloses a method for providing access to a network.

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No.	'904 Patent Claim 19	Quoc
		For example, Quoc is titled "Redundant network management system for a stackable fast ethernet repeater." Quoc, Cover. Quoc discloses "Provided is a redundant network management system. Several network management modules (NMMs), preferably one for each repeater unit, are provided in a single repeater stack. The NMMs of the repeater stack communicate using a management bus. The modules communicate on the management bus by sending small messages, referred to as 'frames.' In a preferred embodiment, the present invention is preferably used in conjunction with a relatively simple and economical 8-bit management bus. This low cost implementation allows only one NMM to access the bus at any given time, and makes use of protocols by which multiple NMMs may use the management bus to communicate while ensuring that no two modules attempt to use the bus at the same time. Moreover, according to the present invention, only one NMM (referred to as the 'master') will perform all of the network management functions for the stack at any one time. The remaining modules operate in 'slave' mode. When in slave mode, the modules are on stand-by, ready to take the role of master if necessary. This master/slave relationship provides a level of fault tolerance and redundancy to the user in a seamless manner, thereby improving network performance and reliability." Quoc, Abstract.

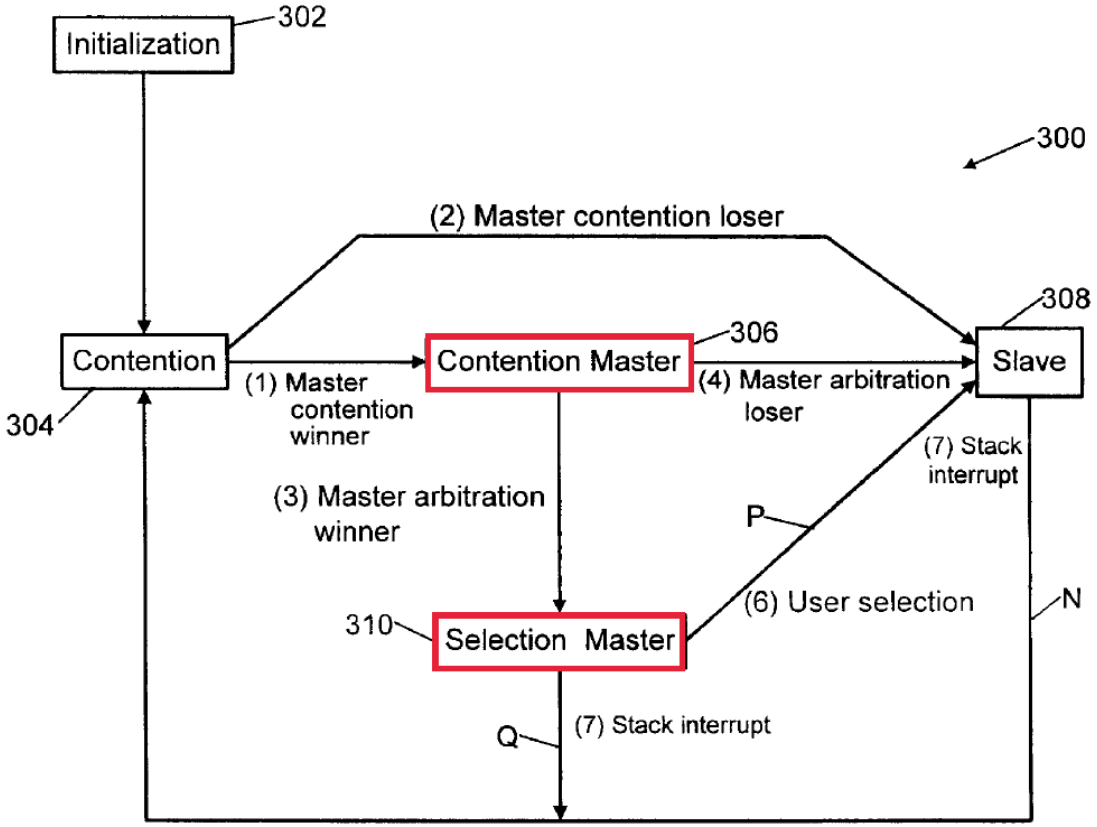
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No.	'904 Patent Claim 19	Quoc
		 Quoc, FIG. 3.
19[a]	coupling first and second master units to interface with the network;	Quoc discloses coupling first and second master units to interface with the network. For example, Quoc discloses that the "master module monitors and coordinates all communication between work stations on the network, sends alerts to a System administrator when appropriate, and monitors and controls the Status of I/O ports for all management modules." Quoc further discloses that the "the remaining modules operate in "slave" mode. When in Slave mode, the modules are on Stand-by, ready to take the role of master if necessary. This master/slave relationship provides a level of fault tolerance and redundancy

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No.	'904 Patent Claim 19	Quoc
		to the user in a seamless manner, thereby improving network operation and reliability." Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. For example, Quoc discloses "provided is a redundant network management system. Several network management modules (NMMs), preferably one for each repeater unit, are provided in a single repeater stack. The NMMs of the repeater stack communicate using a management bus. The modules communicate on the management bus by sending small messages, referred to as 'frames.' In a preferred embodiment, the present invention is preferably used in conjunction with a relatively simple and economical 8-bit management bus. This low cost implementation allows only one NMM to access the bus at any given time, and makes use of protocols by which multiple NMMs may use the management bus to communicate while ensuring that no two modules attempt to use the bus at the same time. Moreover, according to the present invention, only one NMM (referred to as the 'master') will perform all of the network management functions for the stack at any one time. The remaining modules operate in 'slave' mode. When in slave mode, the modules are on stand-by, ready to take the role of master if necessary. This master/slave relationship provides a level of fault tolerance and redundancy to the user in a seamless manner, thereby improving network performance and reliability." Quoc, Abstract.

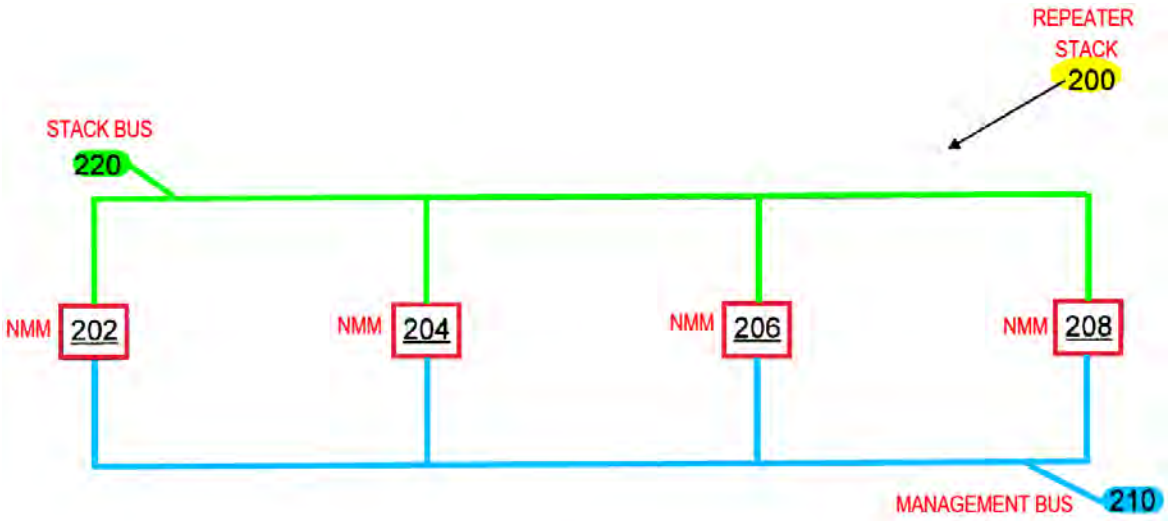
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No.	'904 Patent Claim 19	Quoc
		 Quoc, FIG. 3. (annotated). Further, Quoc discloses "According to a preferred embodiment of the present invention, there are five modes in which a management module can be operating at any one time: Initialization, Contention, Contention Master, Selection Master, and Slave. These five modes of operation are represented in FIG. 3, which is a state diagram of a redundant network management system according to a preferred embodiment of the present invention." Quoc, 6:46-53.

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No.	'904 Patent Claim 19	Quoc
		Quoc further discloses "As shown in state diagram 300 in FIG. 3, the states resulting from the Contention are the Contention Master state 306 and the Slave state 308. As described above, the losers of the Contention enter the Slave state 308, while the winner becomes the Contention Master. The details of Contention Master mode 306 are illustrated in a process flow in FIG. 5. Following conclusion of the Contention, the Contention Master initiates a master arbitration process to select the proper master to perform the network management functions (the 'Selection Master')." Quoc, 7:54-64. Quoc discloses that using physical interface lines, such as cables, was a well known technique for implementing network buses. "While some Ethernet applications connect numerous network devices to a network bus that is literally a cable connecting the network devices, it is often more desirable to connect network devices using a repeater or hub. It should be noted that in the following description the term 'hub' and the term 'repeater' are used interchangeably." Quoc, 3:24-29 (emphasis added). Quoc further discloses that the "802.3 specification contains maximum latency requirements that cannot be exceeded by a conforming repeater. The maximum permissible latency, combined with the requirements for maximum cable length and restrictions on the number and type of other devices allowed within a collision domain, limits the amount of time that it takes to notify a network device that a collision has occurred, ensuring that the overall 802.3 design criteria is met that all collisions are detected before a complete 64 byte frame is transmitted." Quoc, 3:57-66. Quoc discloses that by "July 1993, a group of networking companies joined to form the Fast Ethernet Alliance. The charter of the group was to draft the 802.3u 100BaseT specification of the Institute of Electrical and Electronics Engineers (IEEE) and to accelerate market acceptance of Fast Ethernet technology. The final IEEE 802.3 specification was approved in June 1995. Among the other goals of the Fast Ethernet Alliance are: To maintain the Ethernet transmission protocol Carrier Sense Multiple Access Collision Detection (CSMA/CD); **to** support popular cabling schemes; and to ensure that Fast Ethernet technology will not require

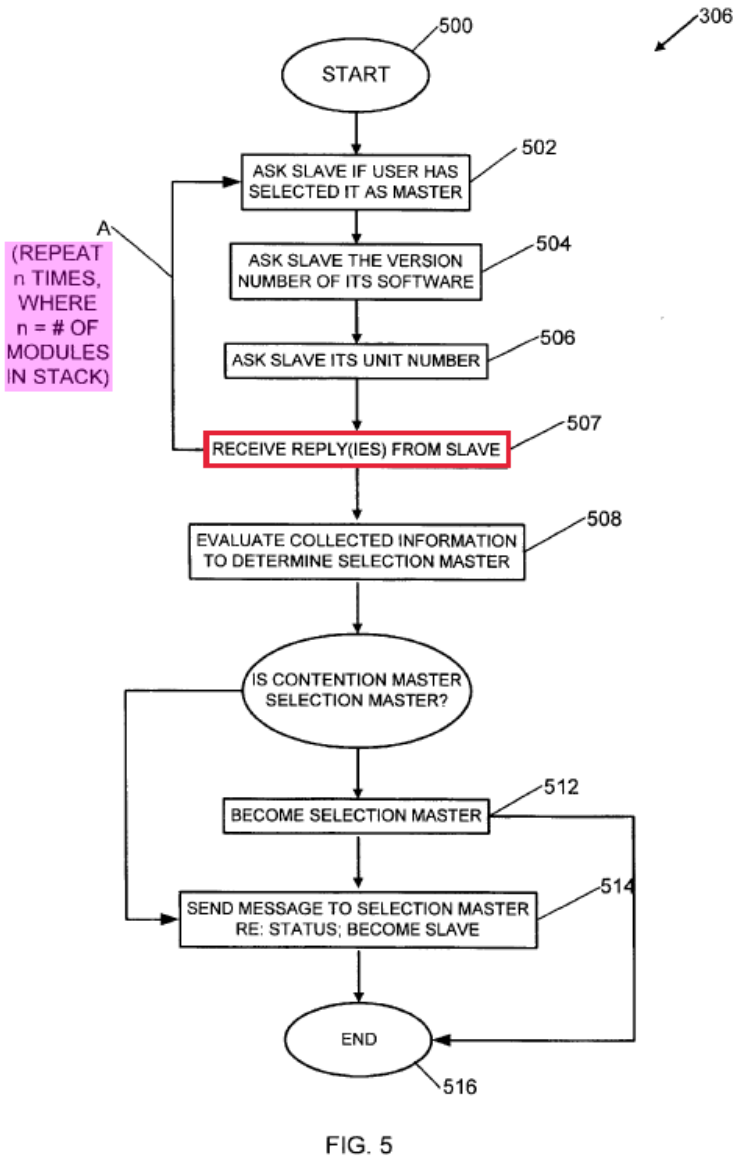
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No.	'904 Patent Claim 19	Quoc
		changes to the upper-layer protocols and software that run on LAN workstations. For example, no changes are necessary to Simple Network Management Protocol (SNMP) management software or Management Information Bases (MIBs) in order to implement Fast Ethernet." Quoc, 1:46-61 (emphasis added). Quoc discloses that "FIG. 2 shows a repeater stack 200 having four NMMs 202, 204, 206 and 208. The modules 202, 204, 206 and 208 of the repeater stack 200 communicate using a management bus 210. The modules communicate on the management bus 210 by sending small messages, referred to as 'frames.' The modules are also connected to a stack bus 220 which provides the main pathway for data transmission between repeaters and other nodes on the network (not shown)." Quoc, 6:21-24.  FIG. 2 Quoc, FIG. 2 (annotated). As shown above, the NMMs 202, 204, 206, and 208 in FIG. 2 are connected in a daisy chain.

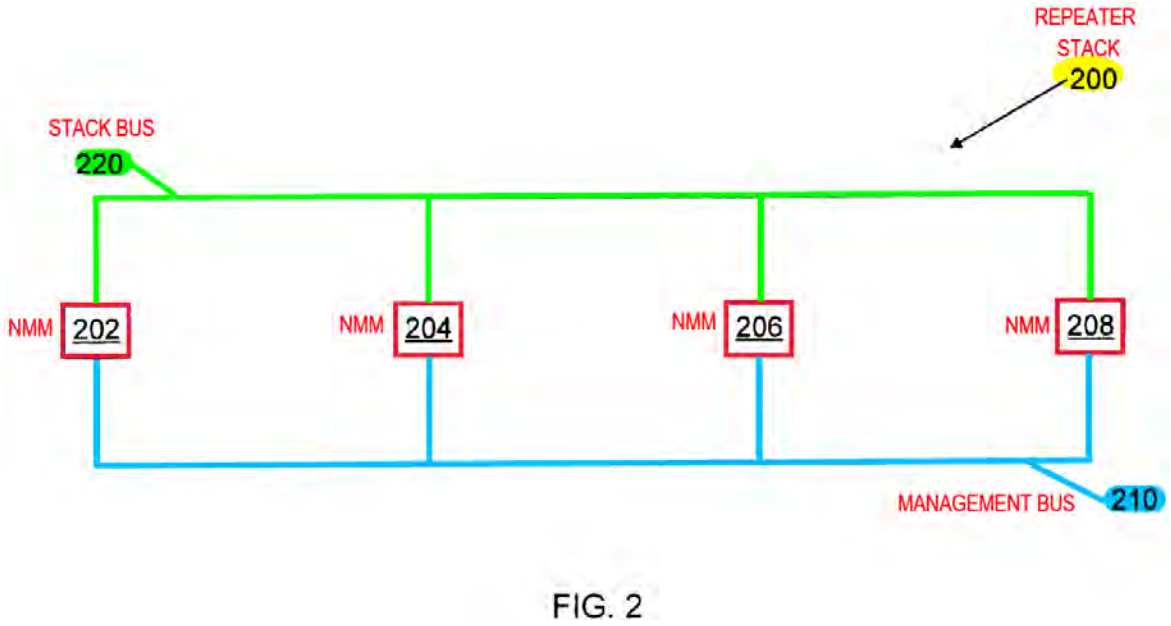
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No.	'904 Patent Claim 19	Quoc
		See supra at 1[a].
19[b]	linking a plurality of slave units,	Quoc discloses linking a plurality of slave units. For example, Quoc discloses "Contention Master mode 306 begins at 500, and at a step 502 the Contention Master sends a master selection arbitration query to each slave in the stack." Quoc, 7:64-67. Specifically, Quoc discloses that "[a]t a step 502, the Contention Master asks a slave (by sending a query frame on the management bus) if it has been selected by a user as master. At a step 504, the Contention Master asks the slave for the version number of its software. And at a step 506, the Contention Master asks the slave its unit number. Each of these queries may be combined into a single query frame or may be sent as individual frames. The slave modules then respond and the master receives the requested information in one or more reply frames at a step 507." Quoc, 8:9-19.

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No.	'904 Patent Claim 19	Quoc
		 FIG. 5 Quoc, FIG. 5.

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No.	'904 Patent Claim 19	Quoc
		Quoc explains that the "query/reply process is repeated for each module in the stack, as represented by the loop arrow A linking step 207 to 202. Once each slave has been queried and its response received, at a step 508 the Contention Master evaluates the information received, compares it to its own relevant selection data, and determines the arbitration winner, i.e., which module should be the Selection Master for the stack." Quoc, 8:26-33. Further, Quoc discloses these slave units are linked by a management bus, stating "FIG. 2 shows a repeater stack 200 having four NMMs 202, 204, 206 and 208. The modules 202, 204, 206 and 208 of the repeater stack 200 communicate using a management bus 210. The modules communicate on the management bus 210 by sending small messages, referred to as 'frames.' The modules are also connected to a stack bus 220 which provides the main pathway for data transmission between repeaters and other nodes on the network (not shown)." Quoc, 6:21-24.  FIG. 2 Quoc, FIG. 2 (annotated).

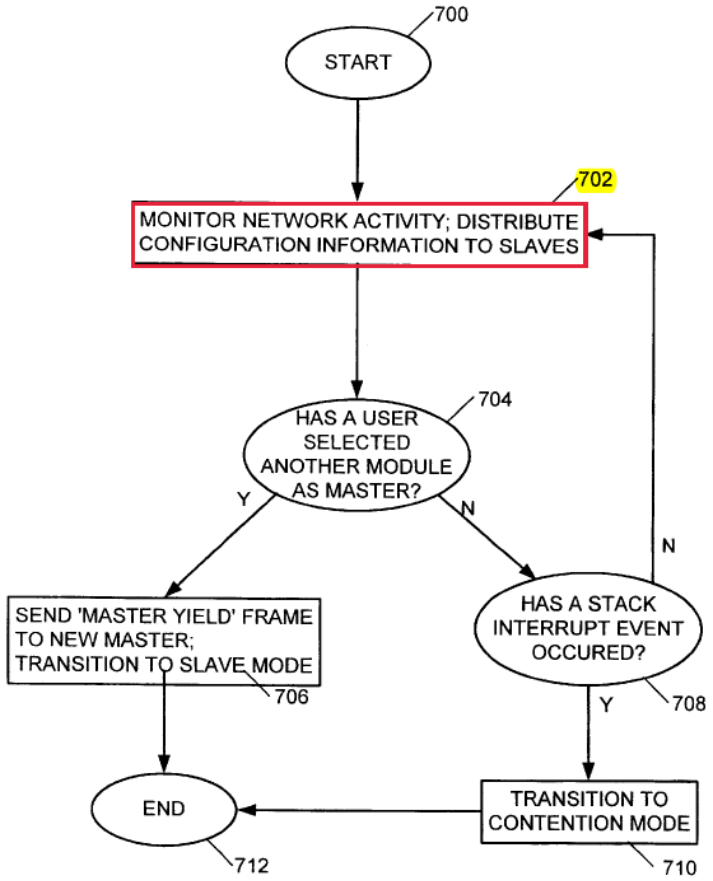
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No.	'904 Patent Claim 19	Quoc
		To further clarify, Quoc's claims describe the connections as being linked. For instance, claim 1 of Quoc recites, in part, "A method of managing a computer network, comprising: providing a stacked repeater having a plurality of network management modules linked by a management bus." Quoc, claim 1 (emphasis added). *See supra* at 1[b], 1[d].
19[c]	each slave unit comprising one or more ports to respective subscriber lines, in a daisy chain between the first and second master units;	Quoc discloses each slave unit comprising one or more ports to respective subscriber lines, in a daisy chain between the first and second master units. For example, Quoc describes that port connectivity was well known and was associated with network latency. Specifically, Quoc discloses that an "Ethernet repeater is a device that serves as a central station for plugging-in network devices included in an Ethernet network, hence the term 'hub.' The Ethernet repeater receives messages from the network devices that are plugged into it and broadcasts (or 'repeats') the message to all of the other devices on the network along a network bus, if no collision is detected. The repeater monitors network traffic in its collision domain and assumes the responsibility for collision detection. The network devices thus simply broadcast messages to the repeater and do not need to first listen before sending messages. If the repeater has already assigned the network bus to a device, then it notifies the device that tried to broadcast that a collision has occurred so that the network device may try again later. The amount of time that it takes for the repeater to receive a data signal and repeat that data signal out to every port on which the data signal is to be broadcast is referred to as the latency of the repeater." Quoc, 3:39-56. Further, Quoc discloses that network flexibility in the IEEE 802.3 specification involves a "Class II requirement, which allows more than one repeater to be included in a single collision domain, significantly adds flexibility to network topology. Expanding the number of ports available on a network may be accomplished by simply adding a second repeater in the same collision domain as a single existing repeater." Quoc, 4:19-25. Quoc explains that "[a]dditional ports could be added to a first repeater stack that functions as one Class II repeater and then a second stack could be included as the second Class II

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No.	'904 Patent Claim 19	Quoc
		repeater. Thus, stackability combined with cascadability would provide even greater flexibility for network expansion." Quoc, 4:37-42. Quoc further discloses that "FIG. 7 provides a process flow for a module operating in Selection Master mode, represented by Selection master state 310 in FIG. 3. The Selection Master is responsible for handling all management activities for the stack. **This management feature of the Selection master is represented by a step 702 in FIG. 7**. For example, **the master module** monitors and coordinates all communication between work stations on the network, sends alerts to a system administrator when appropriate, and **monitors and controls the status of I/O ports for all management modules**." Quoc, 9:4-13 (emphasis added).

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No.	'904 Patent Claim 19	Quoc
		 Quoc, FIG. 7 (annotated). *See supra* at 1[c].
19[d]	conveying initial downstream data packets, received from the network by one of the master units, along	Quoc discloses conveying initial downstream data packets, received from the network by one of the master units, along the daisy chain in a first direction, so as to deliver the packets to the ports of the slave units. *See supra* at 1[d], 1[e].

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No.	'904 Patent Claim 19	Quoc
	the daisy chain in a first direction, so as to deliver the packets to the ports of the slave units; and	
19[e]	in the event of a fault in the daisy chain, conveying further downstream data packets, received from the network by one of the master units, along the daisy chain in a second direction, opposite to the first direction, so as to deliver the further packets to the ports of at least some of the slave units.	Quoc discloses in the event of a fault in the daisy chain, conveying further downstream data packets, received from the network by one of the master units, along the daisy chain in a second direction, opposite to the first direction, so as to deliver the further packets to the ports of at least some of the slave units. *See supra* at 7.

No.	'904 Patent Claim 20	Quoc
20	A method according to claim 19, wherein the initial and further downstream packets are received from the network by the first master unit, and wherein conveying the further downstream packets in the second	Quoc discloses a method according to claim 19, wherein the initial and further downstream packets are received from the network by the first master unit, and wherein conveying the further downstream packets in the second direction comprises conveying the further downstream packets from the first master unit to the second master unit, and then conveying the further downstream packets from the second master unit to the daisy chain. For example, Quoc discloses "master module monitors and coordinates all communication between work stations on the network, sends alerts to a System administrator when appropriate, and monitors and controls the Status of I/O ports for all management modules." Quoc, 9:9-13. Quoc further discloses that the "the remaining modules operate in "slave"

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No.	'904 Patent Claim 20	Quoc
	direction comprises conveying the further downstream packets from the first master unit to the second master unit, and then conveying the further downstream packets from the second master unit to the daisy chain.	mode. When in Slave mode, the modules are on Stand-by, ready to take the role of master if necessary. This master/slave relationship provides a level of fault tolerance and redundancy to the user in a seamless manner, thereby improving network operation and reliability." Quoc, 6:39-45. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Quoc is found to not meet this limitation, a method according to claim 19, wherein the initial and further downstream packets are received from the network by the first master unit, and wherein conveying the further downstream packets in the second direction comprises conveying the further downstream packets from the first master unit to the second master unit, and then conveying the further downstream packets from the second master unit to the daisy chain would have been obvious to a person having ordinary skill in the art, as explained below. Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Quoc in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 20 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Vink '324 21:10-17 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly. For use in the communication system according to Figure 1 the unit 6 can be omitted."). Fig. 2 (annotation added) Vink '324 16:19-17:2 ("The shift register principle is also of advantage with respect to use, for example for reliability reasons, of a plurality of masters as is illustrated in Figure 2 by the

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No.	'904 Patent Claim 20	Quoc
		broken lines. In such a multi-master concept, one of the masters is in general active in relation to data exchange, while one or more other masters only have a passive role therein. All the masters are so designed that they can assume the function of the active master, for example in the event of faults. The passive masters are easily able to detect errors of the active master because, as a consequence of their cascade arrangement and the serial transfer of data bits in the communication system according to the invention, they receive all the information which is intended for the active master. Consequently, no separate communication path is required between the various masters to keep the passive masters abreast of the operations, instruction etc. carried out by the active master. Such a "hot stand-by" mode is of importance, in particular, in industrial process measurement and control in which failure or delay in the production process may, inter alia, have serious financial consequences. It is obvious that, in such a multi-master concept, the conditions under which, and the manner in which, the tasks of a master are assumed by another master have to be specified in advance.").

No.	'904 Patent Claim 21	Quoc
21	A method according to claim 20, wherein conveying the further downstream packets from the first master unit to the second master unit comprises linking further slave units in an additional daisy chain between the first and second master units, and conveying the further downstream packets from the first master unit to the second	Quoc discloses a method according to claim 20, wherein conveying the further downstream packets from the first master unit to the second master unit comprises linking further slave units in an additional daisy chain between the first and second master units, and conveying the further downstream packets from the first master unit to the second master unit over the additional daisy chain. *See supra* at 8.

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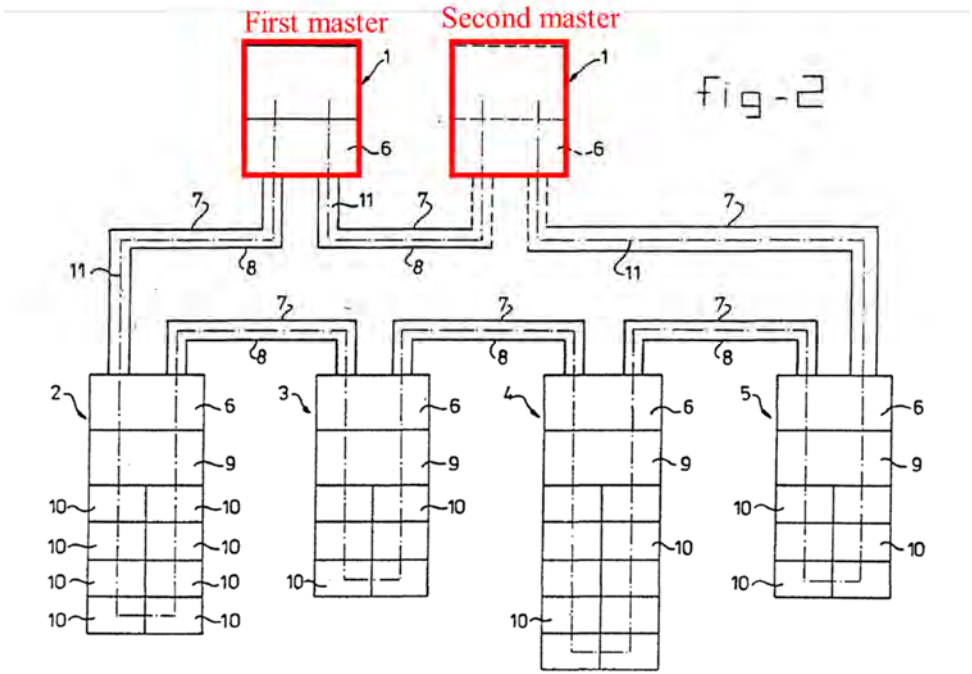
No.	'904 Patent Claim 21	Quoc
	master unit over the additional daisy chain.	

No.	'904 Patent Claim 22	Quoc
22[a]	A method according to claim 19, and comprising conveying initial upstream data packets, received by the slave units from the subscriber lines, along the daisy chain in the second direction so as to transmit the upstream data packets via the first master unit over the network, and	Quoc discloses a method according to claim 19, and comprising conveying initial upstream data packets, received by the slave units from the subscriber lines, along the daisy chain in the second direction so as to transmit the upstream data packets via the first master unit over the network. For example, Quoc discloses that Ethernet networks are well known, disclosing that "an Ethernet repeater is a device that Serves as a central Station for plugging-in network devices included in an Ethernet network, hence the term "hub." The Ethernet repeater receives messages from the network devices that are plugged into it and broadcasts (or "repeats") the message to all of the other devices on the network along a network bus, if no collision is detected.." Quoc, 3:39-45. To the extent that Quoc is found to not meet this limitation, a method according to claim 19, and comprising conveying initial upstream data packets, received by the slave units from the subscriber lines, along the daisy chain in the second direction so as to transmit the upstream data packets via the first master unit over the network would have been obvious to a person having ordinary skill in the art, as explained below. Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Quoc in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 22[a] of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Vink '324 discloses two master units in, for example, a LAN network, connected by lines such as coaxial cable each comprising a physical interface to a packet-switched network.

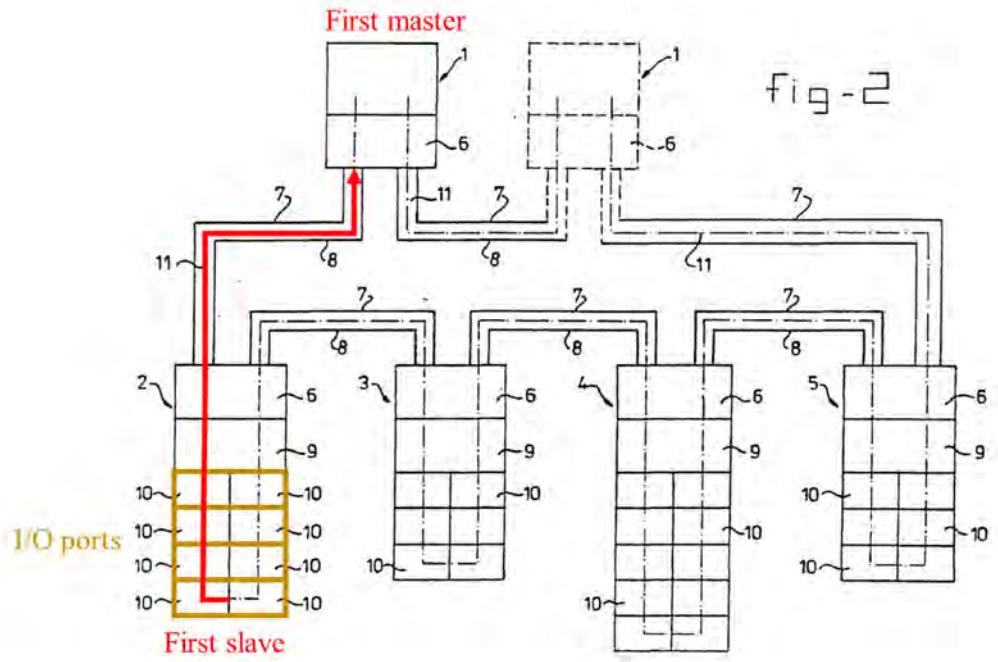
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No.	'904 Patent Claim 22	Quoc
		Vink '324 1:16-23 ("The information is primarily transferred in digital form and can vary from text and speech data to control and measurement data. For long-distance connections, public networks equipped with cables or radio links are, inter alia, available. LAN communication systems are, in principle, designed for communicatively coupling two or more connected stations together as required, whereas public networks primarily have the task of providing point-to-point connections between two stations."). Vink '324 1:24-34 ("LAN topologies generally used in practice are star, bus, ring and tree configurations in which the data bits are transferred serially to the connected stations. Generally in packet form, that is to say a particular station cannot transmit uninterrupted information but only packets containing a measured information content. A large variety of protocols, such as CSMA/CD 'token passing,' Aloha etc., have been developed for controlling the communication. For further details, reference is made to the special issue entitled "Architectures of Local Area Networks (LAN's)" in IEEE Communication Magazine, vol. 22, no. 8, August 1984."). Vink '324 14:28-34 ("A very flexible system is obtained in an embodiment of the invention in that the at least one master and slaves are designed to transmit or receive packets of data bits via a transmission system ring in one and/or the other direction. Master and/or slaves constructed in this way are capable of functioning as a switching centre so that, for example, the master is able to reach as many connected slaves as possible in a fault situation."). Vink '324 15:28-35 ("Figure 2 shows diagrammatically the architecture of a more extensive communication system according to the invention, comprising a master station (master) 1 and a plurality of substations (slaves) 2, 3, 4, 5. The master 1 and the slaves 2, 3, 4, 5 are mutually connected via a double-ring transmission system composed of transmitting/ receiving units 6 and transmission lines 7, 8. The transmission lines 7, 8 may, for example, consist of coaxial cable, optical fibre cable and the like.").

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No.	'904 Patent Claim 22	Quoc
		 Fig. 2 (annotation added) Vink '324 16:19-17:2 ("The shift register principle is also of advantage with respect to use, for example for reliability reasons, of a plurality of masters as is illustrated in Figure 2 by the broken lines. In such a multi-master concept, one of the masters is in general active in relation to data exchange, while one or more other masters only have a passive role therein. All the masters are so designed that they can assume the function of the active master, for example in the event of faults. The passive masters are easily able to detect errors of the active master because, as a consequence of their cascade arrangement and the serial transfer of data bits in the communication system according to the invention, they receive all the information which is intended for the active master. Consequently, no separate communication path is required between the various masters to keep the passive masters abreast of the operations, instruction etc. carried out by the active master. Such a "hot stand-by" mode is of importance, in

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No.	'904 Patent Claim 22	Quoc
		particular, in industrial process measurement and control in which failure or delay in the production process may, inter alia, have serious financial consequences. It is obvious that, in such a multi-master concept, the conditions under which, and the manner in which, the tasks of a master are assumed by another master have to be specified in advance."). Vink '324 21:10-16 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly.").  Fig. 2 (annotation added)

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No.	'904 Patent Claim 22	Quoc
22[b]	in the event of the fault, conveying further upstream data packets received by one or more of the slave units along the daisy chain in the first direction via the second master unit.	Quoc discloses in the event of the fault, conveying further upstream data packets received by one or more of the slave units along the daisy chain in the first direction via the second master unit. *See also supra* at 4[f], 22[a].

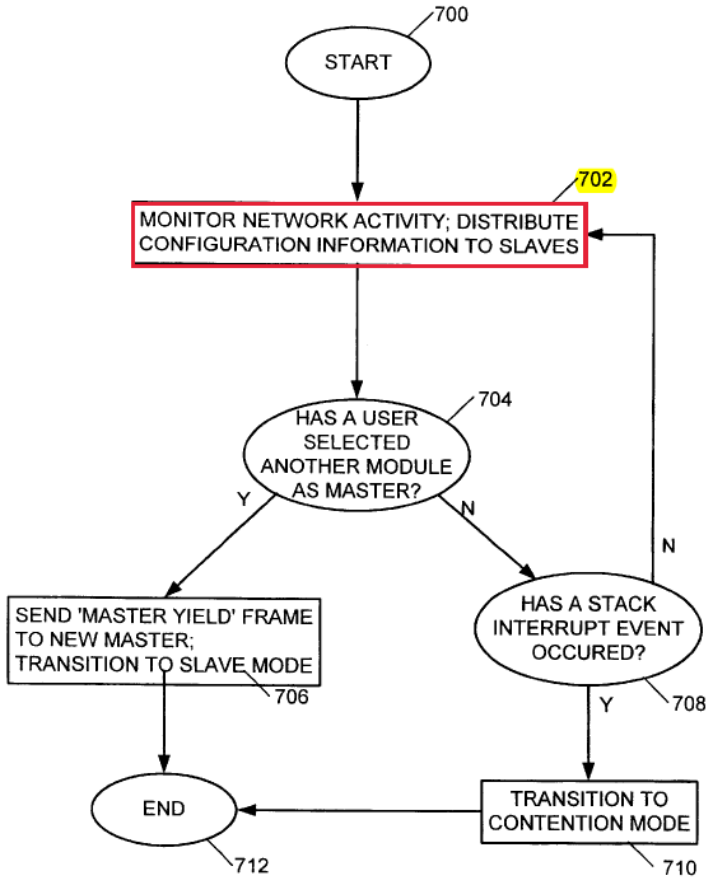
No.	'904 Patent Claim 23	Quoc
23	A method according to claim 22, and comprising bicasting the upstream data packets from the first master unit to the network and to the second master unit, which transmits the bicast upstream data packets over the network.	Quoc discloses a method according to claim 22, and comprising bicasting the upstream data packets from the first master unit to the network and to the second master unit, which transmits the bicast upstream data packets over the network. *See supra* at 6.

No.	'904 Patent Claim 24	Quoc
24	A method according to claim 19, wherein conveying the initial downstream data packets along the daisy chain comprises pre-switching the	Quoc discloses a method according to claim 19, wherein conveying the initial downstream data packets along the daisy chain comprises pre-switching the packets at each of the slave units, so that packets not addressed to any of the ports on the slave unit are passed to the next slave unit in the daisy chain, while packets that are addressed to one or more of the ports on the slave unit are passed to a switch fabric that directs the packets to the ports to which they are addressed.

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No.	'904 Patent Claim 24	Quoc
	packets at each of the slave units, so that packets not addressed to any of the ports on the slave unit are passed to the next slave unit in the daisy chain, while packets that are addressed to one or more of the ports on the slave unit are passed to a switch fabric that directs the packets to the ports to which they are addressed.	For example, Quoc describes that port connectivity was well known and was associated with network latency. Specifically, Quoc discloses that an "Ethernet repeater is a device that serves as a central station for plugging-in network devices included in an Ethernet network, hence the term 'hub.' The Ethernet repeater receives messages from the network devices that are plugged into it and broadcasts (or 'repeats') the message to all of the other devices on the network along a network bus, if no collision is detected. The repeater monitors network traffic in its collision domain and assumes the responsibility for collision detection. The network devices thus simply broadcast messages to the repeater and do not need to first listen before sending messages. If the repeater has already assigned the network bus to a device, then it notifies the device that tried to broadcast that a collision has occurred so that the network device may try again later. The amount of time that it takes for the repeater to receive a data signal and repeat that data signal out to every port on which the data signal is to be broadcast is referred to as the latency of the repeater." Quoc, 3:39-56. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Further, Quoc discloses that network flexibility in the IEEE 802.3 specification involves a "Class II requirement, which allows more than one repeater to be included in a single collision domain, significantly adds flexibility to network topology. Expanding the number of ports available on a network may be accomplished by simply adding a second repeater in the same collision domain as a single existing repeater." Quoc, 4:19-25. Quoc explains that "[a]dditional ports could be added to a first repeater stack that functions as one Class II repeater and then a second stack could be included as the second Class II repeater. Thus, stackability combined with cascadability would provide even greater flexibility for network expansion." Quoc, 4:37-42. Quoc further discloses that "FIG. 7 provides a process flow for a module operating in Selection Master mode, represented by Selection master state 310 in FIG. 3. The Selection Master is responsible for handling all management activities for the stack. **This management feature of the Selection master is represented by a step 702 in FIG. 7**. For example, **the master module** monitors and coordinates all communication between work stations on the network, sends alerts to a system administrator when appropriate, and **monitors and controls the status of I/O ports for all management modules**." Quoc, 9:4-13 (emphasis added).

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No.	'904 Patent Claim 24	Quoc
		 Quoc, FIG. 7 (annotated). *See also supra* at 11[f].

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No.	'904 Patent Claim 25	Quoc
25	A method according to claim 19, wherein the network comprises an asynchronous transfer mode (ATM) network.	Quoc discloses a method according to claim 19, wherein the network comprises an asynchronous transfer mode (ATM) network. *See supra* Claim 2.

No.	'904 Patent Claim 26	Quoc
26	A method according to claim 19, wherein the network comprises an Internet protocol (IP) network.	Quoc discloses a method according to claim 19, wherein the network comprises an Internet protocol (IP) network. *See supra* Claim 3.

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EXHIBIT A-6
Defendant's Preliminary Invalidity Contentions
Orckit Corporation v. Cisco Systems, Inc., 2:22-cv-00276-JRG-RSP

Chart for U.S. Patent 6,680,904 ("the '904 Patent")
W.O. Publication No. 1991/014324 to Vink *et al.* ("Vink '324")

As shown in the chart below, all Asserted Claims of the '904 Patent are invalid under (1) 35 U.S.C. §§ 102 (a), (b), and (e) because Vink '324 meets each element of those claims, and/or (2) 35 U.S.C. § 103 because Vink '324 renders those claims obvious either alone, or in combination with the knowledge of a person having ordinary skill in the art, and in further combination with the references specifically identified below and in the following claim chart and/or one or more references identified in Defendant's Preliminary Invalidity Contentions. The following quotations and diagrams come from Vink '324 titled "Method and Communication System for the Bit-Serial Exchange of Data", which was filed on March 18, 1991, and published on September 19, 1991.

Motivations to combine the disclosures in Vink '324 with disclosures in other publications known in the art, as explained in this chart, include at least the similarity in subject matter between the references to the extent they concern methods of stacking switches within a network. Insofar as the references cite other patents or publications, or suggest additional changes, one of ordinary skill in the art would look beyond a single reference to other references in the field.

These invalidity contentions are based on Defendant's present understanding of the Asserted Claims, and Orckit's apparent construction of the claims in its November 3, 2022 Disclosure of Asserted Claims and Infringement Contentions Pursuant to P.R. 3-1, and Orckit's January 19, 2023 First Amended Disclosure of Asserted Claims and Infringement Contentions Pursuant to P.R. 3-1 (Orckit's "Infringement Disclosures"), which is deficient at least insofar as it fails to cite any documents or identify accused structures, acts, or materials in the Accused Products with particularity. Defendant does not agree with Orckit's application of the claims, or that the claims satisfy the requirements of 35 U.S.C. § 112. Defendant's contentions herein are not, and should in no way be seen as, admissions or adoptions as to any particular claim scope or construction, or as any admission that any particular element is met by any accused product in any particular way. Defendant objects to any attempt to imply claim construction from this chart. Defendant's prior art invalidity contentions are made in a variety of alternatives and do not represent Defendant's agreement or view as to the meaning, definiteness, written description support for, or enablement of any claim contained therein.

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The following contentions are subject to revision and amendment pursuant to Federal Rule of Civil Procedure 26(e), the Local Rules, and the Orders of record in this matter subject to further investigation and discovery regarding the prior art and the Court's construction of the claims at issue.

No.	'904 Patent Claim 1	Vink '324
1[preamble]	Network access apparatus, comprising:	Vink '324 discloses a network access apparatus. For example, Vink '324 discloses a communication system for connections between networks, such as LAN or public networks. Vink '324 1:6-15 ("The invention relates to a method and a communication system for exchanging data in discrete or digital form with one or more input (I) and/or output (0) modules, by means of serial transfer of data bits. under the control of at least one master station (master). Communication systems of this type are in practice known per se. Examples are the so-called 'Local Area Networks' (LAN's) in, inter alia, office, factory, hospital and production environments. The physical transmission medium is usually coaxial or optical fibre cable."). Vink '324 1:6-2:19 ("Communication systems of this type are in practice known per se. Examples are the so-called "Local Area Networks" (LAN's) in, inter alia, office, factory, hospital and production environments. The physical transmission medium is usually coaxial or optical fibre cable. The information is primarily transferred in digital form and can vary from text and speech data to control and measurement data. For long-distance connections, public networks equipped with cables or radio links are, inter alia, available. LAN communication systems are, in principle, designed for communicatively coupling two or more connected stations together as required, whereas public networks primarily have the task of providing point-to-point connections between two stations. LAN topologies generally used in practice are star, bus, ring and tree configurations in which the data bits are transferred serially to the connected stations. Generally in packet form, that is to say a particular station cannot transmit uninterrupted information but only packets containing a measured information content. A large variety of protocols, such as CSMA/CD

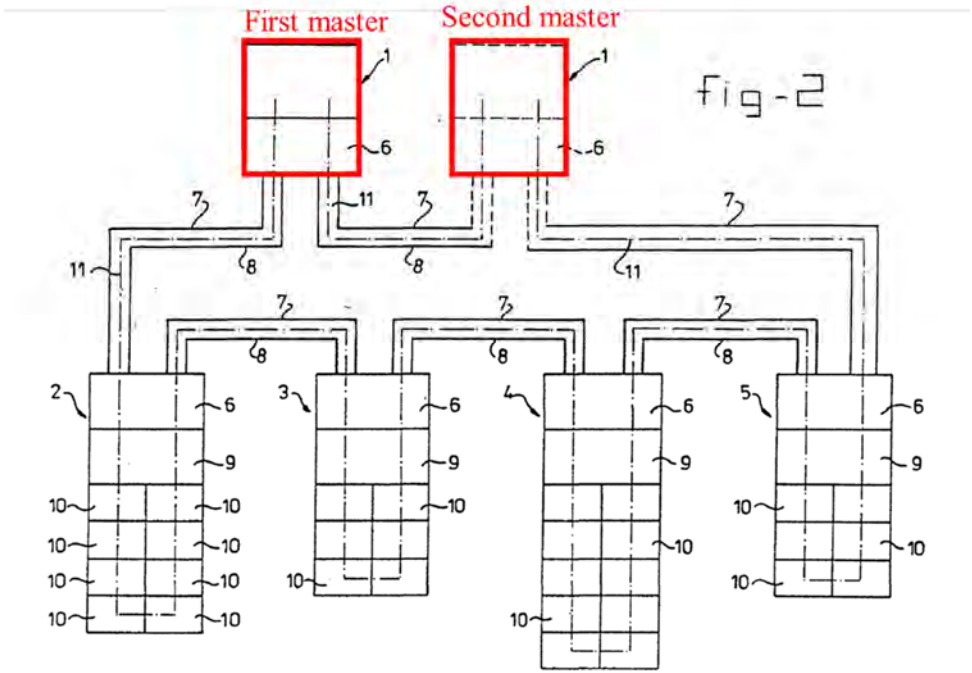
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No.	'904 Patent Claim 1	Vink '324
		"token passing", Aloha etc., have been developed for controlling the communication. For further details, reference is made to the special issue entitled "Architectures of Local Area Networks (LAN's)" in IEEE Communication Magazine, vol. 22, no. 8, August 1984. Unambiguousness in the communication of cause-and-effect relationships is an important requirement, especially for measurement and control applications, monitoring purposes and data acquisition. That is to say, the reaction (the effect) to an instruction (cause) must be transferred unambiguously as being related to said instruction. However, depending on a specific application, input and/or output variables of a system may change relatively rapidly. Communication systems constructed in accordance with the LAN concept generally have the disadvantage that, for use in, for example, industrial measurement and control environments having a large number of I/O points (for example 1,000 or over), they are too slow to be able to fulfil the required cause-and-effect unambiguousness, owing, among other things, to the communication protocols needed. Because the information is transferred bit- serially via the network but, on the other hand, is generally processed in parallel by the stations connected via bus networks, such as the known VME bus and SCSI bus, used for coupling microcomputer systems and peripheral equipment, a further delay can arise as a consequence of the required parallel-to-serial (P/S) and serial-to-parallel (S/P) conversion, which may be understood as follows.").
1[a]	first and second master units, each comprising a physical interface to a packet-switched network;	Vink '324 discloses first and second master units, each comprising a physical interface to a packet-switched network. For example, Vink '324 discloses two master units in, for example, a LAN network, connected by lines such as coaxial cable each comprising a physical interface to a packet-switched network. To the extent that Vink is found to not meet this limitation, each comprising a physical interface to a packet-switched networ would have been obvious to a person having ordinary skill in the art, as explained below. Vink '324 1:16-23 ("The information is primarily transferred in digital form and can vary from text and speech data to control and measurement data. For long-distance connections, public networks equipped with cables or radio links are, inter alia, available. LAN communication systems are, in principle, designed for communicatively coupling two or

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No.	’904 Patent Claim 1	Vink ’324
		more connected stations together as required, whereas public networks primarily have the task of providing point-to-point connections between two stations.”). Vink ’324 1:24-34 (“LAN topologies generally used in practice are star, bus, ring and tree configurations in which the data bits are transferred serially to the connected stations. Generally in packet form, that is to say a particular station cannot transmit uninterrupted information but only packets containing a measured information content. A large variety of protocols, such as CSMA/CD ‘token passing,’ Aloha etc., have been developed for controlling the communication. For further details, reference is made to the special issue entitled "Architectures of Local Area Networks (LAN's)" in IEEE Communication Magazine, vol. 22, no. 8, August 1984.”). Vink ’324 14:28-34 (“A very flexible system is obtained in an embodiment of the invention in that the at least one master and slaves are designed to transmit or receive packets of data bits via a transmission system ring in one and/or the other direction. Master and/or slaves constructed in this way are capable of functioning as a switching centre so that, for example, the master is able to reach as many connected slaves as possible in a fault situation.”). Vink ’324 15:28-35 (“Figure 2 shows diagrammatically the architecture of a more extensive communication system according to the invention, comprising a master station (master) 1 and a plurality of substations (slaves) 2, 3, 4, 5. The master 1 and the slaves 2, 3, 4, 5 are mutually connected via a double-ring transmission system composed of transmitting/ receiving units 6 and transmission lines 7, 8. The transmission lines 7, 8 may, for example, consist of coaxial cable, optical fibre cable and the like.”).

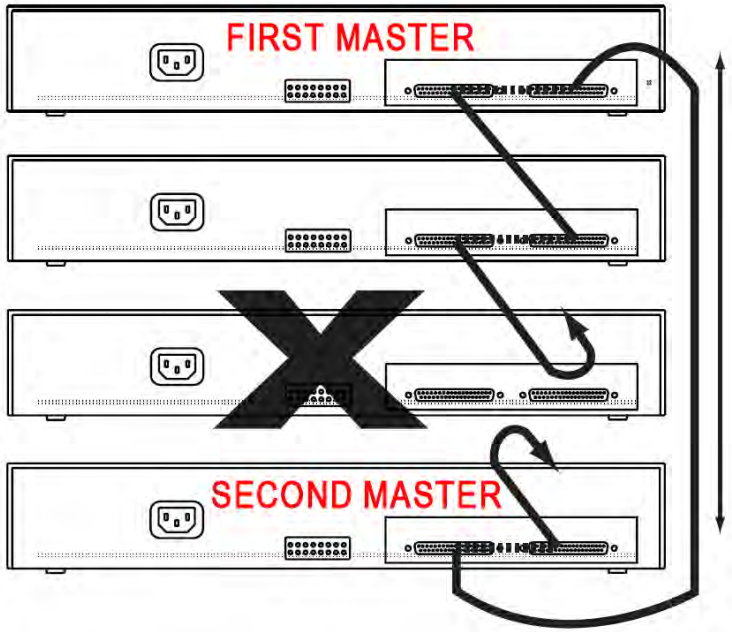
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No.	'904 Patent Claim 1	Vink '324
		 Fig. 2 (annotation added) Vink '324 16:19-17:2 ("The shift register principle is also of advantage with respect to use, for example for reliability reasons, of a plurality of masters as is illustrated in Figure 2 by the broken lines. In such a multi-master concept, one of the masters is in general active in relation to data exchange, while one or more other masters only have a passive role therein. All the masters are so designed that they can assume the function of the active master, for example in the event of faults. The passive masters are easily able to detect errors of the active master because, as a consequence of their cascade arrangement and the serial transfer of data bits in the communication system according to the invention, they receive all the information which is intended for the active master. Consequently, no separate communication path is required between the various masters to keep the passive masters abreast of the operations, instruction etc. carried out by the active master. Such a "hot stand-by" mode is of importance, in

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No.	'904 Patent Claim 1	Vink '324
		particular, in industrial process measurement and control in which failure or delay in the production process may, inter alia, have serious financial consequences. It is obvious that, in such a multi-master concept, the conditions under which, and the manner in which, the tasks of a master are assumed by another master have to be specified in advance."). Vink '324 15:28-35 ("Figure 2 shows diagrammatically the architecture of a more extensive communication system according to the invention, comprising a master station (master) 1 and a plurality of substations (slaves) 2, 3, 4, 5. The master 1 and the slaves 2, 3, 4, 5 are mutually connected via a double-ring transmission system composed of transmitting/ receiving units 6 and transmission lines 7, 8. The transmission lines 7, 8 may, for example, consist of coaxial cable, optical fibre cable and the like."). Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Vink '324 in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 1[a] of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, BayStack 450 Switches disclose two master switch units (one active master and one standby master) that connect to a packet-switched network (e.g., an ethernet network) via cables and/or other physical connections.

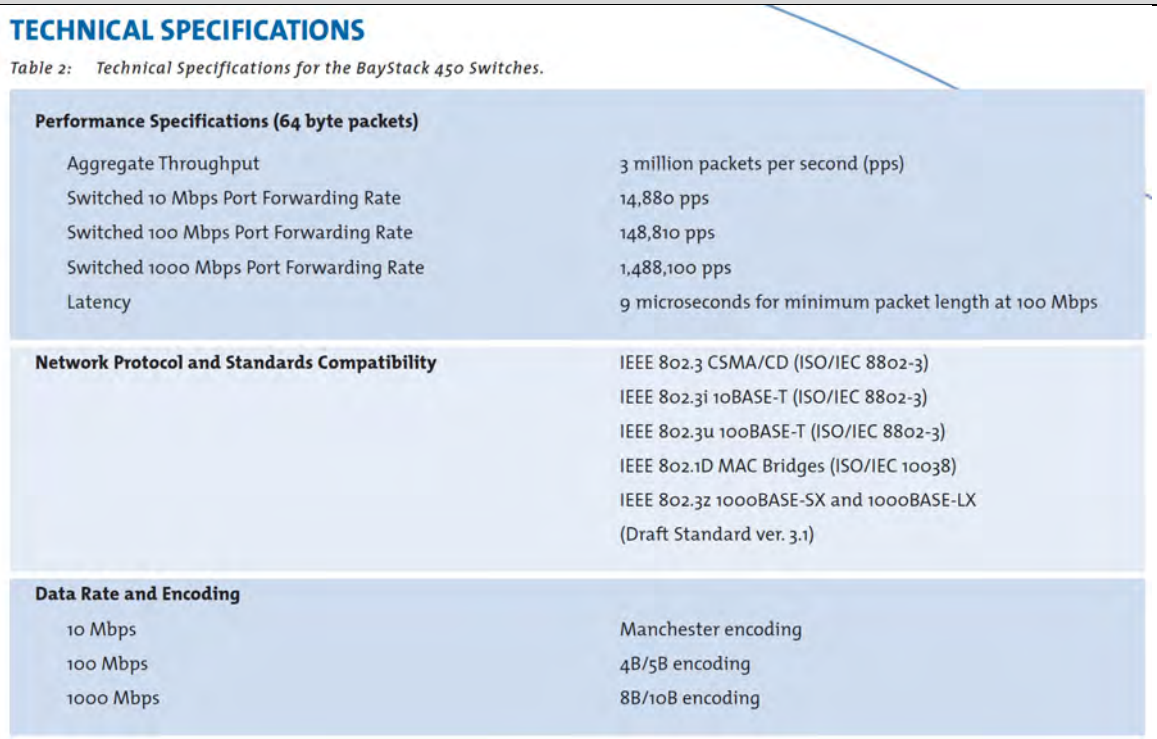
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No.	'904 Patent Claim 1	Vink '324
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). Nortel Networks' BayStack 450 Switches disclose "RJ-45 Connectors Wired for MDI-X," describing that "[a]ll 10/100 autosense Ethernet port connectors are wired for MDI-X connections to other devices. Inexpensive straight-through unshielded twisted pair (UTP) cables can be used to provide switch connections to servers, desktops, and internetworking device." BayStack 450 Data Sheet at 4 of 8. Moreover, Nortel Networks' BayStack 450 Switches disclose a web-based management that includes a "built-in Web-based network management, so network administrators can easily monitor the status and access data about their network via the local corporate intranet, or from any World Wide Web-connected PC, anywhere in the world." BayStack 450 Data Sheet at 4 of 8.

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No.	'904 Patent Claim 1	Vink '324
		In one example, Nortel Networks' BayStack 450 Switches disclose a packet-switch network, stating that its wire-speed throughput includes "2.5 Gigabit per second (Gbps) switching fabric and custom switching ASICs support full 802.1D-compliant MAC Layer frame forwarding and filtering across all ports at the peak rate of 3 million packets per second. The BayStack 450 Switches continue the Bay Networks tradition of industry- leading throughput performance." BayStack 450 Data Sheet at 2 of 8. In another example, Nortel Networks' BayStack 450 Switches disclose enhanced port mirroring capabilities, noting that "[p]ort mirroring copies packets flowing through a specified port and sends the replicated data to the probe for in-depth analysis of switched traffic patterns to trouble-shoot problems and optimize network configurations." BayStack 450 Data Sheet at 4 of 8. Indeed, Nortel Networks' BayStack 450 Switches disclose, in Table 2, various "Technical Specifications for the BayStack 450 Switches," including performance specifications for 64 byte packets and IEEE standards that are used in packet-switched networks. BayStack 450 Data Sheet at 5 of 8.

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No.	'904 Patent Claim 1	Vink '324
		

TECHNICAL SPECIFICATIONS

Table 2: Technical Specifications for the BayStack 450 Switches.

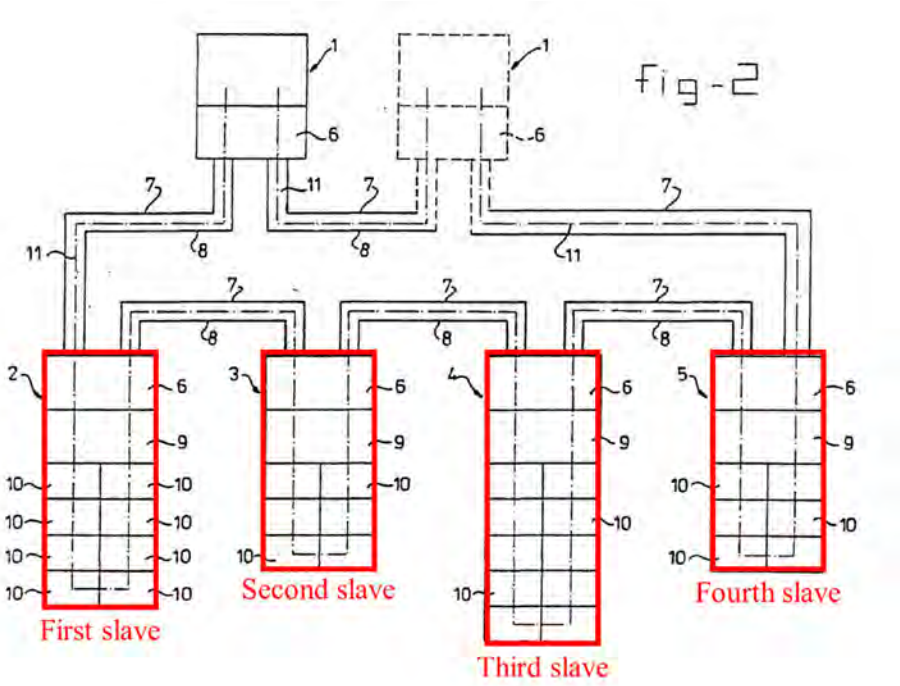
Performance Specifications (64 byte packets)	
Aggregate Throughput	3 million packets per second (pps)
Switched 10 Mbps Port Forwarding Rate	14,880 pps
Switched 100 Mbps Port Forwarding Rate	148,810 pps
Switched 1000 Mbps Port Forwarding Rate	1,488,100 pps
Latency	9 microseconds for minimum packet length at 100 Mbps
Network Protocol and Standards Compatibility	IEEE 802.3 CSMA/CD (ISO/IEC 8802-3) IEEE 802.3i 10BASE-T (ISO/IEC 8802-3) IEEE 802.3u 100BASE-T (ISO/IEC 8802-3) IEEE 802.1D MAC Bridges (ISO/IEC 10038) IEEE 802.3z 1000BASE-SX and 1000BASE-LX (Draft Standard ver. 3.1)
Data Rate and Encoding	
10 Mbps	Manchester encoding
100 Mbps	4B/5B encoding
1000 Mbps	8B/10B encoding

BayStack 450 Data Sheet at 5 of 8, Table 2.

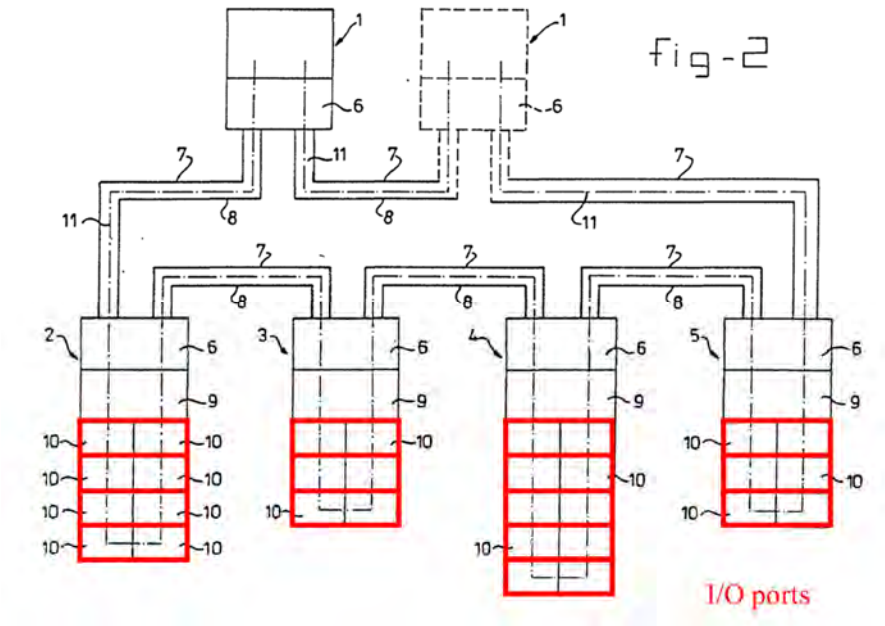
Nortel Networks' BayStack 450 Switches disclose a first master that is referred to as a "base unit." BayStack 450 Manual at 51 of 290. "The base unit is the unique stack unit that you configure with the Unit Select switch on the front panel of the 400-ST1 cascade module. One unit in the stack must be configured as the base unit; all other units in the stack must have their Unit Select switch set to Off (see "Unit Select Switch " on page 1-24). You can assign any single unit in the stack as the base unit." *Id.*

In one example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the bottom of the stack in an aptly-named "Stack Up Configuration." BayStack 450 Manual at 54 of 290.

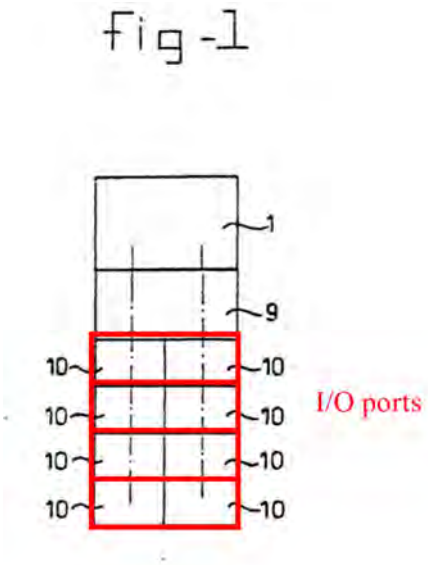
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No.	'904 Patent Claim 1	Vink '324
1[b]	a plurality of slave units,	Vink '324 discloses a plurality of slave units. For example, Vink '324 discloses a plurality of substations. Vink '324 15:28-35 ("Figure 2 shows diagrammatically the architecture of a more extensive communication system according to the invention, comprising a master station (master) 1 and a plurality of substations (slaves) 2, 3, 4, 5. The master 1 and the slaves 2, 3, 4, 5 are mutually connected via a double-ring transmission system composed of transmitting/ receiving units 6 and transmission lines 7, 8. The transmission lines 7, 8 may, for example, consist of coaxial cable, optical fibre cable and the like.").  Fig. 2 (annotation added)

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No.	'904 Patent Claim 1	Vink '324
1[c]	each slave unit comprising one or more ports to respective subscriber lines; and	Vink '324 discloses each slave unit comprising one or more ports to respective subscriber lines. For example, Vink '324 discloses that each substation have one or more I/O modules. Vink '324 15:36-16:4 ("Each slave 2, 3, 4, 5 comprises a control module 9 which is connected to the associated transmitting/receiving unit 6 and to which one or more input (I) and/or output (0) module(s) are connected. The number of I/0 modules 10 to be connected to a control module may vary from slave to slave depending on its function, for example controlling a measurement and control process.").  Fig. 2 (annotation added)

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No.	'904 Patent Claim 1	Vink '324
		Vink '324 21:3-9 ("The transmitting/receiving unit 6 provides for the monitoring of the transmission and the control computer 38 provides for and monitors the correct sequence of the data bits for a relevant slave, related to the sequence in which the I/0 modules are arranged. The information about this sequence is extracted by the control unit 36 from the status information received from the relevant slaves."). Vink '324 4:32-34 ("Extension of a substation by means of a plurality of I/O points has a direct effect on the response time of the subsequent substations."). Vink '324 17:30-37 ("Driver and monitoring means 18 are furthermore connected to unit 16 to control and monitor the operation of a local data bus 19 for serial bit transfer. The respective I/0 modules 10 are connected in cascade to a said local data bus 19 (not shown in Figure 3). A control line 39 is provided for controlling the I/0 35 modules 10. Control information received is transmitted via said control line 39 to the I/0 modules 10 to present them at their output side and/or record data bits at their input side.").  Fig. 1 (annotation added)

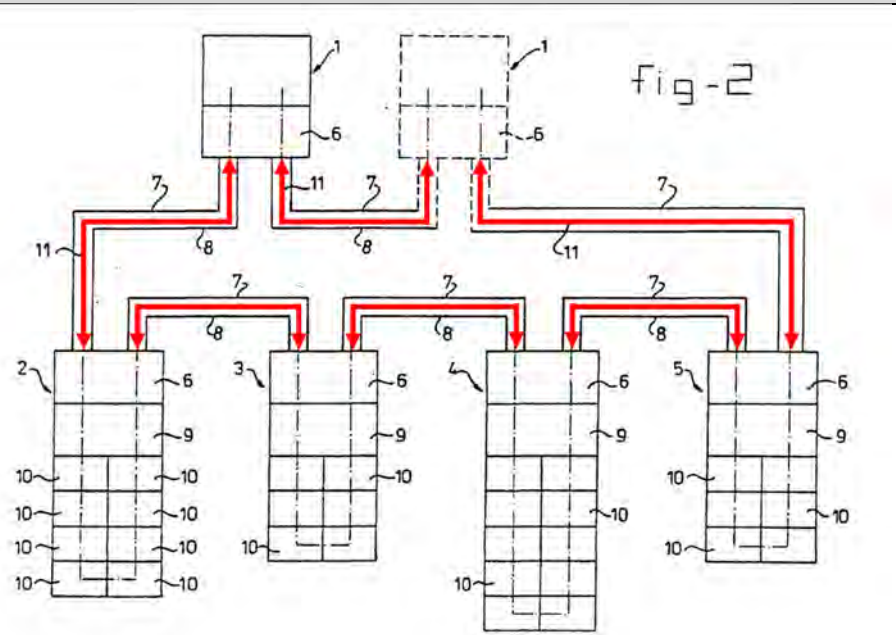
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No.	'904 Patent Claim 1	Vink '324
1[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	Vink '324 discloses a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. For example, Vink '324 discloses interface lines connected between each master and each substation connected in a cascade or shift register fashion which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the interface lines therebetween. Vink '324 further discloses that connections between two stations can be physical connections, such as coaxial cable. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Vink '324 15:28-35 ("Figure 2 shows diagrammatically the architecture of a more extensive communication system according to the invention, comprising a master station (master) 1 and a plurality of substations (slaves) 2, 3, 4, 5. The master 1 and the slaves 2, 3, 4, 5 are mutually connected via a double-ring transmission system composed of transmitting/ receiving units 6 and transmission lines 7, 8. The transmission lines 7, 8 may, for example, consist of coaxial cable, optical fibre cable and the like."). Vink '324 Claim 2 ("Method according to Claim 1, wherein a plurality of I/0 modules (10) are connected in cascade to one or more substations (slaves) (2, 3, 4, 5), which substations (2, 3, 4, 5) are connected to the at least one master (1) in cascade via a transmission system (7, 8) for serial bit transfer, characterised by under the control of the at least one master (1): - supplying the data bits for the I/0 modules (10) to the slaves (2, 3, 4, 5) via the transmission system (7, 8), the sequence of the data bits also corresponding to the sequence of the connected slaves (2, 3, 4, 5); - receiving from the slaves (2, 3, 4, 5) via the transmission system (7, 8) the data bits originating from the I/0 modules (10), the sequence of the data bits received also corresponding to the sequence of the connected slaves (2, 3, 4, 5) ; - supplying control information to the slaves (2, 3, 4, 5) via the transmission system (7, 8); and

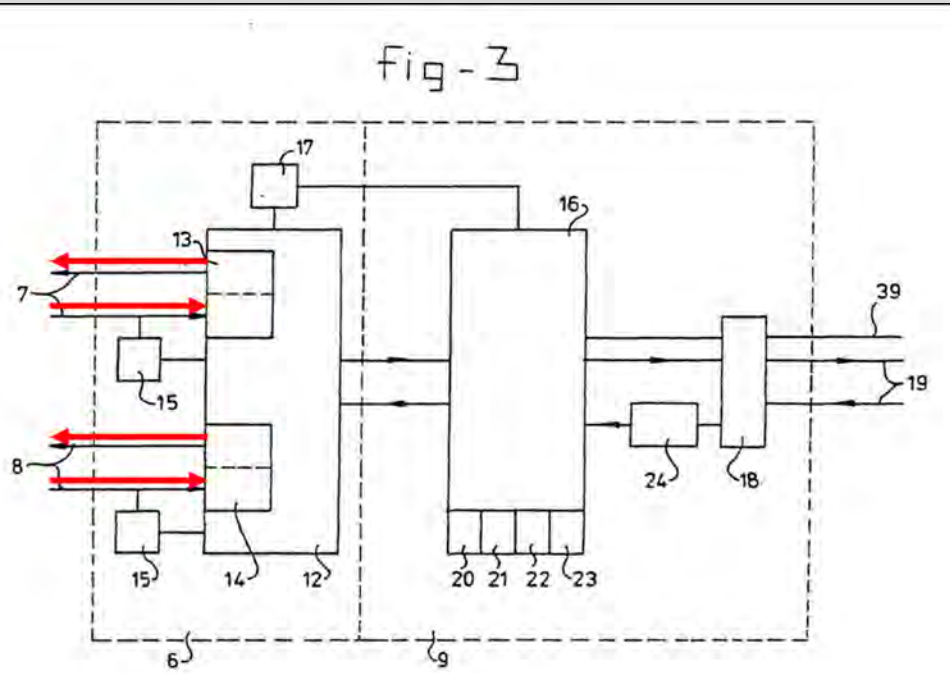
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No.	'904 Patent Claim 1	Vink '324
		- presenting and/or recording data bits of the I/0 modules (10) connected to a respective the relevant slave (2, 3, 4, 5) under the influence of the control information received, controlled by the slaves (2, 3, 4, 5)."). Vink '324 16:11-18 ("As a result, the whole again has a structure corresponding to a shift register, every I/O module being implicitly addressed, as in the system according to Figure 1, by its position in the chain. Although a double-ring transmission system is shown, it will be clear that it is possible to work with either a single-ring transmission system or with a transmission system containing more than two rings. Of course, more or fewer slaves can be used and the number of I/O modules per slave can be greater or smaller."). Vink '324 10:6-12 ("The communication system according to the invention is essentially comparable to a shift register system, i.e. one single shift register or shift register systems separated for input and output, and has the intended deterministic nature. Both during and between the output and the input phase there is a defined simultaneity relationship in the response of the separate I/O modules."). Vink '324 10:23-30 ("A further advantage of the shift register system structure is that the sequence and the number of the data bits in the system can correspond directly to the sequence and the number of data bits of the I/O modules thereof. The addition, to the data bits to be exchanged, of address information relating to the I/O modules is therefore not a requirement in this connection. This has a favourable effect on the effective speed at which the information can be exchanged.").

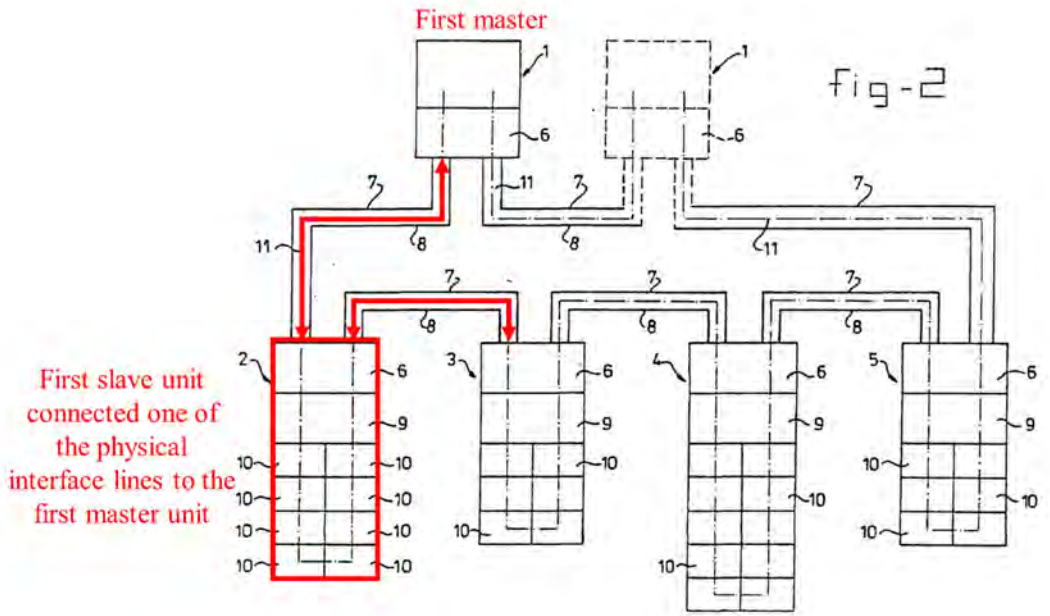
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No.	'904 Patent Claim 1	Vink '324
		 Fig. 2 (annotation added) Vink '324 17:3-12 ("Figure 3 shows a block diagram of an exemplary embodiment of a portion of a slave 2, 3, 4, 5. Data bits are transported via connections provided with an arrow. The transmitting/receiving unit 6 comprises a multiplexer 12 consisting of two modems 13, 14 which are respectively connected to the first transmission ring 7 and to the second transmission ring 8. For the transmission of the data via the transmission system, signal coding techniques known per se in practice may be used. The operation of the relevant transmission ring 7, 8 can be monitored by means of line error detectors 15.").

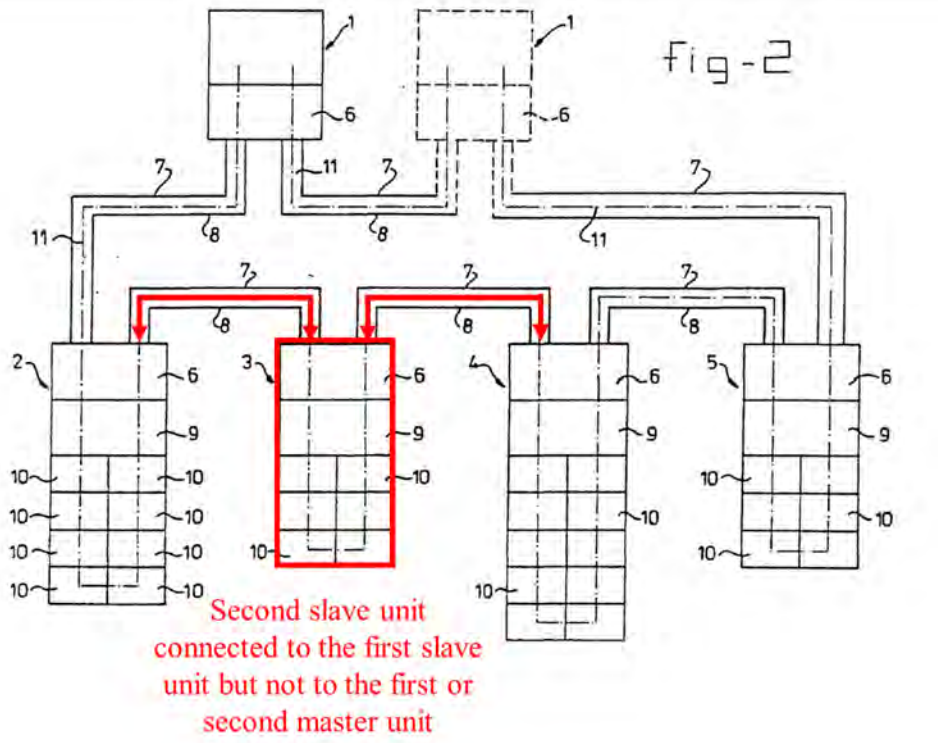
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No.	'904 Patent Claim 1	Vink '324
		 Fig. 3 (annotation added) Vink '324 1:16-23 ("The information is primarily transferred in digital form and can vary from text and speech data to control and measurement data. For long-distance connections, public networks equipped with cables or radio links are, inter alia, available. LAN communication systems are, in principle, designed for communicatively coupling two or more connected stations together as required, whereas public networks primarily have the task of providing point-to-point connections between two stations.").
1[e]	each daisy chain comprising at least a first slave unit connected one of the	Vink '324 discloses each daisy chain comprising at least a first slave unit connected one of the physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit.

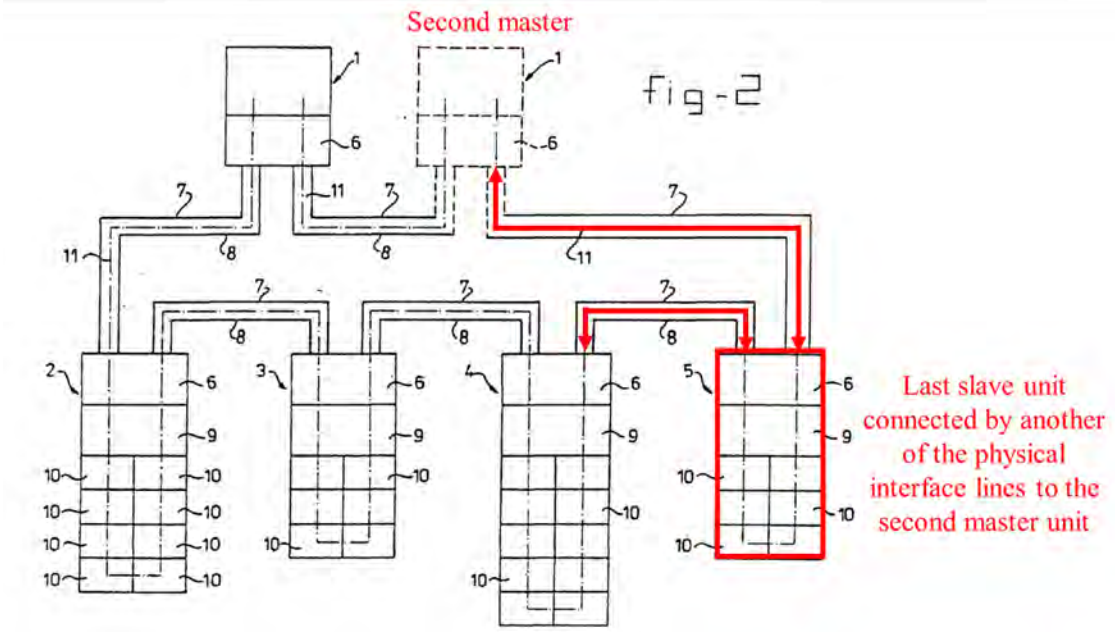
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No.	'904 Patent Claim 1	Vink '324
	physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit.	For example, Vink '324 discloses, due to the nature of the cascade and/or shift register arrangement, that substations and masters are only connection to a single substation or master in the upstream direction, and a single substation or master in the downstream direction. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See also supra* Claim 1[d].  Fig. 2 (annotation added)

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No.	'904 Patent Claim 1	Vink '324
		 Fig. 2 (annotation added)

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No.	'904 Patent Claim 1	Vink '324
		 Fig. 2 (annotation added)

No.	'904 Patent Claim 2	Vink '324
2	Apparatus according to claim 1, wherein the network comprises an asynchronous transfer mode (ATM) network.	Vink '324 discloses apparatus according to claim 1, wherein the network comprises an asynchronous transfer mode (ATM) network. For example, Vink '324 discloses a communication system using time control means, *i.e.*, wherein the network comprises an asynchronous transfer mode (ATM) network. To the extent that the Vink is found to not meet this limitation, wherein the network comprises an asynchronous transfer mode (ATM) network would have been obvious to a person having ordinary skill in the art, as explained below.

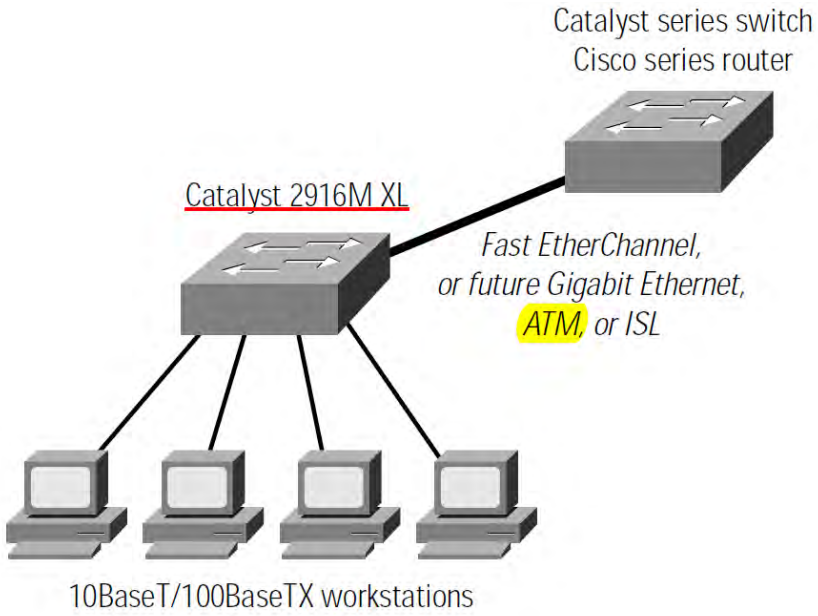
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No.	’904 Patent Claim 2	Vink ’324
		Disclosed is a time control means performed in synchronism, which includes asynchronous time-division multiplexing. For example, a shift register system is disclosed, which is compatible with an ATM network. Vink ’324 Claim 8 (“Communication system according to Claim ·7, wherein a slave (2, 3, 4, 5) is provided with time control means (17) for the transfer of the data bits via the local data bus (19) in synchronism with the transfer of the data bits via the transmission System (7, 8).”). Vink ’324 5:3-8 (“…a communication system according to Claim ·7, wherein a slave (2, 3, 4, 5) is provided with time control means (17) for the transfer of the data bits via the local data bus (19) in synchronism with the transfer of the data bits via the transmission system (7, 8).”). Vink ’324 6:38-7:8 (“… by controlling, in accordance with the invention, the I/0 modules not as a function of the transfer of the data bits, but of the transit time of the control information, the desired unambiguousness in the communication of cause-and-effect relationships is again achieved. This is because the response point of time of each I/0 module is essentially determined by the transmission rate of the system which can in practice generally be chosen as greater than the response rate of a specific application.”). Vink ’324 11:16-25 (“In order to approach the intended behaviour as a shift register system as much as possible, in a further embodiment of the communication system according to the invention, a slave is provided with time control means for the transfer, of the data bits via the local data bus in synchronism with the transfer of the data bits via the transmission system. This communication system has a network structure which is "transparent" in relation to the bit transfer, which is a requirement for arriving at an exchange, having as little delay as possible, of information between the master, the connected slaves and the I/0 modules.”). In addition, at least under the apparent claim scope alleged by Orckit’s Infringement Disclosures, Vink in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more

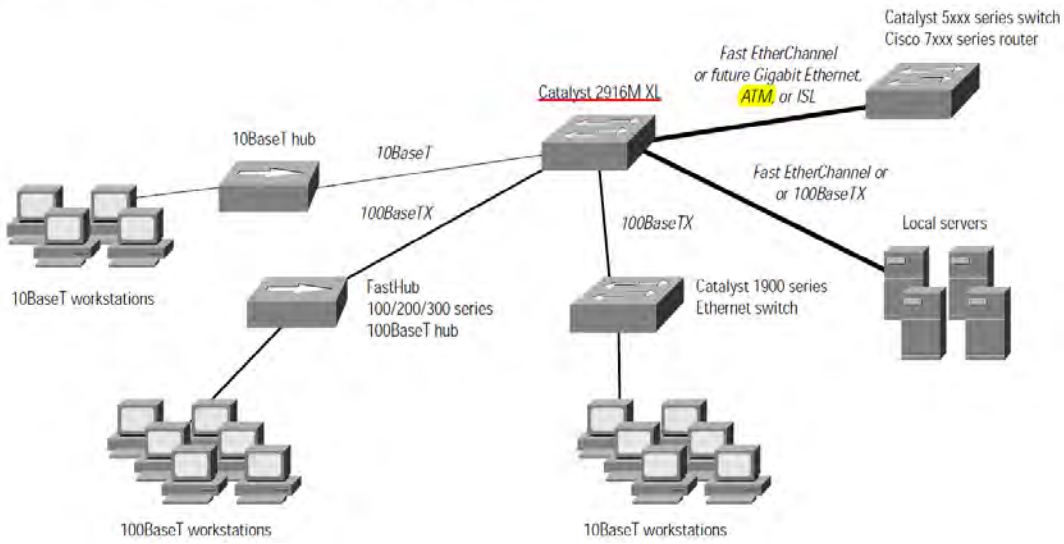
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No.	'904 Patent Claim 2	Vink '324
		together) of the references identified in element 2 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. For example, the BayStack 450 Switches disclose network connectivity that includes provisioning services for ATM networks. Nortel Networks' BayStack 450 Switches disclose that "[a]s described in Table 1, BayStack 450 Switches are available in 24- and 12-port configurations, each with a Media Dependent Adapter (MDA) slot, as well as a cascade stacking module slot." BayStack 450 Data Sheet at 2 of 8. *Table 1: Port, MDA, and Stacking Module Slot Configurations of the BayStack 450 Switches.* **BayStack 450 Switch** / **Autosensing 10BASE-T/ 100BASE-TX Ports** / **MDA Slot** / **Cascade Stacking Module Slot** BayStack 450-12T / 12 / 1 / 1 BayStack 450-24T / 24 / 1 / 1 BayStack 450 Data Sheet at 2 of 8, Table 1. Nortel Networks' BayStack 450 Switches disclose "MDAs for Gigabit Ethernet, Fast Ethernet fiber or 10/100 autosense Ethernet ports, and future ATM uplinks provide the high-bandwidth choices that fit into any network architecture." BayStack 450 Data Sheet at 2 of 8.

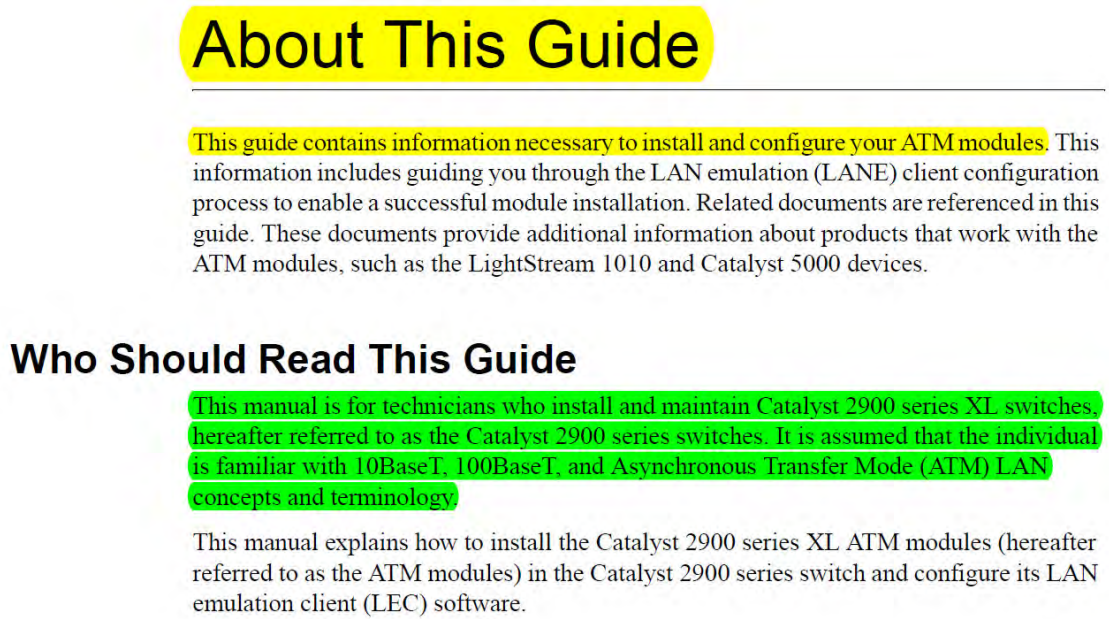
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No.	'904 Patent Claim 2	Vink '324
		For example, the Catalyst XL Switches disclose network connectivity that includes provisioning services for ATM networks. Specifically, the Catalyst XL Switches disclose that "the Catalyst 2916M XL offers Fast EtherChannel and a clear migration path to Gigabit Ethernet, ATM and virtual LANs." 1997, Cisco Catalyst 2900 Series XL Data Sheet at 1 of 6.  Figure 2 The Catalyst 2924 XL or Catalyst 2924C XL for High Performance Desktop Connectivity 1997, Cisco Catalyst 2900 Series XL Data Sheet at 1 of 6, FIG. 2.

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No.	'904 Patent Claim 2	Vink '324
		Figure 3 The Catalyst 2916M XL as Enterprise Workgroup and Server Aggregator  1997, Cisco Catalyst 2900 Series XL Data Sheet at 2 of 6, FIG. 3. Further, Cisco's Catalyst XL Switches disclose numerous configurations in its "Catalyst 2900 Series XL ATM Modules Installation and Configuration Guide." 1999, Cisco Catalyst 2900 Series XL ATM Modules Installation and Configuration Guide at i (1 of 108), Title.

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No.	'904 Patent Claim 2	Vink '324
		 1999, Cisco Catalyst 2900 Series XL ATM Modules Installation and Configuration Guide at vii (7 of 108).

No.	'904 Patent Claim 3	Vink '324
3	Apparatus according to claim 1, wherein the network comprises an Internet protocol (IP) network.	Vink '324 discloses apparatus according to claim 1, wherein the network comprises an Internet protocol (IP) network. For example, Vink '324 discloses that any suitable protocol can be used to exchange information. A person of ordinary skill in the art would understand that to include IP networks. Vink '324 17:13-21 ("After demodulation by one of the modems 13, 14, the data received are fed to the control module 9 connected to the multiplexer 12 which, in the exemplary embodiment shown, is arranged to exchange information with the master in accordance with the known Synchronous Data Link Control (SDLC) protocol. Any other suitable

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No.	'904 Patent Claim 3	Vink '324
		protocol can be used instead of the SDLC protocol. The unit in the control module which caters for the exchange of the information in the chosen protocol is indicated by the reference numeral 16.").

No.	'904 Patent Claim 4	Vink '324
4[preamble]	Network access apparatus, comprising:	Vink '324 discloses a network access apparatus. For example, Vink '324 discloses a communication system for connections between networks, such as LAN or public networks. *See supra* at 1[preamble].
4[a]	first and second master units, each comprising a physical interface to a packet-switched network;	Vink '324 discloses first and second master units, each comprising a physical interface to a packet-switched network. For example, Vink '324 discloses two master units in, for example, a LAN network each comprising a physical interface to a packet-switched network. *See supra* at 1[a].
4[b]	a plurality of slave units,	Vink '324 discloses a plurality of slave units. For example, Vink '324 discloses a plurality of substations. *See supra* at 1[b].
4[c]	each slave unit comprising one or more ports to respective subscriber lines; and	Vink '324 discloses each slave unit comprising one or more ports to respective subscriber lines. For example, Vink '324 discloses that each substation have one or more I/O modules. *See supra* at 1[c].

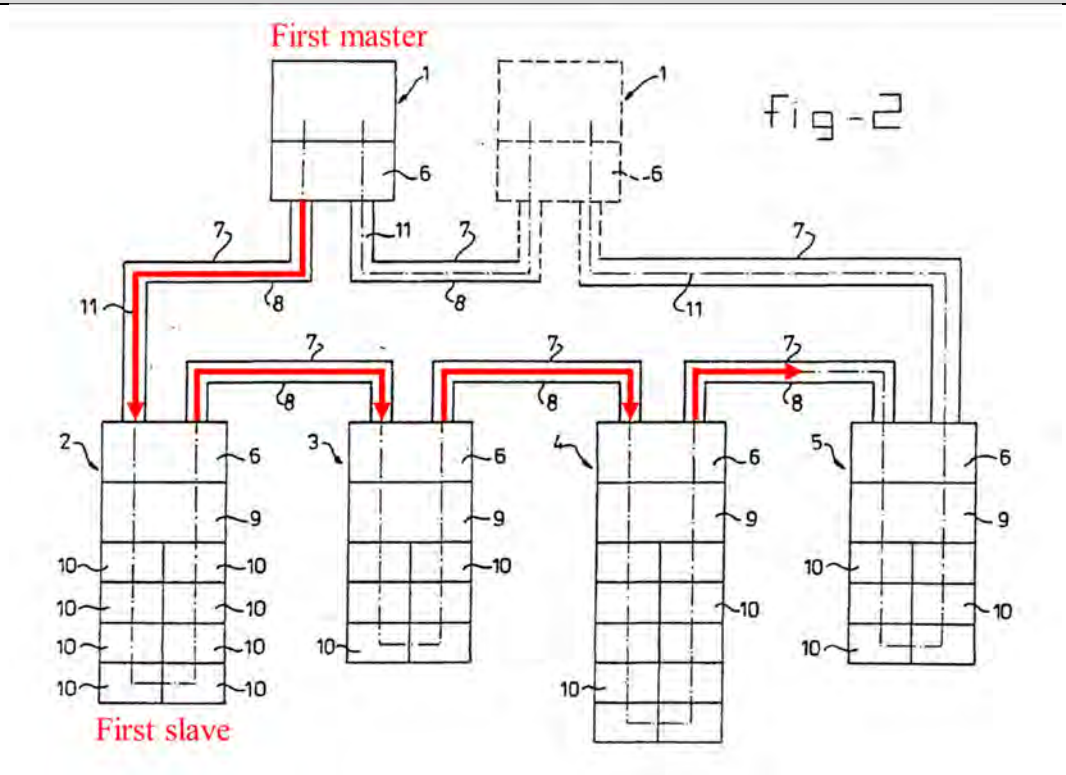
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No.	'904 Patent Claim 4	Vink '324
4[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	Vink '324 discloses a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. For example, Vink '324 discloses interface lines connected between each master and each substation connected in a cascade or shift register fashion which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the interface lines therebetween. Vink '324 further discloses that connections between two stations can be physical connections. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See supra* at 1[d].
4[e]	each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit,	Vink '324 discloses each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit. For example, Vink '324 discloses, due to the nature of the cascade and/or shift register arrangement, that substations and masters are only connection to a single substation or master in the upstream direction, and a single substation or master in the downstream direction. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See supra* at 1[e].
4[f]	wherein in normal operation, downstream data packets received from the network are passed from the first master unit to each of	Vink '324 discloses wherein in normal operation, downstream data packets received from the network are passed from the first master unit to each of the daisy chains via the first slave unit in each chain, and upstream data packets received by the slaves in each chain from the subscriber lines are passed via the first slave unit in the chain to the first master unit for transmission over the network.

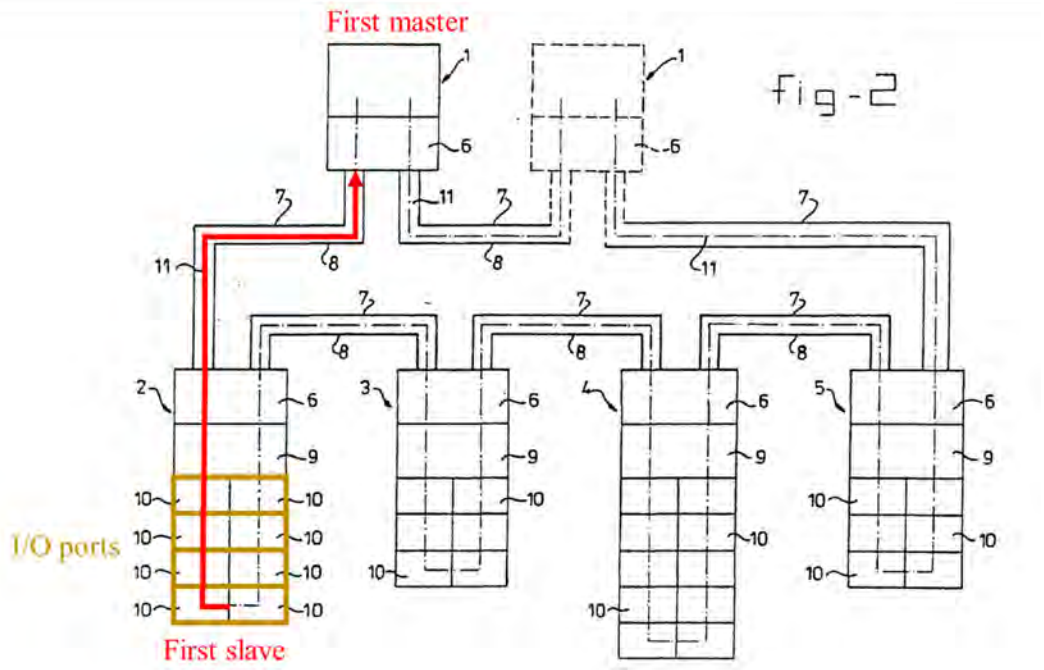
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No.	'904 Patent Claim 4	Vink '324
	the daisy chains via the first slave unit in each chain, and upstream data packets received by the slaves in each chain from the subscriber lines are passed via the first slave unit in the chain to the first master unit for transmission over the network.	For example, Vink '324 discloses each master and slave with a transmission line and a receiving line, where the first master's transmission line passes from the first master to the receiving line of the first slave, and the first slave passes information through a transmission line in the reverse direction to a receiving line in the first master. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Vink '324 21:10-16 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly."). Vink '324 15:28-35 ("Figure 2 shows diagrammatically the architecture of a more extensive communication system according to the invention, comprising a master station (master) 1 and a plurality of substations (slaves) 2, 3, 4, 5. The master 1 and the slaves 2, 3, 4, 5 are mutually connected via a double-ring transmission system composed of transmitting/ receiving units 6 and transmission lines 7, 8. The transmission lines 7, 8 may, for example, consist of coaxial cable, optical fibre cable and the like."). Vink '324 Claim 14 ("Communication system according to Claim 13, wherein the at least one master (1) and the slaves (2, 3, 4, 5) are arranged to transmit or receive data bits via a transmission ring (7, 8) in one and/or the other direction.").

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No.	'904 Patent Claim 4	Vink '324
		 Fig. 2 (annotation added)

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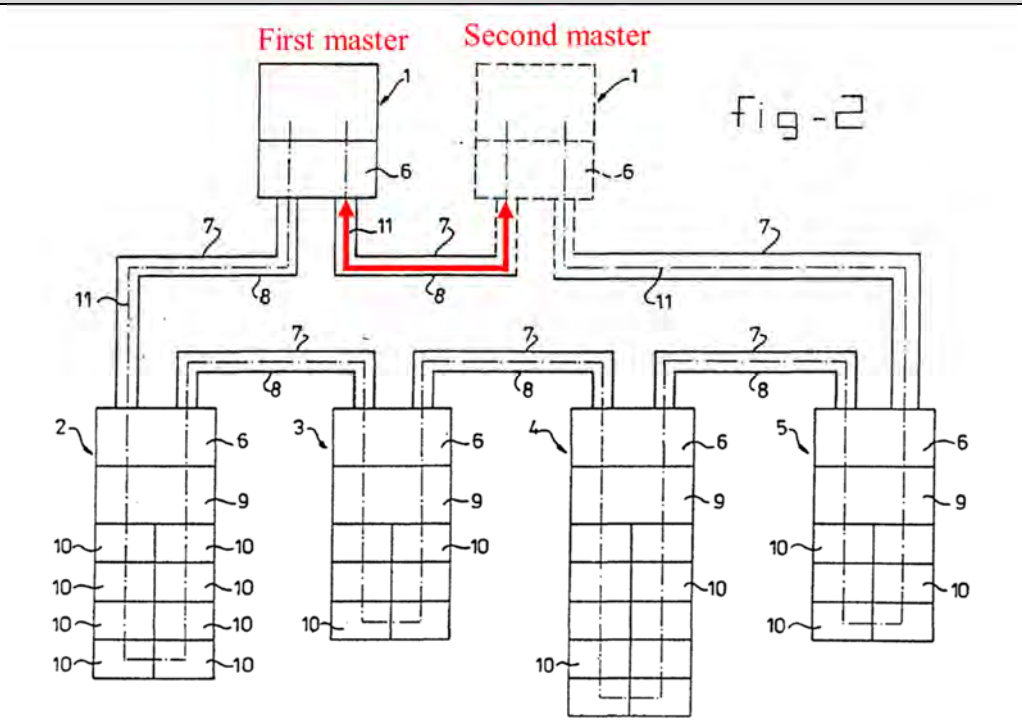
No.	'904 Patent Claim 4	Vink '324
		 Fig. 2 (annotation added)

No.	'904 Patent Claim 5	Vink '324
5	Apparatus according to claim 4, and comprising a protection interface, which couples the second master unit to the first master unit, and over which interface data packets	Vink '324 discloses apparatus according to claim 4, and comprising a protection interface, which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault. For example, Vink '324 discloses a physical interface that joins the first and second master to assist in transferring packets across the system in the event of a fault which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault.

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No.	'904 Patent Claim 5	Vink '324
	are conveyed between the first and second master units in case of a fault.	Vink '324 16:19-17:2 ("The shift register principle is also of advantage with respect to use, for example for reliability reasons, of a plurality of masters as is illustrated in Figure 2 by the broken lines. In such a multi-master concept, one of the masters is in general active in relation to data exchange, while one or more other masters only have a passive role therein. All the masters are so designed that they can assume the function of the active master, for example in the event of faults. The passive masters are easily able to detect errors of the active master because, as a consequence of their cascade arrangement and the serial transfer of data bits in the communication system according to the invention, they receive all the information which is intended for the active master. Consequently, no separate communication path is required between the various masters to keep the passive masters abreast of the operations, instruction etc. carried out by the active master. Such a "hot stand-by" mode is of importance, in particular, in industrial process measurement and control in which failure or delay in the production process may, inter alia, have serious financial consequences. It is obvious that, in such a multi-master concept, the conditions under which, and the manner in which, the tasks of a master are assumed by another master have to be specified in advance.").

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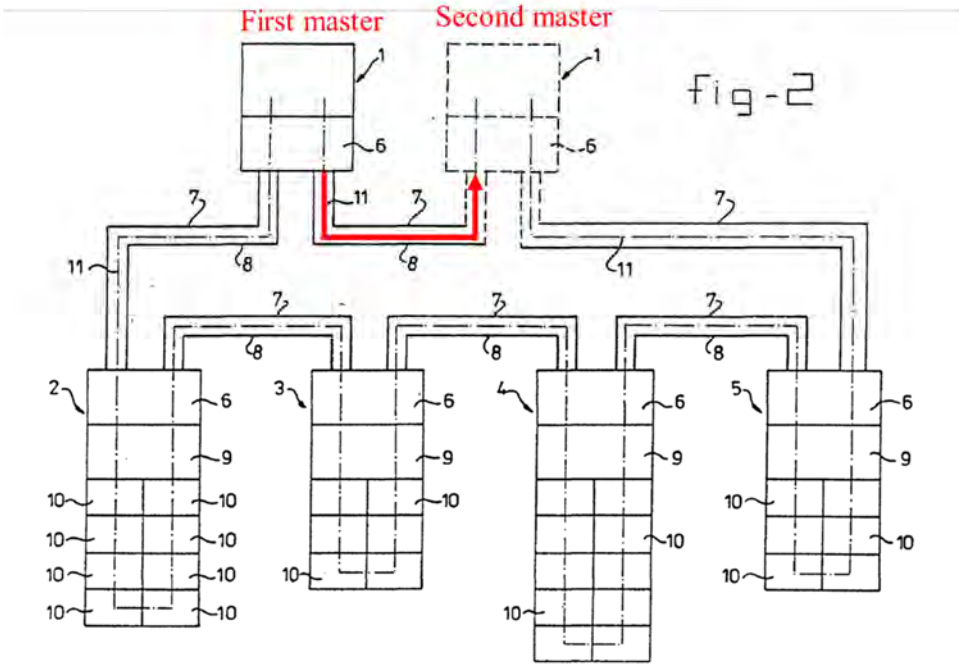
No.	'904 Patent Claim 5	Vink '324
		 Fig. 2 (annotation added)

No.	'904 Patent Claim 6	Vink '324
6	Apparatus according to claim 5, wherein the first master unit bicasts the upstream data packets that it receives from the slave units to the network and, via the	Vink '324 discloses apparatus according to claim 5, wherein the first master unit bicasts the upstream data packets that it receives from the slave units to the network and, via the protection interface, to the second master unit, which transmits the upstream data packets to the network For example, Vink '324 discloses a cascade arrangement and serial transfer of data bits in its communication system. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that the Vink is

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No.	'904 Patent Claim 6	Vink '324
	protection interface, to the second master unit, which transmits the upstream data packets to the network.	found to not meet this limitation, wherein the first master unit bicasts the upstream data packets that it receives from the slave units to the network and, via the protection interface, to the second master unit, which transmits the upstream data packets to the network would have been obvious to a person having ordinary skill in the art, as explained below. Vink '324 16:19-17:2 ("The shift register principle is also of advantage with respect to use, for example for reliability reasons, of a plurality of masters as is illustrated in Figure 2 by the broken lines. In such a multi-master concept, one of the masters is in general active in relation to data exchange, while one or more other masters only have a passive role therein. All the masters are so designed that they can assume the function of the active master, for example in the event of faults. The passive masters are easily able to detect errors of the active master because, as a consequence of their cascade arrangement and the serial transfer of data bits in the communication system according to the invention, they receive all the information which is intended for the active master. Consequently, no separate communication path is required between the various masters to keep the passive masters abreast of the operations, instruction etc. carried out by the active master. Such a "hot stand-by" mode is of importance, in particular, in industrial process measurement and control in which failure or delay in the production process may, inter alia, have serious financial consequences. It is obvious that, in such a multi-master concept, the conditions under which, and the manner in which, the tasks of a master are assumed by another master have to be specified in advance.").

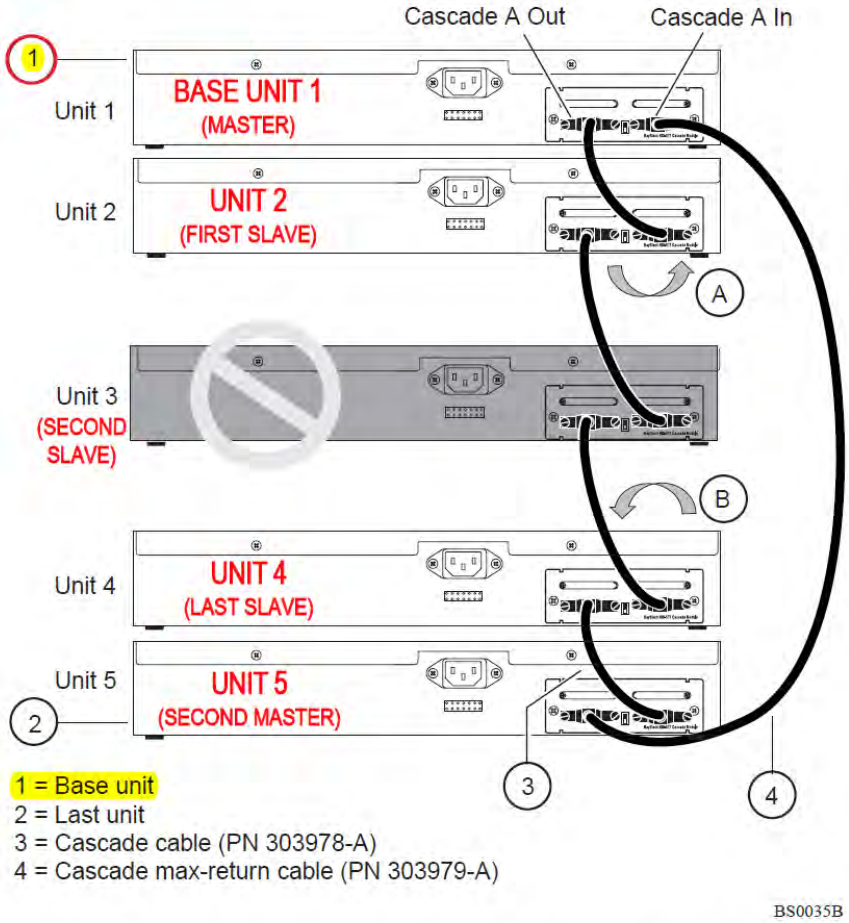
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No.	'904 Patent Claim 6	Vink '324
		 Fig. 2 (annotation added) In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, Vink in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 6 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Dowling discloses network devices where each network device sends periodic messages to a multicast address, and multicasting to a group of stations. See, e.g.,

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No.	'904 Patent Claim 6	Vink '324
		Dowling at 2:58-3:12 ("Ethernet uses variable-length frames of data to transmit information from a source to one or more destinations. Every Ethernet frame has two fields defined as the source and destination addresses, which indicate the MAC addresses of the network devices where a frame originated and where it is ultimately destined, respectively. . . . Special addresses allow for multicasting to a group of Stations and for broadcasting to all Stations on the network.") Dowling at 11:1-9 ("It is to be understood that the present invention is not limited to devices that are compatible with CDP. CDP runs on all media that support the Subnetwork Access Protocol ("SNAP"), including LAN and Frame Relay. CDP runs over the data link layer only. Each network device sends periodic messages to a multicast address and listens to the periodic messages Sent by others in order to learn about neighboring devices and determine when their interfaces to the media go up or down.") For example, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. The BayStack 450 Switches further disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit

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No.	'904 Patent Claim 6	Vink '324
		causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.  **Figure 1-14. Redundant Cascade Stacking Feature**

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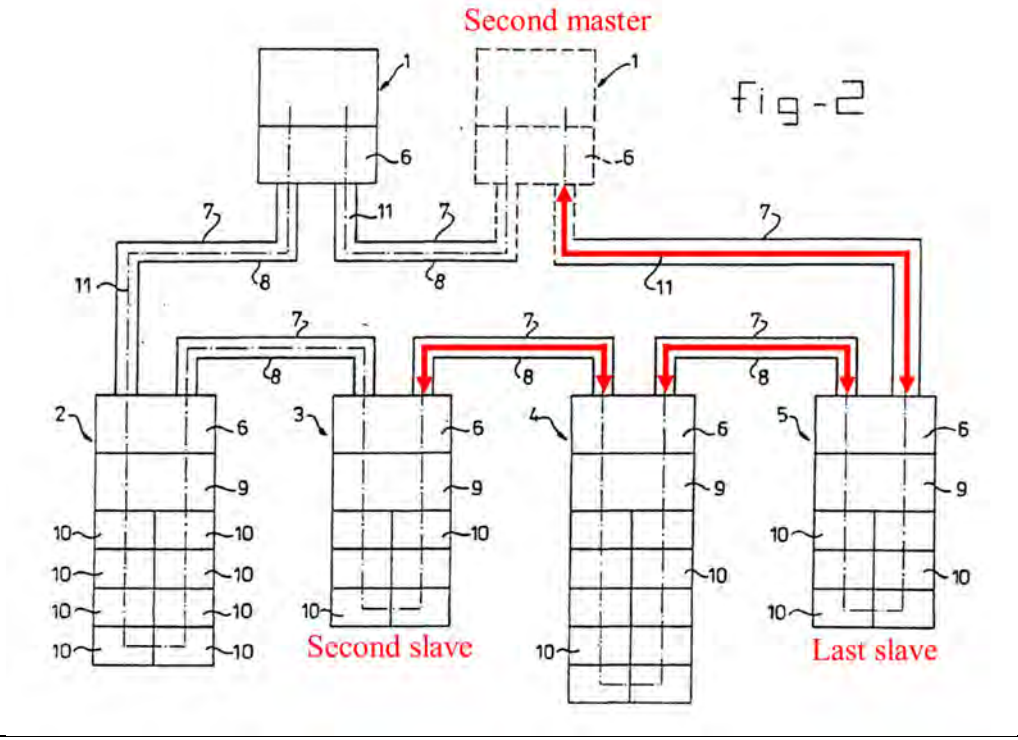
No.	'904 Patent Claim 6	Vink '324
		BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated). Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

No.	'904 Patent Claim 7	Vink '324
7	Apparatus according to claim 4, wherein in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit.	Vink '324 discloses apparatus according to claim 4, wherein in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit. For example, Vink '324 discloses reversing direction of packet flow in the chain in the event of a fault, so that the slaves can still communicate with a master on either side of the fault. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Vink '324 16:19-17:2 ("The shift register principle is also of advantage with respect to use, for example for reliability reasons, of a plurality of masters as is illustrated in Figure 2 by the broken lines. In such a multi-master concept, one of the masters is in general active in relation to data exchange, while one or more other masters only have a passive role therein. All the masters are so designed that they can assume the function of the active master, for example in the event of faults. The passive masters are easily able to detect errors of the active master because, as a consequence of their cascade arrangement and the serial transfer of data bits in the communication system according to the invention, they receive all the information which is intended for the active master. Consequently, no separate communication path is required between the various masters to keep the passive masters abreast of the operations, instruction etc. carried out by the active master. Such a "hot stand-by" mode is of importance, in particular, in industrial process measurement and control in which failure or delay in the production process may, inter alia, have serious financial consequences. It is obvious that, in

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No.	'904 Patent Claim 7	Vink '324
		such a multi-master concept, the conditions under which, and the manner in which, the tasks of a master are assumed by another master have to be specified in advance.").
		Vink '324 14:2-27 ("In particular, with implicit addressing of the I/O modules, that is to say, if the sequence of the data bits corresponds to the sequence of the I/O modules of the relevant slave, errors in the transmission system and/or the local data bus can give rise to undesirable responses. To prevent this as far as possible, in an embodiment of the communication system according to the invention, a slave is provided with means for monitoring the serial transfer of data bits via the transmission system and/or the local data bus. A complete monitoring of the data exchange is achieved in that the at least one master is provided with means for detecting error situations in the transmission system. When a transmission error is detected, the control module of a slave will not accept the data received, nor will it transmit new data. The data bits received are then transferred further unchanged. The master then receives back the data bits despatched, possibly with transmission errors. By checking the transmitted and received data, information can be obtained about a transmission fault. If necessary, the relevant data bits can, for example, be transmitted again. Owing to the serial transfer down to the level of the I/O modules, the nodes in the communication system according to the invention are particularly suitable for use in a ring network configuration. Making use of this, the slaves in a further embodiment of the invention are connected to the at least one master via a multiple ring transmission system, the at least one master and the slaves being provided with means for change-over of a transmission system ring.").
		Vink '324 14:28-38 "A very flexible system is obtained in an embodiment of the invention in that the at least one master and slaves are designed to transmit or receive packets of data bits via a transmission system ring in one and/or the other direction. Master and/or slaves constructed in this way are capable of functioning as a switching centre so that, for example, the master is able to reach as many connected slaves as possible in a fault situation. The invention also relates to an I/O module, a substation (slave) and a master station (master) corresponding to, and suitable for, use in the communication system according to one or more of the preceding embodiments.").

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No.	'904 Patent Claim 7	Vink '324
		Vink '324 21:3-17 ("The transmitting/receiving unit 6 provides for the monitoring of the transmission and the control computer 38 provides for and monitors the correct sequence of the data bits for a relevant slave, related to the sequence in which the I/O modules are arranged. The information about this sequence is extracted by the control unit 36 from the status information received from the relevant slaves. In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about whether the connection to the transmission system is or is not operating correctly. For use in the communication system according to Figure 1 the unit 6 can be omitted.") 

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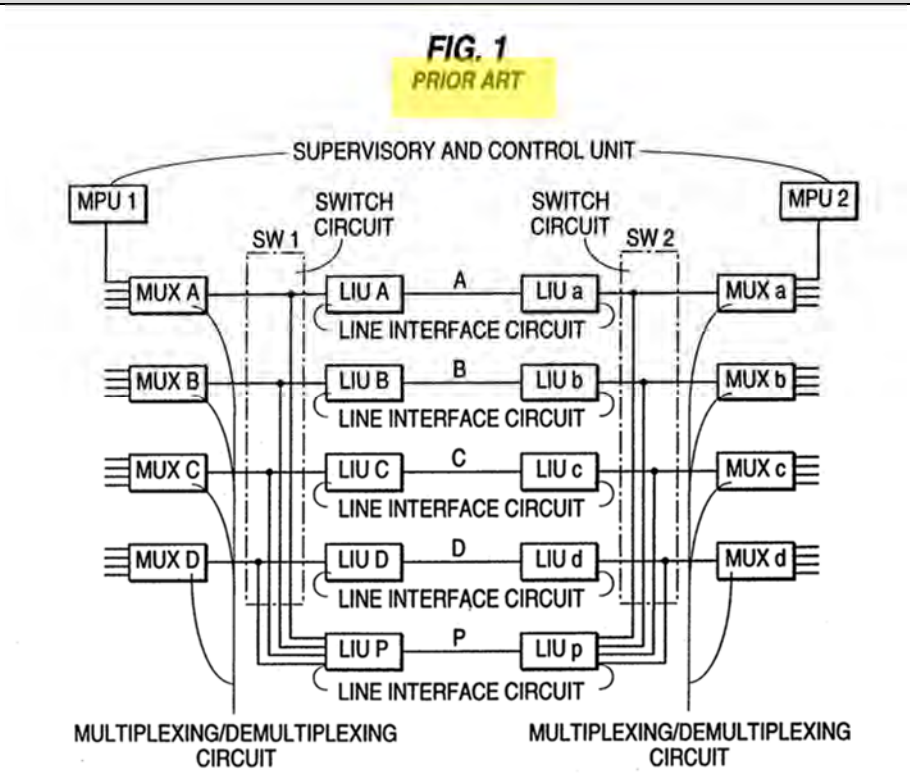
No.	'904 Patent Claim 7	Vink '324
		Fig. 2 (annotation added)

No.	'904 Patent Claim 8	Vink '324
8	Apparatus according to claim 7, wherein the downstream packets for the slave units in the portion of the daisy chain between the location of the fault and the second master unit are conveyed to the second master unit from the first master unit via another one of the daisy chains.	Vink '324 discloses apparatus according to claim 7, wherein the downstream packets for the slave units in the portion of the daisy chain between the location of the fault and the second master unit are conveyed to the second master unit from the first master unit via another one of the daisy chains. For example, Vink '324 discloses ("The transmitting/receiving unit 6 provides for the monitoring of the transmission and the control computer 38 provides for and monitors the correct sequence of the data bits for a relevant slave, related to the sequence in which the I/O modules are arranged. The information about this sequence is extracted by the control unit 36 from the status information received from the relevant slaves. In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about whether the connection to the transmission system is or is not operating correctly. For use in the communication system according to Figure 1 the unit 6 can be omitted.") Vink '324 21:3-17. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that the Vink is found to not meet this limitation, wherein the first master unit bicasts the upstream data packets that it receives from the slave units to the network and, via the protection interface, to the second master unit, which transmits the upstream data packets to the network would have been obvious to a person having ordinary skill in the art, as explained below. In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, Vink in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 8 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references.

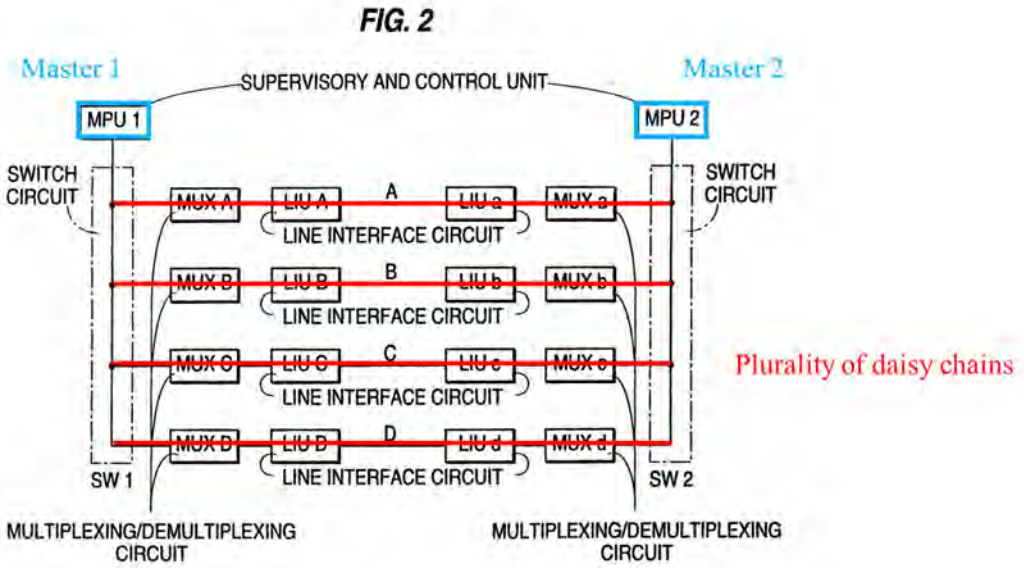
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No.	’904 Patent Claim 8	Vink ’324
		For example, Sugawara ’’456 discloses multiple daisy chains between two masters where, in the case of a fault, packets are routed through a different chain. Sugawara ’456 1:26-45 (“FIG. 1 illustrates a conventional data link protecting system. A through D designate normal lines and P designates a backup line. LIUA through LIUD and LIUa through LIUd denote line interface circuits having functions of communicating with opposed devices, detecting the error rate of received signals, detecting abnormalities in main signals, such as signal interruption, and feeding intermediate repeaters. MUXA through MUXD and MUXa through MUXd designate multiplexing/demultiplexing circuits, and SW1 and SW2 denote switch circuits adapted to switch an abnormal line to the backup line. MPU1 and MPU2 denote supervisory and control units which control their associated devices, supervise the line interface circuits LIUs to switch the switch circuits SW as needed and perform data link communication with opposed devices. Note that the FIG. 1 illustrates only the arrangement for data transmission in one direction. The arrangement for data transmission in the opposite direction is the same as above.”).

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No.	'904 Patent Claim 8	Vink '324
		 Fig. 1 (annotation added) Sugawara '456 3:24-39 ("When a failure of the line A is detected, the data link communication is switched from the line A to another, for example, the line B. This switching is made as follows. That is, a line failure is usually detected as a failure in reception. When detecting the line failure in terms of error rate by way of example, the line interface circuit LIUa on the receiving side informs the supervisory and control unit MPU2 via MUXa of the detection of the line failure. Upon being informed of the line failure, MPU2 informs MPU1 of the failure of the line A via another line, for example, another line of B directed from MPU2 to MPU1 not shown. Responsive to this, the supervisory and control unit MPU1

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No.	'904 Patent Claim 8	Vink '324
		switches switch circuit SW1 to connect MPU1 to another line, for example, the line B. Thereby, the data link communication becomes effected over the line B.").  Fig. 2 (annotation added) For example, Quoc discloses that "because networks tend to constantly change and expand with network devices being added, it would be highly advantageous if, in addition to the Class II feature of allowing two repeaters in a collision domain, it were also possible that each of the two repeaters were expandable or Stackable. Additional ports could be added to a first repeater Stack that functions as one Class II repeater and then a Second Stack could be included as the Second Class II repeater. Thus, Stackability combined with cascadability would provide even greater flexibility for network expansion." Quoc at 4:32-42. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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No.	'904 Patent Claim 8	Vink '324
		Quoc discloses "In a preferred embodiment, network management mod ules (NMMs), preferably one for each repeater unit, may be provided in a Single repeater Stack. FIG. 2 shows a repeater stack 200 having four NMMs 202, 204, 206 and 208. The modules 202, 204, 206 and 208 of the repeater stack 200 communicate using a management bus 210. The modules communicate on the management bus210 by Sending Small messages, referred to as "frames." The modules are also connected to a stack bus 220 which provides the main pathway for data transmission between repeaters and other nodes on the network (not shown)." Quoc, 6:19-29.

No.	'904 Patent Claim 9	Vink '324
9[preamble]	Network access apparatus, comprising:	Vink '324 discloses a network access apparatus. For example, Vink '324 discloses a communication system for connections between networks, such as LAN or public networks. *See supra* at 1[preamble].
9[a]	first and second master units, each comprising a physical interface to a packet-switched network;	Vink '324 discloses first and second master units, each comprising a physical interface to a packet-switched network. For example, Vink '324 discloses two master units in, for example, a LAN network. *See supra* at 1[a].
9[b]	a plurality of slave units,	Vink '324 discloses a plurality of slave units. For example, Vink '324 discloses a plurality of substations. *See supra* at 1[b].

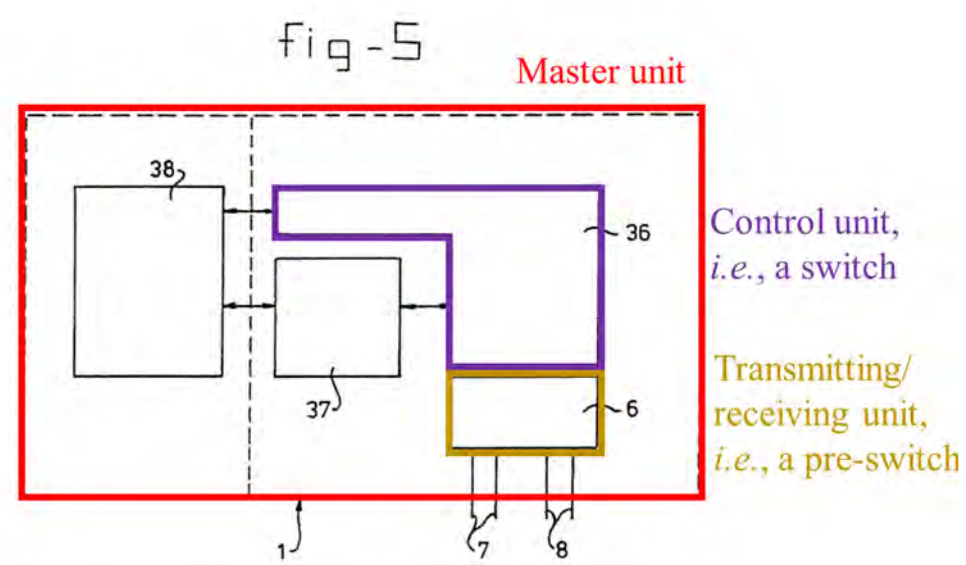
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No.	'904 Patent Claim 9	Vink '324
9[c]	each slave unit comprising one or more ports to respective subscriber lines; and	Vink '324 discloses each slave unit comprising one or more ports to respective subscriber lines. For example, Vink '324 discloses that each substation have one or more I/O modules. *See supra* at 1[c].
9[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	Vink '324 discloses a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. For example, Vink '324 discloses interface lines connected between each master and each substation connected in a cascade or shift register fashion which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the interface lines therebetween. Vink '324 further discloses that connections between two stations can be physical connections. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See supra* at 1[d].
9[e]	each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit, wherein each of the	Vink '324 discloses each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit. For example, Vink '324 discloses, due to the nature of the cascade and/or shift register arrangement, that substations and masters are only connection to a single substation or master in the upstream direction, and a single substation or master in the downstream direction. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See supra* at 1[e].

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No.	'904 Patent Claim 9	Vink '324
	first and second master units comprises:	
9[f]	a switch, configured to route data packets between the respective physical interface and the one or more daisy chains; and	Vink '324 discloses a switch, configured to route data packets between the respective physical interface and the one or more daisy chains. For example, Vink '324 discloses a control unit for controlling the data flow over the chain, configured to route data packets between the respective physical interface and the one or more chains. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Vink '324 20:30-21:2 ("The software for controlling the communication system according to the invention is essentially concentrated in the master 1 which comprises, in an exemplary embodiment of the invention as shown in Figure 5, a control unit 36 for controlling the data flow via the transmission system 7, 8, with an associated memory 37 for storing and exchanging information with a control computer 38 which contains the calculations and background information necessary for the process to be controlled via the I/0 modules. Further peripheral equipment, for example a further computer (not shown) for supporting the control computer 38, may be connected to said control computer 38."). Vink '324 21:10-16 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly."). Vink '324 21:18-23 ("The transmitting/receiving unit 6 can be constructed in a similar way to that shown in Figure 3. A practical embodiment of the master is achieved with a microprocessor of type MC 68020, manufactured by Motorola, as control computer and with a programmable logical device of the type EPM 5128, manufactured by Altera, as control unit 36.").

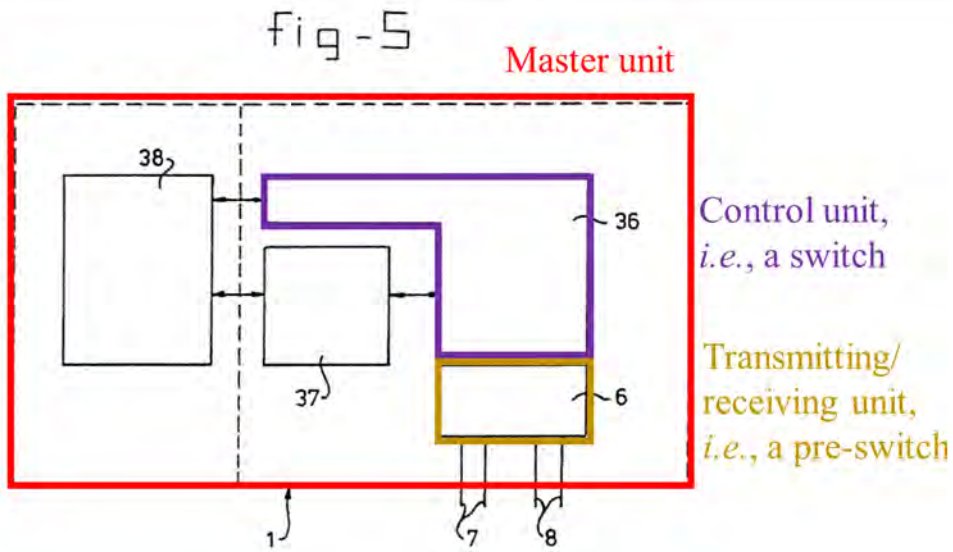
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No.	'904 Patent Claim 9	Vink '324
		Vink '324 21:3-9 ("The transmitting/receiving unit 6 provides for the monitoring of the transmission and the control computer 38 provides for and monitors the correct sequence of the data bits for a relevant slave, related to the sequence in which the I/O modules are arranged. The information about this sequence is extracted by the control unit 36 from the status information received from the relevant slaves.")  Fig. 5 (annotation added) In the alternative, control module 38 serves as the switch and 36 & 6 serves as the pre-switch.
9[g]	a pre-switch, which in the event of a fault at a location in one of the daisy chains, re-routes at least a portion of the data packets	Vink '324 discloses a pre-switch, which in the event of a fault at a location in one of the daisy chains, re-routes at least a portion of the data packets exchanged with one or more of the slaves in the daisy chain in which the fault has occurred through another one of the daisy chains.

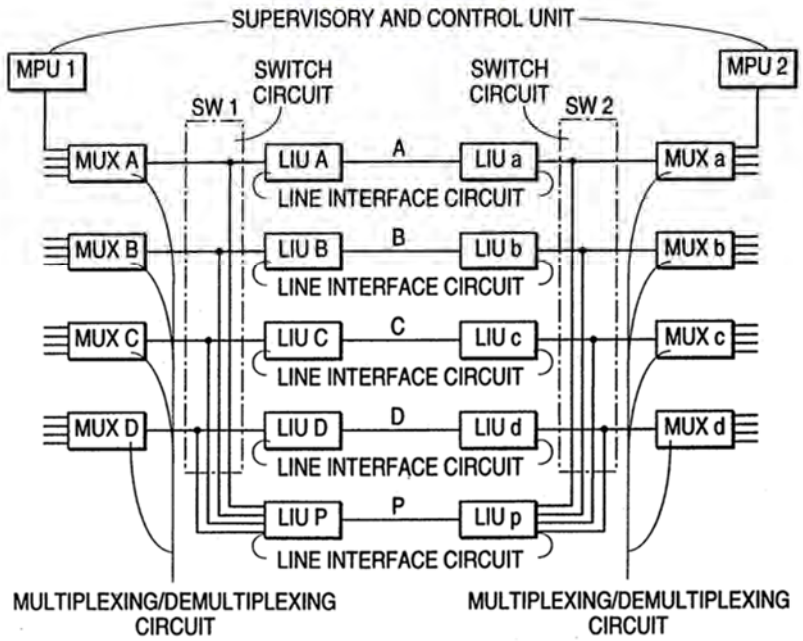
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No.	'904 Patent Claim 9	Vink '324
	exchanged with one or more of the slaves in the daisy chain in which the fault has occurred through another one of the daisy chains.	For example, Vink '324 discloses a transmitting/receiving unit that provides for the switching of the transmission ring or of the communication direction of the data flow across the chain which in the event of a fault at a location in one of the chains, re-routes at least a portion of the data packets exchanged with one or more of the slaves in the chain in which the fault has occurred through another one of the chains. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Czerwiec is found to not meet this limitation, a pre-switch, which in the event of a fault at a location in one of the daisy chains, re-routes at least a portion of the data packets exchanged with one or more of the slaves in the daisy chain in which the fault has occurred through another one of the daisy chains would have been obvious to a person having ordinary skill in the art, as explained below. Vink '324 21:10-16 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly."). Vink '324 21:18-23 ("The transmitting/receiving unit 6 can be constructed in a similar way to that shown in Figure 3. A practical embodiment of the master is achieved with a microprocessor of type MC 68020, manufactured by Motorola, as control computer and with a programmable logical device of the type EPM 5128, manufactured by Altera, as control unit 36.").

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No.	'904 Patent Claim 9	Vink '324
		 Fig. 5 (annotation added) In the alternative, control module 38 serves as the switch and 36 & 6 serves as the pre-switch. Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, Czerwiec in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 9[g] of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of such references. For example, Sugawara '456 discloses multiple daisy chains between two masters where, in the case of a fault, packets are routed through a different chain. Sugawara '456 1:26-45 ("FIG. 1 illustrates a conventional data link protecting system. A through D designate normal lines and P designates a backup line. LIUA through LIUD and LIUa through LIUd denote line interface circuits having functions of communicating with

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No.	'904 Patent Claim 9	Vink '324
		opposed devices, detecting the error rate of received signals, detecting abnormalities in main signals, such as signal interruption, and feeding intermediate repeaters. MUXA through MUXD and MUXa through MUXd designate multiplexing/demultiplexing circuits, and SW1 and SW2 denote switch circuits adapted to switch an abnormal line to the backup line. MPU1 and MPU2 denote supervisory and control units which control their associated devices, supervise the line interface circuits LIUs to switch the switch circuits SW as needed and perform data link communication with opposed devices. Note that the FIG. 1 illustrates only the arrangement for data transmission in one direction. The arrangement for data transmission in the opposite direction is the same as above."). FIG. 1 PRIOR ART  Fig. 1 (annotation added)

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No.	'904 Patent Claim 9	Vink '324
		Sugawara '456 3:24-39 ("When a failure of the line A is detected, the data link communication is switched from the line A to another, for example, the line B. This switching is made as follows. That is, a line failure is usually detected as a failure in reception. When detecting the line failure in terms of error rate by way of example, the line interface circuit LIUa on the receiving side informs the supervisory and control unit MPU2 via MUXa of the detection of the line failure. Upon being informed of the line failure, MPU2 informs MPU1 of the failure of the line A via another line, for example, another line of B directed from MPU2 to MPU1 not shown. Responsive to this, the supervisory and control unit MPU1 switches switch circuit SW1 to connect MPU1 to another line, for example, the line B. Thereby, the data link communication becomes effected over the line B.").

FIG. 2

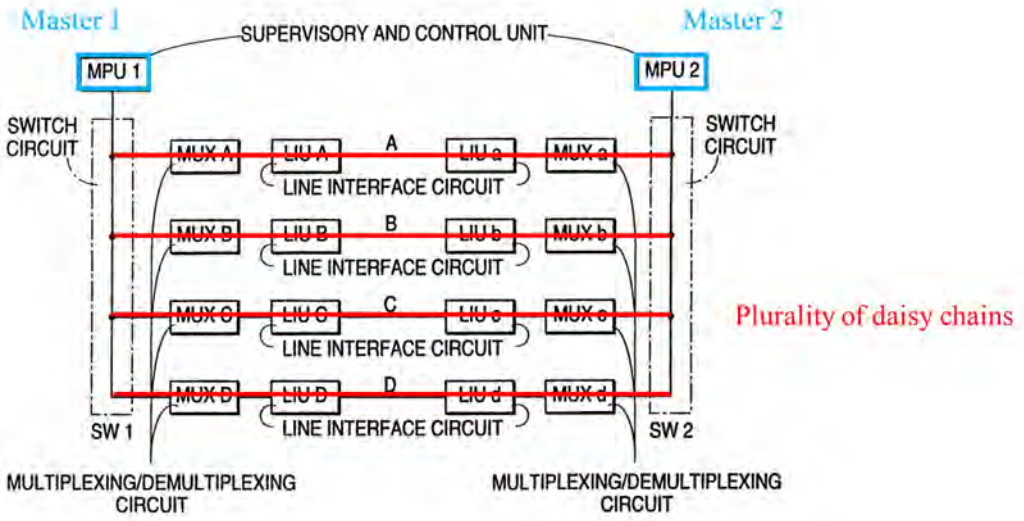


Fig. 2 (annotation added)

For example, Quoc discloses that "because networks tend to constantly change and expand

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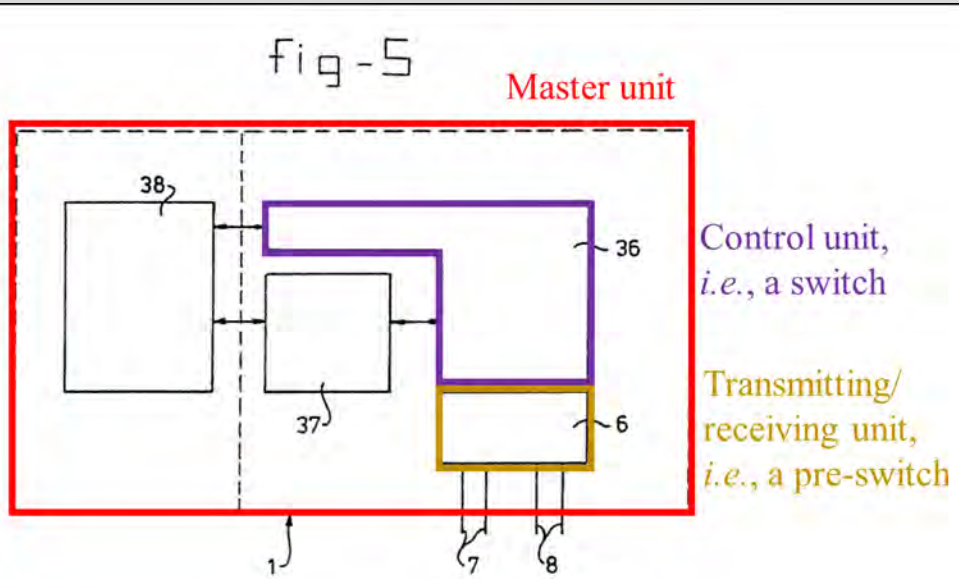
No.	'904 Patent Claim 9	Vink '324
		with network devices being added, it would be highly advantageous if, in addition to the Class II feature of allowing two repeaters in a collision domain, it were also possible that each of the two repeaters were expandable or Stackable. Additional ports could be added to a first repeater Stack that functions as one Class II repeater and then a Second Stack could be included as the Second Class II repeater. Thus, Stackability combined with cascadability would provide even greater flexibility for network expansion." Quoc at 4:32-42. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Quoc discloses "In a preferred embodiment, network management mod ules (NMMs), preferably one for each repeater unit, may be provided in a Single repeater Stack. FIG. 2 shows a repeater stack 200 having four NMMs 202, 204, 206 and 208. The modules 202, 204, 206 and 208 of the repeater stack 200 communicate using a management bus 210. The modules communicate on the management bus210 by Sending Small messages, referred to as "frames." The modules are also connected to a stack bus 220 which provides the main pathway for data transmission between repeaters and other nodes on the network (not shown)." Quoc, 6:19-29.

No.	'904 Patent Claim 10	Vink '324
10	Apparatus according to claim 9, wherein the pre-switch re-routes the data packets such that substantially no reconfiguration of the switch is required responsive to the fault.	Vink '324 discloses apparatus according to claim 9, wherein the pre-switch re-routes the data packets such that substantially no reconfiguration of the switch is required responsive to the fault. For example, Vink '324 discloses a transmitting/receiving unit that changes the direction of the data flow in the case of a fault by switching which transmission ring the packets are being transmitted over. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Disclosed is a transmitting/receiving and control unit which can switch the direction of the data flow.

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No.	'904 Patent Claim 10	Vink '324
		Vink '324 21:10-16 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly."). Vink '324 20:30-21:2 ("The software for controlling the communication system according to the invention is essentially concentrated in the master 1 which comprises, in an exemplary embodiment of the invention as shown in Figure 5, a control unit 36 for controlling the data flow via the transmission system 7, 8, with an associated memory 37 for storing and exchanging information with a control computer 38 which contains the calculations and background information necessary for the process to be controlled via the I/0 modules. Further peripheral equipment, for example a further computer (not shown) for supporting the control computer 38, may be connected to said control computer 38."). Vink '324 17:3-12 ("Figure 3 shows a block diagram of an exemplary embodiment of a portion of a slave 2, 3, 4, 5. Data bits are transported via connections provided with an arrow. The transmitting/receiving unit 6 comprises a multiplexer 12 consisting of two modems 13, 14 which are respectively connected to the first transmission ring 7 and to the second transmission ring 8. For the transmission of the data via the transmission system, signal coding techniques known per se in practice may be used. The operation of the relevant transmission ring 7, 8 can be monitored by means of line error detectors 15.").

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No.	'904 Patent Claim 10	Vink '324
		 Fig. 5 (annotation added) In the alternative, control module 38 serves as the switch and 36 & 6 serves as the pre-switch. Vink '324 16:19-17:2 ("The shift register principle is also of advantage with respect to use, for example for reliability reasons, of a plurality of masters as is illustrated in Figure 2 by the broken lines. In such a multi-master concept, one of the masters is in general active in relation to data exchange, while one or more other masters only have a passive role therein. All the masters are so designed that they can assume the function of the active master, for example in the event of faults. The passive masters are easily able to detect errors of the active master because, as a consequence of their cascade arrangement and the serial transfer of data bits in the communication system according to the invention, they receive all the information which is intended for the active master. Consequently, no separate communication path is required between the various masters to keep the passive masters abreast of the operations, instruction etc. carried out by the active master. Such a "hot stand-by" mode is of importance, in particular, in industrial process measurement and control in which failure or delay in the

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No.	'904 Patent Claim 10	Vink '324
		production process may, inter alia, have serious financial consequences. It is obvious that, in such a multi-master concept, the conditions under which, and the manner in which, the tasks of a master are assumed by another master have to be specified in advance.").

No.	'904 Patent Claim 11	Vink '324
11[preamble]	Network access apparatus, comprising:	Vink '324 discloses a network access apparatus. For example, Vink '324 discloses a communication system for connections between networks, such as LAN or public networks. *See supra* at 1[preamble].
11[a]	first and second master units, each comprising a physical interface to a packet-switched network;	Vink '324 discloses first and second master units, each comprising a physical interface to a packet-switched network. For example, Vink '324 discloses two master units in, for example, a LAN network each comprising a physical interface to a packet-switched network. *See supra* at 1[a].
11[b]	a plurality of slave units,	Vink '324 discloses a plurality of slave units. For example, Vink '324 discloses a plurality of substations. *See supra* at 1[b].
11[c]	each slave unit comprising one or more ports to respective subscriber lines; and	Vink '324 discloses each slave unit comprising one or more ports to respective subscriber lines. For example, Vink '324 discloses that each substation have one or more I/O modules. *See supra* at 1[c].

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No.	'904 Patent Claim 11	Vink '324
11[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	Vink '324 discloses a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. For example, Vink '324 discloses interface lines connected between each master and each substation connected in a cascade or shift register fashion which link the slave units, in which the slave units are mutually connected in series by the interface lines therebetween. Vink '324 further discloses that connections between two stations can be physical connections. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See supra* at 1[d].
11[e]	each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit,	Vink '324 discloses each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit. For example, Vink '324 discloses, due to the nature of the cascade and/or shift register arrangement, that substations and masters are only connection to a single substation or master in the upstream direction, and a single substation or master in the downstream direction. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See supra* at 1[e].
11[f]	wherein each of the slave units comprises: a switch fabric comprising one or more switches, which convey data packets to	Vink '324 discloses each of the slave units comprises: a switch fabric comprising one or more switches, which convey data packets to respective ports on the switch to which the packets are addressed. For example, Vink '324 discloses a transmitting/receiving unit that provides for the switching of the transmission ring or of the communication direction of the data flow.

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No.	'904 Patent Claim 11	Vink '324
	respective ports on the switch to which the packets are addressed; and	Vink '324 21:10-16 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly.").

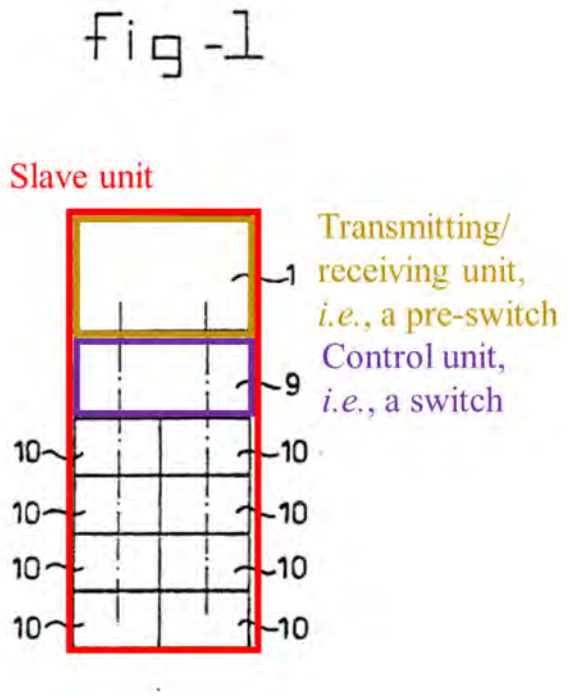
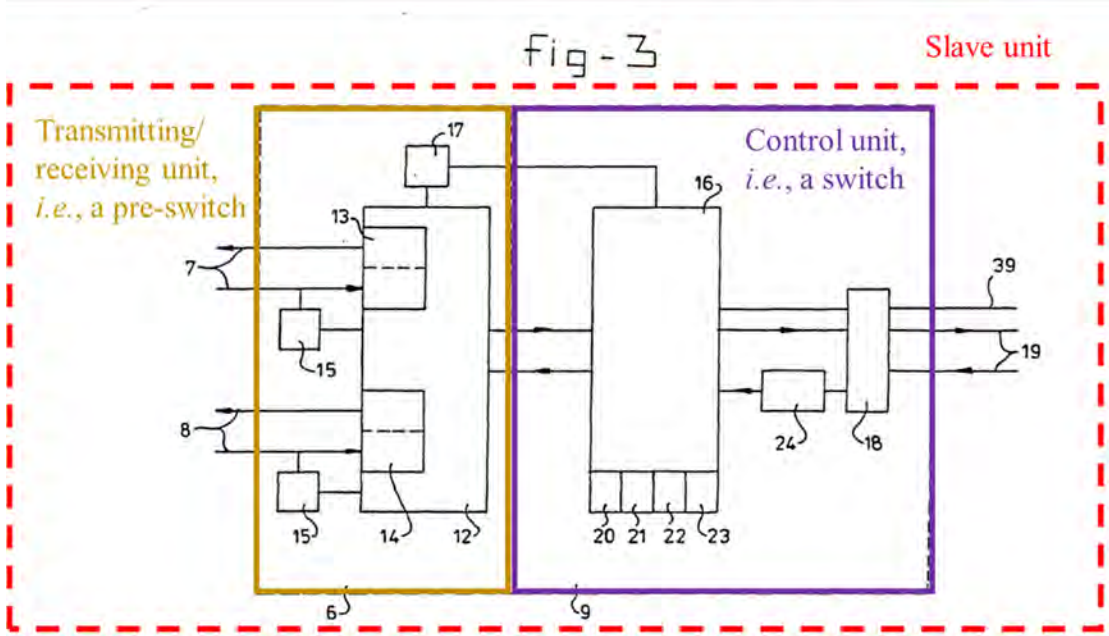


Fig. 1 (annotation added)

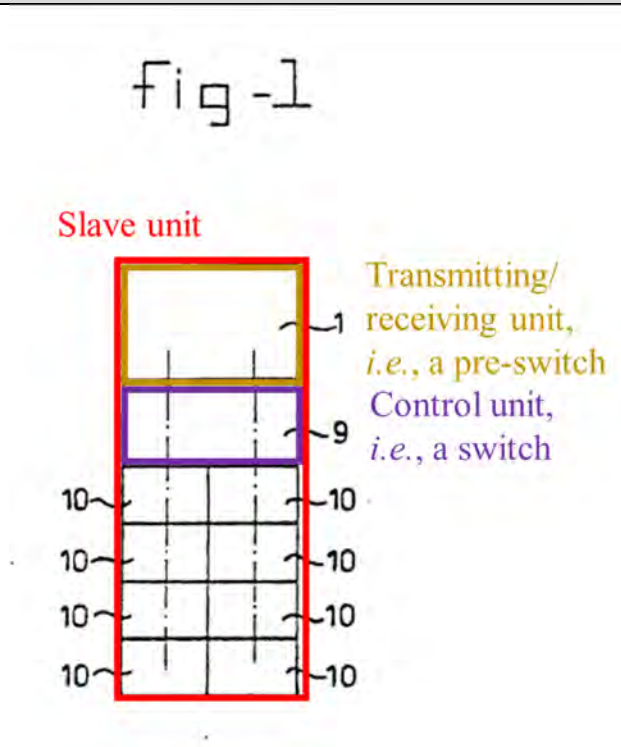
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No.	'904 Patent Claim 11	Vink '324
		 Fig. 3 (annotation added)
11[g]	a pre-switch, which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of	Vink '324 discloses a pre-switch, which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines. For example, Vink '324 discloses a transmitting/receiving unit that routes information across the system, including accepting information received across a transmission or receiving line by a substation and, if the address information of the packet corresponds to the address allocated to the relevant substation, initiating an exchange, and in the absence of address coincidence, not altering the packet information as it passes through the chain which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch

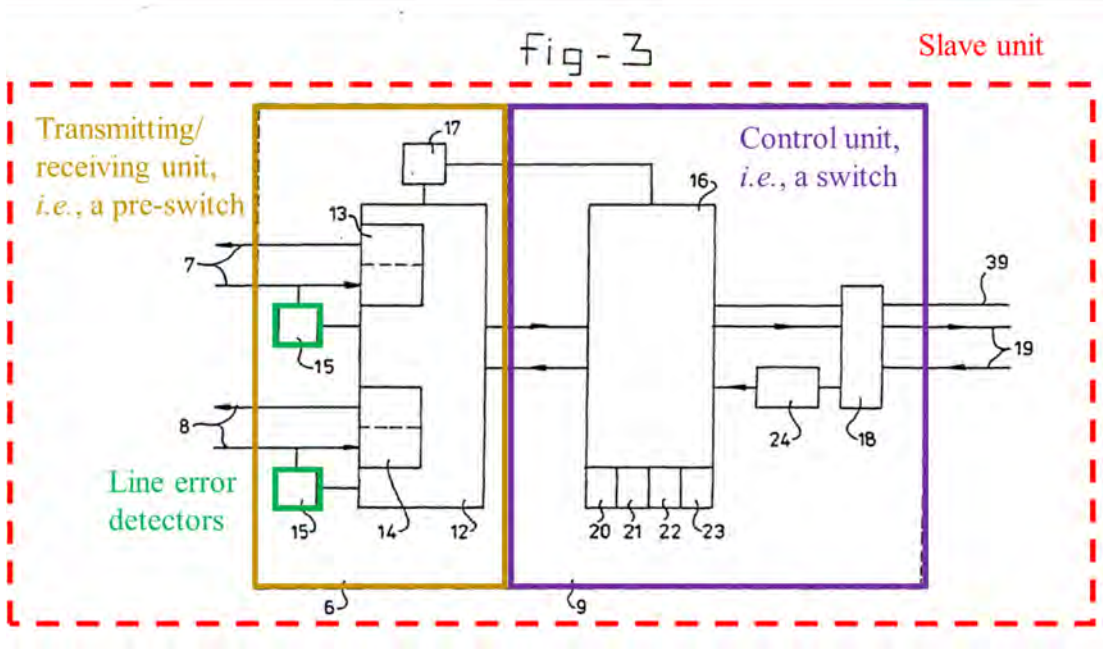
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No.	'904 Patent Claim 11	Vink '324
	the ports on the slave unit for output through another of the physical interface lines.	fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines. Vink '324 Claim 8 ("Communication system according to one or more of Claims 7 to 10 inclusive, wherein a slave (2, 3, 4, 5) is provided with means (15, 18, 23) for monitoring the serial transfer of data bits via the transmission system (7, 8) and/or the local data bus (19)."). Vink '324 3:35-4:10 ("European Patent Application 0,253,381 discloses a communication system in which the data bits are transferred serially up to I/O level. In this process, address information is added to the data bits intended for a particular substation. Information received by a-substation and transmitted under the control of a master station is investigated for address coincidence. In the case of a positive result, that is to say, when the address information added to a group of data bits corresponds to the address allocated to the relevant substation, exchange is initiated. In this process, the data bits intended for a substation are replaced in the same format by data bits originating from the relevant substation and intended for the master station. In the absence of address coincidence, the information concerned is not altered.").

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No.	'904 Patent Claim 11	Vink '324
		 Fig. 1 (annotation added) Vink '324 17:3-12 "Figure 3 shows a block diagram of an exemplary embodiment of a portion of a slave 2, 3, 4, 5. Data bits are transported via connections provided with an arrow. The transmitting/receiving unit 6 comprises a multiplexer 12 consisting of two moderns 13, 14 which are respectively connected to the first transmission ring 7 and to the second transmission ring 8. For the transmission of the data via the transmission system, signal coding techniques known per se in practice may be used. The operation of the relevant transmission ring 7, 8 can be monitored by means of line error detectors 15.").

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No.	'904 Patent Claim 11	Vink '324
		 Fig. 3 (annotation added) Vink '324 17:38-18:13 ("As already discussed in the introduction, every slave can be provided with an unambiguous address and the addressing of the separate I/0 modules 10 can take place on the bases of their sequence in the cascade arrangement. Consequently, a unit 20 which is capable of decoding the address of a slave, a unit 21 which is capable of detecting information about the number of data bits for a relevant slave and, if necessary, a unit 22 which is capable of reading out information about the type coding of the I/O modules connected to the local data bus, for example a module having only an input side or a module having only an output side, are provided. A further unit 23 is provided for a content check of the data bits received, for example on the basis of error detection techniques known per se. The relevant units 20, 21, 22, 23 are all connected to the unit 16 or form part thereof.").

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No.	'904 Patent Claim 12	Vink '324
12	Apparatus according to claim 11, wherein each of the slave units is coupled to receive packets transferred thereto from the first and second master units over first and second ones of the physical interface lines, respectively, and wherein the pre-switch passes the packets received through the first and second physical interface line and addressed to any of the ports on the slave unit to respective first and second addresses in the switch fabric.	Vink '324 discloses apparatus according to claim 11, wherein each of the slave units is coupled to receive packets transferred thereto from the first and second master units over first and second ones of the physical interface lines, respectively, and wherein the pre-switch passes the packets received through the first and second physical interface line and addressed to any of the ports on the slave unit to respective first and second addresses in the switch fabric. For example, Vink '324 discloses that each of the slave units is connected to transmit packets via physical lines (*e.g.*, coaxial cable) in a cascade to other slave units and/or a master unit. Vink '324 further discloses a transmitting/receiving unit that provides for the switching of the transmission ring where, if the address information of the packet corresponds to the address allocated to the relevant substation, initiating an exchange, and in the absence of address coincidence, not altering the packet information as it passes through the chain. *See also supra* at 11[f]. Vink '324 21:10-16 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly."). Vink '324 21:18-23 ("The transmitting/receiving unit 6 can be constructed in a similar way to that shown in Figure 3. A practical embodiment of the master is achieved with a microprocessor of type MC 68020, manufactured by Motorola, as control computer and with a programmable logical device of the type EPM 5128, manufactured by Altera, as control unit 36."). Vink '324 3:35-4:10 ("European Patent Application 0,253,381 discloses a communication system in which the data bits are transferred serially up to I/O level. In this process, address information is added to the data bits intended for a particular substation. Information received

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No.	'904 Patent Claim 12	Vink '324
		by a-substation and transmitted under the control of a master station is investigated for address coincidence. In the case of a positive result, that is to say, when the address information added to a group of data bits corresponds to the address allocated to the relevant substation, exchange is initiated. In this process, the data bits intended for a substation are replaced in the same format by data bits originating from the relevant substation and intended for the master station. In the absence of address coincidence, the information concerned is not altered.").

No.	'904 Patent Claim 13	Vink '324
13	Apparatus according to claim 12, wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second addresses are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required.	Vink '324 discloses apparatus according to claim 12, wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second addresses are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required. For example, Vink '324 discloses directing the packet to a different transmission ring in one and/or the other direction so that substantially no reconfiguration of the switch fabric is required. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Vink '324 Claim 14 ("Communication system according to Claim 13, wherein the at least one master (1) and the slaves (2, 3, 4, 5) are arranged to transmit or receive data bits via a transmission ring (7, 8) in one and/or the other direction."). Vink '324 21:3-9 ("The transmitting/receiving unit 6 provides for the monitoring of the transmission and the control computer 38 provides for and monitors the correct sequence of the data bits for a relevant slave, related to the sequence in which the I/O modules are arranged. The information about this sequence is extracted by the control unit 36 from the status information received from the relevant slaves. In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about whether the connection to the transmission system is or is not operating correctly.").

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No.	'904 Patent Claim 14	Vink '324
14[preamble]	In a network access multiplexing system,	Vink '324 discloses a network access multiplexing system. For example, Vink '324 discloses a communication system comprising a multiplexer in each slave and master system. Vink '324 1:6-15 ("The invention relates to a method and a communication system for exchanging data in discrete or digital form with one or more input (I) and/or output (0) modules, by means of serial transfer of data bits. under the control of at least one master station (master). Communication systems of this type are in practice known per se. Examples are the so-called 'Local Area Networks' (LAN's) in, inter alia, office, factory, hospital and production environments. The physical transmission medium is usually coaxial or optical fibre cable."). Vink '324 17:3-12 ("Figure 3 shows a block diagram of an exemplary embodiment of a portion of a slave 2, 3, 4, 5. Data bits are transported via connections provided with an arrow. The transmitting/receiving unit 6 comprises a multiplexer 12 consisting of two modems 13, 14 which are respectively connected to the first transmission ring 7 and to the second transmission ring 8. For the transmission of the data via the transmission system, signal coding techniques known per se in practice may be used. The operation of the relevant transmission ring 7, 8 can be monitored by means of line error detectors 15."). Vink '324 17:13-21 ("After demodulation by one of the modems 13, 14, the data received are fed to the control module 9 connected to the multiplexer 12 which, in the exemplary embodiment shown, is arranged to exchange information with the master in accordance with the known Synchronous Data Link Control (SDLC) protocol. Any other suitable protocol can be used instead of the SDLC protocol. The unit in the control module which caters for the exchange of the information in the chosen protocol is indicated by the reference numeral 16."). Vink '324 17:22-29 ("With the aid of time control means 17 connected to the multiplexer 12 and unit 16, the time control information required for the control module 9 is derived from the transmission of the data bits via the transmission system 7, 8. This achieves the

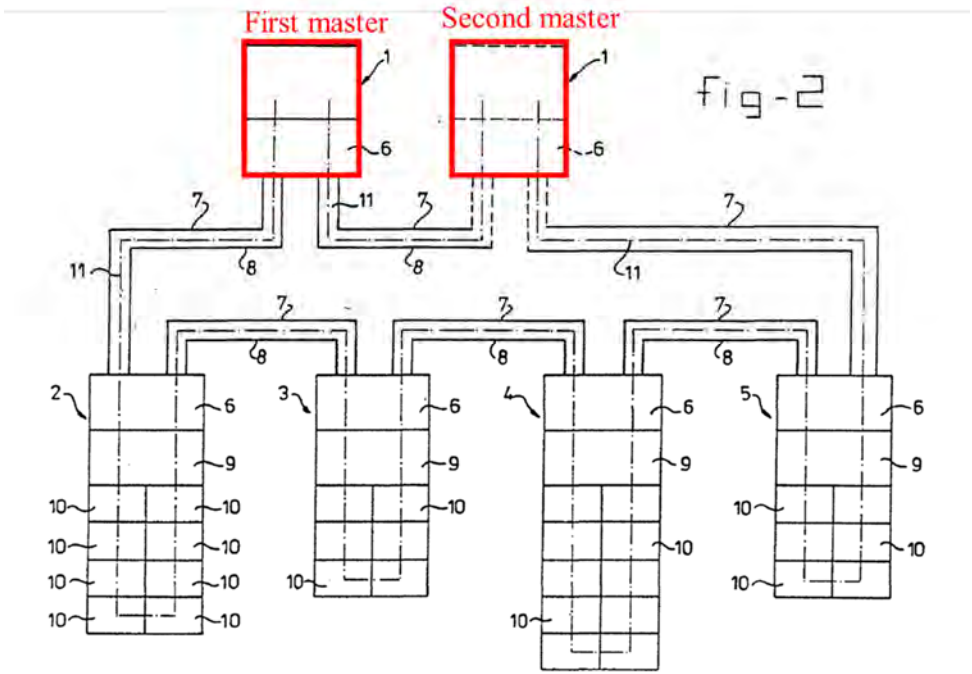
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No.	'904 Patent Claim 14	Vink '324
		result that the transfer of the data bits by the slave or the I/O modules can take place in synchronism with the transmission of the data bits via the transmission system 7, 8. All these features result in a transparent communication structure. Driver and monitoring means 18 are furthermore connected to unit 16 to control and monitor the operation of a local data bus 19 for serial bit transfer. The respective I/O modules 10 are connected in cascade to a said local data bus 19 (not shown in Figure 3). A control line 39 is provided for controlling the I/O modules 10. Control information received is transmitted via said control line 39 to the I/O modules 10 to present them at their output side and/or record data bits at their input side."). Vink '324 18:14-22 ("Status data relating to whether an I/O module is connected or not are collected in a unit 24 which also receives information about the operation of the multiplexer 12, the transmission ring 7, 8 in service and information about the power supply and the correct operation of the local data bus of the relevant slave. Said status information is transmitted to the master 1 via the unit 16. On the basis of this it is possible to correct the data flow for a respective slave or to generate information about the operational state of the slave.").
14[a]	in which a master unit is connected by a physical interface to a packet-switched network,	Vink '324 discloses in which a master unit is connected by a physical interface to a packet-switched network. For example, Vink '324 discloses a master unit in, for example, a LAN network, connected by a physical line such as a coaxial cable. Vink '324 1:16-23 ("The information is primarily transferred in digital form and can vary from text and speech data to control and measurement data. For long-distance connections, public networks equipped with cables or radio links are, inter alia, available. LAN communication systems are, in principle, designed for communicatively coupling two or more connected stations together as required, whereas public networks primarily have the task of providing point-to-point connections between two stations.").

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No.	'904 Patent Claim 14	Vink '324
		Vink '324 1:24-34 ("LAN topologies generally used in practice are star, bus, ring and tree configurations in which the data bits are transferred serially to the connected stations. Generally in packet form, that is to say a particular station cannot transmit uninterrupted information but only packets containing a measured information content. A large variety of protocols, such as CSMA/CD 'token passing,' Aloha etc., have been developed for controlling the communication. For further details, reference is made to the special issue entitled "Architectures of Local Area Networks (LAN's)" in IEEE Communication Magazine, vol. 22, no. 8, August 1984."). Vink '324 14:28-34 ("A very flexible system is obtained in an embodiment of the invention in that the at least one master and slaves are designed to transmit or receive packets of data bits via a transmission system ring in one and/or the other direction. Master and/or slaves constructed in this way are capable of functioning as a switching centre so that, for example, the master is able to reach as many connected slaves as possible in a fault situation."). Vink '324 15:28-35 ("Figure 2 shows diagrammatically the architecture of a more extensive communication system according to the invention, comprising a master station (master) 1 and a plurality of substations (slaves) 2, 3, 4, 5. The master 1 and the slaves 2, 3, 4, 5 are mutually connected via a double-ring transmission system composed of transmitting/ receiving units 6 and transmission lines 7, 8. The transmission lines 7, 8 may, for example, consist of coaxial cable, optical fibre cable and the like.").

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No.	'904 Patent Claim 14	Vink '324
		 Fig. 2 (annotation added) Vink '324 16:19-17:2 ("The shift register principle is also of advantage with respect to use, for example for reliability reasons, of a plurality of masters as is illustrated in Figure 2 by the broken lines. In such a multi-master concept, one of the masters is in general active in relation to data exchange, while one or more other masters only have a passive role therein. All the masters are so designed that they can assume the function of the active master, for example in the event of faults. The passive masters are easily able to detect errors of the active master because, as a consequence of their cascade arrangement and the serial transfer of data bits in the communication system according to the invention, they receive all the information which is intended for the active master. Consequently, no separate communication path is required between the various masters to keep the passive masters abreast of the operations, instruction etc. carried out by the active master. Such a "hot stand-by" mode is of importance, in

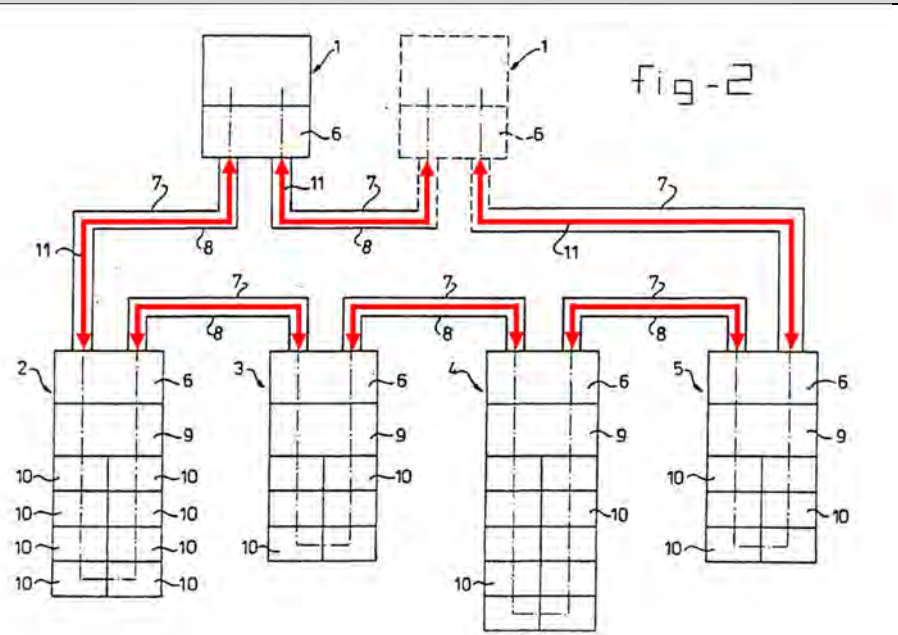
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No.	'904 Patent Claim 14	Vink '324
		particular, in industrial process measurement and control in which failure or delay in the production process may, inter alia, have serious financial consequences. It is obvious that, in such a multi-master concept, the conditions under which, and the manner in which, the tasks of a master are assumed by another master have to be specified in advance."). Vink '324 15:28-35 ("Figure 2 shows diagrammatically the architecture of a more extensive communication system according to the invention, comprising a master station (master) 1 and a plurality of substations (slaves) 2, 3, 4, 5. The master 1 and the slaves 2, 3, 4, 5 are mutually connected via a double-ring transmission system composed of transmitting/ receiving units 6 and transmission lines 7, 8. The transmission lines 7, 8 may, for example, consist of coaxial cable, optical fibre cable and the like.").
14[b]	a slave unit configured to be coupled to the master unit in a daisy chain of such slave units, the slave unit comprising:	Vink '324 discloses a slave unit configured to be coupled to the master unit in a daisy chain of such slave units. For example, Vink '324 discloses interface lines connected between each master and each substation connected in a cascade or shift register fashion. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Vink '324 15:28-35 ("Figure 2 shows diagrammatically the architecture of a more extensive communication system according to the invention, comprising a master station (master) 1 and a plurality of substations (slaves) 2, 3, 4, 5. The master 1 and the slaves 2, 3, 4, 5 are mutually connected via a double-ring transmission system composed of transmitting/ receiving units 6 and transmission lines 7, 8. The transmission lines 7, 8 may, for example, consist of coaxial cable, optical fibre cable and the like."). Vink '324 Claim 2 ("Method according to Claim 1, wherein a plurality of I/0 modules (10) are connected in cascade to one or more substations (slaves) (2, 3, 4, 5), which substations (2, 3, 4, 5) are connected to the at least one master (1) in cascade via a transmission system (7, 8) for serial bit transfer, characterised by under the control of the at least one master (1): - supplying the data bits for the I/0 modules (10) to the slaves (2, 3, 4, 5) via the transmission system (7, 8), the sequence of the data bits also corresponding to the sequence of the connected slaves (2, 3, 4, 5);

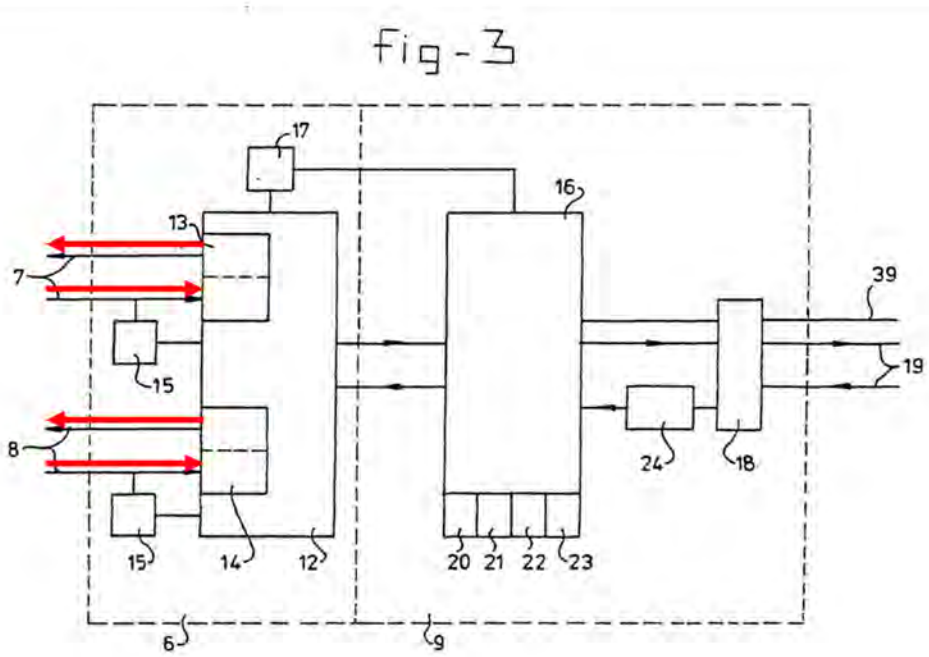
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No.	'904 Patent Claim 14	Vink '324
		- receiving from the slaves (2, 3, 4, 5) via the transmission system (7, 8) the data bits originating from the I/0 modules (10), the sequence of the data bits received also corresponding to the sequence of the connected slaves (2, 3, 4, 5) ; - supplying control information to the slaves (2, 3, 4, 5) via the transmission system (7, 8); and - presenting and/or recording data bits of the I/0 modules (10) connected to a respective the relevant slave (2, 3, 4, 5) under the influence of the control information received, controlled by the slaves (2, 3, 4, 5)."). Vink '324 16:11-18 ("As a result, the whole again has a structure corresponding to a shift register, every I/O module being implicitly addressed, as in the system according to Figure 1, by its position in the chain. Although a double-ring transmission system is shown, it will be clear that it is possible to work with either a single-ring transmission system or with a transmission system containing more than two rings. Of course, more or fewer slaves can be used and the number of I/O modules per slave can be greater or smaller."). Vink '324 10:6-12 ("The communication system according to the invention is essentially comparable to a shift register system, i.e. one single shift register or shift register systems separated for input and output, and has the intended deterministic nature. Both during and between the output and the input phase there is a defined simultaneity relationship in the response of the separate I/O modules."). Vink '324 10:23-30 ("A further advantage of the shift register system structure is that the sequence and the number of the data bits in the system can correspond directly to the sequence and the number of data bits of the I/O modules thereof. The addition, to the data bits to be exchanged, of address information relating to the I/O modules is therefore not a requirement in this connection. This has a favourable effect on the effective speed at which the information can be exchanged.").

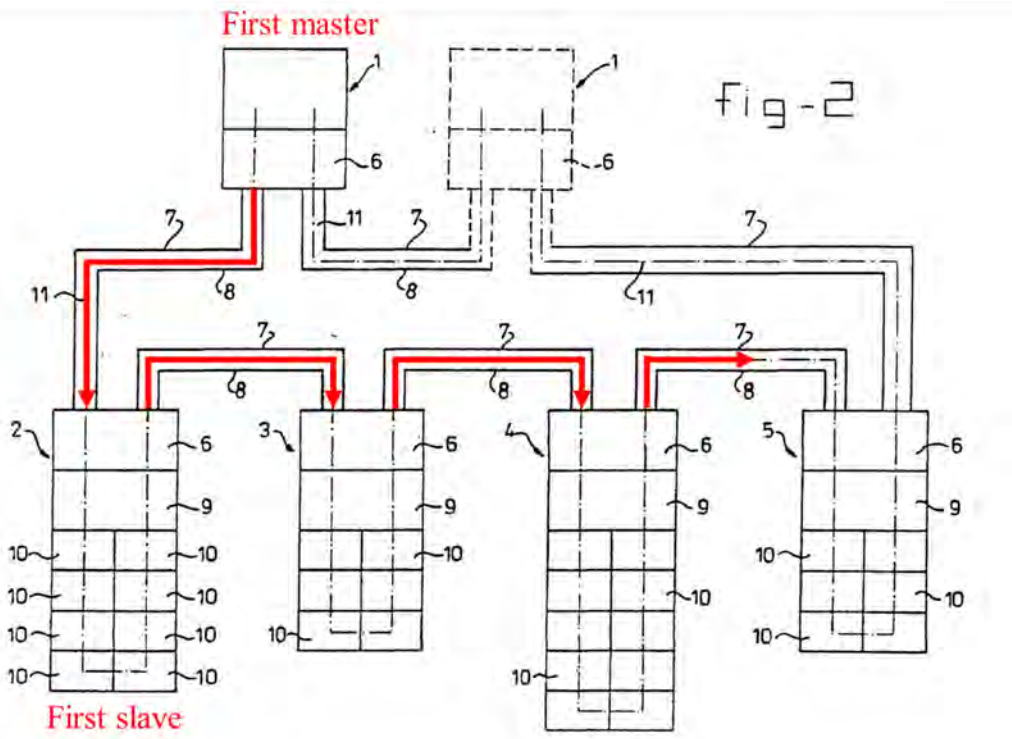
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No.	'904 Patent Claim 14	Vink '324
		 Fig. 2 (annotation added) Vink '324 17:3-12 ("Figure 3 shows a block diagram of an exemplary embodiment of a portion of a slave 2, 3, 4, 5. Data bits are transported via connections provided with an arrow. The transmitting/receiving unit 6 comprises a multiplexer 12 consisting of two modems 13, 14 which are respectively connected to the first transmission ring 7 and to the second transmission ring 8. For the transmission of the data via the transmission system, signal coding techniques known per se in practice may be used. The operation of the relevant transmission ring 7, 8 can be monitored by means of line error detectors 15.").

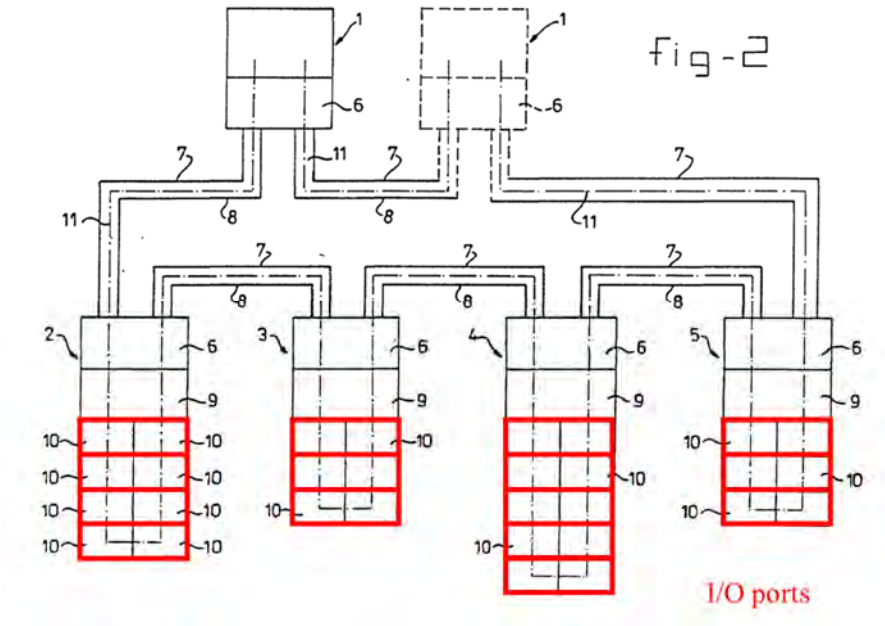
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No.	'904 Patent Claim 14	Vink '324
		 Fig. 3 (annotation added) Vink '324 1:16-23 ("The information is primarily transferred in digital form and can vary from text and speech data to control and measurement data. For long-distance connections, public networks equipped with cables or radio links are, inter alia, available. LAN communication systems are, in principle, designed for communicatively coupling two or more connected stations together as required, whereas public networks primarily have the task of providing point-to-point connections between two stations.").

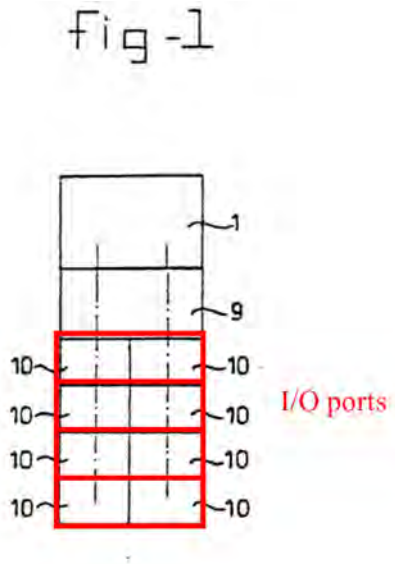
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No.	'904 Patent Claim 14	Vink '324
		 Fig. 2 (annotation added)
14[c]	a plurality of ports, for coupling the slave unit to respective subscriber lines;	Vink '324 discloses that each slave unit has a plurality of ports, for coupling the slave unit to respective subscriber lines. For example, Vink '324 discloses that each substation have one or more I/O modules. Vink '324 15:36-16:4 ("Each slave 2, 3, 4, 5 comprises a control module 9 which is connected to the associated transmitting/receiving unit 6 and to which one or more input (I) and/or output (0) module(s) are connected. The number of I/0 modules 10 to be connected to a control

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No.	'904 Patent Claim 14	Vink '324
		module may vary from slave to slave depending on its function, for example controlling a measurement and control process.").  Fig. 2 (annotation added) Vink '324 21:3-9 ("The transmitting/receiving unit 6 provides for the monitoring of the transmission and the control computer 38 provides for and monitors the correct sequence of the data bits for a relevant slave, related to the sequence in which the I/0 modules are arranged. The information about this sequence is extracted by the control unit 36 from the status information received from the relevant slaves."). Vink '324 4:32-34 ("Extension of a substation by means of a plurality of I/O points has a direct effect on the response time of the subsequent substations.").

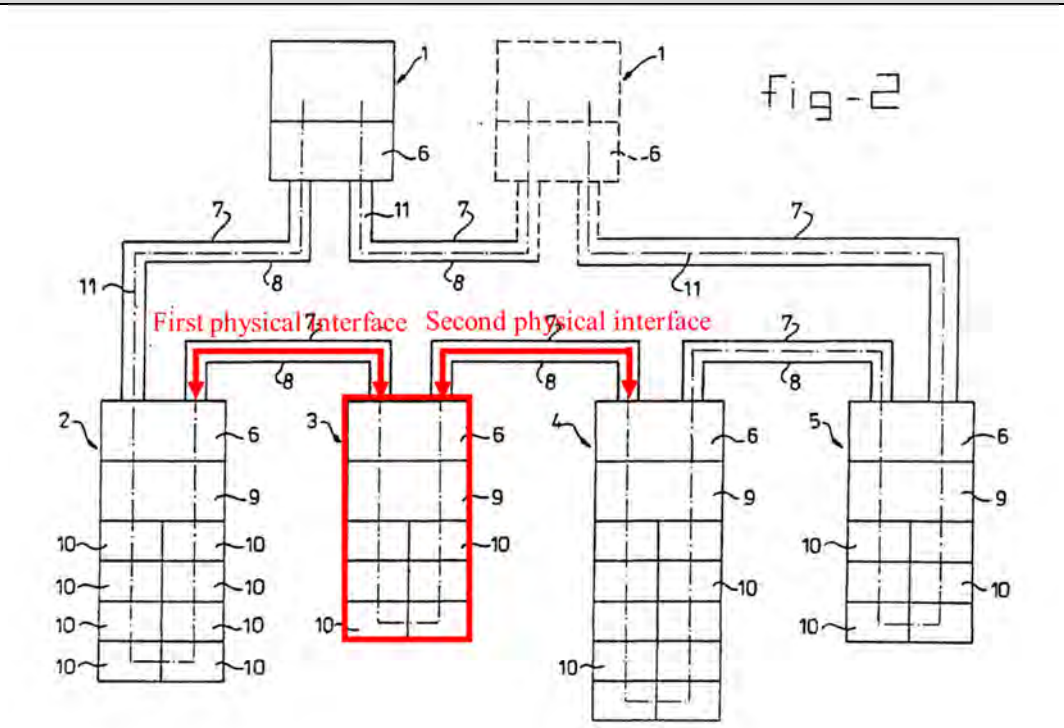
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No.	'904 Patent Claim 14	Vink '324
		Vink '324 17:30-37 ("Driver and monitoring means 18 are furthermore connected to unit 16 to control and monitor the operation of a local data bus 19 for serial bit transfer. The respective I/0 modules 10 are connected in cascade to a said local data bus 19 (not shown in Figure 3). A control line 39 is provided for controlling the I/0 35 modules 10. Control information received is transmitted via said control line 39 to the I/0 modules 10 to present them at their output side and/or record data bits at their input side.").  Fig. 1 (annotation added)
14[d]	first and second physical interfaces, coupled to exchange packets with preceding and succeeding units, respectively, along the daisy chain;	Vink '324 discloses first and second physical interfaces, coupled to exchange packets with preceding and succeeding units, respectively, along the daisy chain. For example, Vink '324 discloses physical lines, such as coaxial cable, on either side of each slave or master, serving as either a transmission line or a receiving line to each slave or master that is next in line along the chain. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

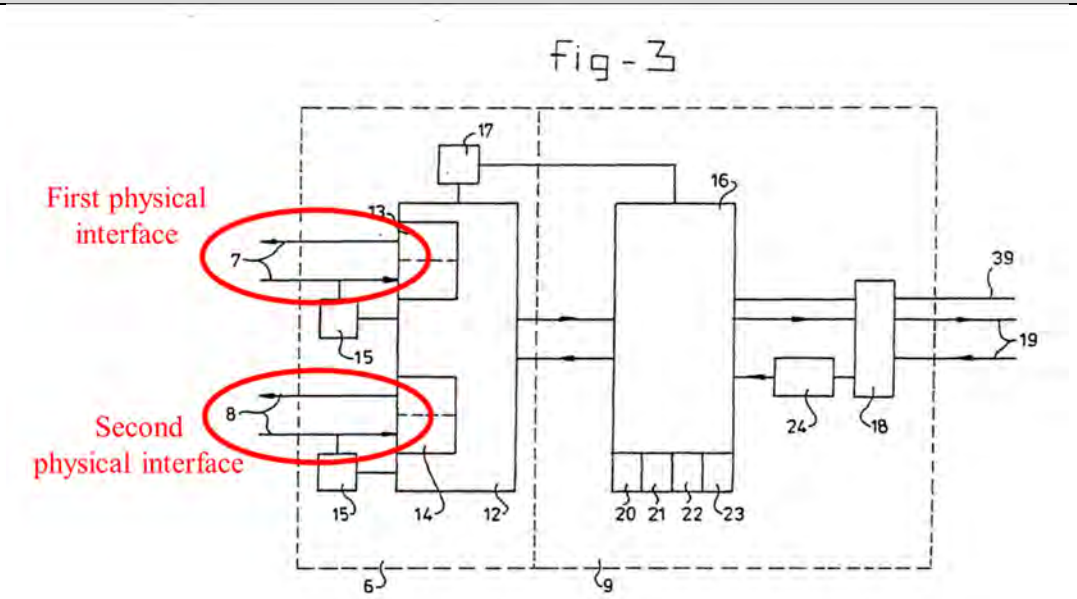
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No.	'904 Patent Claim 14	Vink '324
		Vink '324 15:28-35 ("Figure 2 shows diagrammatically the architecture of a more extensive communication system according to the invention, comprising a master station (master) 1 and a plurality of substations (slaves) 2, 3, 4, 5. The master 1 and the slaves 2, 3, 4, 5 are mutually connected via a double-ring transmission system composed of transmitting/ receiving units 6 and transmission lines 7, 8. The transmission lines 7, 8 may, for example, consist of coaxial cable, optical fibre cable and the like."). Vink '324 15:36-16:4 ("Each slave 2, 3, 4, 5 comprises a control module 9 which is connected to the associated transmitting/receiving unit 6 and to which one or more input (I) and/or output (0) module(s) are connected. The number of I/O modules 10 to be connected to a control module may vary from slave to slave depending on its function, for example controlling a measurement and control process. The I/O modules are arranged in cascade for each slave and in this way form, seen in abstraction, a continuation of the transmission system. A dash-dot line 11 diagrammatically shows the data flow in the communication system. The data bits are serially transferred both in the transmission system 7, 8 and to the level of the I/O modules 10.").

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No.	'904 Patent Claim 14	Vink '324
		 Fig. 2 (annotation added).

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No.	'904 Patent Claim 14	Vink '324
		 Fig. 3 (annotation added).
14[e]	a pre-switch, coupled to receive packets from the first physical interface and responsive to address data carried by the packets, to sort the packets such that packets addressed to the slave unit are retained, and packets addressed to the succeeding units are	Vink '324 discloses a pre-switch, coupled to receive packets from the first physical interface and responsive to address data carried by the packets, to sort the packets such that packets addressed to the slave unit are retained, and packets addressed to the succeeding units are passed to the second physical interface. For example, Vink '324 discloses a transmission/receiving unit that receives packets from the receiving line that when received by a substation, if there is address coincidence, exchange is initiated, and in the absence of address coincidence, the information is not altered and is passed along. Vink '324 Claim 8 ("Communication system according to one or more of Claims 7 to 10 inclusive, wherein a slave (2, 3, 4, 5) is provided with means(15, 18, 23) for monitoring the serial transfer of data bits via the transmission system (7, 8) and/or the local data bus (19)..").

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No.	'904 Patent Claim 14	Vink '324
	passed to the second physical interface; and	Vink '324 3:35-4:10 ("European Patent Application 0,253,381 discloses a communication system in which the data bits are transferred serially up to I/O level. In this process, address information is added to the data bits intended for a particular substation. Information received by a-substation and transmitted under the control of a master station is investigated for address coincidence. In the case of a positive result, that is to say, when the address information added to a group of data bits corresponds to the address allocated to the relevant substation, exchange is initiated. In this process, the data bits intended for a substation are replaced in the same format by data bits originating from the relevant substation and intended for the master station. In the absence of address coincidence, the information concerned is not altered.").

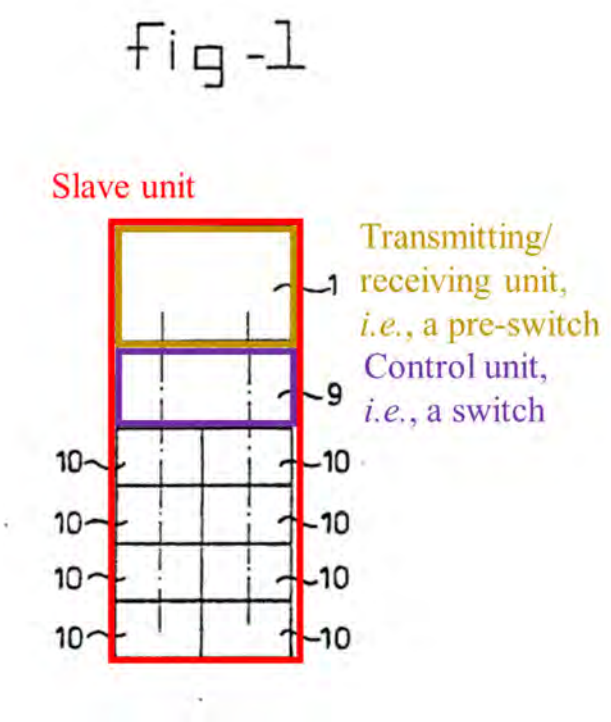


Fig. 1 (annotation added)

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No.	'904 Patent Claim 14	Vink '324
		Vink '324 17:3-12 ("Figure 3 shows a block diagram of an exemplary embodiment of a portion of a slave 2, 3, 4, 5. Data bits are transported via connections provided with an arrow. The transmitting/receiving unit 6 comprises a multiplexer 12 consisting of two moderns 13, 14 which are respectively connected to the first transmission ring 7 and to the second transmission ring 8. For the transmission of the data via the transmission system, signal coding techniques known per se in practice may be used. The operation of the relevant transmission ring 7, 8 can be monitored by means of line error detectors 15.").

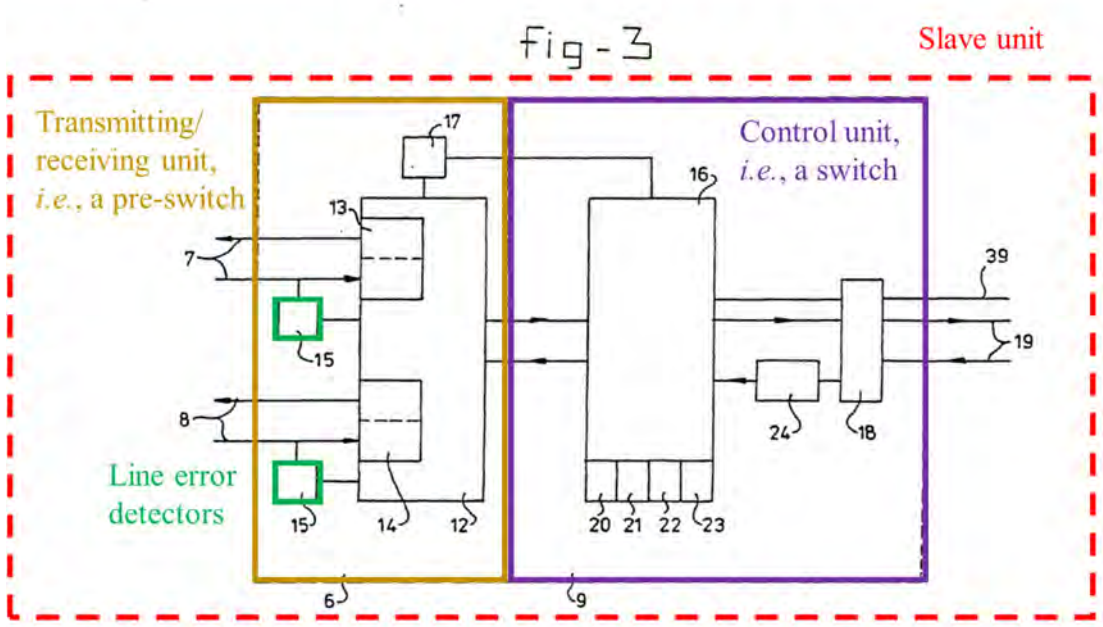


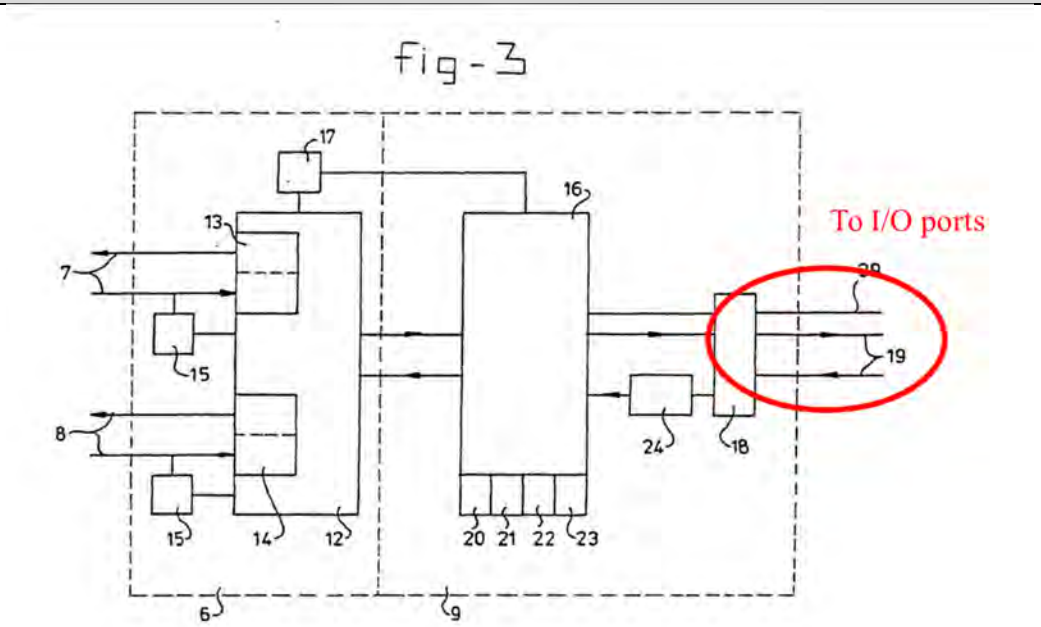
Fig. 3 (annotation added)

Vink '324 17:38-18:13 ("As already discussed in the introduction, every slave can be provided with an unambiguous address and the addressing of the separate I/0 modules 10 can take place on the bases of their sequence in the cascade arrangement. Consequently, a unit 20

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No.	'904 Patent Claim 14	Vink '324
		which is capable of decoding the address of a slave, a unit 21 which is capable of detecting information about the number of data bits for a relevant slave and, if necessary, a unit 22 which is capable of reading out information about the type coding of the I/O modules connected to the local data bus, for example a module having only an input side or a module having only an output side, are provided. A further unit 23 is provided for a content check of the data bits received, for example on the basis of error detection techniques known per se. The relevant units 20, 21, 22, 23 are all connected to the unit 16 or form part thereof."). Vink '324 discloses a fabric of one or more switches, which convey the retained packets to the ports, responsive to the address data. For example, Vink '324 discloses a transmission system that monitors serial transmission of data packets to addressable substations. Vink '324 Claim 8 ("Communication system according to one or more of Claims 7 to 10 inclusive, wherein a slave (2, 3, 4, 5) is provided with means(15, 18, 23) for monitoring the serial transfer of data bits via the transmission system (7, 8) and/or the local data bus (19)."). Vink '324 3:35-4:10 ("European Patent Application 0,253,381 discloses a communication system in which the data bits are transferred serially up to I/O level. In this process, address information is added to the data bits intended for a particular substation. Information received by a-substation and transmitted under the control of a master station is investigated for address coincidence. In the case of a positive result, that is to say, when the address information added to a group of data bits corresponds to the address allocated to the relevant substation, exchange is initiated. In this process, the data bits intended for a substation are replaced in the same format by data bits originating from the relevant substation and intended for the master station. In the absence of address coincidence, the information concerned is not altered.")
14[f]	a fabric of one or more switches, which convey the retained packets to the ports, responsive to the address data.	

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No.	'904 Patent Claim 14	Vink '324
		 Fig. 3 (annotation added)

No.	'904 Patent Claim 15	Vink '324
15	The slave unit according to claim 14, wherein the pre-switch is further coupled to receive packets transferred thereto from the second physical interface and to sort the packets in like manner to the packets received	Vink '324 discloses the slave unit according to claim 14, wherein the pre-switch is further coupled to receive packets transferred thereto from the second physical interface and to sort the packets in like manner to the packets received through the first physical interface. For example, Vink '324 discloses the capability to receive and transmit packets from both interface lines on either side of the slave, and once received by the slave in either direction, is analyzed for address coincidence by the transmitting/receiving unit. Vink '324 21:10-16 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the

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No.	'904 Patent Claim 15	Vink '324
	through the first physical interface.	data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly.").

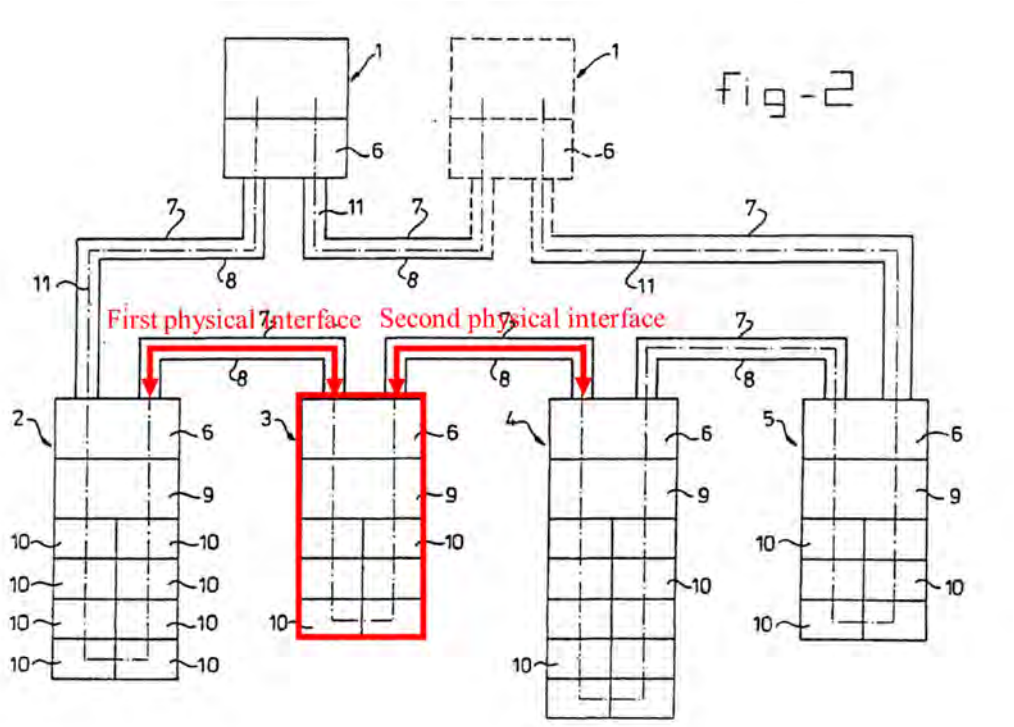
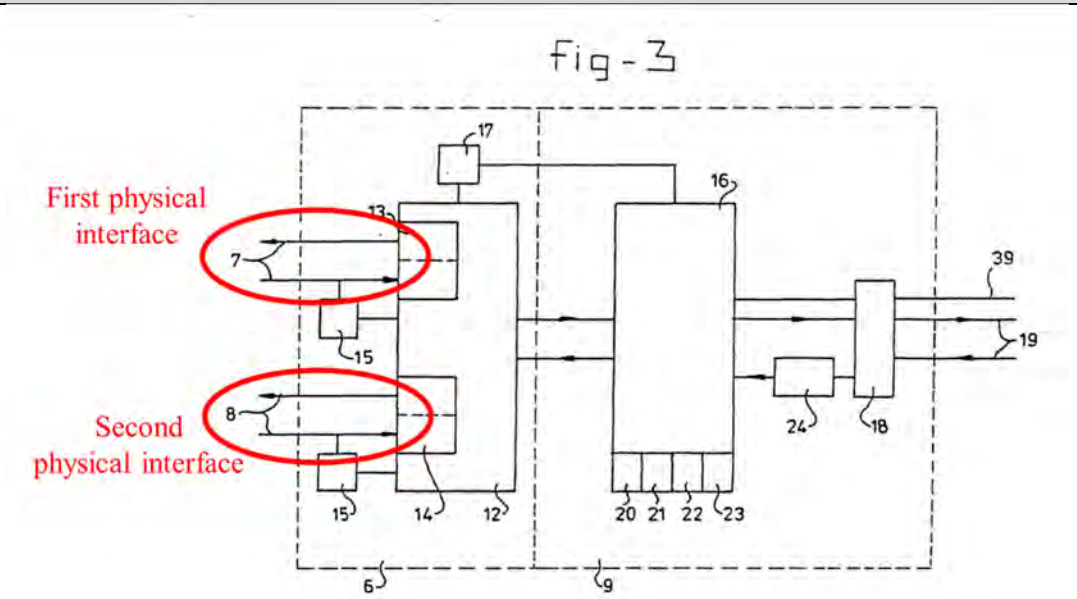


Fig. 2 (annotation added)

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No.	'904 Patent Claim 15	Vink '324
		 Fig. 3 (annotation added) Vink '324 3:35-4:10 ("European Patent Application 0,253,381 discloses a communication system in which the data bits are transferred serially up to I/O level. In this process, address information is added to the data bits intended for a particular substation. Information received by a-substation and transmitted under the control of a master station is investigated for address coincidence. In the case of a positive result, that is to say, when the address information added to a group of data bits corresponds to the address allocated to the relevant substation, exchange is initiated. In this process, the data bits intended for a substation are replaced in the same format by data bits originating from the relevant substation and intended for the master station. In the absence of address coincidence, the information concerned is not altered.").

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No.	'904 Patent Claim 16	Vink '324
16[a]	The slave unit according to claim 15, wherein the retained packets that were received from the first and second physical interfaces and are passed by the pre-switch to the switch fabric are identified by respective first and second port numbers,	Vink '324 discloses the slave unit according to claim 15, wherein the retained packets that were received from the first and second physical interfaces and are passed by the pre-switch to the switch fabric are identified by respective first and second port numbers. For example, Vink '324 discloses at 17:38-18:13: "As already discussed in the introduction, every slave can be provided with an unambiguous address and the addressing of the separate I/0 modules 10 can take place on the bases of their sequence in the cascade arrangement. Consequently, a unit 20 which is capable of decoding the address of a slave, a unit 21 which is capable of detecting information about the number of data bits for a relevant slave and, if necessary, a unit 22 which is capable of reading out information about the type coding of the I/O modules connected to the local data bus, for example a module having only an input side or a module having only an output side, are provided. A further unit 23 is provided for a content check of the data bits received, for example on the basis of error detection techniques known per se. The relevant units 20, 21, 22, 23 are all connected to the unit 16 or form part thereof." Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.
16[b]	and wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second port numbers are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required in response to the reversal.	Vink '324 discloses wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second port numbers are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required in response to the reversal. For example, Vink '324 discloses that the flow of traffic can be switched. Vink '324 further discloses a means for providing for the switching of the flow of traffic. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Vink '324 21:10-17 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly. For use in the communication system according to Figure 1 the unit 6 can be omitted.").

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No.	'904 Patent Claim 16	Vink '324
		Vink '324 Claim 13 ("Communication system according to one or more of Claims 7 to 12 inclusive, wherein the slaves (2, 3, 4, 5) are connected to the at least one master (1) via a multiple ring transmission system, the at least one master (1) and the slaves (2, 3, 4, 5) being provided with means (6) for changeover of a transmission system ring (7, 8).”).

No.	'904 Patent Claim 17	Vink '324
17	The slave unit according to claim 14, wherein when one of the packets received by the pre-switch comprises a multicast packet addressed to one or more of the ports on the slave unit, the pre-switch sorts the multicast packet such that one copy of the packet is retained and another copy of the packet is passed to the second physical interface.	Vink '324 discloses the slave unit according to claim 14, wherein when one of the packets received by the pre-switch comprises a multicast packet addressed to one or more of the ports on the slave unit, the pre-switch sorts the multicast packet such that one copy of the packet is retained and another copy of the packet is passed to the second physical interface. For example, Vink '324 discloses at 3:35-4:10: "European Patent Application 0,253,381 discloses a communication system in which the data bits are transferred serially up to I/O level. In this process, address information is added to the data bits intended for a particular substation. Information received by a-substation and transmitted under the control of a master station is investigated for address coincidence. In the case of a positive result, that is to say, when the address information added to a group of data bits corresponds to the address allocated to the relevant substation, exchange is initiated. In this process, the data bits intended for a substation are replaced in the same format by data bits originating from the relevant substation and intended for the master station. In the absence of address coincidence, the information concerned is not altered." Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that the Vink is found to not meet this limitation, when one of the packets received by the pre-switch comprises a multicast packet addressed to one or more of the ports on the slave unit, the pre-switch sorting the multicast packet such that one copy of the packet is retained and another copy of the packet is passed to the second physical interface would have been obvious to a person having ordinary skill in the art, as explained below. Vink '324 17:3-12 ("Figure 3 shows a block diagram of an exemplary embodiment of a portion of a slave 2, 3, 4, 5. Data bits are transported via connections provided with an arrow. The transmitting/receiving unit 6 comprises a multiplexer 12 consisting of two moderns 13, 14 which are respectively connected to the first transmission ring 7 and to the second

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No.	'904 Patent Claim 17	Vink '324
		transmission ring 8. For the transmission of the data via the transmission system, signal coding techniques known per se in practice may be used. The operation of the relevant transmission ring 7, 8 can be monitored by means of line error detectors 15."). In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, Vink in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 17 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. For example, Dowling discloses network devices where each network device sends periodic messages to a multicast address, and multicasting to a group of stations. See, e.g., Dowling at 2:58-3:12 ("Ethernet uses variable-length frames of data to transmit information from a source to one or more destinations. Every Ethernet frame has two fields defined as the source and destination addresses, which indicate the MAC addresses of the network devices where a frame originated and where it is ultimately destined, respectively. . . . Special addresses allow for multicasting to a group of Stations and for broadcasting to all Stations on the network.") Dowling at 11:1-9 ("It is to be understood that the present invention is not limited to devices that are compatible with CDP. CDP runs on all media that support the Subnetwork Access Protocol ("SNAP"), including LAN and Frame Relay. CDP runs over the data link layer only. Each network device sends periodic messages to a multicast address and listens to the periodic messages Sent by others in order to learn about neighboring devices and determine when their interfaces to the media go up or down.") For example, Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at

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No.	'904 Patent Claim 17	Vink '324
		4 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Nortel Networks' BayStack 450 Switches disclose a BootP Automatic IP/MAC Address: "The BayStack 450 switch has a unique 48-bit hardware address, or MAC address, that is printed on a label on the back panel. You use this MAC address when you configure the network BootP server to recognize the BayStack 450 switch BootP requests. A properly configured BootP server enables the switch to automatically learn its assigned IP address, subnet mask, IP address of the default router (default gateway), and software image file name. When the switch is participating in a stack configuration, a Stack MAC address is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If another unit in the stack is assigned as the base unit, the MAC address of the new base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit." BayStack 450 Manual at 43 of 290.

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No.	'904 Patent Claim 17	Vink '324
		Stack MAC Address The *Stack MAC address* is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If you designate another unit in the stack as the base unit, the MAC address of the *new* base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit. BayStack 450 Manual at 52 of 290.

No.	'904 Patent Claim 18	Vink '324
18	The slave unit according to claim 14, wherein in the event of a fault in the switch fabric, the pre-switch continues to pass the packets addressed to the succeeding units on to the succeeding units without	Vink '324 discloses the slave unit according to claim 14, wherein wherein in the event of a fault in the switch fabric, the pre-switch continues to pass the packets addressed to the succeeding units on to the succeeding units without significant interruption. For example, Vink '324 discloses, in the event of a fault, having the transmitting/receiving unit pass on the packets to further units without altering them. Vink '324 3:35-4:10 ("European Patent Application 0,253,381 discloses a communication system in which the data bits are transferred serially up to I/O level. In this process, address information is added to the data bits intended for a particular substation. Information received

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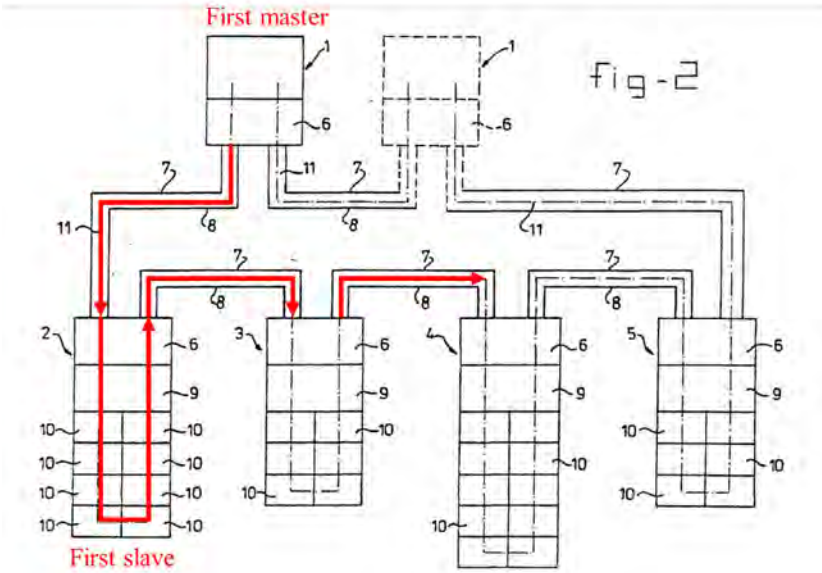
No.	'904 Patent Claim 18	Vink '324
	significant interruption.	by a-substation and transmitted under the control of a master station is investigated for address coincidence. In the case of a positive result, that is to say, when the address information added to a group of data bits corresponds to the address allocated to the relevant substation, exchange is initiated. In this process, the data bits intended for a substation are replaced in the same format by data bits originating from the relevant substation and intended for the master station. In the absence of address coincidence, the information concerned is not altered.").

No.	'904 Patent Claim 19	Vink '324
19[preamble]	A method for providing access to a network, comprising:	Vink '324 discloses a method for providing access to a network. For example, Vink '324 discloses a way for a communication system to connect to a network(s), such as LAN or public networks. *See supra* Claim 1[preamble].
19[a]	coupling first and second master units to interface with the network;	Vink '324 discloses coupling first and second master units to interface with the network. For example, Vink '324 discloses two master units in, for example, a LAN network connected next to each other. *See supra* at 1[a].
19[b]	linking a plurality of slave units,	Vink '324 discloses linking a plurality of slave units. For example, Vink '324 discloses a plurality of substations linked together in a cascade fashion. *See supra* at 1[b], 1[d].
19[c]	each slave unit comprising one or	Vink '324 discloses each slave unit comprising one or more ports to respective subscriber lines, in a daisy chain between the first and second master units.

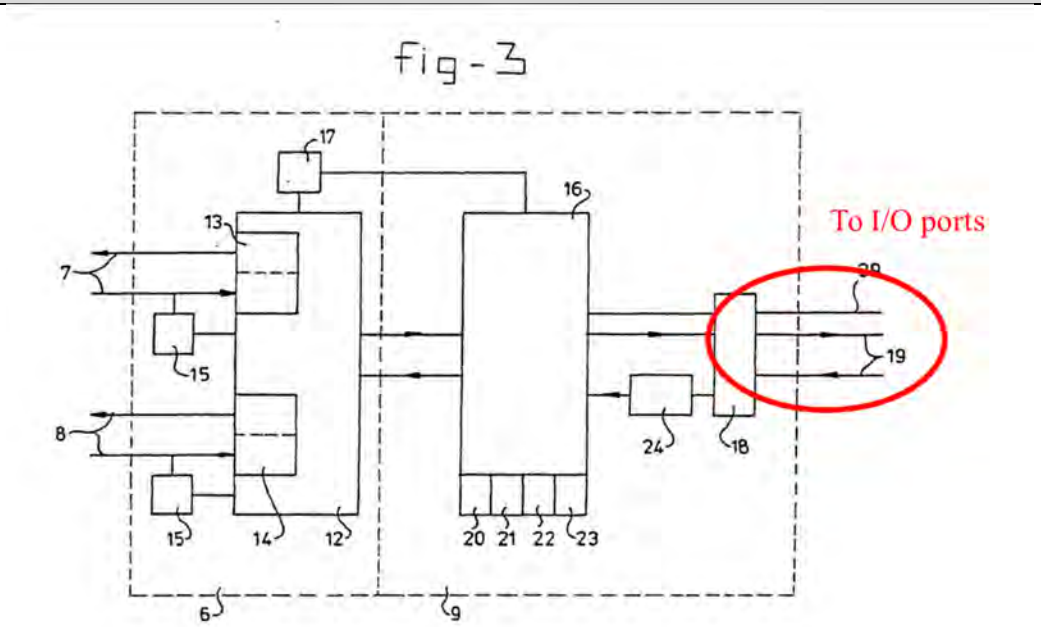
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No.	'904 Patent Claim 19	Vink '324
	more ports to respective subscriber lines, in a daisy chain between the first and second master units;	For example, Vink '324 discloses that each substation, which is connection in a cascade chain between two masters, has one or more I/O modules, each slave unit comprising one or more ports to respective subscriber lines, in a daisy chain between the first and second master units. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See supra* at 1[c], 1[d].
19[d]	conveying initial downstream data packets, received from the network by one of the master units, along the daisy chain in a first direction, so as to deliver the packets to the ports of the slave units; and	Vink '324 discloses conveying initial downstream data packets, received from the network by one of the master units, along the daisy chain in a first direction, so as to deliver the packets to the ports of the slave units. For example, Vink '324 discloses each master and slave with a transmission line and a receiving line, where the first master's transmission line passes from the first master to the receiving line of the first slave, where the first slave transports the packets further to the I/O modules. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See supra* Claim 1[a]. Vink '324 Claim 2 ("Method according to Claim 1, wherein a plurality of I/0 modules (10) are connected in cascade to one or more substations (slaves) (2, 3, 4, 5), which substations (2, 3, 4, 5) are connected to the at least one master (1) in cascade via a transmission system (7, 8) for serial bit transfer, characterised by under the control of the at least one master (1): - supplying the data bits for the I/0 modules (10) to the slaves (2, 3, 4, 5) via the transmission system (7, 8), the sequence of the data bits also corresponding to the sequence of the connected slaves (2, 3, 4, 5); - receiving from the slaves (2, 3, 4, 5) via the transmission system (7, 8) the data bits originating from the I/0 modules (10), the sequence of the data bits received also corresponding to the sequence of the connected slaves (2, 3, 4, 5) ;

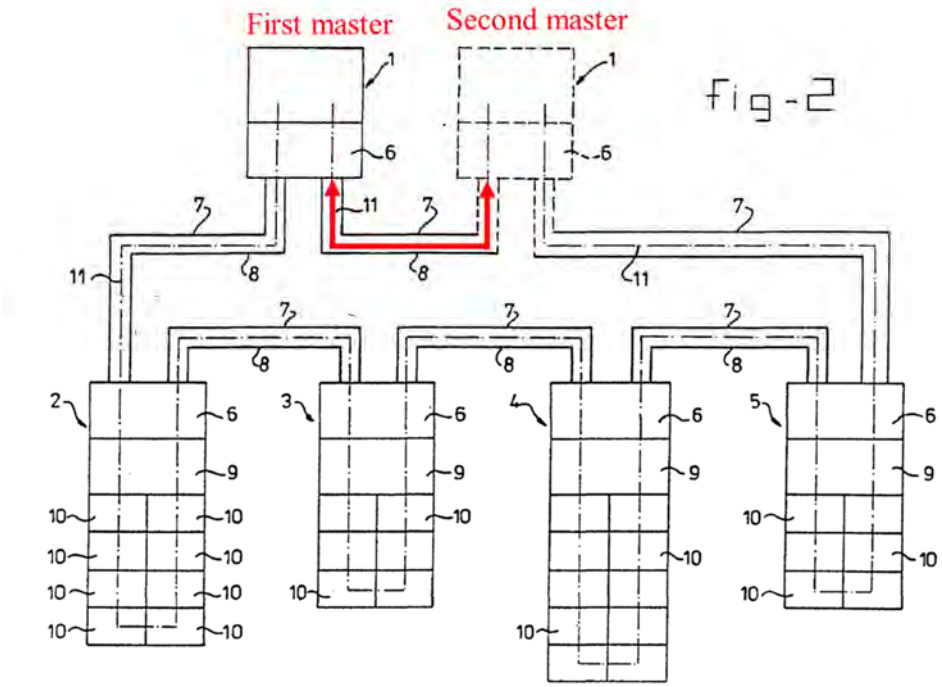
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No.	'904 Patent Claim 19	Vink '324
		- supplying control information to the slaves (2, 3, 4, 5) via the transmission system (7, 8); and - presenting and/or recording data bits of the I/0 modules (10) connected to a respective the relevant slave (2, 3, 4, 5) under the influence of the control information received, controlled by the slaves (2, 3, 4, 5).").  Fig. 2 (annotation added)

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No.	'904 Patent Claim 19	Vink '324
		 Fig. 3 (annotation added)
19[e]	in the event of a fault in the daisy chain, conveying further downstream data packets, received from the network by one of the master units, along the daisy chain in a second direction, opposite to the first direction, so as to deliver the further	Vink '324 discloses in the event of a fault in the daisy chain, conveying further downstream data packets, received from the network by one of the master units, along the daisy chain in a second direction, opposite to the first direction, so as to deliver the further packets to the ports of at least some of the slave units. For example, Vink '324 discloses that each master unit can communicate in both directions along the ring via transmission and receiving lines, such as to deliver packets to the slaves in the opposite direction such as in the event of a fault. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Vink '324 21:10-17 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also

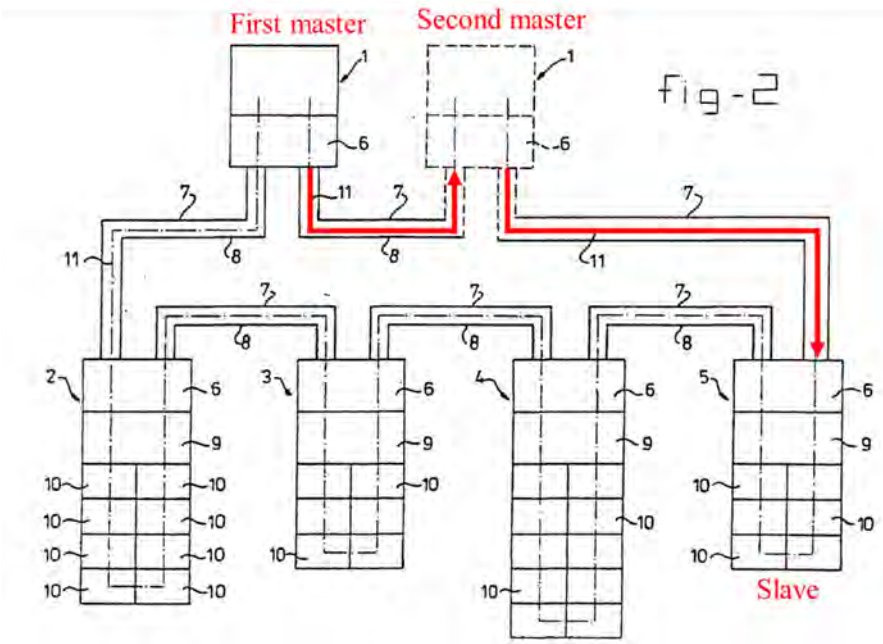
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No.	'904 Patent Claim 19	Vink '324
	packets to the ports of at least some of the slave units.	provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly. For use in the communication system according to Figure 1 the unit 6 can be omitted."). Vink '324 14:28-34 ("A very flexible system is obtained in an embodiment of the invention in that the at least one master and slaves are designed to transmit or receive packets of data bits via a transmission system ring in one and/or the other direction. Master and/or slaves constructed in this way are capable of functioning as a switching centre so that, for example, the master is able to reach as many connected slaves as possible in a fault situation.").  Fig. 2 (annotation added)

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No.	'904 Patent Claim 20	Vink '324
20	A method according to claim 19, wherein the initial and further downstream packets are received from the network by the first master unit, and wherein conveying the further downstream packets in the second direction comprises conveying the further downstream packets from the first master unit to the second master unit, and then conveying the further downstream packets from the second master unit to the daisy chain.	Vink '324 discloses a method according to claim 19, wherein the initial and further downstream packets are received from the network by the first master unit, and wherein conveying the further downstream packets in the second direction comprises conveying the further downstream packets from the first master unit to the second master unit, and then conveying the further downstream packets from the second master unit to the daisy chain. For example, Vink '324 discloses that each master is configured to receive and transmit the same information, where no separate path is required for the first master to send information to the opposite direction. Vink '324 21:10-17 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly. For use in the communication system according to Figure 1 the unit 6 can be omitted.").

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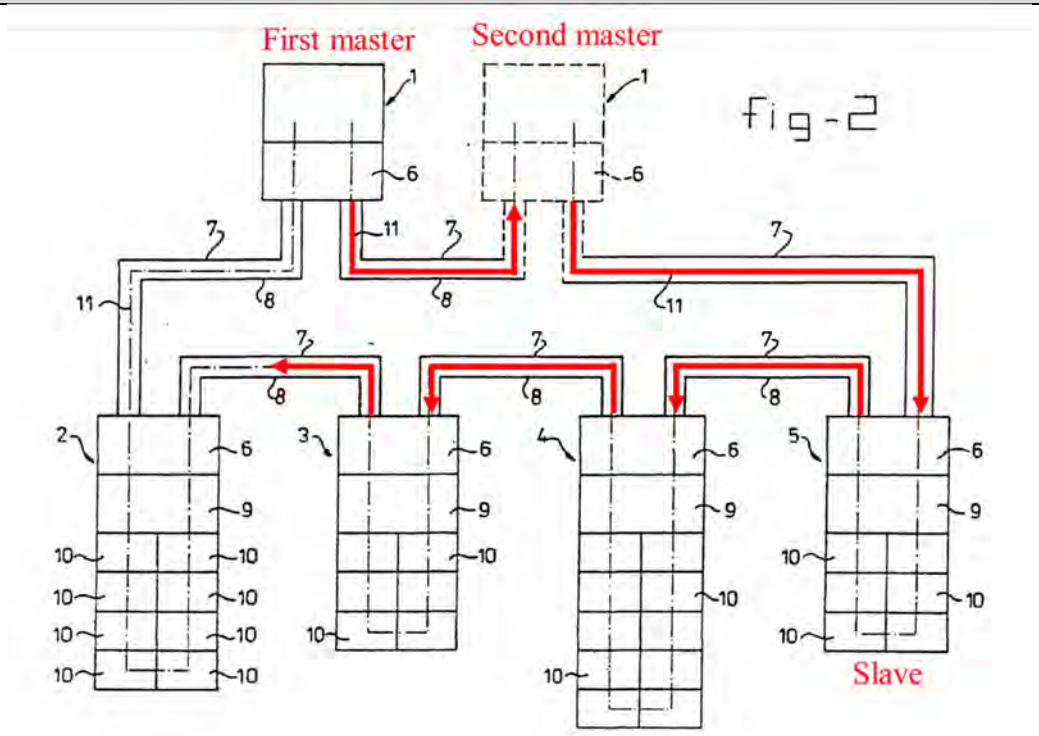
No.	'904 Patent Claim 20	Vink '324
		 Fig. 2 (annotation added) Vink '324 16:19-17:2 ("The shift register principle is also of advantage with respect to use, for example for reliability reasons, of a plurality of masters as is illustrated in Figure 2 by the broken lines. In such a multi-master concept, one of the masters is in general active in relation to data exchange, while one or more other masters only have a passive role therein. All the masters are so designed that they can assume the function of the active master, for example in the event of faults. The passive masters are easily able to detect errors of the active master because, as a consequence of their cascade arrangement and the serial transfer of data bits in the communication system according to the invention, they receive all the information which is intended for the active master. Consequently, no separate communication path is required between the various masters to keep the passive masters abreast of the operations, instruction etc. carried out by the active master. Such a "hot stand-by" mode is of importance, in particular, in industrial process measurement and control in which failure or delay in the

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No.	'904 Patent Claim 20	Vink '324
		production process may, inter alia, have serious financial consequences. It is obvious that, in such a multi-master concept, the conditions under which, and the manner in which, the tasks of a master are assumed by another master have to be specified in advance.").

No.	'904 Patent Claim 21	Vink '324
21	A method according to claim 20, wherein conveying the further downstream packets from the first master unit to the second master unit comprises linking further slave units in an additional daisy chain between the first and second master units, and conveying the further downstream packets from the first master unit to the second master unit over the additional daisy chain.	Vink '324 discloses a method according to claim 20, wherein conveying the further downstream packets from the first master unit to the second master unit comprises linking further slave units in an additional daisy chain between the first and second master units, and conveying the further downstream packets from the first master unit to the second master unit over the additional daisy chain. For example, Vink '324 discloses at 21:10-17 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly. For use in the communication system according to Figure 1 the unit 6 can be omitted."). Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that the Vink is found to not meet this limitation, linking further slave units in an additional daisy chain between the first and second master units, and conveying the further downstream packets from the first master unit to the second master unit over the additional daisy chain would have been obvious to a person having ordinary skill in the art, as explained below. Vink '324 14:28-34 ("A very flexible system is obtained in an embodiment of the invention in that the at least one master and slaves are designed to transmit or receive packets of data bits via a transmission system ring in one and/or the other direction. Master and/or slaves constructed in this way are capable of functioning as a switching centre so that, for example, the master is able to reach as many connected slaves as possible in a fault situation.").

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No.	'904 Patent Claim 21	Vink '324
		 Fig. 2 (annotation added). In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, Vink in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 21 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. For example, Sugawara '456 discloses multiple chains of slave units between the first and second masters, each of said chains capable of transmitting the packets from one master to the other.

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No.	'904 Patent Claim 21	Vink '324
		Sugawara '456 3:6-14 ("FIG. 2 is a schematic block diagram illustrating the principle of the present invention. As illustrated, according to the present invention, switch circuits SW1 and SW2 are provided which selectively connect supervisory and control units MPU1 and MPU2 to corresponding ones of multiplexing/demultiplexing circuits MUXA to MUXD and MUXa to MUXd. A backup line P is not provided.").

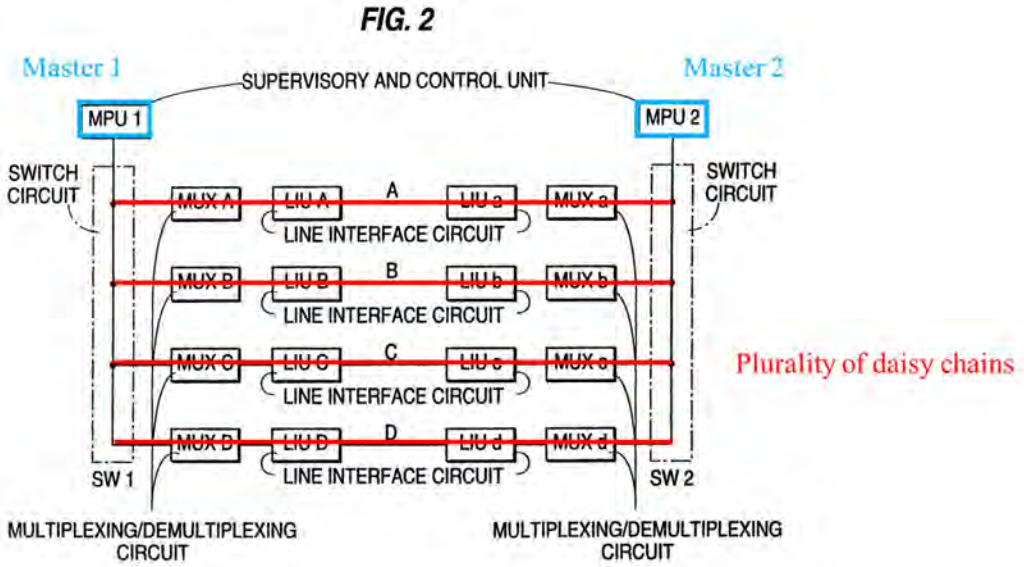


Fig. 2 (annotation added)

Sugawara '456 at 3:24-50 ("When a failure of the line A is detected, the data link communication is switched from the line A to another, for example, the line B. This switching is made as follows. That is, a line failure is usually detected as a failure in reception. When detecting the line failure in terms of error rate by way of example, the line interface circuit LIUa on the receiving side informs the supervisory and control unit MPU2 via MUXa of the detection of the line failure. Upon being informed of the line failure, MPU2 informs MPU1 of the failure of the line A via another line, for example, another line of B directed from MPU2

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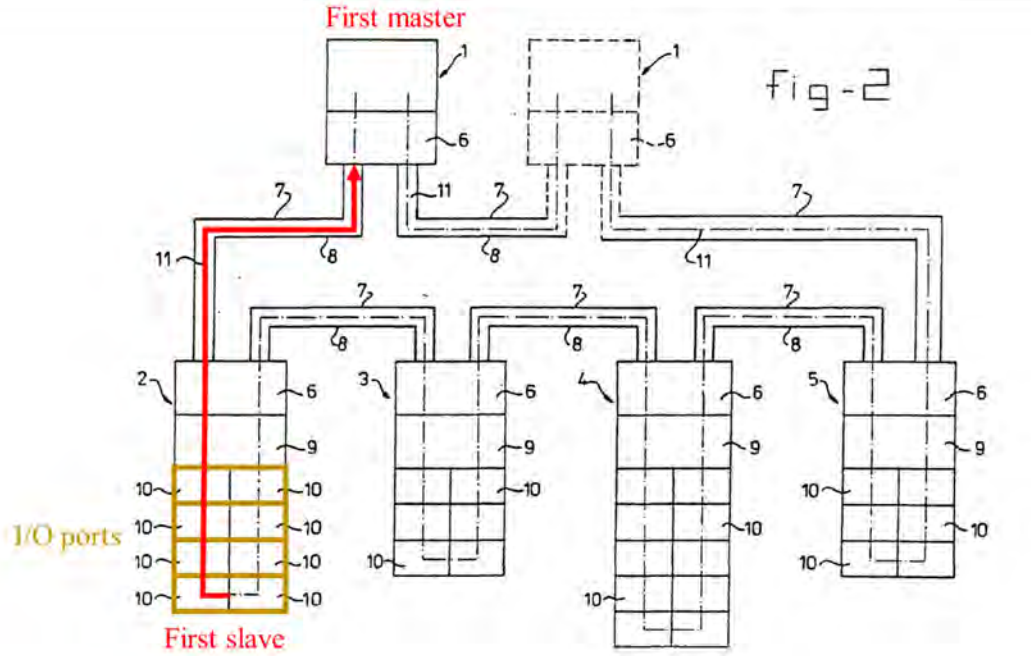
No.	'904 Patent Claim 21	Vink '324
		to MPUl not shown. Responsive to this, the supervisory and control unit MPUl switches switch circuit SWl to connect MPUl to another line, for example, the line B. Thereby, the data link communication becomes effected over the line B. If a failure should also occur in the line B, the line switching will be made likewise. The line B is thus switched to another line, for example, the line C. In FIG. 1, if the line A is faulty, it is switched to the backup line P and, if the backup line P is also faulty, the data link communication will be interrupted. According to the present invention, as long as there are normal lines, data link communications can be continued. No backup is needed. However, if a failure occurs in a line, the transmission of a main signal over the line is interrupted."). Sugawara at Abstract ("A line interface circuit on the receiving side detects communication failure in terms of an error rate and informs the supervisory and control unit on the receiving side of the occurrence of the failure. The supervisory and control unit on the receiving side in turn switches the line data communications from the receiving side to the transmitting side to another line unused for data communications to inform the supervisory and control unit on the transmitting side of the occurrence of the failure. The supervisory and control unit on the transmitting side switches the line for data communications from the transmitting side to the receiving side to the other line. The switching circuit on the receiving side comprises buffers each inserted in a line and a buffer connected to the common outputs of the buffers so that the supervisory and control unit on the receiving side automatically receives a transmit signal transmitted over a line switched on the transmitting side.") For example, Quoc discloses that "because networks tend to constantly change and expand with network devices being added, it would be highly advantageous if, in addition to the Class II feature of allowing two repeaters in a collision domain, it were also possible that each of the two repeaters were expandable or Stackable. Additional ports could be added to a first repeater Stack that functions as one Class II repeater and then a Second Stack could be included as the Second Class II repeater. Thus, Stackability combined with cascadability would provide even greater flexibility for network expansion." Quoc at 4:32-42. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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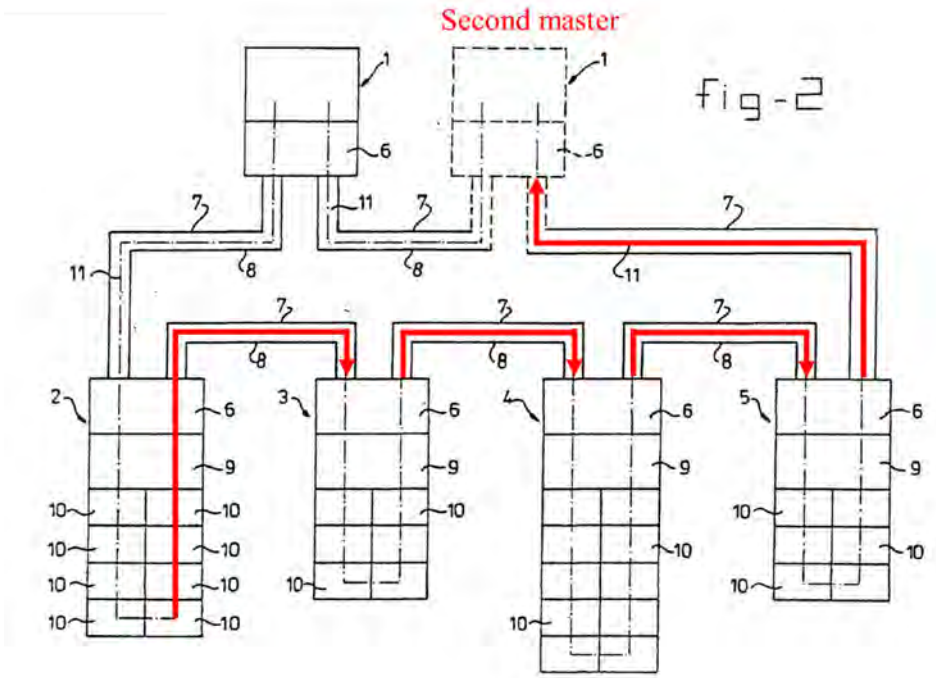
No.	'904 Patent Claim 21	Vink '324
		Quoc discloses "In a preferred embodiment, network management mod ules (NMMs), preferably one for each repeater unit, may be provided in a Single repeater Stack. FIG. 2 shows a repeater stack 200 having four NMMs 202, 204, 206 and 208. The modules 202, 204, 206 and 208 of the repeater stack 200 communicate using a management bus 210. The modules communicate on the management bus210 by Sending Small messages, referred to as "frames." The modules are also connected to a stack bus 220 which provides the main pathway for data transmission between repeaters and other nodes on the network (not shown)." Quoc, 6:19-29.

No.	'904 Patent Claim 22	Vink '324
22[a]	A method according to claim 19, and comprising conveying initial upstream data packets, received by the slave units from the subscriber lines, along the daisy chain in the second direction so as to transmit the upstream data packets via the first master unit over the network,	Vink '324 discloses a method according to claim 19, and comprising conveying initial upstream data packets, received by the slave units from the subscriber lines, along the daisy chain in the second direction so as to transmit the upstream data packets via the first master unit over the network. For example, Vink '324 discloses transmitting information from the I/O modules to the transmitting/receiving unit of the slave, then to the transmitting and receiving lines in either direction, and further on to the next unit (master or slave) in the cascade chain. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See supra* Claim 1[a]. Vink '324 21:10-16 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly.").

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No.	'904 Patent Claim 22	Vink '324
		 Fig. 2 (annotation added)
22[b]	and in the event of the fault, conveying further upstream data packets received by one or more of the slave units along the daisy chain in the first direction via the second master unit.	Vink '324 discloses in the event of the fault, conveying further upstream data packets received by one or more of the slave units along the daisy chain in the first direction via the second master unit. For example, Vink '324 discloses transmitting information from the I/O modules to the transmitting/receiving unit of the slave, then to the transmitting and receiving lines in either direction, and further on to the next unit (master or slave) in the cascade chain, such as in the event of a fault. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Vink '324 21:10-17 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also

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No.	'904 Patent Claim 22	Vink '324
		provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly. For use in the communication system according to Figure 1 the unit 6 can be omitted."). Vink '324 14:28-34 ("A very flexible system is obtained in an embodiment of the invention in that the at least one master and slaves are designed to transmit or receive packets of data bits via a transmission system ring in one and/or the other direction. Master and/or slaves constructed in this way are capable of functioning as a switching centre so that, for example, the master is able to reach as many connected slaves as possible in a fault situation.").  Fig. 2 (annotation added)

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No.	'904 Patent Claim 22	Vink '324
		Vink '324 16:19-17:2 ("The shift register principle is also of advantage with respect to use, for example for reliability reasons, of a plurality of masters as is illustrated in Figure 2 by the broken lines. In such a multi-master concept, one of the masters is in general active in relation to data exchange, while one or more other masters only have a passive role therein. All the masters are so designed that they can assume the function of the active master, for example in the event of faults. The passive masters are easily able to detect errors of the active master because, as a consequence of their cascade arrangement and the serial transfer of data bits in the communication system according to the invention, they receive all the information which is intended for the active master. Consequently, no separate communication path is required between the various masters to keep the passive masters abreast of the operations, instruction etc. carried out by the active master. Such a "hot stand-by" mode is of importance, in particular, in industrial process measurement and control in which failure or delay in the production process may, inter alia, have serious financial consequences. It is obvious that, in such a multi-master concept, the conditions under which, and the manner in which, the tasks of a master are assumed by another master have to be specified in advance.").

No.	'904 Patent Claim 23	Vink '324
23	A method according to claim 22, and comprising bicasting the upstream data packets from the first master unit to the network and to the second master unit, which transmits the bicast upstream data packets over the network.	Vink '324 discloses a method according to claim 22, and comprising bicasting the upstream data packets from the first master unit to the network and to the second master unit, which transmits the bicast upstream data packets over the network. For example, Vink '324 discloses at 3:35-4:10 ("European Patent Application 0,253,381 discloses a communication system in which the data bits are transferred serially up to I/O level. In this process, address information is added to the data bits intended for a particular substation. Information received by a-substation and transmitted under the control of a master station is investigated for address coincidence. In the case of a positive result, that is to say, when the address information added to a group of data bits corresponds to the address allocated to the relevant substation, exchange is initiated. In this process, the data bits intended for a substation are replaced in the same format by data bits originating from the relevant substation and intended for the master station. In the absence of address coincidence, the

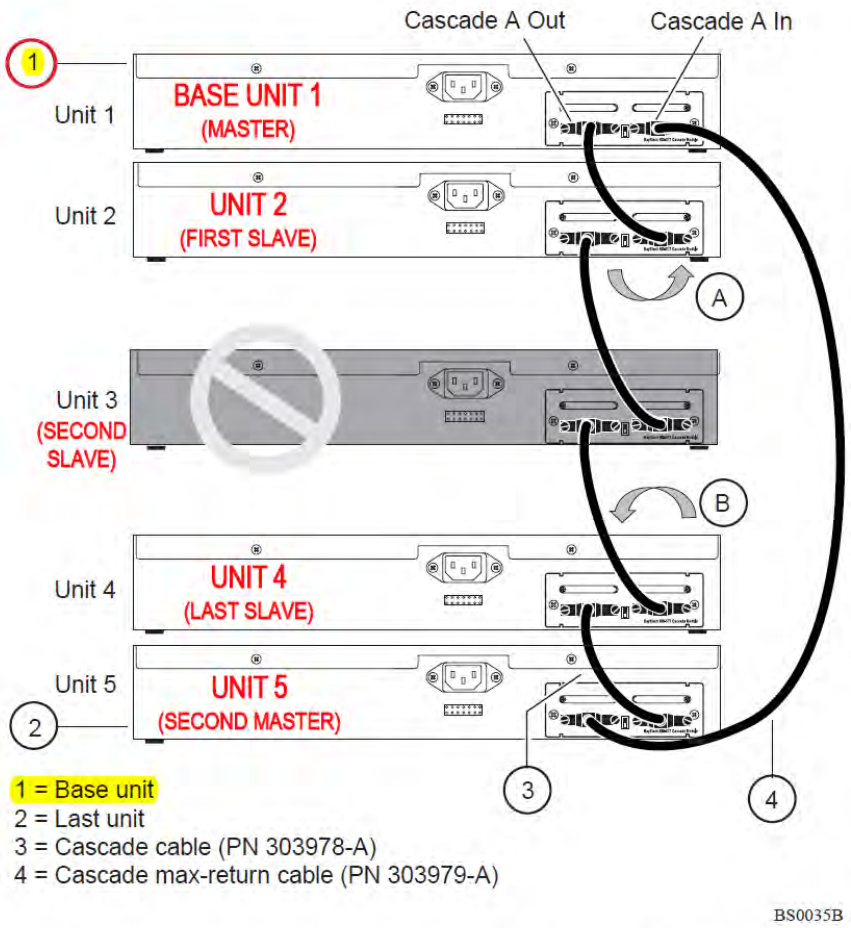
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No.	'904 Patent Claim 23	Vink '324
		information concerned is not altered."). Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that the Vink is found to not meet this limitation, linking further slave units in an additional daisy chain between the first and second master units, and conveying the further downstream packets from the first master unit to the second master unit over the additional daisy chain would have been obvious to a person having ordinary skill in the art, as explained below. Vink '324 17:3-12 ("Figure 3 shows a block diagram of an exemplary embodiment of a portion of a slave 2, 3, 4, 5. Data bits are transported via connections provided with an arrow. The transmitting/receiving unit 6 comprises a multiplexer 12 consisting of two moderns 13, 14 which are respectively connected to the first transmission ring 7 and to the second transmission ring 8. For the transmission of the data via the transmission system, signal coding techniques known per se in practice may be used. The operation of the relevant transmission ring 7, 8 can be monitored by means of line error detectors 15."). In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, Vink '324 in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 23 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. For example, Dowling discloses network devices where each network device sends periodic messages to a multicast address, and multicasting to a group of stations. See, e.g., Dowling at 2:58-3:12 ("Ethernet uses variable-length frames of data to transmit information from a source to one or more destinations. Every Ethernet frame has two fields defined as the source and destination addresses, which indicate the MAC addresses of the network devices where a frame originated and where it is ultimately destined, respectively. . . . Special addresses allow for multicasting to a group of Stations and for broadcasting to all Stations on the network.")

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No.	'904 Patent Claim 23	Vink '324
		Dowling at 11:1-9 ("It is to be understood that the present invention is not limited to devices that are compatible with CDP. CDP runs on all media that support the Subnetwork Access Protocol ("SNAP"), including LAN and Frame Relay. CDP runs over the data link layer only. Each network device sends periodic messages to a multicast address and listens to the periodic messages Sent by others in order to learn about neighboring devices and determine when their interfaces to the media go up or down.") For example, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. The BayStack 450 Switches further disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

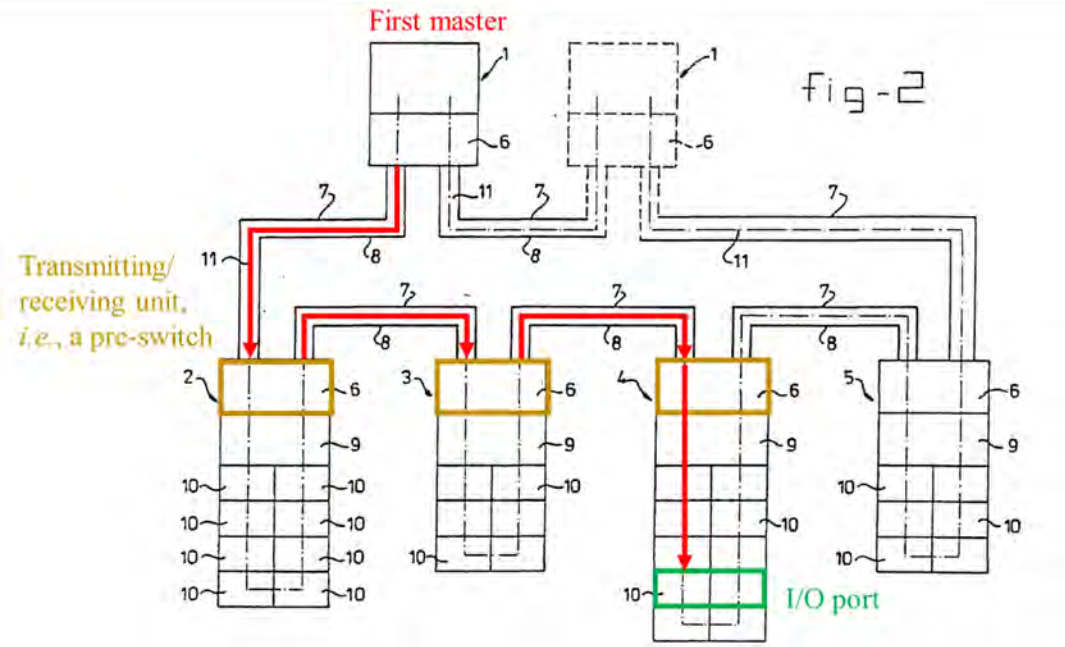
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No.	'904 Patent Claim 23	Vink '324
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated). Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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No.	'904 Patent Claim 24	Vink '324
24	A method according to claim 19, wherein conveying the initial downstream data packets along the daisy chain comprises pre-switching the packets at each of the slave units, so that packets not addressed to any of the ports on the slave unit are passed to the next slave unit in the daisy chain, while packets that are addressed to one or more of the ports on the slave unit are passed to a switch fabric that directs the packets to the ports to which they are addressed.	Vink '324 discloses a method according to claim 19, wherein conveying the initial downstream data packets along the daisy chain comprises pre-switching the packets at each of the slave units, so that packets not addressed to any of the ports on the slave unit are passed to the next slave unit in the daisy chain, while packets that are addressed to one or more of the ports on the slave unit are passed to a switch fabric that directs the packets to the ports to which they are addressed. For example, Vink '324 discloses a transmitting/receiving unit that routes information across the system, including accepting information received across a transmission or receiving line by a substation and, if the address information of the packet corresponds to the address allocated to the relevant substation, initiating an exchange, and in the absence of address coincidence, not altering the packet information as it passes through the chain. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Vink '324 3:35-4:10 ("European Patent Application 0,253,381 discloses a communication system in which the data bits are transferred serially up to I/O level. In this process, address information is added to the data bits intended for a particular substation. Information received by a-substation and transmitted under the control of a master station is investigated for address coincidence. In the case of a positive result, that is to say, when the address information added to a group of data bits corresponds to the address allocated to the relevant substation, exchange is initiated. In this process, the data bits intended for a substation are replaced in the same format by data bits originating from the relevant substation and intended for the master station. In the absence of address coincidence, the information concerned is not altered.").

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No.	'904 Patent Claim 24	Vink '324
		 Fig. 2 (annotation added).

No.	'904 Patent Claim 25	Vink '324
25	A method according to claim 19, wherein the network comprises an asynchronous transfer mode (ATM) network.	Vink '324 discloses a method according to claim 19, wherein the network comprises an asynchronous transfer mode (ATM) network. For example, Vink '324 discloses a communication system using time control means. *See supra* Claim 2.

No.	'904 Patent Claim 26	Vink '324
26	A method according to claim 19, wherein the network comprises an	Vink '324 discloses a method according to claim 19, wherein the network comprises an Internet protocol (IP) network.

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No.	'904 Patent Claim 26	Vink '324
	Internet protocol (IP) network.	For example, Vink '324 discloses that any suitable protocol can be used to exchange information. *See supra* Claim 3.

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Chart for U.S. Patent 6,680,904 ("the '904 Patent")
U.S. Patent No. 6,600,727 B1 to MacKay ("MacKay")

As shown in the chart below, all Asserted Claims of the '904 Patent are invalid under (1) 35 U.S.C. §§ 102 (a) and (e) because Mackay meets each element of those claims, and/or (2) 35 U.S.C. § 103 because Mackay renders those claims obvious either alone, or in combination with the knowledge of a person having ordinary skill in the art, and in further combination with the references specifically identified below and in the following claim chart and/or one or more references identified in Defendant's Preliminary Invalidity Contentions. The following quotations and diagrams come from Mackay titled "Distributed Network Repeater System", which was filed on May 27, 1999, and issued on July 29, 2003.

Motivations to combine the disclosures in Mackay with disclosures in other publications known in the art, as explained in this chart, include at least the similarity in subject matter between the references to the extent they concern methods of stacking switches within a network. Insofar as the references cite other patents or publications, or suggest additional changes, one of ordinary skill in the art would look beyond a single reference to other references in the field.

The following patents are substantially similar to MacKay and invalidate the '904 Patent for the same reasons:

- U.S. Patent No. 6,973,230 to MacKay ("MacKay '230")
- U.S. Patent No. 7,486,630 to MacKay ("MacKay '630")
- U.S. Patent No. 7,880,474 to MacKay ("MacKay '474")

These invalidity contentions are based on Defendant's present understanding of the Asserted Claims, and Orckit's apparent construction of the claims in its November 3, 2022 Disclosure of Asserted Claims and Infringement Contentions Pursuant to P.R. 3-1, and Orckit's January 19, 2023 First Amended Disclosure of Asserted Claims and Infringement Contentions Pursuant to P.R. 3-1 (Orckit's "Infringement Disclosures"), which is deficient at least insofar as it fails to cite any documents or identify accused structures, acts, or materials in the Accused Products with particularity. Defendant does not agree with Orckit's application of the claims, or that the claims satisfy the requirements of 35 U.S.C. § 112. Defendant's contentions herein are not, and should in no way be seen as, admissions or adoptions as to any particular claim scope or construction, or as any admission that any particular element is met by any accused product

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in any particular way. Defendant objects to any attempt to imply claim construction from this chart. Defendant's prior art invalidity contentions are made in a variety of alternatives and do not represent Defendant's agreement or view as to the meaning, definiteness, written description support for, or enablement of any claim contained therein.

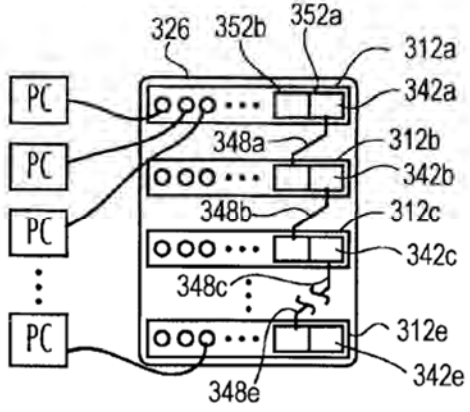
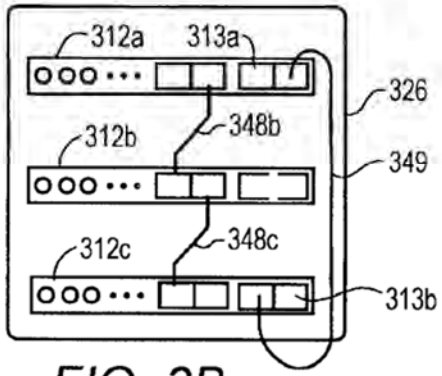
The following contentions are subject to revision and amendment pursuant to Federal Rule of Civil Procedure 26(e), the Local Rules, and the Orders of record in this matter subject to further investigation and discovery regarding the prior art and the Court's construction of the claims at issue.

No.	'904 Patent Claim 1	Mackay
1[preamble]	Network access apparatus, comprising:	Mackay discloses network access apparatus. For example, Mackay discloses an "apparatus for a computer network repeater system, apparatus, apparatus and method," which is "useable for connecting switches in a data communication network, [] in a distributed and/or modular fashion." See, e.g., Mackay, Abstract ("A repeater, useable for connecting switches in a data communication network, is provided in a distributed and/or modular fashion. The repeater includes a plurality of separate and distinct components or modules connected to or least partially housed in, the various switches which the repeater modules couple.") Mackay at 1:6-10 ("The present invention relates to a system, method and apparatus for a computer network repeater system, apparatus and method and in particular to a repeater system which is distributed, and preferably modular, in nature.") Mackay at 3:38-41 ("In one aspect of the invention, a repeater, useable for connecting Switches in a data communication network, is provided in a distributed and/or modular fashion.")
1[a]	first and second master units, each comprising a physical interface to a	Mackay discloses first and second master units, each comprising a physical interface to a packet-switched network.

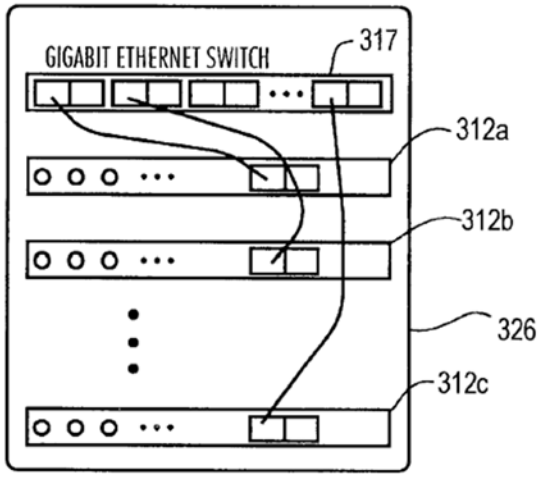
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No.	'904 Patent Claim 1	Mackay
	packet-switched network;	For example, Mackay discloses switches arranged in a stack, which can be managed through a single IP address and can each connect to a packet-switched network (e.g., an ethernet network) via cables and/or other physical connections. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. See, e.g., Mackay, Abstract ("A repeater, useable for connecting switches in a data communication network, is provided in a distributed and/or modular fashion. The repeater includes a plurality of separate and distinct components or modules connected to or least partially housed in, the various switches which the repeater modules couple.") Mackay at 5:47-58 ("By "modular," is meant that the distributed repeater includes a plurality of preferably similar or substantially identical repeater modules which can be added or removed to increment, or decrement, preferably with relatively small granularity, the repeater functionality, So as to substantially match the amount of repeater functionality that is provided, to the amount of repeater functionality that is needed (e.g. to avoid a situation such as that depicted in FIG. 2 in which the repeater 234 has substantially more port capability 234m than needed to provide repeater functions for the depicted switches.) Mackay at 6:10-35 ("In one embodiment, the system permits a variety of different stacking or other architectures, depending on how the modules and cables are connected. For example, in one configuration, the System can be configured to provide a 1 Gigabit per Second (Gbps) independent Stack bus (though Standard Gigabit Ethernet connections), e.g. as depicted in FIG. 3A, allowing a number (in one embodiment, up to at least nine) Switches to be stacked and managed through a Single IP address. In another embodiment, the System provides Support for a redundant loopback connection 349, e.g. using Secondary repeater modules 313a, b in the top and bottom Switches, as illustrated in FIG. 3B. In another configuration, a repeater module in each Switch can be coupled to high bandwidth (e.g. gigabit) Ethernet Switch 317 (FIG. 3C) forming a high-performance point-to-point configuration, to deliver e.g. 2 Gbps full duplex bandwidth between the high bandwidth Ethernet switch 317 and each Switch 312a, b, c which is connected via the repeater modules. In one configuration, a number

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No.	'904 Patent Claim 1	Mackay
		(e.g. up to eight, or more) Switches can be aggregated in a Gigabit Ethernet Star topology. In one embodiment, a pair of Switches can be coupled to provide a full-duplex configuration, as illustrated in FIG. 4A (and as described more thoroughly below). In one embodiment, by employing a Secondary repeater module 413 in at least one Switch, 412b, two or more full-duplex connections can be provided, as illustrated in FIG. 4B.") Mackay, Figs. 3A-3C  FIG. 3A  FIG. 3B

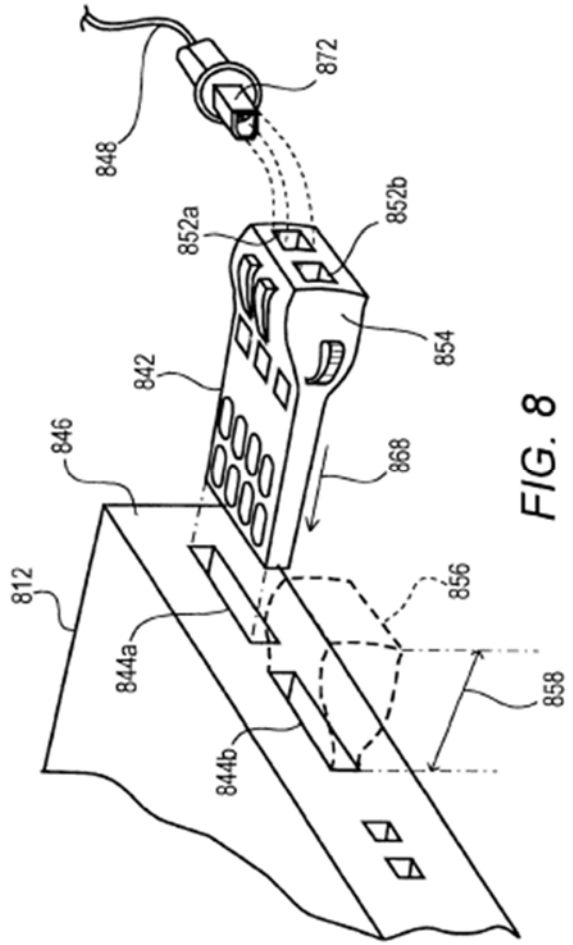
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No.	'904 Patent Claim 1	Mackay
		 FIG. 3C Mackay at 13:20-24 ("Some or all of the features of the present invention can be used at least in connection with systems that provide packetized data communication, i.e. data in a plurality of data groups (which may also include header information, fillers and the like) of finite and/or determinant length.") Mackay at 13:43-52 ("By providing a repeater which is distributed, a system can be configured such that multiple switches (e.g. mounted in a rack) can be treated by an administrator as if they were a single Switch (e.g. allowing management of multiple Switched ports from a single IP address), yet without requiring accommodating the substantial space occupied by a monolithic or non-distributed repeater (preferably providing interconnected switches with an independent high-speed Stacking bus that preserves valuable desktop ports).") Mackay at 15:11-27 ("In at least some embodiments of the present invention, there is no theoretical limit to the number of switch/repeater module units that may be cable connected or otherwise "stacked," although there may be practical or feasibility limits such as software

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No.	'904 Patent Claim 1	Mackay
		capability or complexity limitations, practical space considerations and the like. Although a cable (and cable connector) was described which can be used with embodiments of the present invention, it is possible to implement some or all features of the present invention using other communication links, such as other types of cables or connectors, optical cables, wireless links and the like. Although certain, preferably front-panel, connections were illustrated, repeater modules may be coupled to each other or to other circuitry, in other fashions, including internally in the switchbox, by cables and/or by leads or circuitry, e.g. on one or more switch PCBs.") Mackay at 3:1-11 ("In one embodiment, different modules of the repeater may be housed in different network switches. For example, a computer network may include a plurality of switch boxes or chassis, typically all mounted in one or more racks, often adjacent one another with the switches being coupled to network nodes such as personal computers, work stations and the like. In one embodiment, two or more, in some cases, all, of the switches include one or more regions for receiving repeater modules, with the repeater modules in different switches being coupled to one another by cables and the like.") See also, e.g., Mackay, Figure 8:

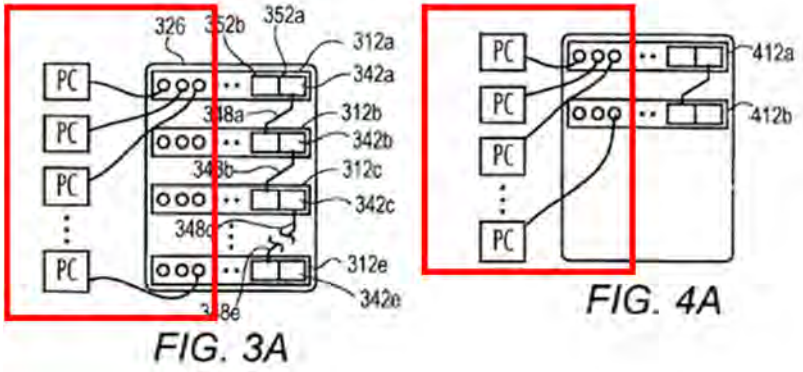
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No.	'904 Patent Claim 1	Mackay
		 FIG. 8
1[b]	a plurality of slave units,	Mackay discloses a plurality of slave units. For example, Mackay discloses multiple switches stacked and treated as a single switch by use of a single IP address. Mackay discloses that there is no limit to the amount of switch/repeater modules that can be stacked within the daisy chain stemming from the switch

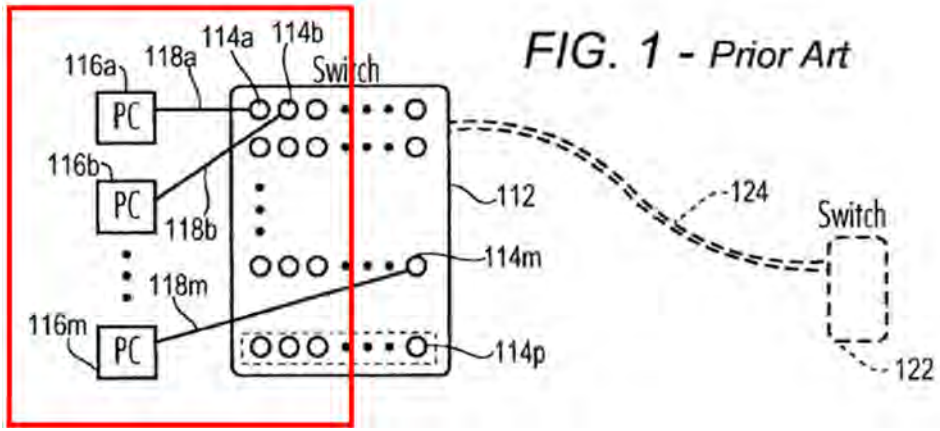
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No.	'904 Patent Claim 1	Mackay
		with the single IP address. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Mackay, Abstract ("A repeater, useable for connecting switches in a data communication network, is provided in a distributed and/or modular fashion. The repeater includes a plurality of separate and distinct components or modules connected to or least partially housed in, the various switches which the repeater modules couple.") Mackay at 3:1-11 ("In one embodiment, different modules of the repeater may be housed in different network switches. For example, a computer network may include a plurality of switch boxes or chassis, typically all mounted in one or more racks, often adjacent one another with the switches being coupled to network nodes such as personal computers, work stations and the like. In one embodiment, two or more, in some cases, all, of the switches include one or more regions for receiving repeater modules, with the repeater modules in different switches being coupled to one another by cables and the like.") Mackay at 13:43-52 ("By providing a repeater which is distributed, a system can be configured such that multiple switches (e.g. mounted in a rack) can be treated by an administrator as if they were a single Switch (e.g. allowing management of multiple Switched ports from a single IP address), yet without requiring accommodating the substantial space occupied by a monolithic or non-distributed repeater (preferably providing interconnected switches with an independent high-speed Stacking bus that preserves valuable desktop ports).") Mackay at 15:11-27 ("In at least some embodiments of the present invention, there is no theoretical limit to the number of switch/repeater module units that may be cable connected or otherwise "stacked," although there may be practical or feasibility limits such as software capability or complexity limitations, practical space considerations and the like.") Mackay at 14:39-48 ("By providing the ability for a system administrator of other end-user to readily form the components of the present invention into any of a plurality of configurations, preferably by using relatively inexpensive repeater modules, the present

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No.	'904 Patent Claim 1	Mackay
		invention can provide relatively high flexibility and investment protection and manageability in a manner readily implemented by a System administrator. The present invention can provide highly flexible, preferably substantially scalable, stacking and/or connectivity options.")
1[c]	each slave unit comprising one or more ports to respective subscriber lines; and	Mackay discloses each slave unit comprising one or more ports to respective subscriber lines. For example, Mackay discloses each switch having ports that connect it to respective PCs, and/or workstations. See, e.g., Mackay at Figs. 3A, 4A (annotation added):  FIG. 3A FIG. 4A Mackay at 3:1-7 ("In one embodiment, different modules of the repeater may be housed in different network Switches. For example, a computer network may include a plurality of switch boxes or chassis, typically all mounted in one or more racks, often adjacent one another with the switches being coupled to network nodes such as personal computers, work stations and the like.")

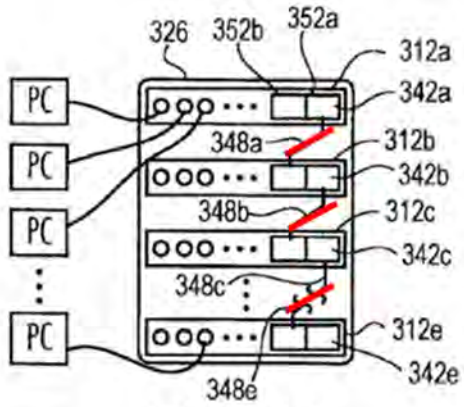
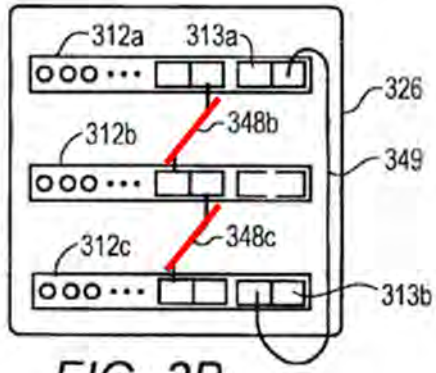
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No.	'904 Patent Claim 1	Mackay
		Mackay at 4:18-26 ("As depicted in FIG. 1, a common configuration of previous networks included a Switch 112 having a plurality of ports 114a, b, m, p coupled to a variety of network nodes, illustrated, in FIG. 1, by personal computers (PCS) 116a, b, m. Nodes can include a variety of items including printers, Scanners and the like. Depending, at least in part, on the type of network implemented, the connections can be way of cables 118a, b, m, Such as coaxial cables, twisted pairs, optical fiber, or one or more wireless links and the like.") Mackay, Figure 1 (annotation added): 
1[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	Mackay discloses a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. For example, Mackay discloses cables that link slave switch units in a daisy chain, in which the switches are connected by physical interface lines therebetween. Mackay at 14:46-56 ("The present invention can provide highly flexible, preferably substantially scalable, stacking and/or connectivity options. It can provide high bandwidth (e.g. 1 Gbps) half-duplex connectivity in a daisy chained configuration or full-duplex (e.g. up

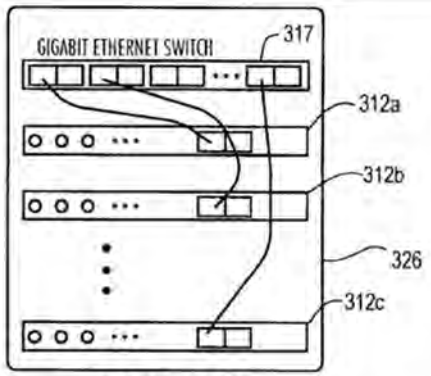
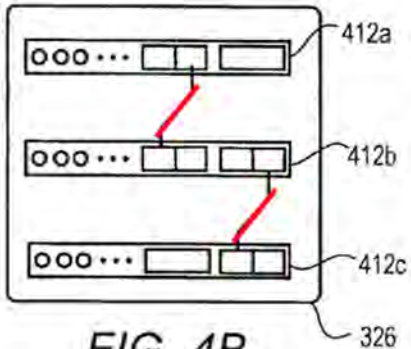
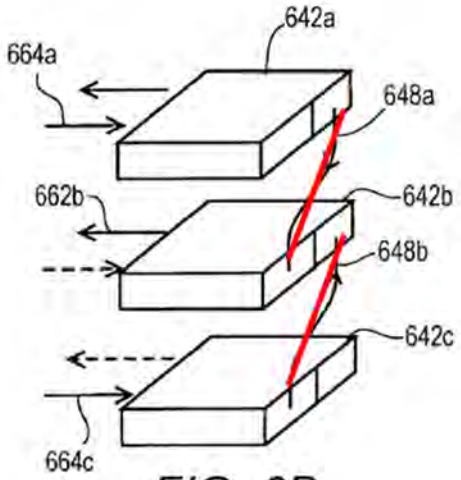
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No.	'904 Patent Claim 1	Mackay
		to 2 Gbps or more) connectivity in a dedicated, Switch-to-Switch configuration. The present invention can be used to implement systems which expand the traditional stacking domain beyond a single wiring closet, allowing users to Select and combine a plurality of interconnections to accommodate a range of management, performance and cost needs.") Mackay at 3:1-11 ("In one embodiment, different modules of the repeater may be housed in different network switches. For example, a computer network may include a plurality of switch boxes or chassis, typically all mounted in one or more racks, often adjacent one another with the switches being coupled to network nodes such as personal computers, work stations and the like. In one embodiment, two or more, in some cases, all, of the switches include one or more regions for receiving repeater modules, with the repeater modules in different switches being coupled to one another by cables and the like.") Mackay at 6:10-35 (("In one embodiment, the system permits a variety of different Stacking or other architectures, depending on how the modules and cables are connected. For example, in one configuration, the System can be configured to provide a 1 Gigabit per Second (Gbps) independent Stack bus (though Standard Gigabit Ethernet connections), e.g. as depicted in FIG. 3A, allowing a number (in one embodiment, up to at least nine) Switches to be stacked and managed through a Single IP address. In another embodiment, the System provides Support for a redundant loopback connection 349, e.g. using Secondary repeater modules 313a, b in the top and bottom Switches, as illustrated in FIG. 3B. In another configuration, a repeater module in each Switch can be coupled to high bandwidth (e.g. gigabit) Ethernet Switch 317 (FIG. 3C) forming a high-performance point-to-point configuration, to deliver e.g. 2 Gbps full duplex bandwidth between the high bandwidth Ethernet switch 317 and each Switch 312a, b, c which is connected via the repeater modules. In one configuration, a number (e.g. up to eight, or more) Switches can be aggregated in a Gigabit Ethernet Star topology. In one embodiment, a pair of switches can be coupled to provide a full-duplex configuration, as illustrated in FIG. 4A (and as described more thoroughly below). In one embodiment, by employing a secondary repeater module 413 in at least one switch, 412b, two or more full-duplex connections can be provided, as illustrated in FIG. 4B.")

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No.	'904 Patent Claim 1	Mackay
		Mackay at 6:60-7:8 ("As depicted in FIG. 3A, a plurality of repeater modules may be coupled, one to another, such as by cables 348a,b,c, e so that the plurality of repeater modules 342a,b,c, e can, together, provide the desired repeater functionality. As shown in FIG. 3A, in one embodiment, the repeater modules 342a, b, c, e each have left and right cable couplings and are configured such that, during normal operation, a cable, e.g. 34.8a, will couple a right coupling 352a of a repeater module in one switch 312a to a left coupling 352b of a repeater module 342b in a second Switch 312b. In the embodiment depicted in FIG. 8, the repeater module 842 is configured with a flared proximal end 854 which, on the module 842 is fully inserted (to the position 856 depicted, in phantom, in FIG. 8) extends outwardly a distance 858 from the front panel 846 of the Switch housing 812.") Mackay at Figures 3A, 3B, 3C, 4B (annotations added):  FIG. 3A  FIG. 3B

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No.	'904 Patent Claim 1	Mackay
		 FIG. 3C  FIG. 4B Mackay, Figure 6B (annotation added):  FIG. 6B
1[e]	each daisy chain comprising at least a	Mackay discloses each daisy chain comprising at least a first slave unit connected one of the physical interface lines to the first master unit, a second slave unit connected to the first slave

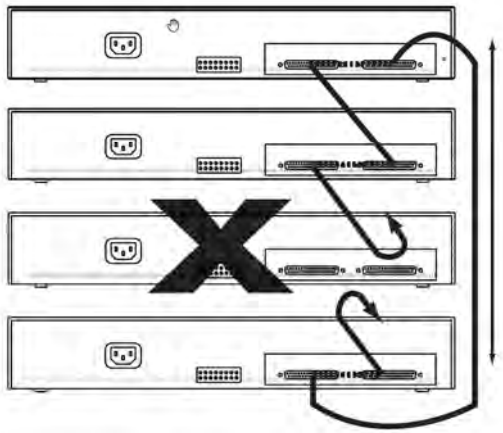
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No.	'904 Patent Claim 1	Mackay
	first slave unit connected one of the physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit.	unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit. For example, Mackay discloses a switch stack arranged such that the top switch, acting as the master, can be connected via cable to subsequent switches in a daisy chain. Mackay discloses that the switches would be adjacent to one another with at least up to 9 switch/repeater modules. In a 9-switch embodiment, switch 3 would be connected to the first slave unit but not to the first or second master unit, and switch 8 would be connected to the second master unit. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that the Mackay is found to not meet this limitation, each daisy chain comprising at least a first slave unit connected one of the physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit would have been obvious to a person having ordinary skill in the art, as explained below. Mackay at 3:1-11 ("In one embodiment, different modules of the repeater may be housed in different network switches. For example, a computer network may include a plurality of switch boxes or chassis, typically all mounted in one or more racks, often adjacent one another with the switches being coupled to network nodes such as personal computers, work stations and the like. In one embodiment, two or more, in some cases, all, of the switches include one or more regions for receiving repeater modules, with the repeater modules in different switches being coupled to one another by cables and the like.") Mackay at 14:46-56 ("The present invention can provide highly flexible, preferably substantially scalable, Stacking and/or connectivity options. It can provide high bandwidth (e.g. 1 Gbps) half-duplex connectivity in a daisy chained configuration or full-duplex (e.g. up to 2 Gbps or more) connectivity in a dedicated, Switch-to-Switch configuration. The present invention can be used to implement systems which expand the traditional stacking domain beyond a single wiring closet, allowing users to Select and combine a plurality of interconnections to accommodate a range of management, performance and cost needs.")

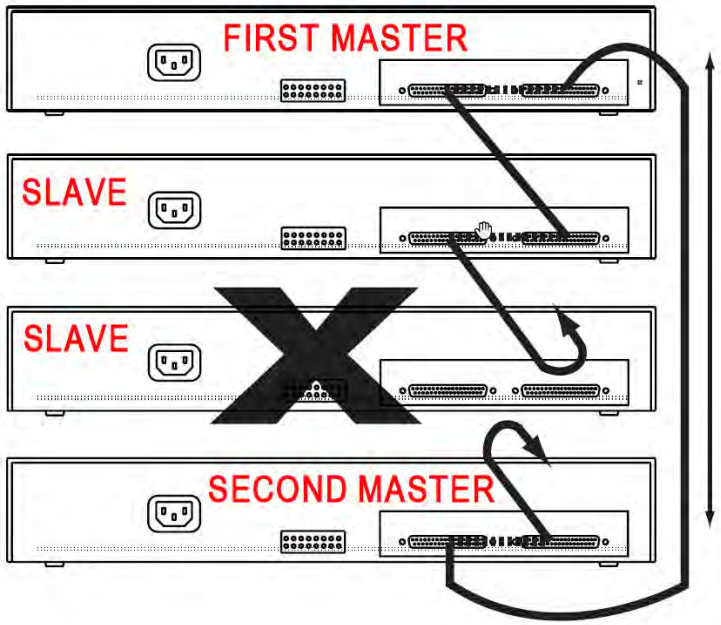
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No.	'904 Patent Claim 1	Mackay
		Mackay at 6:10-35 ("In one embodiment, the system permits a variety of different stacking or other architectures, depending on how the modules and cables are connected. For example, in one configuration, the System can be configured to provide a 1 Gigabit per Second (Gbps) independent Stack bus (though Standard Gigabit Ethernet connections), e.g. as depicted in FIG. 3A, allowing a number (in one embodiment, up to at least nine) switches to be stacked and managed through a Single IP address.") Mackay at 15:11-27 ("In at least some embodiments of the present invention, there is no theoretical limit to the number of switch/repeater module units that may be cable connected or otherwise "stacked," although there may be practical or feasibility limits such as software capability or complexity limitations, practical space considerations and the like. Although a cable (and cable connector) was described which can be used with embodiments of the present invention, it is possible to implement some or all features of the present invention using other communication links, such as other types of cables or connectors, optical cables, wireless links and the like. Although certain, preferably front-panel, connections were illustrated, repeater modules may be coupled to each other or to other circuitry, in other fashions, including internally in the switchbox, by cables and/or by leads or circuitry, e.g. on one or more switch PCBs.") Mackay at 3:1-11 ("In one embodiment, different modules of the repeater may be housed in different network switches. For example, a computer network may include a plurality of switch boxes or chassis, typically all mounted in one or more racks, often adjacent one another with the switches being coupled to network nodes such as personal computers, work stations and the like. In one embodiment, two or more, in some cases, all, of the switches include one or more regions for receiving repeater modules, with the repeater modules in different switches being coupled to one another by cables and the like.") In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, Mackay in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 1[e] of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references.

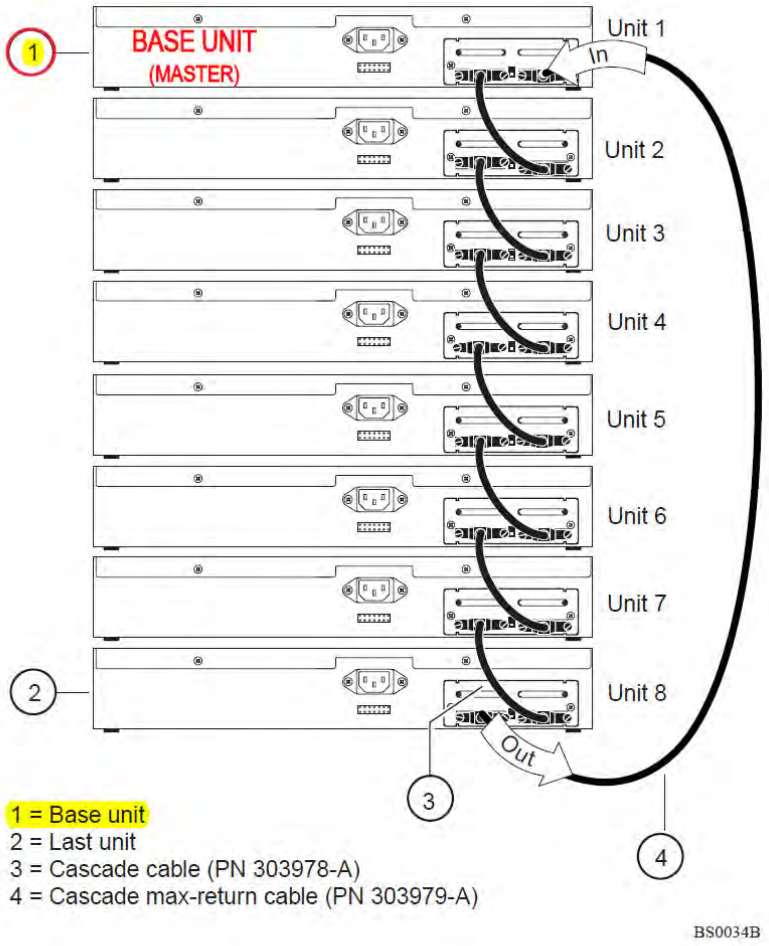
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No.	'904 Patent Claim 1	Mackay
		For example, the BayStack 450 Switches may include several stacked switch units that are slave units; that is, the BayStack 450 Switches are stackable switches that may include a plurality of slave units. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Further, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption." BayStack 450 Data Sheet at 2 of 8. Figure 1, shown below, illustrates the plurality of physical interface lines that link the slave units in a daisy chain, in which the slave units are mutually connected in series by the physical interface lines therebetween. *Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.*  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

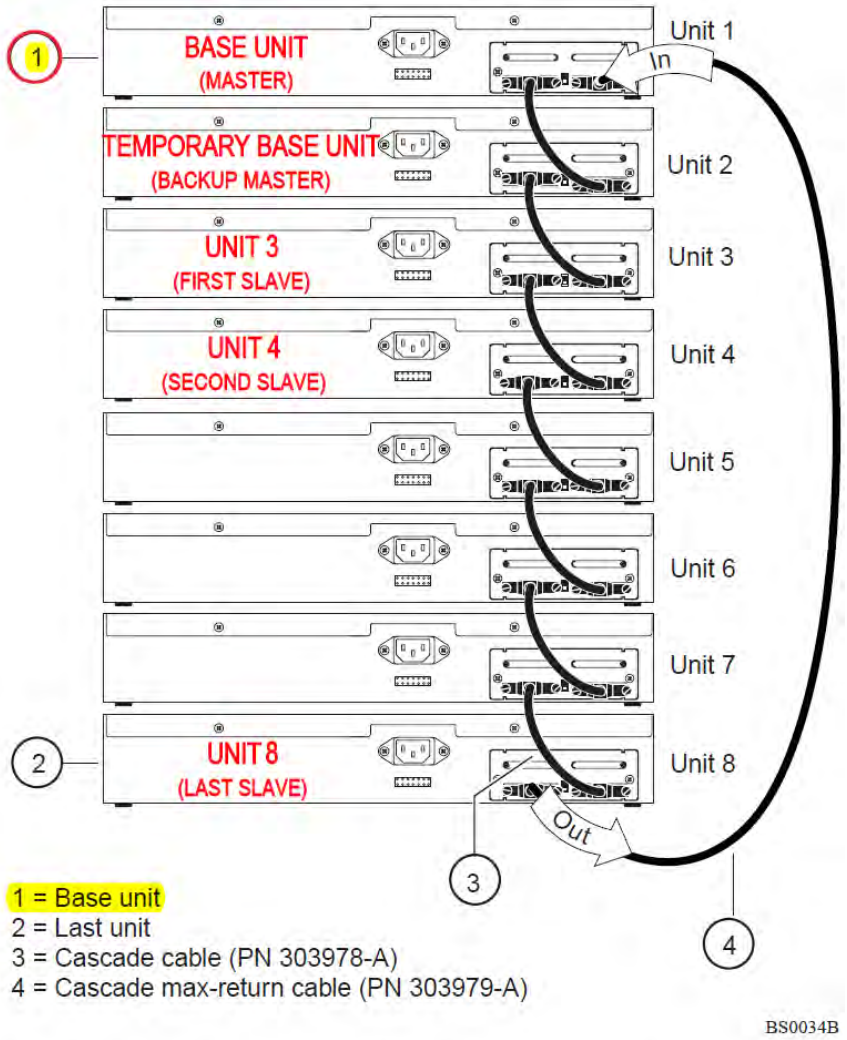
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No.	'904 Patent Claim 1	Mackay
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In another example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the top of the stack and connects a plurality of slaves via physical interface lines in a "Stack Down Configuration." BayStack 450 Manual at 55 of 290.

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No.	'904 Patent Claim 1	Mackay
		 **Figure 1-13. Stack Down Configuration Example** BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated). As shown below, in the Stack Down Configuration, the physical interface lines connect a plurality of slave units.

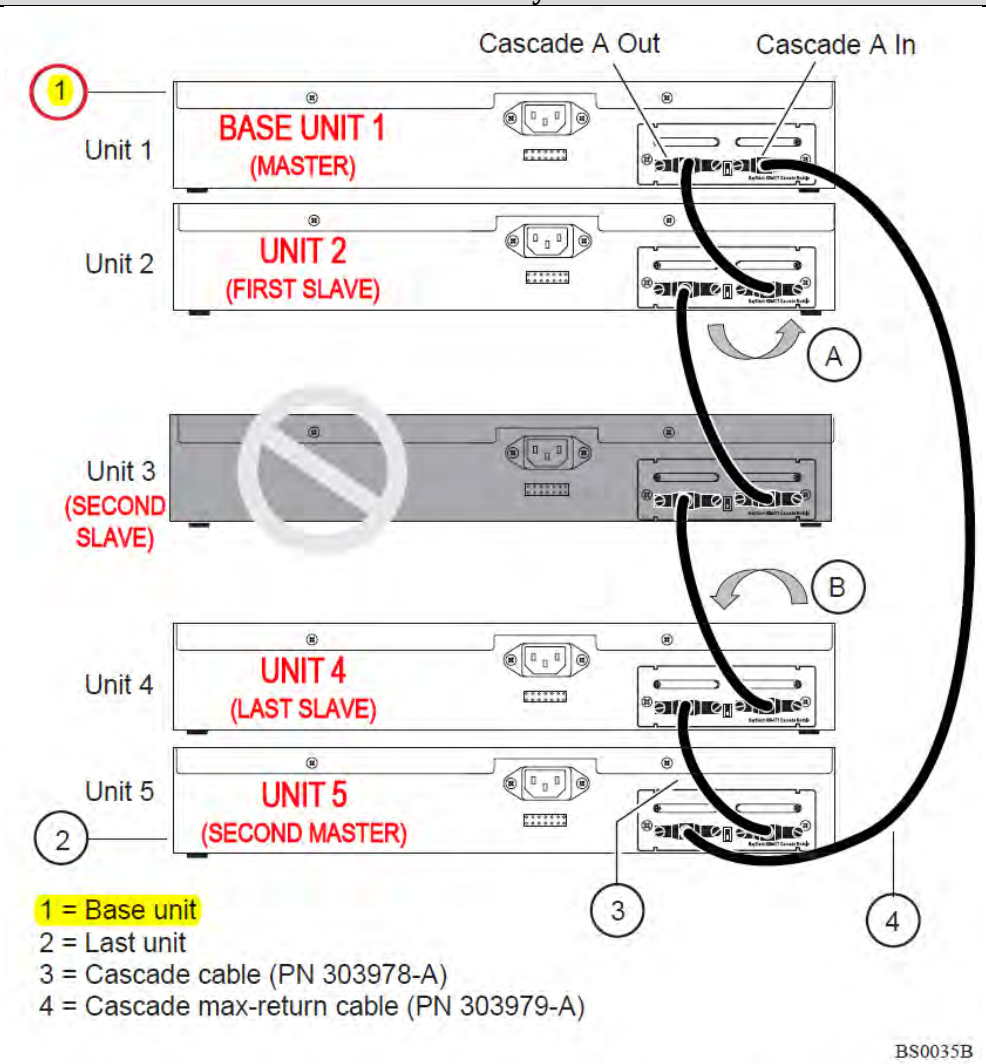
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No.	'904 Patent Claim 1	Mackay
		 **Figure 1-13. Stack Down Configuration Example** BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

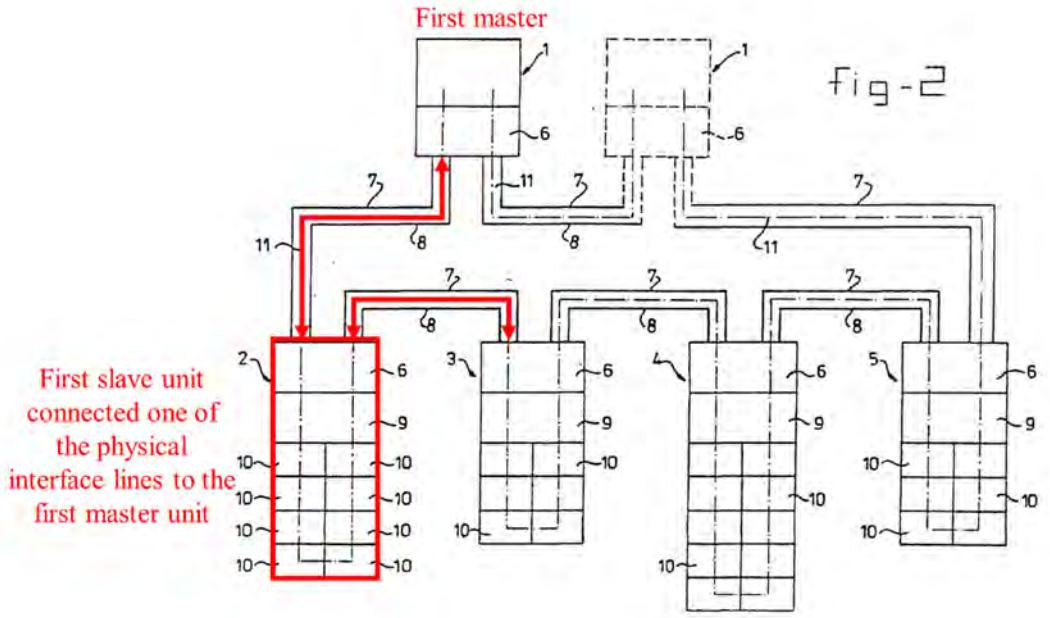
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No.	'904 Patent Claim 1	Mackay
		Further, the BayStack 450 Switches disclose connectivity using physical interface lines using cables, stating "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. The BayStack 450 Switches further disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

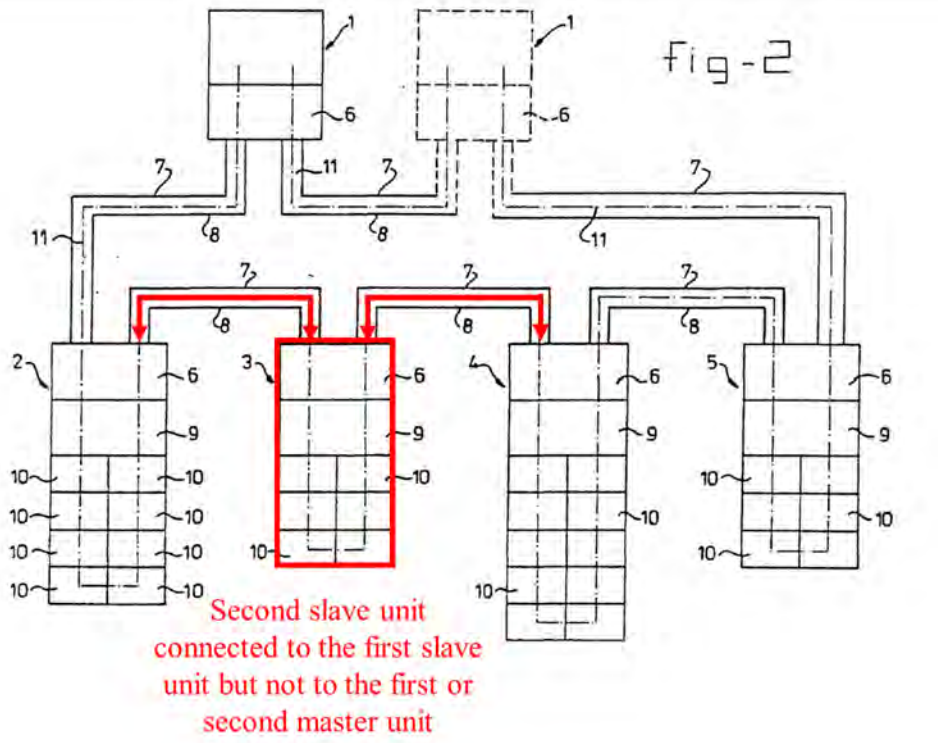
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No.	'904 Patent Claim 1	Mackay
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

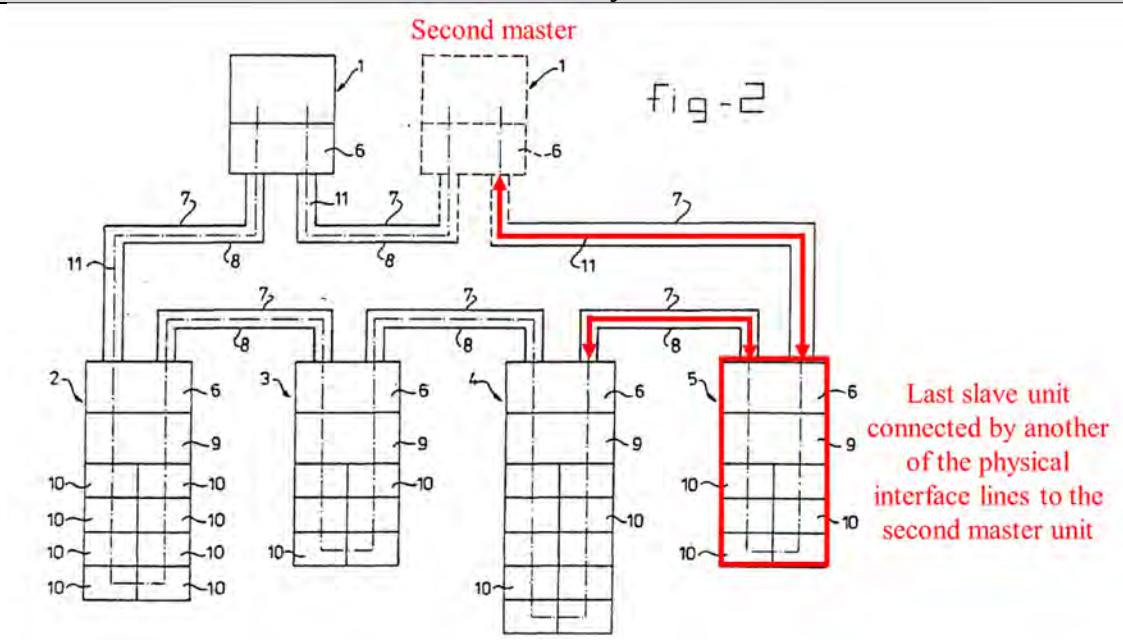
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No.	'904 Patent Claim 1	Mackay
		For example, Vink '324 discloses, due to the nature of the cascade and/or shift register arrangement, that substations and masters are only connection to a single substation or master in the upstream direction, and a single substation or master in the downstream direction.  Fig. 2 (annotation added)

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No.	'904 Patent Claim 1	Mackay
		 Fig. 2 (annotation added)

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No.	'904 Patent Claim 1	Mackay
		 Fig. 2 (annotation added)

No.	'904 Patent Claim 2	Mackay
2	Apparatus according to claim 1, wherein the network comprises an asynchronous transfer mode (ATM) network.	Mackay discloses an apparatus according to claim 1, wherein the network comprises an asynchronous transfer mode (ATM) network. For example, Mackay discloses that its system works with systems that provide packetized data communication, including by using time control means. Mackay at 2:44-50 ("A number of communication Systems provide some or all data in packetized form. In the time domain, data packets are typically Separated from one another by a time period referred to as the inter-packet gap (IPG). In at least some systems, some or

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No.	'904 Patent Claim 2	Mackay
		all of the IPG is used for (at least some) processing overhead and other purposes, e.g. to accommodate variability between nodes and the network.") Mackay at 13:20-41 ("Some or all of the features of the present invention can be used at least in connection with systems that provide packetized data communication, i.e. data in a plurality of data groups (which may also include header information, fillers and the like) of finite and/or determinant length. Typically, there is a period of time that transpires between transmission of any two Successive data packets. This period is referred to as an interpacket gap. For example, as depicted in FIG. 10, a first data packet 1012 terminates at a first time t, and the transmission of the next packet 1014 does not begin until a later and different time t. The interpacket gap 1016 would thus have a duration equal to t-t. In at least some communication systems, it is important to assure that the IPG is always at least a certain minimum duration. In at least some embodiments of the present invention, there is a tendency for implementations of the distributed repeater to diminish the IPG. Accordingly, in one embodiment of the invention, the distributed repeater adds to or augments the duration of each IPG before repeating or transmitting the packet. Preferably, the amount of augmentation is sufficient that the combined effect Substantially offsets any shrinking or diminishing the IPG.") Mackay at 2:17-21 ("It would be desirable in many Such situations to provide a System which is capable of operating in more than one mode. For example, in many situations it is desirable for a System to have the ability to operate in half-duplex mode or full duplex mode.") Mackay at 4:63-65 ("FIGS. 4A and B are block diagrams of systems as depicted in FIG. 3 but configured to permit full duplex operation") Mackay at 14:39-48 ("By providing the ability for a system administrator of other end-user to readily form the components of the present invention into any of a plurality of configurations, preferably by using relatively inexpensive repeater modules, the present invention can provide relatively high flexibility and investment protection and manageability in a manner readily implemented by a System administrator. The present invention can

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No.	'904 Patent Claim 2	Mackay
		provide highly flexible, preferably substantially scalable, stacking and/or connectivity options.")

No.	'904 Patent Claim 3	Mackay
3	Apparatus according to claim 1, wherein the network comprises an Internet protocol (IP) network.	Mackay discloses an apparatus according to claim 1, wherein the network comprises an Internet protocol (IP) network. For example, Mackay is used to provide access to an IP network through an IP address. Mackay at 6:10-35 ("In one embodiment, the system permits a variety of different Stacking or other architectures, depending on how the modules and cables are connected. For example, in one configuration, the system can be configured to provide a 1 Gigabit per Second (Gbps) independent Stack bus (though Standard Gigabit Ethernet connections), e.g. as depicted in FIG. 3A, allowing a number (in one embodiment, up to at least nine) switches to be stacked and managed through a Single IP address. In another embodiment, the System provides Support for a redundant loopback connection 349, e.g. using Secondary repeater modules 313a, b in the top and bottom Switches, as illustrated in FIG. 3B. In another configuration, a repeater module in each Switch can be coupled to high bandwidth (e.g. gigabit) Ethernet Switch 317 (FIG. 3C) forming a high-performance point-to-point configuration, to deliver e.g. 2 Gbps full duplex bandwidth between the high bandwidth Ethernet switch 317 and each Switch 312a, b, c which is connected via the repeater modules. In one configuration, a number (e.g. up to eight, or more) Switches can be aggregated in a Gigabit Ethernet Star topology. In one embodiment, a pair of switches can be coupled to provide a full-duplex configuration, as illustrated in FIG. 4A (and as described more thoroughly below). In one embodiment, by employing a Secondary repeater module 413 in at least one Switch, 412b, two or more full-duplex connections can be provided, as illustrated in FIG. 4B.") Mackay at 13:43-52 ("By providing a repeater which is distributed, a system can be configured such that multiple switches (e.g. mounted in a rack) can be treated by an administrator as if they were a single Switch (e.g. allowing management of multiple Switched ports from a single IP address), yet without requiring accommodating the substantial space occupied by a monolithic or non-distributed repeater (preferably providing interconnected

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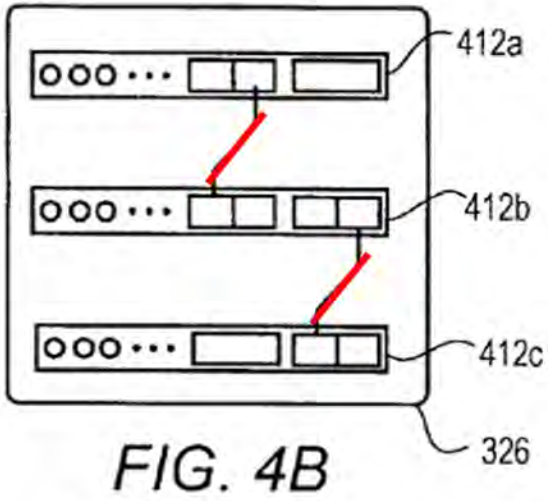
No.	'904 Patent Claim 3	Mackay
		switches with an independent high-speed Stacking bus that preserves valuable desktop ports).") Mackay at 14:46-56 ("The present invention can provide highly flexible, preferably substantially scalable, Stacking and/or connectivity options. It can provide high bandwidth (e.g. 1 Gbps) half-duplex connectivity in a daisy chained configuration or full-duplex (e.g. up to 2 Gbps or more) connectivity in a dedicated, Switch-to-Switch configuration. The present invention can be used to implement Systems which expand the traditional stacking domain beyond a single wiring closet, allowing users to Select and combine a plurality of interconnections to accommodate a range of management, performance and cost needs.")

No.	'904 Patent Claim 4	Mackay
4[preamble]	Network access apparatus, comprising:	Mackay discloses a network apparatus. *See supra* at 1[preamble].
4[a]	first and second master units, each comprising a physical interface to a packet-switched network;	Mackay discloses first and second master units, each comprising a physical interface to a packet-switched network. *See supra* at 1[a].
4[b]	a plurality of slave units,	Mackay discloses a plurality of slave units. *See supra* at 1[b].
4[c]	each slave unit comprising one or more ports to respective subscriber lines; and	Mackay discloses each slave unit comprising one or more ports to respective subscriber lines. *See supra* at 1[c].

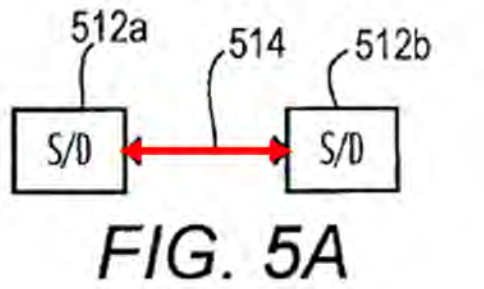
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No.	'904 Patent Claim 4	Mackay
4[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	Mackay discloses a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. *See supra* at 1[d].
4[e]	each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit,	Mackay discloses each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit. *See supra* at 1[e].
4[f]	wherein in normal operation, downstream data packets received from the network are passed from the first master unit to each of the daisy chains via the first slave unit in each chain, and upstream data packets received by the slaves	Mackay discloses wherein in normal operation, downstream data packets received from the network are passed from the first master unit to each of the daisy chains via the first slave unit in each chain, and upstream data packets received by the slaves in each chain from the subscriber lines are passed via the first slave unit in the chain to the first master unit for transmission over the network. For example, Mackay discloses bidirectional connections between the switches that permit the switches to communicate data packets in both directions, as both the source and the destination, when connecting to the network.

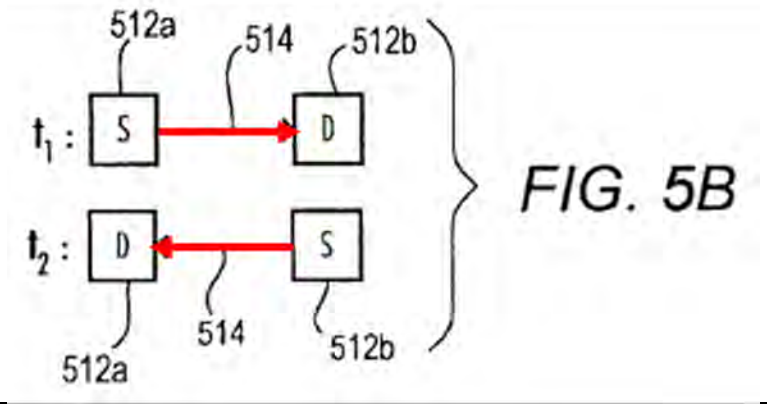
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No.	'904 Patent Claim 4	Mackay
	in each chain from the subscriber lines are passed via the first slave unit in the chain to the first master unit for transmission over the network.	Mackay at 3:1-11 ("In one embodiment, different modules of the repeater may be housed in different network switches. For example, a computer network may include a plurality of switch boxes or chassis, typically all mounted in one or more racks, often adjacent one another with the switches being coupled to network nodes such as personal computers, work stations and the like. In one embodiment, two or more, in some cases, all, of the switches include one or more regions for receiving repeater modules, with the repeater modules in different switches being coupled to one another by cables and the like.") Mackay at 6:32-35 ("In one embodiment, by employing a Secondary repeater module 413 in at least one Switch, 412b, two or more full-duplex connections can be provided, as illustrated in FIG. 4B.") Mackay, Figure 4B (annotation added):  FIG. 4B Mackay at 7:9-20 ("In one embodiment, repeater modules may be configured to provide a system which can operate in full duplex mode or half-duplex mode. As illustrated schematically in FIG. 5A, for communication between first and second nodes 512a, b over a communication link 514, where, at a given bandwidth, the nodes 512a, b can act either as a communication Source (S) or destination (D), full duplex mode permits communication to

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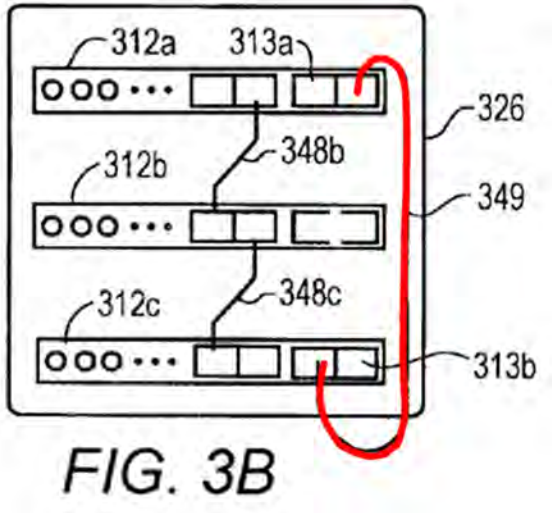
No.	'904 Patent Claim 4	Mackay
		take place over the link 514, simultaneously in a direction from the first node 512a (acting as a Source) to the Second node 512b (acting as a destination) and from the Second node 512b (acting as a Source) to the first node (acting as a destination) 512a.") Mackay, Figure 5A (annotation added):  FIG. 5A Mackay at 7:23-35 ("In a half-duplex node, the link 514 can provide for communication in either direction, but is only used for communication in one direction at any given time. For example, as depicted in FIG. 5B, at a first time t, the System may provide communication from the first node 512a (acting as source S) to the second node 512b (acting as destination D) while at a second, non-overlapping time t, the link 514 is used for providing communication in a direction from the second node 512b (acting as a Source), to the first node 512a (acting as a destination). Such distinctions between full duplex and half-duplex mode can be generalized to include systems with numerous nodes and links, as will be understood by those of skill in the art.") Mackay, Figure 5B (annotation added):

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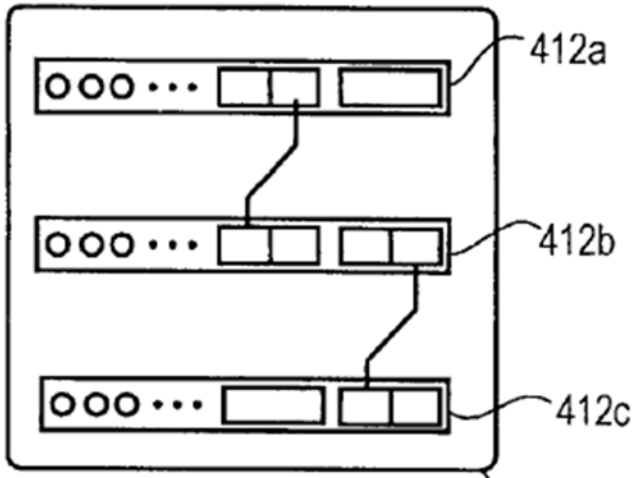
No.	'904 Patent Claim 4	Mackay
		 FIG. 5B

No.	'904 Patent Claim 5	Mackay
5	Apparatus according to claim 4, and comprising a protection interface, which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault.	Mackay discloses an apparatus according to claim 4, and comprising a protection interface, which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault. For example, Mackay discloses a redundant loopback connection to connect the bottom and top switches. At least under the apparent claim scope within Orckit's infringement Disclosures, this limitation is met. To the extent that Mackay is found to not meet this limitation, apparatus according to claim 4, and comprising a protection interface, which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault would have been obvious to a person having ordinary skill in the art, as explained below. *See, e.g.*, Mackay at 6:18-21 ("In another embodiment, the system provides support for a redundant loopback connection 349, e.g. using secondary repeater modules 313a, b in the top and bottom Switches, as illustrated in FIG. 3B.") Mackay, Figure 3B (annotation added):

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No.	'904 Patent Claim 5	Mackay
		 FIG. 3B Mackay at 6:32-35 ("In one embodiment, by employing a Secondary repeater module 413 in at least one Switch, 412b, two or more full-duplex connections can be provided, as illustrated in FIG. 4B.") Mackay, Figure 4B:

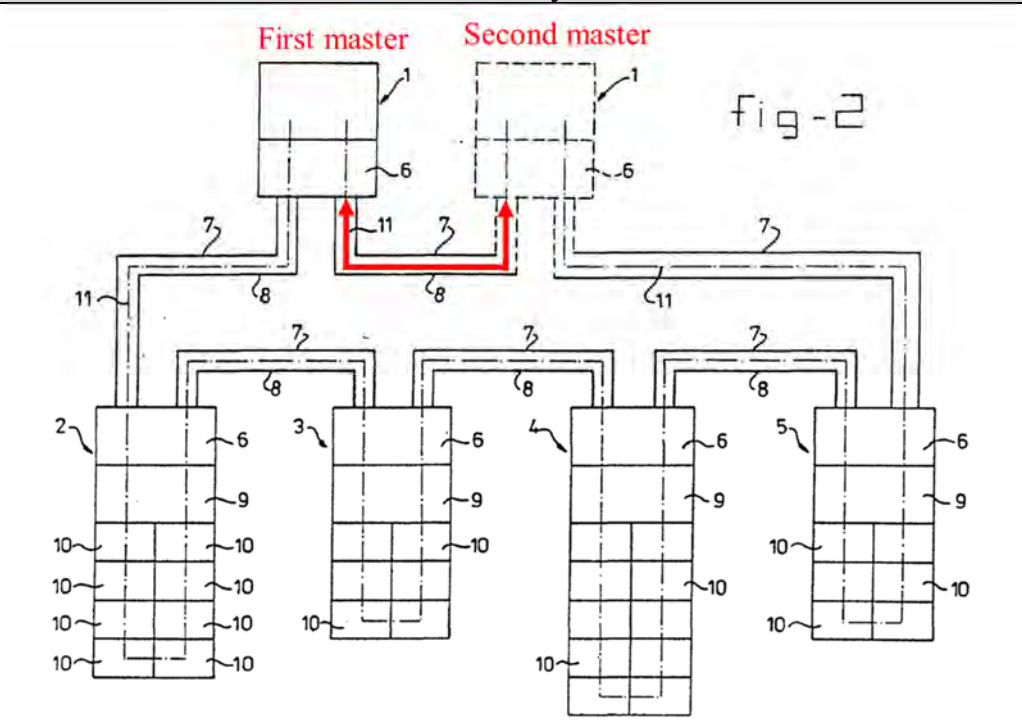
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No.	'904 Patent Claim 5	Mackay
		 FIG. 4B In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, Mackay in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 5 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. For example, Vink '324 discloses a physical interface that joins the first and second master to assist in transferring packets across the system in the event of a fault which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault. Vink '324 16:19-17:2 ("The shift register principle is also of advantage with respect to use, for example for reliability reasons, of a plurality of masters as is illustrated in Figure 2 by

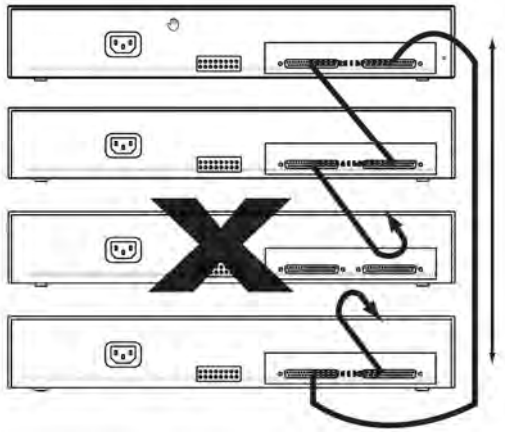
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No.	’904 Patent Claim 5	Mackay
		the broken lines. In such a multi-master concept, one of the masters is in general active in relation to data exchange, while one or more other masters only have a passive role therein. All the masters are so designed that they can assume the function of the active master, for example in the event of faults. The passive masters are easily able to detect errors of the active master because, as a consequence of their cascade arrangement and the serial transfer of data bits in the communication system according to the invention, they receive all the information which is intended for the active master. Consequently, no separate communication path is required between the various masters to keep the passive masters abreast of the operations, instruction etc. carried out by the active master. Such a "hot stand-by" mode is of importance, in particular, in industrial process measurement and control in which failure or delay in the production process may, inter alia, have serious financial consequences. It is obvious that, in such a multi-master concept, the conditions under which, and the manner in which, the tasks of a master are assumed by another master have to be specified in advance.”).

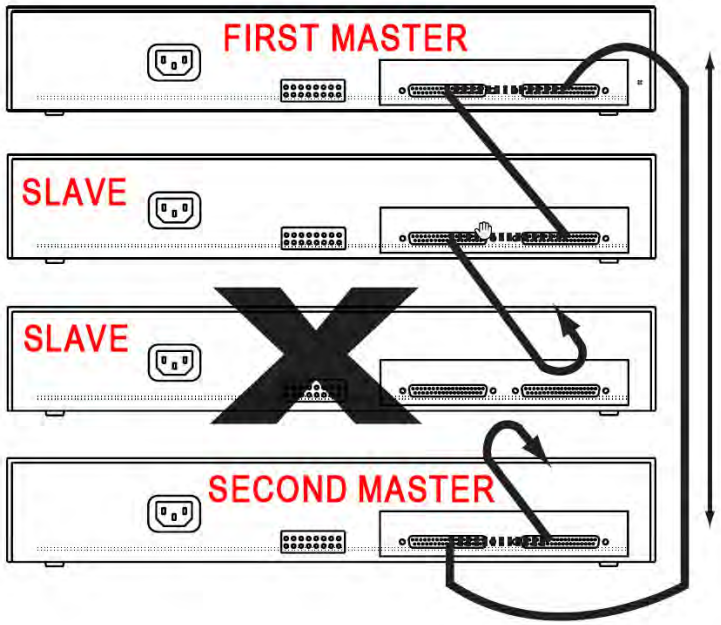
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No.	'904 Patent Claim 5	Mackay
		 Fig. 2 (annotation added) For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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No.	'904 Patent Claim 5	Mackay
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

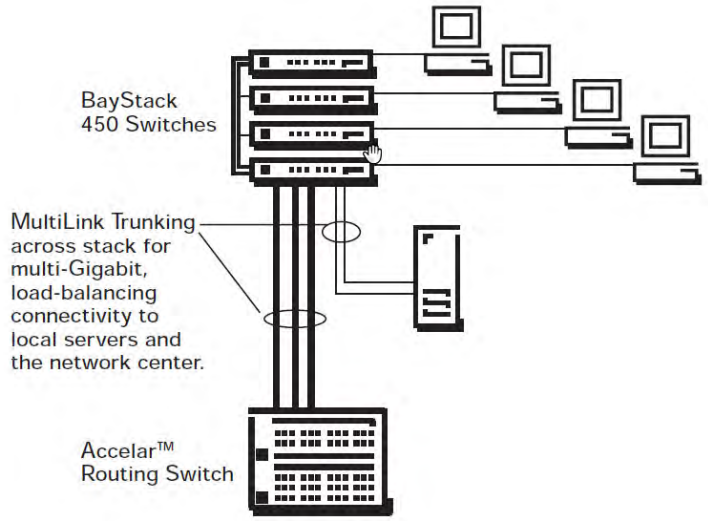
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No.	'904 Patent Claim 5	Mackay
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. In this example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features where "[e]ach unit in the stack has a full copy of the stack configuration so in the unlikely event of any unit failure, operation of the stack continues without affecting application connectivity." BayStack 450 Data Sheet at 3 of 8. In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the

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No.	'904 Patent Claim 5	Mackay
		redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches further disclose its fail-safe design features includes that "[e]ach switch includes a Redundant Power Supply Unit connection. Should the switch's built-in power supply fail, the Bay Networks RPSU (sold separately) will automatically supply power to the switch for uninterrupted operation." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below.

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No.	'904 Patent Claim 5	Mackay
		Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.  BayStack 450 Data Sheet at 4 of 8, FIG. 2. The BayStack 450 Switches further disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290.

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No.	'904 Patent Claim 5	Mackay
		Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

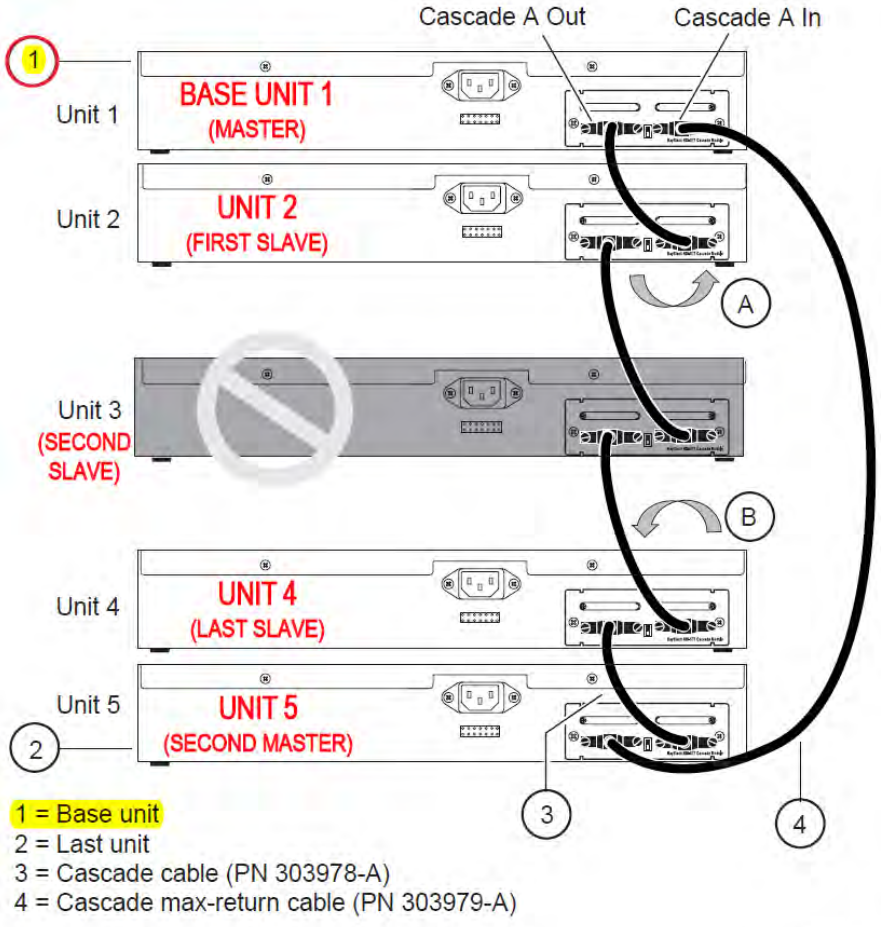
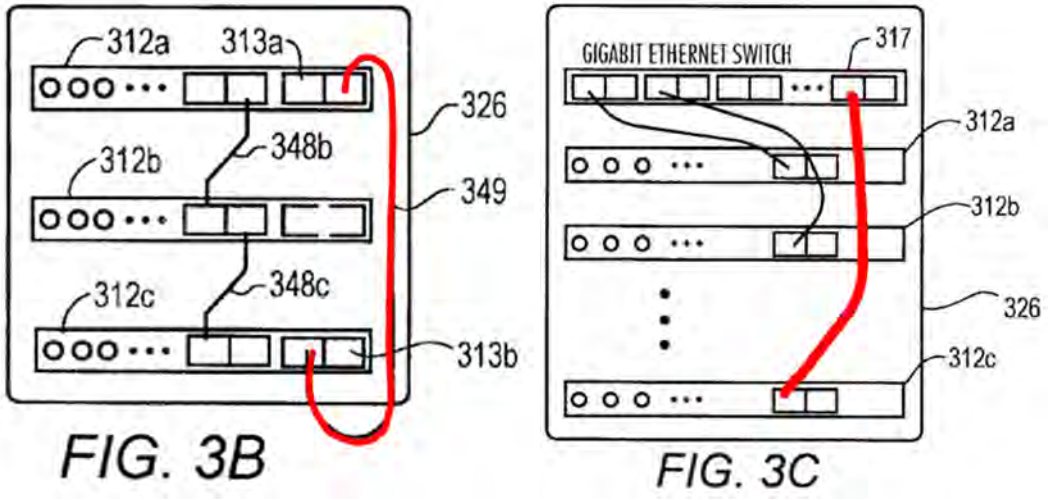


Figure 1-14. Redundant Cascade Stacking Feature

BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

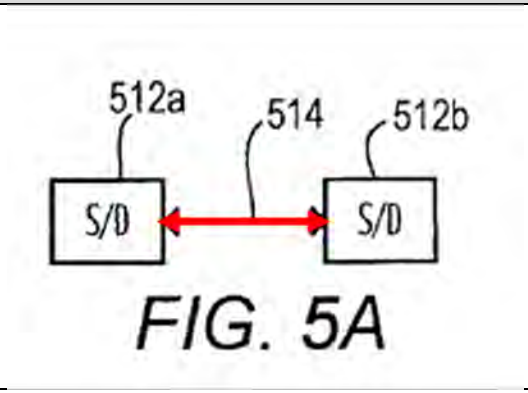
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No.	'904 Patent Claim 6	Mackay
6	Apparatus according to claim 5, wherein the first master unit bicasts the upstream data packets that it receives from the slave units to the network and, via the protection interface, to the second master unit, which transmits the upstream data packets to the network.	Mackay discloses an apparatus according to claim 5, wherein the first master unit bicasts the upstream data packets that it receives from the slave units to the network and, via the protection interface, to the second master unit, which transmits the upstream data packets to the network. For example, Mackay discloses the first switch being connected to the first slave unit and the last switch simultaneously and in a full-duplex connection, therefore capable of bicasting the upstream data packets that it receives from the slave units to the network and, via the protection interface, to the second master unit. Mackay further discloses that the last switch, can be independently connected to the network and therefore transmits upstream data packets to the network. See, e.g., Mackay, Figures 3B, 3C (annotations added): 

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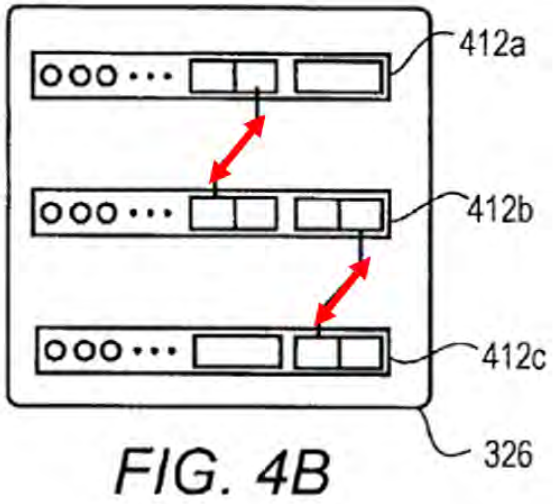
No.	'904 Patent Claim 6	Mackay
		Mackay at 6:18-30 ("In another embodiment, the system provides support for a redundant loopback connection 349, e.g. using secondary repeater modules 313a, b in the top and bottom switches, as illustrated in FIG. 3B. In another configuration, a repeater module in each switch can be coupled to high bandwidth (e.g. gigabit) Ethernet Switch 317 (FIG. 3C) forming a high-performance point-to-point configuration, to deliver e.g. 2 Gbps full duplex bandwidth between the high bandwidth Ethernet switch 317 and each Switch 312a, b, c which is connected via the repeater modules. In one configuration, a number (e.g. up to eight, or more) Switches can be aggregated in a Gigabit Ethernet Star topology.") Mackay at 6:64-7:3 ("As shown in FIG. 3A, in one embodiment, the repeater modules 342a, b, c,e each have left and right cable couplings and are configured such that, during normal operation, a cable, e.g. 34.8a, will couple a right coupling 352a of a repeater module in one switch 312a to a left coupling 352b of a repeater module 342b in a second Switch 312b.") Mackay at 7:9-20 ("In one embodiment, repeater modules may be configured to provide a system which can operate in full duplex mode or half-duplex mode. As illustrated schematically in FIG. 5A, for communication between first and second nodes 512a, b over a communication link 514, where, at a given bandwidth, the nodes 512a, b can act either as a communication Source (S) or destination (D), full duplex mode permits communication to take place over the link 514, simultaneously in a direction from the first node 512a (acting as a Source) to the Second node 512b (acting as a destination) and from the Second node 512b (acting as a Source) to the first node (acting as a destination) 512a.") Mackay, Figure 5A (annotation added):

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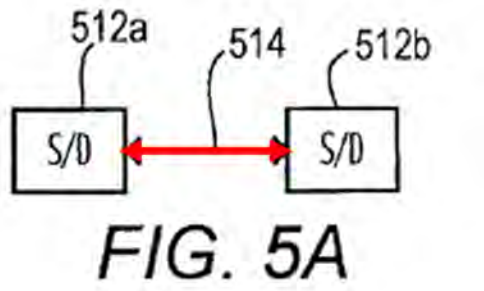
No.	'904 Patent Claim 6	Mackay
		 FIG. 5A

No.	'904 Patent Claim 7	Mackay
7	Apparatus according to claim 4, wherein in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data	Mackay discloses an apparatus according to claim 4, wherein in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit. For example, Mackay discloses bidirectional connections between the switches such that in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit can be reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Mackay is found to not meet this limitation, Apparatus according to claim 4, wherein in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets

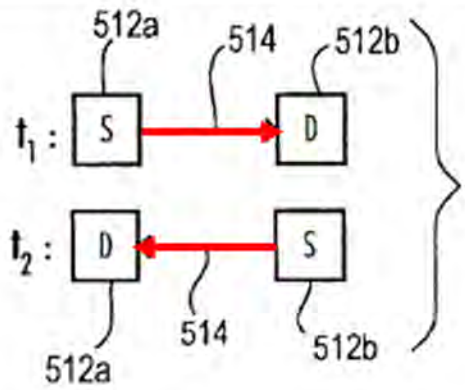
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No.	'904 Patent Claim 7	Mackay
	packets are passed by the last slave unit to the second master unit.	are passed by the last slave unit to the second master unit would have been obvious to a person having ordinary skill in the art, as explained below. Mackay at 6:32-35 ("In one embodiment, by employing a Secondary repeater module 413 in at least one Switch, 412b, two or more full-duplex connections can be provided, as illustrated in FIG. 4B.") MacKay, Figure 4B (annotation added):  FIG. 4B Mackay at 7:9-20 ("In one embodiment, repeater modules may be configured to provide a system which can operate in full duplex mode or half-duplex mode. As illustrated schematically in FIG. 5A, for communication between first and second nodes 512a, b over a communication link 514, where, at a given bandwidth, the nodes 512a, b can act either as a communication Source (S) or destination (D), full duplex mode permits communication to take place over the link 514, simultaneously in a direction from the first node 512a (acting as a Source) to the Second node 512b (acting as a destination) and from the Second node 512b (acting as a Source) to the first node (acting as a destination) 512a.")

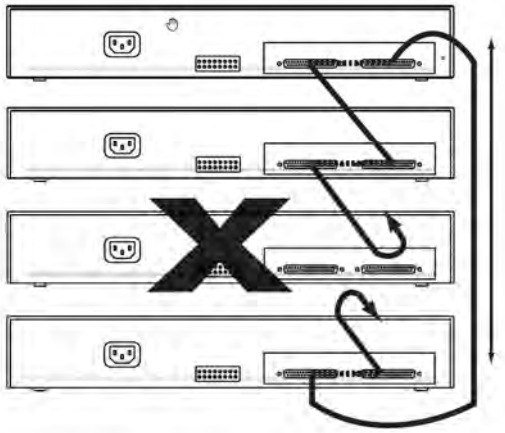
Orckit Exhibit 2016
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No.	'904 Patent Claim 7	Mackay
		Mackay, Figure 5A (annotation added):  FIG. 5A Mackay at 7:23-35 ("In a half-duplex node, the link 514 can provide for communication in either direction, but is only used for communication in one direction at any given time. For example, as depicted in FIG. 5B, at a first time t, the System may provide communication from the first node 512a (acting as source S) to the second node 512b (acting as destination D) while at a second, non-overlapping time t, the link 514 is used for providing communication in a direction from the second node 512b (acting as a Source), to the first node 512a (acting as a destination). Such distinctions between full duplex and half-duplex mode can be generalized to include systems with numerous nodes and links, as will be understood by those of skill in the art.") Mackay, Figure 5B (annotation added):

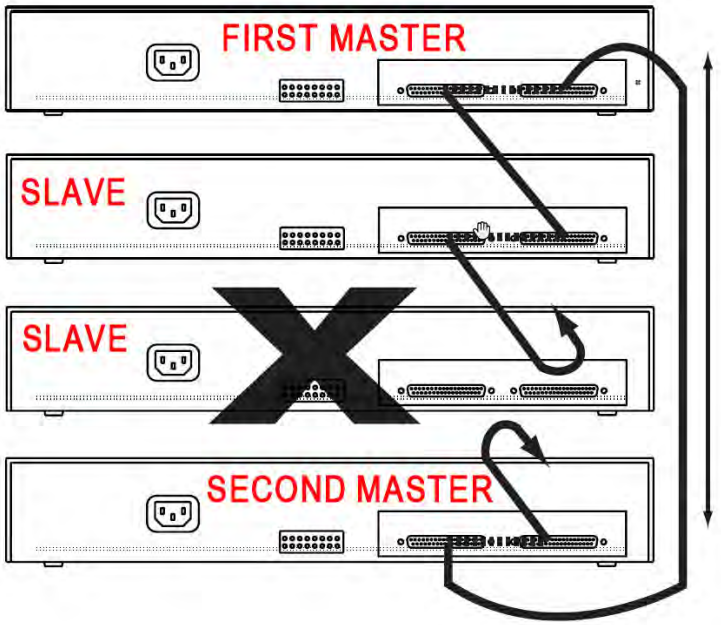
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No.	'904 Patent Claim 7	Mackay
		 FIG. 5B In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, Mackay in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 7 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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No.	'904 Patent Claim 7	Mackay
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

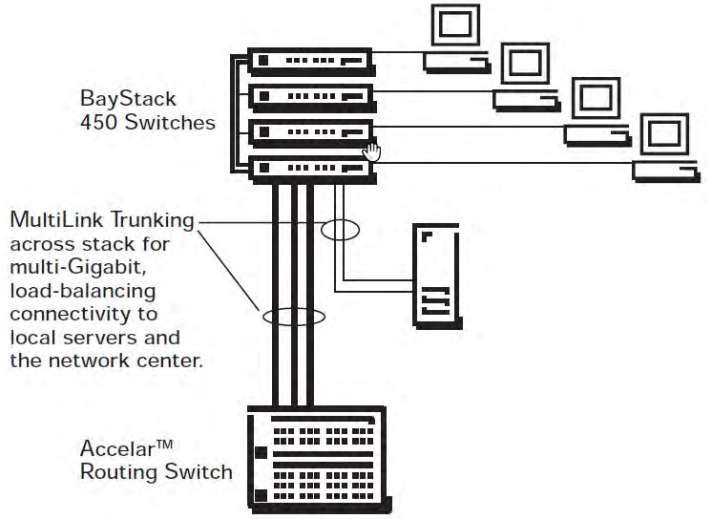
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No.	'904 Patent Claim 7	Mackay
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. In this example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features where "[e]ach unit in the stack has a full copy of the stack configuration so in the unlikely event of any unit failure, operation of the stack continues without affecting application connectivity." BayStack 450 Data Sheet at 3 of 8. In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the

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No.	'904 Patent Claim 7	Mackay
		redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches further disclose its fail-safe design features includes that "[e]ach switch includes a Redundant Power Supply Unit connection. Should the switch's built-in power supply fail, the Bay Networks RPSU (sold separately) will automatically supply power to the switch for uninterrupted operation." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below.

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No.	'904 Patent Claim 7	Mackay
		Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.  BayStack 450 Data Sheet at 4 of 8, FIG. 2. The BayStack 450 Switches further disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290.

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No.	'904 Patent Claim 7	Mackay
		Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

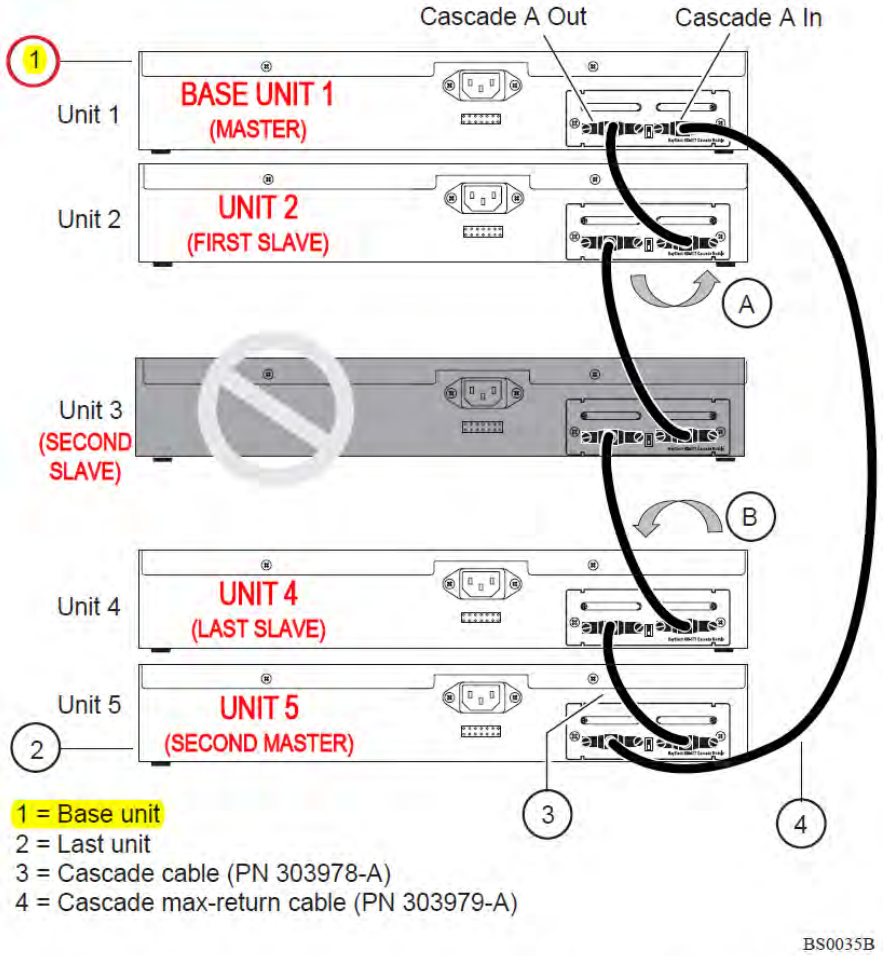
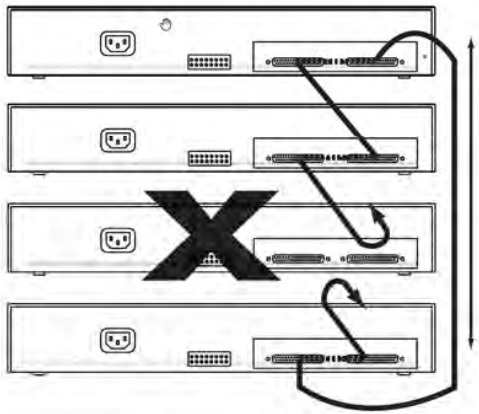


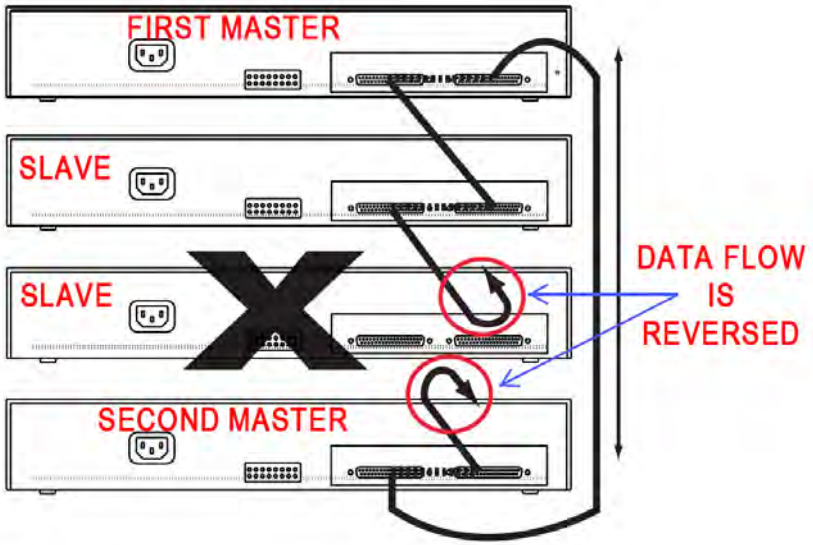
Figure 1-14. Redundant Cascade Stacking Feature

BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

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No.	'904 Patent Claim 7	Mackay
		For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.*  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

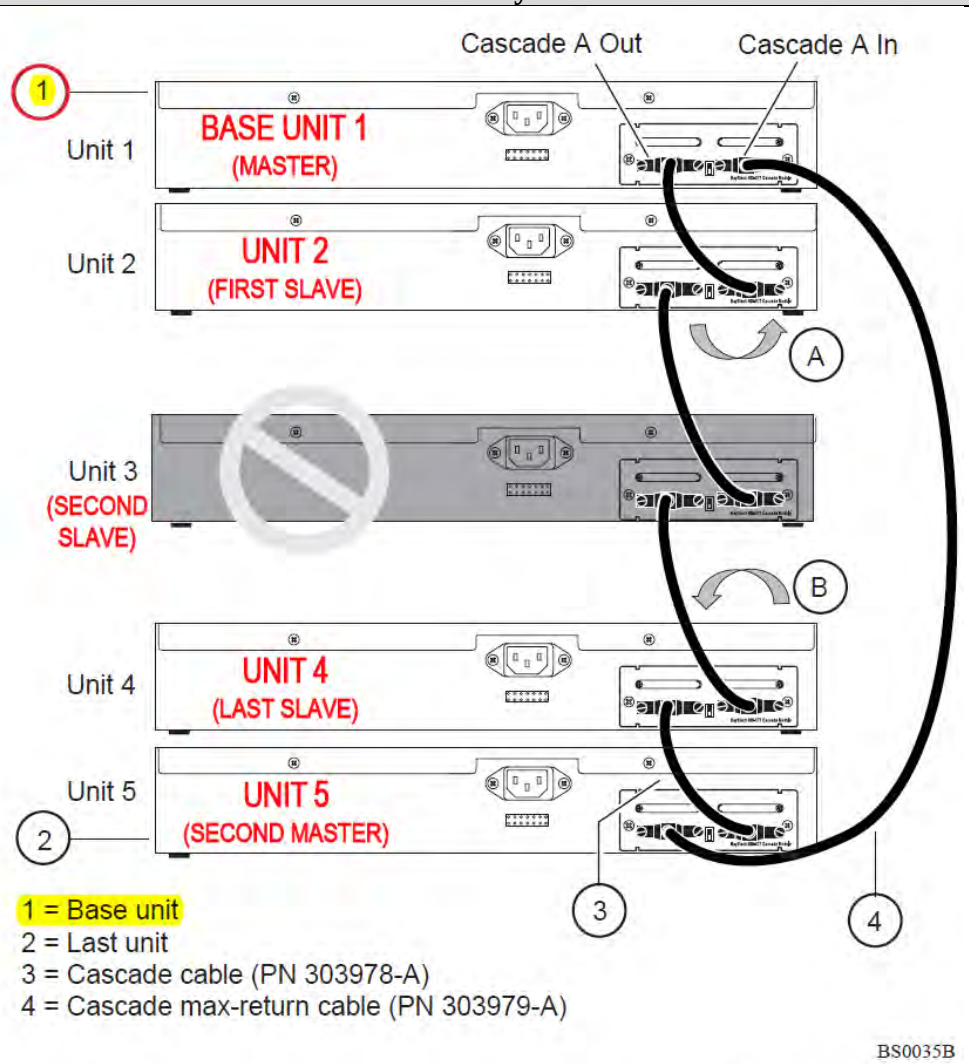
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No.	'904 Patent Claim 7	Mackay
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In the event of a failure, the BayStack 450 Switches disclose a Temporary Base Unit as being a second master unit. See, e.g., BayStack 450 Manual at 33, 52, 230 of 290. For instance, the BayStack 450 Manual states that "[i]f an assigned base unit fails, the next unit in the stack order automatically becomes the new temporary base unit. This change is indicated by the Base LED on the temporary base unit's LED display panel turning on (amber). For detailed information about the base LED, see Table 1-1 on page 1-6." BayStack 450 Manual at 52 of 290. Further, in this alternative example, the BayStack 450 Manual describes that "[t]his automatic failover is a temporary safeguard only. If the stack configuration loses power, the temporary

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No.	'904 Patent Claim 7	Mackay
		base unit will not power up as the base unit when power is restored. For this reason, you should always assign the temporary base unit as the base unit (set the Unit Select switch to Base) until the failed unit is repaired or replaced." BayStack 450 Manual at 52 of 290. In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290. Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

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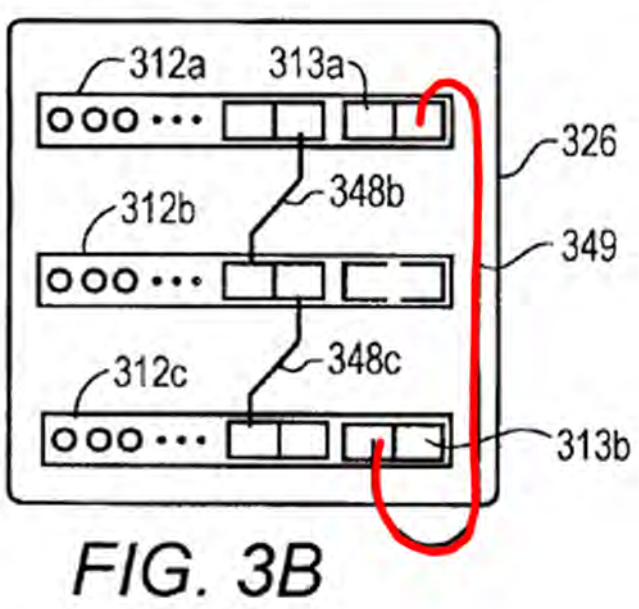
No.	'904 Patent Claim 7	Mackay
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

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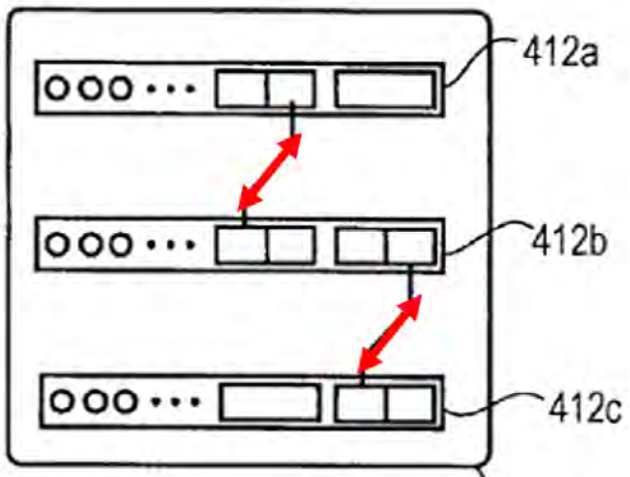
No.	'904 Patent Claim 7	Mackay
		The Baystack 450 Switches in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) Ding renders the claim, including the present limitation, obvious. Ding discloses failure protection. ("In order to coordinate management and control operations across the various cooperating Ethernet Switching modules in the Stack, one of the cooperating Ethernet Switching modules operates as the base module for the Stack. In a preferred embodiment of the present invention, a particular Ethernet Switching module is configured as the base module through a user-controlled toggle Switch on the Ethernet Switching module. If that Ethernet Switching module fails, then another Ethernet switching module (preferably the next upstream Ethernet Switching module in the Stack) automatically reconfigures itself to become the base module for the Stack. The base module is responsible for coordinating management and control for the Stack. Specifically, the base module manages the Stack configuration by ensuring that the Stack is initialized in an orderly manner, handling Stack configuration changes Such as module insertion and removal, and verifying stack integrity. The base module also coordinates certain Stack management functions that require synchronization or mutual exclusion among the various cooperating Ethernet switching modules in the stack." Ding, 8:9-30.

No.	'904 Patent Claim 8	Mackay
8	Apparatus according to claim 7, wherein the downstream packets for the slave units in the portion of the daisy chain between the location of the fault and the second master unit are conveyed to the second master unit	Mackay discloses an apparatus according to claim 7, wherein the downstream packets for the slave units in the portion of the daisy chain between the location of the fault and the second master unit are conveyed to the second master unit from the first master unit via another one of the daisy chains. For example, Mackay discloses directional connections between the switches and a redundant loopback from the bottom switch up to the top switch, creating another daisy chain under Orckit's apparent claim scope alleged by Orckit's Infringement Disclosures. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

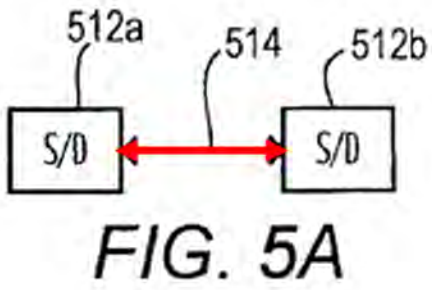
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No.	'904 Patent Claim 8	Mackay
	from the first master unit via another one of the daisy chains.	Mackay at 6:18-21 ("In another embodiment, the system provides support for a redundant loopback connection 349, e.g. using secondary repeater modules 313a, b in the top and bottom Switches, as illustrated in FIG. 3B.") Mackay, Figure 3B (annotation added):  FIG. 3B Mackay at 6:32-35 ("In one embodiment, by employing a Secondary repeater module 413 in at least one Switch, 412b, two or more full-duplex connections can be provided, as illustrated in FIG. 4B.") Mackay, Figure 4B (annotation added):

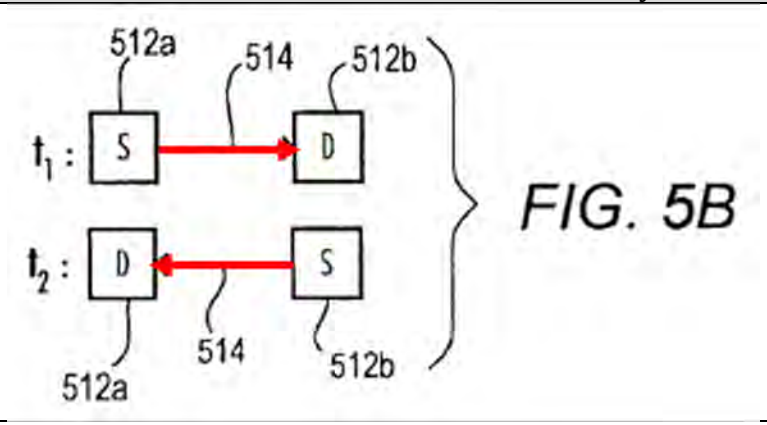
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No.	'904 Patent Claim 8	Mackay
		 FIG. 4B Mackay at 7:9-20 ("In one embodiment, repeater modules may be configured to provide a system which can operate in full duplex mode or half-duplex mode. As illustrated schematically in FIG. 5A, for communication between first and second nodes 512a, b over a communication link 514, where, at a given bandwidth, the nodes 512a, b can act either as a communication Source (S) or destination (D), full duplex mode permits communication to take place over the link 514, simultaneously in a direction from the first node 512a (acting as a Source) to the Second node 512b (acting as a destination) and from the Second node 512b (acting as a Source) to the first node (acting as a destination) 512a.") Mackay, Figure 5A (annotation added):

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No.	'904 Patent Claim 8	Mackay
		 FIG. 5A Mackay at 7:23-35 ("In a half-duplex node, the link 514 can provide for communication in either direction, but is only used for communication in one direction at any given time. For example, as depicted in FIG. 5B, at a first time t, the System may provide communication from the first node 512a (acting as source S) to the second node 512b (acting as destination D) while at a second, non-overlapping time t, the link 514 is used for providing communication in a direction from the second node 512b (acting as a Source), to the first node 512a (acting as a destination). Such distinctions between full duplex and half-duplex mode can be generalized to include systems with numerous nodes and links, as will be understood by those of skill in the art.") Mackay, Figure 5B (annotation added):

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No.	'904 Patent Claim 8	Mackay
		 FIG. 5B

No.	'904 Patent Claim 9	Mackay
9[preamble]	Network access apparatus, comprising:	Mackay discloses a network access apparatus. *See supra* at 1[preamble].
9[a]	first and second master units, each comprising a physical interface to a packet-switched network;	Mackay discloses first and second master units, each comprising a physical interface to a packet-switched network. *See supra* at 1[a].
9[b]	a plurality of slave units,	Mackay discloses a plurality of slave units. *See supra* at 1[b].
9[c]	each slave unit comprising one or more ports to respective subscriber lines; and	Mackay discloses each slave unit comprising one or more ports to respective subscriber lines. *See supra* at 1[c].

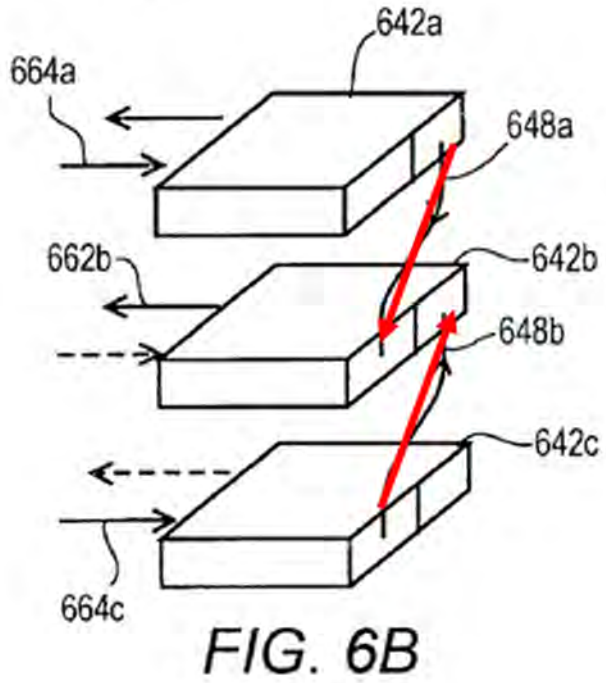
Orckit Exhibit 2016
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No.	'904 Patent Claim 9	Mackay
9[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	Mackay discloses Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See supra* at 1[d].
9[e]	each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit, wherein each of the first and second master units comprises:	Mackay discloses [-]. *See supra* at 1[e].
9[f]	a switch, configured to route data packets between the respective physical interface and the one or more daisy chains; and	Mackay discloses a switch, configured to route data packets between the respective physical interface and the one or more daisy chains. For example, Mackay discloses switches each configured to route data packets between their respective physical interfaces and one or more daisy chains.

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No.	'904 Patent Claim 9	Mackay
		Mackay, Abstract ("A repeater, useable for connecting switches in a data communication network, is provided in a distributed and/or modular fashion. The repeater includes a plurality of separate and distinct components or modules connected to or least partially housed in, the various switches which the repeater modules couple.") Mackay at 6:10-35 ("In one embodiment, the system permits a variety of different stacking or other architectures, depending on how the modules and cables are connected. For example, in one configuration, the System can be configured to provide a 1 Gigabit per Second (Gbps) independent Stack bus (though Standard Gigabit Ethernet connections), e.g. as depicted in FIG. 3A, allowing a number (in one embodiment, up to at least nine) Switches to be stacked and managed through a Single IP address.") Mackay at 14:46-56 ("In at least one embodiment, the present invention assists the system in maintaining at least a minimum IPG, e.g. to provide sufficient time for processing overhead, accommodating packet variability and the like. . . . The present invention can provide highly flexible, preferably substantially scalable, stacking and/or connectivity options. It can provide high bandwidth (e.g. 1 Gbps) half-duplex connectivity in a daisy chained configuration or full-duplex (e.g. up to 2 Gbps or more) connectivity in a dedicated, Switch-to-Switch configuration. The present invention can be used to implement systems which expand the traditional stacking domain beyond a single wiring closet, allowing users to Select and combine a plurality of interconnections to accommodate a range of management, performance and cost needs.") Mackay at 3:59-62 ("FIGS. 3A-C are block diagrams depicting components of networks with a plurality of Switches, each including a repeater module, with repeater modules coupled according to embodiments of the present invention.") Mackay at 13:20-24 ("Some or all of the features of the present invention can be used at least in connection with systems that provide packetized data communication, i.e. data in a plurality of data groups (which may also include header information, fillers and the like) of finite and/or determinant length.")

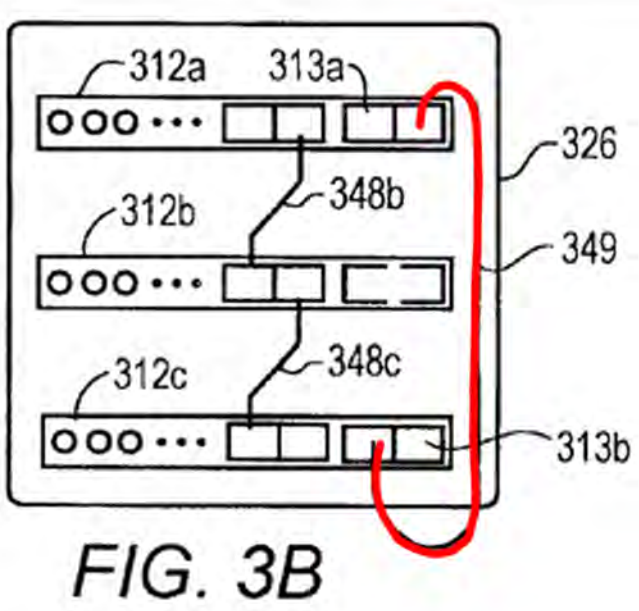
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No.	'904 Patent Claim 9	Mackay
		Mackay at 4:1-4 ("FIGS. 6A and 6B are block diagrams depicting data flow in a two-repeater-module full duplex configuration and a three-repeater-module, half-duplex configuration, respectively") Mackay, Figure 6B (annotation added):  FIG. 6B Mackay at 7:43-48 ("Each module 642a, 642b communicates with other circuitry on the Switch 312 e.g. via a circuitry on a circuit board (not shown) and the like to provide for both data output streams 662a, b and data input streams 664a, b between the switch circuitry 312 and repeater modules 642a, b respectively.")
9[g]	a pre-switch, which in the event of a fault at a location in one of the	Mackay discloses a pre-switch, which in the event of a fault at a location in one of the daisy chains, re-routes at least a portion of the data packets exchanged with one or more of the

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No.	'904 Patent Claim 9	Mackay
	daisy chains, re-routes at least a portion of the data packets exchanged with one or more of the slaves in the daisy chain in which the fault has occurred through another one of the daisy chains.	slaves in the daisy chain in which the fault has occurred through another one of the daisy chains. For example, Mackay discloses redundant loopbacks connecting switches, the ability to implement different topology configurations, and also discloses auto-configuration that allows it to disable specific repeater connections while maintaining data integrity, such that in the event of a fault at a location in one of the daisy chains, the system is capable of re-routing at least a portion of the data packets exchanged with one or more of the slaves in the daisy chain in which the fault has occurred through a secondary repeater connection as disclosed by the redundant loopback connection. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. See, e.g., Mackay at 6:18-21 ("In another embodiment, the system provides support for a redundant loopback connection 349, e.g. using secondary repeater modules 313a, b in the top and bottom Switches, as illustrated in FIG. 3B.") Mackay, Figure 3B (annotation added):

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No.	'904 Patent Claim 9	Mackay
		 FIG. 3B Mackay at 14:5-36 ("Preferably, expansion or reduction of a system can be accomplished without the need for suspending or disabling operation of communication system or otherwise disrupting communications. In one embodiment, autodetecting and autoconfiguration include the capability of detecting when the system is configured in a fashion that is compatible with full duplex communication and configuring the system for such full duplex operation when it is appropriate, otherwise configuring system for half-duplex operation in all cable connected repeater modules. In this way, the system can automatically operate at the more efficient and generally desirable full duplex mode whenever it is available while automatically providing half-duplex mode when that is the best mode feasible thus automatically configuring the system and repeater into the highest performance configuration without the need for operator input. In one embodiment, the autodetection and configuration includes automatically detecting whether a distributed repeater module port is coupled to a cable and, if so, whether the cable is of a proper type and, preferably, taking appropriate actions such as disabling or interrupting a repeater transmitter when a cable is not connected

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No.	'904 Patent Claim 9	Mackay
		or is of the improper type. In this way, the system can, preferably substantially automatically, configure itself so as to avoid undesirable levels of EMI (thus reducing EMI radiated from the distributed repeater at least because the software can determine when to enable and disable transmitters based on sensing a cable connection) and/or to avoid data loss or and maintain data integrity (thus, improving reliability of connections made since the user will know, when a cable is installed, that the cable is correct or incorrect).")

No.	'904 Patent Claim 10	Mackay
10	Apparatus according to claim 9, wherein the pre-switch re-routes the data packets such that substantially no reconfiguration of the switch is required responsive to the fault.	Mackay discloses an apparatus according to claim 9, wherein the pre-switch re-routes the data packets such that substantially no reconfiguration of the switch is required responsive to the fault. For example, Mackay discloses redundant loopbacks connecting switches, the ability to implement different topology configurations, and also auto-configuration that allows it to disable specific repeater connections while maintaining data integrity, such that re-routes the data packets such that substantially no reconfiguration of the switch is required responsive to the fault. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Mackay is found to not meet this limitation, apparatus according to claim 9, wherein the pre-switch re-routes the data packets such that substantially no reconfiguration of the switch is required responsive to the fault would have been obvious to a person having ordinary skill in the art, as explained below. *See supra* Claim 9[g]. See also, e.g., Mackay at 13:64-14:8 ("The present invention provides for implementing a system which is at least partially autodetecting and auto configuring in the sense that repeater functionality may be added to or removed from the system, or the system may be otherwise be reconfigured, by inserting or removing modular units and/or cables, preferably in fashion requiring only front panel access, without the need to manually set switches or otherwise perform configuration operations other than inserting or removing cables or modules. Preferably, expansion or reduction of a system can be accomplished without the need for

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No.	'904 Patent Claim 10	Mackay
		suspending or disabling operation of communication system or otherwise disrupting communications.") In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, Mackay in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 10 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. For example, Vink '324 discloses a transmitting/receiving unit that changes the direction of the data flow (*i.e.*, re-routes packets) in the case of a fault by switching which transmission ring the packets are being transmitted over. Disclosed is a transmitting/receiving and control unit which can switch the direction of the data flow. Vink '324 21:10-16 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly."). Vink '324 20:30-21:2 ("The software for controlling the communication system according to the invention is essentially concentrated in the master 1 which comprises, in an exemplary embodiment of the invention as shown in Figure 5, a control unit 36 for controlling the data flow via the transmission system 7, 8, with an associated memory 37 for storing and exchanging information with a control computer 38 which contains the calculations and background information necessary for the process to be controlled via the I/0 modules. Further peripheral equipment, for example a further computer (not shown) for supporting the control computer 38, may be connected to said control computer 38.")

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No.	'904 Patent Claim 10	Mackay
		Vink '324 17:3-12 ("Figure 3 shows a block diagram of an exemplary embodiment of a portion of a slave 2, 3, 4, 5. Data bits are transported via connections provided with an arrow. The transmitting/receiving unit 6 comprises a multiplexer 12 consisting of two modems 13, 14 which are respectively connected to the first transmission ring 7 and to the second transmission ring 8. For the transmission of the data via the transmission system, signal coding techniques known per se in practice may be used. The operation of the relevant transmission ring 7, 8 can be monitored by means of line error detectors 15.").

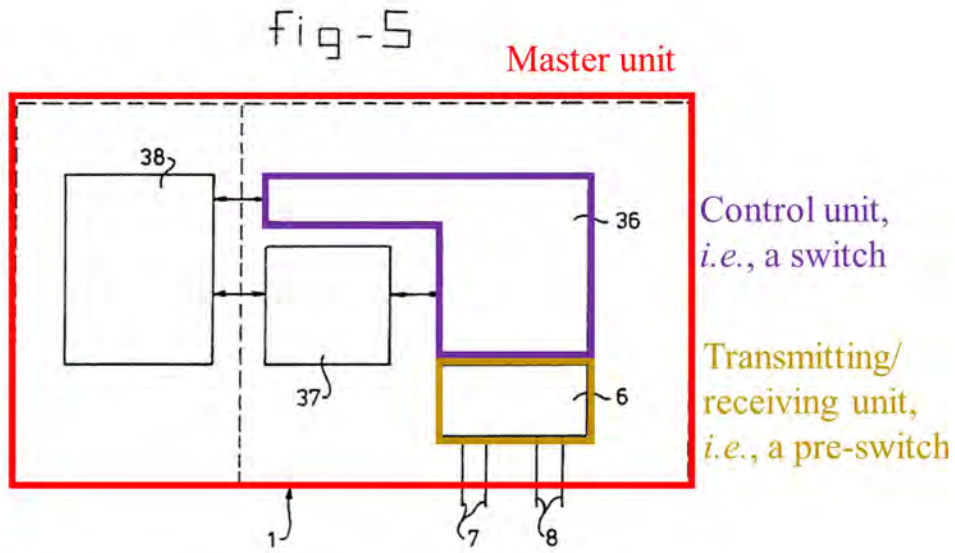


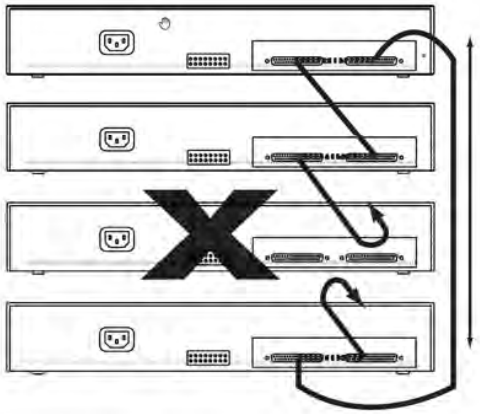
Fig. 5 (annotation added)

Vink '324 16:19-17:2 ("The shift register principle is also of advantage with respect to use, for example for reliability reasons, of a plurality of masters as is illustrated in Figure 2 by the broken lines. In such a multi-master concept, one of the masters is in general active in relation to data exchange, while one or more other masters only have a passive role therein. All the masters are so designed that they can assume the function of the active master, for example in the event of faults. The passive masters are easily able to detect errors of the active master

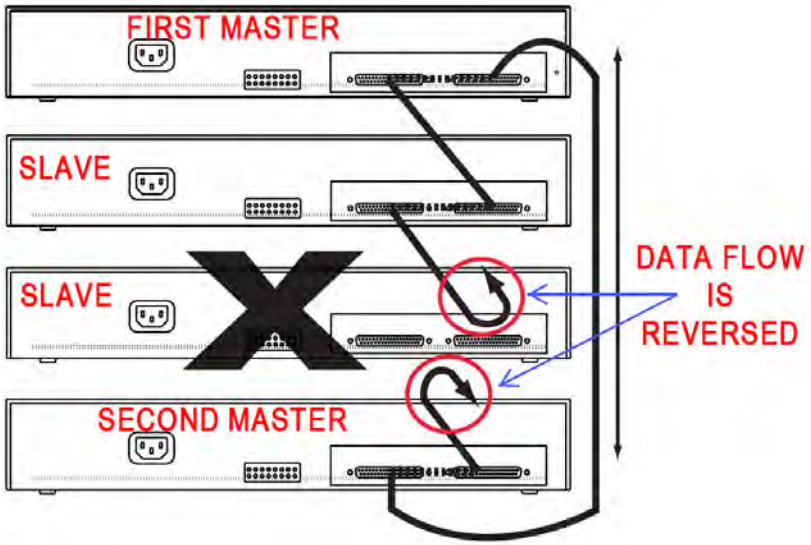
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No.	'904 Patent Claim 10	Mackay
		because, as a consequence of their cascade arrangement and the serial transfer of data bits in the communication system according to the invention, they receive all the information which is intended for the active master. Consequently, no separate communication path is required between the various masters to keep the passive masters abreast of the operations, instruction etc. carried out by the active master. Such a "hot stand-by" mode is of importance, in particular, in industrial process measurement and control in which failure or delay in the production process may, inter alia, have serious financial consequences. It is obvious that, in such a multi-master concept, the conditions under which, and the manner in which, the tasks of a master are assumed by another master have to be specified in advance."). For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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No.	'904 Patent Claim 10	Mackay
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

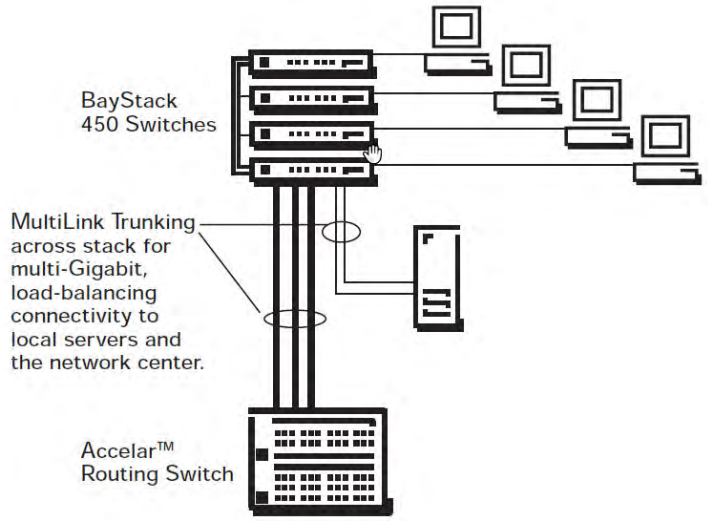
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No.	'904 Patent Claim 10	Mackay
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. In this example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features where "[e]ach unit in the stack has a full copy of the stack configuration so in the unlikely event of any unit failure, operation of the stack continues without affecting application connectivity." BayStack 450 Data Sheet at 3 of 8.

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No.	'904 Patent Claim 10	Mackay
		In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches further disclose its fail-safe design features includes that "[e]ach switch includes a Redundant Power Supply Unit connection. Should the switch's built-in power supply fail, the Bay Networks RPSU (sold separately) will automatically supply power to the switch for uninterrupted operation." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below.

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No.	'904 Patent Claim 10	Mackay
		Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.  BayStack 450 Data Sheet at 4 of 8, FIG. 2. And Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. In one example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the bottom of the stack in an aptly-named "Stack Up Configuration." BayStack 450 Manual at 54 of 290.

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No.	'904 Patent Claim 10	Mackay

Stack Up Configurations

In Figure 1-12, data flows from the base unit (unit 1) to the next switch, which is assigned as unit 2, and continues until the last switch in the stack is assigned as unit 8. The physical order of the switches is *from bottom to top* (unit 1 to unit 8).

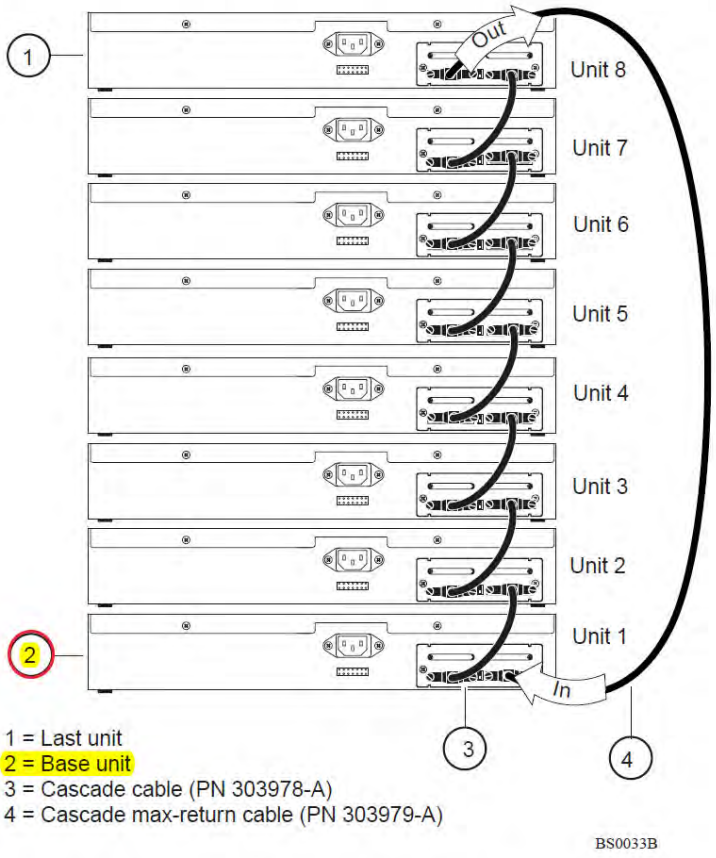


Figure 1-12. Stack Up Configuration Example

BayStack 450 Manual at 54 of 290, FIG. 1-12 (annotated).

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No.	'904 Patent Claim 10	Mackay
		In another example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the top of the stack in the also aptly-named "Stack Down Configuration." BayStack 450 Manual at 55 of 290.

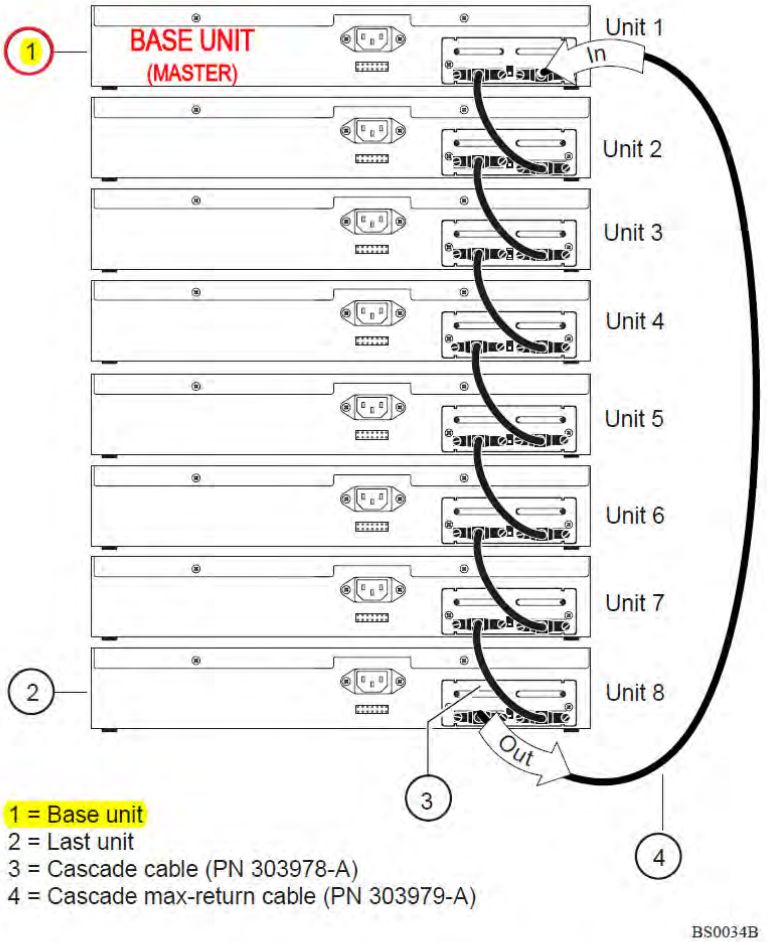


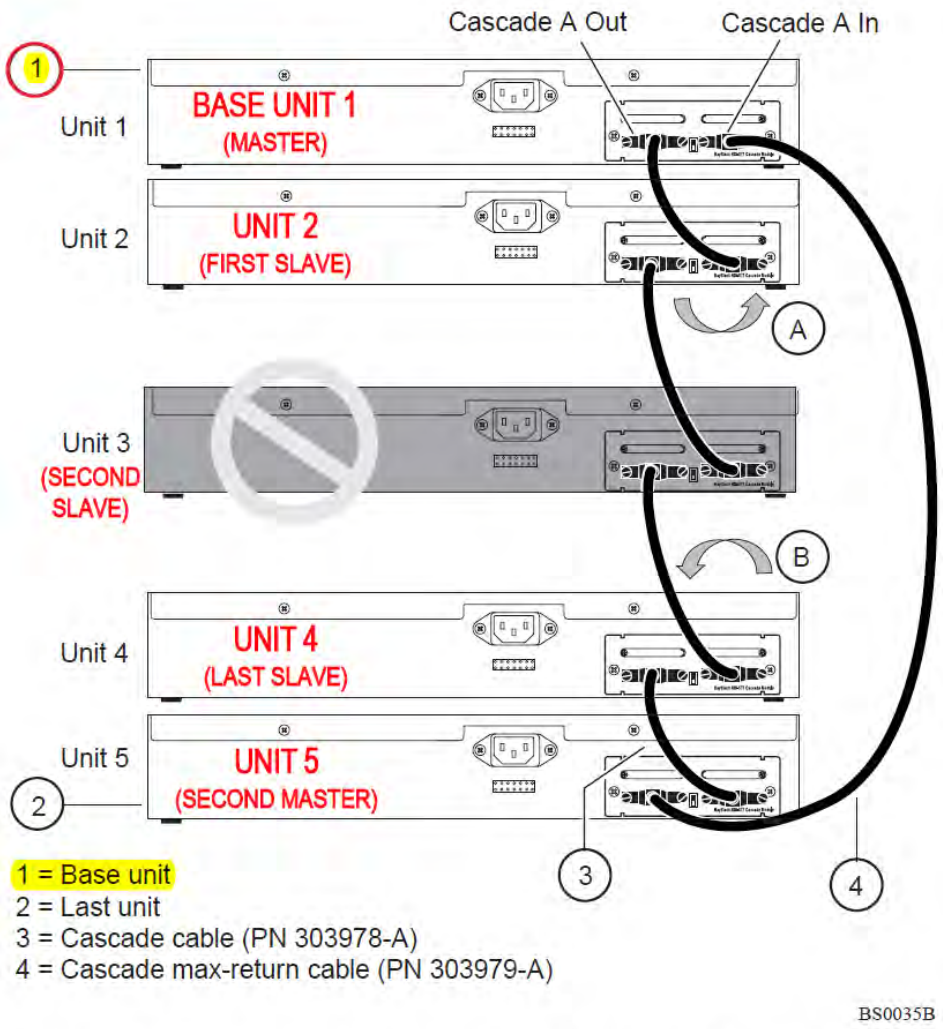
Figure 1-13. Stack Down Configuration Example

BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

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No.	'904 Patent Claim 10	Mackay
		In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290. Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

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No.	'904 Patent Claim 10	Mackay
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

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No.	'904 Patent Claim 11	Mackay
11[preamble]	Network access apparatus, comprising:	Mackay discloses a network access apparatus. *See supra* at 1[preamble].
11[a]	first and second master units, each comprising a physical interface to a packet-switched network;	Mackay discloses first and second master units, each comprising a physical interface to a packet-switched network. *See supra* at 1[a].
11[b]	a plurality of slave units,	Mackay discloses a plurality of slave units. *See supra* at 1[b].
11[c]	each slave unit comprising one or more ports to respective subscriber lines; and	Mackay discloses each slave unit comprising one or more ports to respective subscriber lines. *See supra* at 1[c].
11[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	Mackay discloses a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. *See supra* at 1[d].
11[e]	each daisy chain comprising at least a first slave unit	Mackay discloses each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit.

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No.	'904 Patent Claim 11	Mackay
	connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit,	*See supra* at 1[e].
11[f]	wherein each of the slave units comprises: a switch fabric comprising one or more switches, which convey data packets to respective ports on the switch to which the packets are addressed; and	Mackay discloses wherein each of the slave units comprises: a switch fabric comprising one or more switches, which convey data packets to respective ports on the switch to which the packets are addressed. For example, Mackay discloses being able to manage multiple switched ports from a single IP address when the switches are stacked in a daisy chain. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Mackay at 13:42-47 ("In light of the above description a number of advantages of the present invention can be seen. By providing a repeater which is distributed, a system can be configured such that multiple switches (e.g. mounted in a rack) can be treated by an administrator as if they were a single switch (e.g. allowing management of multiple switched ports from a single IP address)") Mackay, Claim 6 ("Apparatus for selecting between half-duplex and full duplex communication comprising: providing a multi-module distributed network repeater, each module having two ports for cable connections") Mackay at 3:38-43 ("In one aspect of the invention, a repeater, useable for connecting Switches in a data communication network, is provided in a distributed and/or modular fashion. The repeater includes a plurality of separate and distinct components or modules connected to or at least partially housed in, the various Switches which the repeater modules couple.")

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No.	'904 Patent Claim 11	Mackay
		Mackay at 7:43-48 ("Each module 642a, 642b communicates with other circuitry on the Switch 312 e.g. via a circuitry on a circuit board (not shown) and the like to provide for both data output streams 662a, b and data input streams 664a, b between the switch circuitry 312 and repeater modules 642a, b respectively.")
11[g]	a pre-switch, which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines.	Mackay discloses a pre-switch, which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines. For example, Mackay includes switch circuitry for distributing data appropriately among the ports on the switches. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Mackay at 7:43-48 ("Each module 642a, 642b communicates with other circuitry on the Switch 312 e.g. via a circuitry on a circuit board (not shown) and the like to provide for both data output streams 662a, b and data input streams 664a, b between the switch circuitry 312 and repeater modules 642a, b respectively.") Mackay at 3:38-43 ("In one aspect of the invention, a repeater, useable for connecting Switches in a data communication network, is provided in a distributed and/or modular fashion. The repeater includes a plurality of separate and distinct components or modules connected to or at least partially housed in, the various Switches which the repeater modules couple.") Mackay at 13:20-24 ("Some or all of the features of the present invention can be used at least in connection with Systems that provide pack etized data communication, i.e. data in a plurality of data groups (which may also include header information, fillers and the like) of finite and/or determinant length.")

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No.	'904 Patent Claim 12	Mackay
12	Apparatus according to claim 11, wherein each of the slave units is coupled to receive packets transferred thereto from the first and second master units over first and second ones of the physical interface lines, respectively, and wherein the pre-switch passes the packets received through the first and second physical interface line and addressed to any of the ports on the slave unit to respective first and second addresses in the switch fabric.	Mackay discloses apparatus according to claim 11, wherein each of the slave units is coupled to receive packets transferred thereto from the first and second master units over first and second ones of the physical interface lines, respectively, and wherein the pre-switch passes the packets received through the first and second physical interface line and addressed to any of the ports on the slave unit to respective first and second addresses in the switch fabric. *See, e.g.*, *supra* at 11[f].

No.	'904 Patent Claim 13	Mackay
13	Apparatus according to claim 12, wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second addresses are swapped in the pre-	Mackay discloses an apparatus according to claim 12, wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second addresses are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required. *See, e.g.*, *supra* at Claim 10.

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No.	'904 Patent Claim 13	Mackay
	switch, so that substantially no reconfiguration of the switch fabric is required.	

No.	'904 Patent Claim 14	Mackay
14[preamble]	In a network access multiplexing system,	Mackay discloses a network access multiplexing system. For example, Mackay discloses stackable switches that are configured to be managed through a single IP address. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. See, e.g., Mackay, Abstract ("A repeater, useable for connecting switches in a data communication network, is provided in a distributed and/or modular fashion. The repeater includes a plurality of separate and distinct components or modules connected to or least partially housed in, the various switches which the repeater modules couple.") Mackay at 3:1-11 ("In one embodiment, different modules of the repeater may be housed in different network switches. For example, a computer network may include a plurality of switch boxes or chassis, typically all mounted in one or more racks, often adjacent one another with the switches being coupled to network nodes such as personal computers, work stations and the like. In one embodiment, two or more, in some cases, all, of the switches include one or more regions for receiving repeater modules, with the repeater modules in different switches being coupled to one another by cables and the like.") Mackay at 13:43-52 ("By providing a repeater which is distributed, a system can be configured such that multiple switches (e.g. mounted in a rack) can be treated by an administrator as if they were a single Switch (e.g. allowing management of multiple Switched ports from a single

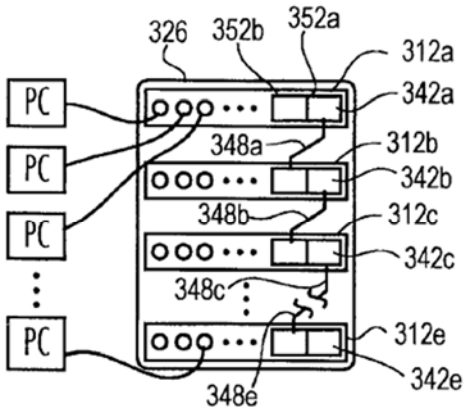
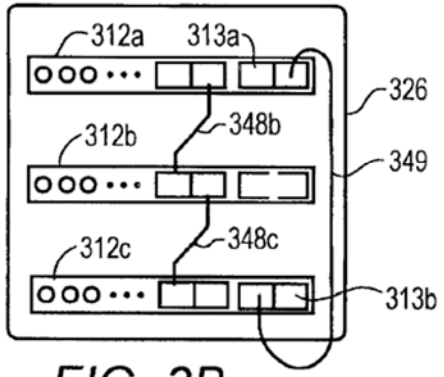
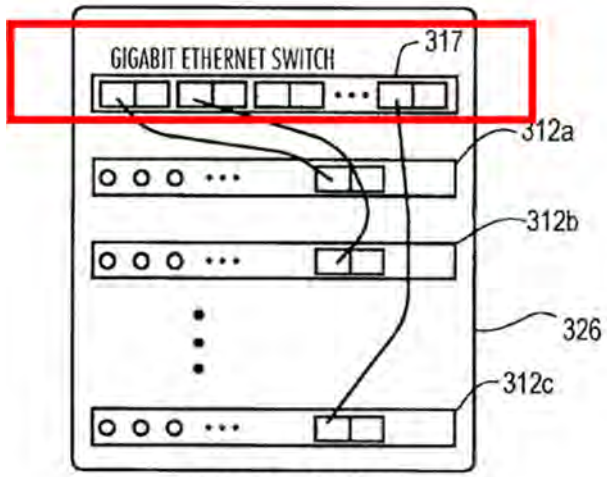
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No.	'904 Patent Claim 14	Mackay
		IP address), yet without requiring accommodating the substantial space occupied by a monolithic or non-distributed repeater (preferably providing interconnected switches with an independent high-speed Stacking bus that preserves valuable desktop ports).") Mackay at 15:11-27 ("In at least some embodiments of the present invention, there is no theoretical limit to the number of switch/repeater module units that may be cable connected or otherwise "stacked," although there may be practical or feasibility limits such as software capability or complexity limitations, practical space considerations and the like.") Mackay at 14:39-48 ("By providing the ability for a system administrator of other end-user to readily form the components of the present invention into any of a plurality of configurations, preferably by using relatively inexpensive repeater modules, the present invention can provide relatively high flexibility and investment protection and manageability in a manner readily implemented by a System administrator. The present invention can provide highly flexible, preferably substantially scalable, stacking and/or connectivity options.") See also, e.g., Mackay, Figures 3A-4B, 6B.
14[a]	in which a master unit is connected by a physical interface to a packet-switched network,	Mackay discloses a master unit is connected by a physical interface to a packet-switched network. For example, Mackay discloses switches are arranged in a stack that includes a master unit that connects to a packet-switched network (e.g., an ethernet network) via cables and/or other physical connections. Mackay, Abstract ("A repeater, useable for connecting switches in a data communication network, is provided in a distributed and/or modular fashion. The repeater includes a plurality of separate and distinct components or modules connected to or least partially housed in, the various switches which the repeater modules couple.") Mackay at 5:47-58 ("By "modular," is meant that the distributed repeater includes a plurality of preferably similar or substantially identical repeater modules which can be added or removed to increment, or decrement, preferably with relatively small granularity, the repeater

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No.	'904 Patent Claim 14	Mackay
		functionality, So as to substantially match the amount of repeater functionality that is provided, to the amount of repeater functionality that is needed (e.g. to avoid a situation such as that depicted in FIG. 2 in which the repeater 234 has substantially more port capability 234m than needed to provide repeater functions for the depicted switches.) Mackay at 6:10-35 ("In one embodiment, the system permits a variety of different stacking or other architectures, depending on how the modules and cables are connected. For example, in one configuration, the System can be configured to provide a 1 Gigabit per Second (Gbps) independent Stack bus (though Standard Gigabit Ethernet connections), e.g. as depicted in FIG. 3A, allowing a number (in one embodiment, up to at least nine) Switches to be stacked and managed through a Single IP address. In another embodiment, the System provides Support for a redundant loopback connection 349, e.g. using Secondary repeater modules 313a, b in the top and bottom Switches, as illustrated in FIG. 3B. In another configuration, a repeater module in each Switch can be coupled to high bandwidth (e.g. gigabit) Ethernet Switch 317 (FIG. 3C) forming a high-performance point-to-point configuration, to deliver e.g. 2 Gbps full duplex bandwidth between the high bandwidth Ethernet switch 317 and each Switch 312a, b, c which is connected via the repeater modules. In one configuration, a number (e.g. up to eight, or more) Switches can be aggregated in a Gigabit Ethernet Star topology. In one embodiment, a pair of Switches can be coupled to provide a full-duplex configuration, as illustrated in FIG. 4A (and as described more thoroughly below). In one embodiment, by employing a Secondary repeater module 413 in at least one Switch, 412b, two or more full-duplex connections can be provided, as illustrated in FIG. 4B.") Mackay, Figs. 3A-3C (annotation added):

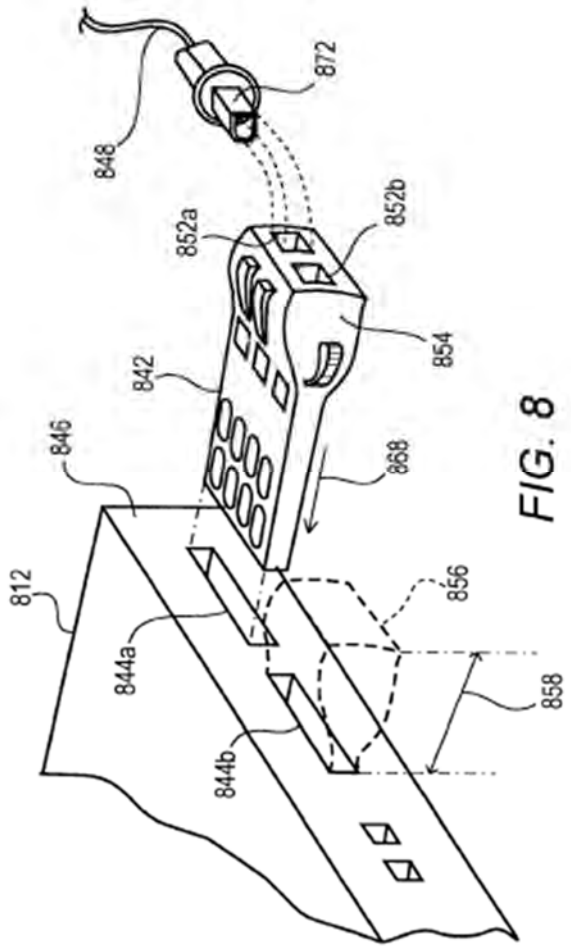
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No.	'904 Patent Claim 14	Mackay
		 FIG. 3A  FIG. 3B  FIG. 3C

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No.	'904 Patent Claim 14	Mackay
		Mackay at 13:20-24 ("Some or all of the features of the present invention can be used at least in connection with systems that provide packetized data communication, i.e. data in a plurality of data groups (which may also include header information, fillers and the like) of finite and/or determinant length.") Mackay at 13:43-52 ("By providing a repeater which is distributed, a system can be configured such that multiple switches (e.g. mounted in a rack) can be treated by an administrator as if they were a single Switch (e.g. allowing management of multiple Switched ports from a single IP address), yet without requiring accommodating the substantial space occupied by a monolithic or non-distributed repeater (preferably providing interconnected switches with an independent high-speed Stacking bus that preserves valuable desktop ports).") Mackay at 15:11-27 ("In at least some embodiments of the present invention, there is no theoretical limit to the number of switch/repeater module units that may be cable connected or otherwise "stacked," although there may be practical or feasibility limits such as software capability or complexity limitations, practical space considerations and the like. Although a cable (and cable connector) was described which can be used with embodiments of the present invention, it is possible to implement some or all features of the present invention using other communication links, such as other types of cables or connectors, optical cables, wireless links and the like. Although certain, preferably front-panel, connections were illustrated, repeater modules may be coupled to each other or to other circuitry, in other fashions, including internally in the switchbox, by cables and/or by leads or circuitry, e.g. on one or more switch PCBs.") Mackay at 3:1-11 ("In one embodiment, different modules of the repeater may be housed in different network switches. For example, a computer network may include a plurality of switch boxes or chassis, typically all mounted in one or more racks, often adjacent one another with the switches being coupled to network nodes such as personal computers, work stations and the like. In one embodiment, two or more, in some cases, all, of the switches include one or more regions for receiving repeater modules, with the repeater modules in different switches being coupled to one another by cables and the like.")

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No.	'904 Patent Claim 14	Mackay
		See also, e.g., Mackay, Figure 8:  FIG. 8

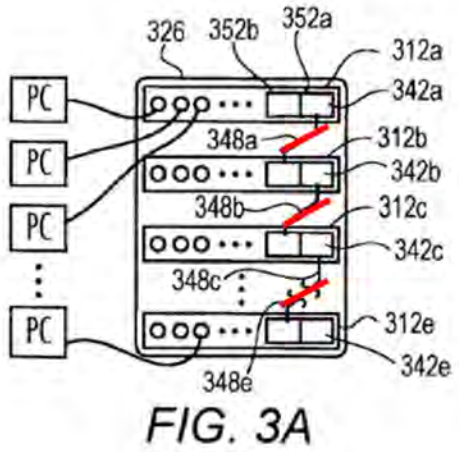
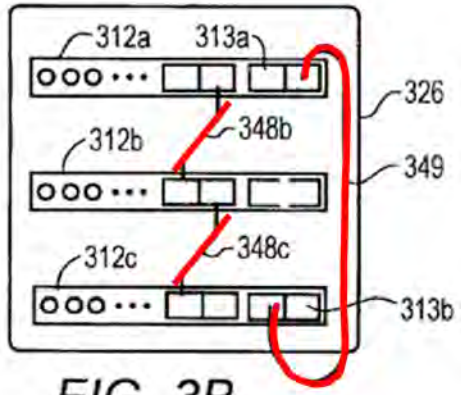
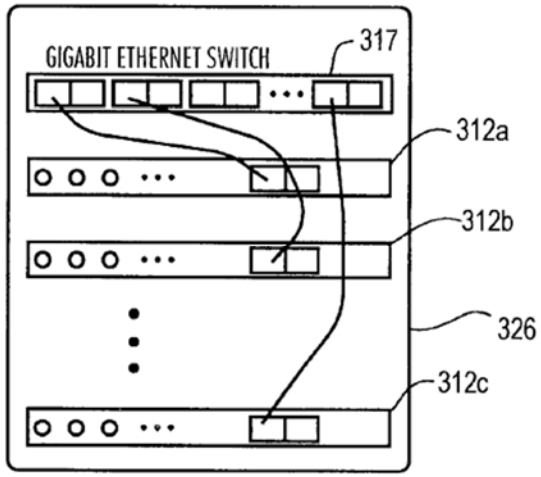
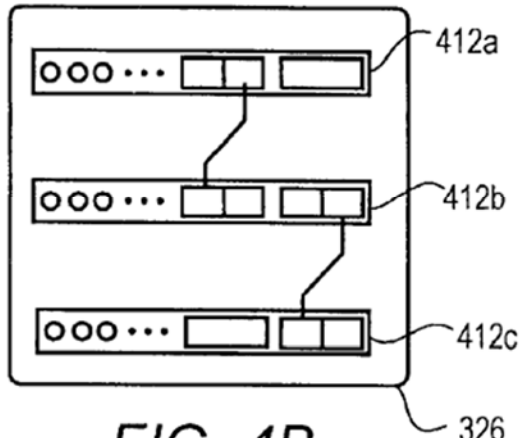
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No.	'904 Patent Claim 14	Mackay
14[b]	a slave unit configured to be coupled to the master unit in a daisy chain of such slave units, the slave unit comprising:	Mackay discloses a slave unit configured to be coupled to the master unit in a daisy chain of such slave units. For example, Mackay discloses cables that link switch units in a daisy chain, in which the switches are connected by physical interface lines therebetween. Thus, at least under the apparent claim scope in Orckit's Infringement Disclosures, this limitation is met. Mackay at 14:46-56 ("The present invention can provide highly flexible, preferably substantially scalable, stacking and/or connectivity options. It can provide high bandwidth (e.g. 1 Gbps) half-duplex connectivity in a daisy chained configuration or full-duplex (e.g. up to 2 Gbps or more) connectivity in a dedicated, Switch-to-Switch configuration. The present invention can be used to implement systems which expand the traditional stacking domain beyond a single wiring closet, allowing users to Select and combine a plurality of interconnections to accommodate a range of management, performance and cost needs.") Mackay at 3:1-11 ("In one embodiment, different modules of the repeater may be housed in different network switches. For example, a computer network may include a plurality of switch boxes or chassis, typically all mounted in one or more racks, often adjacent one another with the switches being coupled to network nodes such as personal computers, work stations and the like. In one embodiment, two or more, in some cases, all, of the switches include one or more regions for receiving repeater modules, with the repeater modules in different switches being coupled to one another by cables and the like.") Mackay at 6:10-35 ("("In one embodiment, the system permits a variety of different Stacking or other architectures, depending on how the modules and cables are connected. For example, in one configuration, the System can be configured to provide a 1 Gigabit per Second (Gbps) independent Stack bus (though Standard Gigabit Ethernet connections), e.g. as depicted in FIG. 3A, allowing a number (in one embodiment, up to at least nine) Switches to be stacked and managed through a Single IP address. In another embodiment, the System provides Support for a redundant loopback connection 349, e.g. using Secondary repeater modules 313a, b in the top and bottom Switches, as illustrated in FIG. 3B. In another configuration, a

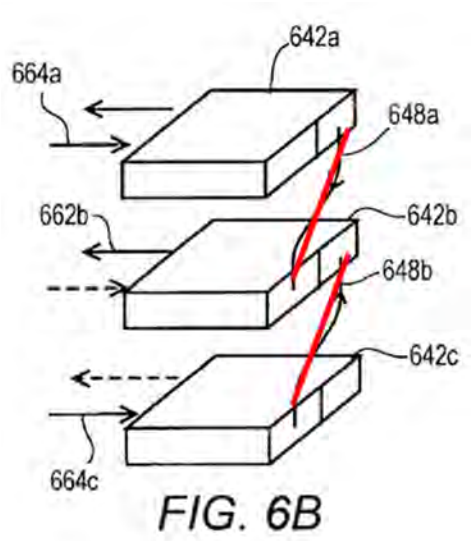
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No.	'904 Patent Claim 14	Mackay
		repeater module in each Switch can be coupled to high bandwidth (e.g. gigabit) Ethernet Switch 317 (FIG. 3C) forming a high-performance point-to-point configuration, to deliver e.g. 2 Gbps full duplex bandwidth between the high bandwidth Ethernet switch 317 and each Switch 312a, b, c which is connected via the repeater modules. In one configuration, a number (e.g. up to eight, or more) Switches can be aggregated in a Gigabit Ethernet Star topology. In one embodiment, a pair of switches can be coupled to provide a full-duplex configuration, as illustrated in FIG. 4A (and as described more thoroughly below). In one embodiment, by employing a secondary repeater module 413 in at least one switch, 412b, two or more full-duplex connections can be provided, as illustrated in FIG. 4B.") Mackay at 6:60-7:8 ("As depicted in FIG. 3A, a plurality of repeater modules may be coupled, one to another, such as by cables 348a,b,c, e so that the plurality of repeater modules 342a,b,c, e can, together, provide the desired repeater functionality. As shown in FIG. 3A, in one embodiment, the repeater modules 342a, b, c, e each have left and right cable couplings and are configured such that, during normal operation, a cable, e.g. 34.8a, will couple a right coupling 352a of a repeater module in one switch 312a to a left coupling 352b of a repeater module 342b in a second Switch 312b. In the embodiment depicted in FIG. 8, the repeater module 842 is configured with a flared proximal end 854 which, on the module 842 is fully inserted (to the position 856 depicted, in phantom, in FIG. 8) extends outwardly a distance 858 from the front panel 846 of the Switch housing 812.") Mackay at Figures 3A, 3B, 3C, 4B (annotation added):

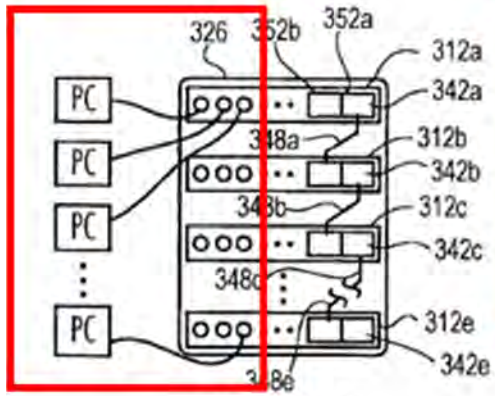
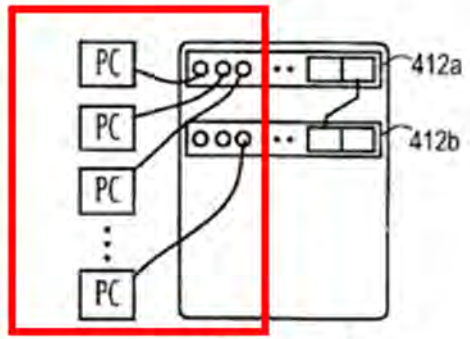
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No.	'904 Patent Claim 14	Mackay
		 FIG. 3A  FIG. 3B  FIG. 3C  FIG. 4B

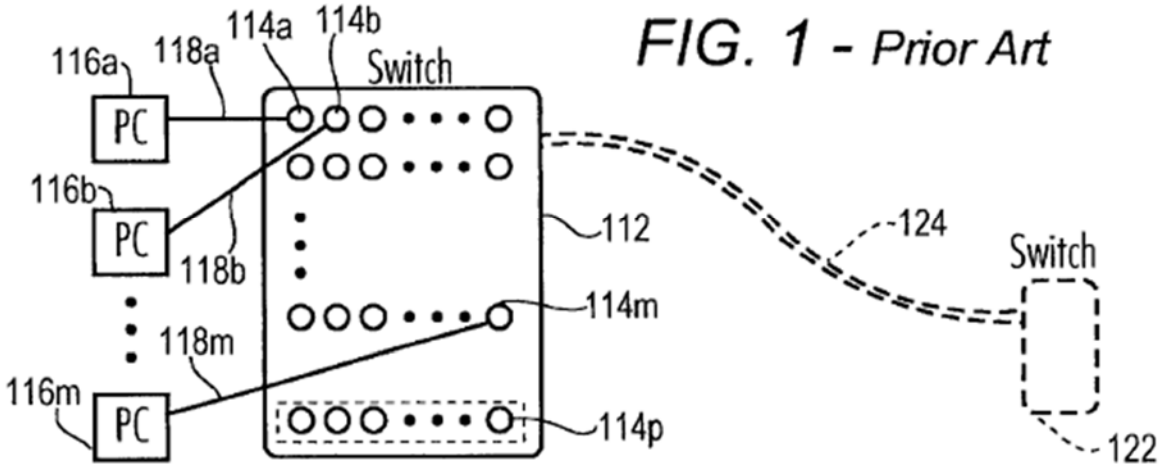
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No.	'904 Patent Claim 14	Mackay
		Mackay, Figure 6B:  FIG. 6B
14[c]	a plurality of ports, for coupling the slave unit to respective subscriber lines;	Mackay discloses a plurality of ports, for coupling the slave unit to respective subscriber lines. For example, Mackay discloses each switch having a plurality of ports that connect it to respective PCs, and/or workstations. See, e.g., Mackay at Figs. 3A, 4A (annotation added):

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No.	'904 Patent Claim 14	Mackay
		 FIG. 3A  FIG. 4A Mackay at 3:1-7 ("In one embodiment, different modules of the repeater may be housed in different network Switches. For example, a computer network may include a plurality of switch boxes or chassis, typically all mounted in one or more racks, often adjacent one another with the switches being coupled to network nodes such as personal computers, work stations and the like.") Mackay at 4:18-26 ("As depicted in FIG. 1, a common configuration of previous networks included a Switch 112 having a plurality of ports 114a, b, m, p coupled to a variety of network nodes, illustrated, in FIG. 1, by personal computers (PCS) 116a, b, m. Nodes can include a variety of items including printers, Scanners and the like. Depending, at least in part, on the type of network implemented, the connections can be way of cables 118a, b, m, Such as coaxial cables, twisted pairs, optical fiber, or one or more wireless links and the like.") Mackay, Figure 1:

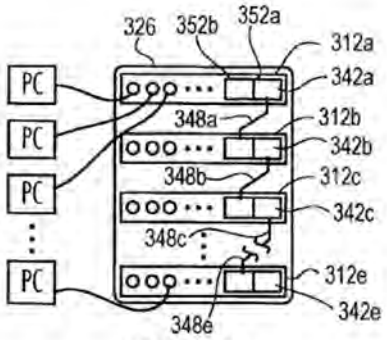
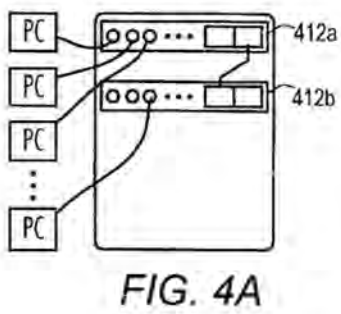
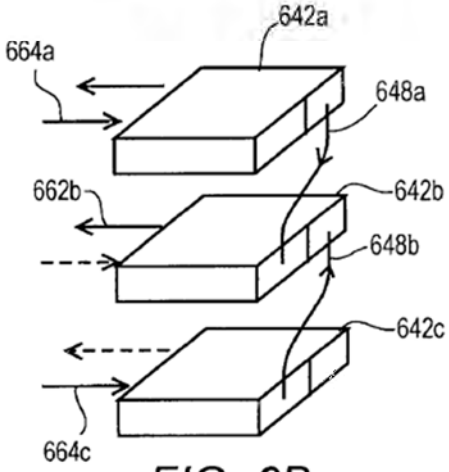
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No.	'904 Patent Claim 14	Mackay
		
14[d]	first and second physical interfaces, coupled to exchange packets with preceding and succeeding units, respectively, along the daisy chain;	Mackay discloses first and second physical interfaces, coupled to exchange packets with preceding and succeeding units, respectively, along the daisy chain. For example, Mackay discloses each switch coupling via cable to preceding and succeeding switches in the daisy chain. See, e.g., Mackay at 13:43-52 ("By providing a repeater which is distributed, a system can be configured such that multiple switches (e.g. mounted in a rack) can be treated by an administrator as if they were a single Switch (e.g. allowing management of multiple Switched ports from a single IP address), yet without requiring accommodating the substantial space occupied by a monolithic or non-distributed repeater (preferably providing interconnected switches with an independent high-speed Stacking bus that preserves valuable desktop ports).")

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No.	'904 Patent Claim 14	Mackay
		Mackay at 15:11-27 ("In at least some embodiments of the present invention, there is no theoretical limit to the number of switch/repeater module units that may be cable connected or otherwise "stacked," although there may be practical or feasibility limits such as software capability or complexity limitations, practical space considerations and the like. Although a cable (and cable connector) was described which can be used with embodiments of the present invention, it is possible to implement some or all features of the present invention using other communication links, such as other types of cables or connectors, optical cables, wireless links and the like. Although certain, preferably front-panel, connections were illustrated, repeater modules may be coupled to each other or to other circuitry, in other fashions, including internally in the switchbox, by cables and/or by leads or circuitry, e.g. on one or more switch PCBs.") Mackay at 3:1-11 ("In one embodiment, different modules of the repeater may be housed in different network switches. For example, a computer network may include a plurality of switch boxes or chassis, typically all mounted in one or more racks, often adjacent one another with the switches being coupled to network nodes such as personal computers, work stations and the like. In one embodiment, two or more, in some cases, all, of the switches include one or more regions for receiving repeater modules, with the repeater modules in different switches being coupled to one another by cables and the like.") Mackay, Claim 6 ("Apparatus for selecting between half-duplex and full duplex communication comprising: providing a multi-module distributed network repeater, each module having two ports for cable connections") Mackay at 6:60-7:8 ("As depicted in FIG. 3A, a plurality of repeater modules may be coupled, one to another, such as by cables 348a,b,c, e so that the plurality of repeater modules 342a,b,c, e can, together, provide the desired repeater functionality. As shown in FIG. 3A, in one embodiment, the repeater modules 342a, b, c, e each have left and right cable couplings and are configured Such that, during normal operation, a cable, e.g. 34.8a, will couple a right coupling 352a of a repeater module in one switch 312a to a left coupling 352b of a repeater module 342b in a second Switch 312b. In the embodiment depicted in FIG. 8, the repeater

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No.	'904 Patent Claim 14	Mackay
		module 842 is configured with a flared proximal end 854 which, on the module 842 is fully inserted (to the position 856 depicted, in phantom, in FIG. 8) extends outwardly a distance 858 from the front panel 846 of the Switch housing 812.") Mackay, Figure 3A, 4A, 6B  FIG. 3A  FIG. 4A  FIG. 6B

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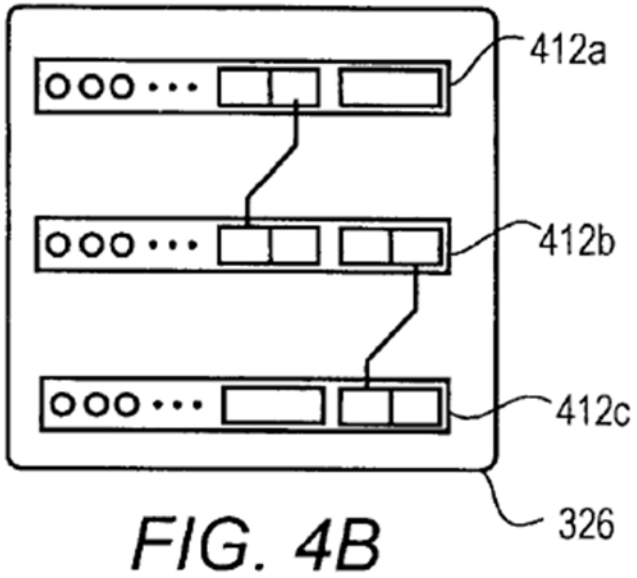
No.	'904 Patent Claim 14	Mackay
14[e]	a pre-switch, coupled to receive packets from the first physical interface and responsive to address data carried by the packets, to sort the packets such that packets addressed to the slave unit are retained, and packets addressed to the succeeding units are passed to the second physical interface; and	Mackay discloses a pre-switch, coupled to receive packets from the first physical interface and responsive to address data carried by the packets, to sort the packets such that packets addressed to the slave unit are retained, and packets addressed to the succeeding units are passed to the second physical interface. *See supra* at Claim 11[g].
14[f]	a fabric of one or more switches, which convey the retained packets to the ports, responsive to the address data.	Mackay discloses a fabric of one or more switches, which convey the retained packets to the ports, responsive to the address data. *See, supra* at 11[f].

No.	'904 Patent Claim 15	Mackay
15	The slave unit according to claim 14, wherein the pre-switch is further coupled to receive packets transferred thereto from the second physical interface and to sort the packets in	Mackay discloses the slave unit according to claim 14, wherein the pre-switch is further coupled to receive packets transferred thereto from the second physical interface and to sort the packets in like manner to the packets received through the first physical interface. For example, Mackay discloses bidirectional connections that permits the switches to communicate data packets in both directions, as both the source and the destination, such that a switch can receive packets transferred to it in the same way as packets it receives from the other slave units' physical interfaces, and sorts those packets in the same manner. To the extent that the Mackay is found to not meet this limitation, the slave unit according to claim

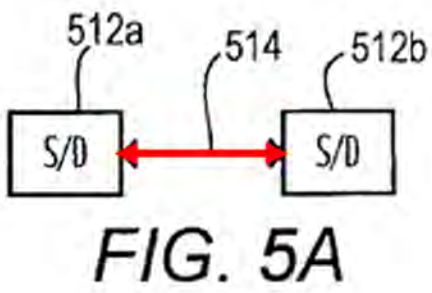
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No.	'904 Patent Claim 15	Mackay
	like manner to the packets received through the first physical interface.	14, wherein the pre-switch is further coupled to receive packets transferred thereto from the second physical interface and to sort the packets in like manner to the packets received through the first physical interface would have been obvious to a person having ordinary skill in the art, as explained below. See, e.g., Mackay at 3:1-11 ("In one embodiment, different modules of the repeater may be housed in different network switches. For example, a computer network may include a plurality of switch boxes or chassis, typically all mounted in one or more racks, often adjacent one another with the switches being coupled to network nodes such as personal computers, work stations and the like. In one embodiment, two or more, in some cases, all, of the switches include one or more regions for receiving repeater modules, with the repeater modules in different switches being coupled to one another by cables and the like.") Mackay at 6:32-35 ("In one embodiment, by employing a Secondary repeater module 413 in at least one Switch, 412b, two or more full-duplex connections can be provided, as illustrated in FIG. 4B.") Mackay, Figure 4B:

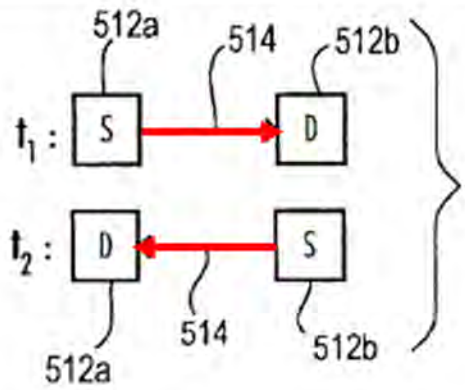
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No.	'904 Patent Claim 15	Mackay
		 FIG. 4B Mackay at 7:9-20 ("In one embodiment, repeater modules may be configured to provide a system which can operate in full duplex mode or half-duplex mode. As illustrated schematically in FIG. 5A, for communication between first and second nodes 512a, b over a communication link 514, where, at a given bandwidth, the nodes 512a, b can act either as a communication Source (S) or destination (D), full duplex mode permits communication to take place over the link 514, simultaneously in a direction from the first node 512a (acting as a Source) to the Second node 512b (acting as a destination) and from the Second node 512b (acting as a Source) to the first node (acting as a destination) 512a.") Mackay, Figure 5A (annotation added):

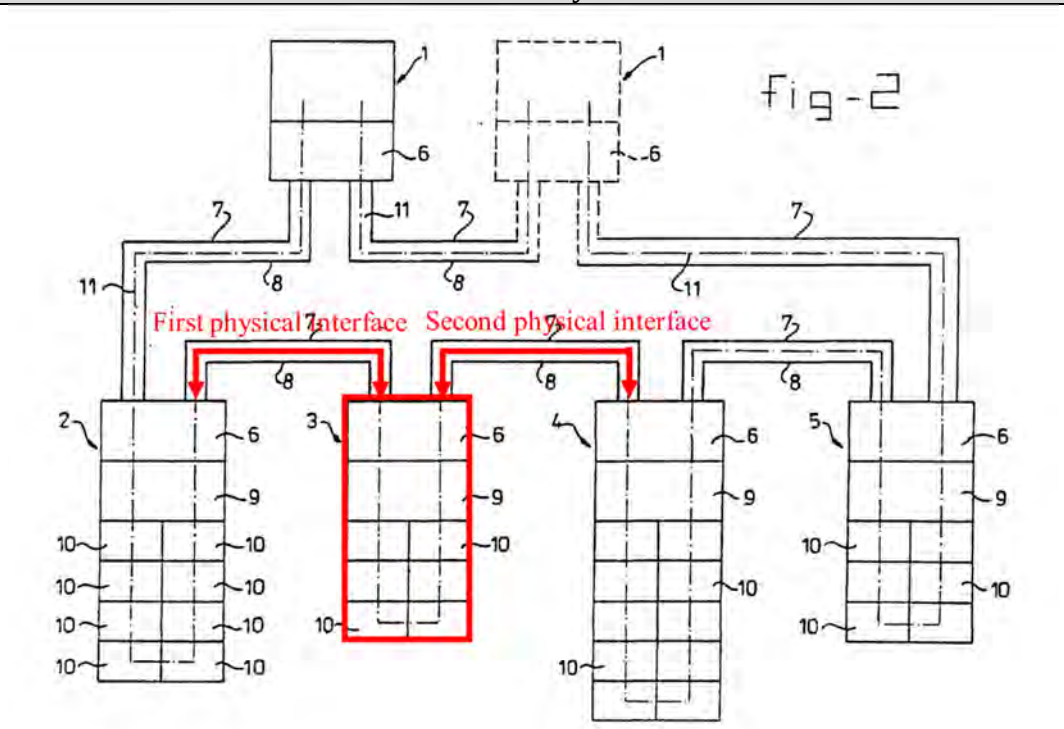
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No.	'904 Patent Claim 15	Mackay
		 FIG. 5A Mackay at 7:23-35 ("In a half-duplex node, the link 514 can provide for communication in either direction, but is only used for communication in one direction at any given time. For example, as depicted in FIG. 5B, at a first time t, the System may provide communication from the first node 512a (acting as source S) to the second node 512b (acting as destination D) while at a second, non-overlapping time t, the link 514 is used for providing communication in a direction from the second node 512b (acting as a Source), to the first node 512a (acting as a destination). Such distinctions between full duplex and half-duplex mode can be generalized to include systems with numerous nodes and links, as will be understood by those of skill in the art.") Mackay, Figure 5B (annotation added):

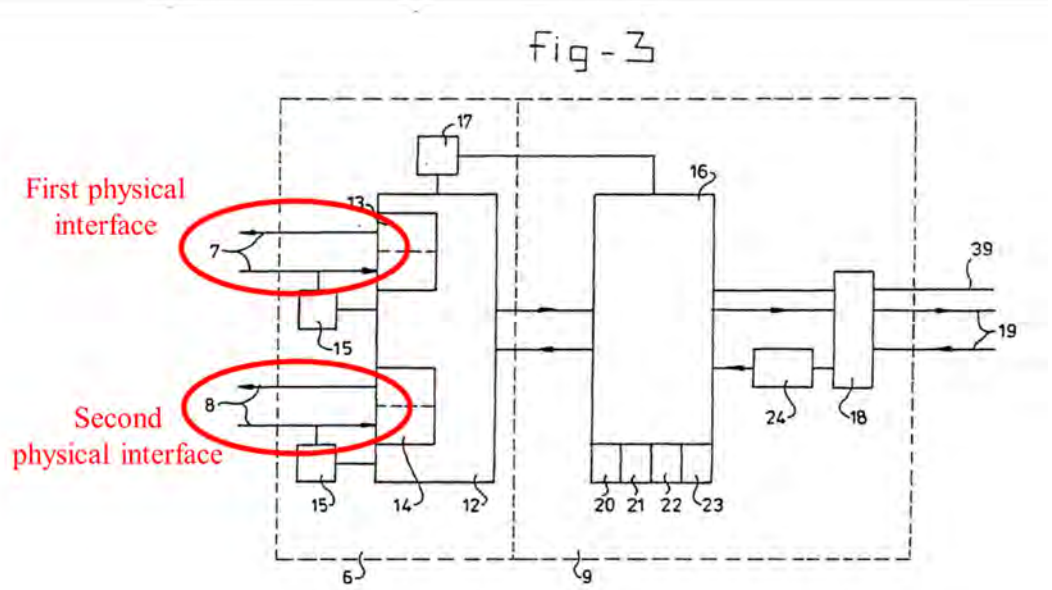
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No.	'904 Patent Claim 15	Mackay
		 FIG. 5B In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, Mackay in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 15 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. For example, Vink '324 discloses the capability to receive and transmit packets from both interface lines on either side of the slave, and once received by the slave in either direction, is analyzed for address coincidence by the transmitting/receiving unit. Vink '324 21:10-16 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly.").

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No.	'904 Patent Claim 15	Mackay
		 Fig. 2 (annotation added)

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No.	'904 Patent Claim 15	Mackay
		 Fig. 3 (annotation added) Vink '324 3:35-4:10 ("European Patent Application 0,253,381 discloses a communication system in which the data bits are transferred serially up to I/O level. In this process, address information is added to the data bits intended for a particular substation. Information received by a-substation and transmitted under the control of a master station is investigated for address coincidence. In the case of a positive result, that is to say, when the address information added to a group of data bits corresponds to the address allocated to the relevant substation, exchange is initiated. In this process, the data bits intended for a substation are replaced in the same format by data bits originating from the relevant substation and intended for the master station. In the absence of address coincidence, the information concerned is not altered."). In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290.

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No.	'904 Patent Claim 15	Mackay
		Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

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No.	'904 Patent Claim 15	Mackay

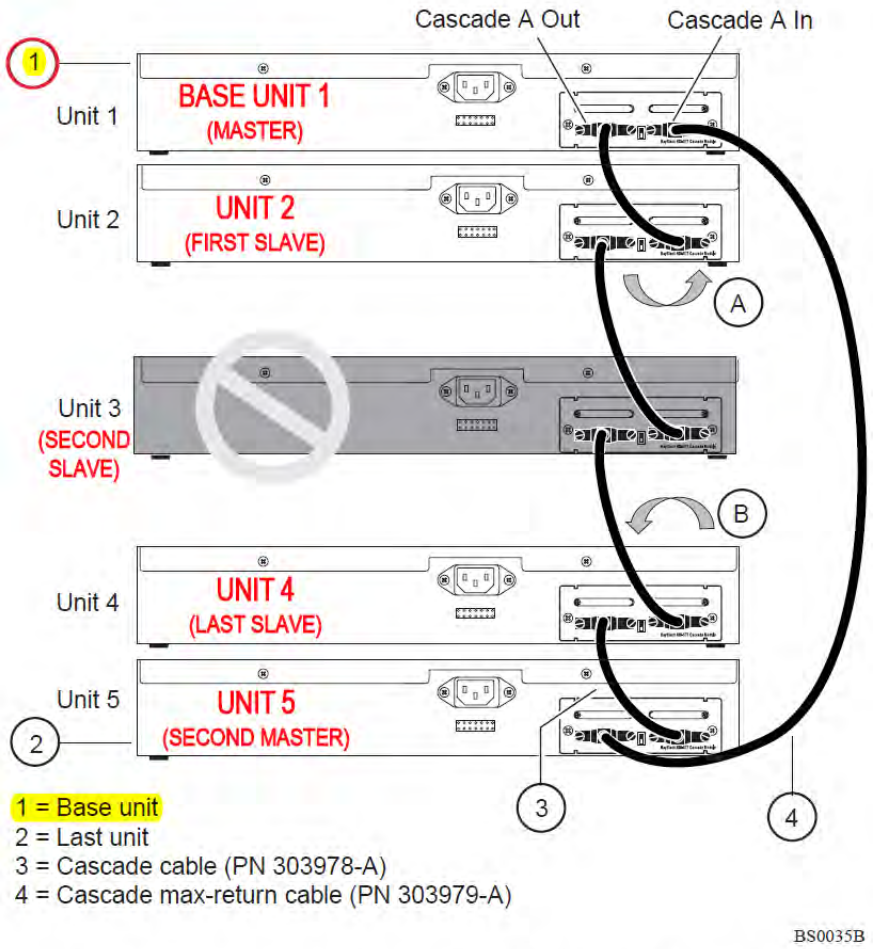


Figure 1-14. Redundant Cascade Stacking Feature

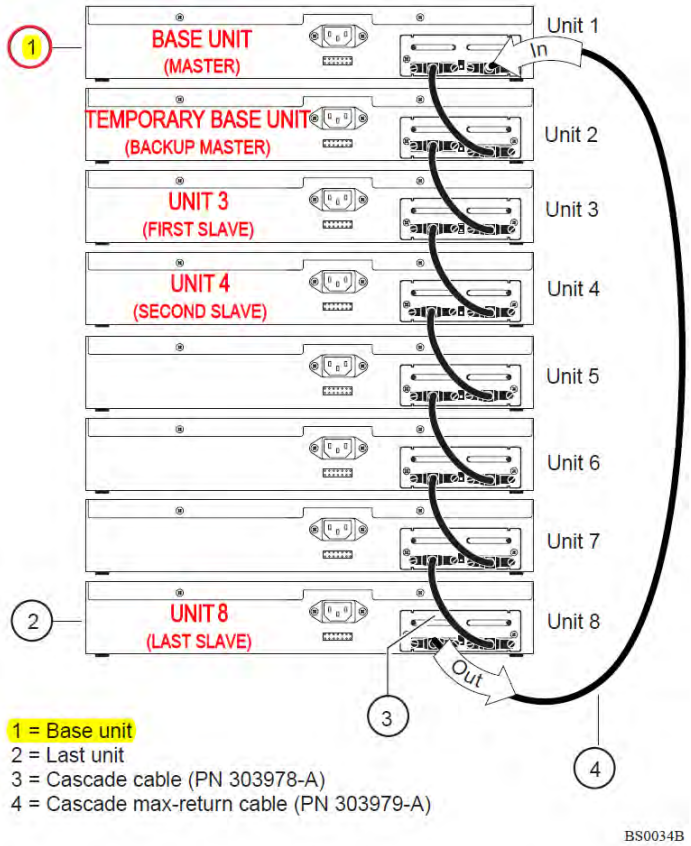
BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

In an alternative example, the BayStack 450 Switches disclose a Temporary Base Unit as being a second master unit. See, e.g., BayStack 450 Manual at 33, 52, 230 of 290. For

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No.	'904 Patent Claim 15	Mackay
		instance, the BayStack 450 Manual states that "[i]f an assigned base unit fails, the next unit in the stack order automatically becomes the new temporary base unit. This change is indicated by the Base LED on the temporary base unit's LED display panel turning on (amber). For detailed information about the base LED, see Table 1-1 on page 1-6." BayStack 450 Manual at 52 of 290. Further, in this alternative example, the BayStack 450 Manual describes that "[t]his automatic failover is a temporary safeguard only. If the stack configuration loses power, the temporary base unit will not power up as the base unit when power is restored. For this reason, you should always assign the temporary base unit as the base unit (set the Unit Select switch to Base) until the failed unit is repaired or replaced." BayStack 450 Manual at 52 of 290. The BayStack 450 Manual notes, in this alternative example, that "[i]f you do not reassign the temporary base unit as the new base unit, and the temporary base unit fails, the next unit directly downstream from this unit becomes the new temporary base unit. This process can continue until there are only two units left in the stack configuration." BayStack 450 Manual at 52 of 290. In this example, the BayStack 450 Switches disclose that the BayStack 450 Switch LED Descriptions include an amber light that indicates when "unit is operating as the stack configuration's temporary base unit." BayStack 450 Manual at 33 of 290. "This condition occurs automatically if the base unit (directly downstream from this unit) fails." *Id.* And the BayStack 450 Switches disclose that, in this case, the "two units directly upstream and directly downstream from the failed unit automatically wrap their cascade connectors and indicate this condition by lighting their Cas Up and Cas Dwn LEDs (see Cas Up and Cas Dwn description in this table)." BayStack 450 Manual at 33 of 290. But the BayStack 450 Switches also disclose, in this alternative example, that "[i]f the temporary base unit fails, the next unit directly downstream from this unit becomes the new temporary base unit. This process can continue until there are only two units left in the stack configuration." BayStack 450 Manual at 33 of 290.

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No.	'904 Patent Claim 15	Mackay
		As shown below, in the Stack Down Configuration, the second unit would become the temporary base unit if the base unit were to fail in this configuration.  **Figure 1-13. Stack Down Configuration Example** BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

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No.	'904 Patent Claim 16	Mackay
16[a]	The slave unit according to claim 15, wherein the retained packets that were received from the first and second physical interfaces and are passed by the pre-switch to the switch fabric are identified by respective first and second port numbers,	Mackay discloses the slave unit according to claim 15, wherein the retained packets that were received from the first and second physical interfaces and are passed by the pre-switch to the switch fabric are identified by respective first and second port numbers. *See supra* at Claims 11[f], 14[f], 15.
16[b]	and wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second port numbers are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required in response to the reversal.	Mackay discloses and wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second port numbers are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required in response to the reversal. For example, Mackay discloses bidirectional connections that permits the switches to communicate data packets in both directions, as both the source and the destination, such that a switch can receive packets transferred to it in the same way as packets it receives from the other slave units' physical interfaces, and sorts those packets in the same manner. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See supra* Claim 10, 15.

No.	'904 Patent Claim 17	Mackay
17	The slave unit according to claim 14, wherein when one of the packets received by the pre-switch	Mackay discloses the slave unit according to claim 14, wherein when one of the packets received by the pre-switch comprises a multicast packet addressed to one or more of the ports on the slave unit, the pre-switch sorts the multicast packet such that one copy of the packet is retained and another copy of the packet is passed to the second physical interface

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No.	'904 Patent Claim 17	Mackay
	comprises a multicast packet addressed to one or more of the ports on the slave unit, the pre-switch sorts the multicast packet such that one copy of the packet is retained and another copy of the packet is passed to the second physical interface.	For example, Mackay discloses that the ports within the stack of switches can be managed from a single IP address. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. See, e.g., Mackay at 13:42-48 ("In light of the above description a number of advantages of the present invention can be seen. By providing a repeater which is distributed, a System can be configured Such that multiple Switches (e.g. mounted in a rack) can be treated by an administrator as if they were a single Switch (e.g. allowing management of multiple Switched ports from a single IP address)")

No.	'904 Patent Claim 18	Mackay
18	The slave unit according to claim 14, wherein in the event of a fault in the switch fabric, the pre-switch continues to pass the packets addressed to the succeeding units on to the succeeding units without significant interruption.	Mackay discloses the slave unit according to claim 14, wherein in the event of a fault in the switch fabric, the pre-switch continues to pass the packets addressed to the succeeding units on to the succeeding units without significant interruption. *See supra* at Claim 17.

No.	'904 Patent Claim 19	Mackay
19[preamble]	A method for providing access to a network, comprising:	Mackay discloses a method for providing access to a network. For example, Mackay discloses a method for providing access to a network by connecting switches via a modular repeater system.

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No.	'904 Patent Claim 19	Mackay
		Mackay at 1:6-10 ("The present invention relates to a system, method and apparatus for a computer network repeater system, apparatus and method and in particular to a repeater system which is distributed, and preferably modular, in nature.") Mackay at 15:64-16:3 ("The present invention, in various embodiments, includes components, methods, processes, systems and/or apparatus substantially as depicted and described herein, including various embodiments, subcombinations, and subsets thereof. Those of skill in the art will understand how to make and use the present invention after understanding the present disclosure.")
19[a]	coupling first and second master units to interface with the network;	Mackay discloses coupling first and second master units to interface with the network. *See supra* at 1[a].
19[b]	linking a plurality of slave units,	Mackay discloses linking a plurality of slave units. *See supra* at 1[b], 1[d].
19[c]	each slave unit comprising one or more ports to respective subscriber lines, in a daisy chain between the first and second master units;	Mackay discloses each slave unit comprising one or more ports to respective subscriber lines, in a daisy chain between the first and second master units. *See supra* at 1[c].
19[d]	conveying initial downstream data packets, received from the network by one of the master units, along the daisy chain in a first direction, so as to	Mackay discloses conveying initial downstream data packets, received from the network by one of the master units, along the daisy chain in a first direction, so as to deliver the packets to the ports of the slave units. For example, Mackay discloses the first switch conveying downstream data packets from the network along the daisy chain to deliver to the ports of the other switches or slave units.

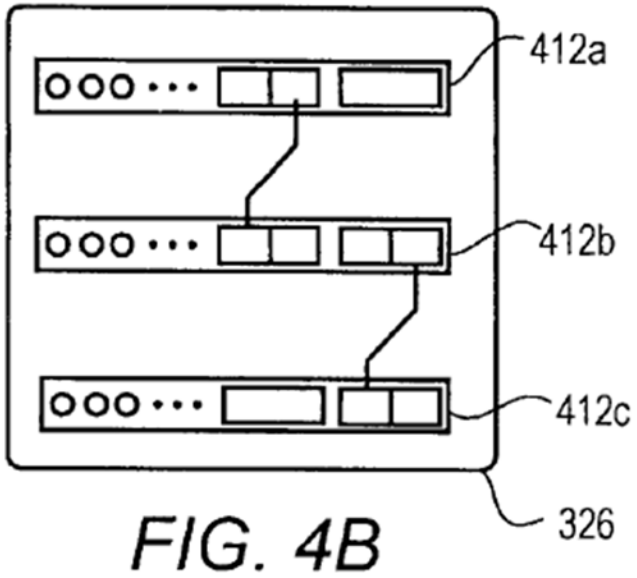
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No.	'904 Patent Claim 19	Mackay
	deliver the packets to the ports of the slave units; and	*See, e.g.*, Mackay at : ("It can provide high bandwidth (e.g. 1 Gbps) half-duplex connectivity in a daisy chained configuration or full-duplex (e.g. up to 2 Gbps or more) connectivity in a dedicated, Switch-to-Switch configuration. The present invention can be used to implement Systems which expand the traditional Stacking domain beyond a single wiring closet, allowing users to select and combine a plurality of interconnections to accommodate a range of management, performance and cost needs.") Mackay at 3:38-44 ("In one aspect of the invention, a repeater, useable for connecting switches in a data communication network, is provided in a distributed and/or modular fashion. The repeater includes a plurality of Separate and distinct com ponents or modules connected to or at least partially housed in, the various Switches which the repeater modules couple.")
19[e]	in the event of a fault in the daisy chain, conveying further downstream data packets, received from the network by one of the master units, along the daisy chain in a second direction, opposite to the first direction, so as to deliver the further packets to the ports of at least some of the slave units.	Mackay discloses in the event of a fault in the daisy chain, conveying further downstream data packets, received from the network by one of the master units, along the daisy chain in a second direction, opposite to the first direction, so as to deliver the further packets to the ports of at least some of the slave units. *See supra* at 7.

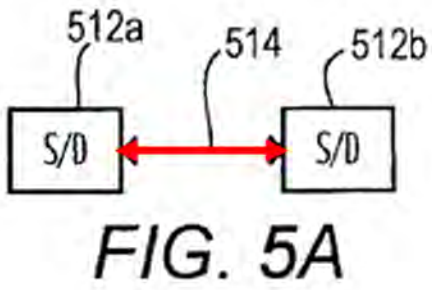
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No.	'904 Patent Claim 20	Mackay
20	A method according to claim 19, wherein the initial and further downstream packets are received from the network by the first master unit, and wherein conveying the further downstream packets in the second direction comprises conveying the further downstream packets from the first master unit to the second master unit, and then conveying the further downstream packets from the second master unit to the daisy chain.	Mackay discloses a method according to claim 19, wherein the initial and further downstream packets are received from the network by the first master unit, and wherein conveying the further downstream packets in the second direction comprises conveying the further downstream packets from the first master unit to the second master unit, and then conveying the further downstream packets from the second master unit to the daisy chain.. For example, Mackay discloses bidirectional connections between the switches that permit the switches to communicate data packets in both directions, as both the source and the destination, when connecting to the network, such that the initial and further downstream packets are received from the network by the first master unit, and wherein conveying the further downstream packets in the second direction comprises conveying the further downstream packets from the first master unit to the second master unit, and then conveying the further downstream packets from the second master unit to the daisy chain. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. See, e.g., Mackay at 6:32-35 ("In one embodiment, by employing a Secondary repeater module 413 in at least one Switch, 412b, two or more full-duplex connections can be provided, as illustrated in FIG. 4B.") Mackay, Figure 4B:

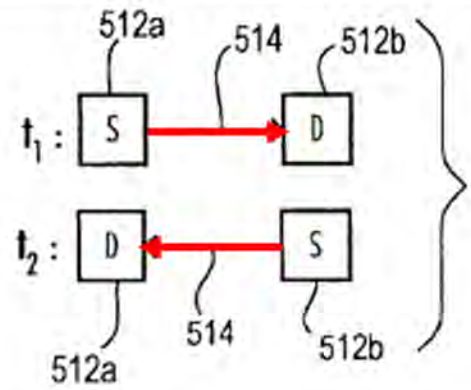
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No.	'904 Patent Claim 20	Mackay
		 FIG. 4B Mackay at 7:9-20 ("In one embodiment, repeater modules may be configured to provide a system which can operate in full duplex mode or half-duplex mode. As illustrated schematically in FIG. 5A, for communication between first and second nodes 512a, b over a communication link 514, where, at a given bandwidth, the nodes 512a, b can act either as a communication Source (S) or destination (D), full duplex mode permits communication to take place over the link 514, simultaneously in a direction from the first node 512a (acting as a Source) to the Second node 512b (acting as a destination) and from the Second node 512b (acting as a Source) to the first node (acting as a destination) 512a.") Mackay, Figure 5A (annotation added):

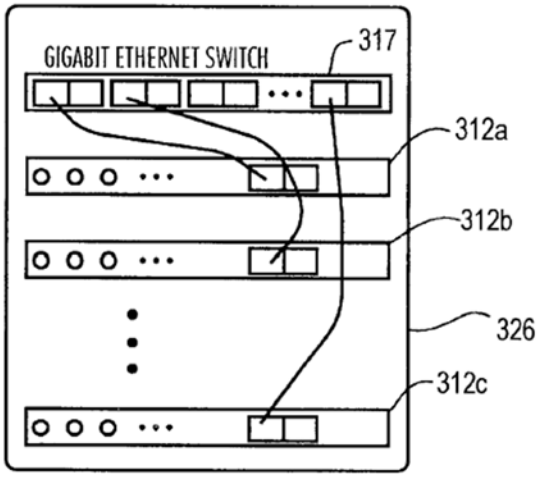
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No.	'904 Patent Claim 20	Mackay
		 FIG. 5A Mackay at 7:23-35 ("In a half-duplex node, the link 514 can provide for communication in either direction, but is only used for communication in one direction at any given time. For example, as depicted in FIG. 5B, at a first time t, the System may provide communication from the first node 512a (acting as source S) to the second node 512b (acting as destination D) while at a second, non-overlapping time t, the link 514 is used for providing communication in a direction from the second node 512b (acting as a Source), to the first node 512a (acting as a destination). Such distinctions between full duplex and half-duplex mode can be generalized to include systems with numerous nodes and links, as will be understood by those of skill in the art.") Mackay, Figure 5B (annotation added):

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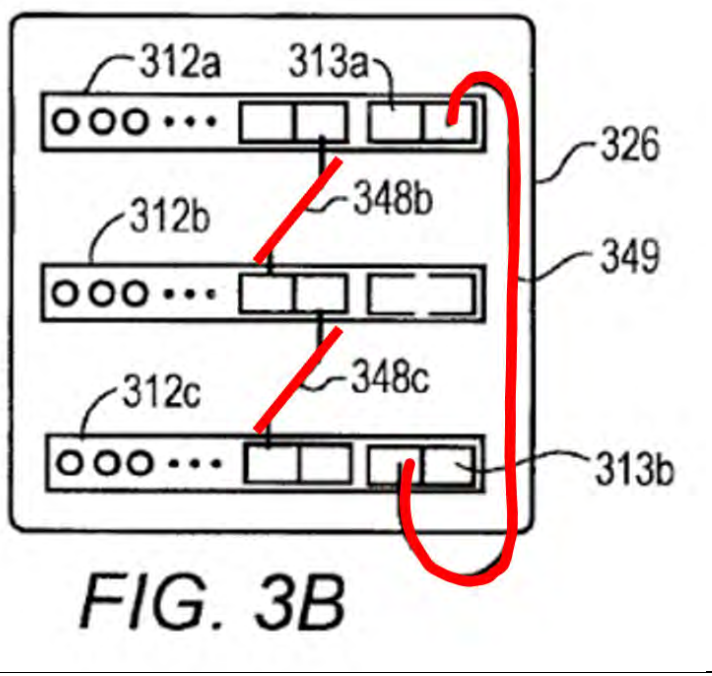
No.	'904 Patent Claim 20	Mackay
		 FIG. 5B Mackay at 6:10-35 ("In one embodiment, the system permits a variety of different stacking or other architectures, depending on how the modules and cables are connected. For example, in one configuration, the System can be configured to provide a 1 Gigabit per Second (Gbps) independent Stack bus (though Standard Gigabit Ethernet connections), e.g. as depicted in FIG. 3A, allowing a number (in one embodiment, up to at least nine) Switches to be stacked and managed through a Single IP address. In another embodiment, the System provides Support for a redundant loopback connection 349, e.g. using Secondary repeater modules 313a, b in the top and bottom Switches, as illustrated in FIG. 3B. In another configuration, a repeater module in each Switch can be coupled to high bandwidth (e.g. gigabit) Ethernet Switch 317 (FIG. 3C) forming a high-performance point-to-point configuration, to deliver e.g. 2 Gbps full duplex bandwidth between the high bandwidth Ethernet switch 317 and each Switch 312a, b, c which is connected via the repeater modules. In one configuration, a number (e.g. up to eight, or more) Switches can be aggregated in a Gigabit Ethernet Star topology. In one embodiment, a pair of Switches can be coupled to provide a full-duplex configuration, as illustrated in FIG. 4A (and as described more thoroughly below). In one embodiment, by employing a Secondary repeater module 413 in at least one Switch, 412b, two or more full-duplex connections can be provided, as illustrated in FIG. 4B.")

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No.	'904 Patent Claim 20	Mackay
		 FIG. 3C

No.	'904 Patent Claim 21	Mackay
21	A method according to claim 20, wherein conveying the further downstream packets from the first master unit to the second master unit comprises linking further slave units in an additional daisy chain between the first and second master units, and conveying the further downstream packets	Mackay discloses a method according to claim 20, wherein conveying the further downstream packets from the first master unit to the second master unit comprises linking further slave units in an additional daisy chain between the first and second master units, and conveying the further downstream packets from the first master unit to the second master unit over the additional daisy chain. See supra at 4[e], 4[f], 5. See also, e.g., Mackay at 6:18-21 ("In another embodiment, the system provides support for a redundant loopback connection 349, e.g. using secondary repeater modules 313a, b in the top and bottom Switches, as illustrated in FIG. 3B.")

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No.	'904 Patent Claim 21	Mackay
	from the first master unit to the second master unit over the additional daisy chain.	Mackay, Figure 3B (annotation added):  FIG. 3B

No.	'904 Patent Claim 22	Mackay
22[a]	A method according to claim 19, and comprising conveying initial upstream data packets, received by the slave units from the subscriber lines, along the daisy chain in the second direction so as to transmit the upstream data packets	Mackay discloses a method according to claim 19, and comprising conveying initial upstream data packets, received by the slave units from the subscriber lines, along the daisy chain in the second direction so as to transmit the upstream data packets via the first master unit over the network. For example, Mackay discloses bidirectional connections between the switches that permits the switches to communicate in both directions, as both the source and the destination, and therefore permits a user to use the system in such a manner of conveying initial upstream data packets, received by the slave units from the subscriber lines, along the daisy chain in the second direction so as to transmit the upstream data packets via the first master unit over the

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No.	'904 Patent Claim 22	Mackay
	via the first master unit over the network,	network. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See supra* at 4[f], 7.
22[b]	and in the event of the fault, conveying further upstream data packets received by one or more of the slave units along the daisy chain in the first direction via the second master unit.	Mackay discloses in the event of the fault, conveying further upstream data packets received by one or more of the slave units along the daisy chain in the first direction via the second master unit. For example, Mackay discloses that data is bidirectional along the daisy chain, so that upstream data packets can also be sent along the daisy chain via the second master unit. *See supra* at 4[f]. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

No.	'904 Patent Claim 23	Mackay
23	A method according to claim 22, and comprising bicasting the upstream data packets from the first master unit to the network and to the second master unit, which transmits the bicast upstream data packets over the network.	Mackay discloses a method according to claim 22, and comprising bicasting the upstream data packets from the first master unit to the network and to the second master unit, which transmits the bicast upstream data packets over the network. *See supra* at 6.

No.	'904 Patent Claim 24	Mackay
24	A method according to claim 19, wherein	Mackay discloses a method according to claim 19, wherein conveying the initial downstream data packets along the daisy chain comprises pre-switching the packets at each of the slave

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No.	'904 Patent Claim 24	Mackay
	conveying the initial downstream data packets along the daisy chain comprises pre-switching the packets at each of the slave units, so that packets not addressed to any of the ports on the slave unit are passed to the next slave unit in the daisy chain, while packets that are addressed to one or more of the ports on the slave unit are passed to a switch fabric that directs the packets to the ports to which they are addressed.	units, so that packets not addressed to any of the ports on the slave unit are passed to the next slave unit in the daisy chain, while packets that are addressed to one or more of the ports on the slave unit are passed to a switch fabric that directs the packets to the ports to which they are addressed. *See supra* at 11[f], 11[g].

No.	'904 Patent Claim 25	Mackay
25	A method according to claim 19, wherein the network comprises an asynchronous transfer mode (ATM) network.	Mackay discloses a method according to claim 19, wherein the network comprises an asynchronous transfer mode (ATM) network.. *See supra* at 2.

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No.	'904 Patent Claim 26	Mackay
26	A method according to claim 19, wherein the network comprises an Internet protocol (IP) network.	Mackay discloses a method according to claim 19, wherein the network comprises an Internet protocol (IP) network. *See supra* at 3.

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Chart for U.S. Patent 6,680,904 ("the '904 Patent")
U.S. Patent No. 6,636,499 B1 to Dowling ("Dowling")

As shown in the chart below, all Asserted Claims of the '904 Patent are invalid under (1) 35 U.S.C. §§ 102 (a) and (e) because Dowling meets each element of those claims, and/or (2) 35 U.S.C. § 103 because Dowling renders those claims obvious either alone, or in combination with the knowledge of a person having ordinary skill in the art, and in further combination with the references specifically identified below and in the following claim chart and/or one or more references identified in Defendant's Preliminary Invalidity Contentions. The following quotations and diagrams come from Dowling titled "Apparatus And Method For Cluster Network Device Discovery", which was filed on December 2, 1999, and issued on October 21, 2003.

Motivations to combine the disclosures in Dowling with disclosures in other publications known in the art, as explained in this chart, include at least the similarity in subject matter between the references to the extent they concern methods of stacking switches within a network. Insofar as the references cite other patents or publications, or suggest additional changes, one of ordinary skill in the art would look beyond a single reference to other references in the field.

The following patent has substantially similar disclosures to Dowling and invalidates the '904 Patent for the same reasons:

- U.S. Patent No. 7,554,959 to Dowling ("Dowling '959")

These invalidity contentions are based on Defendant's present understanding of the Asserted Claims, and Orckit's apparent construction of the claims in its November 3, 2022 Disclosure of Asserted Claims and Infringement Contentions Pursuant to P.R. 3-1, and Orckit's January 19, 2023 First Amended Disclosure of Asserted Claims and Infringement Contentions Pursuant to P.R. 3-1 (Orckit's "Infringement Disclosures"), which is deficient at least insofar as it fails to cite any documents or identify accused structures, acts, or materials in the Accused Products with particularity. Defendant does not agree with Orckit's application of the claims, or that the claims satisfy the requirements of 35 U.S.C. § 112. Defendant's contentions herein are not, and should in no way be seen as, admissions or adoptions as to any particular claim scope or construction, or as any admission that any particular element is met by any accused product in any particular way. Defendant objects to any attempt to imply claim construction from this chart. Defendant's prior art invalidity

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contentions are made in a variety of alternatives and do not represent Defendant's agreement or view as to the meaning, definiteness, written description support for, or enablement of any claim contained therein.

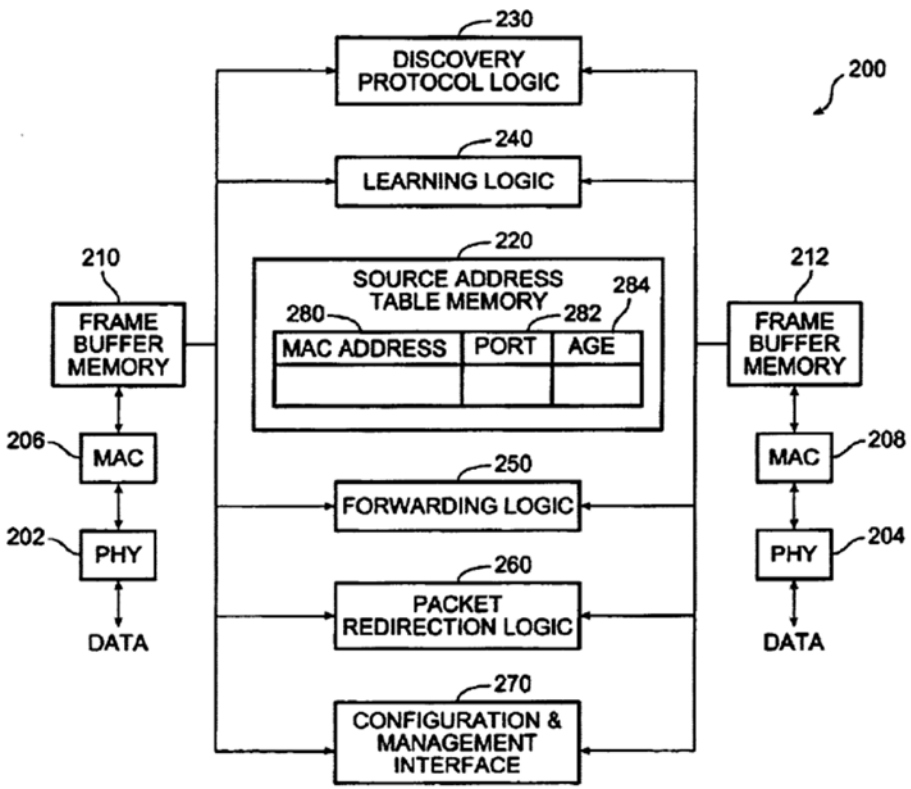
The following contentions are subject to revision and amendment pursuant to Federal Rule of Civil Procedure 26(e), the Local Rules, and the Orders of record in this matter subject to further investigation and discovery regarding the prior art and the Court's construction of the claims at issue.

No.	'904 Patent Claim 1	Dowling
1[preamble]	Network access apparatus, comprising:	Dowling discloses a network access apparatus. For example, Dowling discloses a network access apparatus including a group of network devices such as Ethernet switches that are logically configured as a single cluster, wherein each network device transmits data packets. See, e.g., Dowling at 13:8-10 ("Configuration and management data packets are sent between the commander 100 and member Switches 102 A-102-N via the network connection.) Dowling at 13:15-27 ("A command from the management station 104 is received by the Ethernet module 122 of the commander Switch 100. The command is processed at the IP layer 124, UDP or TCP layer 126, and Management Application layer 128 of the commander Switch 100. The Management Application layer 128 determines that the command is intended for member Switch 102, and performs redirection by translating the port number in the received command to the appropriate port for member Switch 102. The redirected command flows down through the UDP or TCP layer 126, the IP layer 124, and the Ethernet layer 122 of the commander Switch 100, and is passed on via Ethernet to the member Switch 102.") Dowling at 6:47-52 ("Thus, it is an object of the present invention to provide a method and apparatus which permits an entire cluster of network devices to share a single IP address. A further goal of the present invention is to enable the clustering of LAN switches or other network devices so that they can be managed through a single network device.")

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No.	'904 Patent Claim 1	Dowling
		For example, Dowling discloses that the protocols of its invention are implemented in Internet Protocol networks. Dowling at 9:50-55 ("According to the present invention, a Single IP address for the entire cluster 98 is assigned to the commander Switch 100, which distributes configuration information to the other Switches in the cluster. In one embodiment, a cluster with up to 15 member Switches may be configured and managed via the IP address of the commander Switch 100.").
1[a]	first and second master units, each comprising a physical interface to a packet-switched network;	Dowling discloses first and second master units, each comprising a physical interface to a packet-switched network. For example, Dowling discloses switches that can be arranged in a stack that can be configured to include two commander units (one active commander and a standby commander) that physically connect to a packet-switched network via cables. See, e.g., Dowling at 3:61-4:6 ("Referring now to FIG. 2-B, a block diagram of an Ethernet Switch according to one aspect of the present invention is shown. As shown in FIG. 2-B, Ethernet Switch 200 includes a Layer 1 Physical Interface ("PHY) 202,204,and a Layer 2 Media Access Control Interface ("MAC") 206, 208, for each port on the Ethernet switch 200. A network interface card ("NIC") consists of a MAC and a PHY. An Ethernet Switch also contains a MAC and PHY on every port. Thus, an Ethernet Switch may appear to a network as multiple NICs coupled together. Each Switch PHY 202, 204, receives the incoming data bit stream and passes it to its corresponding MAC 206, 208, which reassembles the original Ethernet frames.") Dowling, Figure 2B:

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No.	'904 Patent Claim 1	Dowling
		 *FIG. 2B* Dowling at 10:29-36 ("The commander Switch is the Single point of access used to configure and monitor all the Switches in a cluster. According to embodiments of the present invention, member Switches are managed through a commander Switch. The commander Switch is used to manage the cluster, and is managed directly by the network management Station. Member Switches operate under the control of the commander.") Dowling at 11:54-60 ("Recovery from a failed command Switch can be accomplished by replacing the failed unit with a cluster member or another Switch. To have a cluster member

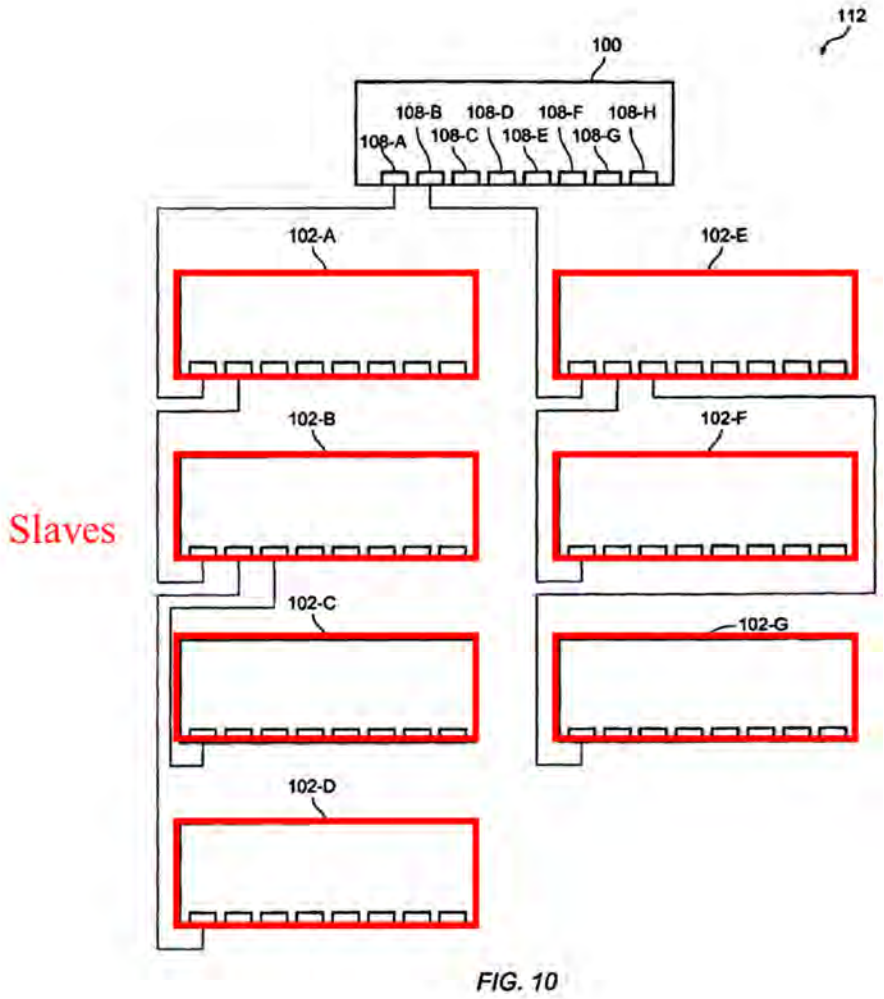
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No.	'904 Patent Claim 1	Dowling
		ready to replace the commander Switch, the network administrator must assign an IP address to another cluster member, and know the command-Switch enable password for that Switch.") Dowling at 13:15-27 ("A command from the management station 104 is received by the Ethernet module 122 of the commander Switch 100. The command is processed at the IP layer 124, UDP or TCP layer 126, and Management Application layer 128 of the commander Switch 100. The Management Application layer 128 determines that the command is intended for member Switch 102, and performs redirection by translating the port number in the received command to the appropriate port for member Switch 102.The redirected command flows down through the UDP or TCP layer 126, the IP layer 124, and the Ethernet layer 122 of the commander Switch 100, and is passed on via Ethernet to the member Switch 102..") Dowling at 16:27-28 ("A device may optionally advertise one or more Loopback IP addresses.") Dowling at 23:56-67 ("In one embodiment of the present invention, the commander of a cluster is also a member of a cluster. Since both of these "logical" devices are really the same "physical" device, their intra-cluster communication is slightly different from that between a separate member and its commander. The commander-as-commander does not Send heartbeats to the commander-as-member. However, the commander-as-member does Send Status heartbeats and neighbor updates to its commander-as-commander. When the function that sends the UDP packet recognizes that it is Sending a packet from itself as member to itself as commander, it calls the correct ICC receiving function directly.") Dowling at 1:20-23 ("The network typically includes a cable that attaches to network interface cards ("NICs") in each of the devices within the network.") Dowling at 12:38-40 ("Without limitation, switches in a cluster may be interconnected using 10 Mbps Ethernet, 100 Mbps Fast Ethernet, or 1000 Mbps Gigabit Ethernet.")

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No.	'904 Patent Claim 1	Dowling
		Dowling at 10:40-47("When switches are first installed, they are cabled together according to the network configuration desired for a particular application, and an IP address is assigned to the commander switch. In addition, the commander switch must be enabled as the commander Switch of the cluster. Once the commander Switch has been enabled, it can use information known about the network topology to identify other network devices in the network that may be added to the cluster.")
1[b]	a plurality of slave units,	Dowling discloses a plurality of slave units. For example, Dowling discloses a plurality of member switches, which are under the control of the commander switch. See, e.g., Dowling at 11:39-41 ("In embodiments of the present invention, there can be a maximum of Sixteen Switches in a cluster: fifteen member switches and one commander Switch.") Dowling, Figure 10 (annotation added):

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No.	'904 Patent Claim 1	Dowling
		 FIG. 10 Dowling at 9:42-49 ("When LAN Switches are grouped into clusters, one switch is called the commander Switch, and the other Switches are called member switches. Referring now to FIG. 7, an exemplary Switch cluster 98 is shown which includes a commander Switch 100

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No.	'904 Patent Claim 1	Dowling
		and one or more member Switches 102-A-102-N. Management station 104 is connected to the commander switch 100, which redirects configuration requests to the member Switches 102-A-102-N.") Dowling at 9:50-57 ("According to the present invention, a Single IP address for the entire cluster 98 is assigned to the commander Switch 100, which distributes configuration information to the other Switches in the cluster. In one embodiment, a cluster with up to 15 member Switches may be configured and managed via the IP address of the commander Switch 100. The member Switches 102-A-102-N in the cluster do not need individual IP addresses.") Dowling at 10:14-25 ("As a third example, FIG. 10 illustrates a "hybrid" cluster configuration with one commander Switch 100 and seven member Switches 102-A-102-G. In cluster 112, member switches 102-A and 102-E are in a star configuration with respect to commander Switch 100. Member Switch 102-B is in a daisy chain configuration with respect to member Switch 102-A, while member Switches 102-C and 102-D are in a star configuration with respect to member switch 102-B.") Dowling at 10:29-36 ("The commander Switch is the Single point of access used to configure and monitor all the Switches in a cluster. According to embodiments of the present invention, member Switches are managed through a commander Switch. The commander Switch is used to manage the cluster, and is managed directly by the network management Station. Member Switches operate under the control of the commander.") Dowling at 13:66-14:1 ("The user must configure a Switch to be the cluster commander. The commander will then examine CDP packets it receives on all interfaces to find candidate Switches.")
1[c]	each slave unit comprising one or more ports to respective subscriber lines; and	Dowling discloses each slave unit comprising one or more ports to respective subscriber lines. For example, Dowling discloses that each member switch in the cluster includes ports that connect it to PCs, workstations, or servers.

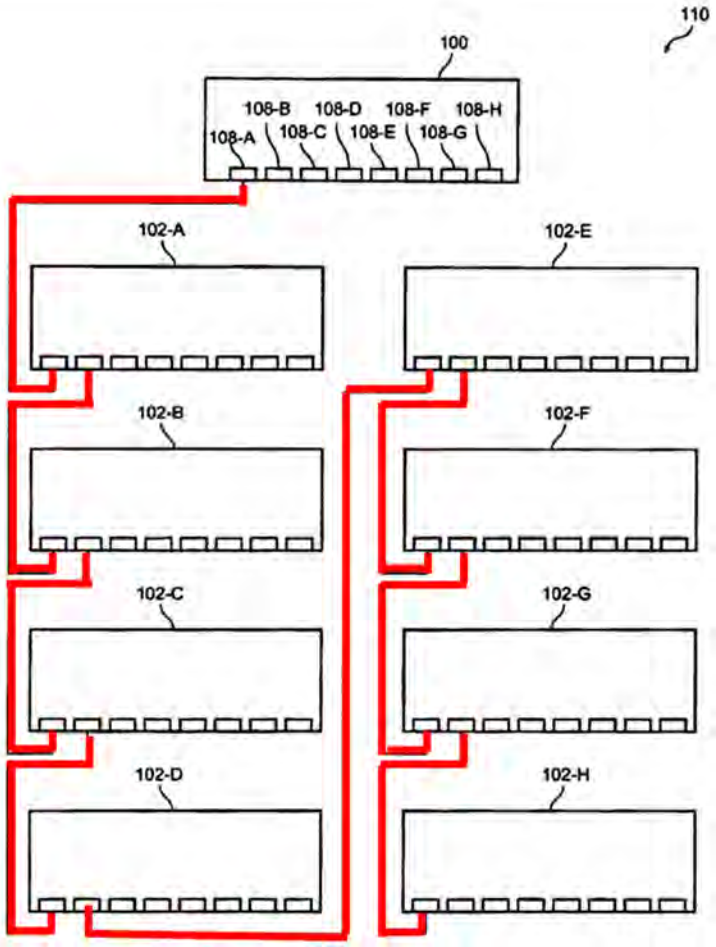
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No.	'904 Patent Claim 1	Dowling
		See, e.g., Dowling at 3:61-4:6("Because a Switch maintains a table of the Source MAC addresses received on every port, it "learns' to which port a station is attached every time the Station transmits. Then, each packet that arrives for that Station is forwarded only to the correct port, eliminating the waste of bandwidth on the other ports. Since Station addresses are checked every time a Switch receives a packet from a Station, if a Station is relocated, the Switch will reconfigure its forwarding table immediately upon receiving a transmission from the Station. Referring now to FIG. 2-B, a block diagram of an Ethernet Switch according to one aspect of the present invention is shown. As shown in FIG. 2-B, Ethernet Switch 200 includes a Layer 1 Physical Interface ("PHY) 202,204, and a Layer 2 Media Access Control Interface ("MAC") 206, 208, for each port on the Ethernet switch 200. A network interface card ("NIC") consists of a MAC and a PHY. An Ethernet Switch also contains a MAC and PHY on every port. Thus, an Ethernet Switch may appear to a network as multiple NICs coupled together. Each Switch PHY 202, 204, receives the incoming data bit stream and passes it to its corresponding MAC 206, 208, which reassembles the original Ethernet frames.") Dowling at 5:48-65 ("Referring now to FIG. 4, two LAN Switches 70-A and 70-B are shown, connected in a cascaded configuration. As shown, each of the LAN Switches 70-A and 70-B contains eight ports, 72-A-72-H and 74-A-74-H. On each of the LAN switches 70-A and 70-B, four ports 72-A-72-D and 74-A-74-D are connected to computer workstations 76-A-76-D and 76E-76-H, respectively. The other four ports on each LAN switch (i.e., ports 72-E-72-H on LAN switch 70-A, and ports 74E-74-H on LAN switch 70-B) are dedicated to interswitch communication. For example, if each of the four interswitch connections is capable of supporting a 100 Mbps Fast Ethernet channel, the aggregate interswitch communication rate of the Switches connected as shown in FIG. 4 is 400 Mbps. However, the total number of ports available for connecting to Workstations or other network devices on each LAN Switch is diminished due to the dedicated interswitch connections that are necessary to implement the cascaded configuration.")

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No.	'904 Patent Claim 1	Dowling
		Dowling at 6:6-9 ("Each network device is connected to one or more of the other network devices in the LAN 78. Computer WorkStations, network printers and other network devices are also connected to the LAN 78, but not shown.") Dowling at 2:29-33 ("A local area network ("LAN") is a network that is located in a relatively Small physical area, Such as a building, in which computers and other network devices are linked, usually via a wiring-based cabling Scheme. A LAN typically includes a shared medium to which workstations attach and through which they communicate.")
1[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	Dowling discloses a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. For example, Dowling discloses a plurality of member switches, which are controlled by the commander switch and physically linked in daisy chains. See, e.g., Dowling, Figure 9 (annotation added):

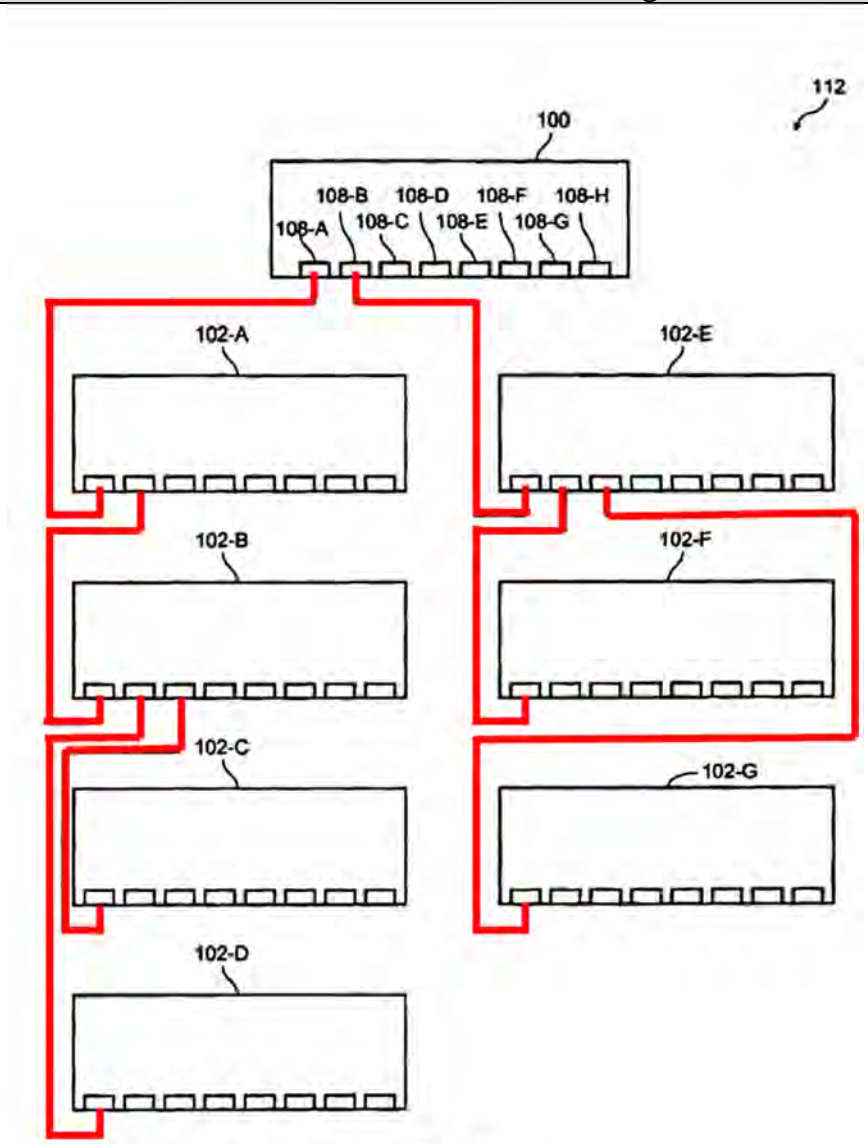
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No.	'904 Patent Claim 1	Dowling
		 *FIG. 9* Dowling at 7:43-45 ("FIG. 9 is a block diagram illustrating a cluster of network devices in a daisy chain configuration according to one aspect of the present invention.")

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No.	'904 Patent Claim 1	Dowling
		Dowling at 10:5-14 ("A Second example of a cluster configuration, known as a "daisy chain" configuration, is shown in FIG. 9. In cluster 110, only member switch 102-A is directly connected to the commander Switch 100. Member switches 102-B-102-G are each connected to an "upstream" Switch (one that is fewer "hops" away from commander switch 100) and to a "down-stream" switch (one that is more "hops" away from commander switch 100). Finally, the last Switch in the chain (member switch 102-H) is only connected to its upstream "neighbor" 102-G.") Dowling at 10:40-44 ("When switches are first installed, they are cabled together according to the network configuration desired for a particular application, and an IP address is assigned to the commander switch.") Dowling at 24:1-15 ("If one member device moves its connection to the cluster from one port on a Second member device to another port on the second member device (this could be done either physically or through a Spanning Tree topology change), the Second member device updates its local information and passes that information on to the commander.")

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No.	'904 Patent Claim 1	Dowling
		 FIG. 10

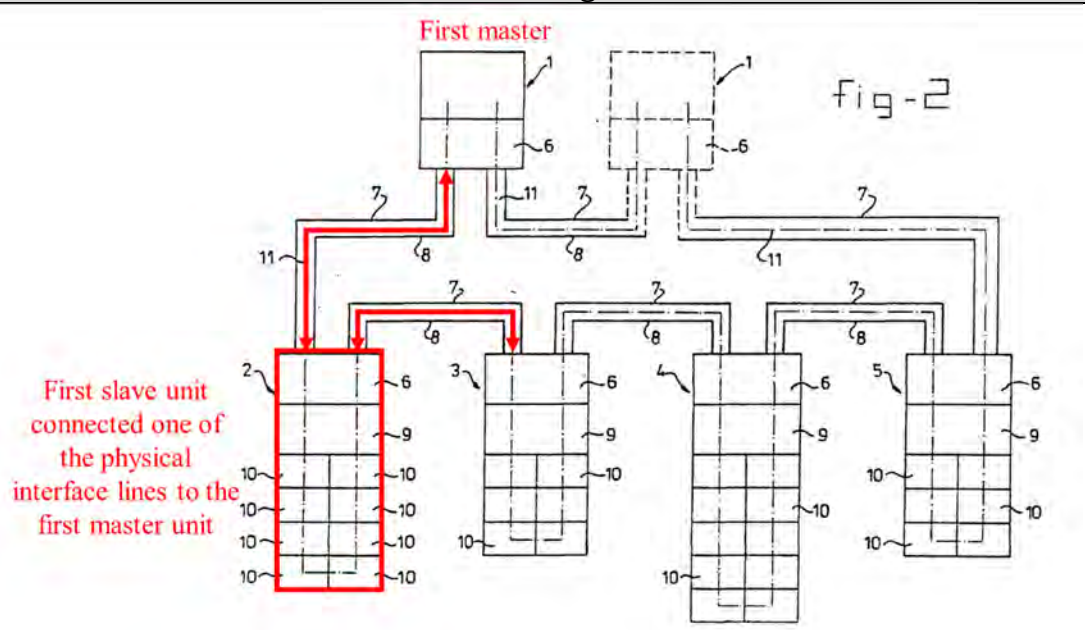
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No.	'904 Patent Claim 1	Dowling
		Dowling at 24:57-60 ("In one embodiment of the present invention, a device can belong to only one cluster. However, other embodiments of the present invention may allow a device to belong to more than one cluster.")
1[e]	each daisy chain comprising at least a first slave unit connected one of the physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit.	Dowling discloses each daisy chain comprising at least a first slave unit connected one of the physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit. For example, Dowling discloses a switch stack arranged such that the commander switch, acting as the master, can be connected via cable to subsequent switches in a daisy chain. Dowling discloses that the switches would be adjacent to one another with at least up to 9 switch/repeater modules. Dowling also discloses that any of the switches could be configured to replace the commander, which would include the last member switch. In a 16 switch embodiment, member switch 2 would be connected to the first slave unit but not to the first or second master unit, and switch 13 would be connected to the second master unit. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Dowling is found to not meet this limitation, each daisy chain comprising at least a first slave unit connected one of the physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit would have been obvious to a person having ordinary skill in the art, as explained below. See, e.g., Dowling at 9:66-10:28 ("Clusters may be configured in a variety of topologies. . . . A Second example of a cluster configuration, known as a "daisy chain" configuration, is shown in FIG. 9. . . . It is to be understood that many more cluster configurations are possible, and that the above examples are not in any way limiting.")

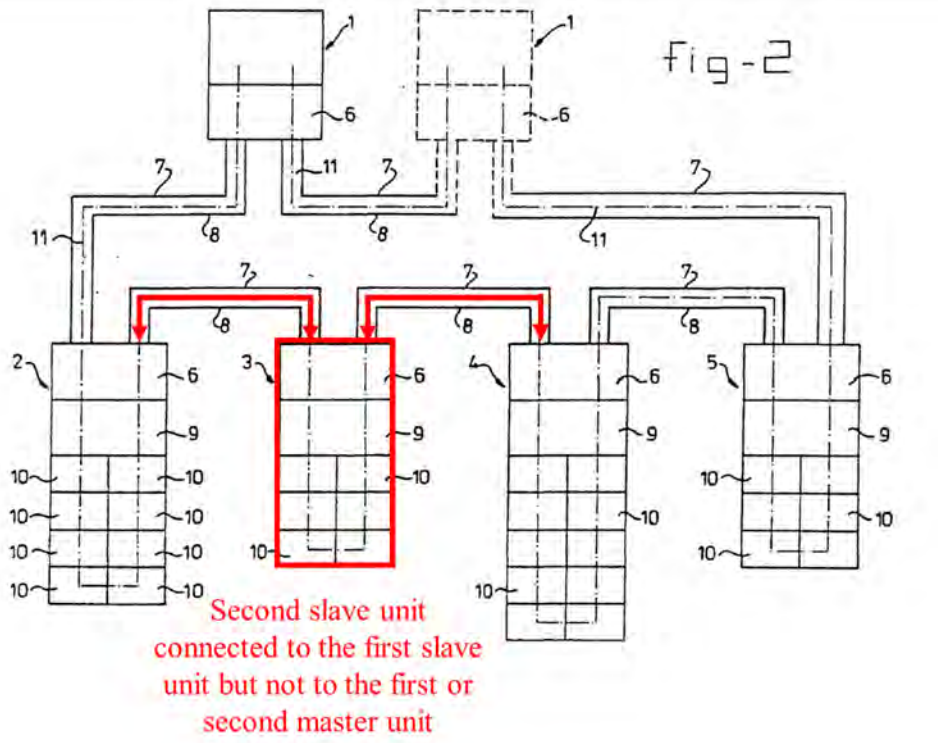
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No.	'904 Patent Claim 1	Dowling
		Dowling at 10:40-44 ("("When switches are first installed, they are cabled together according to the network configuration desired for a particular application, and an IP address is assigned to the commander switch. In addition, the commander switch must be enabled as the commander Switch of the cluster. Once the commander Switch has been enabled, it can use information known about the network topology to identify other network devices in the network that may be added to the cluster.") Dowling at 11:54-60 ("Recovery from a failed command Switch can be accomplished by replacing the failed unit with a cluster member or another Switch. To have a cluster member ready to replace the commander Switch, the network administrator must assign an IP address to another cluster member, and know the command-Switch enable password for that Switch.") Dowling at 12:32-36 ("There is no restriction on the type of connections between a commander Switch and member Switches. In one embodiment of the present invention, a cluster can be formed for a fully interconnected group of CDP neighbors. . . . Without limitation, Switches in a cluster may be interconnected using 10 Mbps Ethernet, 100 Mbps Fast Ethernet, or 1000 Mbps Gigabit Ethernet. ") In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, Dowling in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 1[e] of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. For example, Vink '324 discloses, due to the nature of the cascade and/or shift register arrangement, that substations and masters are only connection to a single substation or master in the upstream direction, and a single substation or master in the downstream direction.

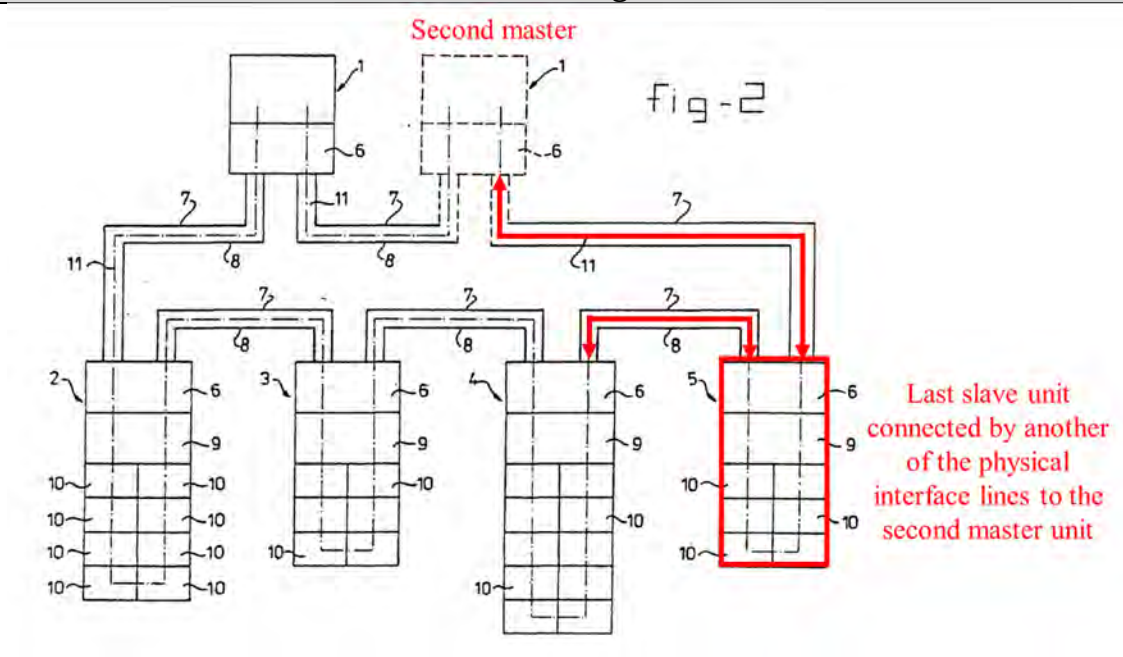
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No.	'904 Patent Claim 1	Dowling
		 Fig. 2 (annotation added)

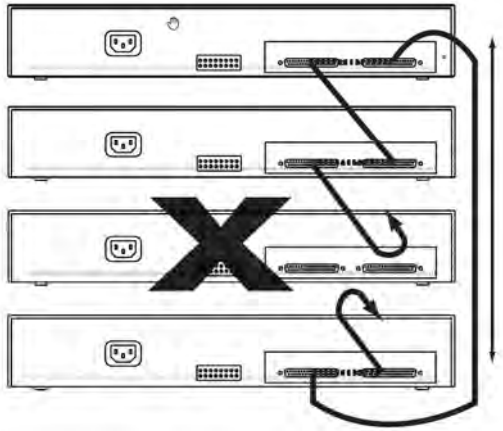
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No.	'904 Patent Claim 1	Dowling
		 Fig. 2 (annotation added)

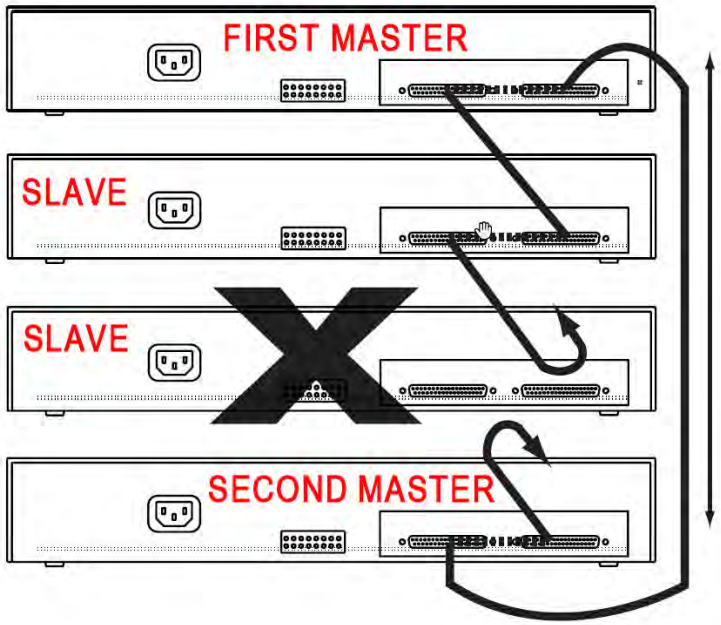
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No.	'904 Patent Claim 1	Dowling
		 Fig. 2 (annotation added) For example, the BayStack 450 Switches may include several stacked switch units that are slave units; that is, the BayStack 450 Switches are stackable switches that may include a plurality of slave units. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Further, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption." BayStack 450 Data Sheet at 2 of 8.

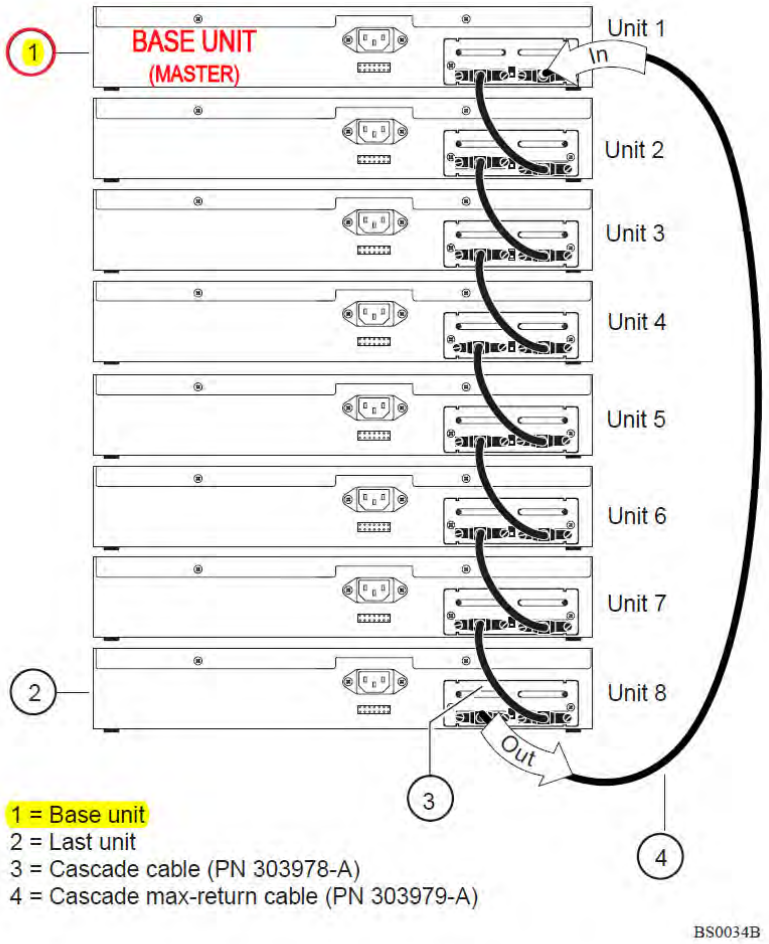
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No.	'904 Patent Claim 1	Dowling
		Figure 1, shown below, illustrates the plurality of physical interface lines that link the slave units in a daisy chain, in which the slave units are mutually connected in series by the physical interface lines therebetween. *Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.*  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

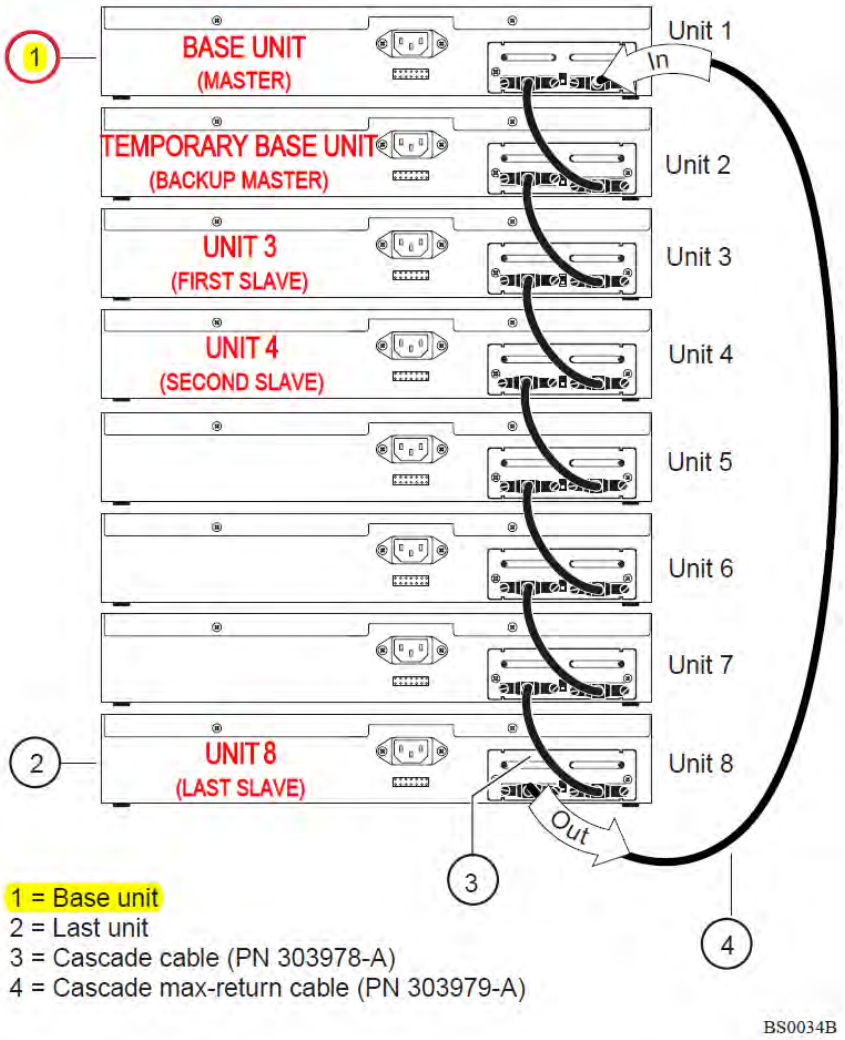
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No.	'904 Patent Claim 1	Dowling
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In another example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the top of the stack and connects a plurality of slaves via physical interface lines in a "Stack Down Configuration." BayStack 450 Manual at 55 of 290.

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No.	'904 Patent Claim 1	Dowling
		 **Figure 1-13. Stack Down Configuration Example** BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated). As shown below, in the Stack Down Configuration, the physical interface lines connect a plurality of slave units.

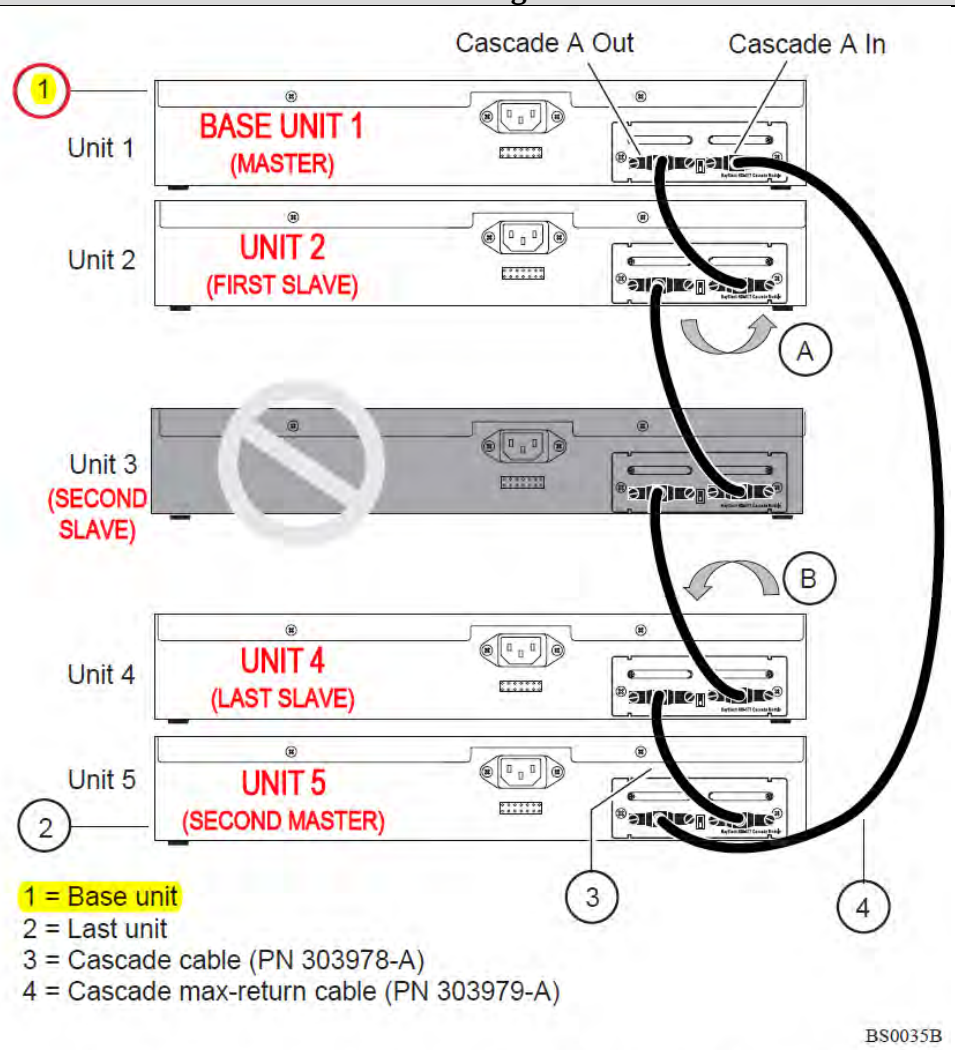
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No.	'904 Patent Claim 1	Dowling
		 **Figure 1-13. Stack Down Configuration Example** BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

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No.	'904 Patent Claim 1	Dowling
		Further, the BayStack 450 Switches disclose connectivity using physical interface lines using cables, stating "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. The BayStack 450 Switches further disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

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No.	'904 Patent Claim 1	Dowling
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

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No.	'904 Patent Claim 2	Dowling
2	Apparatus according to claim 1, wherein the network comprises an asynchronous transfer mode (ATM) network.	Dowling discloses an apparatus according to claim 1, wherein the network comprises an asynchronous transfer mode (ATM) network. For example, Dowling discloses that its invention can be used with any network known in the art and at multiple duplex settings, which can comprise an asynchronous transfer mode (ATM) network. See, e.g., Dowling at 6:11-22 ("Regardless of the method used to interconnect them, network devices Such as LAN Switches need to be configured and managed, because they typically include a number of programmable features that can be changed by a network administrator for optimal performance in a particular network. Without limitation, such features typically include whether each port on the network device is enabled or disabled, the data transmission speed setting on each port, and the duplex setting on each port. Many commercially available network devices contain embedded HTML Web servers, which allow the network device to be configured and managed remotely via a Web browser.") Dowling at 11:1-17 ("It is to be understood that the present invention is not limited to devices that are compatible with CDP. CDP runs on all media that support the Subnetwork Access Protocol ("SNAP"), including LAN and Frame Relay. CDP runs over the data link layer only. Each network device Sends periodic messages to a multicast address and listens to the periodic messages Sent by others in order to learn about neighboring devices and determine when their interfaces to the media go up or down. Each device also advertises at least one address at which it can receive SNMP messages. The advertisements contain hold time information, which indicates the period of time a receiving device should hold CDP information from a neighbor before discarding it. With CDP, network management applications can learn the device type and the SNMP agent address of neighboring devices. This process enables applications to send SNMP queries to neighboring devices.")

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No.	'904 Patent Claim 3	Dowling
3	Apparatus according to claim 1, wherein the network comprises an Internet protocol (IP) network.	Dowling discloses an apparatus according to claim 1, wherein the network comprises an Internet protocol (IP) network. For example, Dowling discloses using an Internet Protocol ("IP") suite as the underlying mechanism to transport data. Dowling at 8:26-36 ("Embodiments of the present invention use a subset of the Transmission Control Protocol/Internet Protocol ("TCP/IP") suite as the underlying mechanism to transport the SNMP configuration and management data. Without limitation, the protocols implemented in embodiments of the present invention include the Internet Protocol ("IP"), the Internet Control Message Protocol ("ICMP"), the User Datagram Protocol ("UDP"), the Trivial File Transfer Protocol ("TFTP"), the Bootstrap Protocol ("BOOTP"), and the Address Resolution Protocol ("ARP"), all of which are known to those skilled in the art.") Dowling at 6:23-28 ("Traditionally, network device installation includes inserting the device into the network and assigning it an Internet Protocol ("IP") address, which is a 32-bit number assigned to hosts that want to participate in a TCP/IP Internet. The IP address of a network device is a unique address that specifies the logical location of a host or client on the Internet.") Dowling at 6:47-52 ("Thus, it is an object of the present invention to provide a method and apparatus which permits an entire cluster of network devices to share a single IP address. A further goal of the present invention is to enable the clustering of LAN switches or other network devices so that they can be managed through a single network device.") For example, Dowling discloses that the protocols of its invention are implemented in Internet Protocol networks. Dowling at 9:50-55 ("According to the present invention, a Single IP address for the entire cluster 98 is assigned to the commander Switch 100, which distributes configuration information to the other Switches in the cluster. In one embodiment, a cluster with up to 15 member Switches may be configured and managed via the IP address of the commander Switch 100.").

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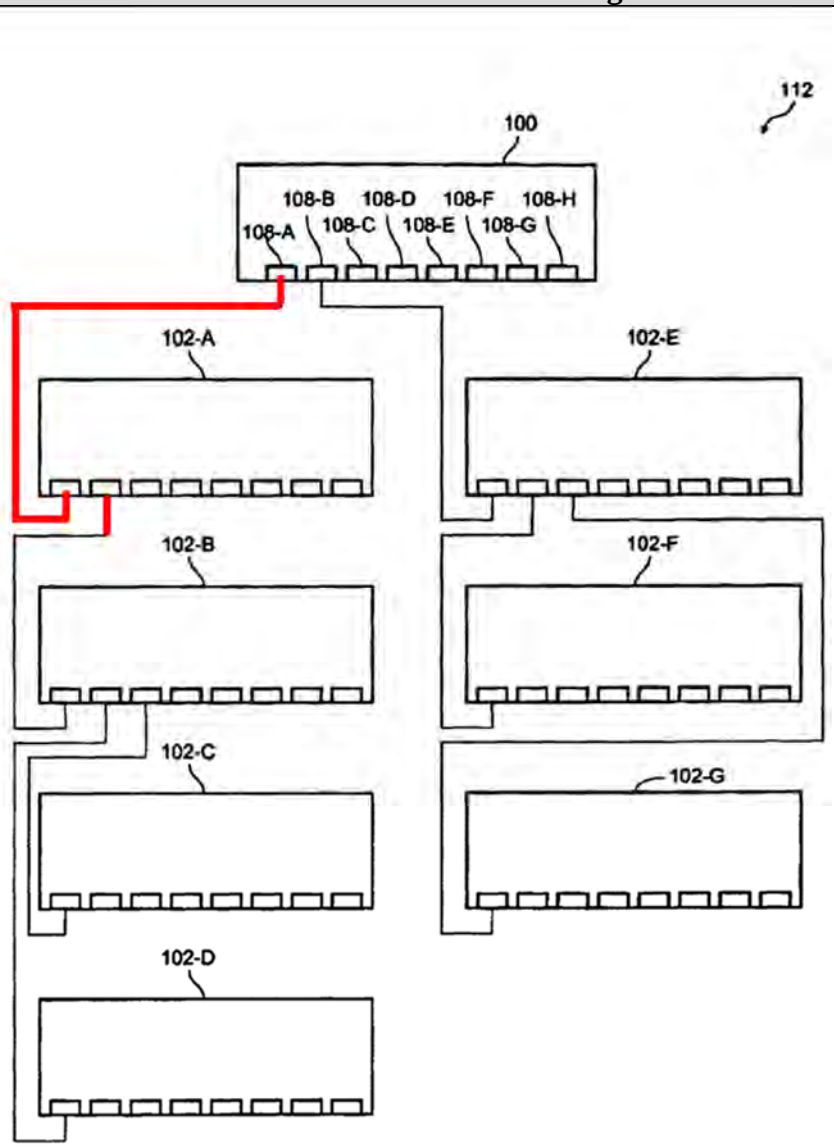
No.	'904 Patent Claim 3	Dowling
		Dowling at 12:4-46 ("The primary external configuration and management interface to the cluster is a TCP/IP connection to the commander switch, HTTP, SNMP, and telnet protocols run on top of the IP Stack in the operating system. Alternatively, the cluster may also be managed via the console port of the commander."). Dowling at 17:10-16 ("The IP Network Prefix TLV (0x0007) contains a list of network prefixes of stub networks to which the transmitting device can forward IP packets. Each network prefix is formatted as a 4-byte network address followed by a 1-byte net mask length. Thus, the length of the value is a multiple of 5 bytes. This IP Network Prefix TLV can used in On Demand Routing ("ODR') applications.")

No.	'904 Patent Claim 4	Dowling
4[preamble]	Network access apparatus, comprising:	Dowling discloses a network access apparatus. *See supra* at 1[preamble].
4[a]	first and second master units, each comprising a physical interface to a packet-switched network;	Dowling discloses first and second master units, each comprising a physical interface to a packet-switched network. *See supra* at 1[a].
4[b]	a plurality of slave units,	Dowling discloses a plurality of slave units. *See supra* at 1[b]
4[c]	each slave unit comprising one or more ports to respective subscriber lines; and	Dowling discloses each slave unit comprising one or more ports to respective subscriber lines. *See supra* at 1[c].

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No.	'904 Patent Claim 4	Dowling
4[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	Dowling discloses a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. *See supra* at 1[d].
4[e]	each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit,	Dowling discloses each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit. *See supra* at 1[e].
4[f]	wherein in normal operation, downstream data packets received from the network are passed from the first master unit to each of the daisy chains via the first slave unit in each chain, and upstream data packets received by the slaves	Dowling discloses wherein in normal operation, downstream data packets received from the network are passed from the first master unit to each of the daisy chains via the first slave unit in each chain, and upstream data packets received by the slaves in each chain from the subscriber lines are passed via the first slave unit in the chain to the first master unit for transmission over the network. For example, Dowling depicts this claim limitation in Figure 10 (annotation added):

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No.	'904 Patent Claim 4	Dowling
	in each chain from the subscriber lines are passed via the first slave unit in the chain to the first master unit for transmission over the network.	 FIG. 10

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No.	'904 Patent Claim 4	Dowling
		Dowling at 10:14-25 ("As a third example, FIG. 10 illustrates a "hybrid" cluster configuration with one commander Switch 100 and seven member Switches 102-A-102-G. In cluster 112, member Switches 102-A and 102-E are in a star configuration with respect to commander Switch 100. Member Switch 102-B is in a daisy chain configuration with respect to member Switch 102-A, while member Switches 102-C and 102-D are in a star configuration with respect to member switch 102-B. Finally, member Switches 102-F and 102-G are in a star configuration with respect to member Switch 102-E. Thus, hybrid cluster 112 as shown in FIG. 10 consists of a combination of Star and daisy chain configurations.") Dowling at 12:60-64 ("The commander switch 100 manages SNMP communication for all switches in the cluster 98. The commander switch 100 forwards the set and get requests from SNMP applications to member switches 102-A-102-N, and it forwards traps and other responses from the member switches 102-A-102-N back to the management station 104.") Dowling at 6:12-22 ("Regardless of the method used to interconnect them, network devices Such as LAN Switches need to be configured and managed, because they typically include a number of programmable features that can be changed by a network administrator for optimal performance in a particular network. Without limitation, such features typically include whether each port on the network device is enabled or disabled, the data transmission Speed Setting on each port, and the duplex setting on each port. Many commercially available network devices contain embedded HTML Web servers, which allow the network device to be configured and managed remotely via a Web browser.") Dowling at 20:40-44 ("The commander sends heartbeat datagrams over UDP to each cluster member, and independently, each cluster member sends heartbeat data grams over UDP to the commander, allowing each to diagnose communication breakdowns within the cluster.") Dowling at 15:14-18 ("Using CDP, each network device Sends periodic messages to a multicast address, and listens to the periodic messages Sent by others in order to learn about neighboring devices and determine when their interfaces to the media go up or down.")

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No.	'904 Patent Claim 5	Dowling
5	Apparatus according to claim 4, and comprising a protection interface, which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault.	Dowling discloses an apparatus according to claim 4, and comprising a protection interface, which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault. For example, Dowling discloses that any member switch in a defined cluster, which is coupled to the first member through the daisy chain, can be configured to become the commander switch in case of a fault via an assigned IP address and a command-switch enable password. Dowling further discloses that any topology can be used, including a Token Ring network. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Dowling at 11:48-60 ("If the commander Switch of a cluster fails, member switches continue forwarding but cannot be managed through the commander switch. Member Switches retain the ability to be managed through normal Standalone means, Such as the console-port CLI, and they can be managed through SNMP, HTML, and Telnet after they have been assigned an IP address. Recovery from a failed command Switch can be accomplished by replacing the failed unit with a cluster member or another Switch. To have a cluster member ready to replace the commander Switch, the network administrator must assign an IP address to another cluster member, and know the command-Switch enable password for that Switch.") Dowling at 2:40-45 ("Switching is a technology that alleviates congestion in Ethernet, Token Ring, and Fiber Distributed Data Interface (FDDI) and other similar LANs by reducing traffic and increasing bandwidth. LAN switches are designed to work with existing media infrastructures so that they can be installed with minimal disruption of existing networks.") Dowling at 9:66-67 ("Clusters may be configured in a variety of topologies.") Dowling at 2:40-45 ("Switching is a technology that alleviates congestion in Ethernet, Token Ring, and Fiber Distributed Data Interface (FDDI) and other similar LANs by reducing traffic and increasing bandwidth. LAN switches are designed to work with existing media infrastructures so that they can be installed with minimal disruption of existing networks.")

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No.	'904 Patent Claim 6	Dowling
6	Apparatus according to claim 5, wherein the first master unit bicasts the upstream data packets that it receives from the slave units to the network and, via the protection interface, to the second master unit, which transmits the upstream data packets to the network.	Dowling discloses apparatus according to claim 5, wherein the first master unit bicasts the upstream data packets that it receives from the slave units to the network and, via the protection interface, to the second master unit, which transmits the upstream data packets to the network. For example, Dowling discloses that any member switch in a defined cluster, which is coupled to the first member through the daisy chain, can be configured to become the commander switch in case of a fault via an assigned IP address and a command-switch enable password. Dowling sends data through the daisy chain. Dowling further discloses that any topology can be used, including a Token Ring network. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. See, e.g., Dowling at 2:58-3:12 ("Ethernet uses variable-length frames of data to transmit information from a source to one or more destinations. Every Ethernet frame has two fields defined as the source and destination addresses, which indicate the MAC addresses of the network devices where a frame originated and where it is ultimately destined, respectively. . . . Special addresses allow for multicasting to a group of Stations and for broadcasting to all Stations on the network.") Dowling at 11:1-9 ("It is to be understood that the present invention is not limited to devices that are compatible with CDP. CDP runs on all media that support the Subnetwork Access Protocol ("SNAP"), including LAN and Frame Relay. CDP runs over the data link layer only. Each network device sends periodic messages to a multicast address and listens to the periodic messages Sent by others in order to learn about neighboring devices and determine when their interfaces to the media go up or down.")

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No.	'904 Patent Claim 7	Dowling
7	Apparatus according to claim 4, wherein in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit.	Dowling discloses apparatus according to claim 4, wherein in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit. For example, Dowling discloses multiple topology configurations, including a hybrid configuration with multiple daisy chains, such that in the case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit could be reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Dowling is found to not meet this limitation, apparatus according to claim 4, wherein in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit would have been obvious to a person having ordinary skill in the art, as explained below. See, e.g., Dowling at 11:5-9 ("Each network device sends periodic messages to a multicast address and listens to the periodic messages Sent by others in order to learn about neighboring devices and determine when their interfaces to the media go up or down.") Dowling at 9:66-67 ("Clusters may be configured in a variety of topologies.")

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No.	'904 Patent Claim 7	Dowling
		Dowling at 2:40-45 ("Switching is a technology that alleviates congestion in Ethernet, Token Ring, and Fiber Distributed Data Interface (FDDI) and other similar LANs by reducing traffic and increasing bandwidth. LAN switches are designed to work with existing media infrastructures so that they can be installed with minimal disruption of existing networks.") Dowling at 6:11-22 ("Regardless of the method used to interconnect them, network devices Such as LAN Switches need to be configured and managed, because they typically include a number of programmable features that can be changed by a network administrator for optimal performance in a particular network. Without limitation, such features typically include whether each port on the network device is enabled or disabled, the data transmission speed setting on each port, and the duplex setting on each port. Many commercially available network devices contain embedded HTML Web servers, which allow the network device to be configured and managed remotely via a Web browser.") Dowling at 13:44-65 ("The commander automatically discovers candidate switches that send CDP packets directly to the commander. The commander then produces a list of Ethernet addresses of candidate Switches. As candidate switches become members of the cluster, they look for CDP packets from "down stream" devices. A device is downstream of a member if it is one CDP hop further away from the commander than is the member. An administrator may view the list of candidates and add candidates to the cluster through the commander console port, telnet CLI, a Web console or SNMP. The commander applies rules to devices attached to the cluster to determine whether each is qualified to join the cluster. According to one embodiment of the present invention, in order to become a cluster candidate, a switch must meet the following qualification criteria: (1) it must be cluster-capable, (2) it must have HTTP capabilities and have CDP enabled, (3) it must be connected to a member of the existing cluster, (4) its connection must be STP forwarding at both ends, and (5) it must not be an active member of any other cluster. In addition, the enable password of the candidate must be either the same as the commander or known to the administrator who is adding the Switch to the cluster.") In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, Dowling in combination with (1) the knowledge of a person of ordinary skill in

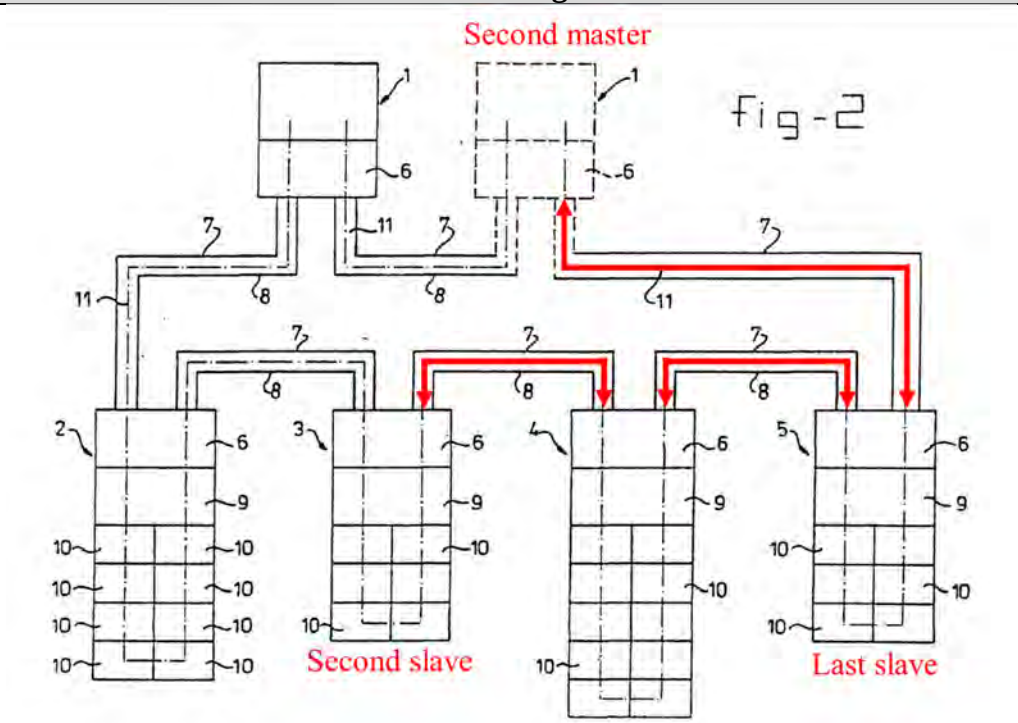
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No.	'904 Patent Claim 7	Dowling
		the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 7 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. For example, Vink '324 discloses reversing direction of packet flow in the chain in the event of a fault, so that the slaves can still communicate with a master on either side of the fault. Vink '324 16:19-17:2 ("The shift register principle is also of advantage with respect to use, for example for reliability reasons, of a plurality of masters as is illustrated in Figure 2 by the broken lines. In such a multi-master concept, one of the masters is in general active in relation to data exchange, while one or more other masters only have a passive role therein. All the masters are so designed that they can assume the function of the active master, for example in the event of faults. The passive masters are easily able to detect errors of the active master because, as a consequence of their cascade arrangement and the serial transfer of data bits in the communication system according to the invention, they receive all the information which is intended for the active master. Consequently, no separate communication path is required between the various masters to keep the passive masters abreast of the operations, instruction etc. carried out by the active master. Such a "hot stand-by" mode is of importance, in particular, in industrial process measurement and control in which failure or delay in the production process may, inter alia, have serious financial consequences. It is obvious that, in such a multi-master concept, the conditions under which, and the manner in which, the tasks of a master are assumed by another master have to be specified in advance."). Vink '324 14:2-27 ("In particular, with implicit addressing of the I/O modules, that is to say, if the sequence of the data bits corresponds to the sequence of the I/O modules of the relevant slave, errors in the transmission system and/or the local data bus can give rise to undesirable responses. To prevent this as far as possible, in an embodiment of the communication system according to the invention, a slave is provided with means for monitoring the serial transfer of data bits via the transmission system and/or the local data bus. A complete monitoring of the data exchange is achieved in that the at least one master is provided with means for detecting error situations in the transmission system. When a transmission error is detected,

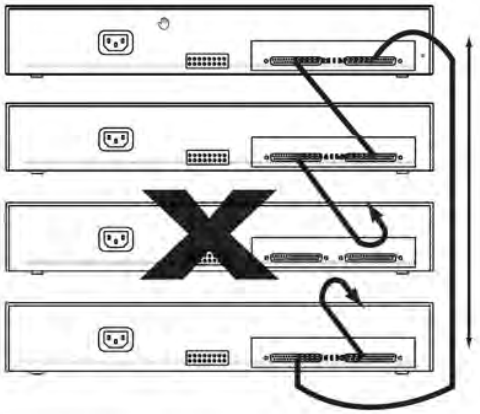
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No.	'904 Patent Claim 7	Dowling
		the control module of a slave will not accept the data received, nor will it transmit new data. The data bits received are then transferred further unchanged. The master then receives back the data bits despatched, possibly with transmission errors. By checking the transmitted and received data, information can be obtained about a transmission fault. If necessary, the relevant data bits can, for example, be transmitted again. Owing to the serial transfer down to the level of the I/O modules, the nodes in the communication system according to the invention are particularly suitable for use in a ring network configuration. Making use of this, the slaves in a further embodiment of the invention are connected to the at least one master via a multiple ring transmission system, the at least one master and the slaves being provided with means for change-over of a transmission system ring."). Vink '324 14:28-38 "A very flexible system is obtained in an embodiment of the invention in that the at least one master and slaves are designed to transmit or receive packets of data bits via a transmission system ring in one and/or the other direction. Master and/or slaves constructed in this way are capable of functioning as a switching centre so that, for example, the master is able to reach as many connected slaves as possible in a fault situation. The invention also relates to an I/O module, a substation (slave) and a master station (master) corresponding to, and suitable for, use in the communication system according to one or more of the preceding embodiments."). Vink '324 21:3-17 ("The transmitting/receiving unit 6 provides for the monitoring of the transmission and the control computer 38 provides for and monitors the correct sequence of the data bits for a relevant slave, related to the sequence in which the I/O modules are arranged. The information about this sequence is extracted by the control unit 36 from the status information received from the relevant slaves. In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about whether the connection to the transmission system is or is not operating correctly. For use in the communication system according to Figure 1 the unit 6 can be omitted.")

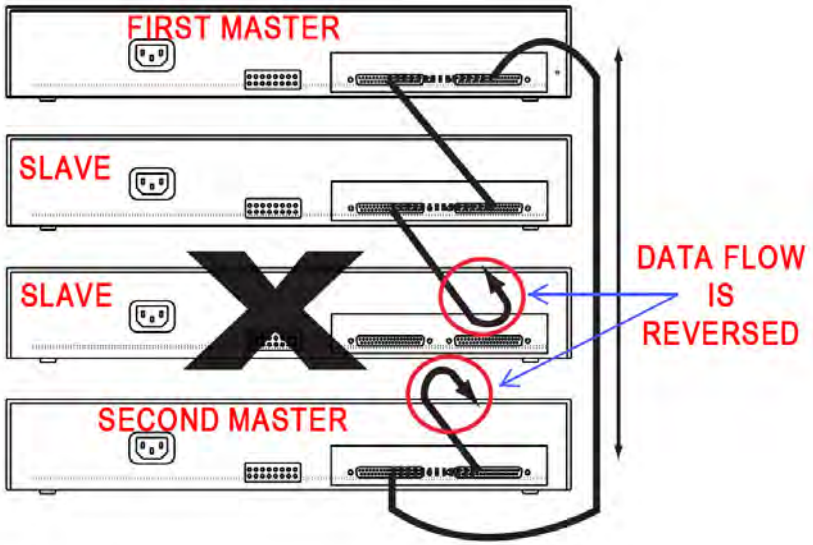
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No.	'904 Patent Claim 7	Dowling
		 Fig. 2 (annotation added) For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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No.	'904 Patent Claim 7	Dowling
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

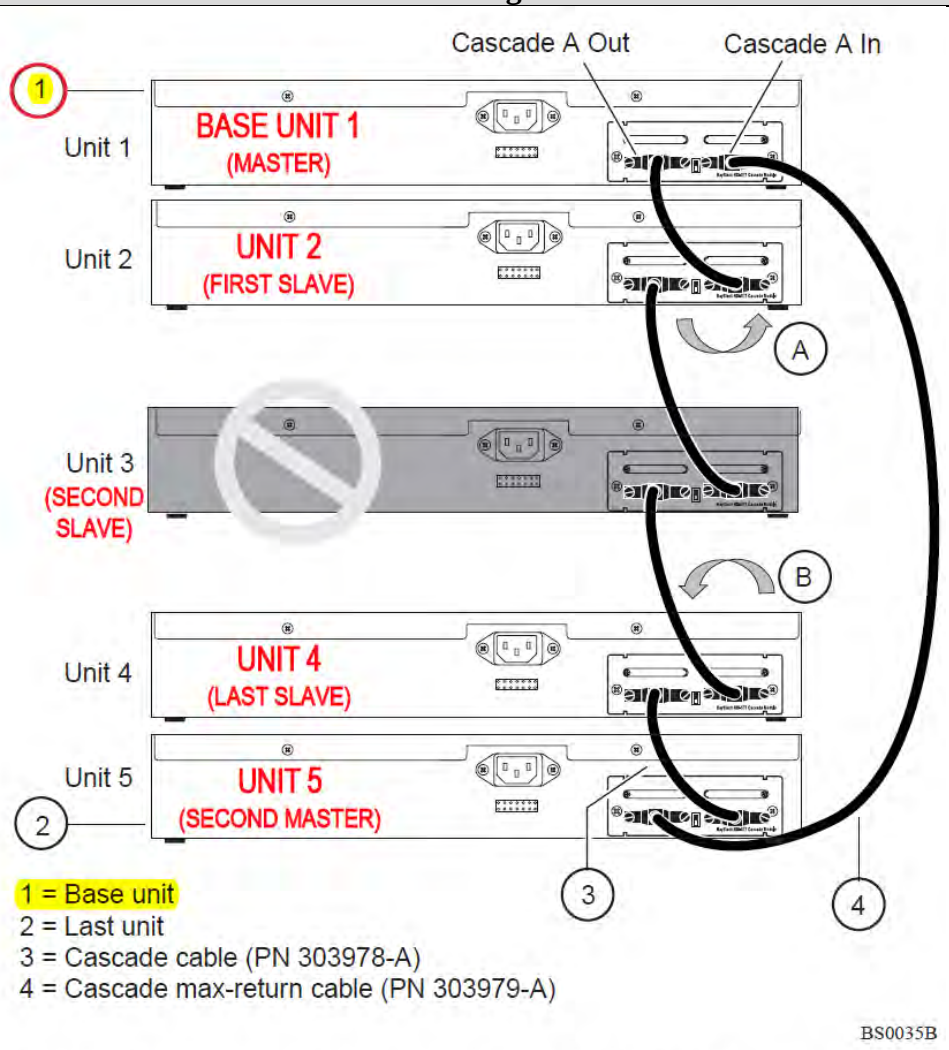
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No.	'904 Patent Claim 7	Dowling
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In the event of a failure, the BayStack 450 Switches disclose a Temporary Base Unit as being a second master unit. See, e.g., BayStack 450 Manual at 33, 52, 230 of 290. For instance, the BayStack 450 Manual states that "[i]f an assigned base unit fails, the next unit in the stack order automatically becomes the new temporary base unit. This change is indicated by the Base LED on the temporary base unit's LED display panel turning on (amber). For detailed information about the base LED, see Table 1-1 on page 1-6." BayStack 450 Manual at 52 of 290. Further, in this alternative example, the BayStack 450 Manual describes that "[t]his automatic failover is a temporary safeguard only. If the stack configuration loses power, the temporary

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No.	'904 Patent Claim 7	Dowling
		base unit will not power up as the base unit when power is restored. For this reason, you should always assign the temporary base unit as the base unit (set the Unit Select switch to Base) until the failed unit is repaired or replaced." BayStack 450 Manual at 52 of 290. In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290. Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

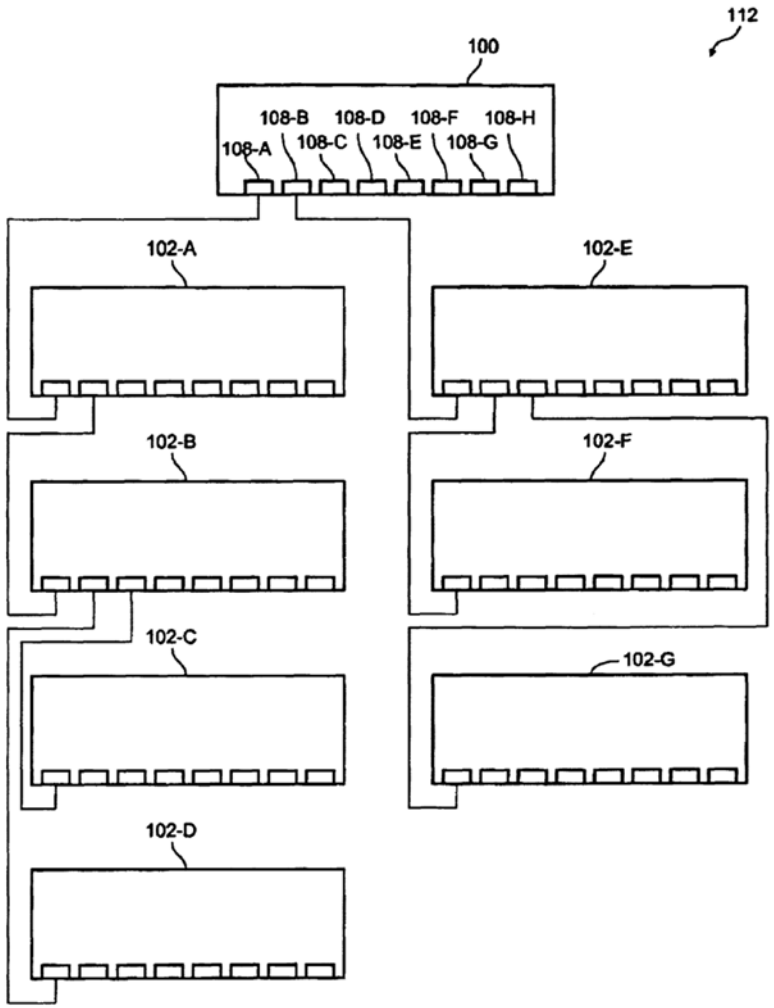
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No.	'904 Patent Claim 7	Dowling
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

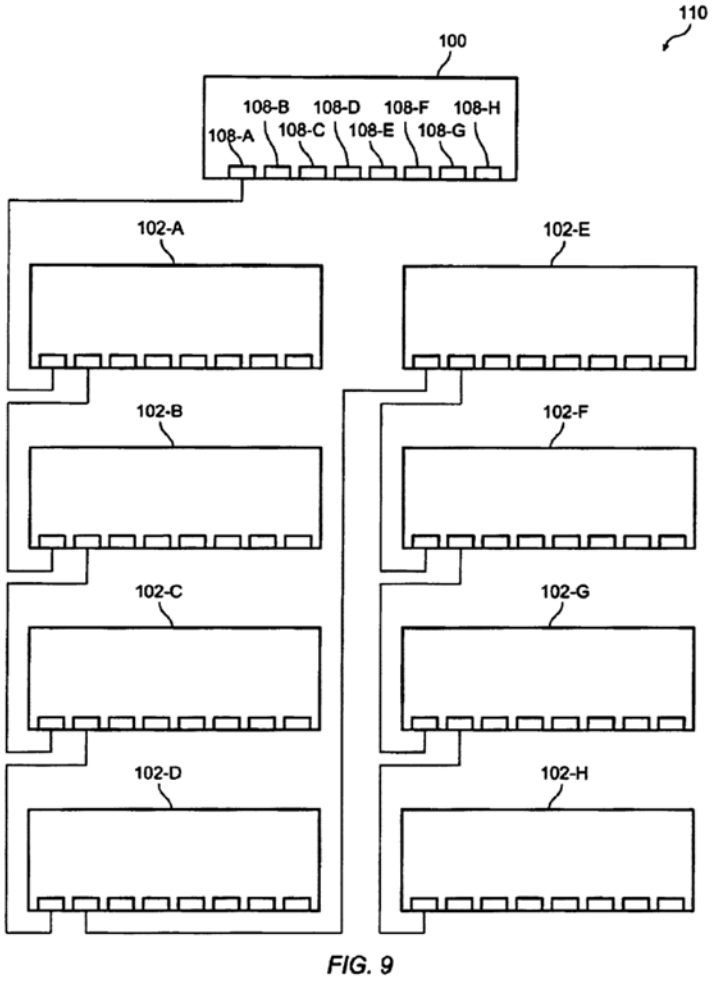
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No.	'904 Patent Claim 8	Dowling
8	Apparatus according to claim 7, wherein the downstream packets for the slave units in the portion of the daisy chain between the location of the fault and the second master unit are conveyed to the second master unit from the first master unit via another one of the daisy chains.	Dowling discloses apparatus according to claim 7, wherein the downstream packets for the slave units in the portion of the daisy chain between the location of the fault and the second master unit are conveyed to the second master unit from the first master unit via another one of the daisy chains. For example, Dowling discloses that any switch can be configured to be the second master unit and discloses multiple topology configurations, including a hybrid configuration with multiple daisy chains, such that the apparatus could be configured to have the downstream packets for the slave units in the portion of the daisy chain between the location of the fault and the second master unit are conveyed to the second master unit from the first master unit via another one of the daisy chains. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. See, e.g., Dowling, Figure 10:

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No.	'904 Patent Claim 8	Dowling
		 FIG. 10 Dowling, Figure 9:

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No.	'904 Patent Claim 8	Dowling
		 *FIG. 9* Dowling at 7:43-45 ("FIG. 9 is a block diagram illustrating a cluster of network devices in a daisy chain configuration according to one aspect of the present invention.")

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No.	'904 Patent Claim 8	Dowling
		Dowling at 10:5-14 ("A Second example of a cluster configuration, known as a "daisy chain" configuration, is shown in FIG. 9. In cluster 110, only member switch 102-A is directly connected to the commander Switch 100. Member switches 102-B-102-G are each connected to an "upstream" Switch (one that is fewer "hops" away from commander switch 100) and to a "down-stream" switch (one that is more "hops" away from commander switch 100). Finally, the last Switch in the chain (member switch 102-H) is only connected to its upstream "neighbor" 102-G.") Dowling at 10:40-44 ("When switches are first installed, they are cabled together according to the network configuration desired for a particular application, and an IP address is assigned to the commander switch.") Dowling at 24:1-15 ("If one member device moves its connection to the cluster from one port on a Second member device to another port on the second member device (this could be done either physically or through a Spanning Tree topology change), the Second member device updates its local information and passes that information on to the commander.") Dowling at 24:57-60 ("In one embodiment of the present invention, a device can belong to only one cluster. However, other embodiments of the present invention may allow a device to belong to more than one cluster.") Dowling at 11:54-60 ("Recovery from a failed command Switch can be accomplished by replacing the failed unit with a cluster member or another Switch. To have a cluster member ready to replace the commander Switch, the network administrator must assign an IP address to another cluster member, and know the command-Switch enable password for that Switch.") Dowling at 24:57-60 ("In one embodiment of the present invention, a device can belong to only one cluster. However, other embodiments of the present invention may allow a device to belong to more than one cluster.")

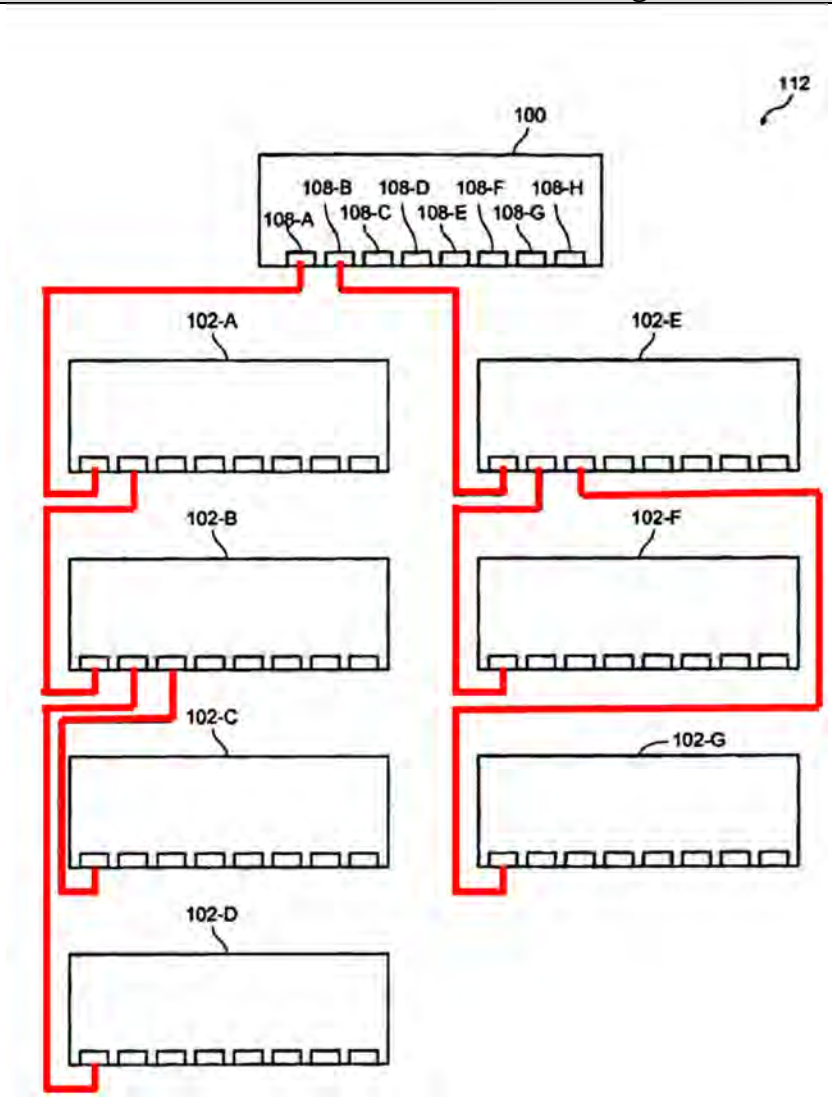
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No.	'904 Patent Claim 9	Dowling
9[preamble]	Network access apparatus, comprising:	Dowling discloses a network access apparatus. *See supra* at 4[preamble].
9[a]	first and second master units, each comprising a physical interface to a packet-switched network;	Dowling discloses first and second master units, each comprising a physical interface to a packet-switched network. *See supra* at 4[a].
9[b]	a plurality of slave units,	Dowling discloses a plurality of slave units. *See supra* at 1[b].
9[c]	each slave unit comprising one or more ports to respective subscriber lines; and	Dowling discloses each slave unit comprising one or more ports to respective subscriber lines. *See supra* at 4[c].
9[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	Dowling discloses a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. *See supra* at 4[d].
9[e]	each daisy chain comprising at least a first slave unit connected by one of	Dowling discloses each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit.

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No.	'904 Patent Claim 9	Dowling
	the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit, wherein each of the first and second master units comprises:	*See supra* at 4[e].
9[f]	a switch, configured to route data packets between the respective physical interface and the one or more daisy chains; and	Dowling discloses wherein each of the first and second master units comprises a switch, configured to route data packets between the respective physical interface and the one or more daisy chains. For example, Dowling depicts this limitation in Figure 10 (annotation added):

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No.	'904 Patent Claim 9	Dowling
		 FIG. 10

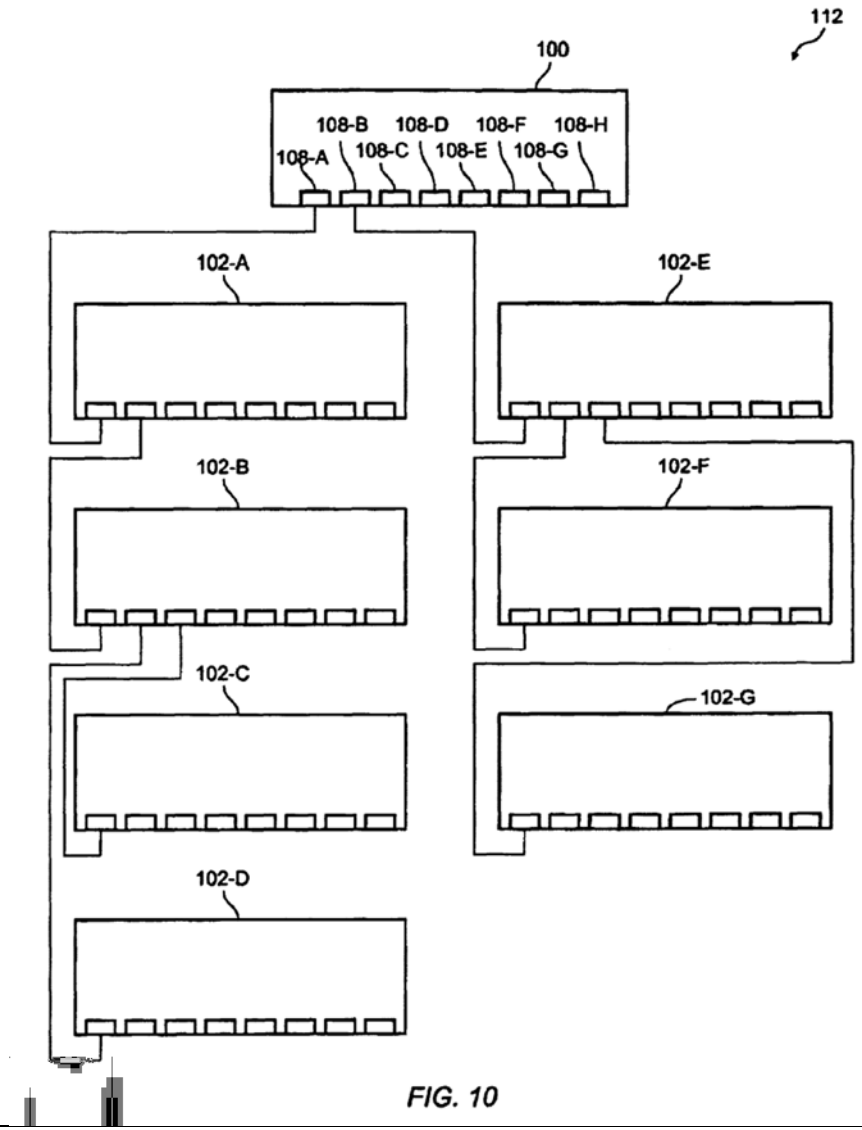
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No.	'904 Patent Claim 9	Dowling
		Dowling at 10:14-28 ("As a third example, FIG. 10 illustrates a "hybrid" cluster configuration with one commander Switch 100 and seven member Switches 102-A-102-G. In cluster 112, member Switches 102-A and 102-E are in a star configuration with respect to commander Switch 100. Member Switch 102-B is in a daisy chain configuration with respect to member Switch 102-A, while member Switches 102-C and 102-D are in a star configuration with respect to member switch 102-B. Finally, member Switches 102-F and 102-G are in a star configuration with respect to member Switch 102-E. Thus, hybrid cluster 112 as shown in FIG. 10 consists of a combination of Star and daisy chain configurations. It is to be understood that many more cluster configurations are possible, and that the above examples are not in any way limiting.")
9[g]	a pre-switch, which in the event of a fault at a location in one of the daisy chains, re-routes at least a portion of the data packets exchanged with one or more of the slaves in the daisy chain in which the fault has occurred through another one of the daisy chains.	Dowling discloses a pre-switch, which in the event of a fault at a location in one of the daisy chains, re-routes at least a portion of the data packets exchanged with one or more of the slaves in the daisy chain in which the fault has occurred through another one of the daisy chains. For example, Dowling discloses the ability to implement different topology configurations, bidirectional communication, and the ability to mark a member switch inactive, such that in the event of a fault at a location in one of the daisy chains, the system is capable of re-routing at least a portion of the data packets exchanged with one or more of the slaves in the daisy chain in which the fault has occurred through a secondary repeater connection as disclosed by the redundant loopback connection. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. See, e.g., Dowling at 9:66-10:28 ("Clusters may be configured in a variety of topologies. . . . A Second example of a cluster configuration, known as a "daisy chain" configuration, is shown in FIG. 9. . . . It is to be understood that many more cluster configurations are possible, and that the above examples are not in any way limiting.") Dowling at 19:38-49 ("If the commander fails to receive heartbeats from a member Switch for a predetermined interval (e.g., 60 seconds) or cannot set up any other communication with

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No.	'904 Patent Claim 9	Dowling
		it, it marks the member switch as inactive. The commander will stop sending heartbeats, and the user will notice at the user interface that the member switch is inactive. The commander stops accepting or forwarding any configuration commands for the inactive member switch until the cluster begins receiving CDP packets from that switch again, at which time the commander resumes sending heartbeats to the member switch.") Dowling at 2:40-45 ("Switching is a technology that alleviates congestion in Ethernet, Token Ring, and Fiber Distributed Data Interface (FDDI) and other similar LANs by reducing traffic and increasing bandwidth. LAN switches are designed to work with existing media infrastructures so that they can be installed with minimal disruption of existing networks.") Dowling, Figure 10:

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No.	'904 Patent Claim 9	Dowling
		 FIG. 10

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No.	'904 Patent Claim 9	Dowling
		Dowling at 10:14-28 ("As a third example, FIG. 10 illustrates a "hybrid" cluster configuration with one commander Switch 100 and seven member Switches 102-A-102-G. In cluster 112, member Switches 102-A and 102-E are in a star configuration with respect to commander Switch 100. Member Switch 102-B is in a daisy chain configuration with respect to member Switch 102-A, while member Switches 102-C and 102-D are in a star configuration with respect to member switch 102-B. Finally, member Switches 102-F and 102-G are in a star configuration with respect to member Switch 102-E. Thus, hybrid cluster 112 as shown in FIG. 10 consists of a combination of Star and daisy chain configurations. It is to be understood that many more cluster configurations are possible, and that the above examples are not in any way limiting.") Dowling at 24:57-60 ("In one embodiment of the present invention, a device can belong to only one cluster. However, other embodiments of the present invention may allow a device to belong to more than one cluster.")

No.	'904 Patent Claim 10	Dowling
10	Apparatus according to claim 9, wherein the pre-switch re-routes the data packets such that substantially no reconfiguration of the switch is required responsive to the fault.	Dowling discloses an apparatus according to claim 9, wherein the pre-switch re-routes the data packets such that substantially no reconfiguration of the switch is required responsive to the fault. For example, Dowling discloses the ability to implement different topology configurations, bidirectional communication, the ability to mark a member switch inactive, and the ability to replace a commander switch. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Dowling is found to not meet this limitation, apparatus according to claim 9, wherein the pre-switch re-routes the data packets such that substantially no reconfiguration of the switch is required responsive to the fault would have been obvious to a person having ordinary skill in the art, as explained below. See, e.g.,

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No.	'904 Patent Claim 10	Dowling
		Dowling at 19:32-48 ("In this embodiment of the present invention, the cluster commander Switch transmits ICC "heartbeat" packets to each member Switch in the cluster at predetermined intervals (e.g., 10 Seconds). Also at predetermined intervals (e.g., 10 Seconds), each member Switch sends its own heartbeat to the commander. Each Switch's heartbeat contains information about the current State of the Switch and Status of all its ports. If the commander fails to receive heartbeats from a member Switch for a predetermined interval (e.g., 60 seconds) or cannot set up any other communication with it, it marks the member Switch as inactive. The commander will stop sending heartbeats, and the user will notice at the user interface that the member Switch is inactive. The commander Stops accepting or forwarding any configuration commands for the inactive member Switch until the cluster begins receiving CDP packets from that Switch again, at which time the commander resumes Sending heartbeats to the member Switch.") Dowling at 11:54-60 ("Recovery from a failed command Switch can be accomplished by replacing the failed unit with a cluster member or another Switch. To have a cluster member ready to replace the commander switch, the network administrator must assign an IP address to another cluster member, and know the command-Switch enable password for that Switch.") Dowling at 6:11-22 ("Regardless of the method used to interconnect them, network devices Such as LAN Switches need to be configured and managed, because they typically include a number of programmable features that can be changed by a network administrator for optimal performance in a particular network. Without limitation, such features typically include whether each port on the network device is enabled or disabled, the data transmission speed setting on each port, and the duplex setting on each port. Many commercially available network devices contain embedded HTML Web servers, which allow the network device to be configured and managed remotely via a Web browser.") Dowling at 10:14-28 ("As a third example, FIG. 10 illustrates a "hybrid" cluster configuration with one commander Switch 100 and seven member Switches 102-A-102-G. In cluster 112, member Switches 102-A and 102-E are in a star configuration with respect to commander Switch 100. Member Switch 102-B is in a daisy chain configuration with respect to member

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No.	'904 Patent Claim 10	Dowling
		Switch 102-A, while member Switches 102-C and 102-D are in a star configuration with respect to member switch 102-B. Finally, member Switches 102-F and 102-G are in a star configuration with respect to member Switch 102-E. Thus, hybrid cluster 112 as shown in FIG. 10 consists of a combination of Star and daisy chain configurations. It is to be understood that many more cluster configurations are possible, and that the above examples are not in any way limiting.") Dowling at 9:66-67 ("Clusters may be configured in a variety of topologies.") Dowling, Figure 10:

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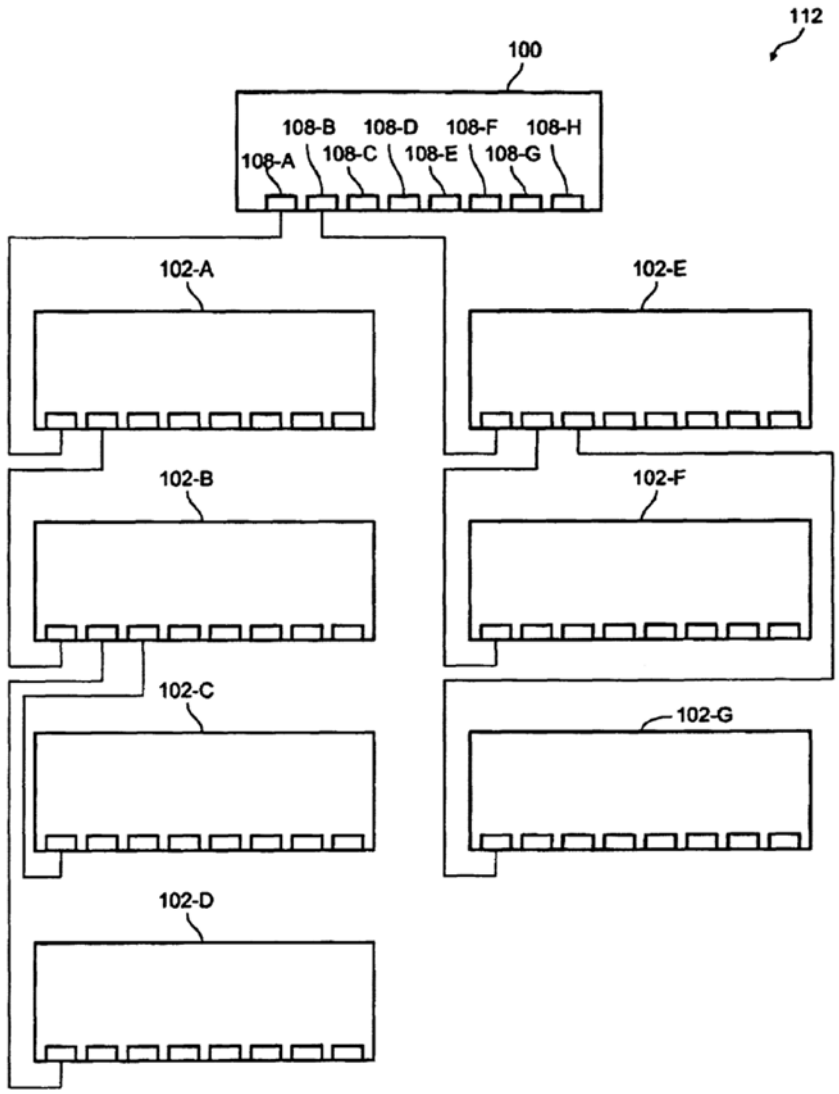
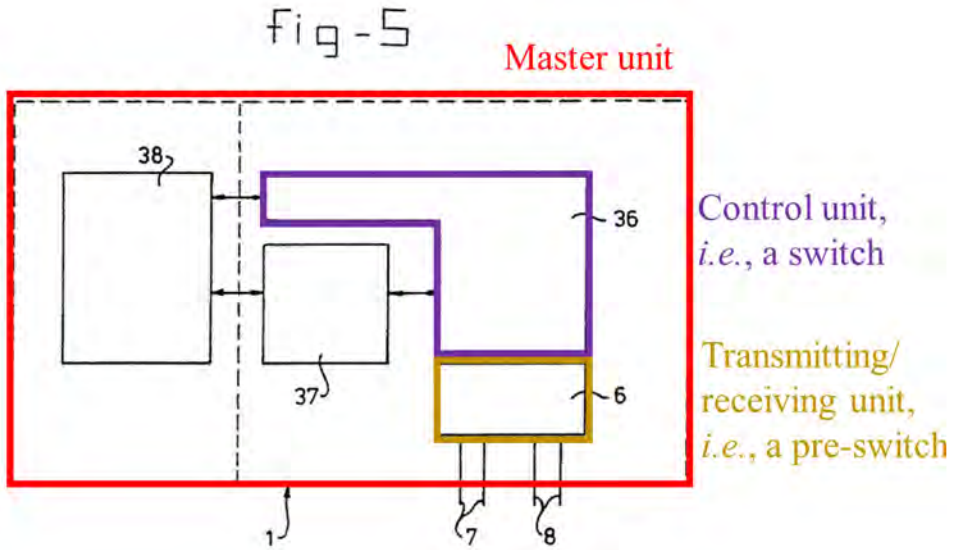


FIG. 10

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No.	'904 Patent Claim 10	Dowling
		Dowling at 2:40-45 ("Switching is a technology that alleviates congestion in Ethernet, Token Ring, and Fiber Distributed Data Interface (FDDI) and other similar LANs by reducing traffic and increasing bandwidth. LAN switches are designed to work with existing media infrastructures so that they can be installed with minimal disruption of existing networks.") Dowling at 24:57-60 ("In one embodiment of the present invention, a device can belong to only one cluster. However, other embodiments of the present invention may allow a device to belong to more than one cluster.") In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, Dowling in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 10 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. For example, Vink '324 discloses a transmitting/receiving unit that changes the direction of the data flow (*i.e.*, re-routes packets) in the case of a fault by switching which transmission ring the packets are being transmitted over. Disclosed is a transmitting/receiving and control unit which can switch the direction of the data flow. Vink '324 21:10-16 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly."). Vink '324 20:30-21:2 ("The software for controlling the communication system according to the invention is essentially concentrated in the master 1 which comprises, in an exemplary embodiment of the invention as shown in Figure 5, a control unit 36 for controlling the data flow via the transmission system 7, 8, with an associated memory 37 for

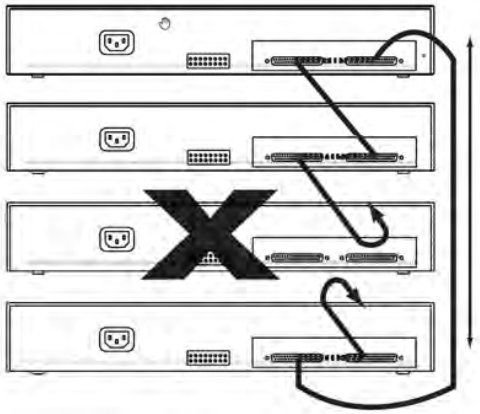
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No.	'904 Patent Claim 10	Dowling
		storing and exchanging information with a control computer 38 which contains the calculations and background information necessary for the process to be controlled via the I/0 modules. Further peripheral equipment, for example a further computer (not shown) for supporting the control computer 38, may be connected to said control computer 38."). Vink '324 17:3-12 ("Figure 3 shows a block diagram of an exemplary embodiment of a portion of a slave 2, 3, 4, 5. Data bits are transported via connections provided with an arrow. The transmitting/receiving unit 6 comprises a multiplexer 12 consisting of two modems 13, 14 which are respectively connected to the first transmission ring 7 and to the second transmission ring 8. For the transmission of the data via the transmission system, signal coding techniques known per se in practice may be used. The operation of the relevant transmission ring 7, 8 can be monitored by means of line error detectors 15.").  Fig. 5 (annotation added)

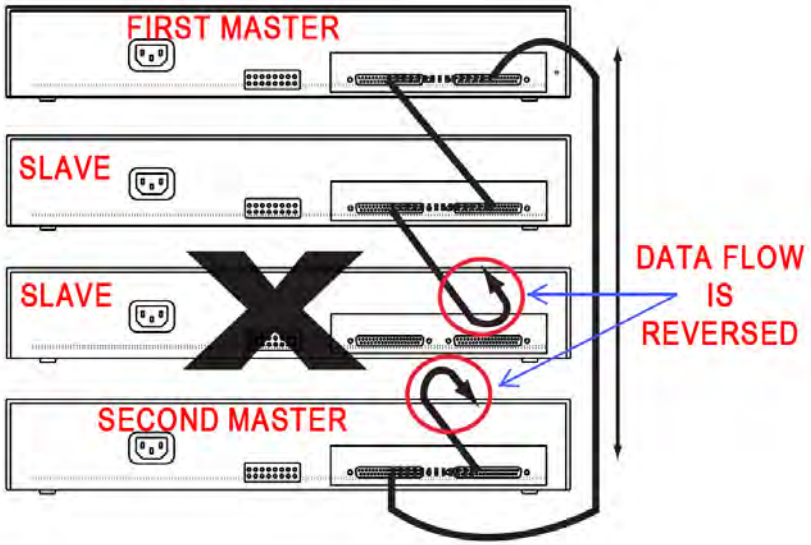
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No.	'904 Patent Claim 10	Dowling
		Vink '324 16:19-17:2 ("The shift register principle is also of advantage with respect to use, for example for reliability reasons, of a plurality of masters as is illustrated in Figure 2 by the broken lines. In such a multi-master concept, one of the masters is in general active in relation to data exchange, while one or more other masters only have a passive role therein. All the masters are so designed that they can assume the function of the active master, for example in the event of faults. The passive masters are easily able to detect errors of the active master because, as a consequence of their cascade arrangement and the serial transfer of data bits in the communication system according to the invention, they receive all the information which is intended for the active master. Consequently, no separate communication path is required between the various masters to keep the passive masters abreast of the operations, instruction etc. carried out by the active master. Such a "hot stand-by" mode is of importance, in particular, in industrial process measurement and control in which failure or delay in the production process may, inter alia, have serious financial consequences. It is obvious that, in such a multi-master concept, the conditions under which, and the manner in which, the tasks of a master are assumed by another master have to be specified in advance."). For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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No.	'904 Patent Claim 10	Dowling
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

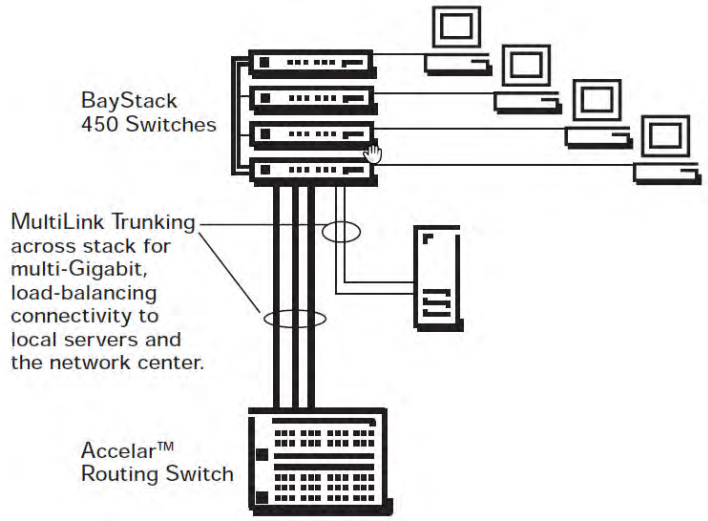
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No.	'904 Patent Claim 10	Dowling
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. In this example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features where "[e]ach unit in the stack has a full copy of the stack configuration so in the unlikely event of any unit failure, operation of the stack continues without affecting application connectivity." BayStack 450 Data Sheet at 3 of 8.

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No.	'904 Patent Claim 10	Dowling
		In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches further disclose its fail-safe design features includes that "[e]ach switch includes a Redundant Power Supply Unit connection. Should the switch's built-in power supply fail, the Bay Networks RPSU (sold separately) will automatically supply power to the switch for uninterrupted operation." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below.

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No.	'904 Patent Claim 10	Dowling
		Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.  BayStack 450 Data Sheet at 4 of 8, FIG. 2. And Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. In one example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the bottom of the stack in an aptly-named "Stack Up Configuration." BayStack 450 Manual at 54 of 290.

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No.	'904 Patent Claim 10	Dowling

Stack Up Configurations

In Figure 1-12, data flows from the base unit (unit 1) to the next switch, which is assigned as unit 2, and continues until the last switch in the stack is assigned as unit 8. The physical order of the switches is *from bottom to top* (unit 1 to unit 8).

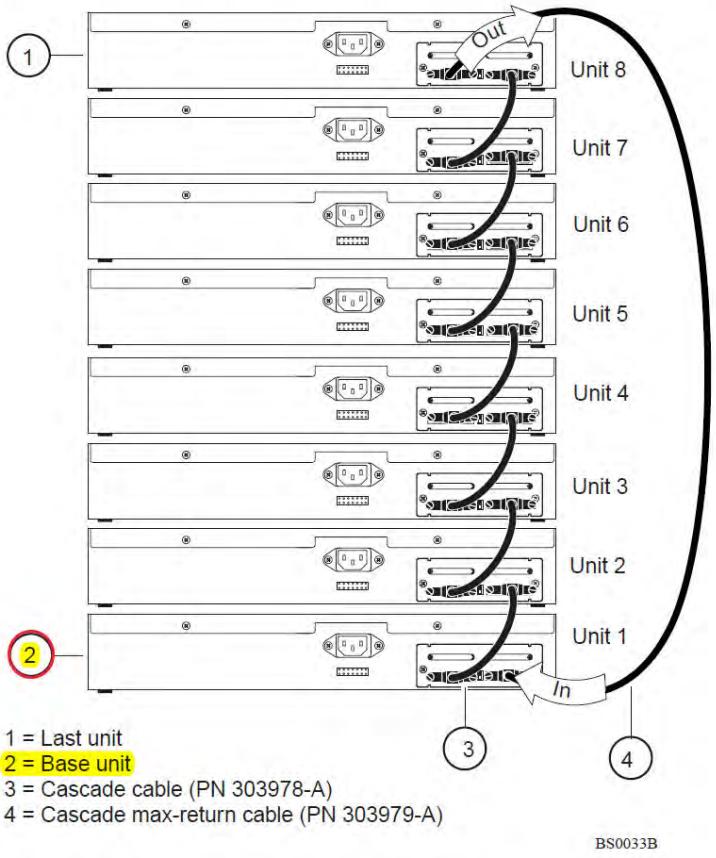


Figure 1-12. Stack Up Configuration Example

BayStack 450 Manual at 54 of 290, FIG. 1-12 (annotated).

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No.	'904 Patent Claim 10	Dowling
		In another example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the top of the stack in the also aptly-named "Stack Down Configuration." BayStack 450 Manual at 55 of 290.

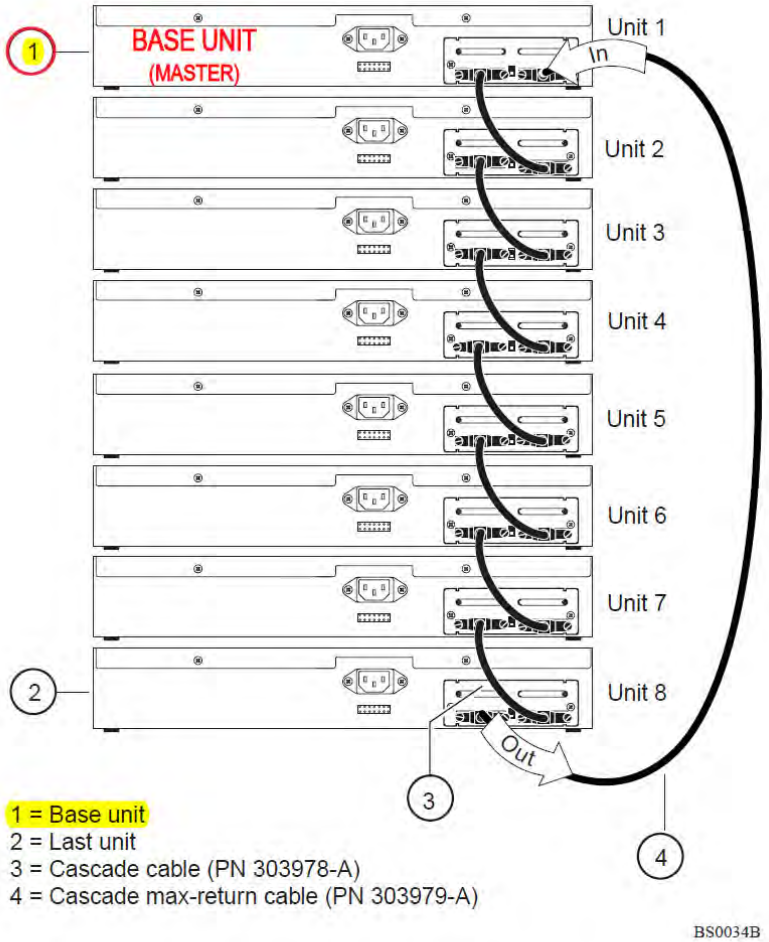


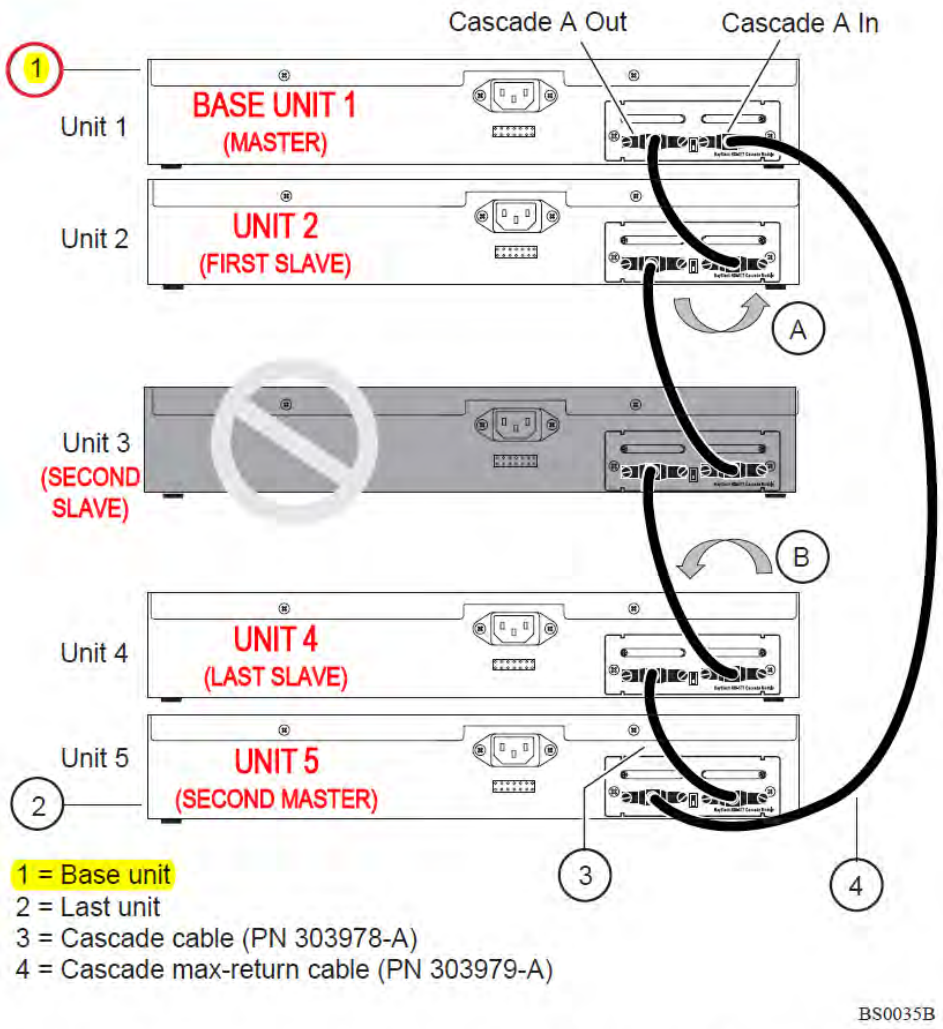
Figure 1-13. Stack Down Configuration Example

BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

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No.	'904 Patent Claim 10	Dowling
		In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290. Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

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No.	'904 Patent Claim 10	Dowling
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

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No.	'904 Patent Claim 11	Dowling
11[preamble]	Network access apparatus, comprising:	Dowling discloses a network access apparatus. *See supra* at 1[preamble].
11[a]	first and second master units, each comprising a physical interface to a packet-switched network;	Dowling discloses first and second master units, each comprising a physical interface to a packet-switched network. *See supra* at 1[a].
11[b]	a plurality of slave units,	Dowling discloses a plurality of slave units. *See supra* at 1[b].
11[c]	each slave unit comprising one or more ports to respective subscriber lines; and	Dowling discloses each slave unit comprising one or more ports to respective subscriber lines. *See supra* at 4[c].
11[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	Dowling discloses a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. *See supra* at 4[d].
11[e]	each daisy chain comprising at least a first slave unit connected by one of	Dowling discloses each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit.

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No.	'904 Patent Claim 11	Dowling
	the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit,	*See supra* at 4[e].
11[f]	wherein each of the slave units comprises: a switch fabric comprising one or more switches, which convey data packets to respective ports on the switch to which the packets are addressed; and	Dowling discloses wherein each of the slave units comprises: a switch fabric comprising one or more switches, which convey data packets to respective ports on the switch to which the packets are addressed. For example, Dowling discloses a cluster of network switches, which convey data packets to respective ports on the switch to which the packets are addressed. See, e.g., Dowling at 6:66-7:7 ("A group of network devices, Such as Ethernet Switches, are logically configured as a Single cluster, with one commander device and one or more member devices. Each network device capable of belonging to a cluster transmits data packets containing cluster capability information to its neighbors. Each network device capable of belonging to a cluster that receives data packets containing cluster capability information maintains a database containing information about its cluster-capable neighbor devices.") Dowling at 3:52-60 ("Because a Switch maintains a table of the Source MAC addresses received on every port, it "learns' to which port a Station is attached every time the Station transmits. Then, each packet that arrives for that Station is forwarded only to the correct port, eliminating the waste of bandwidth on the other ports. Since Station addresses are checked every time a Switch receives a packet from a Station, if a Station is relocated, the Switch will reconfigure its forwarding table immediately upon receiving a transmission from the Station.")

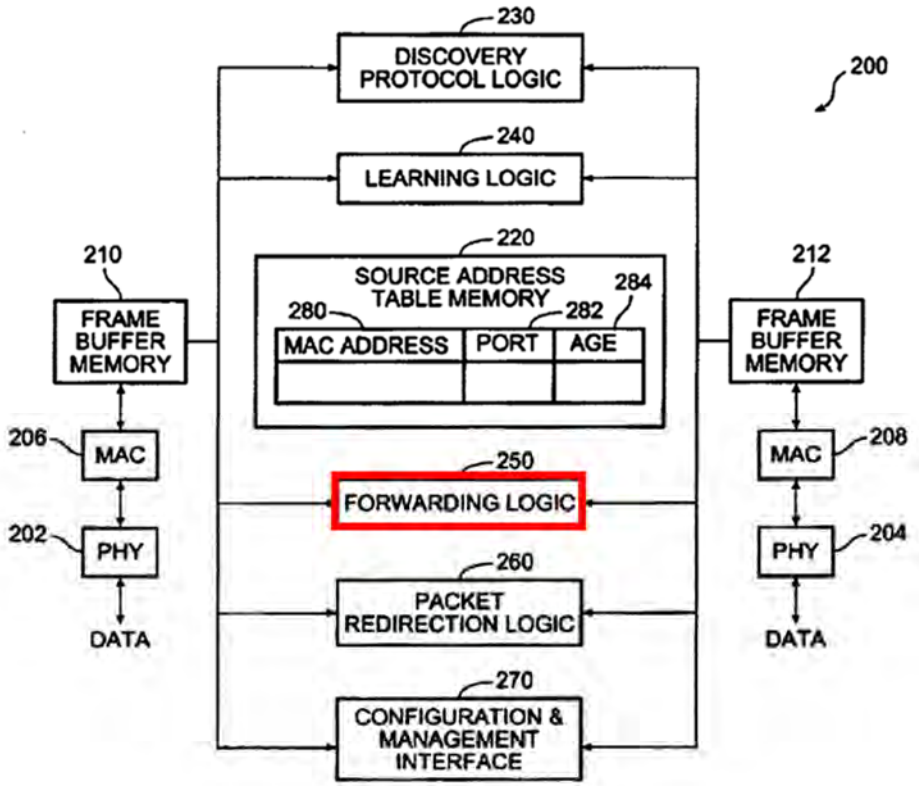
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No.	'904 Patent Claim 11	Dowling
		Dowling at 7:52-54 ("FIG. 12 is a block diagram of configuration data packet processing by a commander device according to one aspect of the present invention.") Dowling at 4:7-11 ("Each switch PHY 202, 204, receives the incoming data bit stream and passes it to its corresponding MAC 206, 208, which reassembles the original Ethernet frames. Ethernet Switch 200 also includes a frame buffer memory 210, 212, for each port, a source address table memory 220, discovery protocol logic 230, learning logic 240, forwarding logic 250, packet redirection logic 260, and a configuration and management interface 270.") Dowling at 4:57-5:2 ("According to embodiments of the present invention, discovery protocol logic 230 receives, processes, and sends discovery protocol packets to neighboring network devices on the network. Packet redirection logic 260 examines the Source and destination addresses of Ethernet packets under control of the configuration and management interface 270 and forwards them to other network devices in a cluster configuration. As known to those skilled in the art, the program code corresponding to discovery protocol logic 230, learning logic 240, forwarding logic 250, packet redirection logic 260, configuration and management interface 270, and other necessary functions may all be stored on a computer-readable medium.") Dowling at 13:8-27 ("Configuration and management data packets are sent between the commander 100 and member Switches 102 A-102-N via the network connection. The commander 100 identifies each member switch 102-A-102-N by the MAC address of the port on the member Switch that is connected to the commander 100. FIG. 12 illustrates in block diagram form how a packet intended for a member Switch is processed by the commander. A command from the management station 104 is received by the Ethernet module 122 of the commander Switch 100. The command is processed at the IP layer 124, UDP or TCP layer 126, and Management Application layer 128 of the commander Switch 100. The Management Application layer 128 determines that the command is intended for member Switch 102, and performs redirection by translating the port number in the received command to the appropriate port for member Switch 102. The redirected command flows down through the UDP or TCP layer 126, the IP layer 124, and the Ethernet layer 122 of the commander Switch 100, and is passed on via Ethernet to the member Switch 102.")

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No.	'904 Patent Claim 11	Dowling
11[g]	a pre-switch, which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines.	Dowling discloses a pre-switch, which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines. For example, Dowling discloses each of the member units having a switch circuitry for determining whether a command is intended for any of the ports on the switch and for forwarding packets to another unit accordingly. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. See, e.g., Dowling at 13:8-27 ("Configuration and management data packets are sent between the commander 100 and member Switches 102 A-102-N via the network connection. The commander 100 identifies each member switch 102-A-102-N by the MAC address of the port on the member Switch that is connected to the commander 100. FIG. 12 illustrates in block diagram form how a packet intended for a member Switch is processed by the commander. A command from the management station 104 is received by the Ethernet module 122 of the commander Switch 100. The command is processed at the IP layer 124, UDP or TCP layer 126, and Management Application layer 128 of the commander Switch 100. The Management Application layer 128 determines that the command is intended for member Switch 102, and performs redirection by translating the port number in the received command to the appropriate port for member Switch 102. The redirected command flows down through the UDP or TCP layer 126, the IP layer 124, and the Ethernet layer 122 of the commander Switch 100, and is passed on via Ethernet to the member Switch 102.") Dowling, Figure 2B (annotated):

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No.	'904 Patent Claim 11	Dowling
		 *FIG. 2B* Dowling at 3:61-4:6 ("Referring now to FIG. 2-B, a block diagram of an Ethernet Switch according to one aspect of the present invention is shown. As shown in FIG. 2-B, Ethernet Switch 200 includes a Layer 1 Physical Interface ("PHY) 202,204, and a Layer 2 Media Access Control Interface ("MAC") 206, 208, for each port on the Ethernet switch 200. A network interface card ("NIC") consists of a MAC and a PHY. An Ethernet Switch also contains a MAC and PHY on every port. Thus, an Ethernet Switch may appear to a network as multiple NICs coupled together. Each Switch PHY 202, 204, receives the incoming data bit stream and passes it to its corresponding MAC 206, 208, which reassembles the original Ethernet frames.")

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No.	'904 Patent Claim 11	Dowling
		Dowling at 3:52-57 ("Because a Switch maintains a table of the Source MAC addresses received on every port, it 'learns' to which port a Station is attached every time the Station transmits. Then, each packet that arrives for that Station is forwarded only to the correct port, eliminating the waste of bandwidth on the other ports.") Dowling at 4:7-64 ("Ethernet Switch 200 also includes a frame buffer memory 210, 212, for each port, a source address table memory 220, discovery protocol logic 230, learning logic 240, forwarding logic 250, packet redirection logic 260, and a configuration and management interface 270. During operation, the learning logic 240 will look at the source address ("SA") within a received Ethernet frame and populate the Source Address Table ("SAT") memory 220 with three columns: MAC address 280, port number 282, and age 284. The MAC address is the same as the Source address that a Sender has embedded into the frame. The age item will be a date stamp to indicate when the last frame was received from a particular MACSA. In the example shown in FIG.2-B, the port number may be 1 or 2. The SAT is also known as the Switch Forwarding Table ("SFT). Forwarding logic 250 examines at the destination address ("DA') of a received Ethernet frame. This now becomes the new MAC address, which is then compared with the entries in the SAT. Four different forwarding options are possible. . . . If the MAC address is found in the SAT and the corresponding port number is different from the received port, the frame is forwarded to that particular port number only. If the MAC address is found in the SAT and the port number is the same as the received port number, the frame is not forwarded; instead, it is discarded. This is known as "filtering." The frame is discarded because the transmitting Station and the receiving Station are connected on the Same shared LAN Segment on that particular port and the receiver has already tuned into the frame. If the MAC address is not found in the table, the frame is forwarded to all ports. . . . According to embodiments of the present invention, discovery protocol logic 230 receives, processes, and sends discovery protocol packets to neighboring network devices on the network. Packet redirection logic 260 examines the Source and destination addresses of Ethernet packets under control of the configuration and management interface 270 and forwards them to other network devices in a cluster configuration.)

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No.	'904 Patent Claim 11	Dowling
		Dowling at 3:20-35 ("In the context of the present invention, the term "switching" refers to a technology in which a network device (known as a switch) connects two or more LAN segments. A Switch transmits frames of data from one Segment to their destinations on the same or other Segments. When a Switch begins to operate, it examines the MAC address of the frames that flow through it to build a table of known sources. If the Switch determines that the destination of a frame is on the same segment as the source of the frame, it drops, or filters, the frame because there is no need to transmit it. If the switch determines that the destination is on another segment, it transmits the frame onto the destination segment only. Finally, using a technique known as flooding, if the destination segment is unknown, the switch transmits the frame on all segments except the source segment.")

No.	'904 Patent Claim 12	Dowling
12	Apparatus according to claim 11, wherein each of the slave units is coupled to receive packets transferred thereto from the first and second master units over first and second ones of the physical interface lines, respectively, and wherein the pre-switch passes the packets received through the first and second physical interface line and addressed to any of the ports on the slave unit to respective first and second	Dowling discloses an apparatus according to claim 11, wherein each of the slave units is coupled to receive packets transferred thereto from the first and second master units over first and second ones of the physical interface lines, respectively, and wherein the pre-switch passes the packets received through the first and second physical interface line and addressed to any of the ports on the slave unit to respective first and second addresses in the switch fabric. *See supra* at 11[f].

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No.	'904 Patent Claim 12	Dowling
	addresses in the switch fabric.	

No.	'904 Patent Claim 13	Dowling
13	Apparatus according to claim 12, wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second addresses are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required.	Dowling discloses an apparatus according to claim 12, wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second addresses are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required. For example, Dowling discloses that the data can be sent in either direction, that the apparatus can be configured in a token ring topology, and that the management application layer of the commander switch can translate the port number in the received command to the appropriate port number. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. See, e.g., Dowling at 11:5-9 ("Each network device sends periodic messages to a multicast address and listens to the periodic messages Sent by others in order to learn about neighboring devices and determine when their interfaces to the media go up or down.") Dowling at 13:8-27 ("Configuration and management data packets are sent between the commander 100 and member Switches 102 A-102-N via the network connection. The commander 100 identifies each member switch 102-A-102-N by the MAC address of the port on the member Switch that is connected to the commander 100. FIG. 12 illustrates in block diagram form how a packet intended for a member Switch is processed by the commander. A command from the management station 104 is received by the Ethernet module 122 of the commander Switch 100. The command is processed at the IP layer 124, UDP or TCP layer 126, and Management Application layer 128 of the commander Switch 100. The Management Application layer 128 determines that the command is intended for member Switch 102, and performs redirection by translating the port number in the received command to the appropriate port for member Switch 102. The redirected command flows down through the

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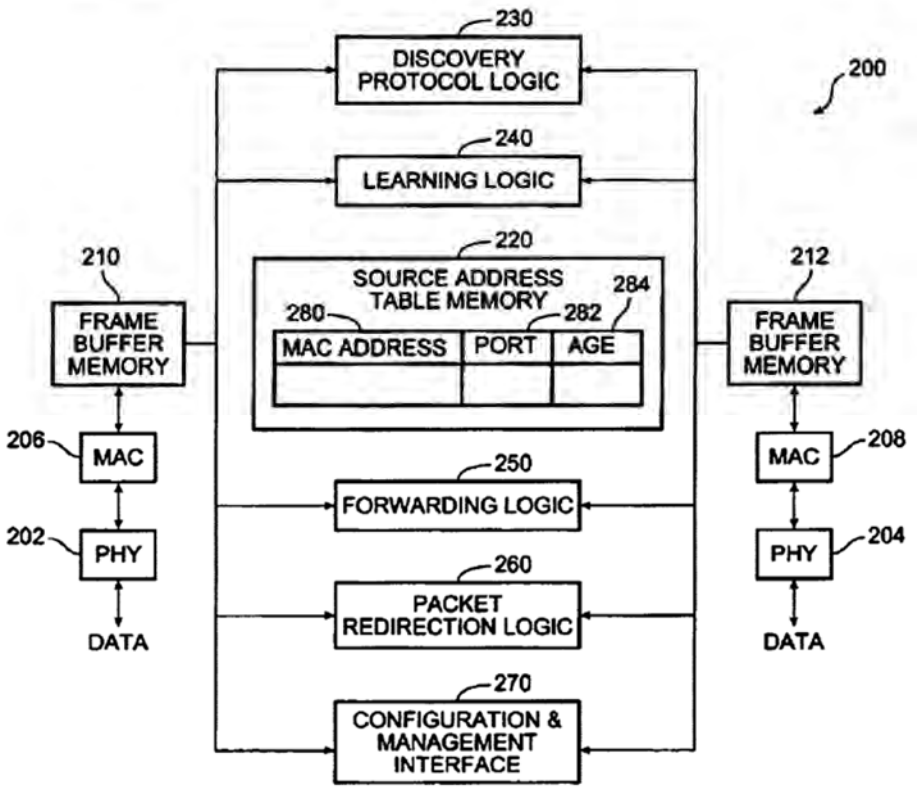
No.	'904 Patent Claim 13	Dowling
		UDP or TCP layer 126, the IP layer 124, and the Ethernet layer 122 of the commander Switch 100, and is passed on via Ethernet to the member Switch 102.") Dowling at 2:40-45 ("Switching is a technology that alleviates congestion in Ethernet, Token Ring, and Fiber Distributed Data Interface (FDDI) and other similar LANs by reducing traffic and increasing bandwidth. LAN switches are designed to work with existing media infrastructures so that they can be installed with minimal disruption of existing networks.") Dowling at 9:66-67 ("Clusters may be configured in a variety of topologies.") Dowling at 3:61-4:6 ("Because a Switch maintains a table of the Source MAC addresses received on every port, it 'learns' to which port a station is attached every time the Station transmits. Then, each packet that arrives for that Station is forwarded only to the correct port, eliminating the waste of bandwidth on the other ports. Since station addresses are checked every time a Switch receives a packet from a station, if a station is relocated, the switch will reconfigure its forwarding table immediately upon receiving a transmission from the Station.")

No.	'904 Patent Claim 14	Dowling
14[preamble]	In a network access multiplexing system,	Dowling discloses a network access multiplexing system. For example, Dowling discloses stackable switches that are configured to be managed through a single IP address. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. See, e.g., Dowling at 13:8-10 ("Configuration and management data packets are sent between the commander 100 and member Switches 102 A-102-N via the network connection.) Dowling at 13:15-27 ("A command from the management station 104 is received by the Ethernet module 122 of the commander Switch 100. The command is processed at the IP

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No.	'904 Patent Claim 14	Dowling
		layer 124, UDP or TCP layer 126, and Management Application layer 128 of the commander Switch 100. The Management Application layer 128 determines that the command is intended for member Switch 102, and performs redirection by translating the port number in the received command to the appropriate port for member Switch 102. The redirected command flows down through the UDP or TCP layer 126, the IP layer 124, and the Ethernet layer 122 of the commander Switch 100, and is passed on via Ethernet to the member Switch 102.") Dowling at 9:50-57 ("According to the present invention, a single IP address for the entire cluster 98 is assigned to the commander switch 100, which distributes configuration information to the other switches in the cluster. In one embodiment, a cluster with up to 15 member switches may be configured and managed via the IP address of the commander switch 100. The member switches 102-A-102-N in the cluster do not need individual IP addresses.") Dowling at 9:60-67 ("A cluster is a group of connected network devices (e.g., LAN switches) that are managed as a single entity. The network devices can be in the same location, or they can be distributed across a network. According to embodiments of the present invention, all communication with cluster switches is through a single IP address assigned to the commander switch. Clusters may be configured in a variety of topologies.")
14[a]	in which a master unit is connected by a physical interface to a packet-switched network,	Dowling discloses a master unit is connected by a physical interface to a packet-switched network. For example, Dowling discloses a commander unit connected via physical interface to a packet-switched network. See, e.g., Dowling at 3:61-4:6 ("Referring now to FIG. 2-B, a block diagram of an Ethernet Switch according to one aspect of the present invention is shown. As shown in FIG. 2-B, Ethernet Switch 200 includes a Layer 1 Physical Interface ("PHY) 202,204,and a Layer 2 Media Access Control Interface ("MAC") 206, 208, for each port on the Ethernet switch 200. A

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No.	'904 Patent Claim 14	Dowling
		network interface card ("NIC") consists of a MAC and a PHY. An Ethernet Switch also contains a MAC and PHY on every port. Thus, an Ethernet Switch may appear to a network as multiple NICs coupled together. Each Switch PHY 202, 204, receives the incoming data bit stream and passes it to its corresponding MAC 206, 208, which reassembles the original Ethernet frames.") Dowling, Figure 2B:  *FIG. 2B*

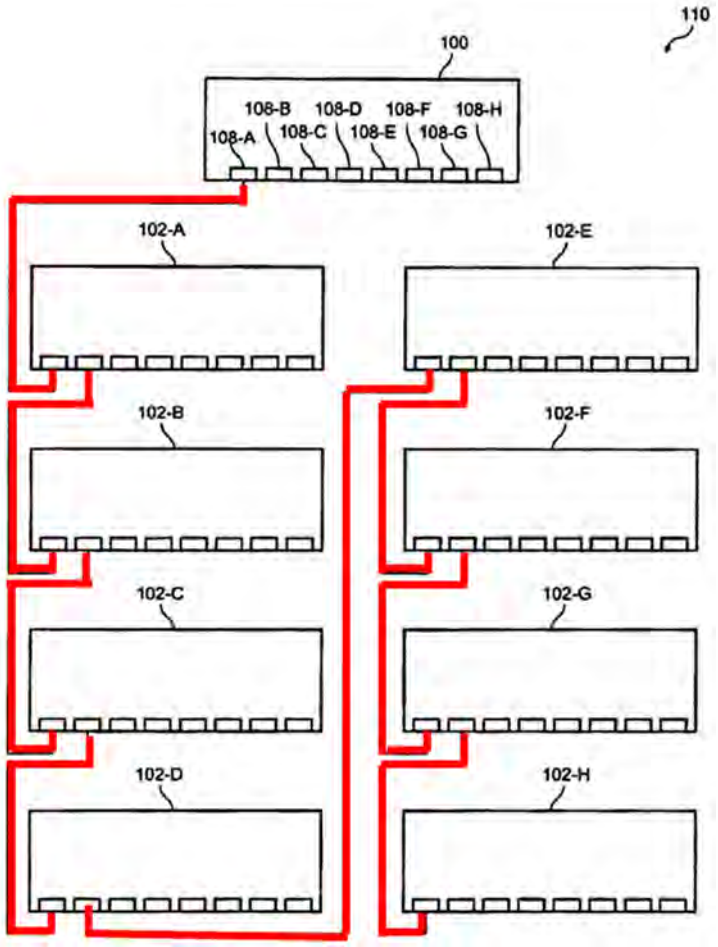
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No.	'904 Patent Claim 14	Dowling
		Dowling at 10:29-36 ("The commander Switch is the Single point of access used to configure and monitor all the switches in a cluster. According to embodiments of the present invention, member Switches are managed through a commander Switch. The commander switch is used to manage the cluster, and is managed directly by the network management station. Member Switches operate under the control of the commander.") Dowling at 13:15-27 ("A command from the management station 104 is received by the Ethernet module 122 of the commander Switch 100. The command is processed at the IP layer 124, UDP or TCP layer 126, and Management Application layer 128 of the commander Switch 100. The Management Application layer 128 determines that the command is intended for member Switch 102, and performs redirection by translating the port number in the received command to the appropriate port for member Switch 102.The redirected command flows down through the UDP or TCP layer 126, the IP layer 124, and the Ethernet layer 122 of the commander Switch 100, and is passed on via Ethernet to the member Switch 102..") Dowling at 16:27-28 ("A device may optionally advertise one or more Loopback IP addresses.") Dowling at 23:56-67 ("In one embodiment of the present invention, the commander of a cluster is also a member of a cluster. Since both of these "logical" devices are really the same "physical" device, their intra-cluster communication is slightly different from that between a separate member and its commander. The commander-as-commander does not Send heartbeats to the commander-as-member. However, the commander-as-member does Send Status heartbeats and neighbor updates to its commander-as-commander. When the function that sends the UDP packet recognizes that it is Sending a packet from itself as member to itself as commander, it calls the correct ICC receiving function directly.") Dowling at 1:20-23 ("The network typically includes a cable that attaches to network interface cards ("NICs") in each of the devices within the network.")

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No.	'904 Patent Claim 14	Dowling
		Dowling at 12:38-40 ("Without limitation, switches in a cluster may be interconnected using 10 Mbps Ethernet, 100 Mbps Fast Ethernet, or 1000 Mbps Gigabit Ethernet.") Dowling at 10:40-47("When switches are first installed, they are cabled together according to the network configuration desired for a particular application, and an IP address is assigned to the commander switch. In addition, the commander switch must be enabled as the commander Switch of the cluster. Once the commander Switch has been enabled, it can use information known about the network topology to identify other network devices in the network that may be added to the cluster.")
14[b]	a slave unit configured to be coupled to the master unit in a daisy chain of such slave units, the slave unit comprising:	Dowling discloses a slave unit configured to be coupled to the master unit in a daisy chain of such slave units. For example, Dowling discloses a member switch linked to the commander switch in a daisy chain of member switches. See, e.g., Dowling, Figure 9 (annotation added):

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No.	'904 Patent Claim 14	Dowling
		 *FIG. 9* Dowling at 7:43-45 ("FIG. 9 is a block diagram illustrating a cluster of network devices in a daisy chain configuration according to one aspect of the present invention.") Dowling, Figure 10 (annotation added):

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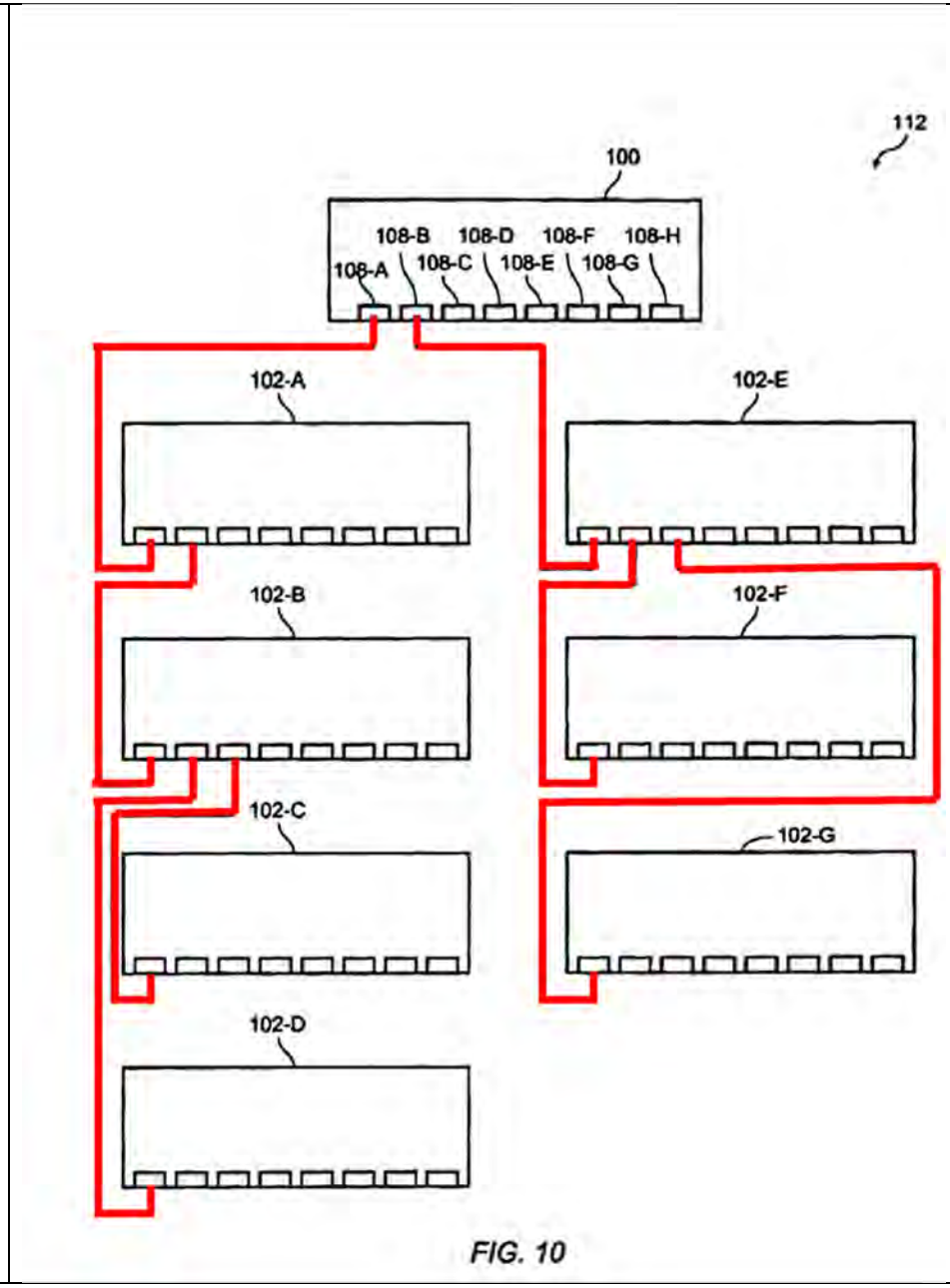
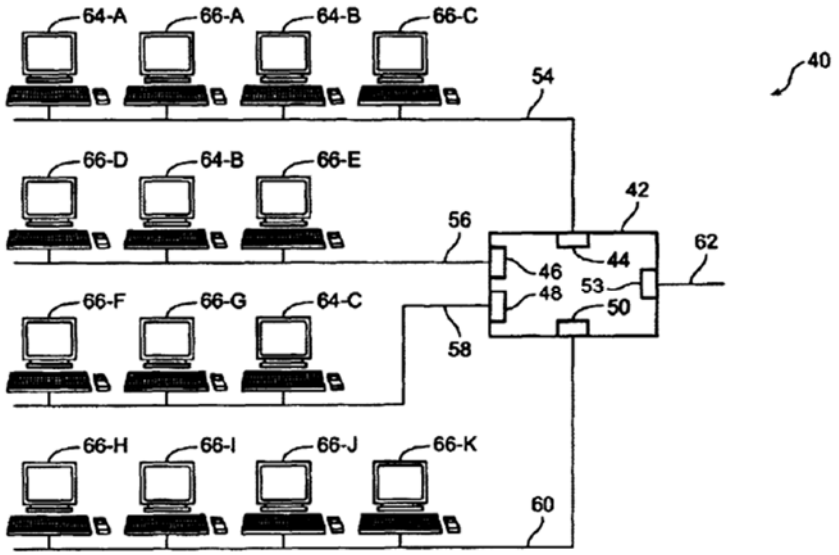


FIG. 10

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No.	'904 Patent Claim 14	Dowling
		Dowling at 9:42-49 ("When LAN Switches are grouped into clusters, one switch is called the commander Switch, and the other Switches are called member switches. Referring now to FIG. 7, an exemplary Switch cluster 98 is shown which includes a commander Switch 100 and one or more member Switches 102-A-102-N. Management station 104 is connected to the commander switch 100, which redirects configuration requests to the member Switches 102-A-102-N.") Dowling at 9:50-57 ("According to the present invention, a Single IP address for the entire cluster 98 is assigned to the commander Switch 100, which distributes configuration information to the other Switches in the cluster. In one embodiment, a cluster with up to 15 member Switches may be configured and managed via the IP address of the commander Switch 100. The member Switches 102-A-102-N in the cluster do not need individual IP addresses.") Dowling at 10:14-25 ("As a third example, FIG. 10 illustrates a "hybrid" cluster configuration with one commander Switch 100 and seven member Switches 102-A-102-G. In cluster 112, member switches 102-A and 102-E are in a star configuration with respect to commander Switch 100. Member Switch 102-B is in a daisy chain configuration with respect to member Switch 102-A, while member Switches 102-C and 102-D are in a star configuration with respect to member switch 102-B.") Dowling at 10:29-36 ("The commander Switch is the Single point of access used to configure and monitor all the Switches in a cluster. According to embodiments of the present invention, member Switches are managed through a commander Switch. The commander Switch is used to manage the cluster, and is managed directly by the network management Station. Member Switches operate under the control of the commander.") Dowling at 11:39-41 ("In embodiments of the present invention, there can be a maximum of Sixteen Switches in a cluster: fifteen member switches and one commander Switch.")

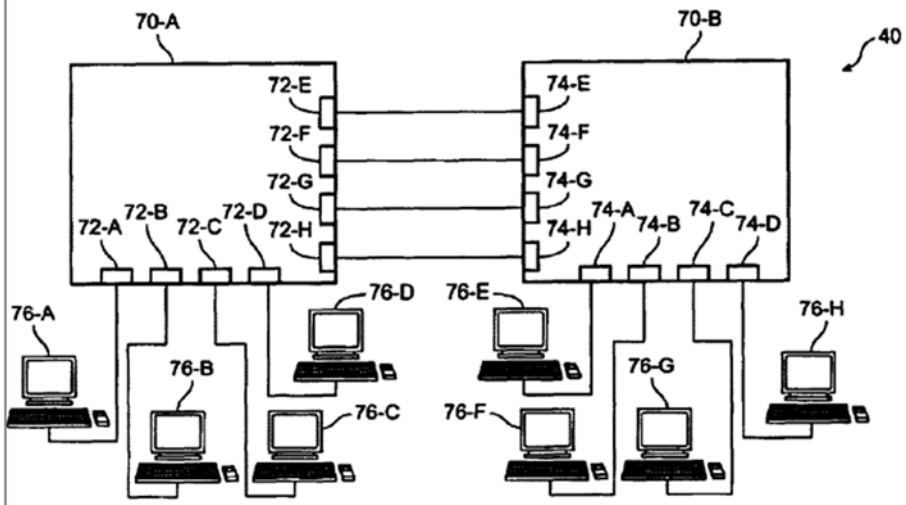
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No.	'904 Patent Claim 14	Dowling
14[c]	a plurality of ports, for coupling the slave unit to respective subscriber lines;	Dowling discloses the slave unit comprising a plurality of ports, for coupling the slave unit to respective subscriber lines. For example, Dowling discloses that each member switch has a plurality of ports for coupling the member switch to respective PCs and/or workstations. See, e.g., Dowling at 19:34-37 ("Also at predetermined intervals (e.g., 10 Seconds), each member switch sends its own heartbeat to the commander. Each switch's heartbeat contains information about the current state of the switch and status of all its ports.") Dowling, Figure 3:  FIG. 3

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No.	'904 Patent Claim 14	Dowling
		Dowling at 5:7-30 ("An Ethernet LAN Switch improves bandwidth by separating collision domains and selectively forwarding traffic to the appropriate Segments. FIG. 3 illustrates the topology of a typical Ethernet network 40 in which a LAN Switch 42 has been installed. With reference now to FIG. 3, exemplary Ethernet network 40 includes a LAN Switch 42. As shown in FIG.3, LAN switch 42 has five ports: 44, 46,48, 50, and 52. The first port 44 is connected to LAN segment 54. The second port 46 is connected to LAN segment 56. The third port 48 is connected to LAN segment 58. The fourth port 50 is connected to LAN segment 60. The fifth port 52 is connected to LAN segment 62. The Ethernet network 40 also includes a plurality of servers 64-A-64-C and a plurality of clients 66-A-66-K, each of which is attached to one of the LAN segments 54, 56, 58, 60, or 62. If server 64-A on port 44 needs to transmit to client 66-D on port 46, the LAN Switch 42 forwards Ethernet frames from port 44 to port 46, thus sparing ports 48, 50, and 52 from frames destined for client 66-D. If server 64-C needs to send data to client 66-J at the same time that server 64-A sends data to client 66-D, it can do so because the LAN Switch can forward frames from port 48 to port 50 at the same time it is forwarding frames from port 44 to port 46. If server 64-A on port 44 needs to send data to client 66-C, which is also connected to port 44, the LAN Switch 42 does not need to forward any frames.") Dowling at 7:27-28 ("FIG. 3 is a block diagram illustrating the topology of an exemplary LAN incorporating a LAN Switch.") Dowling, Figure 4:

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No.	'904 Patent Claim 14	Dowling
		 FIG. 4 Dowling at 5:48-61 ("Referring now to FIG. 4, two LAN switches 70-A and 70-B are shown, connected in a cascaded configuration. As shown, each of the LAN switches 70-A and 70-B contains eight ports, 72-A-72-H and 74-A-74-H. On each of the LAN switches 70-A and 70-B, four ports 72-A-72-D and 74-A-74-D are connected to computer workstations 76-A-76-D and 76E-76-H, respectively. The other four ports on each LAN switch (i.e., ports 72-E-72-H on LAN switch 70-A, and ports 74E-74-H on LAN switch 70-B) are dedicated to interswitch communication. For example, if each of the four interswitch connections is capable of supporting a 100 Mbps Fast Ethernet channel, the aggregate interswitch communication rate of the switches connected as shown in FIG. 4 is 400 Mbps.") Dowling at 5:66-6:11 ("As a LAN grows, network devices are typically added to the LAN and interconnected according to the needs of the particular LAN to which they belong. For example, FIG. 5 illustrates an exemplary group of network devices in a LAN 78, and the interconnections between the network devices in the LAN 78. As shown in FIG. 5, the LAN 78 includes seven network devices: six LAN switches 80-A-80-F and a router 82. Each network device is connected to one or more of the other network devices in the LAN 78.

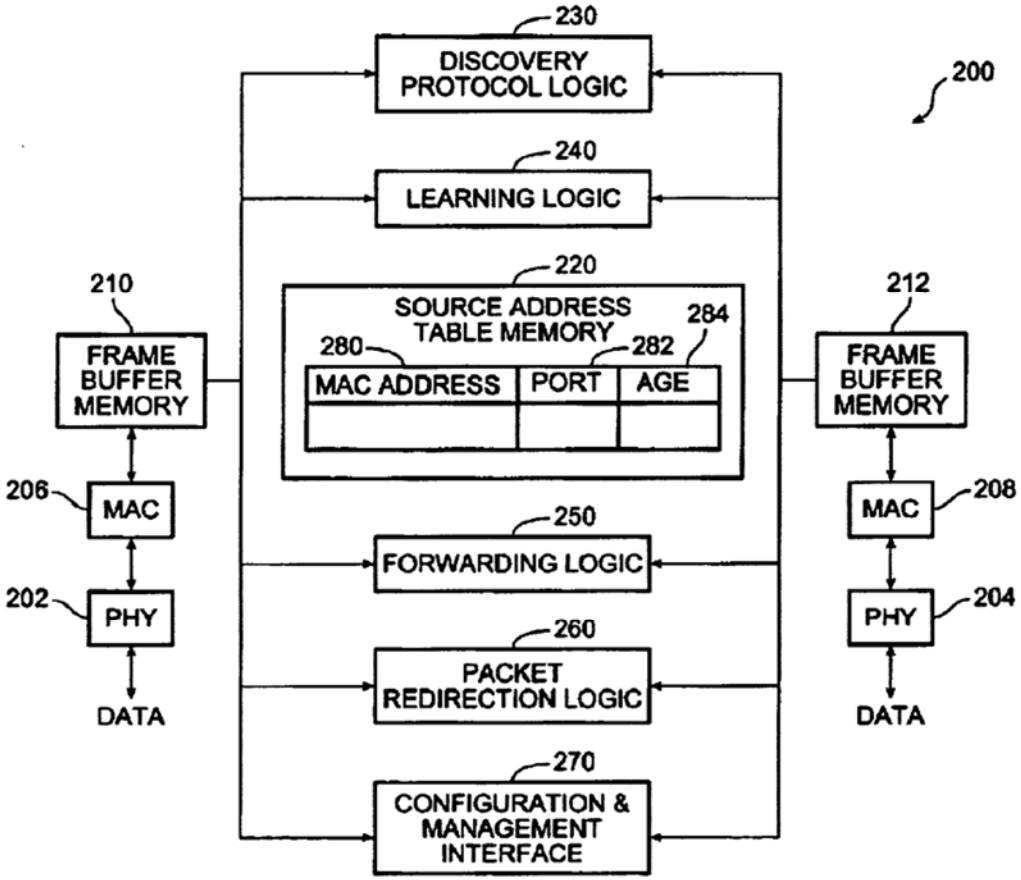
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No.	'904 Patent Claim 14	Dowling
		Computer Workstations, network printers and other network devices are also connected to the LAN 78, but not shown. It is to be understood that the LAN configuration shown in FIG. 5 is exemplary only, and not in any way limiting.") Dowling at 1:29-40 ("A local area network ("LAN") is a network that is located in a relatively small physical area, such as a building, in which computers and other network devices are linked, usually via a wiring-based cabling scheme. A LAN typically includes a shared medium to which workstations attach and through which they communicate. LANs often use broad casting methods for data communication, whereby any device on the LAN can transmit a message that all other devices on the LAN then "listen' to. However, only the device or devices to which the message is addressed actually receive the message. Data is typically packaged into frames for transmission on the LAN.")
14[d]	first and second physical interfaces, coupled to exchange packets with preceding and succeeding units, respectively, along the daisy chain;	Dowling discloses first and second physical interfaces, coupled to exchange packets with preceding and succeeding units, respectively, along the daisy chain. For example, Dowling discloses each switch in the daisy chain having a physical interface coupled to exchange packets with preceding and succeeding units for each port in its switch. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. See, e.g., Dowling at 1:13-15 ("A network is a communication system that links two or more computers and peripheral devices, and allows users to access resources on other computers and exchange messages with other users.") Dowling at 8:37-41 ("The MIB variables of network devices according to embodiments of the present invention are accessible through SNMP, SNMP is an application-layer protocol designed to facilitate the exchange of management information between network devices.") Dowling at 24:23-27 ("If a first member network device moves its connection to the cluster from a second network device to a third network device (this could be done physically or

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No.	'904 Patent Claim 14	Dowling
		through a Spanning Tree topology change), the change must be made at the commander level.") Dowling at 3:61-66 ("Referring now to FIG. 2-B, a block diagram of an Ethernet Switch according to one aspect of the present invention is shown. As shown in FIG. 2-B, Ethernet Switch 200 includes a Layer 1 Physical Interface ("PHY) 202, 204, and a Layer 2 Media Access Control Interface ("MAC") 206, 208, for each port on the Ethernet switch 200.") Dowling at Figure 2B:

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No.	'904 Patent Claim 14	Dowling
		 *FIG. 2B*
14[e]	a pre-switch, coupled to receive packets from the first physical interface and	Dowling discloses a pre-switch, coupled to receive packets from the first physical interface and responsive to address data carried by the packets, to sort the packets such that packets addressed to the slave unit are retained, and packets addressed to the succeeding units are passed to the second physical interface.

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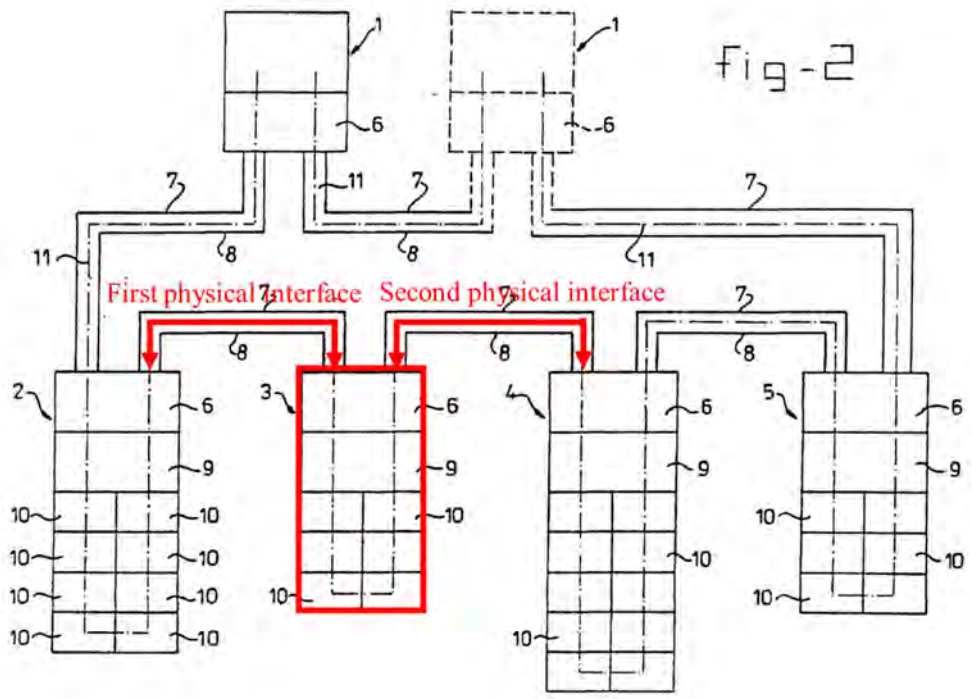
No.	'904 Patent Claim 14	Dowling
	responsive to address data carried by the packets, to sort the packets such that packets addressed to the slave unit are retained, and packets addressed to the succeeding units are passed to the second physical interface; and	See supra at Claim 11[g].
14[f]	a fabric of one or more switches, which convey the retained packets to the ports, responsive to the address data.	Dowling discloses a fabric of one or more switches, which convey the retained packets to the ports, responsive to the address data. See supra at 11[f].

No.	'904 Patent Claim 15	Dowling
15	The slave unit according to claim 14, wherein the pre-switch is further coupled to receive packets transferred thereto from the second physical interface and to sort the packets in like manner to the packets received through the first physical interface.	Dowling discloses the slave unit according to claim 14, wherein the pre-switch is further coupled to receive packets transferred thereto from the second physical interface and to sort the packets in like manner to the packets received through the first physical interface. For example, Dowling discloses bidirectional communication, the ability for the interfaces to connect up and down, and that the switches have a mechanism to receive and sort packets in the same manner in both directions. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that Dowling is found to not meet this limitation, a plurality of physical interface lines, the slave unit according to claim 14, wherein the pre-switch is further coupled to receive packets transferred thereto from the second physical interface and to sort the packets in like manner to the packets received through the first physical interface would have been obvious to a person having ordinary skill in the art, as explained below.

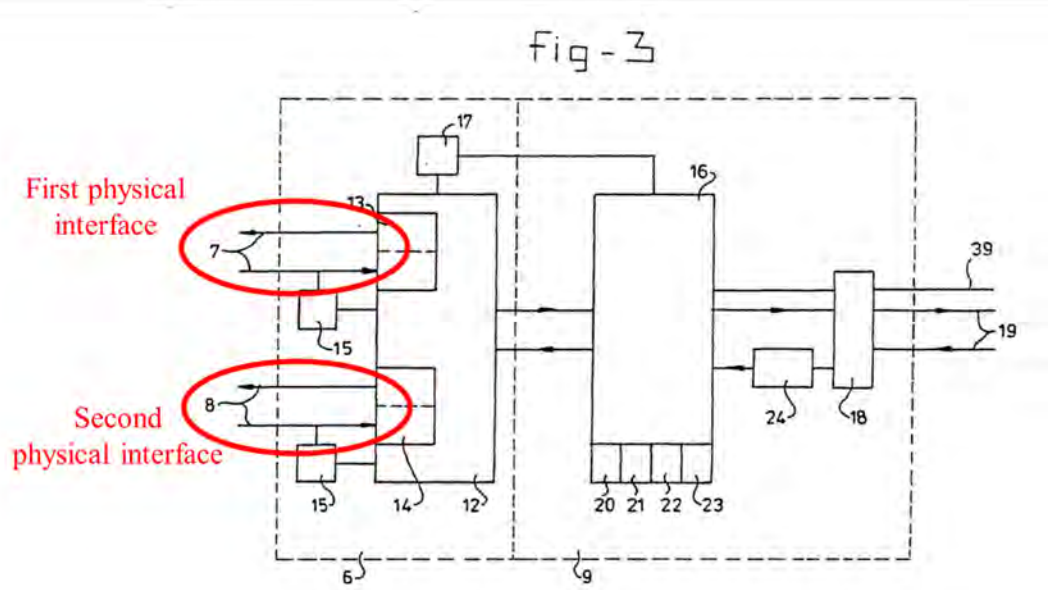
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No.	'904 Patent Claim 15	Dowling
		See, e.g., 11[g], 14[e]. See also, e.g., Dowling at 6:12-22 ("Regardless of the method used to interconnect them, network devices Such as LAN Switches need to be configured and managed, because they typically include a number of programmable features that can be changed by a network administrator for optimal performance in a particular network. Without limitation, such features typically include whether each port on the network device is enabled or disabled, the data transmission speed Setting on each port, and the duplex setting on each port. Many commercially available network devices contain embedded HTML Web servers, which allow the network device to be configured and managed remotely via a Web browser.") Dowling at 11:5-9 ("Each network device sends periodic messages to a multicast address and listens to the periodic messages Sent by others in order to learn about neighboring devices and determine when their interfaces to the media go up or down.") Dowling at 13:8-10 ("Configuration and management data packets are sent between the commander 100 and member Switches 102 A-102-N via the network connection.") In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, Dowling in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 15 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. or example, Vink '324 discloses the capability to receive and transmit packets from both interface lines on either side of the slave, and once received by the slave in either direction, is analyzed for address coincidence by the transmitting/receiving unit. Vink '324 21:10-16 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also

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No.	'904 Patent Claim 15	Dowling
		provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly.").  Fig. 2 (annotation added)

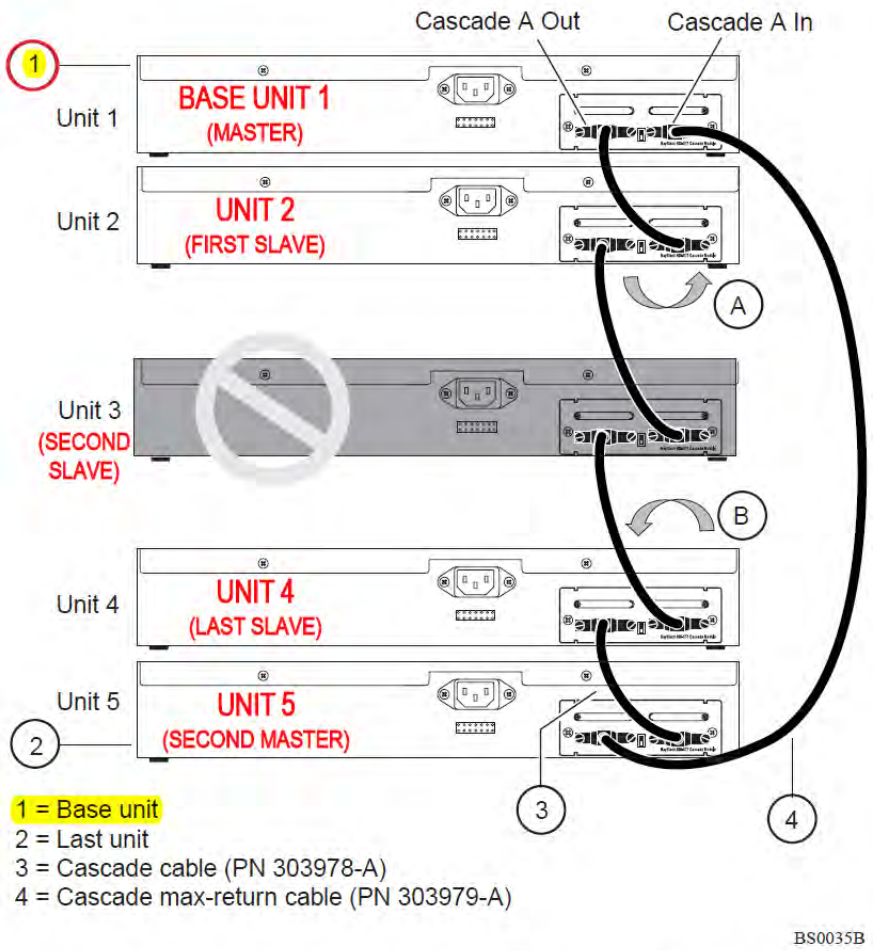
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No.	'904 Patent Claim 15	Dowling
		 Fig. 3 (annotation added) Vink '324 3:35-4:10 ("European Patent Application 0,253,381 discloses a communication system in which the data bits are transferred serially up to I/O level. In this process, address information is added to the data bits intended for a particular substation. Information received by a-substation and transmitted under the control of a master station is investigated for address coincidence. In the case of a positive result, that is to say, when the address information added to a group of data bits corresponds to the address allocated to the relevant substation, exchange is initiated. In this process, the data bits intended for a substation are replaced in the same format by data bits originating from the relevant substation and intended for the master station. In the absence of address coincidence, the information concerned is not altered."). In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290.

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No.	'904 Patent Claim 15	Dowling
		Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

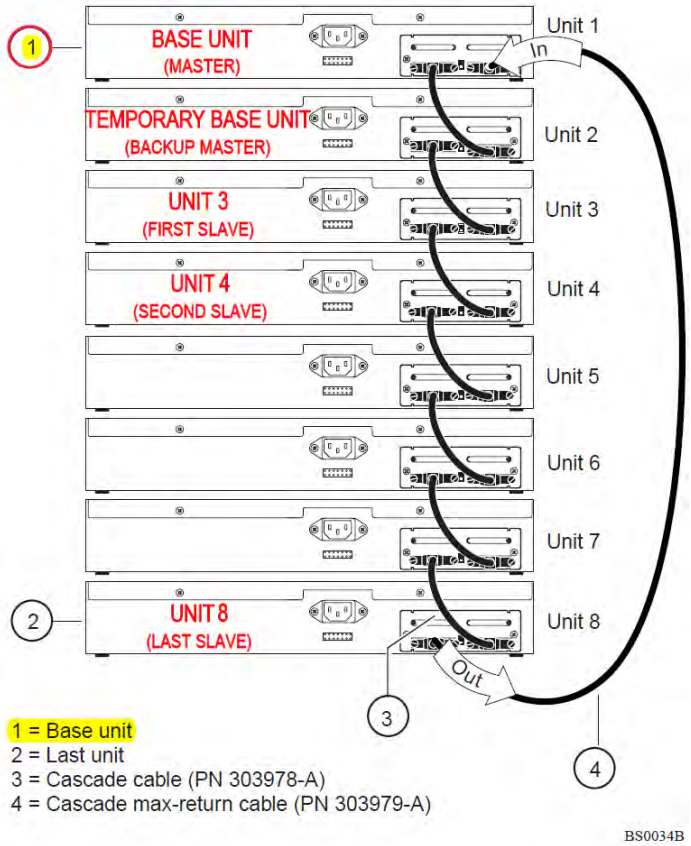
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No.	'904 Patent Claim 15	Dowling
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated). In an alternative example, the BayStack 450 Switches disclose a Temporary Base Unit as being a second master unit. See, e.g., BayStack 450 Manual at 33, 52, 230 of 290. For

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No.	'904 Patent Claim 15	Dowling
		instance, the BayStack 450 Manual states that "[i]f an assigned base unit fails, the next unit in the stack order automatically becomes the new temporary base unit. This change is indicated by the Base LED on the temporary base unit's LED display panel turning on (amber). For detailed information about the base LED, see Table 1-1 on page 1-6." BayStack 450 Manual at 52 of 290. Further, in this alternative example, the BayStack 450 Manual describes that "[t]his automatic failover is a temporary safeguard only. If the stack configuration loses power, the temporary base unit will not power up as the base unit when power is restored. For this reason, you should always assign the temporary base unit as the base unit (set the Unit Select switch to Base) until the failed unit is repaired or replaced." BayStack 450 Manual at 52 of 290. The BayStack 450 Manual notes, in this alternative example, that "[i]f you do not reassign the temporary base unit as the new base unit, and the temporary base unit fails, the next unit directly downstream from this unit becomes the new temporary base unit. This process can continue until there are only two units left in the stack configuration." BayStack 450 Manual at 52 of 290. In this example, the BayStack 450 Switches disclose that the BayStack 450 Switch LED Descriptions include an amber light that indicates when "unit is operating as the stack configuration's temporary base unit." BayStack 450 Manual at 33 of 290. "This condition occurs automatically if the base unit (directly downstream from this unit) fails." *Id.* And the BayStack 450 Switches disclose that, in this case, the "two units directly upstream and directly downstream from the failed unit automatically wrap their cascade connectors and indicate this condition by lighting their Cas Up and Cas Dwn LEDs (see Cas Up and Cas Dwn description in this table)." BayStack 450 Manual at 33 of 290. But the BayStack 450 Switches also disclose, in this alternative example, that "[i]f the temporary base unit fails, the next unit directly downstream from this unit becomes the new temporary base unit. This process can continue until there are only two units left in the stack configuration." BayStack 450 Manual at 33 of 290.

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No.	'904 Patent Claim 15	Dowling
		As shown below, in the Stack Down Configuration, the second unit would become the temporary base unit if the base unit were to fail in this configuration.  **Figure 1-13. Stack Down Configuration Example** BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

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No.	'904 Patent Claim 16	Dowling
16[a]	The slave unit according to claim 15, wherein the retained packets that were received from the first and second physical interfaces and are passed by the pre-switch to the switch fabric are identified by respective first and second port numbers,	Dowling discloses the slave unit according to claim 15, wherein the retained packets that were received from the first and second physical interfaces and are passed by the pre-switch to the switch fabric are identified by respective first and second port numbers. For example, Dowling discloses that the retained packets that were received from the first and second physical interfaces are passed by the pre-switch to the switch fabric are identified by respective first and second port numbers.
16[b]	and wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second port numbers are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required in response to the reversal.	Dowling discloses wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second port numbers are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required in response to the reversal. See supra at 13. See also, e.g., Dowling at 13:19-27 ("The Management Application layer 128 determines that the command is intended for member Switch 102, and performs redirection by translating the port number in the received command to the appropriate port for member Switch 102. The redirected command flows down through the UDP or TCP layer 126, the IP layer 124, and the Ethernet layer 122 of the commander Switch 100, and is passed on via Ethernet to the member Switch 102.")

No.	'904 Patent Claim 17	Dowling
17	The slave unit according to claim 14, wherein when one of the packets received	Dowling discloses the slave unit according to claim 14, wherein when one of the packets received by the pre-switch comprises a multicast packet addressed to one or more of the ports on the slave unit, the pre-switch sorts the multicast packet such that one copy of the packet is retained and another copy of the packet is passed to the second physical interface.

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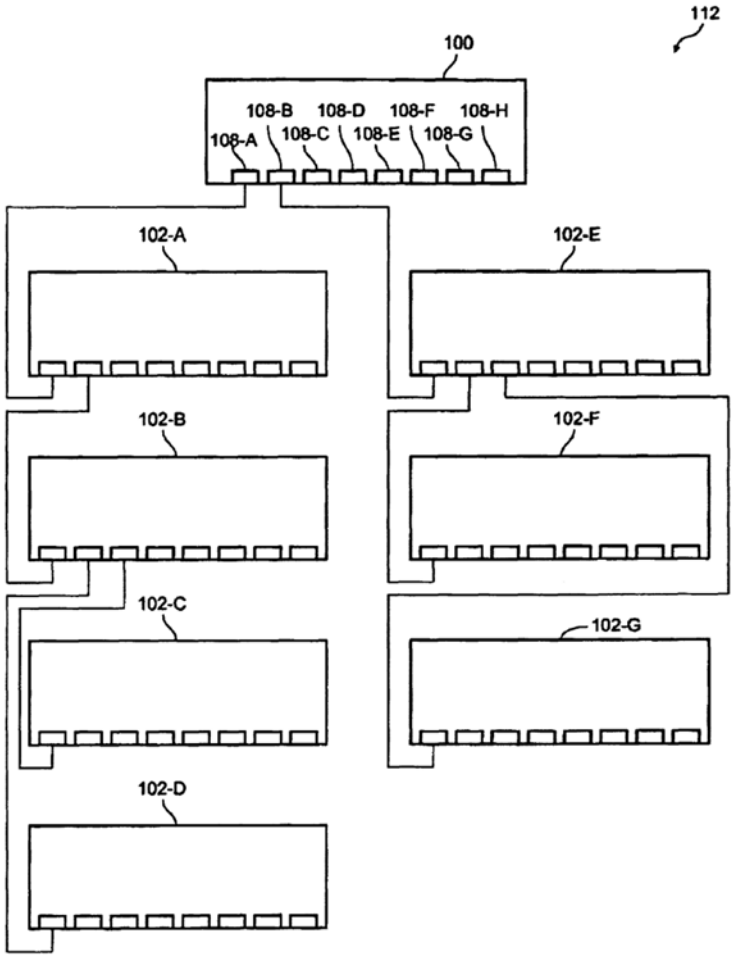
No.	'904 Patent Claim 17	Dowling
	by the pre-switch comprises a multicast packet addressed to one or more of the ports on the slave unit, the pre-switch sorts the multicast packet such that one copy of the packet is retained and another copy of the packet is passed to the second physical interface.	For example, Dowling discloses wherein one of the packets received by the pre-switch comprises a multicast packet addressed to one or more of the ports on the member switch, the a layer of the member switch sorts the multicast packet such that one copy of the packet is retained and another copy of the packet is passed to the second physical interface. Dowling, Claim 11 ("11. The method according to claim 10 wherein the candidate network devices send the discovery packets to a multicast address.") Dowling at 3:11-12 ("Special addresses allow for multicasting to a group of stations and for broadcasting to all stations on the network.") Dowling at 13:19-27 ("The Management Application layer 128 determines that the command is intended for member Switch 102, and performs redirection by translating the port number in the received command to the appropriate port for member Switch 102. The redirected command flows down through the UDP or TCP layer 126, the IP layer 124, and the Ethernet layer 122 of the commander Switch 100, and is passed on via Ethernet to the member Switch 102.") Dowling at 23:54-67 ("When the function that sends the UDP packet recognizes that it is Sending a packet from itself as member to itself as commander, it calls the correct ICC receiving function directly.")

No.	**'904 Patent Claim 18**	**Dowling**
18	The slave unit according to claim 14, wherein in the event of a fault in the switch fabric, the pre-switch continues to pass the packets addressed to the succeeding units	Dowling discloses the slave unit according to claim 14, wherein in the event of a fault in the switch fabric, the pre-switch continues to pass the packets addressed to the succeeding units on to the succeeding units without significant interruption.. For example, Dowling discloses multiple topology configurations, such that the data packets can be passed to succeeding units in the case of a fault without significant interruption. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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No.	'904 Patent Claim 18	Dowling
	on to the succeeding units without significant interruption.	See, e.g., Dowling at 19:50-20:9 ("If a member switch fails to receive heartbeats from its commander for a predetermined interval (e.g., 60 seconds), the member switch recognizes that it has lost connectivity to the commander. This can happen if the link has been broken, the commander has rebooted, or an STP topology change has put the member switch more than one CDP hop from the cluster. The member switch retains knowledge of its commander and continues to send CDP packets with its cluster member information, but stops sending heartbeats. If the member switch begins to receive heartbeats from the commander again, it will resume sending its own heartbeats.") Dowling at 2:40-45 ("Switching is a technology that alleviates congestion in Ethernet, Token Ring, and Fiber Distributed Data Interface (FDDI) and other similar LANs by reducing traffic and increasing bandwidth. LAN switches are designed to work with existing media infrastructures so that they can be installed with minimal disruption of existing networks.") Dowling, Figure 10:

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No.	'904 Patent Claim 18	Dowling
		 FIG. 10 Dowling, Figure 2B:

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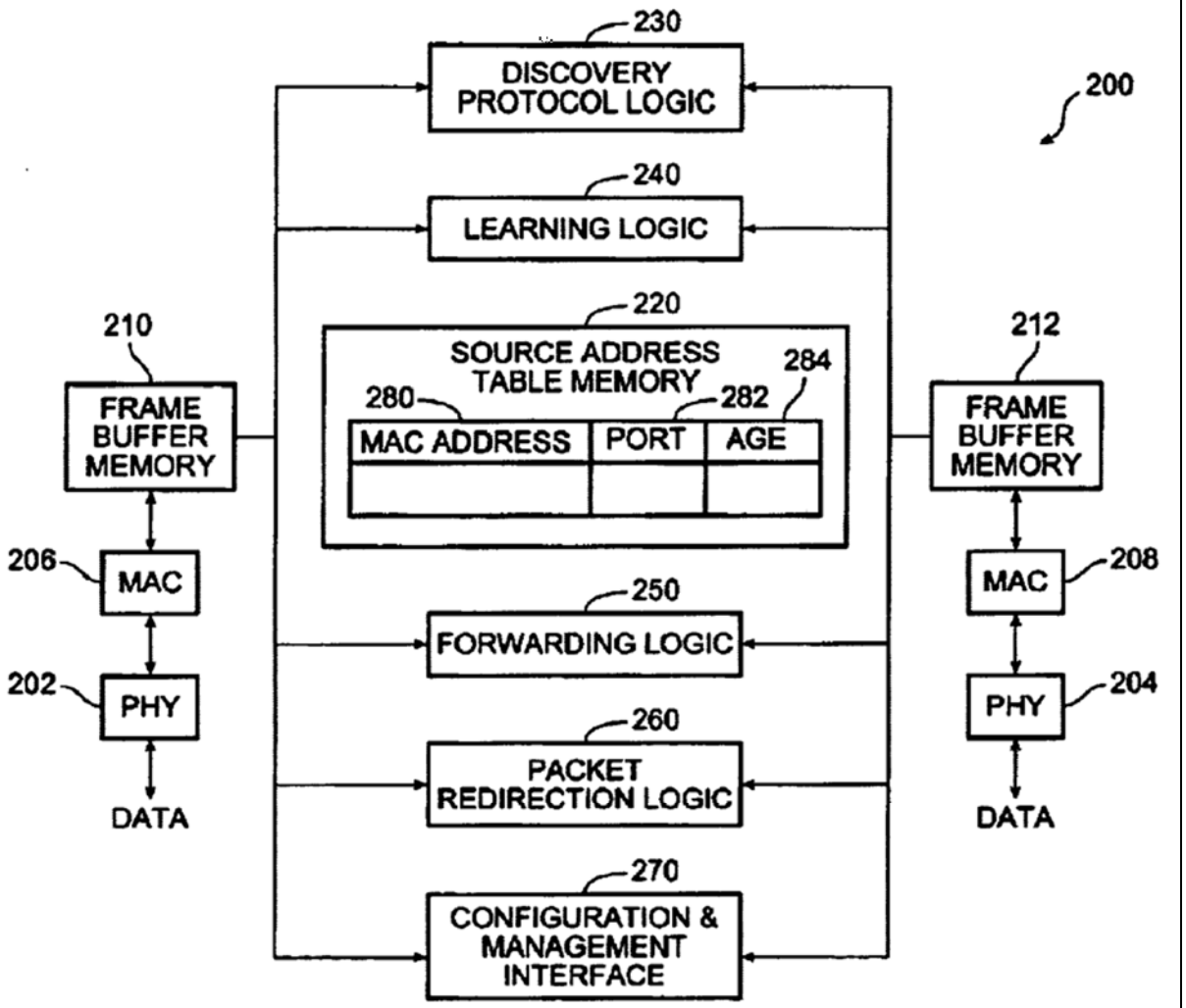
No.	'904 Patent Claim 18	Dowling
		

FIG. 2B

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No.	'904 Patent Claim 18	Dowling
		Dowling at 3:61-4:6 ("Referring now to FIG. 2-B, a block diagram of an Ethernet Switch according to one aspect of the present invention is shown. As shown in FIG. 2-B, Ethernet Switch 200 includes a Layer 1 Physical Interface ("PHY) 202,204,and a Layer 2 Media Access Control Interface ("MAC") 206, 208, for each port on the Ethernet switch 200. A network interface card ("NIC") consists of a MAC and a PHY. An Ethernet Switch also contains a MAC and PHY on every port. Thus, an Ethernet Switch may appear to a network as multiple NICs coupled together. Each Switch PHY 202, 204, receives the incoming data bit stream and passes it to its corresponding MAC 206, 208, which reassembles the original Ethernet frames.") Dowling at 4:60-5:2 ("Packet redirection logic 260 examines the Source and destination addresses of Ethernet packets under control of the configuration and management interface 270 and forwards them to other network devices in a cluster configuration. As known to those skilled in the art, the program code corresponding to discovery protocol logic 230, learning logic 240, forwarding logic 250, packet redirection logic 260, configuration and management interface 270, and other necessary functions may all be stored on a computer-readable medium.") Dowling at 20:11-44 ("If a member switch is removed from a cluster, all member switches that reach the commander through the member switch that has just been removed become inactive and cannot be reached from the commander. In embodiments of the present invention, the best way to remove a member switch from a cluster is to issue a command at the commander while the member switch is still an active member of the cluster. Configuration commands that were entered when the member switch was added to the cluster will be undone. The record of that member switch is expunged from the commander. If the member switch had been previously separated from the commander, the member switch continues to think it is part of the cluster. In this case, the user must connect to the console of the separated member switch and issue a command to remove the member switch from the cluster. Every cluster-capable network device according to one embodiment of the present invention maintains a CDP neighbor database even though it is not currently a member of any cluster. In this way, its neighbor information is immediately accessible when it joins a cluster. Otherwise, the user would typically have to wait between one and fifteen minutes for the

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No.	'904 Patent Claim 18	Dowling
		neighbor database to be populated, which slows configuration. Periodically, each cluster member sends its cluster and neighbor information to the commander, which maintains a complete database for use in configuration and display of the current state of the cluster. The commander sends heartbeat datagrams over UDP to each cluster member, and independently, each cluster member sends heartbeat data grams over UDP to the commander, allowing each to diagnose communication breakdowns within the cluster.")

No.	'904 Patent Claim 19	Dowling
19[preamble]	A method for providing access to a network, comprising:	Dowling discloses a method for providing access to a network. For example, Dowling discloses a method for providing network access through a group of network devices such as Ethernet switches that are logically configured as a single cluster, wherein each network device transmits data packets. See, e.g., Dowling at 13:8-10 ("Configuration and management data packets are sent between the commander 100 and member Switches 102 A-102-N via the network connection.) Dowling at 13:15-27 ("A command from the management station 104 is received by the Ethernet module 122 of the commander Switch 100. The command is processed at the IP layer 124, UDP or TCP layer 126, and Management Application layer 128 of the commander Switch 100. The Management Application layer 128 determines that the command is intended for member Switch 102, and performs redirection by translating the port number in the received command to the appropriate port for member Switch 102. The redirected command flows down through the UDP or TCP layer 126, the IP layer 124, and the Ethernet layer 122 of the commander Switch 100, and is passed on via Ethernet to the member Switch 102.") Dowling at 6:47-52 ("Thus, it is an object of the present invention to provide a method and apparatus which permits an entire cluster of network devices to share a single IP address. A

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No.	'904 Patent Claim 19	Dowling
		further goal of the present invention is to enable the clustering of LAN switches or other network devices so that they can be managed through a single network device.") Dowling at 9:50-55 ("According to the present invention, a Single IP address for the entire cluster 98 is assigned to the commander Switch 100, which distributes configuration information to the other Switches in the cluster. In one embodiment, a cluster with up to 15 member Switches.")
19[a]	coupling first and second master units to interface with the network;	Dowling discloses coupling first and second master units to interface with the network. *See supra* at 1[a].
19[b]	linking a plurality of slave units,	Dowling discloses linking a plurality of slave units. *See supra* at 1[b], 1[d].
19[c]	each slave unit comprising one or more ports to respective subscriber lines, in a daisy chain between the first and second master units;	Dowling discloses each slave unit comprising one or more ports to respective subscriber lines, in a daisy chain between the first and second master units. *See supra* at 1[c].
19[d]	conveying initial downstream data packets, received from the network by one of the master units, along the daisy chain in a first direction, so as to deliver the packets to	Dowling discloses conveying initial downstream data packets, received from the network by one of the master units, along the daisy chain in a first direction, so as to deliver the packets to the ports of the slave units. For example, Dowling discloses the first member switch conveying downstream data packets from the network along the daisy chain to deliver to the ports of the other switches or slave units. See, e.g.,

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No.	'904 Patent Claim 19	Dowling
	the ports of the slave units; and	Dowling at 3:61-4:6("Because a Switch maintains a table of the Source MAC addresses received on every port, it 'learns' to which port a station is attached every time the Station transmits. Then, each packet that arrives for that Station is forwarded only to the correct port, eliminating the waste of bandwidth on the other ports. Since Station addresses are checked every time a Switch receives a packet from a Station, if a Station is relocated, the Switch will reconfigure its forwarding table immediately upon receiving a transmission from the Station.") Referring now to FIG. 2-B, a block diagram of an Ethernet Switch according to one aspect of the present invention is shown. As shown in FIG. 2-B, Ethernet Switch 200 includes a Layer 1 Physical Interface ("PHY) 202,204, and a Layer 2 Media Access Control Interface ("MAC") 206, 208, for each port on the Ethernet switch 200. A network interface card ("NIC") consists of a MAC and a PHY. An Ethernet Switch also contains a MAC and PHY on every port. Thus, an Ethernet Switch may appear to a network as multiple NICs coupled together. Each Switch PHY 202, 204, receives the incoming data bit stream and passes it to its corresponding MAC 206, 208, which reassembles the original Ethernet frames.") Dowling at 13:44-65 ("The commander automatically discovers candidate switches that send CDP packets directly to the commander. The commander then produces a list of Ethernet addresses of candidate Switches. As candidate switches become members of the cluster, they look for CDP packets from "down stream" devices. A device is downstream of a member if it is one CDP hop further away from the commander than is the member. An administrator may view the list of candidates and add candidates to the cluster through the commander console port, telnet CLI, a Web console or SNMP. The commander applies rules to devices attached to the cluster to determine whether each is qualified to join the cluster. According to one embodiment of the present invention, in order to become a cluster candidate, a switch must meet the following qualification criteria: (1) it must be cluster-capable, (2) it must have HTTP capabilities and have CDP enabled, (3) it must be connected to a member of the existing cluster, (4) its connection must be STP forwarding at both ends, and (5) it must not be an active member of any other cluster. In addition, the enable password of the candidate

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No.	'904 Patent Claim 19	Dowling
		must be either the same as the commander or known to the administrator who is adding the Switch to the cluster.")
19[e]	in the event of a fault in the daisy chain, conveying further downstream data packets, received from the network by one of the master units, along the daisy chain in a second direction, opposite to the first direction, so as to deliver the further packets to the ports of at least some of the slave units.	Dowling discloses in the event of a fault in the daisy chain, conveying further downstream data packets, received from the network by one of the master units, along the daisy chain in a second direction, opposite to the first direction, so as to deliver the further packets to the ports of at least some of the slave units. *See supra* at 7.

No.	'904 Patent Claim 20	Dowling
20	A method according to claim 19, wherein the initial and further downstream packets are received from the network by the first master unit, and wherein conveying the further downstream packets in the second direction comprises conveying the further downstream packets	Dowling discloses a method according to claim 19, wherein the initial and further downstream packets are received from the network by the first master unit, and wherein conveying the further downstream packets in the second direction comprises conveying the further downstream packets from the first master unit to the second master unit, and then conveying the further downstream packets from the second master unit to the daisy chain. For example, Dowling discloses bidirectional connections between the switches and a variety of topologies including a Token Ring, such that the initial and further downstream packets are received from the network by the first master unit, and wherein conveying the further downstream packets in the second direction comprises conveying the further downstream packets from the first master unit to the second master unit, and then conveying the further downstream packets from the second master unit to the daisy chain. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

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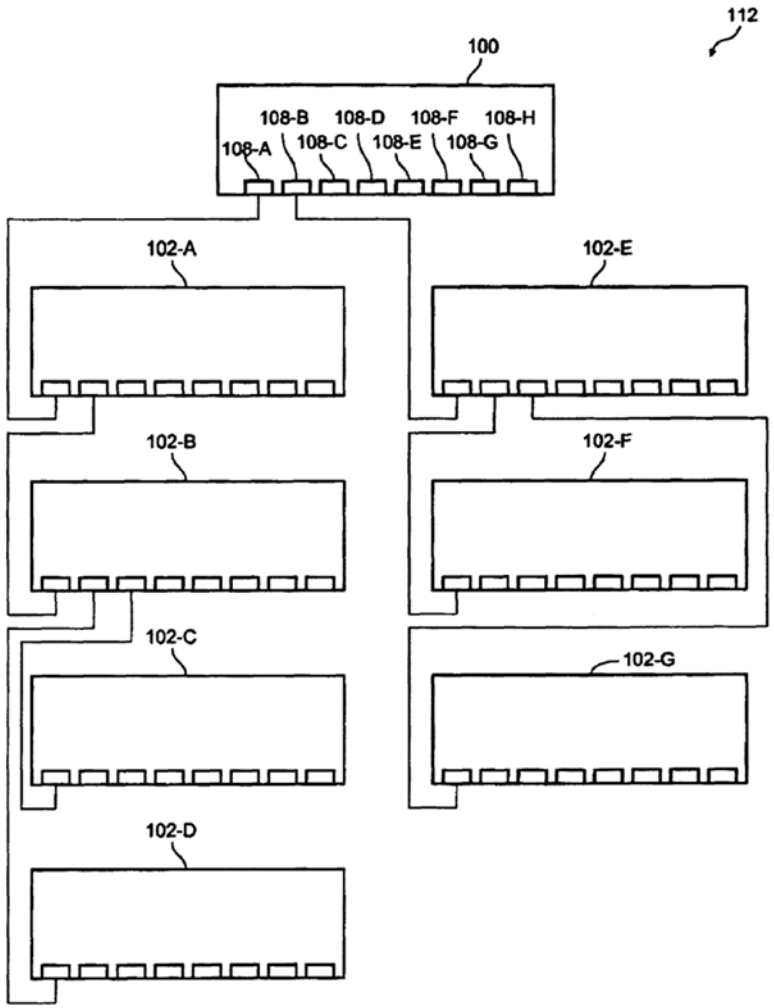
No.	'904 Patent Claim 20	Dowling
	from the first master unit to the second master unit, and then conveying the further downstream packets from the second master unit to the daisy chain.	See, e.g., Dowling at 11:5-9 ("Each network device sends periodic messages to a multicast address and listens to the periodic messages Sent by others in order to learn about neighboring devices and determine when their interfaces to the media go up or down.") Dowling at 9:66-67 ("Clusters may be configured in a variety of topologies.") Dowling at 2:40-45 ("Switching is a technology that alleviates congestion in Ethernet, Token Ring, and Fiber Distributed Data Interface (FDDI) and other similar LANs by reducing traffic and increasing bandwidth. LAN switches are designed to work with existing media infrastructures so that they can be installed with minimal disruption of existing networks.") Dowling at 6:11-22 ("Regardless of the method used to interconnect them, network devices Such as LAN Switches need to be configured and managed, because they typically include a number of programmable features that can be changed by a network administrator for optimal performance in a particular network. Without limitation, such features typically include whether each port on the network device is enabled or disabled, the data transmission speed setting on each port, and the duplex setting on each port. Many commercially available network devices contain embedded HTML Web servers, which allow the network device to be configured and managed remotely via a Web browser.") Dowling at 13:44-65 ("The commander automatically discovers candidate switches that send CDP packets directly to the commander. The commander then produces a list of Ethernet addresses of candidate Switches. As candidate switches become members of the cluster, they look for CDP packets from "down stream" devices. A device is downstream of a member if it is one CDP hop further away from the commander than is the member. An administrator may view the list of candidates and add candidates to the cluster through the commander console port, telnet CLI, a Web console or SNMP. The commander applies rules to devices attached to the cluster to determine whether each is qualified to join the cluster. According to one embodiment of the present invention, in order to become a cluster candidate, a switch

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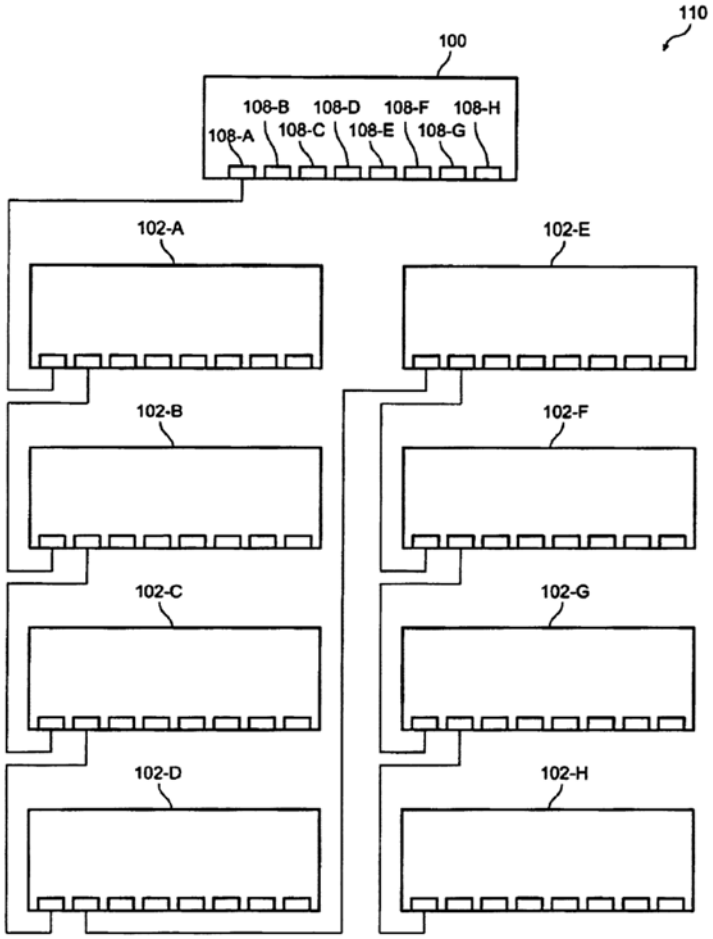
No.	'904 Patent Claim 20	Dowling
		must meet the following qualification criteria: (1) it must be cluster-capable, (2) it must have HTTP capabilities and have CDP enabled, (3) it must be connected to a member of the existing cluster, (4) its connection must be STP forwarding at both ends, and (5) it must not be an active member of any other cluster. In addition, the enable password of the candidate must be either the same as the commander or known to the administrator who is adding the Switch to the cluster.")

No.	'904 Patent Claim 21	Dowling
21	A method according to claim 20, wherein conveying the further downstream packets from the first master unit to the second master unit comprises linking further slave units in an additional daisy chain between the first and second master units, and conveying the further downstream packets from the first master unit to the second master unit over the additional daisy chain.	Dowling discloses a method according to claim 20, wherein conveying the further downstream packets from the first master unit to the second master unit comprises linking further slave units in an additional daisy chain between the first and second master units, and conveying the further downstream packets from the first master unit to the second master unit over the additional daisy chain. For example, Dowling discloses multiple topology configurations, including a hybrid configuration with multiple daisy chains, such that in the case of a fault at a location in one of the daisy chains, data can be conveyed from the first commander switch to the back-up commander switch by linking further slave units in an additional daisy chain between the first commander switch to the back-up commander switch. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. See, e.g., Dowling at 9:66-67 ("Clusters may be configured in a variety of topologies.") Dowling, Figure 10:

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No.	'904 Patent Claim 21	Dowling
		 FIG. 10 Dowling, Figure 9:

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No.	'904 Patent Claim 21	Dowling
		 *FIG. 9* Dowling at 7:43-45 ("FIG. 9 is a block diagram illustrating a cluster of network devices in a daisy chain configuration according to one aspect of the present invention.")

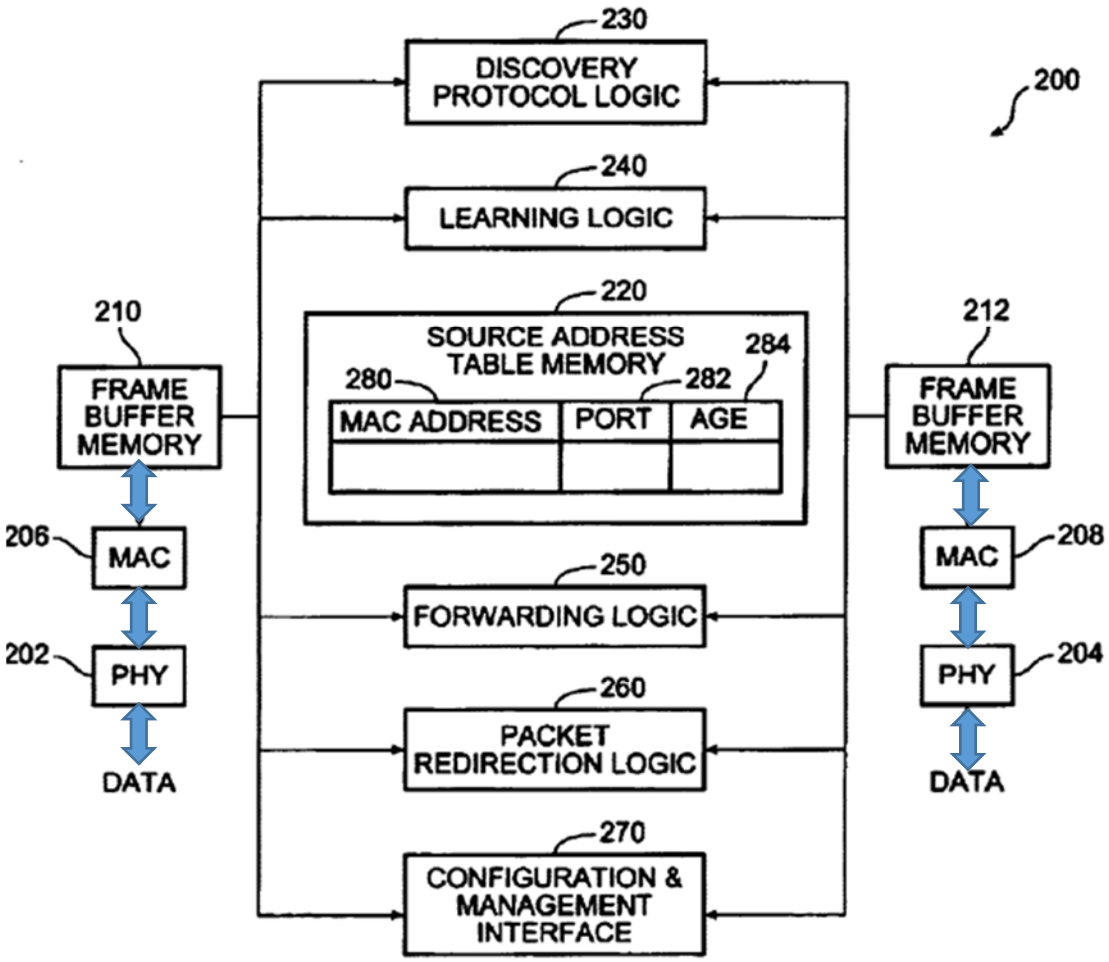
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No.	'904 Patent Claim 21	Dowling
		Dowling at 10:5-14 ("A Second example of a cluster configuration, known as a "daisy chain" configuration, is shown in FIG. 9. In cluster 110, only member switch 102-A is directly connected to the commander Switch 100. Member switches 102-B-102-G are each connected to an "upstream" Switch (one that is fewer "hops" away from commander switch 100) and to a "down-stream" switch (one that is more "hops" away from commander switch 100). Finally, the last Switch in the chain (member switch 102-H) is only connected to its upstream "neighbor" 102-G.") Dowling at 10:15-28 ("As a third example, FIG. 10 illustrates a "hybrid" cluster configuration with one commander Switch 100 and seven member Switches 102-A-102-G. In cluster 112, member Switches 102-A and 102-E are in a star configuration with respect to commander Switch 100. Member Switch 102-B is in a daisy chain configuration with respect to member Switch 102-A, while member Switches 102-C and 102-D are in a star configuration with respect to member switch 102-B. Finally, member Switches 102-F and 102-G are in a star configuration with respect to member Switch 102-E. Thus, hybrid cluster 112 as shown in FIG. 10 consists of a combination of Star and daisy chain configurations. It is to be understood that many more cluster configurations are possible and that the above examples are not in any way limiting.") Dowling at 24:1-15 ("If one member device moves its connection to the cluster from one port on a Second member device to another port on the second member device (this could be done either physically or through a Spanning Tree topology change), the second member device updates its local information and passes that information on to the commander.") Dowling at 24:57-60 ("In one embodiment of the present invention, a device can belong to only one cluster. However, other embodiments of the present invention may allow a device to belong to more than one cluster.") Dowling at 11:54-60 ("Recovery from a failed command Switch can be accomplished by replacing the failed unit with a cluster member or another Switch. To have a cluster member ready to replace the commander Switch, the network administrator must assign an IP address to another cluster member, and know the command-Switch enable password for that Switch.")

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No.	'904 Patent Claim 22	Dowling
22[a]	A method according to claim 19, and comprising conveying initial upstream data packets, received by the slave units from the subscriber lines, along the daisy chain in the second direction so as to transmit the upstream data packets via the first master unit over the network,	Dowling discloses a method according to claim 19, and comprising conveying initial upstream data packets, received by the slave units from the subscriber lines, along the daisy chain in the second direction so as to transmit the upstream data packets via the first master unit over the network. For example, Dowling discloses multiple topology configurations, including a Token Ring, and switches that communicate in both directions, and therefore permits a user to use the system in such a manner of conveying initial upstream data packets, received by the slave units from the subscriber lines, along the daisy chain in the second direction so as to transmit the upstream data packets via the first master unit over the network. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. See, e.g., Dowling at 1:8-11 ("The present invention relates to the field of data commu nications networks. More particularly, the present invention relates to an apparatus and method for automatic network device cluster discovery.") Dowling at 11:5-9 ("Each network device sends periodic messages to a multicast address and listens to the periodic messages Sent by others in order to learn about neighboring devices and determine when their interfaces to the media go up or down.") Dowling at 3:20-25 ("In the context of the present invention, the term "switching" refers to a technology in which a network device (known as a switch) connects two or more LAN segments. A switch transmits frames of data from one Segment to their destinations on the same or other segments.") Dowling, Figure 2B (annotated):

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No.	'904 Patent Claim 22	Dowling
		 *FIG. 2B*
22[b]	and in the event of the fault, conveying further upstream data	Dowling discloses in the event of the fault, conveying further upstream data packets received by one or more of the slave units along the daisy chain in the first direction via the second master unit.

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No.	'904 Patent Claim 22	Dowling
	packets received by one or more of the slave units along the daisy chain in the first direction via the second master unit.	For example, Dowling discloses that data is bidirectional along the daisy chain, and that any of the member switches can be configured to replace the commander switch so that upstream data packets can also be sent along the daisy chain via the second master unit. See supra at 4[f]. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

No.	'904 Patent Claim 23	Dowling
23	A method according to claim 22, and comprising bicasting the upstream data packets from the first master unit to the network and to the second master unit, which transmits the bicast upstream data packets over the network.	Dowling discloses a method according to claim 22, and comprising bicasting the upstream data packets from the first master unit to the network and to the second master unit, which transmits the bicast upstream data packets over the network. *See supra* at 6.

No.	'904 Patent Claim 24	Dowling
24	A method according to claim 19, wherein conveying the initial downstream data packets along the daisy chain comprises pre-switching the packets at each of the slave units, so that packets not addressed	Dowling discloses a method according to claim 19, wherein conveying the initial downstream data packets along the daisy chain comprises pre-switching the packets at each of the slave units, so that packets not addressed to any of the ports on the slave unit are passed to the next slave unit in the daisy chain, while packets that are addressed to one or more of the ports on the slave unit are passed to a switch fabric that directs the packets to the ports to which they are addressed. For example, Dowling discloses that each member device has its own unique MAC address and monitors network traffic and searches for its own MAC address to determine whether it

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No.	'904 Patent Claim 24	Dowling
	to any of the ports on the slave unit are passed to the next slave unit in the daisy chain, while packets that are addressed to one or more of the ports on the slave unit are passed to a switch fabric that directs the packets to the ports to which they are addressed.	should decode the packet or not. Once the member device learns that the packet is addressed to one of its ports, it forwards the packet only to the correct port. Dowling at 2:46-57 ("A Media Access Control ("MAC") address is the unique hexadecimal Serial number assigned to each Ethernet network device to identify it on the network. With Ethernet devices, this address is permanently set at the time of manufacture. Each network device has a unique MAC address, so that it will be able to receive only the frames that were sent to it. If MAC addresses were not unique, there would be no way to distinguish between two Stations. Devices on a network monitor network traffic and search for their own MAC address in each frame to determine whether they should decode it or not. Special circumstances exist for broadcasting to every device on the network.") Dowling at 3:21-35("In the context of the present invention, the term "switching" refers to a technology in which a network device (known as a Switch) connects two or more LAN segments. A switch transmits frames of data from one segment to their destinations on the same or other Segments. When a Switch begins to operate, it examines the MAC address of the frames that flow through it to build a table of known sources. If the Switch determines that the destination of a frame is on the same Segment as the Source of the frame, it drops, or filters, the frame because there is no need to transmit it. If the Switch determines that the destination is on another Segment, it transmits the frame onto the destination Segment only. Finally, using a technique known as flooding, if the destination Segment is unknown, the Switch transmits the frame on all segments except the source segment.") Dowling at 3:52-60 ("Because a switch maintains a table of the Source MAC addresses received on every port, it "learns' to which port a Station is attached every time the Station transmits. Then, each packet that arrives for that Station is forwarded only to the correct port, eliminating the waste of bandwidth on the other ports. Since Station addresses are checked every time a Switch receives a packet from a Station, if a Station is relocated, the Switch will reconfigure its forwarding table immediately upon receiving a transmission from the Station.")

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No.	'904 Patent Claim 25	Dowling
25	A method according to claim 19, wherein the network comprises an asynchronous transfer mode (ATM) network.	Dowling discloses a method according to claim 19, wherein the network comprises an asynchronous transfer mode (ATM) network. See *supra* at 2.

No.	'904 Patent Claim 26	Dowling
26	A method according to claim 19, wherein the network comprises an Internet protocol (IP) network.	Dowling discloses a method according to claim 19, wherein the network comprises an asynchronous transfer mode (ATM) network. *See supra* at 3.

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Chart for U.S. Patent 6,680,904 ("the '904 Patent")
U.S. Patent No. 5,953,318 to Nattkemper et al. ("Nattkemper")

As shown in the chart below, Asserted Claims 14 and 15 of the '904 Patent are invalid under (1) 35 U.S.C. §§ 102 (a), (b), and (e) because Nattkemper meets each element of those claims, and/or (2) 35 U.S.C. § 103 because Nattkemper renders those claims obvious either alone, or in combination with the knowledge of a person having ordinary skill in the art, and in further combination with the references specifically identified below and in the following claim chart and/or one or more references identified in Defendant's Preliminary Invalidity Contentions. The following quotations and diagrams come from Nattkemper titled "Distributed telecommunications switching system and method", which was filed on December 4, 1997, and issued on September 14, 1999.

Motivations to combine the disclosures in Nattkemper with disclosures in other publications known in the art, as explained in this chart, include at least the similarity in subject matter between the references to the extent they concern methods of stacking switches within a network. Insofar as the references cite other patents or publications, or suggest additional changes, one of ordinary skill in the art would look beyond a single reference to other references in the field.

These invalidity contentions are based on Defendant's present understanding of the Asserted Claims, and Orckit's apparent construction of the claims in its November 3, 2022 Disclosure of Asserted Claims and Infringement Contentions Pursuant to P.R. 3-1, and Orckit's January 19, 2023 First Amended Disclosure of Asserted Claims and Infringement Contentions Pursuant to P.R. 3-1 (Orckit's "Infringement Disclosures"), which is deficient at least insofar as it fails to cite any documents or identify accused structures, acts, or materials in the Accused Products with particularity. Defendant does not agree with Orckit's application of the claims, or that the claims satisfy the requirements of 35 U.S.C. § 112. Defendant's contentions herein are not, and should in no way be seen as, admissions or adoptions as to any particular claim scope or construction, or as any admission that any particular element is met by any accused product in any particular way. Defendant objects to any attempt to imply claim construction from this chart. Defendant's prior art invalidity contentions are made in a variety of alternatives and do not represent Defendant's agreement or view as to the meaning, definiteness, written description support for, or enablement of any claim contained therein.

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The following contentions are subject to revision and amendment pursuant to Federal Rule of Civil Procedure 26(e), the Local Rules, and the Orders of record in this matter subject to further investigation and discovery regarding the prior art and the Court's construction of the claims at issue.

No.	'904 Patent Claim 14	Nattkemper
14[preamble]	In a network access multiplexing system,	Nattkemper discloses a network access multiplexing system. For example, Nattkemper discloses a network switching system that is a multiplexer. In one example, Nattkemper discloses that its "architecture follows the spirit of GR-2842-CORE ATM Service Access Multiplexer Generic requirements. Switching subsystem 100 provides features and enhancements not required by the GR-2842-CORE. The enhancements include statistical multiplexing and virtual path/circuit switching capabilities. In a network implementing switching subsystem 100, preferably the ATM switches will use the Virtual UNI functions. In effect, the ATM switch terminates the signaling streams as defined in GR-2842-CORE and acts as a proxy Connection Admission Control (CAC) entity for switching subsystem 100. In addition, although not strictly required, the ATM switch should provide a Usage Parameter Control (UPC) (policing) function for the virtual UNI drops resident in the switching subsystem 100." Nattkemper, 15:49-63. Further, Nattkemper discloses that the "Switching subsystem 100 implements advanced functions that are generally transparent to the data path traffic. A control channel between switching units 104 permits the switching units 104 to cooperate on the various system functions. The switching units 104 are classified as first, intermediate or last. The first, intermediate, and last shelf classes generally run similar software, but each of the classes may have its own unique processes. The architecture is capable of both VP and VC cell routing with support for up to eight or more traffic classes. The control levels provided by the MegaSLAM can be grouped into five categories although other control levels are possible. The five exemplary categories are: 1 instantaneous controls cell routing selective cell discard (EPD/PPD) signaling cell mapping

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No.	'904 Patent Claim 14	Nattkemper
		cell statistics gathering EFCI/CLP marking 2 real time controls control process for cell buffer management (to declare congestion states) control process for UPC of ingress streams (with virtual circuit granularity) compute fairness primitives (i.e. EPD/PPD rates) compute queue occupancy 3 hop-by-hop propagation delay controls (or segment-to-segment) inter-shelf peer to peer element state signaling (i.e. for fairness algorithm) 4 end-to-end propagation delay controls--EFCI flow control 5 end-to-end round trip delay controls CAC I/F via NNIS routing provisioning via NMS." Nattkemper, 15:64-16:31. In fact, claim 21 is directed to a "channel bank for service access multiplexer" and recites: a first buffer operable to receive a control asynchronous transfer mode cell generated from a local processor; a a second buffer operable to receive a bypass asynchronous transfer mode cell from a downstream channel bank; a third buffer operable to receive an ingress asynchronous transfer mode cell from one of a plurality of subscribers; a cell scheduler operable to select one of the first, second, and third buffers for upstream transport of its respective asynchronous transfer mode cell, the cell scheduler controlling upstream transport of asynchronous transfer mode cells over a pre-defined control period in response to a credit allowance received by the cell scheduler, the credit allowance determining a number of asynchronous transfer mode cells to be transported upstream by the cell scheduler during the pre-defined control period. Nattkemper, claim 21. *See also*:

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No.	'904 Patent Claim 14	Nattkemper
		Nattkemper, 2:15-28 ("Multiple interconnected units (which can also be referred to as "shelves" or "channel banks") are preferably used to implement the present invention. The multiple units may be physically located in a common place or in remote locations from one another. Each unit is associated with a plurality of subscriber interfaces, and performs distinct functions and procedures to the traffic deriving from the ATM network or subscriber interfaces. The cumulative effect of the multiple units is to form a technique and system that, among other things, routes and controls the ATM traffic amongst the various subscriber interfaces. As such, the present invention can be considered as a series of distributed ATM switches or nodes that collectively function as a single switching or multiplexing entity.").
		Nattkemper, 3:9-37 ("FIG. 1 is a block diagram of a telecommunications network 10. Telecommunications network 10 includes a central office 11, an asynchronous transfer mode (ATM) switch 12, a time division multiplex (TDM) switch 13, a central digital loop carrier system 14, a remote digital loop carrier system 15, one or more remote terminal 16, and a switching subsystem 100. In operation, central office 11 may receive time division multiplex traffic from TDM switch 13 at any of a plurality of channel banks 17. The TDM traffic is received by a line card 18, appropriately processed, and transferred to a common control shelf 19 where the TDM traffic can be passed to an appropriate central digital loop carrier system 14. Digital loop carrier system 14 may also receive ATM traffic from ATM switch 12. Digital loop carrier system 14 integrates the TDM traffic with the ATM traffic for transfer, preferably over an optical fiber link 20 to a remote digital loop carrier system 15. The remote digital loop carrier system 15 may partition the integrated TDM and ATM traffic received over optical fiber link 20 into separate TDM and ATM traffic streams. The partitioned TDM traffic stream may be provided to a remote terminal 16 according to its appropriate destination. Digital loop carrier system 15 may also provide the partitioned ATM stream to switching system 100 that appropriately sends the ATM stream to its appropriate user destination. While FIG. 1 shows switching subsystem 100 as only receiving an ATM stream, switching subsystem 100 may also receive and process TDM streams from telecommunications network 10.").
		Nattkemper, 3:38-58 ("FIG. 1 illustrates a switching subsystem 100, also known as an ATM service access multiplexer, in accordance with a preferred embodiment of the present

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No.	'904 Patent Claim 14	Nattkemper
		invention. As illustrated, switching subsystem 100 may communicate to an ATM switch 12, as commonly found in a central office 14, through a shared communication link 110. Switching subsystem 100 includes a first switching unit 104a, a last switching unit 104n, and one or more intermediate switching units 104i interposed between the first switching unit 104a and the last switching unit 104n. Such switching units 104 are connected to one another through bidirectional connections 108, which collectively can be considered to provide for a control loop 112. Such connections 108 preferably transmit optical signals, such as OC-3 optical signals. Further, the switching units 104 are each associated to certain subscriber interfaces, specifically, the first switching unit 104a is associated with certain subscriber interfaces by link 106a, the intermediate switching units 104i are associated with other subscriber interfaces by link 106i, and the last switching unit 104n is associated with still other subscriber interfaces by link 106n.").

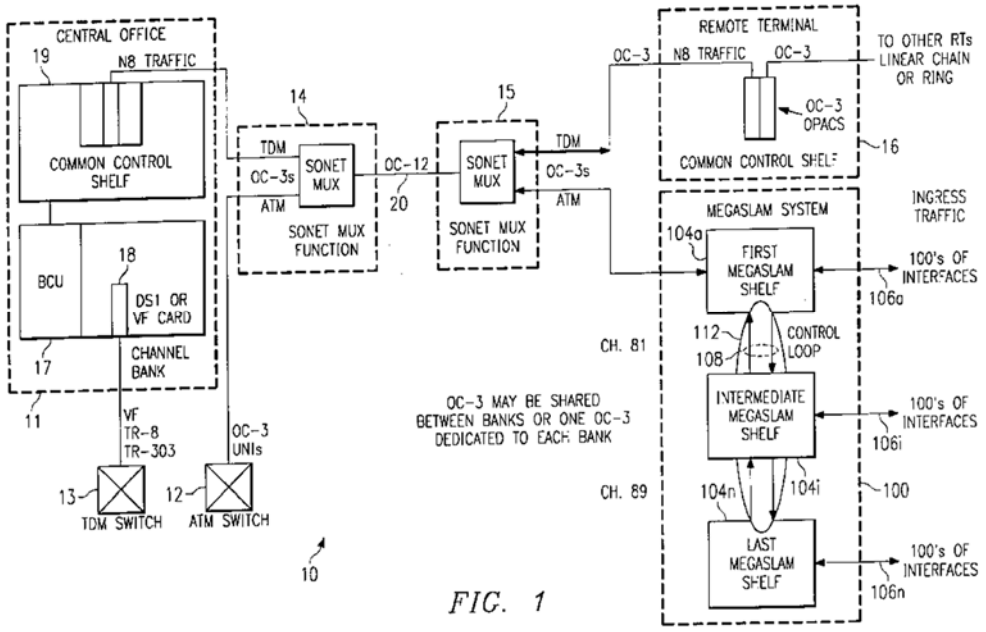
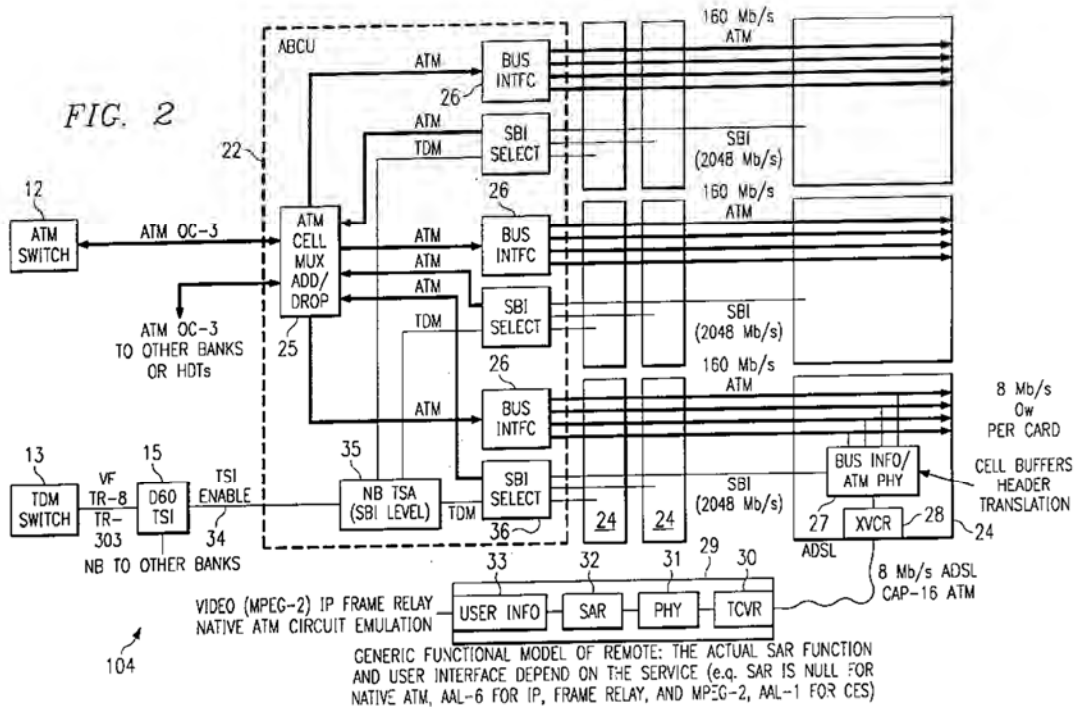


FIG. 1

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No.	'904 Patent Claim 14	Nattkemper
		Nattkemper, FIG. 1 Nattkemper, 13:41-57 ("Switching subsystem 100 may be either a deterministic ingress traffic multiplexer that may be distributed over a number of switching units 104 or a statistical ingress traffic multiplexer that also supports a distribution of multiplexer functions over a number of switching units 104. Switching subsystem 100 may also include advanced queuing and congestion avoidance policies. In the downstream direction, switching subsystem 100 support oversubscription with queuing and congestion avoidance policies and is permanent virtual circuit (PVC) based. Switching subsystem 100 uses a centralized shared memory ATM switch fabric. Switching subsystem 100 is preferably capable of supporting an aggregate downstream cell rate of 370,000 cells per second and an upstream burst aggregate cell rate of 222,000 cells/sec for each of nine switching units 104. The aggregate ingress rate for switching subsystem 100 is therefore 2,000,000 cells/sec. The downstream rate supports one full OC-3c.").
14[a]	in which a master unit is connected by a physical interface to a packet-switched network,	Nattkemper discloses in which a master unit is connected by a physical interface to a packet-switched network. For example, Nattkemper discloses that the master unit 1102 is connected to an ATM switch and network via physical lines, preferably fiber optic cables. In one example, Nattkemper discloses "FIG. 2 is a block diagram of switching unit 104. Switching unit 104 includes an asynchronous transfer mode bank channel unit (ABCU) card 22 and a plurality of asynchronous digital subscriber line (ADSL) line cards 24. While ADSL line cards 24 are to be described preferably with respect to the asynchronous digital subscriber loop protocol, ADSL line cards 24 may be implemented with other appropriate transmission protocols. In operation, switching unit 104 receives asynchronous transfer mode cells at an ATM cell multiplexer add/drop unit 25. Add/drop unit 25 determines whether each ATM cell received has the appropriate destination and addressing information for a user serviced by ADSL line cards 24 associated with ABCU card 22. If not, then the ATM cell is passed to the next switching unit 104 within switching subsystem 100. If add/drop unit 25 identifies an ATM cell with the correct addressing and destination information, then the ATM cell is

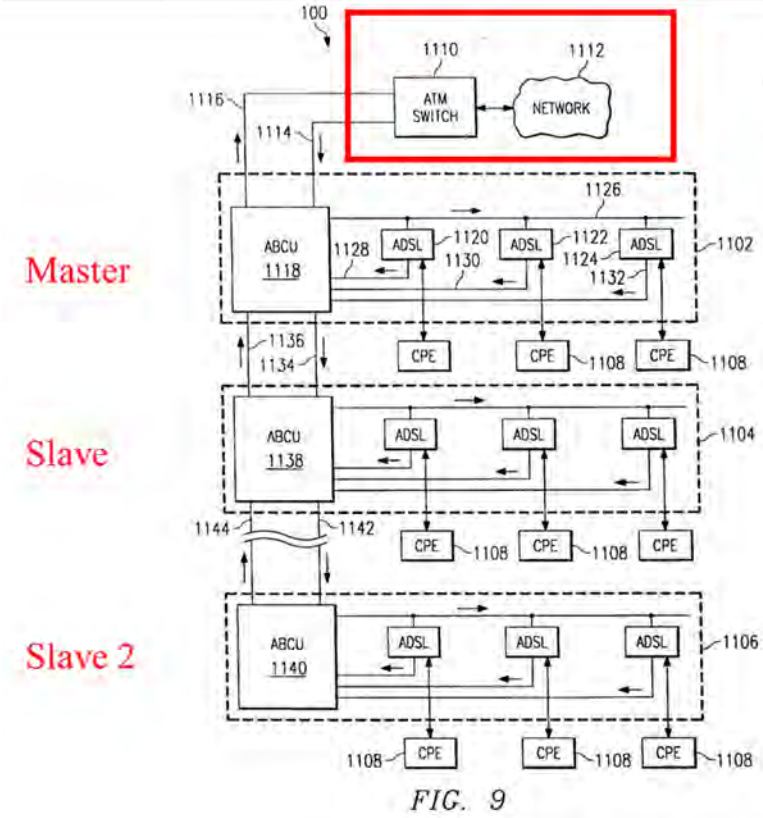
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No.	'904 Patent Claim 14	Nattkemper
		forwarded to an appropriate bus interface 26 for transfer to an appropriate ADSL line card 24. The appropriate ADSL line card includes a bus interface 27 to extract the ATM cell and provide it to a transceiver 28 where the ATM cell is placed into the appropriate ADSL transmission format for transmission to a remote unit 29. Remote unit 29 processes the ADSL transmission received from ADSL line card 24 through a transceiver 30, physical layer unit 31, segmentation and resegmentation unit 32 or other appropriate device and a user interface 33 for transmission to an end user." Nattkemper, 5:15-41. Nattkemper depicts the block diagram described above in Figure 2, which is shown below.  Nattkemper, FIG. 2

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No.	'904 Patent Claim 14	Nattkemper
		In one example, Nattkemper discloses ABCU card 22 may receive TDM traffic over a timeslot interchange cable 34 from TDM switch 13 through a switching device such as digital loop carrier system 15. ABCU card 22 includes a timeslot assigner 35 that places the TDM traffic into a subscriber bus interface (SBI) protocol format. The TDM traffic in the SBI protocol format is provided to an SBI selector 36 and sent to the appropriate ADSL line card 24 for transmission to the end user. Nattkemper, 5:42-48. Nattkemper, 53:66-54:8 ("Primary channel bank 1102 communicates with ATM switch 1110 by means of communication line 1114 which carries ATM cells downstream from ATM switch 1110 to primary channel bank 1102. Primary channel bank 1102 also communicates with ATM switch 1110 by means of communication line 1116 which carries cells upstream from primary channel bank 1102 to ATM switch 1110. In the preferred embodiment, communication lines 1114 and 1116 are fiber optic cables capable of carrying data at a standard OC-3 data rate.").

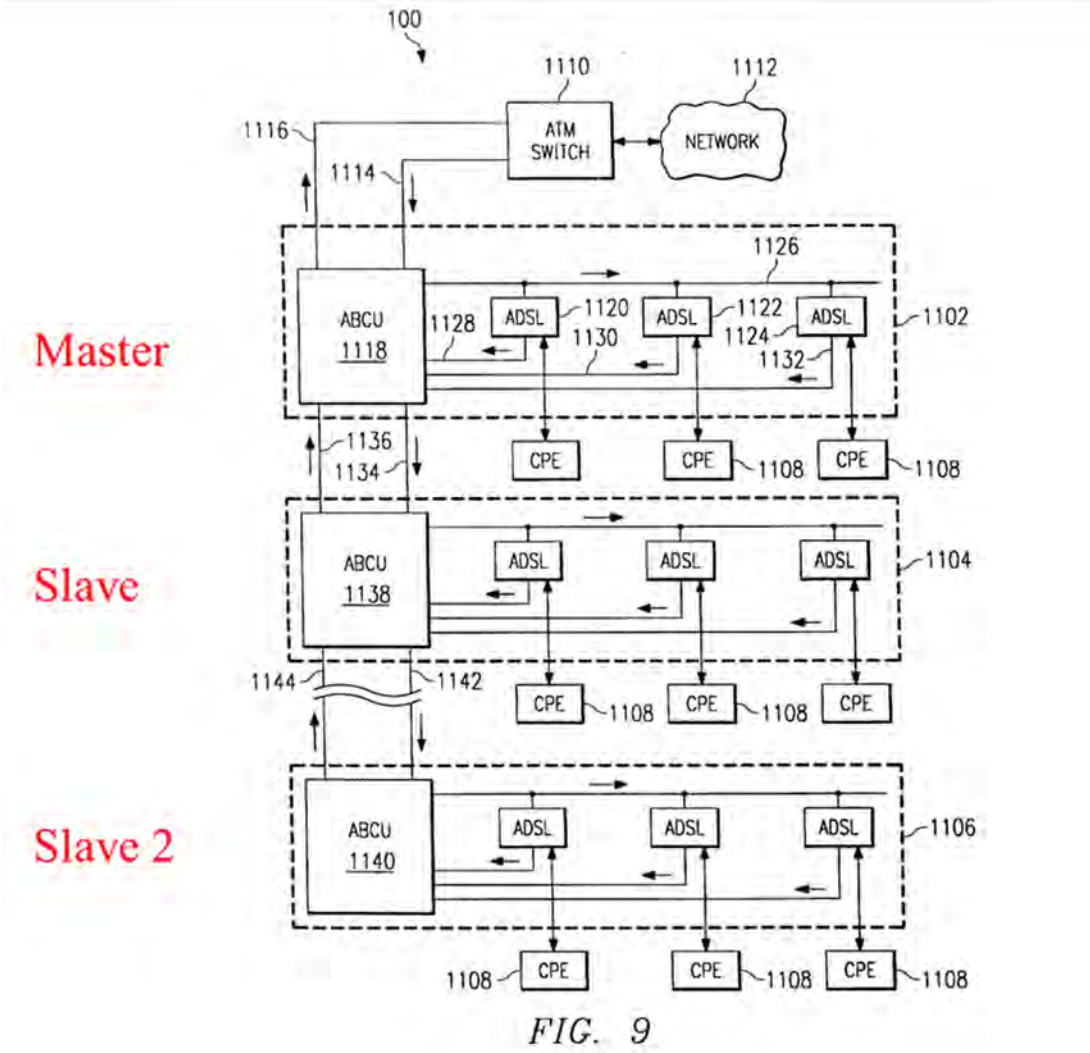
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No.	'904 Patent Claim 14	Nattkemper
		 *FIG. 9* Nattkemper, FIG. 9 (annotation added) Nattkemper, 4:43-5:14 ("A fairness analysis and credit-based scheme may, for example, be established through the control loop 112 to control upstream congestion between the switching units 104. The first switching unit 104a preferably generates a command cell in the downstream direction. The command cell includes information that defines the credits to be awarded to each unit switching 104, in accordance with the fairness analysis and assessment, and effects the downstream serial transmission of that cell to the other units. In response to reception of the command cell, the last switching unit 104n generates a feedback status cell, which includes feedback status information, such as the congestion status and behavioral

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No.	'904 Patent Claim 14	Nattkemper
		attributes of a given shelf. The feedback status cell is, however, passed upstream and the feedback information therein is modified by the intermediate switching units 104i. Specifically, each intermediate switching unit 104i preferably supplements the information already included in the feedback status cell, which concerns other units, with feedback information concerning that particular unit. Using the information provided for in the command cell, together with the feedback status cell, allows for a credit-based scheme to take place whereby each switching unit 104 is informed of the number of credits it is awarded. The number of credits relates to the number of ATM cells that a switching unit 104 can pass upstream in a given period of time. Upon receiving the credits, a particular switching unit 104 may start to launch ATM cells into the upstream connection 108 until its credits are exhausted. The above-described fairness analysis and credit-based scheme is preferably implemented by designating one of the switching units 104 as a master, and the other units as slaves. The master switching unit 104, preferably the first switching unit 104a, should be operable to compute the credits awarded to each slave unit switching 104 based on the command and feedback status cells, and to inform each slave switching unit of its allotted number of credits. As a consequence of the fairness analysis and credit based scheme, the connections 108 between the switching units 104 are regulated such that upstream congestion (i.e., a bottleneck) is avoided.").
14[b]	a slave unit configured to be coupled to the master unit in a daisy chain of such slave units, the slave unit comprising:	Nattkemper discloses a slave unit configured to be coupled to the master unit in a daisy chain of such slave units. For example, Nattkemper discloses switching unit 1102 that serves as a master, connected to unit 1104 that serves as a slave, further connected to unit 1106 that also serves as a slave, all connected in a daisy-chain configuration.

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No.	'904 Patent Claim 14	Nattkemper
		 *FIG. 9* Nattkemper, FIG. 9 (annotation added)

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No.	'904 Patent Claim 14	Nattkemper
		Nattkemper, 2:29-34 ("Preferably, the units are serially connected to one another such that any one unit is connected to one or two other units. The first and last units are connected to only one other unit, while the intermediate units between the first and last units are connected to two other units."). Nattkemper, 7:18-30 ("Switching subsystem 100 provides daisy chaining of multiple units or shelves. The present invention is described as having nine switching units concurrently, however, any number of intermediate shelves 104i may be implemented. In other words, all the switching units cooperate to implement a distributed switch process and distributed real time control processes including fairness. The daisy chaining queue (bypass) method takes priority over all local queues. In effect each switching unit generates a conformant cell stream where the sum of all the rates from the multiple switching units equal the OC-3 rate. The resultant behavior of the nine switching units is equivalent to a single ATM switching node."). Nattkemper, 8:59-9:3 ("In the event all three lookups fail for the current cell, the cell may be passed via a separate FIFO to the next switching unit 104 in the daisy chain. This permits the switching units 104 to implement the distributed switch process. In effect, each switching unit 104 is programmed to terminate a subset of the virtual circuits for the downstream path. But as a whole all the switching units 104 terminate all the downstream virtual circuits. The last switching unit 104n implements the mis-inserted cell processing function as a proxy for all the daisy chained switching units 104. Thus, the last switching unit 104n acts as a proxy for all exception events for the distributed switch fabric."). Nattkemper, 53:30-57 ("FIGS. 9-14 provide functional operation perspective of switching subsystem 1100. Referring to FIG. 9, a distributed telecommunications switching subsystem 1100 is shown. Switching subsystem 1100 comprises a plurality of switching units 1102, 1104, and 1106, referred to as channel banks. Each channel bank provides data and/or voice communication services to a plurality of customer premises equipment (CPE) units 1108. A primary channel bank 1102 communicates with a data packet switch 1110, such as an asynchronous transfer mode (ATM) switch 1110, which in turn communicates with a telecommunications network 1112. ATM switch 1110 may, for example, be located at a

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No.	'904 Patent Claim 14	Nattkemper
		telephone company central office one or more intermediate channel banks 1104 may be positioned between primary channel bank 1102 and a terminating channel bank 1106."). Nattkemper, 53:58-65 ("In the following discussion, ATM cells being sent from ATM switch 1110 through switching units 1102, 1104, and 1106 to CPE units 1108, or any other destination in switching subsystem 1100, will be referred to as traveling in the downstream direction. Any cells sent from CPE units 1108 through switching units 1102, 1104, and 1106 to ATM switch 1110 will be referred to as traveling in the upstream direction. Primary channel bank 1102 communicates with ATM switch 1110 by means of communication line 1114 which carries ATM cells downstream from ATM switch 1110 to primary channel bank 1102. Primary channel bank 1102 also communicates with ATM switch 1110 by means of communication line 1116 which carries cells upstream from primary channel bank 1102 to ATM switch 1110. In the preferred embodiment, communication lines 1114 and 1116 are fiber optic cables capable of carrying data at a standard OC-3 data rate."). Nattkemper, 3:37-58 ("FIG. 1 illustrates a switching subsystem 100, also known as an ATM service access multiplexer, in accordance with a preferred embodiment of the present invention. As illustrated, switching subsystem 100 may communicate to an ATM switch 12, as commonly found in a central office 14, through a shared communication link 110. Switching subsystem 100 includes a first switching unit 104a, a last switching unit 104n, and one or more intermediate switching units 104i interposed between the first switching unit 104a and the last switching unit 104n. Such switching units 104 are connected to one another through bidirectional connections 108, which collectively can be considered to provide for a control loop 112. Such connections 108 preferably transmit optical signals, such as OC-3 optical signals. Further, the switching units 104 are each associated to certain subscriber interfaces, specifically, the first switching unit 104a is associated with certain subscriber interfaces by link 106a, the intermediate switching units 104i are associated with other subscriber interfaces by link 106i, and the last switching unit 104n is associated with still other subscriber interfaces by link 106n.").

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No.	'904 Patent Claim 14	Nattkemper
14[c]	a plurality of ports, for coupling the slave unit to respective subscriber lines;	Nattkemper discloses a plurality of ports, for coupling the slave unit to respective subscriber lines. For example, Nattkemper discloses a plurality of ADSL line cards in each unit which connect to customer premises equipment (CPE) units. In one example, Nattkemper discloses "In the downstream direction, the cells are fanned out to their target switching units 104 via the VC/VP descriptor lookup in each switching unit. In the VC case, the cells are enqueued into either a high priority or a low priority queue that is associated with each drop (or port). The ASCU card 22 is capable of 22 sets of these dual priority queues." Nattkemper, 11:33-38. In another example, Nattkemper discloses "the upstream rate supports over-subscription of the OC-3c by a factor of 5.4. The burst upstream rate can be sustained until switching subsystem 100 enters into a congestion imminent state. Cell buffers preferably provide sufficient buffer resources for queuing up to 2×1500 byte packets from the 22 ingress ports per shelf simultaneously. Thus, the architecture preferably supports 22 physical ATM ports in each shelf (i.e. two per slot)." Nattkemper, 13:58-65. Further, Nattkemper discloses that the "downstream direction also supports oversubscription. For the most part this is handled by the ATM network including the CO resident ATM switch which is delivering the OC-3c to switching subsystem 100. Switching subsystem 100 supports bursts that exceed the egress bottleneck pipe capacity. In addition, two queues are provided in the downstream direction. One of these queues is intended for step function stream (i.e. UBR etc.) that may be oversubscribed. The other queue would be used for streams that require a guaranteed QoS (i.e. CBR, VBR etc.). As such, the buffers are sized to support up to 1×1500 byte packet per egress port." Nattkemper, 13:66-14:10. In one example, Nattkemper discloses that "periodically, for the high demand periods during the day, an overload situation may exist for the 200 downstream user sources in this embodiment. In this case, the user sources may attempt to load the backbone ATM network to 200 Mbps or more. For the UBR traffic case, the TCP/IP protocol with its inherent rate

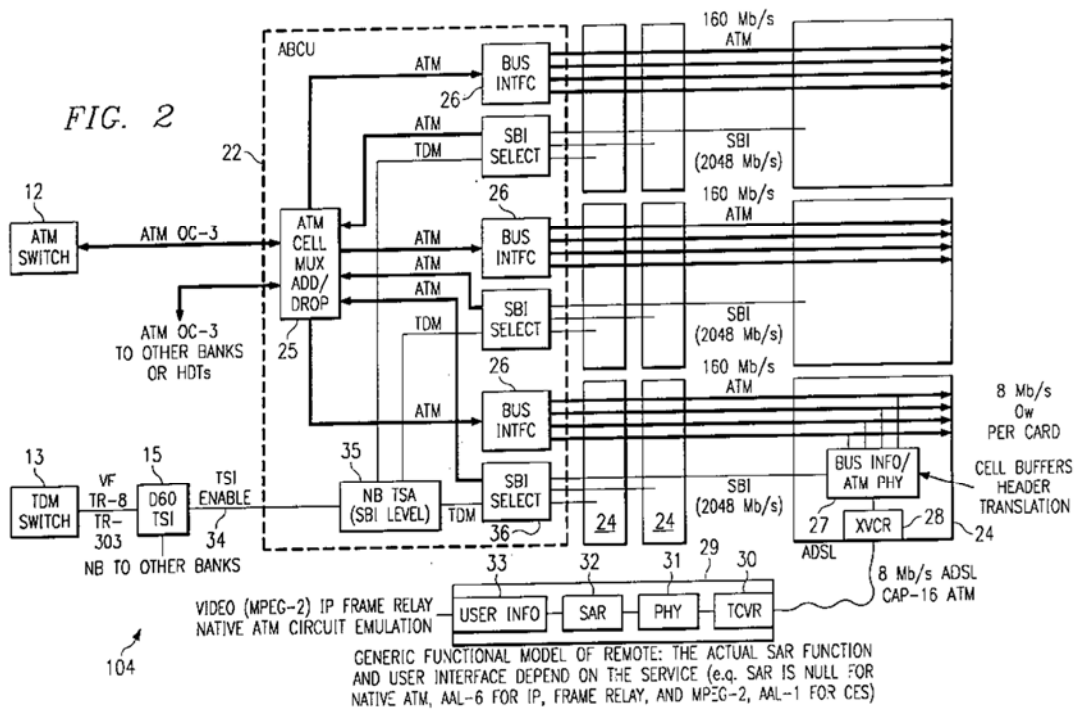
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No.	'904 Patent Claim 14	Nattkemper
		reduction algorithms would slow down the user sources until a reasonable ratio of successful packets are getting though telecommunications network 10. In effect, the user sources in this embodiment would slow down to an aggregate rate that is approximately equal to the bottleneck rate (in this case the OC-3c pipe). Therefore, the downstream direction can be greatly oversubscribed while still delivering acceptable level of performance to each user port. If the backbone ATM network supports advanced discard policies (e.g. EPD), then the system throughput would be maximized. This is due to the one for one relationship between the discarded AAL5 packet and the TCP/IP layer packet retransmit." Nattkemper, 16:50-67. In one example, Nattkemper discloses "Within the VP address range, switching subsystem 100 is provisioned for the required number of PVCs. In the event SVC support is required, the mapping scheme described above (for the signaling channel) could also be used to provide SVC capabilities. This is referred to as VPI tunneling, and each user port is mapped to the ATM switch 12. This scheme uses the VPI address bits to uniquely identify each user. If a virtual path connection is provisioned in the VP-- descriptor, then only the VPI bits are used to route the cells between each user and the ATM switch 12. The remaining VCI bits are available for SVC/PVC connections to the user end points. In this implementation, preferably the virtual path connections are unique and no virtual circuit connections will reside with the VP address range (i.e., the VP-- descriptors are mutually exclusive). For the virtual path scenario, the CAC process runs in the ATM switch 12 and provisions circuits, PVC or SVC, using the VCI field." Nattkemper, 24:33-50. In one example, Nattkemper discloses "In addition, the interface to the ATM switch 12 port can be provisioned to support the NNI cell header format. In this case, the mapping scheme defined above is extended to support more VPs per shelf and N daisy chained shelves." Nattkemper, 24:61-64. In one example, Nattkemper discloses "FIG. 6 shows a block diagram of the fabric controls for ABCU card 22. The ABCU card 22 preferably provides a programmable timer based rate adaptation circuit to traffic-shape the flows to the ADSL line cards 22. The purpose of the circuit is to rate adapt the switch fabric cell rate to the port cell rate. A set of registers is provided on the ABCU card 22 to provision the scheduler rate for each of, for example, 60

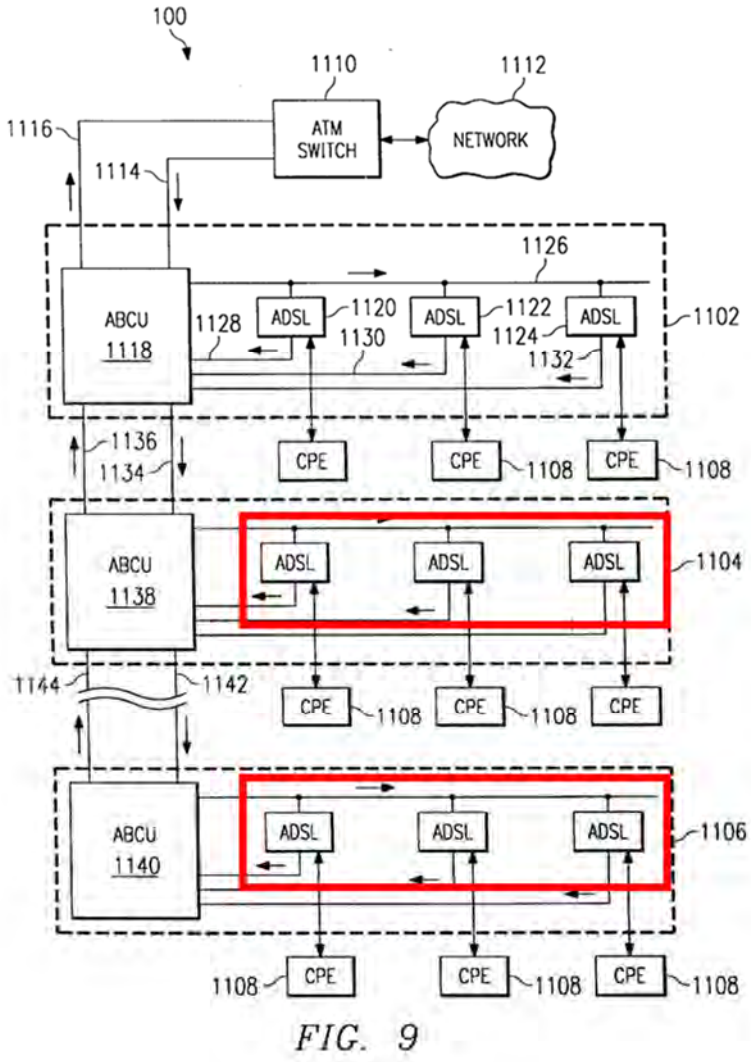
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No.	'904 Patent Claim 14	Nattkemper
		ADSL line cards 24 (×2 for the number of ports per card). Two bits are preferably used to control the rate adaptation circuit for each port." Nattkemper, 28:7-15. *See also*: Nattkemper, 5:15-41 ("FIG. 2 is a block diagram of switching unit 104. Switching unit 104 includes an asynchronous transfer mode bank channel unit (ABCU) card 22 and a plurality of asynchronous digital subscriber line (ADSL) line cards 24. While ADSL line cards 24 are to be described preferably with respect to the asynchronous digital subscriber loop protocol, ADSL line cards 24 may be implemented with other appropriate transmission protocols. In operation, switching unit 104 receives asynchronous transfer mode cells at an ATM cell multiplexer add/drop unit 25. Add/drop unit 25 determines whether each ATM cell received has the appropriate destination and addressing information for a user serviced by ADSL line cards 24 associated with ABCU card 22. If not, then the ATM cell is passed to the next switching unit 104 within switching subsystem 100. If add/drop unit 25 identifies an ATM cell with the correct addressing and destination information, then the ATM cell is forwarded to an appropriate bus interface 26 for transfer to an appropriate ADSL line card 24. The appropriate ADSL line card includes a bus interface 27 to extract the ATM cell and provide it to a transceiver 28 where the ATM cell is placed into the appropriate ADSL transmission format for transmission to a remote unit 29. Remote unit 29 processes the ADSL transmission received from ADSL line card 24 through a transceiver 30, physical layer unit 31, segmentation and resegmentation unit 32 or other appropriate device and a user interface 33 for transmission to an end user.").

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No.	'904 Patent Claim 14	Nattkemper
		 Nattkemper, FIG. 2 Nattkemper, 26:15-23 ("Each ADSL line card 24 preferably provides one register set for each port on the ADSL line card 24. The register may be used to determine whether or not the port needs to capture the cell on the downstream bus. The word coding scheme is set out in the control word format. A second register is provided for system specific communication (e.g., software download). A third default value may be implemented on each port card. This third default value is preferably reserved for system specific broadcast communication.")

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No.	'904 Patent Claim 14	Nattkemper
		 FIG. 9 Nattkemper, FIG. 9 (annotation added)

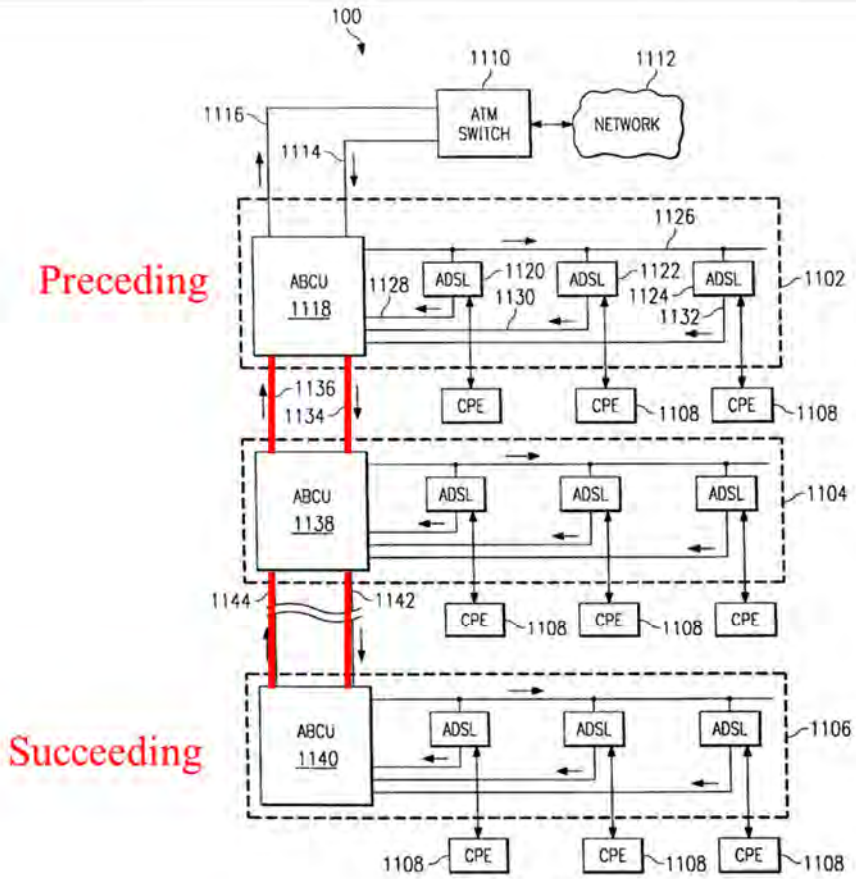
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No.	'904 Patent Claim 14	Nattkemper
		Nattkemper, 53:29-57 ("FIGS. 9-14 provide functional operation perspective of switching subsystem 1100. Referring to FIG. 9, a distributed telecommunications switching subsystem 1100 is shown. Switching subsystem 1100 comprises a plurality of switching units 1102, 1104, and 1106, referred to as channel banks. Each channel bank provides data and/or voice communication services to a plurality of customer premises equipment (CPE) units 1108. A primary channel bank 1102 communicates with a data packet switch 1110, such as an asynchronous transfer mode (ATM) switch 1110, which in turn communicates with a telecommunications network 1112. ATM switch 1110 may, for example, be located at a telephone company central office one or more intermediate channel banks 1104 may be positioned between primary channel bank 1102 and a terminating channel bank 1106. In the preferred embodiment described herein, the primary function of switching subsystem 1100 is to route data packets in the well known ATM cell format from ATM switch 1110 to individual CPE units 1108 and to carry ATM cells from CPE units 1108 to ATM switch 1110. Together, ATM switch 1110 and switching subsystem 1100 provide communication paths between CPE units 1108 and one or more destinations in telecommunications network 1112. It will be understood that the distributed telecommunications switching subsystem and method described herein may also be employed to route digital or analog information encoded in other formats, such as Transmission Control Protocol/Internet Protocol data packets. In the following discussion, ATM cells being sent from ATM switch 1110 through switching units 1102, 1104, and 1106 to CPE units 1108, or any other destination in switching subsystem 1100, will be referred to as traveling in the downstream direction. Any cells sent from CPE units 1108 through switching units 1102, 1104, and 1106 to ATM switch 1110 will be referred to as traveling in the upstream direction.").
14[d]	first and second physical interfaces, coupled to exchange packets with preceding and succeeding units, respectively, along the daisy chain;	Nattkemper discloses first and second physical interfaces, coupled to exchange packets with preceding and succeeding units, respectively, along the daisy chain. For example, Nattkemper discloses unit 1104, with preceding and succeeding lines 1136, 1134, 1142, and 1144 coupled to the preceding and succeeding units, respectively, in a daisy chain. Nattkemper further discloses that these lines are preferably fiber optic cables.

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No.	'904 Patent Claim 14	Nattkemper
		Nattkemper, 53:29-57 ("FIGS. 9-14 provide functional operation perspective of switching subsystem 1100. Referring to FIG. 9, a distributed telecommunications switching subsystem 1100 is shown. Switching subsystem 1100 comprises a plurality of switching units 1102, 1104, and 1106, referred to as channel banks. Each channel bank provides data and/or voice communication services to a plurality of customer premises equipment (CPE) units 1108. A primary channel bank 1102 communicates with a data packet switch 1110, such as an asynchronous transfer mode (ATM) switch 1110, which in turn communicates with a telecommunications network 1112. ATM switch 1110 may, for example, be located at a telephone company central office one or more intermediate channel banks 1104 may be positioned between primary channel bank 1102 and a terminating channel bank 1106. In the preferred embodiment described herein, the primary function of switching subsystem 1100 is to route data packets in the well known ATM cell format from ATM switch 1110 to individual CPE units 1108 and to carry ATM cells from CPE units 1108 to ATM switch 1110. Together, ATM switch 1110 and switching subsystem 1100 provide communication paths between CPE units 1108 and one or more destinations in telecommunications network 1112. It will be understood that the distributed telecommunications switching subsystem and method described herein may also be employed to route digital or analog information encoded in other formats, such as Transmission Control Protocol/Internet Protocol data packets. In the following discussion, ATM cells being sent from ATM switch 1110 through switching units 1102, 1104, and 1106 to CPE units 1108, or any other destination in switching subsystem 1100, will be referred to as traveling in the downstream direction. Any cells sent from CPE units 1108 through switching units 1102, 1104, and 1106 to ATM switch 1110 will be referred to as traveling in the upstream direction.").

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No.	'904 Patent Claim 14	Nattkemper
		 *FIG. 9* Nattkemper, FIG. 9 (annotation added) Nattkemper, 54:18-23 ("Controller 1118 sends cells downstream to intermediate channel bank 1104 via communication line 1134, and receives cells traveling upstream via communication line 1136. Communication lines 1134 and 1136, like lines 1114 and 1116, are preferably fiber optic cables capable of carrying data at the standard OC-3 data rate.").

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No.	'904 Patent Claim 14	Nattkemper
		Nattkemper, 54:24-29 ("Downstream intermediate channel banks 1104 and terminating channel bank 1106 are similar in structure to primary channel bank 1102, each having a controller 1138 and 1140, respectively, and a plurality of subscriber interface cards 1120. Some differences in functionality among the channel banks will become apparent from the description to follow."). Nattkemper, 54:30-40 ("Intermediate channel bank 1104 may be directly coupled to terminating channel bank 1106 by communication lines 1142 and 1144. Alternatively, one or more channel banks may be situated between intermediate channel bank 1104 and terminating channel bank 1106 in a "daisy chain" arrangement, with each channel bank being connected to the previous one by communication lines, as shown. Switching subsystem 1100 preferably comprises up to nine channel banks. Regardless of the number of channel banks in switching subsystem 1100, terminating channel bank 1106 is the last channel bank in the chain."). Nattkemper, 54:41-52 ("Each channel bank 1102, 1104, 1106 may include up to 60 subscriber interface cards 1120, with each subscriber interface card 1120 communicating with up to four separate CPE units 1108. The communication with CPE units 1108 is asymmetric, with an exemplary data rate of six million bits per second (6 Mbps) supplied to the customer and 640 Kbps received from the customer. The type of service provided to the customer may be plain old telephone service (POTS), data service, or any other telecommunications service, and may or may not include a minimum cell rate (MCR) guaranteed for the customer's upstream data communications."). Nattkemper, 56:35-48 ("Processor 1178 may also generate control cells for transmission to downstream channel banks, as will be described more fully below. When processor 1178 generates such a cell, the cell is passed by switch 1180 to CPU queue 1188, which transmits a ready signal to scheduler 1190. Scheduler 1190 preferably controls both bypass queue 1186 and CPU queue 1188 to ensure that CPU queue 1188 receives higher priority than bypass queue 1186. This priority scheme may be implemented in a variety of ways. For example, bypass queue 1186 may be allowed to dequeue a cell only when CPU queue 1188 is empty. Because the frequency of control cells is low, this priority scheme does not significantly impede downstream traffic.").

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No.	'904 Patent Claim 14	Nattkemper
		Nattkemper, 56:60-67 ("If controller 1150 is implemented in a downstream channel bank, i.e. a channel bank other than primary channel bank 1102, then processor 1178 may also generate control cells for transmission to upstream channel banks, as will be described more fully below. When processor 1178 generates such a cell, the cell is passed by switch 1180 to a CPU queue 1196, which transmits a ready signal to scheduler 1200. When scheduler 1200 sends a transmit signal to CPU queue 1196, the control cell is transmitted to coupler 1202 and on to fiber optic cable 1154."). Nattkemper, 60:57-63 ("The credit allowance word for a channel bank indicates the number of cells in a control cycle that are allotted to that channel bank for transmission upstream. For example, if the control cycle length is 128 cells, and the credit allowance word for channel bank 1104 has a value of 43, then controller 1138 may transmit 43 cells upstream on fiber optic cable 1136 during the next 128-cell interval.").
14[e]	a pre-switch, coupled to receive packets from the first physical interface and responsive to address data carried by the packets, to sort the packets such that packets addressed to the slave unit are retained, and packets addressed to the succeeding units are passed to the second physical interface; and	Nattkemper discloses a pre-switch, coupled to receive packets from the first physical interface and responsive to address data carried by the packets, to sort the packets such that packets addressed to the slave unit are retained, and packets addressed to the succeeding units are passed to the second physical interface. For example, Nattkemper discloses a virtual circuit that has a virtual circuit lookup table that is used for determining whether a cell is destined for the ABCU. Nattkemper further discloses that if a match occurs, the cell is scheduled for transmission, and if there is no match, another comparison is performed downstream. Nattkemper, 58:45-52 ("Internal switching controller 1206 transmits cells to controller 1138 via fiber optic cable 1144. To accomplish this, cells are transmitted to a plurality of FIFO queues 1220 and 1222 controlled by a scheduler 1224. When triggered by scheduler 1224, each queue 1220 or 1222 dequeues one or more cells, transmitting the cells to a fiber optic coupler 1226 which converts the data signals to optical signals for transmission over fiber optic cable 1144.").

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No.	'904 Patent Claim 14	Nattkemper
		Nattkemper, 58:30-40 ("Referring to FIG. 12, a functional block diagram of controller 1140 is shown. Controller 1140 is similar in structure to controller 1150 described above in connection with FIG. 10. However, because controller 1140 controls terminating channel bank 1106 in switching subsystem 1100, controller 1140 does not receive or transmit cells to any downstream channel banks. For the purposes of this description only, it will be assumed that switching subsystem 1100 comprises only three channel banks and that controller 1140 therefore communicates directly with controller 1138.").

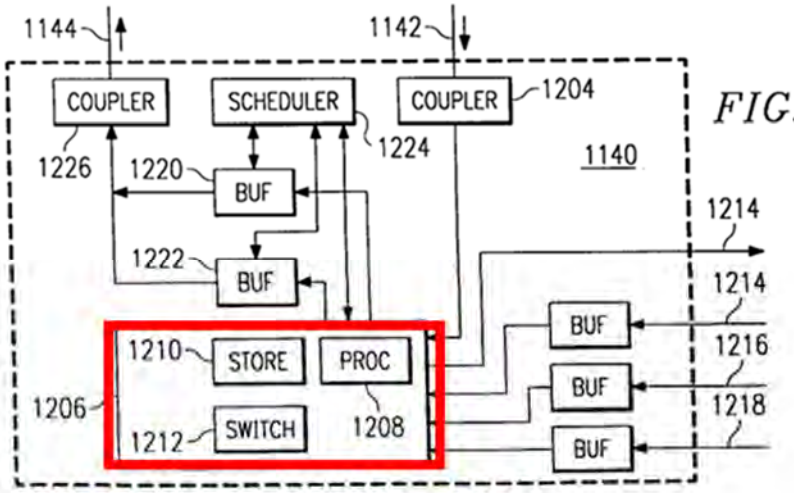


FIG. 12

Nattkemper, FIG. 12 (annotation added)

Nattkemper, 59:16-21 ("Cells addressed to valid upstream destinations are transmitted by switch 1212 to ingress queue 1220. Processor 1208 may also generate control cells for transmission to upstream channel banks, as will be described more fully below. When processor 1208 generates such a cell, the cell is passed by switch 1212 to a CPU queue 1222.").

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No.	'904 Patent Claim 14	Nattkemper
		Nattkemper, 59:30-35 ("From the foregoing description, it will be appreciated that switching subsystem 1100 provides distributed telecommunications switching which features several advantages over a traditional tree structure. Each channel bank only stores a limited number of addresses pertaining to customers directly serviced by the channel bank, and is effectively independent of the other channel banks in the system.").

TABLE A

Octet	Function
1-5	standard ATM header
6	4 bits OAM type 4 bits Function type
7-8	Control command word - containes length of control cycle in cell times
9-24	8 words of 16 bits contain the credit allowance for each of the 8 daisy chained channel banks octets 9 and 10 are for the first channel bank octets 23 and 24 are for the last channel bank
25-46	spare
47-48	6 bits reserved 10 bits for CRC-10

Nattkemper, 60:26-43 (Table A).

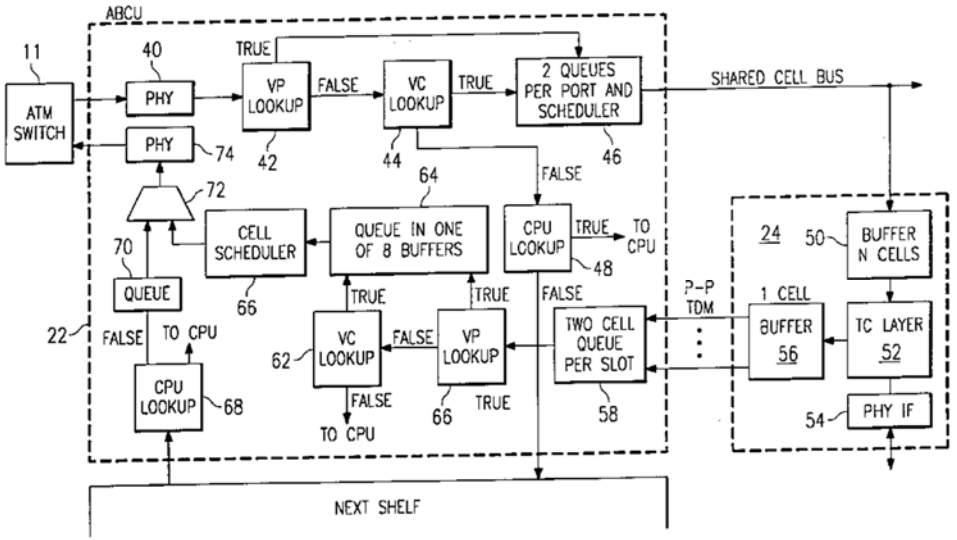
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No.	'904 Patent Claim 14	Nattkemper
		TABLE B Octet — Function 1-5 — standard ATM header 6 — 4 bits OAM type 4 bits Function type 7-12 — 8 words of 16 bits contain the status for each of the 8 daisy chained channel banks octets 7 and 8 are for the first channel bank octets 21 and 22 are for the last channel bank 23-44 — spare 45-46 — Number of cells in upstream bypass queue or last Releae Two shelf 47-48 — 6 bits reserved 10 bits for CRC-10 Nattkemper, 61:35-51 (Table B). Nattkemper, 8:33-50 ("A virtual circuit (VC) lookup sequence is triggered by the VP--lookup-- failure indication from the previous state. The virtual circuit lookup is preferably implemented in hardware by a sorted list that supports a maximum of 2K virtual paths. The process starts near the middle of the list and tests to see if the current 24/28 bit virtual circuit bit pattern is equal to, greater than or less than the pattern from the VP-- descriptor entry. This hardware test preferably requires 2 clock cycles, or less, to complete. At 50 MHZ, this would permit 25 iterations each requiring 40 ns before the 1.0 μs deadline. For a VC range that is a power of 2, the number of iterations is equal to the exponent plus one (211 supports 2000 virtual circuits which requires 11+1=12 iterations) This design, whether implemented in

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No.	'904 Patent Claim 14	Nattkemper
		software, firmware, or an Application-Specific Integrated Circuit (ASIC) may be used in OC-3, OC-12, or other applications. This design further may support applications having 64,000 virtual circuits or more."). Nattkemper, 5:57-6:17 ("FIG. 3 is a simplified block diagram of ABCU card 22. In the downstream direction, ABCU card 22 receives asynchronous transfer mode cells from ATM switch 12 at a physical layer interface 40. A downstream virtual path (VP) lookup table 42 and a downstream virtual circuit (VC) lookup table 44 are used in determining whether the ATM cell is destined for this ABCU card 22. A comparison is done at downstream VP lookup table 42 to determine whether there is a match in the VP addressing. If a match occurs, the ATM cell is placed into an appropriate queue 46 and is scheduled for transmission to associated ADSL line card 24. If a match did not occur at downstream VP lookup table 42, a comparison is done at downstream VC lookup table 44. If a match occurs at downstream VC lookup table 44, then the ATM cell is sent to queue 46. If a match still has not occurred, a downstream CPU lookup table 48 is consulted to determine if the ATM cell is a control cell to be processed by the CPU on the ABCU card 22. If a match occurs at the downstream CPU lookup table 48, the ATM cell is passed to the CPU of ABCU card 22. If there is still no match, then the ATM cell is not destined for this ABCU card 22. The ATM cell is then passed to the next switching unit 104 within switching subsystem 100. The next switching unit 104 performs a similar lookup process described above. ATM cells provided to ADSL line card 24 are placed into a buffer 50, processed by a transmission convergence layer 52, and sent to the remote unit 29 through a physical layer interface 54.").

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No.	'904 Patent Claim 14	Nattkemper
		 *FIG. 3* Nattkemper, FIG. 3 Nattkemper, 24:51-60 ("The mapping function for the signaling cell routing is implemented by a hardware VC-descriptor sorted list lookup on the ABCU card 22. The ABCU card 22 resident CPU maintains a database that provisions the VC-- descriptor of the ingress streams from the I/O cards and a second VP-- descriptor for the egress cell stream from the ATM switch 12. This database can be provisioned in cooperation with the virtual UNI resident in the ATM switch 12. The virtual UNI in the ATM switch 12 terminates the Q.2931 signaling streams.") Nattkemper, 1:25-31 ("To route addressed data or otherwise communicate with one of the CPE units, the central office determines which branch of the tree services the CPE unit in question. The data is then passed to the switching system for that branch, which in turn passes

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No.	'904 Patent Claim 14	Nattkemper
		the data on to the next lower level in the switching hierarchy, and so on, until the data reaches the CPE unit."). Nattkemper, 1:32-41 ("This routing scheme requires that each switching system at each level in the hierarchy must store address and routing information for all of the CPE units serviced by it. If the customer base is expanded to include additional CPE units, then all switching systems routing traffic to the new CPE units must be reprogrammed to store the new address and routing information. Therefore, it is desirable to avoid establishing, maintaining, and updating address and routing information storage for the entire network at each switching system therein."). Nattkemper, Claim 9 ("The method of claim 8, further comprising the step of performing a validity check by the processor on an address portion of each one of the first plurality of customer-generated data packets."). Nattkemper, 24:4-21 ("The signaling VCs from each of the end users can be tunneled through switching subsystem 100 to the CO resident ATM switch 12. The tunneling approach maps the default user signaling virtual circuit (VC=5, VP=0) to the ATM switch 12 as a function of the provisioned VP-- descriptor, which translates the address toward the ATM switch (the approach may be VC=5, VP=geographic slot address+port number). The value VP=0 is preferably not used. The scheme may support up to four interfaces per card or more. The CO ATM switch 12 UNI treats each of these virtual circuits (VC=5, VP=x) as signaling channels. Switching subsystem 100 does not terminate the signaling channels. The mapping function for the signaling streams is implemented by the VCI/VPI header translation logic for the supported 2000 virtual circuits. Thus, each port consumes a single virtual circuit translation resource for the signaling channel mapping to the UNI on the CO-resident ATM switch 12."). Nattkemper, 24:33-50 ("Within the VP address range, switching subsystem 100 is provisioned for the required number of PVCs. In the event SVC support is required, the mapping scheme described above (for the signaling channel) could also be used to provide SVC capabilities. This is referred to as VPI tunneling, and each user port is mapped to the ATM switch 12. This scheme uses the VPI address bits to uniquely identify each user. If a

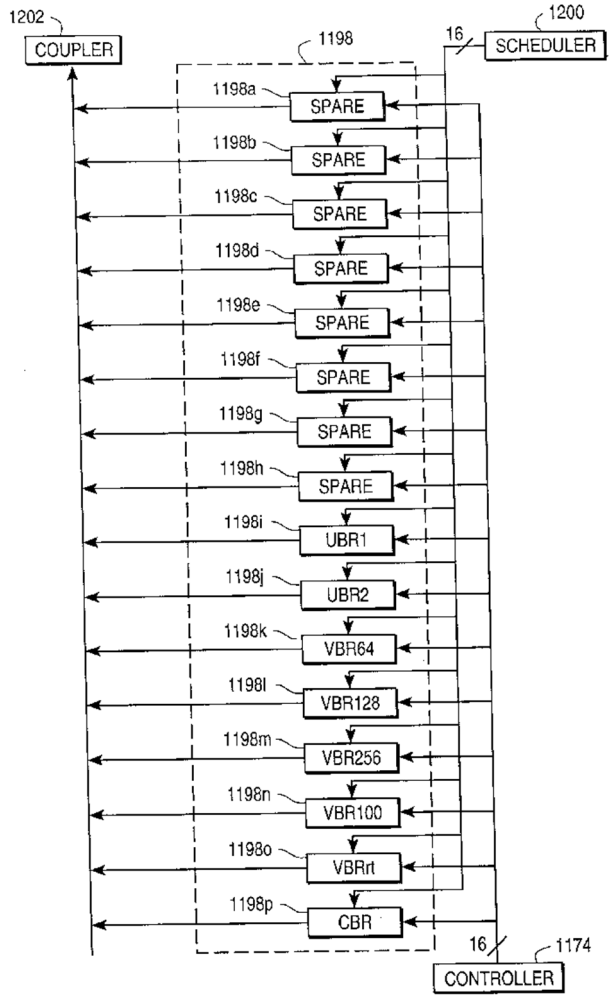
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No.	'904 Patent Claim 14	Nattkemper
		virtual path connection is provisioned in the VP-- descriptor, then only the VPI bits are used to route the cells between each user and the ATM switch 12. The remaining VCI bits are available for SVC/PVC connections to the user end points. In this implementation, preferably the virtual path connections are unique and no virtual circuit connections will reside with the VP address range (i.e., the VP-- descriptors are mutually exclusive). For the virtual path scenario, the CAC process runs in the ATM switch 12 and provisions circuits, PVC or SVC, using the VCI field."). Nattkemper, 31:60-32:6 9 ("The cell assembly unit on the ABCU card 22 for the upstream paths will append the geographic address field and other information to conform with the encapsulated cell format. The ADSL line card itself generates the port address field. As stated, the VP and VC routing decision for the data path may be made as a function of the relevant VCI/VPI bits from the cell header. However, the header alone does not normally ensure the cell came from a unique port. Thus, the geographic address and the port ID information is used to uniquely identify the source of the cell. The VCI/VPI field in the cell header does not guarantee that each UNI will use different values (e.g., ports might use the same signaling channel VPI/VCI). These control or signaling cells may be stripped out of the stream and presented to the CPU."). Nattkemper, 55:39-48 ("Address storage system 1176 stores a list of addresses corresponding to the CPE units 1108 serviced by controller 1150. In the preferred embodiment, each address identifies a virtual path and virtual circuit for a CPE unit 1108 in an addressing format well known to those skilled in the art of ATM communications. However, it will be appreciated that other addressing systems, such as Internet Protocol addressing, may be used to identify cell destinations both within and outside switching subsystem 1100."). Nattkemper, 56:20-27 ("Returning to controller 1150, if the address of the cell did not match any of the addresses stored in address storage system 1176, then processor 1178 compares the address of the cell to a processor address to determine whether the cell is a control cell addressed to processor 1178. If the address matches the processor address, then the control cell is processed by processor 1178 in a manner to be described below.").

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No.	'904 Patent Claim 14	Nattkemper
		Nattkemper, 57:1-7 ("If the cell address does not match the processor address, then the cell is sent by switch 1180 to a bypass queue 1194. When bypass queue 1194 receives a cell, it sends a ready signal to scheduler 1200, which coordinates transmissions over fiber optic cable 1154. When scheduler 1200 sends a transmit signal to bypass queue 1194, the cell is transmitted to coupler 1202 and onto fiber optic cable 1154.").
14[f]	a fabric of one or more switches, which convey the retained packets to the ports, responsive to the address data.	Nattkemper discloses a fabric of one or more switches, which convey the retained packets to the ports, responsive to the address data. For example, Nattkemper discloses internal switching controllers that analyze the address of the cell received by subscriber lines. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Nattkemper, 56:20-27 ("Returning to controller 1150, if the address of the cell did not match any of the addresses stored in address storage system 1176, then processor 1178 compares the address of the cell to a processor address to determine whether the cell is a control cell addressed to processor 1178. If the address matches the processor address, then the control cell is processed by processor 1178 in a manner to be described below.").

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No.	'904 Patent Claim 14	Nattkemper
		 FIG. 11 Nattkemper, FIG. 11

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No.	'904 Patent Claim 14	Nattkemper
		Nattkemper, 54:61-55:31 ("Referring to FIG. 10, a functional block diagram of an upstream controller 1150 in accordance with the invention is shown. Controller 1150 may be implemented in switching subsystem 1100 as controller 1118 or 1138, or as a controller for another intermediate channel bank situated between intermediate channel bank 1104 and terminating channel bank 1106. Controller 1150 receives cells traveling downstream from ATM switch 1110 or another controller in an upstream channel bank via fiber optic cable 1152 and send cells upstream from a downstream channel bank via fiber optic cable 1154. Controller 1150 sends cells downstream to another channel bank via fiber optic cable 1156 and receives cells upstream from a downstream channel bank via fiber optic cable 1158. Controller 1150 transmits appropriate cells downstream to subscriber interface cards 1120 on a shared high speed cell bus 1160. When a large number of subscriber interface cards 1120 are serviced by controller 1150, high speed cell bus 1160 may comprise a plurality of separate lines, each carrying the same high speed signal to a separate set of subscriber interface cards 1120. For example, in a configuration with 60 subscriber interface cards being serviced by controller 1150, high speed cell bus 1160 may comprise three separate lines, each connected to 20 subscriber interface cards 1120, but each carrying cells addressed to all of the subscriber interface cards 1120. Each subscriber interface card 1120 sends cells upstream to controller 1150 via a separate subscriber bus interface line 1162, 1164, or 1166. In addition to carrying ATM traffic, subscriber bus interface lines 1162, 1164, and 1166 may also carry telephone traffic from POTS subscribers. In that case, the POTS traffic may be separated out from the ATM traffic and processed by other equipment not shown. This separation occurs before the processing of ATM cells described herein. The downstream communication of POTS traffic to subscriber interface cards 1120 may occur on lines other than high speed cell bus 1160."). Nattkemper, 5:57-6:17 ("FIG. 3 is a simplified block diagram of ABCU card 22. In the downstream direction, ABCU card 22 receives asynchronous transfer mode cells from ATM switch 12 at a physical layer interface 40. A downstream virtual path (VP) lookup table 42 and a downstream virtual circuit (VC) lookup table 44 are used in determining whether the ATM cell is destined for this ABCU card 22. A comparison is done at downstream VP lookup table 42 to determine whether there is a match in the VP addressing. If a match occurs, the

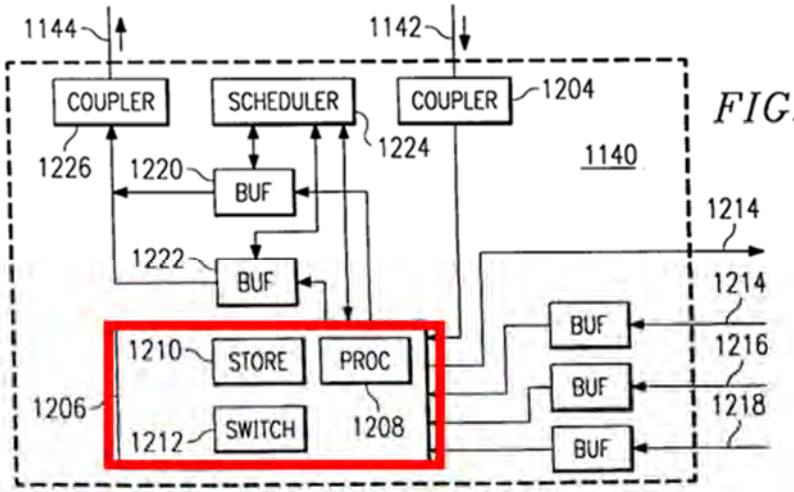
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No.	'904 Patent Claim 14	Nattkemper
		ATM cell is placed into an appropriate queue 46 and is scheduled for transmission to associated ADSL line card 24. If a match did not occur at downstream VP lookup table 42, a comparison is done at downstream VC lookup table 44. If a match occurs at downstream VC lookup table 44, then the ATM cell is sent to queue 46. If a match still has not occurred, a downstream CPU lookup table 48 is consulted to determine if the ATM cell is a control cell to be processed by the CPU on the ABCU card 22. If a match occurs at the downstream CPU lookup table 48, the ATM cell is passed to the CPU of ABCU card 22. If there is still no match, then the ATM cell is not destined for this ABCU card 22. The ATM cell is then passed to the next switching unit 104 within switching subsystem 100. The next switching unit 104 performs a similar lookup process described above. ATM cells provided to ADSL line card 24 are placed into a buffer 50, processed by a transmission convergence layer 52, and sent to the remote unit 29 through a physical layer interface 54.") Nattkemper, 57:44-63 ("In an alternative embodiment of controller 1150, ingress queue 1198 actually comprises 16 separate ingress queues, as shown in FIG. 11. Each ingress queue 1198a-1198p is assigned a separate priority. As in the previous embodiment, a priority scheme is enforced by scheduler 1200."). Nattkemper, 57:49-63 ("The priority scheme allows each queue to provide different classes of service to customers. For example, each ingress queue may receive cells belonging to one of the well-known ATM cell traffic classes, as illustrated in FIG. 11. In this example, ingress queues 1198a through 1198h are spare queues, ingress queue 1198i receives unspecified bit rate (UBR) traffic with fair performance, ingress queue 1198j receives UBR traffic with good performance, ingress queues 1198k, 1198l and 1198m receive variable bit rate (VBR) traffic with guaranteed minimum cell rates of 64 Kbps, 128 Kbps and 256 Kbps, respectively, ingress queue 1198n receives VBR traffic with guaranteed 100% cell throughput, ingress queue 1198o receives real-time variable bit rate (VBR) traffic, and ingress queue 1198p receives constant bit rate (CER) traffic."). Nattkemper, 58:53-59:21 ("For downstream operation, controller 1140 receives ATM cells from upstream channel bank 1104 on fiber optic cable 1142. A processor 1208 of internal switching controller 1206 compares the address portion of a received cell to the list of

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No.	'904 Patent Claim 14	Nattkemper
		addresses stored in address storage system 1210. If a match is found, then a switch 1212 transmits the cells to the subscriber interface cards 1120 associated with controller 1140 on shared high speed cell bus 1214. If the address of the cell does not match any of the addresses stored in address storage system 1210, then processor 1208 compares the address of the cell to its own address to determine whether the cell is a control cell addressed to processor 1208. If the address matches the processor address, then the control cell is processed by processor 1208 in a manner to be described below. If the cell address does not match the processor address, then the cell has failed to match any of the addresses serviced by switching subsystem 1100. At this point, the cell is deemed a mis-inserted cell and is processed by processor 1208 which may gather statistics on such cells. Mis-inserted cells may, for example, indicate that an unauthorized party is attempting to receive service from switching subsystem 1100. In the upstream direction, cells are received from the local CPE units 1108 serviced by controller 1140 on subscriber bus interface lines 1215, 1216, and 1218. As previously noted, controller 1140 may receive cells from up to 60 subscriber bus interface lines. Processor 1208 checks the address portion of each cell to determine whether the cell is addressed to processor 1208 itself or to a valid upstream destination. Cells addressed to valid upstream destinations are transmitted by switch 1212 to ingress queue 1220. Processor 1208 may also generate control cells for transmission to upstream channel banks, as will be described more fully below. When processor 1208 generates such a cell, the cell is passed by switch 1212 to a CPU queue 1222.")

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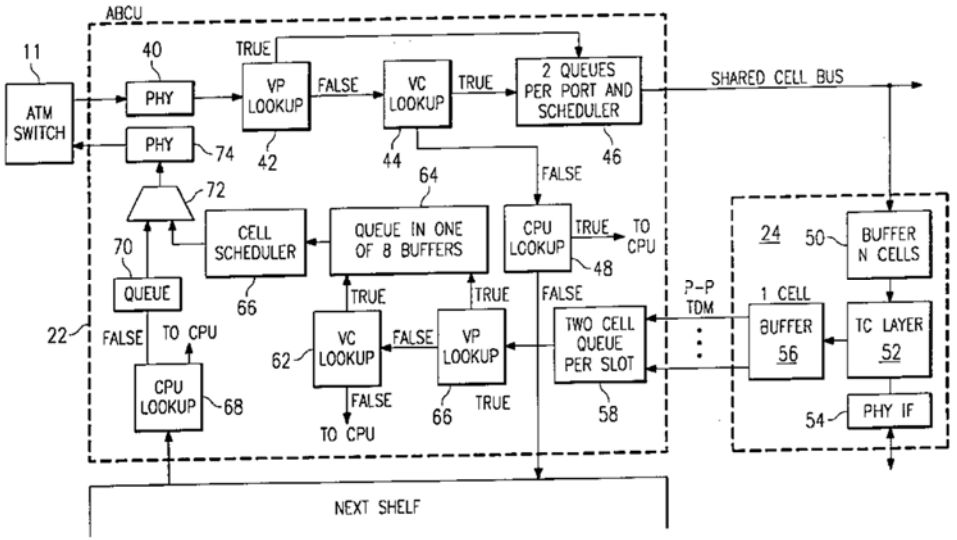
No.	'904 Patent Claim 14	Nattkemper
		 FIG. 12 Nattkemper, FIG. 12 (annotation added)

No.	'904 Patent Claim 15	Nattkemper
15	The slave unit according to claim 14, wherein the pre-switch is further coupled to receive packets transferred thereto from the second physical interface and to sort the packets in like manner to the packets received through the first physical interface.	Nattkemper discloses the slave unit according to claim 14, wherein the pre-switch is further coupled to receive packets transferred thereto from the second physical interface and to sort the packets in like manner to the packets received through the first physical interface. For example, Nattkemper discloses receiving cells in the opposite direction, that are processed by an upstream lookup table to determine whether the packets will be transmitted to ADSL cards or to pass on further upstream to be analyzed by a further lookup table. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Nattkemper, 5:57-6:17 ("FIG. 3 is a simplified block diagram of ABCU card 22. In the downstream direction, ABCU card 22 receives asynchronous transfer mode cells from ATM switch 12 at a physical layer interface 40. A downstream virtual path (VP) lookup table 42

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No.	'904 Patent Claim 15	Nattkemper
		and a downstream virtual circuit (VC) lookup table 44 are used in determining whether the ATM cell is destined for this ABCU card 22. A comparison is done at downstream VP lookup table 42 to determine whether there is a match in the VP addressing. If a match occurs, the ATM cell is placed into an appropriate queue 46 and is scheduled for transmission to associated ADSL line card 24. If a match did not occur at downstream VP lookup table 42, a comparison is done at downstream VC lookup table 44. If a match occurs at downstream VC lookup table 44, then the ATM cell is sent to queue 46. If a match still has not occurred, a downstream CPU lookup table 48 is consulted to determine if the ATM cell is a control cell to be processed by the CPU on the ABCU card 22. If a match occurs at the downstream CPU lookup table 48, the ATM cell is passed to the CPU of ABCU card 22. If there is still no match, then the ATM cell is not destined for this ABCU card 22. The ATM cell is then passed to the next switching unit 104 within switching subsystem 100. The next switching unit 104 performs a similar lookup process described above. ATM cells provided to ADSL line card 24 are placed into a buffer 50, processed by a transmission convergence layer 52, and sent to the remote unit 29 through a physical layer interface 54.”).

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No.	'904 Patent Claim 15	Nattkemper
		 *FIG. 3* Nattkemper, FIG. 3 Nattkemper, 6:30-41 ("ABCU card 22 also receives ATM cells from another switching unit 104. ATM cells received from another switching unit 104 are processed by an upstream CPU lookup table 68 determined whether the receive cell is a control cell. If so, the ATM cell received from another switching unit 104 is passed to the CPU of ABCU card 22 for further processing. If it is not a control cell, the ATM cell received from another switching unit 104 is placed into a hop queue 70. A selector 72 determines which of the cells in the hop queue 70 and the cells identified by the credit scheduler 66 from the upstream queue 64 are to be transmitted through a physical layer interface 74 to ATM switch 12."). Nattkemper, 6:42-57 ("FIG. 4 provides a more detailed view of ABCU card 22. ABCU card 22 may have a switch controller 80 that performs the VP and VC lookup of ATM cells received from ATM switch 12. If a VC or VP match occurs a controller 80, the ATM cells

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No.	'904 Patent Claim 15	Nattkemper
		passed to queue 46 are sent to an appropriate ADSL line card 24 as determined by a scheduler 82. A rate adapter transfers the ATM cell from queue 46 over the cell bus to ADSL line card 24 at the appropriate rate as determined by an adapter controller 86. If a lookup match does not occur at controller 80, the ATM cells are placed into a CPU queue if determined to be a control cell, or a bypass queue area 88 for transfer to the next switching unit 104. Transfer from the bypass/CPU queue 88 is determined by a scheduler 90. ATM cells within bypass queue 88 are transferred to a TC layer 92 and a physical layer interface 93 to the next switching unit 104.").

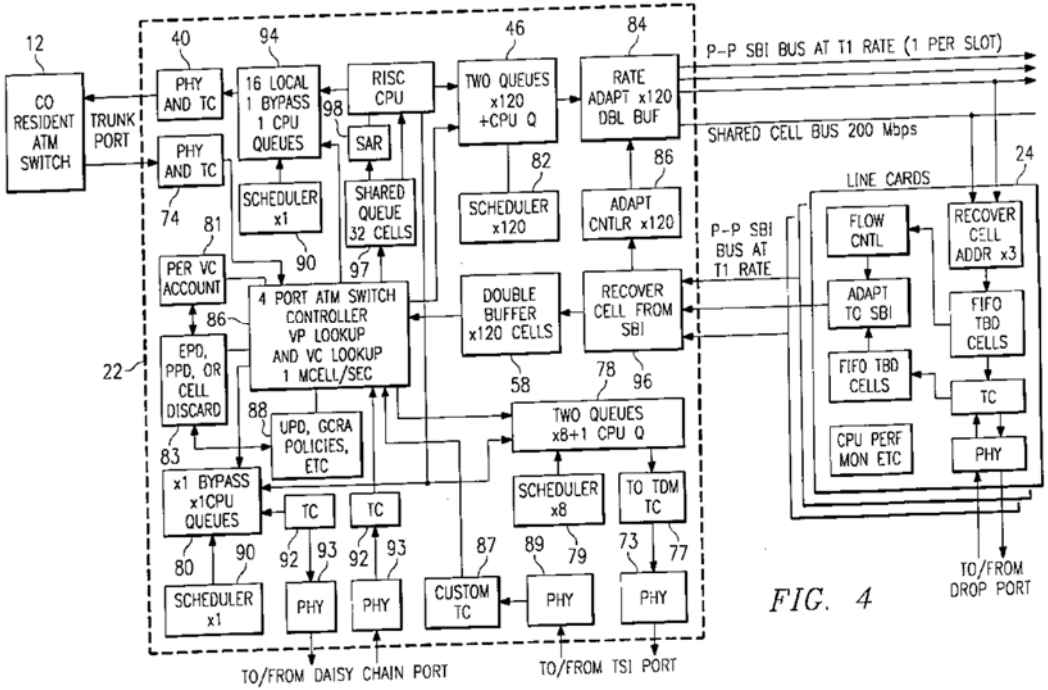


FIG. 4

Nattkemper, FIG. 4

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No.	'904 Patent Claim 15	Nattkemper
		Nattkemper, 8:12-16 ("The logic resident on the ABCU card 22 implements the cell routing function for any ingress cells from either the network OC-3c, the daisy chain OC-3c or the Upstream time division multiplexed (TDM) bus stream. The virtual circuit validation process is a two stage process."). Nattkemper, 8:33-50 ("A virtual circuit (VC) lookup sequence is triggered by the VP--lookup-- failure indication from the previous state. The virtual circuit lookup is preferably implemented in hardware by a sorted list that supports a maximum of 2K virtual paths. The process starts near the middle of the list and tests to see if the current 24/28 bit virtual circuit bit pattern is equal to, greater than or less than the pattern from the VP-- descriptor entry. This hardware test preferably requires 2 clock cycles, or less, to complete. At 50 MHZ, this would permit 25 iterations each requiring 40 ns before the 1.0 μs deadline. For a VC range that is a power of 2, the number of iterations is equal to the exponent plus one (211 supports 2000 virtual circuits which requires 11+1=12 iterations) This design, whether implemented in software, firmware, or an Application-Specific Integrated Circuit (ASIC) may be used in OC-3, OC-12, or other applications. This design further may support applications having 64,000 virtual circuits or more."). Nattkemper, 24:51-64 ("The mapping function for the signaling cell routing is implemented by a hardware VC-descriptor sorted list lookup on the ABCU card 22. The ABCU card 22 resident CPU maintains a database that provisions the VC-- descriptor of the ingress streams from the I/O cards and a second VP-- descriptor for the egress cell stream from the ATM switch 12. This database can be provisioned in cooperation with the virtual UNI resident in the ATM switch 12. The virtual UNI in the ATM switch 12 terminates the Q.2931 signaling streams. In addition, the interface to the ATM switch 12 port can be provisioned to support the NNI cell header format. In this case, the mapping scheme defined above is extended to support more VPs per shelf and N daisy chained shelves."). Nattkemper, 25:30-45 ("The virtual circuit lookup sequence is triggered by the VP-- lookup-- failure indication from the previous state. The virtual circuit lookup is preferably implemented in hardware by a sorted list that supports 4000 or more virtual paths. The process

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No.	'904 Patent Claim 15	Nattkemper
		starts near the middle of the list and tests to see if the current 24/28 bit virtual circuit bit pattern is equal to, greater than, or less than the pattern from in the VC-- descriptor entry. This hardware test is fast, preferably producing a result within 2 clock cycles. At 50 MHZ, this rate permits 25 iterations of 40 ns per iteration within the 1.0 us deadline. For a VC range that is a power of 2, the number of iterations is equal to the exponent plus one (e.g., 211 supports 2K virtual circuits which requires 11+1=12 iterations). This performance may allow this architecture to be reused in future OC-12 applications while supporting 64000 virtual circuits or more."). Nattkemper, 13:41-57 ("Switching subsystem 100 may be either a deterministic ingress traffic multiplexer that may be distributed over a number of switching units 104 or a statistical ingress traffic multiplexer that also supports a distribution of multiplexer functions over a number of switching units 104. Switching subsystem 100 may also include advanced queuing and congestion avoidance policies. In the downstream direction, switching subsystem 100 support oversubscription with queuing and congestion avoidance policies and is permanent virtual circuit (PVC) based. Switching subsystem 100 uses a centralized shared memory ATM switch fabric. Switching subsystem 100 is preferably capable of supporting an aggregate downstream cell rate of 370,000 cells per second and an upstream burst aggregate cell rate of 222,000 cells/sec for each of nine switching units 104. The aggregate ingress rate for switching subsystem 100 is therefore 2,000,000 cells/sec. The downstream rate supports one full OC-3c.") Nattkemper, 4:16-38 ("ATM cells include information such as virtual path ("VP") and virtual circuit ("VC") routing information, and information concerning their termination ("terminating information"). Each switching unit 104 analyzes and evaluates the information included with each ATM cell. If the ATM cell identifies VP or VC routing information that is associated with a particular switching unit 104 analyzing the cell, then the cell is forwarded by that particular switching unit to the appropriate destination. Similarly, if the ATM 104 cell includes terminating information that is associated with the particular switching unit 104 evaluating the cell, then the cell is terminated by that particular switching unit 104. In the absence of matching routing or terminating information between the ATM cell and the evaluating switching unit 104, then the evaluating unit passes the cell downstream to the next

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No.	'904 Patent Claim 15	Nattkemper
		switching unit 104. That switching unit 104 will then undertake similar analyses and evaluations. As a result, certain switching units 104 are operable to forward or terminate certain ATM cells. However, when the multiple switching units 104 are considered collectively, they are able to either forward or terminate all of the ATM cells. As such, the switching subsystem 100 provides for a distributed switching technique.").

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Chart for U.S. Patent 6,680,904 ("the '904 Patent")
Trendnet TE100-DM/DS Series Dual-Speed Hub User's Guide ("TRENDnet Stackable Hubs")

As shown in the chart below, all Asserted Claims of the '904 Patent are invalid under (1) 35 U.S.C. §§ 102 (a) and (g) because the TRENDnet Stackable Hubs meet each element of those claims, (2) 35 U.S.C. §§ 102 (a) and (b) because the references describing the TRENDnet Stackable Hubs discloses each element of each Asserted Claim, and/or (3) 35 U.S.C. § 103 because the TRENDnet Stackable Hubs render those claims obvious either alone, or in combination with the knowledge of a person having ordinary skill in the art, and in further combination with the references specifically identified below and in the following claim chart and/or one or more references identified in Defendant's Preliminary Invalidity Contentions. The following quotations and diagrams come from documents that show the TRENDnet Stackable Hubs were on sale and in public use by at least January 1999 and describe their functionality.

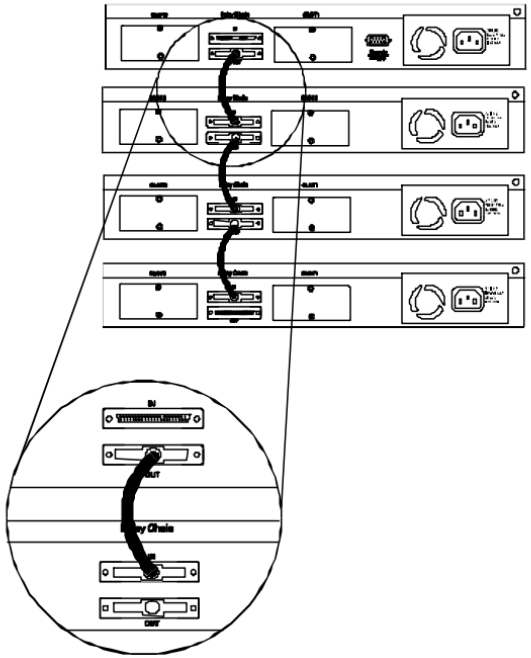
- TRENDnet TE100-DM/DS Series Dual-Speed Hub User's Guide ("TRENDnet Stackable Hubs") (TRENDNET0000005-113);
- TRENDnet TE100-DSM, TE100-DFXM, TE100-DTXM Hub Expansion Module User's Guide ("TRENDnet Expansion Guide");
- TRENDnet Press Release, Introducing the TRENDnet LAN Cruiser 10/100Mbps Series: Dual Speed Stackable Hubs ("TRENDnet Press Release");
- DLink DFE-2600 Series Ethernet/Fast Ethernet Dual-Speed Managed/Unmanaged Stackable Hubs User's Guide ("DLink User Guide");
- 1998-08-17 TRENDnet Fax Request (TRENDNET0000124);
- 1998-11-02 TRENDnet Tech Support Email Correspondence (TRENDNET0000125);
- 1998-11-19 TRENDnet Tech Support Email Correspondence (TRENDNET0000126);
- 1999-01-05 TRENDnet Tech Support Email Correspondence (TRENDNET0000127);
- 1999-02-03 TRENDnet Tech Support Email Correspondence (TRENDNET0000128);
- 1999-03-08 TRENDnet Tech Support Email Correspondence (TRENDNET0000129);
- The March 23, 2023 Declaration of Sonny Su; and
- 1999-09-15 TRENDnet RMA [Return Merchandise Authorization] Form (TRENDNET0000130).

Motivations to combine the disclosures in the TRENDnet Stackable Hubs with disclosures in other publications known in the art, as explained in this chart, include at least the similarity in subject matter between the references to the extent they concern methods of stacking switches within a network. Insofar as the references cite other patents or publications, or suggest additional changes, one of ordinary skill in the art would look beyond a single reference to other references in the field.

These invalidity contentions are based on Defendant's present understanding of the Asserted Claims, and Orckit's apparent construction of the claims in its November 3, 2022 Disclosure of Asserted Claims and Infringement Contentions Pursuant to P.R. 3-1, and Orckit's January 19, 2023 First Amended Disclosure of Asserted Claims and Infringement Contentions Pursuant to P.R. 3-1 (Orckit's "Infringement Disclosures"), which is deficient at least insofar as it fails to cite any documents or identify accused structures, acts, or materials in the Accused Products with particularity. Defendant does not agree with Orckit's application of the claims, or that the claims satisfy the requirements of 35 U.S.C. § 112. Defendant's contentions herein are not, and should in no way be seen as, admissions or adoptions as to any particular claim scope or construction, or as any admission that any particular element is met by any accused product in any particular way. Defendant objects to any attempt to imply claim construction from this chart. Defendant's prior art invalidity contentions are made in a variety of alternatives and do not represent Defendant's agreement or view as to the meaning, definiteness, written description support for, or enablement of any claim contained therein.

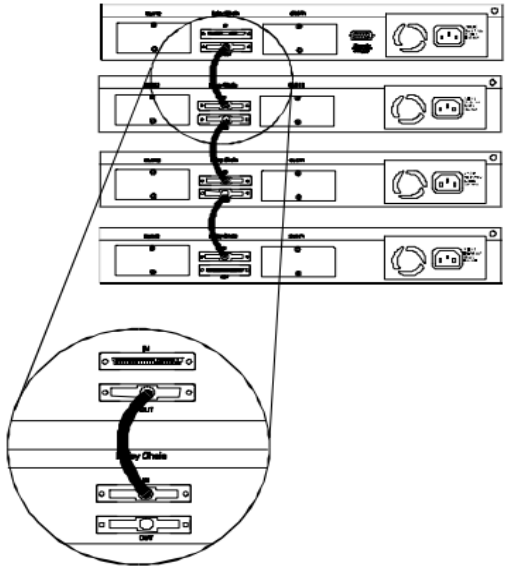
The following contentions are subject to revision and amendment pursuant to Federal Rule of Civil Procedure 26(e), the Local Rules, and the Orders of record in this matter subject to further investigation and discovery regarding the prior art and the Court's construction of the claims at issue.

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
1[preamble]	Network access apparatus, comprising:	TRENDnet Stackable Hubs disclose a network access apparatus. For example, TRENDnet Stackable Hubs disclose a TE100-DM/DS hub stack, that is designed to allow easy migration and integration between 10Mbps Ethernet and 100Mbps Fast Ethernet networks. The TE100-DM/DS hub stack includes multiple TE100-DM/DS hub units. *See generally* TRENDNET0000001-130. TRENDnet Stackable Hubs at Page No. 15 ("[The TE100-DM/DS series dual-speed stackable Ethernet/Fast Ethernet hubs are designed to allow easy migration and integration between 10Mbps Ethernet and 100Mbps Fast Ethernet, while providing manageability and flexibility

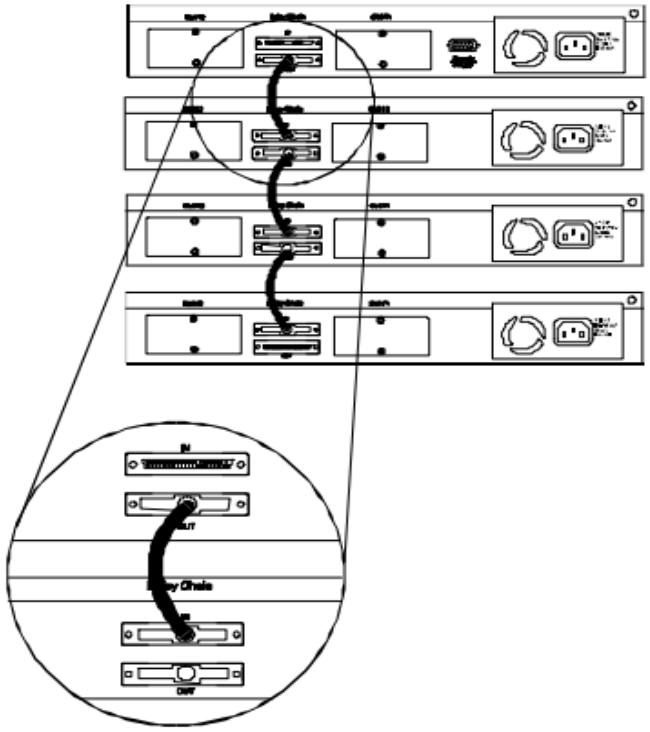
No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		in cable connections. The TE100-DM/DS hubs can operate with either IEEE 802.3 10BASE-T connections (twisted-pair Ethernet operating at 10 megabits per second), or IEEE 802.3u 100BASE-TX connections (twisted pair Fast Ethernet operating at 100 megabits per second). All of the twisted-pair ports support NWay auto-negotiation, allowing the hub to automatically detect the speed of a network connection. This means you can connect all of your Ethernet and Fast Ethernet hosts to a TE100-DM/DS series hub stack, without any rewiring required when a host is upgraded from 10Mbps to 100Mbps.]"). TRENDNET00000019. TRENDnet Stackable Hubs at Page No. 15 ("[The TE100-DM/DS series hubs, available in 16-port and 24-port models, can be stacked with up to five hubs in a stack. A stack of five 24-port hubs gives a total of 120 Ethernet or Fast Ethernet ports.]"). TRENDNET00000019. TRENDnet Stackable Hubs at Page No. 38; TRENDNET00000042. 

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
1[a]	first and second master units, each comprising a physical interface to a packet-switched network;	TRENDnet Stackable Hubs disclose first and second master units, each comprising a physical interface to a packet-switched network. For example, TRENDnet Stackable Hubs disclose two master units (one primary master and one standby backup master) that are connected to an Ethernet network via twisted-pair cables. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. TRENDnet Stackable Hubs at Page No. 15 ("[The TE100-DM/DS series hubs, available in 16-port and 24-port models, can be stacked with up to five hubs in a stack. A stack of five 24-port hubs gives a total of 120 Ethernet or Fast Ethernet ports.]"). TRENDNET00000019. TRENDnet Stackable Hubs at Page No. 16 ("[The list below highlights the features and specifications of the TE100-DM/DS series hubs. Compatible with the IEEE 802.3 10BASE-T Ethernet and 802.3u 100BASE-TX Fast Ethernet industry standards for interoperability with other Ethernet/Fast Ethernet network devices. Ethernet connections support Category 3 or better twisted-pair cables. Fast Ethernet connections support both shielded twisted pair and Category 5 unshielded twisted-pair cables. Fast Ethernet connections support a maximum distance of 100 meters from end-station to hub, and a total network diameter of 205 meters. Sixteen (TE100-DS16, TE100-DS16X, TE100-DM16, TE100-DM16X) or twenty-four (TE100-DS24, TE100-DS24X, TE100-DM24, TE100-DM24X) NWay RJ-45 ports for connecting stations to the network. Full hub stack and network management provided via a SNMP management agent (TE100-DM16, TE100-DM16X, TE100-DM24, TE100-DM24X). An optional slide-in switch module allows bridging between 10Mbps and 100Mbps segments. Only one switch module is needed per stack, but managed hub stacks can make use of additional switch modules for redundancy. LED indicators for power, collisions, link, network activity, partitioning status, disable, operating speed (10 or 100Mbps) and network utilization. Digital hub ID number front panel display.

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		Auto-partition protection. Data collision detection and handling. Preamble regeneration, signal re-timing. Two proprietary daisy-chain ports for cascading up to five hubs to form one logical hub; management provided via a master hub. Standby backup master capability when two master model hubs are present within a single stack. Uplink port allows easy linking of two Fast Ethernet hub stacks to further expand your network. Standard-size (19", 1.25U height), rack mountable Built-in, removable power supply, replaceable without opening the hub. Power supply is easily removed and replaced.]"). TRENDNET00000020-021. TRENDnet Stackable Hubs at Page No. 37 ("[This chapter discusses how to make connections to the hub's twisted-pair ports and console port, cascading hubs to create a stack, and linking with other hubs (or hub stacks).]"). TRENDNET00000041. TRENDnet Stackable Hubs at Page No. 37 ("[You can stack up to five hubs using the daisy-chain ports to form one logical hub. In this configuration, the interconnected hubs constitute a single logical unit, providing a maximum of 120 twisted-pair ports.]"). TRENDNET00000041. TRENDnet Stackable Hubs at Page No. 37 ("[Use the provided daisy-chain cable to connect the Daisy-Chain OUT port on the rear panel of one hub to the Daisy-Chain IN port on the hub below it, as shown in the figure below. Repeat this procedure for each hub to be included in the stack.]"). TRENDNET00000041.

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 38; TRENDNET00000042.  TRENDnet Stackable Hubs at Page No. 45 ("[There are three optional modules that may be added to any of the TE100-DM/DS series hubs. Each hub can accommodate two modules. Each of the modules offers a different additional network interface that allows for greater flexibility in how these hubs may be used in a network.]"). TRENDNET00000049. TRENDnet Stackable Hubs at Page No. 54 ("[Within a TE100-DM/DS series hub stack, in addition to a master hub for management purposes, a standby backup master can also be installed. If a hub stack has two master units, the first powered-on Master unit or the unit that is higher in the stack will manage the stack and be designated as the "Primary Master." Master hubs in the series include a built-in contention algorithm which determines which hub will manage the stack and which will operate in standby mode. If, during power-on, the two master hubs in the stack both attempt to initialize as the Primary Master, this collision will result in an automatic stack reset indicated by all hub ID numbers changing to 0 temporarily. If the current Primary Master Hub fails or loses power, the standby master will take over and manage the hub stack.]"). TRENDNET00000058.

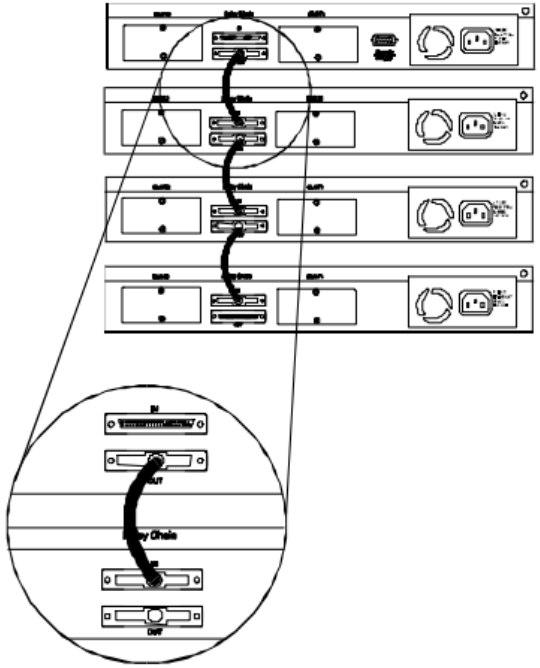
No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack Note: In this context, "Group" means "Hub." The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077.
1[b]	a plurality of slave units,	TRENDnet Stackable Hubs disclose a plurality of slave units. For example, TRENDnet Stackable Hubs disclose a Trendnet TE100-DM/DS Hub Stack that includes several stacked hub units. Wherein, out of these several stacked hub units, two hub units are master units (one primary master and one standby backup master), and the rest of the hub units are slave units. Also, the group configuration menu screen displays information about each of the hubs in the stack; wherein, the group role shows what role the hub is currently playing in the hub stack e.g., primary master, standby backup master, or slave.

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 38; TRENDNET00000042.  TRENDnet Stackable Hubs at Page No. 54 ("[Within a TE100-DM/DS series hub stack, in addition to a master hub for management purposes, a standby backup master can also be installed. If a hub stack has two master units, the first powered-on Master unit or the unit that is higher in the stack will manage the stack and be designated as the "Primary Master." Master hubs in the series include a built-in contention algorithm which determines which hub will manage the stack and which will operate in standby mode. If, during power-on, the two master hubs in the stack both attempt to initialize as the Primary Master, this collision will result in an automatic stack reset indicated by all hub ID numbers changing to 0 temporarily. If the current Primary Master Hub fails or loses power, the standby master will take over and manage the hub stack.]"). TRENDNET00000058.

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack Note: In this context, "Group" means "Hub." The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077.
1[c]	each slave unit comprising one or more ports to respective subscriber lines; and	TRENDnet Stackable Hubs disclose each slave unit comprising one or more ports to respective subscriber lines. For example, TRENDnet Stackable Hubs disclose that each hub unit in the Trendnet TE100-DM/DS Hub Stack includes MDI-X ports that connect it to PCs, workstations, or servers. TRENDnet Stackable Hubs at Page No. 16 ("[The list below highlights the features and specifications of the TE100-DM/DS series hubs. Compatible with the IEEE 802.3 10BASE-T Ethernet and 802.3u 100BASE-TX Fast Ethernet industry standards for interoperability with other Ethernet/Fast Ethernet network devices. Ethernet connections support Category 3 or better twisted-pair cables. Fast Ethernet connections support both shielded twisted pair and Category 5 unshielded twisted-pair cables. Fast Ethernet connections support a maximum distance of 100 meters from end-station to hub, and a total network diameter of 205 meters. Sixteen (TE100-DS16, TE100-DS16X, TE100-DM16, TE100-DM16X) or twenty-four (TE100-DS24, TE100-DS24X, TE100-DM24, TE100-DM24X) NWay RJ-45 ports for connecting stations to the network.]"). TRENDNET00000020-021.

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 25 (" [Twisted-Pair Ports Use any of these ports to connect stations to the hub. The ports are MDI-X Nway ports, which means you can use ordinary straight-through twisted-pair cable to connect the hub to PCs, workstations, or servers through these ports, and the speed of the connection will be detected automatically. If you need to connect to another device with MDI-X ports such as another hub or an Ethernet switch, you should use a crossover cable, or connect using the Uplink port (described below). For more information about crossover connection, see the Crossover Cables section on page 76."). TRENDNET00000029. TRENDnet Stackable Hubs at Page No. 24; TRENDNET00000028. ***Front Panel*** **TE100-DM24 / TE100-DM24X Front Panel**  **TE100-DS24 / TE100-DS24X Front Panel**  TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack Note: In this context, "Group" means "Hub." The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number.

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077.
1[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	TRENDnet Stackable Hubs disclose a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. For example, TRENDnet Stackable Hubs disclose that a Trendnet TE100-DM/DS Hub Stack includes multiple hubs that can be stacked through the daisy-chain ports into one logical hub using a cable. A cascade of five hubs can be created, wherein, the first and last hub in the stack use only one of the daisy-chain ports, while the others use both of the daisy-chain ports. Thus, under the apparent claim scope alleged in Orckit's Infringement Disclosures, this limitation is met. To the extent that the TRENDnet Stackable Hubs is found to not meet this limitation, a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween would have been obvious to a person having ordinary skill in the art, as explained below. TRENDnet Stackable Hubs at Page No. 37 ("[You can stack up to five hubs using the daisy-chain ports to form one logical hub. In this configuration, the interconnected hubs constitute a single logical unit, providing a maximum of 120 twisted-pair ports. Use the provided daisy-chain cable to connect the Daisy-Chain OUT port on the rear panel of one hub to the Daisy-Chain IN port on the hub below it, as shown in the figure below. Repeat this procedure for each hub to be included in the stack.]"). TRENDNET00000041.

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 38; TRENDNET00000042.  TRENDnet Stackable Hubs at Page No. 26 ("[Daisy-Chain IN Port When cascading a set of stackable dual-speed hubs, this port should be connected to the Daisy-Chain OUT port of the previous hub in the stack (usually placed immediately above it). A cascade of five hubs can be created in this way. The first and last hubs in the stack use only one of the daisy-chain ports, while the others use both." "Daisy-Chain OUT Port Works in conjunction with the Daisy-Chain IN Port (see above). Connect this port to the Daisy-Chain IN Port of the next hub in ack (usually placed immediately below it), using the enclosed daisy-chain cable.]"). TRENDNET00000030.

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack Note: In this context, "Group" means "Hub." The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). TRENDNET00000077. Group Port Capacity. This field shows the total number of network ports on the hub.]") In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, TRENDnet Stackable Hubs in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 1[d] of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. For example, Vink '324 discloses interface lines connected between each master and each substation connected in a cascade or shift register fashion which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the interface lines therebetween. Vink '324 further discloses that connections between two stations can be physical connections, such as coaxial cable. Vink '324 15:28-35 ("Figure 2 shows diagrammatically the architecture of a more extensive communication system according to the invention, comprising a master station (master) 1 and a plurality of substations (slaves) 2, 3, 4, 5. The master 1 and the slaves 2, 3, 4, 5 are mutually connected via a double-ring transmission system composed of transmitting/

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		receiving units 6 and transmission lines 7, 8. The transmission lines 7, 8 may, for example, consist of coaxial cable, optical fibre cable and the like."). Vink '324 Claim 2 ("Method according to Claim 1, wherein a plurality of I/0 modules (10) are connected in cascade to one or more substations (slaves) (2, 3, 4, 5), which substations (2, 3, 4, 5) are connected to the at least one master (1) in cascade via a transmission system (7, 8) for serial bit transfer, characterised by under the control of the at least one master (1): - supplying the data bits for the I/0 modules (10) to the slaves (2, 3, 4, 5) via the transmission system (7, 8), the sequence of the data bits also corresponding to the sequence of the connected slaves (2, 3, 4, 5); - receiving from the slaves (2, 3, 4, 5) via the transmission system (7, 8) the data bits originating from the I/0 modules (10), the sequence of the data bits received also corresponding to the sequence of the connected slaves (2, 3, 4, 5) ; - supplying control information to the slaves (2, 3, 4, 5) via the transmission system (7, 8); and - presenting and/or recording data bits of the I/0 modules (10) connected to a respective the relevant slave (2, 3, 4, 5) under the influence of the control information received, controlled by the slaves (2, 3, 4, 5)."). Vink '324 16:11-18 ("As a result, the whole again has a structure corresponding to a shift register, every I/O module being implicitly addressed, as in the system according to Figure 1, by its position in the chain. Although a double-ring transmission system is shown, it will be clear that it is possible to work with either a single-ring transmission system or with a transmission system containing more than two rings. Of course, more or fewer slaves can be used and the number of I/O modules per slave can be greater or smaller."). Vink '324 10:6-12 ("The communication system according to the invention is essentially comparable to a shift register system, i.e. one single shift register or shift register systems separated for input and output, and has the intended deterministic nature. Both during and between the output and the input phase there is a defined simultaneity relationship in the response of the separate I/O modules.").

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		Vink '324 10:23-30 ("A further advantage of the shift register system structure is that the sequence and the number of the data bits in the system can correspond directly to the sequence and the number of data bits of the I/O modules thereof. The addition, to the data bits to be exchanged, of address information relating to the I/O modules is therefore not a requirement in this connection. This has a favourable effect on the effective speed at which the information can be exchanged.").

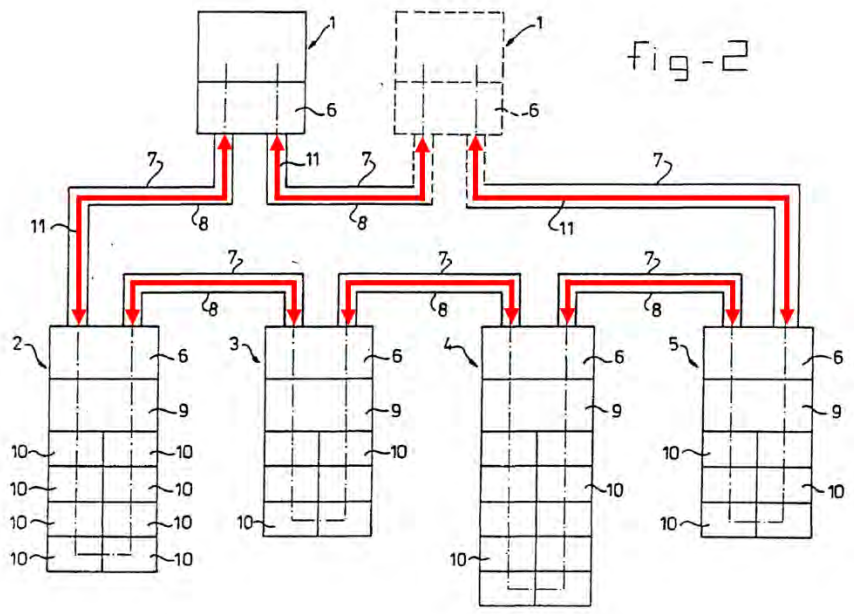


Fig. 2 (annotation added)

Vink '324 17:3-12 ("Figure 3 shows a block diagram of an exemplary embodiment of a portion of a slave 2, 3, 4, 5. Data bits are transported via connections provided with an arrow. The transmitting/receiving unit 6 comprises a multiplexer 12 consisting of two modems 13, 14 which are respectively connected to the first transmission ring 7 and to the second transmission ring 8. For the transmission of the data via the transmission system, signal

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		coding techniques known per se in practice may be used. The operation of the relevant transmission ring 7, 8 can be monitored by means of line error detectors 15.").

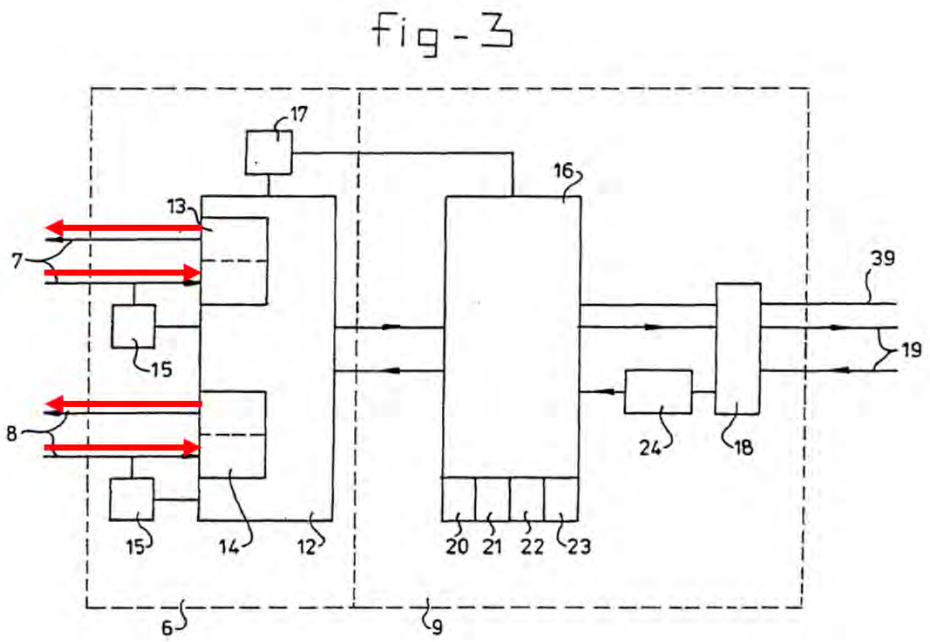
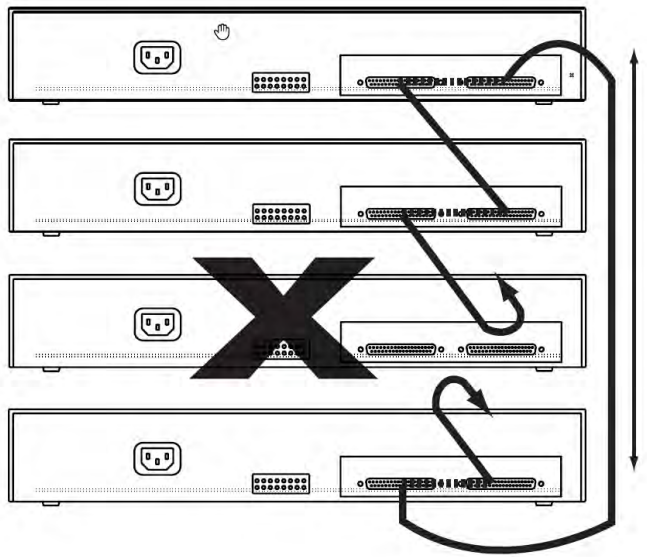
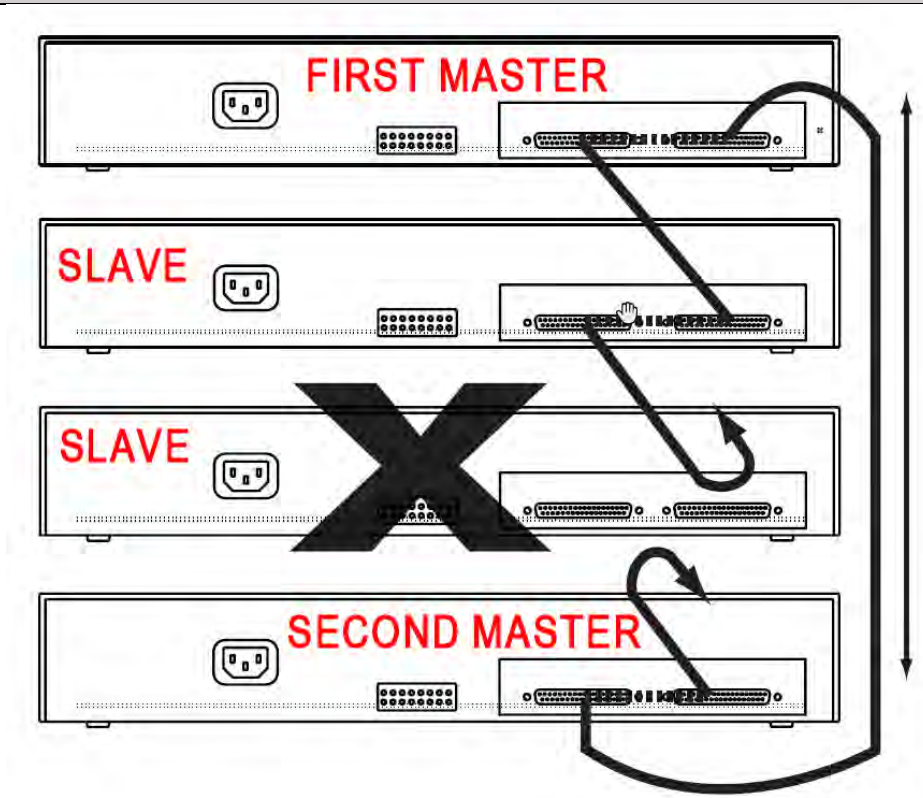


Fig. 3 (annotation added)

Vink '324 1:16-23 ("The information is primarily transferred in digital form and can vary from text and speech data to control and measurement data. For long-distance connections, public networks equipped with cables or radio links are, inter alia, available. LAN communication systems are, in principle, designed for communicatively coupling two or more connected stations together as required, whereas public networks primarily have the task of providing point-to-point connections between two stations.").

For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Figure 1, shown below, illustrates the plurality of physical interface lines that link the slave units in a daisy chain, in which the slave units are mutually connected in series by the physical interface lines therebetween. *Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.*  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). Nortel Networks' BayStack 450 Switches also disclose a "Fail-Safe Stack Application." BayStack 450 Manual at 48 of 290. More specifically, that Nortel Networks' BayStack 450 Switches disclose that "Figure 1-9 shows an example of eight BayStack 450 switches that are stacked together as a single managed unit. If any single unit in the stack fails, the remaining stack remains operational, without interruption." BayStack 450 Manual at 48 of 290. Figure 1-9 of the BayStack 450 Manual depicts a plurality of slaves and is shown below.

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs

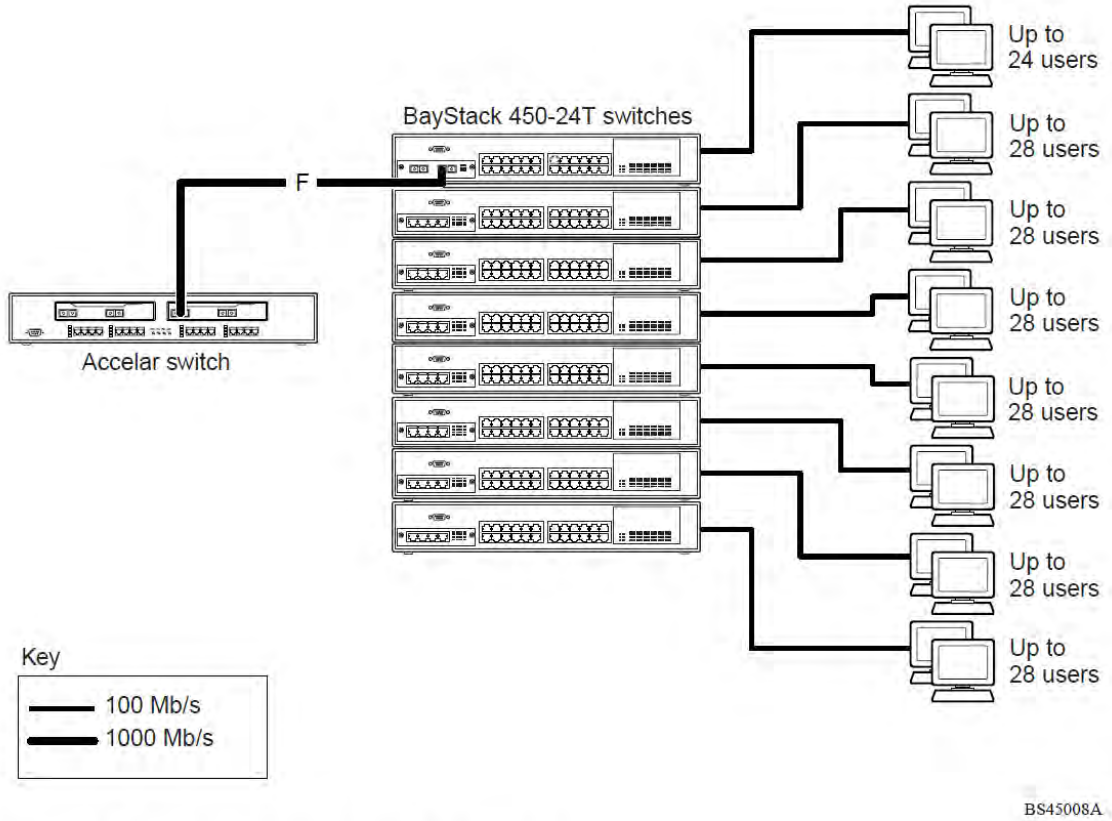
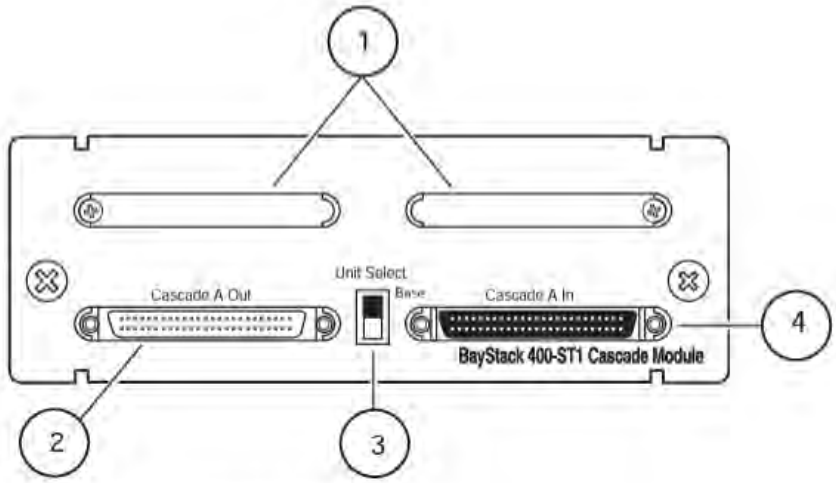


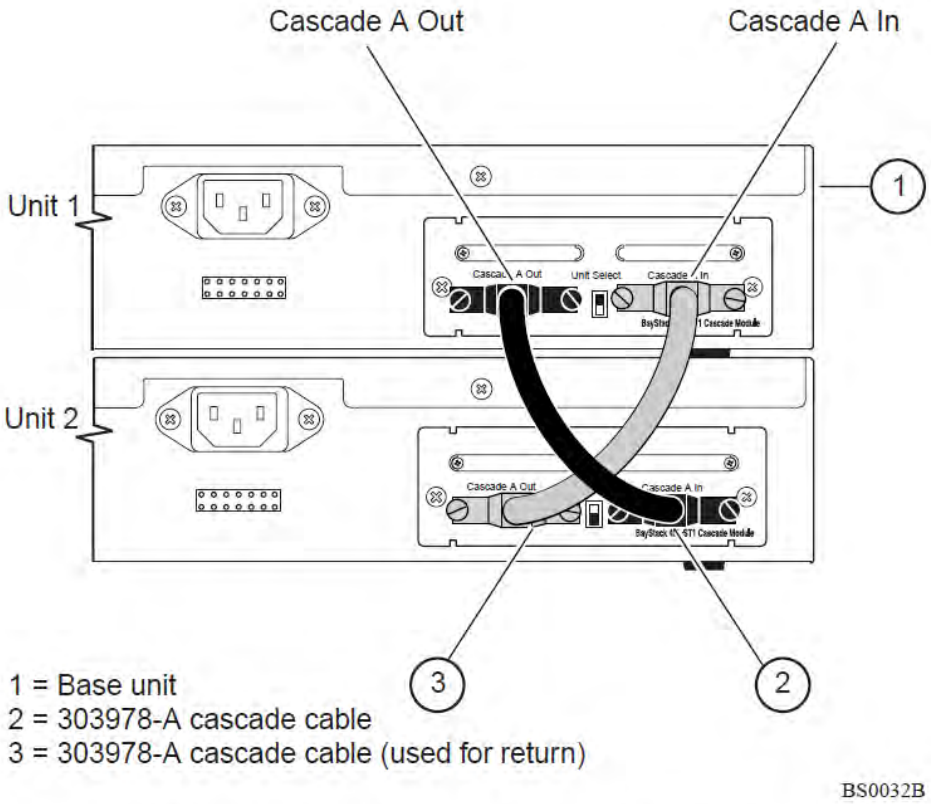
Figure 1-9. Fail-Safe Stack Example

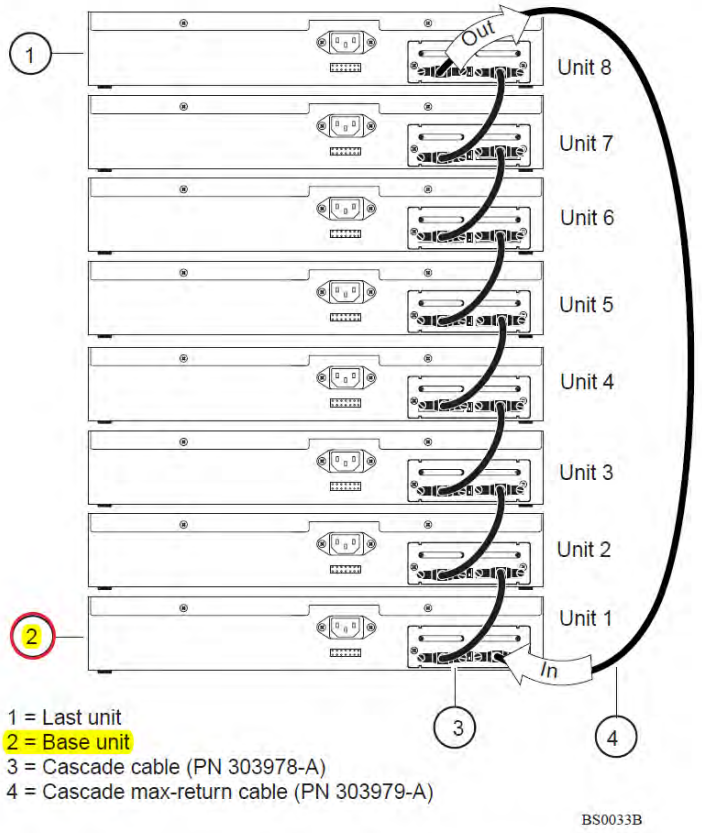
BayStack 450 Manual at 48 of 290, FIG. 1-9.

Nortel Networks' BayStack 450 Switches further disclose that "[a]s shown in Figure 1-9, the Accelar 1100 switch is used as a backbone switch, connecting to the BayStack 450 switch with an optional gigabit (1000BASE-SX) MDA for maximum bandwidth. This configuration uses optional BayStack 400-ST1 Cascade Modules to connect the switches in the fail-safe stack." BayStack 450 Manual at 48 of 290.

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		Nortel Networks' BayStack 450 Switches disclose that "[f]or an overview of the fail-safe stacking feature that is available for the BayStack 450 switches, see 'Stack Operation' following this section." BayStack 450 Manual at 48 of 290. Indeed, Nortel Networks' BayStack 450 Switches provide an overview of the fail-safe stacking feature, which discloses "BayStack 450 switches that are configured with BayStack 450 software version V1.1.0 or later provide fail-safe stackability when you install the optional BayStack 400-ST1 Cascade Module. You can connect up to eight switches to provide uninterrupted connectivity for up to 224 ports (see 'Fail-Safe Stack Application' on page 1-22). The entire stack is manageable as a single unit. Installation instructions are provided with the BayStack 400-ST1 Cascade Module (see your Nortel Networks sales representative for ordering information)." BayStack 450 Manual at 49 of 290. Further, Nortel Networks' BayStack 450 Switches disclose that the "BayStack 400-ST1 Cascade Module," which is shown in Figure 1-10 below. BayStack 450 Manual at 49 of 290; *id.*, FIG. 1-10.

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		 **Figure 1-10. BayStack 400-ST1 Front-Panel Components** In addition, Nortel Networks' BayStack 450 Switches disclose that the "Unit Select switch (up = Base) determines the base unit for the stack configuration (see "Base Unit " on page 1-25). The Unit Select switch status is displayed on the BayStack 450 LED display panel. When the Unit Select switch is in the Base (up) position, all other Unit Select switches in the stack configuration must be set to Off (down)." BayStack 450 Manual at 50 of 290. Further still, Nortel Networks' BayStack 450 Switches disclose a Cascade A In Connector that provides "an attachment point for accepting a cascade cable connection from an adjacent unit in the stack. A return cable from this unit's Cascade A Out connector to the adjacent unit's Cascade A In connector completes the stack connection (see the example shown in

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		Figure 1-11)." BayStack 450 Manual at 50 of 290. Figure 1-11 shows physical interface lines of cascading cables and is reproduced below. BayStack 450 Manual at 50 of 290, FIG. 1-11.  **Figure 1-11. Connecting Cascade Cables** In one example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the bottom of the stack and connects a plurality of slaves via physical interface lines in a "Stack Up Configuration." BayStack 450 Manual at 54 of 290.

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		Stack Up Configurations In Figure 1-12, data flows from the base unit (unit 1) to the next switch, which is assigned as unit 2, and continues until the last switch in the stack is assigned as unit 8. The physical order of the switches is *from bottom to top* (unit 1 to unit 8).  **Figure 1-12. Stack Up Configuration Example** BayStack 450 Manual at 54 of 290, FIG. 1-12 (annotated).

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		In another example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the top of the stack and connects a plurality of slaves via physical interface lines in a "Stack Down Configuration." BayStack 450 Manual at 55 of 290.

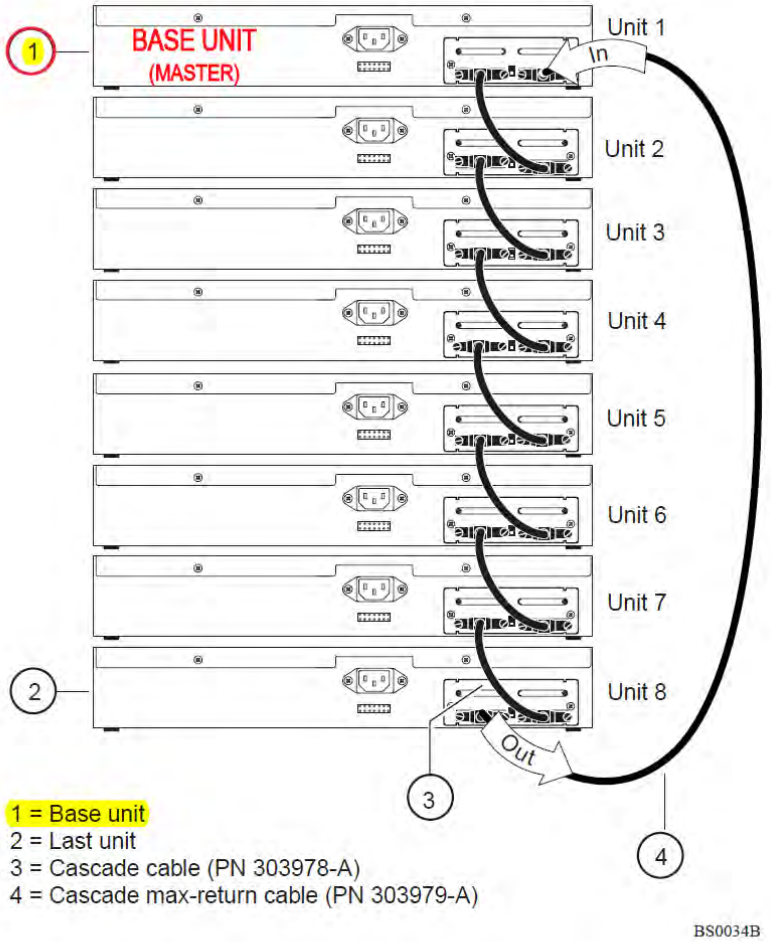


Figure 1-13. Stack Down Configuration Example

BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		As shown below, in the Stack Down Configuration, the physical interface lines connect a plurality of slave units.

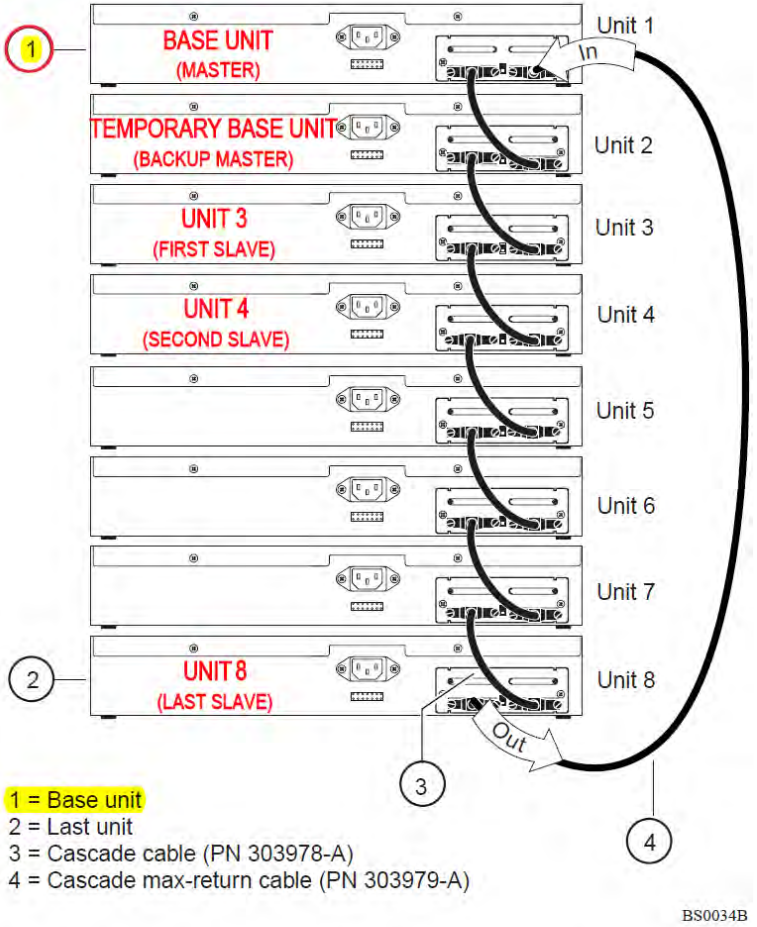
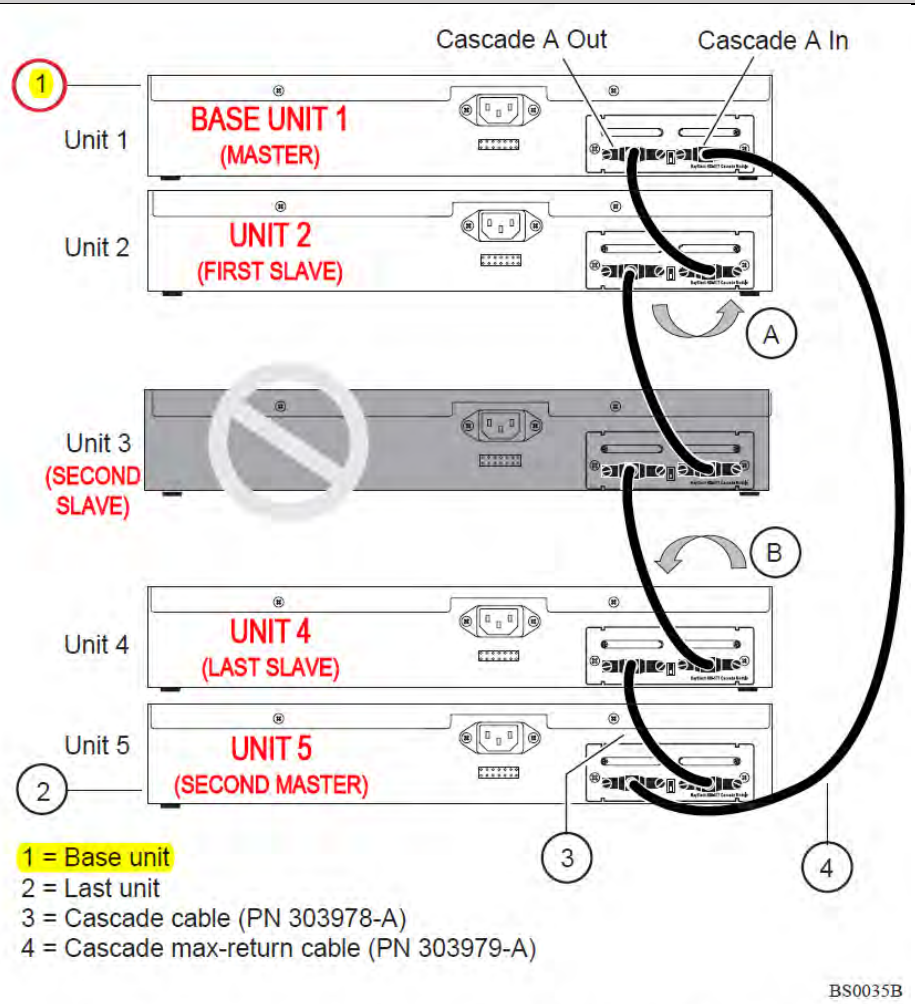


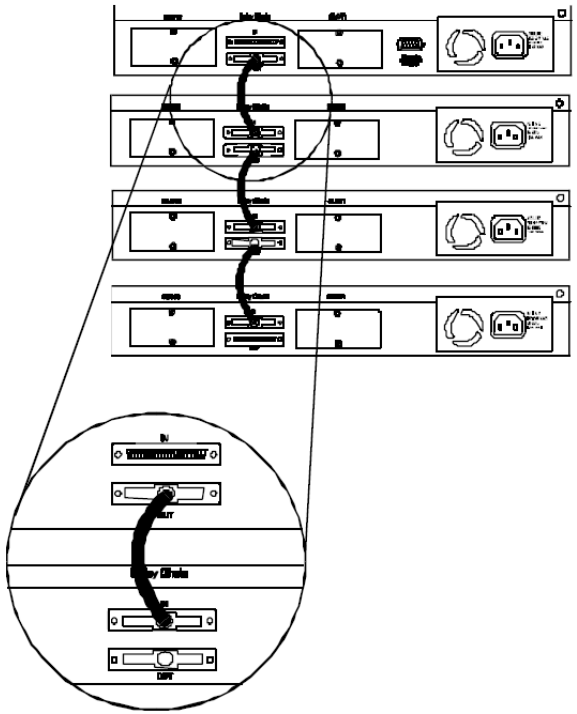
Figure 1-13. Stack Down Configuration Example

BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		Further, the BayStack 450 Switches disclose connectivity using physical interface lines using cables, stating "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. The BayStack 450 Switches further disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
1[e]	each daisy chain comprising at least a first slave unit connected one of the physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit.	TRENDnet Stackable Hubs disclose each daisy chain comprising at least a first slave unit connected one of the physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit. For example, TRENDnet Stackable Hubs disclose a Trendnet TE100-DM/DS Hub Stack that can include up to five stacked hubs using the daisy-chain ports to form one logical hub. Wherein, two hubs act as master unit (Primary and Standby Backup Master) and rest of them act as slave units. Also, the Group Configuration Menu screen displays information about each of the hubs in the stack. The Group Role shows what role the hub is currently playing in the hub stack *e.g.*, primary master, standby master, or slave. Further, TRENDnet Stackable Hubs disclose that when the uppermost unit is referred to as the first master unit, then the uppermost unit is connected to the second unit of the hub stack which can be the first slave unit connected via daisy-chain ports. The third unit of the hub stack can be a second slave unit connected to the second unit of the hub. Further, the third unit of the hub stack can be the last slave unit connected to fourth unit of the hub stack which can be the second master unit through the daisy-chain ports using a cable. Thus, under the apparent claim scope alleged in Orckit's Infringement Disclosures, this limitation is met. To the extent that the TRENDnet Stackable Hubs is found to not meet this limitation, each daisy chain comprising at least a first slave unit connected one of the physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit would have been obvious to a person having ordinary skill in the art, as explained below. TRENDnet Stackable Hubs at Page No. 37 ("[You can stack up to five hubs using the daisy-chain ports to form one logical hub. In this configuration, the interconnected hubs constitute a single logical unit, providing a maximum of 120 twisted-pair ports. Use the provided daisy-chain cable to connect the Daisy-Chain OUT port on the rear panel of one hub to the Daisy-Chain IN port on the hub below it, as shown in the figure below. Repeat this procedure for each hub to be included in the stack.]"). TRENDNET00000041.

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 54 ("[Within a TE100-DM/DS series hub stack, in addition to a master hub for management purposes, a standby backup master can also be installed. If a hub stack has two master units, the first powered-on Master unit or the unit that is higher in the stack will manage the stack and be designated as the "Primary Master." Master hubs in the series include a built-in contention algorithm which determines which hub will manage the stack and which will operate in standby mode. If, during power-on, the two master hubs in the stack both attempt to initialize as the Primary Master, this collision will result in an automatic stack reset indicated by all hub ID numbers changing to 0 temporarily. If the current Primary Master Hub fails or loses power, the standby master will take over and manage the hub stack.]"). TRENDNET00000058. TRENDnet Stackable Hubs at Page No. 38; TRENDNET00000042. 

No.	'904 Patent Claim 1	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack Note: In this context, "Group" means "Hub." The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077.

No.	'904 Patent Claim 2	TRENDnet Stackable Hubs
2	Apparatus according to claim 1, wherein the network comprises an asynchronous transfer mode (ATM) network.	TRENDnet Stackable Hubs disclose apparatus according to claim 1, an apparatus according to claim 1, wherein the network comprises an asynchronous transfer mode (ATM) network. For example, TRENDnet Stackable Hubs disclose a network using the TCP/IP TELNET protocol, Trivial File Transfer Protocol and Fast Ethernet Network. TRENDnet Stackable Hubs further disclose the need for the benefits of its invention – greater bandwidth and lower latency for various types of networks including ATM networks. TRENDnet Stackable Hubs at Page No. 19 ("[Recognizing this need for greater bandwidth and lower latency, a variety of technologies such as FDDI, ATM, and Fast Ethernet (100Mbps) have been adopted by many vendors. Fast Ethernet technology stands out as the most inexpensive and smoothest migration path for existing 10Mbps Ethernet users in part because it doesn't require a protocol translation when sharing data with 10Mbps Ethernet.]"). TRENDNET00000023.

No.	'904 Patent Claim 3	TRENDnet Stackable Hubs
3	Apparatus according to claim 1, wherein the network comprises an Internet protocol (IP) network.	TRENDnet Stackable Hubs disclose apparatus according to claim 1, wherein the network comprises an Internet protocol (IP) network. For example, TRENDnet Stackable Hubs disclose network using the TCP/IP TELNET protocol and Trivial File Transfer Protocol; a low overhead protocol for file transmission over TCP/IP networks comprises an Internet protocol (IP) network. TRENDnet Stackable Hubs at Page No. 41 ("[You can also access the same functions over a TELNET link. Once you have set an IP address for your hub (see the beginning of this chapter), you can use a TELNET program (in a VT-100 compatible terminal mode) to access and control the hub. All of the screens are for the most part identical, whether accessed from the diagnostic port or from TELNET.]"). TRENDNET00000045. TRENDnet Stackable Hubs at Page No. 51 ("[The TE100-DM16, TE100-DM16X, TE100-DM24, and TE100- DM24X master hubs (hereafter and elsewhere referred to as "SNMP master hubs") provide an on-board console program that allows you to set up and control all TE100-DM/DS hubs stacked with it. This program can be accessed either with an ordinary terminal (or terminal emulator) or over the network using the TCP/IP TELNET protocol. You can use this program to perform many basic network management functions.]"). TRENDNET00000055. TRENDnet Stackable Hubs at Page No. 61 ("[The hub needs to have an IP address assigned to it so that the network management system or TELNET client can communicate with it over the network. The TCP/IP Parameters Configuration Menu allows you to change the settings for the two different interfaces used by the hub: the internal Fast Ethernet interface used for in-band communication, and the SLIP interface used through the diagnostic port for out-of-band communication.]"). TRENDNET00000065. TRENDnet Stackable Hubs at Page No. 61 ("[IP Address. This parameter determines the IP address used by the hub for receiving SNMP and TELNET messages. The address should be of the form xxx.xxx.xxx.xxx, where each xxx is a number (represented in decimal) between 0 and 255. This address should be a unique address on the network assigned to you by a

No.	'904 Patent Claim 3	TRENDnet Stackable Hubs
		network administrator. The same IP address is shared by both the SLIP and Ethernet network interfaces.]"). TRENDNET00000065. TRENDnet Stackable Hubs at Page No. 93 ("[TE100-DM/DS series master hubs support a powerful configuration file which allows many of the hub stackconfiguration parameters to be stored on a centralized server. When the master hub starts up, it can be configured to read its configuration file from the server using the TFTP protocol. This can make it easier to manage a large number of hub stacks, since all of the configuration parameters for all of the hubs can be managed in a single place.]"). TRENDNET00000097. TRENDnet Stackable Hubs at Page No. 106 ("[Trivial File Transfer Protocol; a low overhead protocol for file transmission over TCP/IP networks. Often used for obtaining device configuration files or bootstrap image files.]"). TRENDNET00000110.

No.	'904 Patent Claim 4	TRENDnet Stackable Hubs
4[preamble]	Network access apparatus, comprising:	TRENDnet Stackable Hubs disclose a network access apparatus, comprising For example, TRENDnet Stackable Hubs disclose a TE100-DM/DS hub stack designed to allow easy migration and integration between 10Mbps Ethernet and 100Mbps Fast Ethernet. *See generally* TRENDNET0000001-130. *See supra at* 1 [preamble].
4[a]	first and second master units, each comprising a physical interface to a packet-switched network;	TRENDnet Stackable Hubs disclose first and second master units, each comprising a physical interface to a packet-switched network For example, TRENDnet Stackable Hubs disclose two master units (one primary master and one standby backup master) that connect to an Ethernet network via twisted-pair cables. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See supra* at 1[a].

No.	'904 Patent Claim 4	TRENDnet Stackable Hubs
4[b]	a plurality of slave units,	TRENDnet Stackable Hubs disclose a plurality of slave units. For example, TRENDnet Stackable Hubs disclose a Trendnet TE100-DM/DS Hub Stack that includes several stacked hub units. Wherein, out of these several stacked hub units, two hub units are master units, and the rest are slave units. Also, the group configuration menu screen displays information about each of the hubs in the stack; wherein, the group role shows what role the hub is currently playing in the hub stack e.g., primary master, standby master, or slave. *See supra* at 1[b].
4[c]	each slave unit comprising one or more ports to respective subscriber lines; and	TRENDnet Stackable Hubs disclose each slave unit comprising one or more ports to respective subscriber lines. For example, TRENDnet Stackable Hubs disclose each hub unit in the Trendnet TE100-DM/DS Hub Stack includes MDI-X ports that connect it to PCs, workstations, or servers. *See supra* at 1[c].
4[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	TRENDnet Stackable Hubs disclose a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. For example, TRENDnet Stackable Hubs disclose Trendnet TE100-DM/DS Hub Stack includes multiple hubs that can be stacked through the daisy-chain ports to form one logical hub using a cable. A cascade of five hubs can be created, wherein, the first and last hub in the stack use only one of the daisy-chain ports, while the others use both. Thus, at least under Orckit's Infringement Disclosures, this limitation is met. *See supra* at 1[d].

No.	'904 Patent Claim 4	TRENDnet Stackable Hubs
4[e]	each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit,	TRENDnet Stackable Hubs disclose each daisy chain comprising at least a first slave unit connected one of the physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit. For example, TRENDnet Stackable Hubs disclose Trendnet TE100-DM/DS Hub Stack that can be stack up to five hubs using the daisy-chain ports to form one logical hub. Wherein, two hubs act as master unit (PRIMARY and STANDBY BACKUP MASTER) and rest of them act as slave units. Also, the Group Configuration Menu screen displays information about each of the hubs in the stack. The Group Role shows what role the hub is currently playing in the hub stack e.g., primary master, standby master, or slave. Further, referring to the figure below at Page 38, the uppermost unit is referred to as the first master unit, then the uppermost unit is connected to the second unit of the hub stack which is the first slave unit connected via daisy-chain ports. The third unit of the hub stack is a second slave unit connected to the second unit of the hub stack. Further, the third unit of the hub stack the last slave unit connected to fourth unit of the hub stack which is the second master unit connected by another of the physical interface lines to the second master unit through the daisy-chain ports using a cable. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See supra* at 1[e].

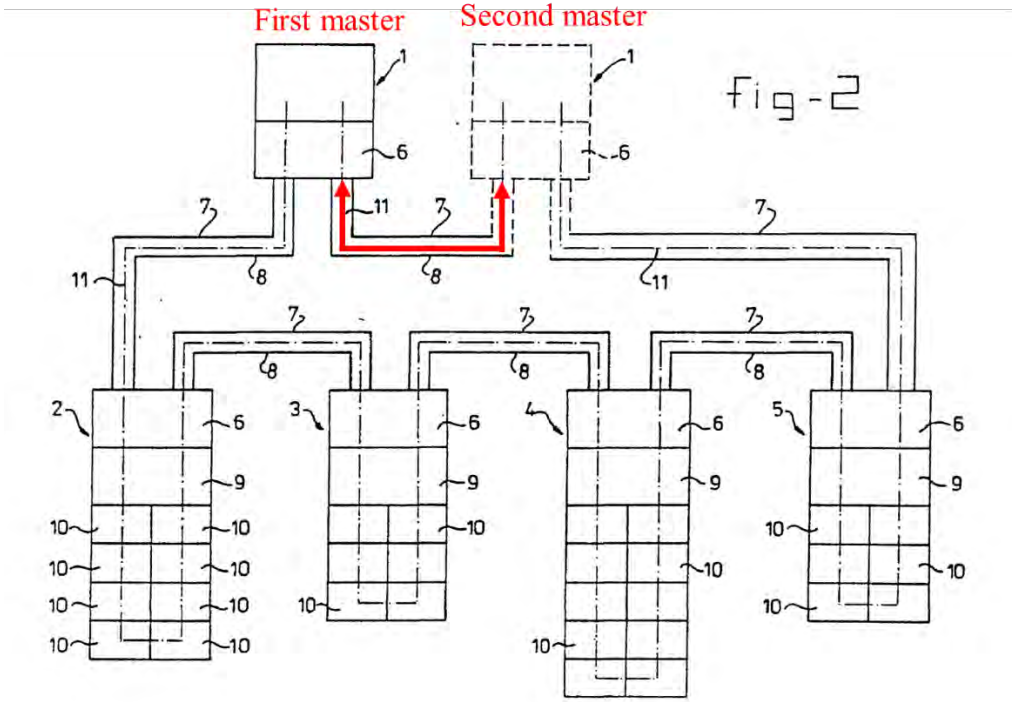
No.	'904 Patent Claim 4	TRENDnet Stackable Hubs
4[f]	wherein in normal operation, downstream data packets received from the network are passed from the first master unit to each of the daisy chains via the first slave unit in each chain, and upstream data packets received by the slaves in each chain from the subscriber lines are passed via the first slave unit in the chain to the first master unit for transmission over the network.	TRENDnet Stackable Hubs disclose downstream data packets received from the network. For example, TRENDnet Stackable Hubs disclose that packets are received from the network. TRENDnet Stackable Hubs further disclose that the Trendnet TE100-DM/DS Hub Stack is connected to multiple networks, *e.g.*, a10Mbps Ethernet network and a 100Mbps Fast Ethernet network. TRENDnet Stackable Hubs further disclose that the hubs within the Trendnet TE100-DM/DS Hub Stack contain more than one daisy-chain port, *e.g.*, two daisy-chain ports. Thus, a person of ordinary skill in the art would understand from the teachings of TRENDnet Stackable Hubs that data packets can be received from either a downstream or upstream direction, and that the slave units can receive the downstream data packets from the primary master and can transmit the upstream data packets to the primary master. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. TRENDnet Stackable Hubs at Page No. 47 ("[The Fast Ethernet module includes the following LED indicators: • Power/Tx—this LED is lit when the hub is on and blinks when the module is transmitting packets. • Link/Rx—this LED is lit when the port is properly connected to a powered-on device and blinks when the module is receiving packets.]"). TRENDNET00000051. TRENDnet Stackable Hubs at Page No. 16 ("[The list below highlights the features and specifications of the TE100-DM/DS series hubs. Compatible with the IEEE 802.3 10BASE-T Ethernet and 802.3u 100BASE-TX Fast Ethernet industry standards for interoperability with other Ethernet/Fast Ethernet network devices. Ethernet connections support Category 3 or better twisted-pair cables. Fast Ethernet connections support both shielded twisted pair and Category 5 unshielded twisted-pair cables. Fast Ethernet connections support a maximum distance of 100 meters from end-station to hub, and a total network diameter of 205 meters.

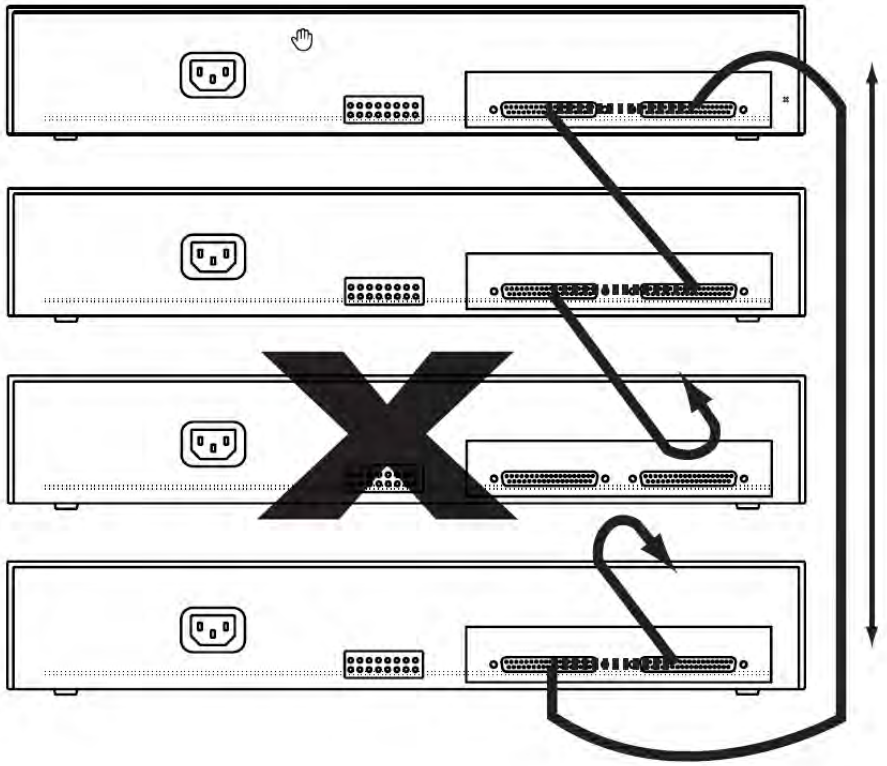
No.	'904 Patent Claim 4	TRENDnet Stackable Hubs
		Sixteen (TE100-DS16, TE100-DS16X, TE100-DM16, TE100-DM16X) or twenty-four (TE100-DS24, TE100-DS24X, TE100-DM24, TE100-DM24X) NWay RJ-45 ports for connecting stations to the network.]"). TRENDNET00000020-021. TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack Note: In this context, "Group" means "Hub." The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077. TRENDnet Stackable Hubs at Page No. 78 ("[The hub supports several monitoring functions, allowing you to keep statistics on the operation of each port, each hub, and the entire network segment, as well as to monitor the addresses of the packets received at each port.]"). TRENDNET00000082. TRENDnet Stackable Hubs at Page No. 80 ("[Multicast. This statistic counts the number of good multicast packets received. Multicast events are messages sent from one node to multiple nodes on the segment. Broadcast. This statistic counts the number of good broadcast packets received. Broadcast events are messages sent to all nodes on the segment.]"). TRENDNET00000084. TRENDnet Stackable Hubs at Page No. 82 ("[Displaying Segment Statistics

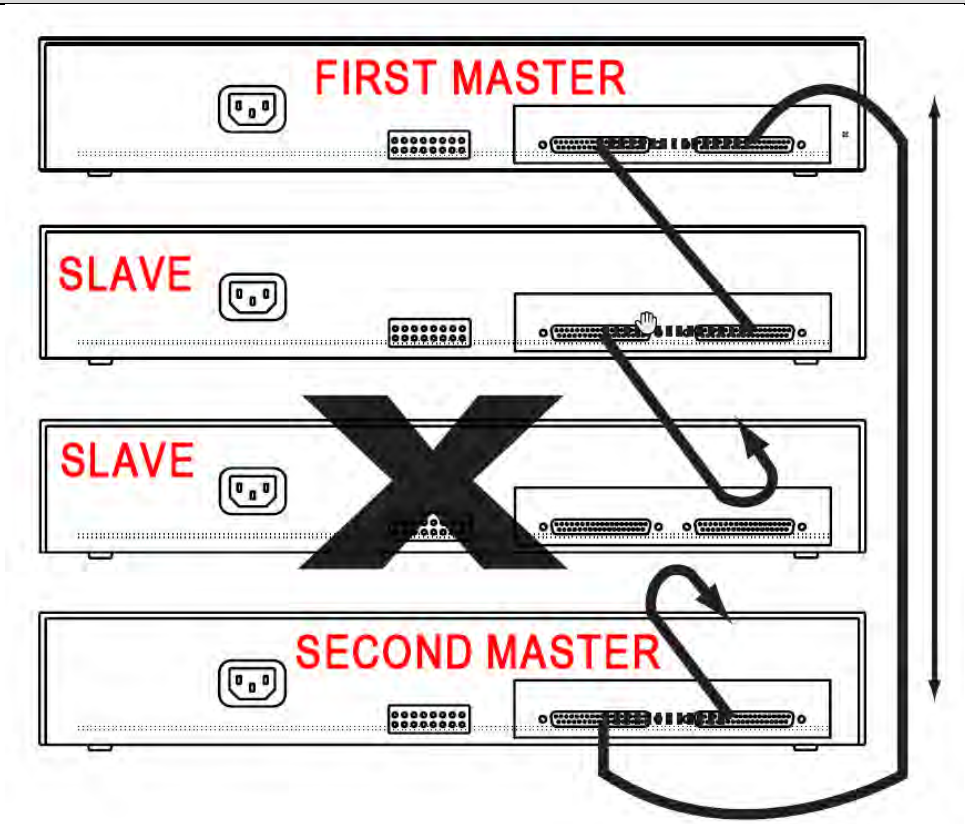
No.	'904 Patent Claim 4	TRENDnet Stackable Hubs
		The hub stack collects network transmission statistics for each segment in the stack. You can choose to view them from the Statistics menu, accessible under the Network Monitoring menu. StatsPkts. This statistic displays the number of packets received from the network, including error packets. BroadcastPkts. This statistics counts the number of good broadcast packets received on the segment. MulticastPkts. This statistics counts the number of good multicast packets received on the segment. CRCAlignErrors. This statistic counts the number of valid length packets (64 to 1518 bytes) that had a bad Frame Check Sequence (FCS). UndersizePkts. This statistic counts the number of well-formed packets that were smaller than 64 octets. OversizePkts. This statistic counts the number of well-formed packets that were longer than 1518 octets. Fragments. This statistic counts the number of ill formed packets less than 64 octets and all events without a start-of-frame delimiter regardless of their length.]"). TRENDNET00000086. TRENDnet Stackable Hubs at Page No. 54 ("[Within a TE100-DM/DS series hub stack, in addition to a master hub for management purposes, a standby backup master can also be installed. If a hub stack has two master units, the first powered-on Master unit or the unit that is higher in the stack will manage the stack and be designated as the "Primary Master." Master hubs in the series include a built-in contention algorithm which determines which hub will manage the stack and which will operate in standby mode. If, during power-on, the two master hubs in the stack both attempt to initialize as the Primary Master, this collision will result in an automatic stack reset indicated by all hub ID numbers changing to 0 temporarily. If the current Primary Master Hub fails or loses power, the standby master will take over and manage the hub stack.]"). TRENDNET00000058.

No.	'904 Patent Claim 5	TRENDnet Stackable Hubs
5	Apparatus according to claim 4, and comprising a protection interface, which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault.	TRENDnet Stackable Hubs disclose apparatus according to claim 4, and comprising a protection interface, which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault. For example, TRENDnet Stackable Hubs disclose a stack that couples the standby master to the first master via a protection interface such that "fails or loses power, the standby master will take over and manage the hub stack." Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that the TRENDnet Stackable Hubs are not found to not meet this limitation, a protection interface coupling the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault, would have been obvious to a person having ordinary skill in the art, as explained below. TRENDnet Stackable Hubs at Page No. 54 ("[Within a TE100-DM/DS series hub stack, in addition to a master hub for management purposes, a standby backup master can also be installed. If a hub stack has two master units, the first powered-on Master unit or the unit that is higher in the stack will manage the stack and be designated as the "Primary Master." Master hubs in the series include a built-in contention algorithm which determines which hub will manage the stack and which will operate in standby mode. If, during power-on, the two master hubs in the stack both attempt to initialize as the Primary Master, this collision will result in an automatic stack reset indicated by all hub ID numbers changing to 0 temporarily. If the current Primary Master Hub fails or loses power, the standby master will take over and manage the hub stack.]"). TRENDNET00000058. TRENDnet Stackable Hubs at Page No. 15. ("Standby backup master capability when two master model hubs are present within a single stack."). TRENDNET00000019. Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, the TRENDnet Stackable Hubs in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or

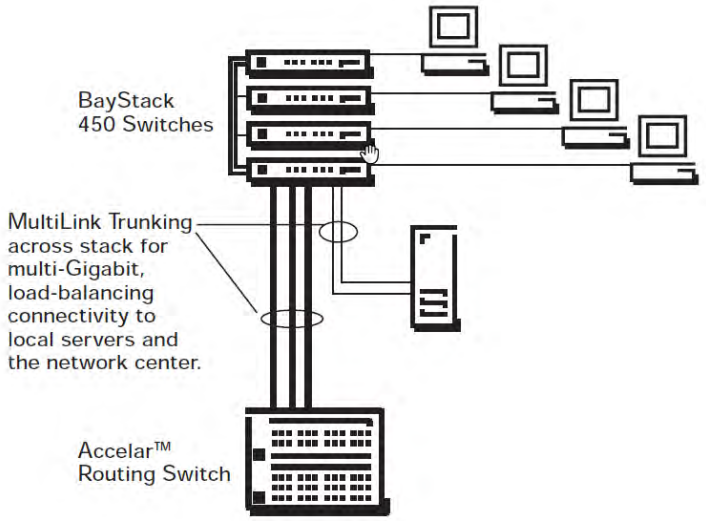
No.	’904 Patent Claim 5	TRENDnet Stackable Hubs
		more together) of the references identified in element 5 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. For example, Vink ’324 discloses a physical interface that joins the first and second master to assist in transferring packets across the system in the event of a fault which couples the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault. Vink ’324 16:19-17:2 (“The shift register principle is also of advantage with respect to use, for example for reliability reasons, of a plurality of masters as is illustrated in Figure 2 by the broken lines. In such a multi-master concept, one of the masters is in general active in relation to data exchange, while one or more other masters only have a passive role therein. All the masters are so designed that they can assume the function of the active master, for example in the event of faults. The passive masters are easily able to detect errors of the active master because, as a consequence of their cascade arrangement and the serial transfer of data bits in the communication system according to the invention, they receive all the information which is intended for the active master. Consequently, no separate communication path is required between the various masters to keep the passive masters abreast of the operations, instruction etc. carried out by the active master. Such a "hot stand-by" mode is of importance, in particular, in industrial process measurement and control in which failure or delay in the production process may, inter alia, have serious financial consequences. It is obvious that, in such a multi-master concept, the conditions under which, and the manner in which, the tasks of a master are assumed by another master have to be specified in advance.”).

No.	'904 Patent Claim 5	TRENDnet Stackable Hubs
		 Fig. 2 (annotation added) For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

No.	'904 Patent Claim 5	TRENDnet Stackable Hubs
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

No.	'904 Patent Claim 5	TRENDnet Stackable Hubs
		 BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. In this example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features where "[e]ach unit in the stack has a full copy of the stack configuration so in the unlikely event of any unit failure, operation of the stack continues without affecting application connectivity." BayStack 450 Data Sheet at 3 of 8.

No.	'904 Patent Claim 5	TRENDnet Stackable Hubs
		In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches further disclose its fail-safe design features includes that "[e]ach switch includes a Redundant Power Supply Unit connection. Should the switch's built-in power supply fail, the Bay Networks RPSU (sold separately) will automatically supply power to the switch for uninterrupted operation." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below.

No.	'904 Patent Claim 5	TRENDnet Stackable Hubs
		Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.  BayStack 450 Data Sheet at 4 of 8, FIG. 2. The BayStack 450 Switches further disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290.

No.	'904 Patent Claim 5	TRENDnet Stackable Hubs
		Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

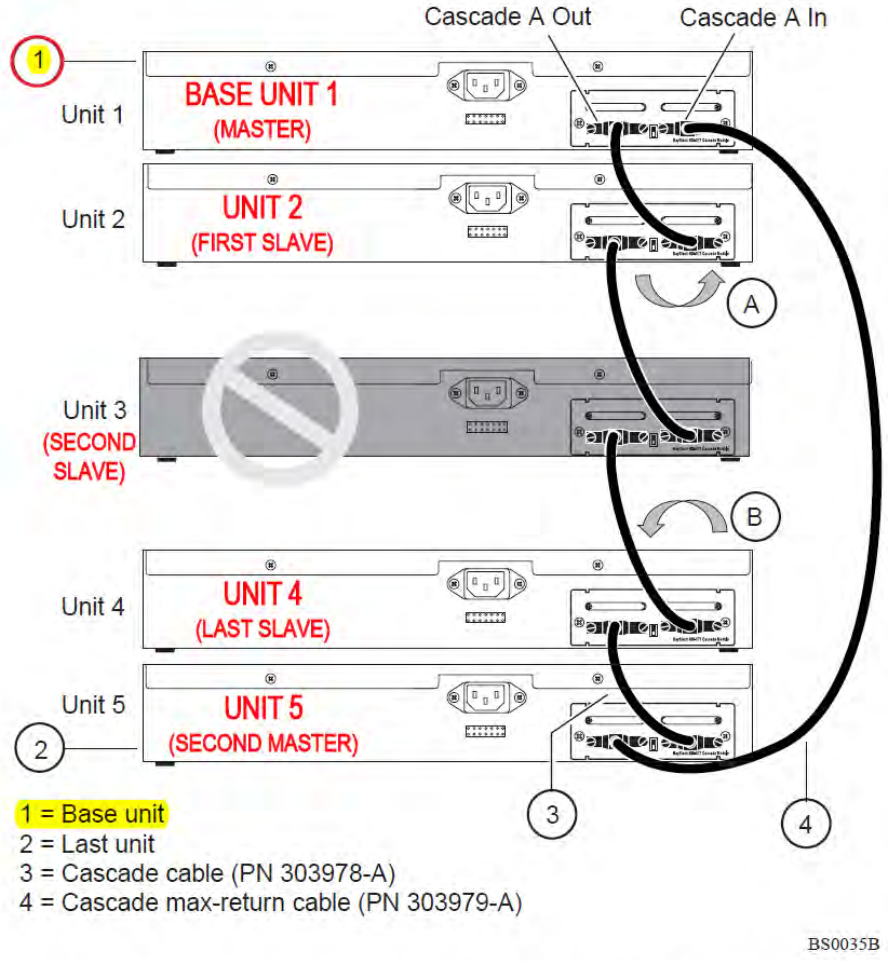


Figure 1-14. Redundant Cascade Stacking Feature

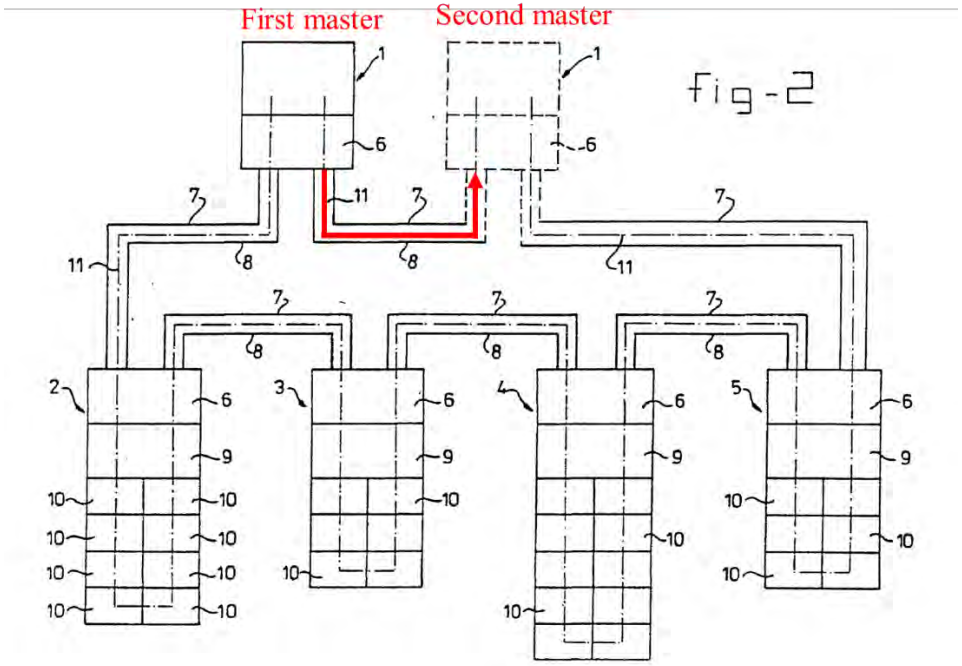
BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

No.	'904 Patent Claim 6	TRENDnet Stackable Hubs
6	Apparatus according to claim 5, wherein the first master unit bicasts the upstream data packets that it receives from the slave units to the network and, via the protection interface, to the second master unit, which transmits the upstream data packets to the network.	TRENDnet Stackable Hubs disclose apparatus according to claim 5, wherein the first master unit bicasts the upstream data packets that it receives from the slave units to the network and, via the protection interface, to the second master unit, which transmits the upstream data packets to the network. For example, TRENDnet Stackable Hubs disclose that packets are received from the network. TRENDnet Stackable Hubs further disclose that the Trendnet TE100-DM/DS Hub Stack is connected to multiple networks, *e.g.*, a10Mbps Ethernet network and a 100Mbps Fast Ethernet network. TRENDnet Stackable Hubs further disclose that the hubs within the Trendnet TE100-DM/DS Hub Stack contain more than one daisy-chain port, *e.g.*, two daisy-chain ports. Thus, a person of ordinary skill in the art would understand from the teachings of TRENDnet Stackable Hubs that data packets can be received from either a downstream or upstream direction, and that the primary master can bicast the packets to the first slave unit and to the standby backup master. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that the TRENDnet Stackable Hubs are not found to not meet this limitation, a protection interface coupling the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault, would have been obvious to a person having ordinary skill in the art, as explained below. TRENDnet Stackable Hubs at Page No. 16 ("[The list below highlights the features and specifications of the TE100-DM/DS series hubs. Compatible with the IEEE 802.3 10BASE-T Ethernet and 802.3u 100BASE-TX Fast Ethernet industry standards for interoperability with other Ethernet/Fast Ethernet network devices. Ethernet connections support Category 3 or better twisted-pair cables. Fast Ethernet connections support both shielded twisted pair and Category 5 unshielded twisted-pair cables. Fast Ethernet connections support a maximum distance of 100 meters from end-station to hub, and a total network diameter of 205 meters.

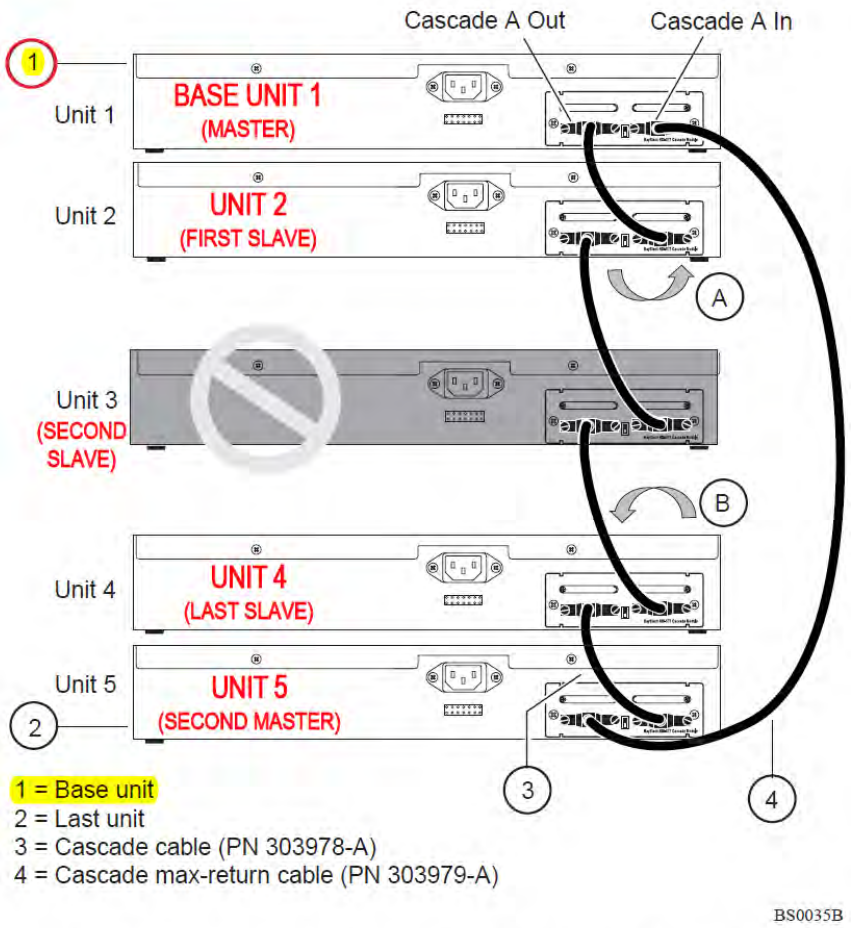
No.	'904 Patent Claim 6	TRENDnet Stackable Hubs
		Sixteen (TE100-DS16, TE100-DS16X, TE100-DM16, TE100-DM16X) or twenty-four (TE100-DS24, TE100-DS24X, TE100-DM24, TE100-DM24X) NWay RJ-45 ports for connecting stations to the network.]"). TRENDNET00000020-021. TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack **Note: In this context, "Group" means "Hub."** The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077. TRENDnet Stackable Hubs at Page No. 78 ("[The hub supports several monitoring functions, allowing you to keep statistics on the operation of each port, each hub, and the entire network segment, as well as to monitor the addresses of the packets received at each port.]"). TRENDNET00000082. TRENDnet Stackable Hubs at Page No. 80 ("[Multicast. This statistic counts the number of good multicast packets received. Multicast events are messages sent from one node to multiple nodes on the segment. Broadcast. This statistic counts the number of good broadcast packets received. Broadcast events are messages sent to all nodes on the segment.]"). TRENDNET00000084.

No.	'904 Patent Claim 6	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 82 ("[Displaying Segment Statistics The hub stack collects network transmission statistics for each segment in the stack. You can choose to view them from the Statistics menu, accessible under the Network Monitoring menu. StatsPkts. This statistic displays the number of packets received from the network, including error packets. BroadcastPkts. This statistics counts the number of good broadcast packets received on the segment. MulticastPkts. This statistics counts the number of good multicast packets received on the segment. CRCAlignErrors. This statistic counts the number of valid length packets (64 to 1518 bytes) that had a bad Frame Check Sequence (FCS). UndersizePkts. This statistic counts the number of well-formed packets that were smaller than 64 octets. OversizePkts. This statistic counts the number of well-formed packets that were longer than 1518 octets. Fragments. This statistic counts the number of ill formed packets less than 64 octets and all events without a start-of-frame delimiter regardless of their length.]"). TRENDNET00000086. TRENDnet Stackable Hubs at Page No. 54 ("[Within a TE100-DM/DS series hub stack, in addition to a master hub for management purposes, a standby backup master can also be installed. If a hub stack has two master units, the first powered-on Master unit or the unit that is higher in the stack will manage the stack and be designated as the "Primary Master." Master hubs in the series include a built-in contention algorithm which determines which hub will manage the stack and which will operate in standby mode. If, during power-on, the two master hubs in the stack both attempt to initialize as the Primary Master, this collision will result in an automatic stack reset indicated by all hub ID numbers changing to 0 temporarily. If the current Primary Master Hub fails or loses power, the standby master will take over and manage the hub stack.]"). TRENDNET00000058.

No.	'904 Patent Claim 6	TRENDnet Stackable Hubs
		Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, the TRENDnet Stackable Hubs in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 6 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. For example, Vink '324 discloses a cascade arrangement and serial transfer of data bits in its communication system. Vink '324 16:19-17:2 ("The shift register principle is also of advantage with respect to use, for example for reliability reasons, of a plurality of masters as is illustrated in Figure 2 by the broken lines. In such a multi-master concept, one of the masters is in general active in relation to data exchange, while one or more other masters only have a passive role therein. All the masters are so designed that they can assume the function of the active master, for example in the event of faults. The passive masters are easily able to detect errors of the active master because, as a consequence of their cascade arrangement and the serial transfer of data bits in the communication system according to the invention, they receive all the information which is intended for the active master. Consequently, no separate communication path is required between the various masters to keep the passive masters abreast of the operations, instruction etc. carried out by the active master. Such a "hot stand-by" mode is of importance, in particular, in industrial process measurement and control in which failure or delay in the production process may, inter alia, have serious financial consequences. It is obvious that, in such a multi-master concept, the conditions under which, and the manner in which, the tasks of a master are assumed by another master have to be specified in advance.").

No.	'904 Patent Claim 6	TRENDnet Stackable Hubs
		 Fig. 2 (annotation added) For example, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8.

No.	'904 Patent Claim 6	TRENDnet Stackable Hubs
		The BayStack 450 Switches further disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

No.	'904 Patent Claim 6	TRENDnet Stackable Hubs
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

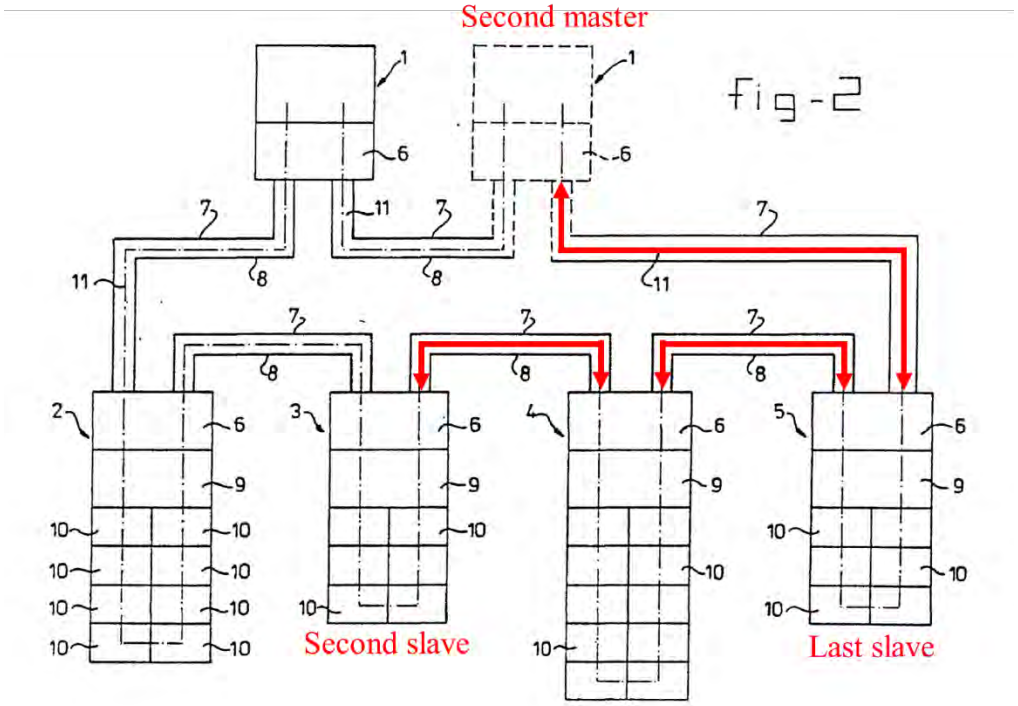
No.	'904 Patent Claim 7	TRENDnet Stackable Hubs
7	Apparatus according to claim 4, wherein in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit.	TRENDnet Stackable Hubs disclose apparatus according to claim 4, wherein in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit. For example, TRENDnet Stackable Hubs disclose that packets are received from the network. TRENDnet Stackable Hubs further disclose that the Trendnet TE100-DM/DS Hub Stack is connected to multiple networks, *e.g.*, a10Mbps Ethernet network and a 100Mbps Fast Ethernet network. TRENDnet Stackable Hubs further disclose that the hubs within the Trendnet TE100-DM/DS Hub Stack contain more than one daisy-chain port, *e.g.*, two daisy-chain ports. Thus, a person of ordinary skill in the art would understand from the teachings of TRENDnet Stackable Hubs that data packets can be received from either a downstream or upstream direction, and in response to a fault the direction of traffic can be reversed. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that the TRENDnet Stackable Hubs are not found to not meet this limitation, wherein in case of a fault at a location in one of the daisy chains, data flow in a portion of the daisy chain between the location of the fault and the second master unit is reversed, so that the downstream data packets are passed from the second master unit to the slave units in the portion of the daisy chain via the last slave unit in the chain, and the upstream data packets are passed by the last slave unit to the second master unit, would have been obvious to a person having ordinary skill in the art, as explained below. TRENDnet Stackable Hubs at Page No. 16 ("[The list below highlights the features and specifications of the TE100-DM/DS series hubs. Compatible with the IEEE 802.3 10BASE-T Ethernet and 802.3u 100BASE-TX Fast Ethernet industry standards for interoperability with other Ethernet/Fast Ethernet network devices. Ethernet connections support Category 3 or better twisted-pair cables. Fast Ethernet connections support both shielded twisted pair and Category 5 unshielded twisted-pair cables.

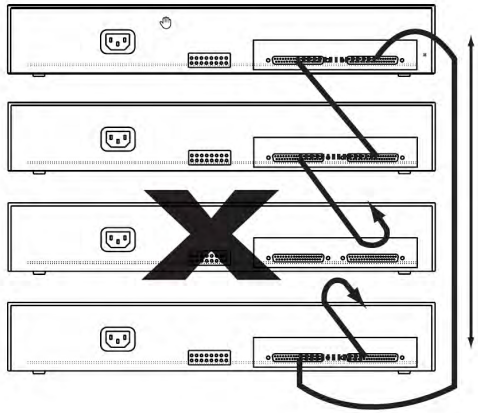
No.	'904 Patent Claim 7	TRENDnet Stackable Hubs
		Fast Ethernet connections support a maximum distance of 100 meters from end-station to hub, and a total network diameter of 205 meters. Sixteen (TE100-DS16, TE100-DS16X, TE100-DM16, TE100-DM16X) or twenty-four (TE100-DS24, TE100-DS24X, TE100-DM24, TE100-DM24X) NWay RJ-45 ports for connecting stations to the network.]"). TRENDNET00000020-021. TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack Note: In this context, "Group" means "Hub." The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077. TRENDnet Stackable Hubs at Page No. 78 ("[The hub supports several monitoring functions, allowing you to keep statistics on the operation of each port, each hub, and the entire network segment, as well as to monitor the addresses of the packets received at each port.]"). TRENDNET00000082. TRENDnet Stackable Hubs at Page No. 80 ("[Multicast. This statistic counts the number of good multicast packets received. Multicast events are messages sent from one node to multiple nodes on the segment. Broadcast. This statistic counts the number of good broadcast packets received. Broadcast events are messages sent to all nodes on the segment.]"). TRENDNET00000084.

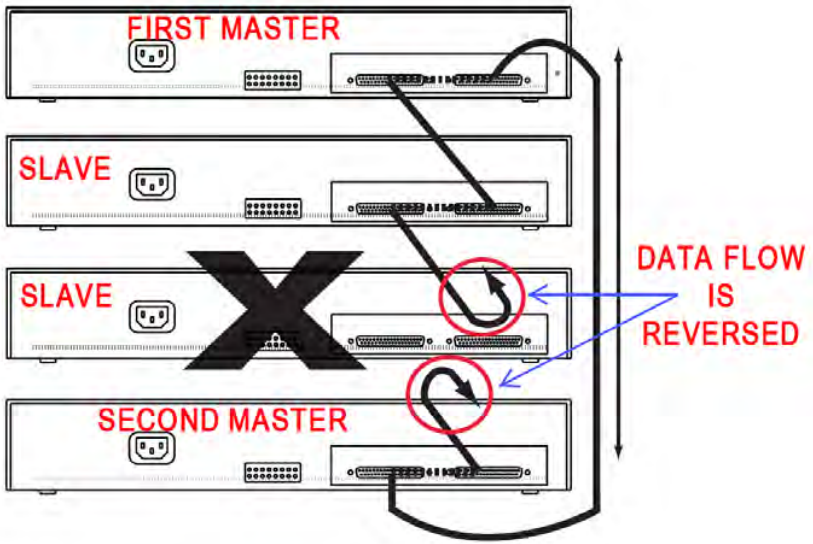
No.	'904 Patent Claim 7	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 82 ("[Displaying Segment Statistics The hub stack collects network transmission statistics for each segment in the stack. You can choose to view them from the Statistics menu, accessible under the Network Monitoring menu. StatsPkts. This statistic displays the number of packets received from the network, including error packets. BroadcastPkts. This statistics counts the number of good broadcast packets received on the segment. MulticastPkts. This statistics counts the number of good multicast packets received on the segment. CRCAlignErrors. This statistic counts the number of valid length packets (64 to 1518 bytes) that had a bad Frame Check Sequence (FCS). UndersizePkts. This statistic counts the number of well-formed packets that were smaller than 64 octets. OversizePkts. This statistic counts the number of well-formed packets that were longer than 1518 octets. Fragments. This statistic counts the number of ill formed packets less than 64 octets and all events without a start-of-frame delimiter regardless of their length.]"). TRENDNET00000086. TRENDnet Stackable Hubs at Page No. 54 ("[Within a TE100-DM/DS series hub stack, in addition to a master hub for management purposes, a standby backup master can also be installed. If a hub stack has two master units, the first powered-on Master unit or the unit that is higher in the stack will manage the stack and be designated as the "Primary Master." Master hubs in the series include a built-in contention algorithm which determines which hub will manage the stack and which will operate in standby mode. If, during power-on, the two master hubs in the stack both attempt to initialize as the Primary Master, this collision will result in an automatic stack reset indicated by all hub ID numbers changing to 0 temporarily. If the current Primary Master Hub fails or loses power, the standby master will take over and manage the hub stack.]"). TRENDNET00000058.

No.	'904 Patent Claim 7	TRENDnet Stackable Hubs
		Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, the TRENDnet Stackable Hubs in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 7 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. For example, Vink '324 discloses reversing direction of packet flow in the chain in the event of a fault, so that the slaves can still communicate with a master on either side of the fault. Vink '324 16:19-17:2 ("The shift register principle is also of advantage with respect to use, for example for reliability reasons, of a plurality of masters as is illustrated in Figure 2 by the broken lines. In such a multi-master concept, one of the masters is in general active in relation to data exchange, while one or more other masters only have a passive role therein. All the masters are so designed that they can assume the function of the active master, for example in the event of faults. The passive masters are easily able to detect errors of the active master because, as a consequence of their cascade arrangement and the serial transfer of data bits in the communication system according to the invention, they receive all the information which is intended for the active master. Consequently, no separate communication path is required between the various masters to keep the passive masters abreast of the operations, instruction etc. carried out by the active master. Such a "hot stand-by" mode is of importance, in particular, in industrial process measurement and control in which failure or delay in the production process may, inter alia, have serious financial consequences. It is obvious that, in such a multi-master concept, the conditions under which, and the manner in which, the tasks of a master are assumed by another master have to be specified in advance."). Vink '324 14:2-27 ("In particular, with implicit addressing of the I/O modules, that is to say, if the sequence of the data bits corresponds to the sequence of the I/O modules of the relevant slave, errors in the transmission system and/or the local data bus can give rise to undesirable responses. To prevent this as far as possible, in an embodiment of the communication system according to the invention, a slave is provided with means for monitoring the serial transfer of data bits via the transmission system and/or the local data bus. A complete monitoring of

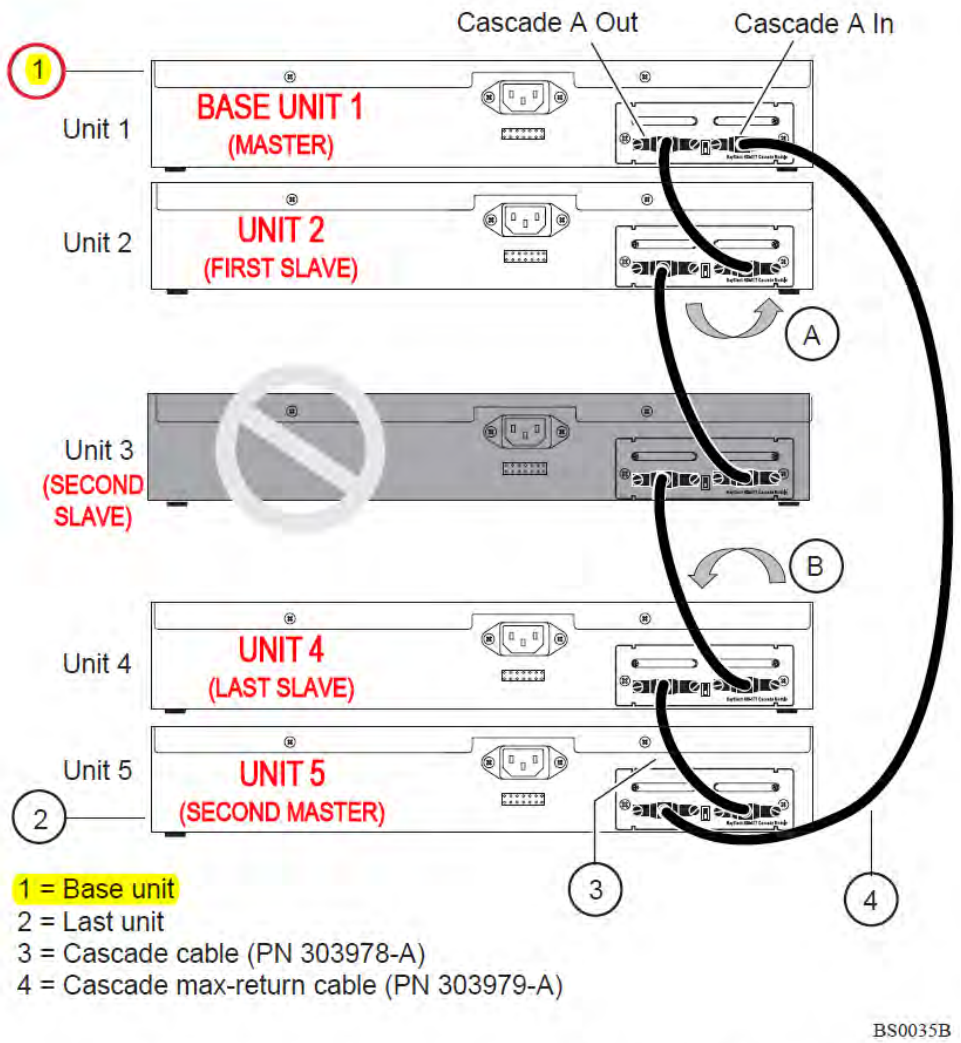
No.	'904 Patent Claim 7	TRENDnet Stackable Hubs
		the data exchange is achieved in that the at least one master is provided with means for detecting error situations in the transmission system. When a transmission error is detected, the control module of a slave will not accept the data received, nor will it transmit new data. The data bits received are then transferred further unchanged. The master then receives back the data bits despatched, possibly with transmission errors. By checking the transmitted and received data, information can be obtained about a transmission fault. If necessary, the relevant data bits can, for example, be transmitted again. Owing to the serial transfer down to the level of the I/O modules, the nodes in the communication system according to the invention are particularly suitable for use in a ring network configuration. Making use of this, the slaves in a further embodiment of the invention are connected to the at least one master via a multiple ring transmission system, the at least one master and the slaves being provided with means for change-over of a transmission system ring."). Vink '324 14:28-38 "A very flexible system is obtained in an embodiment of the invention in that the at least one master and slaves are designed to transmit or receive packets of data bits via a transmission system ring in one and/or the other direction. Master and/or slaves constructed in this way are capable of functioning as a switching centre so that, for example, the master is able to reach as many connected slaves as possible in a fault situation. The invention also relates to an I/O module, a substation (slave) and a master station (master) corresponding to, and suitable for, use in the communication system according to one or more of the preceding embodiments."). Vink '324 21:3-17 ("The transmitting/receiving unit 6 provides for the monitoring of the transmission and the control computer 38 provides for and monitors the correct sequence of the data bits for a relevant slave, related to the sequence in which the I/O modules are arranged. The information about this sequence is extracted by the control unit 36 from the status information received from the relevant slaves. In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about whether the connection to the transmission system is or is not operating

No.	'904 Patent Claim 7	TRENDnet Stackable Hubs
		correctly. For use in the communication system according to Figure 1 the unit 6 can be omitted.")  Fig. 2 (annotation added) For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the

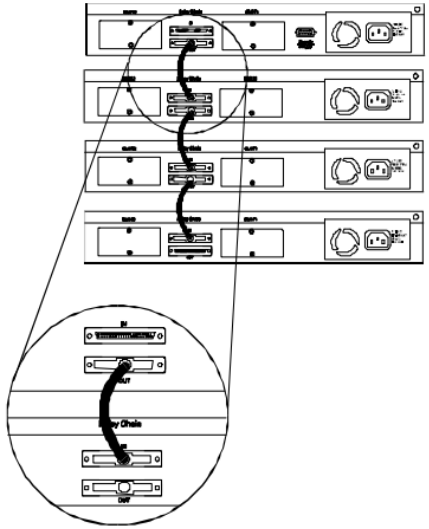
No.	'904 Patent Claim 7	TRENDnet Stackable Hubs
		stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.*  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

No.	'904 Patent Claim 7	TRENDnet Stackable Hubs
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In the event of a failure, the BayStack 450 Switches disclose a Temporary Base Unit as being a second master unit. See, e.g., BayStack 450 Manual at 33, 52, 230 of 290. For instance, the BayStack 450 Manual states that "[i]f an assigned base unit fails, the next unit in the stack order automatically becomes the new temporary base unit. This change is indicated by the Base LED on the temporary base unit's LED display panel turning on (amber). For detailed information about the base LED, see Table 1-1 on page 1-6." BayStack 450 Manual at 52 of 290. Further, in this alternative example, the BayStack 450 Manual describes that "[t]his automatic failover is a temporary safeguard only. If the stack configuration loses power, the temporary

No.	'904 Patent Claim 7	TRENDnet Stackable Hubs
		base unit will not power up as the base unit when power is restored. For this reason, you should always assign the temporary base unit as the base unit (set the Unit Select switch to Base) until the failed unit is repaired or replaced." BayStack 450 Manual at 52 of 290. In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290. Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

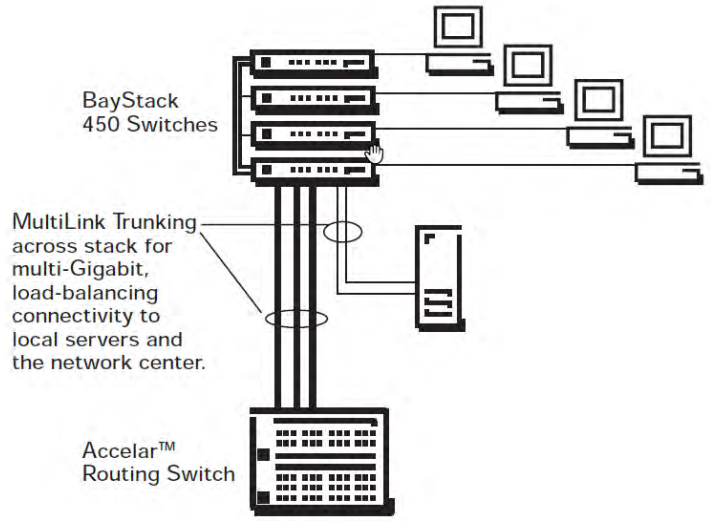
No.	'904 Patent Claim 7	TRENDnet Stackable Hubs
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

No.	'904 Patent Claim 8	TRENDnet Stackable Hubs
8	Apparatus according to claim 7, wherein the downstream packets for the slave units in the portion of the daisy chain between the location of the fault and the second master unit are conveyed to the second master unit from the first master unit via another one of the daisy chains.	TRENDnet Stackable Hubs disclose apparatus according to claim 7, wherein the downstream packets for the slave units in the portion of the daisy chain between the location of the fault and the second master unit are conveyed to the second master unit from the first master unit via another one of the daisy chains. For example, TRENDnet Stackable Hubs disclose that a Trendnet TE100-DM/DS Hub Stack includes multiple hubs that can be stacked through the daisy-chain ports to form one logical hub using a cable. A cascade of five hubs can be created, wherein, the first and last hub in the stack use only one of the daisy-chain ports, while the others use both of the daisy-chain ports. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that the TRENDnet Stackable Hubs are not found to not meet this limitation, a protection interface coupling the second master unit to the first master unit, and over which interface data packets are conveyed between the first and second master units in case of a fault, would have been obvious to a person having ordinary skill in the art, as explained below. TRENDnet Stackable Hubs at Page No. 37 ("[You can stack up to five hubs using the daisy-chain ports to form one logical hub. In this configuration, the interconnected hubs constitute a single logical unit, providing a maximum of 120 twisted-pair ports. Use the provided daisy-chain cable to connect the Daisy-Chain OUT port on the rear panel of one hub to the Daisy-Chain IN port on the hub below it, as shown in the figure below. Repeat this procedure for each hub to be included in the stack.]"). TRENDNET00000041.

No.	'904 Patent Claim 8	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 38; TRENDNET00000042.  TRENDnet Stackable Hubs at Page No. 26 ("[Daisy-Chain IN Port When cascading a set of stackable dual-speed hubs, this port should be connected to the Daisy-Chain OUT port of the previous hub in the stack (usually placed immediately above it). A cascade of five hubs can be created in this way. The first and last hubs in the stack use only one of the daisy-chain ports, while the others use both." "Daisy-Chain OUT Port Works in conjunction with the Daisy-Chain IN Port (see above). Connect this port to the Daisy-Chain IN Port of the next hub in ack (usually placed immediately below it), using the enclosed daisy-chain cable.]"). TRENDNET00000030. TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack Note: In this context, "Group" means "Hub." The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed.

No.	'904 Patent Claim 8	TRENDnet Stackable Hubs
		Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077. Under at least the apparent claim scope alleged by Orckit's Infringement Disclosures, the TRENDnet Stackable Hubs in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 8 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. For example, Vink '324 discloses ("The transmitting/receiving unit 6 provides for the monitoring of the transmission and the control computer 38 provides for and monitors the correct sequence of the data bits for a relevant slave, related to the sequence in which the I/O modules are arranged. The information about this sequence is extracted by the control unit 36 from the status information received from the relevant slaves. In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about whether the connection to the transmission system is or is not operating correctly. For use in the communication system according to Figure 1 the unit 6 can be omitted.") Vink '324 21:3-17. In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

No.	'904 Patent Claim 8	TRENDnet Stackable Hubs
		In addition, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below.

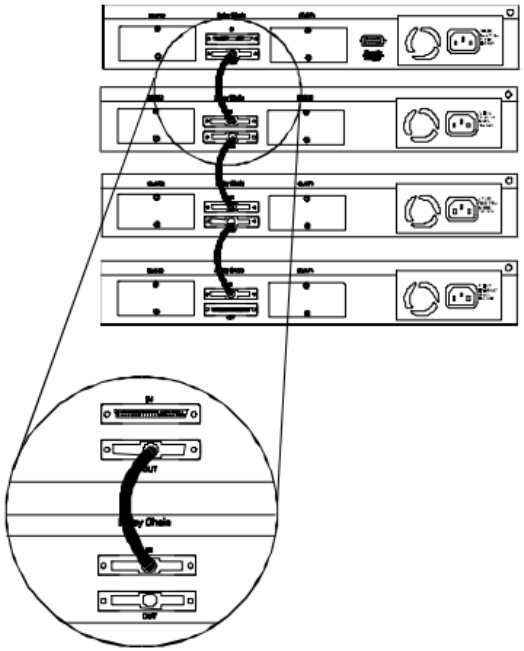
No.	'904 Patent Claim 8	TRENDnet Stackable Hubs
		Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.  BayStack 450 Data Sheet at 4 of 8, FIG. 2.

No.	'904 Patent Claim 9	TRENDnet Stackable Hubs
9[preamble]	Network access apparatus, comprising:	TRENDnet Stackable Hubs disclose network access apparatus, comprising For example, TRENDnet Stackable Hubs disclose TE100-DM/DS hub stack designed to allow easy migration and integration between 10Mbps Ethernet and 100Mbps Fast Ethernet. *See generally* TRENDNET0000001-130. *See supra at* 1 [preamble].

No.	'904 Patent Claim 9	TRENDnet Stackable Hubs
9[a]	first and second master units, each comprising a physical interface to a packet-switched network;	TRENDnet Stackable Hubs disclose first and second master units, each comprising a physical interface to a packet-switched network. For example, TRENDnet Stackable Hubs disclose two master units (one primary master and one standby backup master) that connect to an Ethernet network via twisted-pair cables. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See supra* at 1[a].
9[b]	a plurality of slave units,	TRENDnet Stackable Hubs disclose a plurality of slave units. For example, TRENDnet Stackable Hubs disclose Trendnet TE100-DM/DS Hub Stack that include several stacked hub units. Wherein, out of these several stacked hub units, two hub units are master units, and the rest are slave units. Also, the group configuration menu screen displays information about each of the hubs in the stack; wherein, the group role shows what role the hub is currently playing in the hub stack e.g., primary master, standby master, or slave. *See supra* at 1[b].
9[c]	each slave unit comprising one or more ports to respective subscriber lines; and	TRENDnet Stackable Hubs disclose each slave unit comprising one or more ports to respective subscriber lines. For example, TRENDnet Stackable Hubs disclose each hub unit in the Trendnet TE100-DM/DS Hub Stack includes MDI-X ports that connect it to PCs, workstations, or servers. *See supra* at 1[c].

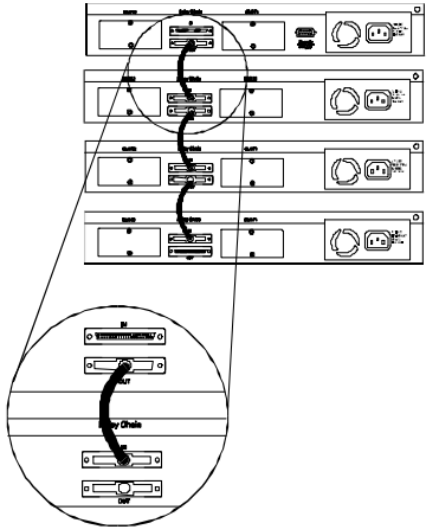
No.	'904 Patent Claim 9	TRENDnet Stackable Hubs
9[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	TRENDnet Stackable Hubs disclose a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. For example, TRENDnet Stackable Hubs disclose Trendnet TE100-DM/DS Hub Stack includes multiple hubs that can be stacked through the daisy-chain ports to form one logical hub using a cable. A cascade of five hubs can be created, wherein, the first and last hub in the stack use only one of the daisy-chain ports, while the others use both. Thus, at least under the apparent claim scope set forth in Orckit's Infringement Disclosures, this limitation is met. *See supra* at 1[d].
9[e]	each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit, wherein each of the first and second master units comprises:	TRENDnet Stackable Hubs disclose each daisy chain comprising at least a first slave unit connected one of the physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit. For example, TRENDnet Stackable Hubs disclose Trendnet TE100-DM/DS Hub Stack that can be stacked up to five hubs using the daisy-chain ports to form one logical hub. Wherein, two hubs act as master unit (PRIMARY and STANDBY BACKUP MASTER) and rest of them act as slave units. Also, the Group Configuration Menu screen displays information about each of the hubs in the stack. The Group Role shows what role the hub is currently playing in the hub stack e.g., primary master, standby master, or slave. Further, the uppermost unit is referred to as the first master unit and is connected to the second unit of the hub stack which is the first slave unit connected via daisy-chain ports. The third unit of the hub stack is a second slave unit connected to the second unit of the hub. Further, the third unit of the hub stack is the last slave unit connected to fourth unit of the hub stack which is the second master unit through the daisy-chain ports using a cable. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See supra* at 1[e].

No.	'904 Patent Claim 9	TRENDnet Stackable Hubs
9[f]	a switch, configured to route data packets between the respective physical interface and the one or more daisy chains; and	TRENDnet Stackable Hubs disclose a switch, configured to route data packets between the respective physical interface and the one or more daisy chains. For example, each of the master units (PRIMARY and STANDBY BACKUP MASTER) in a transmit data to the hubs to which they are connected. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. TRENDnet Stackable Hubs at Page No. 78 ("[The hub supports several monitoring functions, allowing you to keep statistics on the operation of each port, each hub, and the entire network segment, as well as to monitor the addresses of the packets received at each port.]"). TRENDNET00000082. TRENDnet Stackable Hubs at Page No. 80 ("[Multicast. This statistic counts the number of good multicast packets received. Multicast events are messages sent from one node to multiple nodes on the segment. Broadcast. This statistic counts the number of good broadcast packets received. Broadcast events are messages sent to all nodes on the segment.]"). TRENDNET00000084. TRENDnet Stackable Hubs at Page No. 82 ("[Displaying Segment Statistics The hub stack collects network transmission statistics for each segment in the stack. You can choose to view them from the Statistics menu, accessible under the Network Monitoring menu. StatsPkts. This statistic displays the number of packets received from the network, including error packets. BroadcastPkts. This statistics counts the number of good broadcast packets received on the segment. MulticastPkts. This statistics counts the number of good multicast packets received on the segment. CRCAlignErrors. This statistic counts the number of valid length packets (64 to 1518 bytes) that had a bad Frame Check Sequence (FCS). UndersizePkts. This statistic counts the number of well-formed packets that were smaller than 64 octets.

No.	'904 Patent Claim 9	TRENDnet Stackable Hubs
		OversizePkts. This statistic counts the number of well-formed packets that were longer than 1518 octets. Fragments. This statistic counts the number of ill formed packets less than 64 octets and all events without a start-of-frame delimiter regardless of their length.]"). TRENDNET00000086. TRENDnet Stackable Hubs at Page No. 37 ("[You can stack up to five hubs using the daisy-chain ports to form one logical hub. In this configuration, the interconnected hubs constitute a single logical unit, providing a maximum of 120 twisted-pair ports. Use the provided daisy-chain cable to connect the Daisy-Chain OUT port on the rear panel of one hub to the Daisy-Chain IN port on the hub below it, as shown in the figure below. Repeat this procedure for each hub to be included in the stack.]"). TRENDNET00000041. TRENDnet Stackable Hubs at Page No. 38; TRENDNET00000042. 

No.	'904 Patent Claim 9	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 26 ("[Daisy-Chain IN Port When cascading a set of stackable dual-speed hubs, this port should be connected to the Daisy-Chain OUT port of the previous hub in the stack (usually placed immediately above it). A cascade of five hubs can be created in this way. The first and last hubs in the stack use only one of the daisy-chain ports, while the others use both." "Daisy-Chain OUT Port Works in conjunction with the Daisy-Chain IN Port (see above). Connect this port to the Daisy-Chain IN Port of the next hub in ack (usually placed immediately below it), using the enclosed daisy-chain cable.]"). TRENDNET00000030. TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack Note: In this context, "Group" means "Hub." The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077.

No.	'904 Patent Claim 9	TRENDnet Stackable Hubs
9[g]	a pre-switch, which in the event of a fault at a location in one of the daisy chains, re-routes at least a portion of the data packets exchanged with one or more of the slaves in the daisy chain in which the fault has occurred through another one of the daisy chains.	TRENDnet Stackable Hubs disclose a pre-switch, which in the event of a fault at a location in one of the daisy chains, re-routes at least a portion of the data packets exchanged with one or more of the slaves in the daisy chain in which the fault has occurred through another one of the daisy chains. For example, each of the slave units includes switch circuitry for forwarding packets to connecting devices, including through another one of the stacks of hubs when a fault has occurred in one of the stacks of hubs connected by daisy-chain ports. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. TRENDnet Stackable Hubs at Page No. 78 ("[The hub supports several monitoring functions, allowing you to keep statistics on the operation of each port, each hub, and the entire network segment, as well as to monitor the addresses of the packets received at each port.]"). TRENDNET00000082. TRENDnet Stackable Hubs at Page No. 80 ("[Multicast. This statistic counts the number of good multicast packets received. Multicast events are messages sent from one node to multiple nodes on the segment. Broadcast. This statistic counts the number of good broadcast packets received. Broadcast events are messages sent to all nodes on the segment.]"). TRENDNET00000084. TRENDnet Stackable Hubs at Page No. 82 ("[Displaying Segment Statistics The hub stack collects network transmission statistics for each segment in the stack. You can choose to view them from the Statistics menu, accessible under the Network Monitoring menu. StatsPkts. This statistic displays the number of packets received from the network, including error packets. BroadcastPkts. This statistics counts the number of good broadcast packets received on the segment. MulticastPkts. This statistics counts the number of good multicast packets received on the segment.

No.	'904 Patent Claim 9	TRENDnet Stackable Hubs
		CRCAlignErrors. This statistic counts the number of valid length packets (64 to 1518 bytes) that had a bad Frame Check Sequence (FCS). UndersizePkts. This statistic counts the number of well-formed packets that were smaller than 64 octets. OversizePkts. This statistic counts the number of well-formed packets that were longer than 1518 octets. Fragments. This statistic counts the number of ill formed packets less than 64 octets and all events without a start-of-frame delimiter regardless of their length.]"). TRENDNET00000086. TRENDnet Stackable Hubs at Page No. 37 ("[You can stack up to five hubs using the daisy-chain ports to form one logical hub. In this configuration, the interconnected hubs constitute a single logical unit, providing a maximum of 120 twisted-pair ports. Use the provided daisy-chain cable to connect the Daisy-Chain OUT port on the rear panel of one hub to the Daisy-Chain IN port on the hub below it, as shown in the figure below. Repeat this procedure for each hub to be included in the stack.]"). TRENDNET00000041. TRENDnet Stackable Hubs at Page No. 38; TRENDNET00000042. 

No.	'904 Patent Claim 9	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 26 ("[Daisy-Chain IN Port When cascading a set of stackable dual-speed hubs, this port should be connected to the Daisy-Chain OUT port of the previous hub in the stack (usually placed immediately above it). A cascade of five hubs can be created in this way. The first and last hubs in the stack use only one of the daisy-chain ports, while the others use both." "Daisy-Chain OUT Port Works in conjunction with the Daisy-Chain IN Port (see above). Connect this port to the Daisy-Chain IN Port of the next hub in ack (usually placed immediately below it), using the enclosed daisy-chain cable.]"). TRENDNET00000030. TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack Note: In this context, "Group" means "Hub." The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077.

No.	'904 Patent Claim 10	TRENDnet Stackable Hubs
10	Apparatus according to claim 9, wherein the pre-switch re-routes the data packets such that substantially no reconfiguration of the switch is required responsive to the fault.	TRENDnet Stackable Hubs disclose apparatus according to claim 9, wherein the pre-switch re-routes the data packets such that substantially no reconfiguration of the switch is required responsive to the fault. *See supra* Claim 9[g].

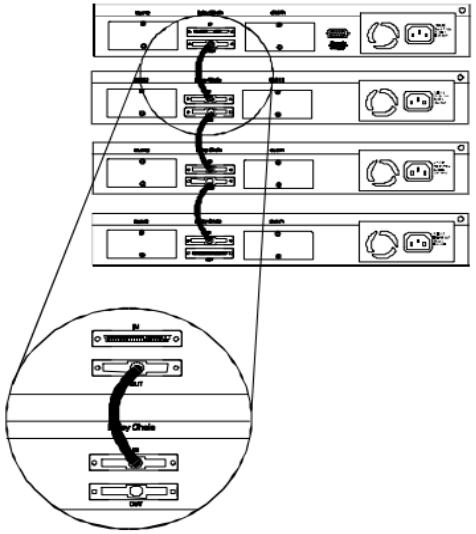
No.	'904 Patent Claim 11	TRENDnet Stackable Hubs
11[preamble]	Network access apparatus, comprising:	TRENDnet Stackable Hubs disclose network access apparatus, comprising For example, TRENDnet Stackable Hubs disclose TE100-DM/DS hub stack designed to allow easy migration and integration between 10Mbps Ethernet and 100Mbps Fast Ethernet. *See generally* TRENDNET0000001-130. *See supra at* 1 [preamble].
11[a]	first and second master units, each comprising a physical interface to a packet-switched network;	TRENDnet Stackable Hubs disclose first and second master units, each comprising a physical interface to a packet-switched network For example, TRENDnet Stackable Hubs disclose two master units (one primary master and one standby backup master) that connect to an Ethernet network via twisted-pair cables. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See supra* at 1[a].

No.	'904 Patent Claim 11	TRENDnet Stackable Hubs
11[b]	a plurality of slave units,	TRENDnet Stackable Hubs disclose a plurality of slave units. For example, TRENDnet Stackable Hubs disclose Trendnet TE100-DM/DS Hub Stack that include several stacked hub units. Wherein, out of these several stacked hub units, two hub units are master units, and the rest are slave units. Also, the group configuration menu screen displays information about each of the hubs in the stack; wherein, the group role shows what role the hub is currently playing in the hub stack e.g., primary master, standby master, or slave. *See supra* at 1[b].
11[c]	each slave unit comprising one or more ports to respective subscriber lines; and	TRENDnet Stackable Hubs disclose each slave unit comprising one or more ports to respective subscriber lines. For example, TRENDnet Stackable Hubs disclose each hub unit in the Trendnet TE100-DM/DS Hub Stack includes MDI-X ports that connect it to PCs, workstations, or servers. *See supra* at 1[c].
11[d]	a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween,	TRENDnet Stackable Hubs disclose a plurality of physical interface lines, which link the slave units in one or more daisy chains, in which the slave units are mutually connected in series by the physical interface lines therebetween. For example, TRENDnet Stackable Hubs discloses that the Trendnet TE100-DM/DS Hub Stack includes multiple hubs that can be stacked through the daisy-chain ports to form one logical hub using a cable. A cascade of five hubs can be created, wherein, the first and last hub in the stack use only one of the daisy-chain ports, while the others use both. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See supra* at 1[d].

No.	'904 Patent Claim 11	TRENDnet Stackable Hubs
11[e]	each daisy chain comprising at least a first slave unit connected by one of the physical interface lines to the first master unit and a last slave unit connected by another of the physical interface lines to the second master unit,	TRENDnet Stackable Hubs disclose each daisy chain comprising at least a first slave unit connected one of the physical interface lines to the first master unit, a second slave unit connected to the first slave unit but not to the first or second master unit, and a last slave unit connected by another of the physical interface lines to the second master unit. For example, TRENDnet Stackable Hubs disclose Trendnet TE100-DM/DS Hub Stack that can be stacked up to five hubs using the daisy-chain ports to form one logical hub. Wherein, two hubs act as master unit (PRIMARY and STANDBY BACKUP MASTER) and rest of them act as slave units. Also, the Group Configuration Menu screen displays information about each of the hubs in the stack. The Group Role shows what role the hub is currently playing in the hub stack e.g., primary master, standby master, or slave. Further, referring to the figure below at Page 38, the uppermost unit is referred to as the first master unit, then the uppermost unit is connected to the second unit of the hub stack which is the first slave unit connected via daisy chain ports. Further, the third unit of the hub stack is the last slave unit connected to the fourth unit of the hub stack which is the second master unit through the daisy-chain ports using a cable. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See supra* at 1[e].
11[f]	wherein each of the slave units comprises: a switch fabric comprising one or more switches, which convey data packets to respective ports on the switch to which the packets are addressed; and	TRENDnet Stackable Hubs disclose wherein each of the slave units comprises: a switch fabric comprising one or more switches, which convey data packets to respective ports on the switch to which the packets are addressed. For example, TRENDnet Stackable Hubs disclose that each of the slave units is a switch with several ports to which data is routed through switch circuitry. TRENDnet Stackable Hubs at Page No. 15 ("[The TE100-DM/DS series dual-speed stackable Ethernet/Fast Ethernet hubs are designed to allow easy migration and integration between 10Mbps Ethernet and 100Mbps Fast Ethernet, while providing manageability and flexibility in cable connections. The TE100-DM/DS hubs can operate with either IEEE 802.3 10BASE-T connections (twisted-pair Ethernet operating at 10 megabits per second), or IEEE 802.3u 100BASE-TX connections (twisted pair Fast Ethernet operating at 100 megabits per second).

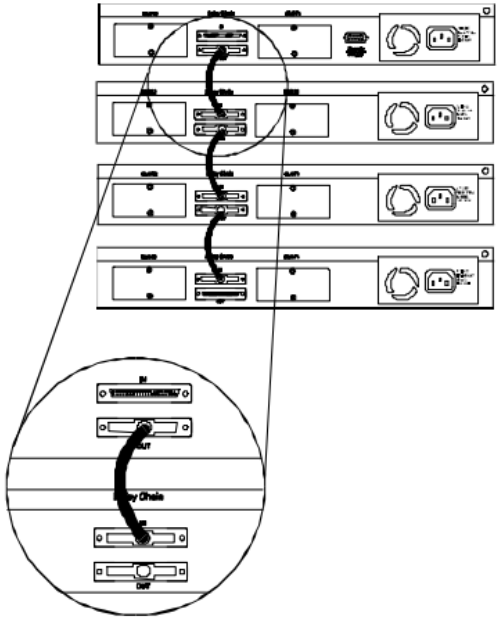
No.	'904 Patent Claim 11	TRENDnet Stackable Hubs
		All of the twisted-pair ports support NWay auto-negotiation, allowing the hub to automatically detect the speed of a network connection. This means you can connect all of your Ethernet and Fast Ethernet hosts to a TE100-DM/DS series hub stack, without any rewiring required when a host is upgraded from 10Mbps to 100Mbps.]"). TRENDNET00000019. TRENDnet Stackable Hubs at Page No. 15 ("[The TE100-DM/DS series hubs, available in 16-port and 24-port models, can be stacked with up to five hubs in a stack. A stack of five 24-port hubs gives a total of 120 Ethernet or Fast Ethernet ports.]"). TRENDNET00000019. TRENDnet Stackable Hubs at Page No. 16 ("[The list below highlights the features and specifications of the TE100-DM/DS series hubs. Compatible with the IEEE 802.3 10BASE-T Ethernet and 802.3u 100BASE-TX Fast Ethernet industry standards for interoperability with other Ethernet/Fast Ethernet network devices. Ethernet connections support Category 3 or better twisted-pair cables. Fast Ethernet connections support both shielded twisted pair and Category 5 unshielded twisted-pair cables. Fast Ethernet connections support a maximum distance of 100 meters from end-station to hub, and a total network diameter of 205 meters. Sixteen (TE100-DS16, TE100-DS16X, TE100-DM16, TE100-DM16X) or twenty-four (TE100-DS24, TE100-DS24X, TE100-DM24, TE100-DM24X) NWay RJ-45 ports for connecting stations to the network. Full hub stack and network management provided via a SNMP management agent (TE100-DM16, TE100-DM16X, TE100-DM24, TE100-DM24X). An optional slide-in switch module allows bridging between 10Mbps and 100Mbps segments. Only one switch module is needed per stack, but managed hub stacks can make use of additional switch modules for redundancy. LED indicators for power, collisions, link, network activity, partitioning status, disable, operating speed (10 or 100Mbps) and network utilization. Digital hub ID number front panel display. Auto-partition protection. Data collision detection and handling. Preamble regeneration, signal re-timing.

No.	'904 Patent Claim 11	TRENDnet Stackable Hubs
		Two proprietary daisy-chain ports for cascading up to five hubs to form one logical hub; management provided via a master hub. Standby backup master capability when two master model hubs are present within a single stack. Uplink port allows easy linking of two Fast Ethernet hub stacks to further expand your network. Standard-size (19", 1.25U height), rack mountable Built-in, removable power supply, replaceable without opening the hub. Power supply is easily removed and replaced.]"). TRENDNET00000020-021. TRENDnet Stackable Hubs at Page No. 37 ("[This chapter discusses how to make connections to the hub's twisted-pair ports and console port, cascading hubs to create a stack, and linking with other hubs (or hub stacks).]"). TRENDNET00000041. TRENDnet Stackable Hubs at Page No. 37 ("[You can stack up to five hubs using the daisy-chain ports to form one logical hub. In this configuration, the interconnected hubs constitute a single logical unit, providing a maximum of 120 twisted-pair ports.]"). TRENDNET00000041. TRENDnet Stackable Hubs at Page No. 37 ("[Use the provided daisy-chain cable to connect the Daisy-Chain OUT port on the rear panel of one hub to the Daisy-Chain IN port on the hub below it, as shown in the figure below. Repeat this procedure for each hub to be included in the stack.]"). TRENDNET00000041. TRENDnet Stackable Hubs at Page No. 38; TRENDNET00000042.

No.	'904 Patent Claim 11	TRENDnet Stackable Hubs
		 TRENDnet Stackable Hubs at Page No. 45 ("[There are three optional modules that may be added to any of the TE100-DM/DS series hubs. Each hub can accommodate two modules. Each of the modules offers a different additional network interface that allows for greater flexibility in how these hubs may be used in a network.]"). TRENDNET00000049. TRENDnet Stackable Hubs at Page No. 54 ("[Within a TE100-DM/DS series hub stack, in addition to a master hub for management purposes, a standby backup master can also be installed. If a hub stack has two master units, the first powered-on Master unit or the unit that is higher in the stack will manage the stack and be designated as the "Primary Master." Master hubs in the series include a built-in contention algorithm which determines which hub will manage the stack and which will operate in standby mode. If, during power-on, the two master hubs in the stack both attempt to initialize as the Primary Master, this collision will result in an automatic stack reset indicated by all hub ID numbers changing to 0 temporarily. If the current Primary Master Hub fails or loses power, the standby master will take over and manage the hub stack.]"). TRENDNET00000058.
11[g]	a pre-switch, which receives the data	TRENDnet Stackable Hubs discloses a pre-switch, which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets

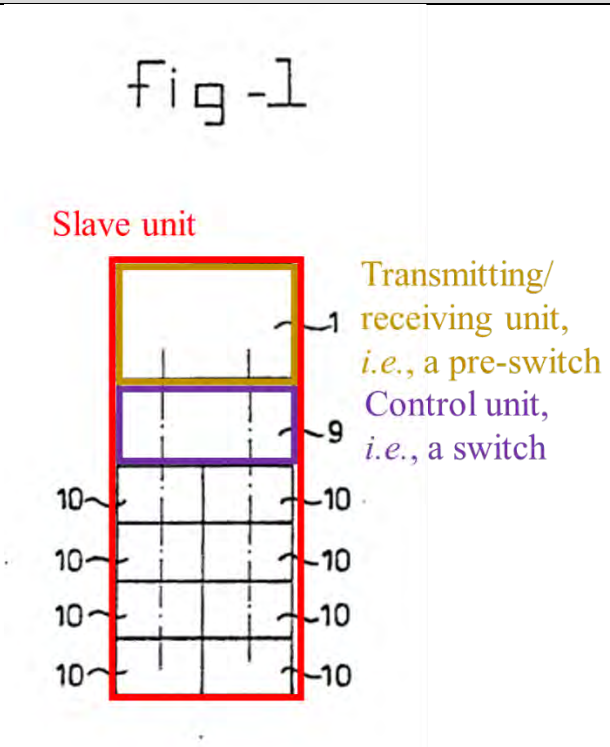
No.	'904 Patent Claim 11	TRENDnet Stackable Hubs
	packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines.	that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines. For example, each of the slave units includes switch circuitry for forwarding packets to connecting devices, including through another one of the stacks of hubs when a fault has occurred in one of the stacks of hubs connected by daisy-chain ports. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that the TRENDnet Stackable Hubs is found to not meet this limitation, a pre-switch, which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines would have been obvious to a person having ordinary skill in the art, as explained below. TRENDnet Stackable Hubs at Page No. 78 ("[The hub supports several monitoring functions, allowing you to keep statistics on the operation of each port, each hub, and the entire network segment, as well as to monitor the addresses of the packets received at each port.]"). TRENDNET00000082. TRENDnet Stackable Hubs at Page No. 80 ("[Multicast. This statistic counts the number of good multicast packets received. Multicast events are messages sent from one node to multiple nodes on the segment. Broadcast. This statistic counts the number of good broadcast packets received. Broadcast events are messages sent to all nodes on the segment.]"). TRENDNET00000084. TRENDnet Stackable Hubs at Page No. 82 ("[Displaying Segment Statistics The hub stack collects network transmission statistics for each segment in the stack. You can choose to view them from the Statistics menu, accessible under the Network Monitoring menu. StatsPkts. This statistic displays the number of packets received from the network, including error packets.

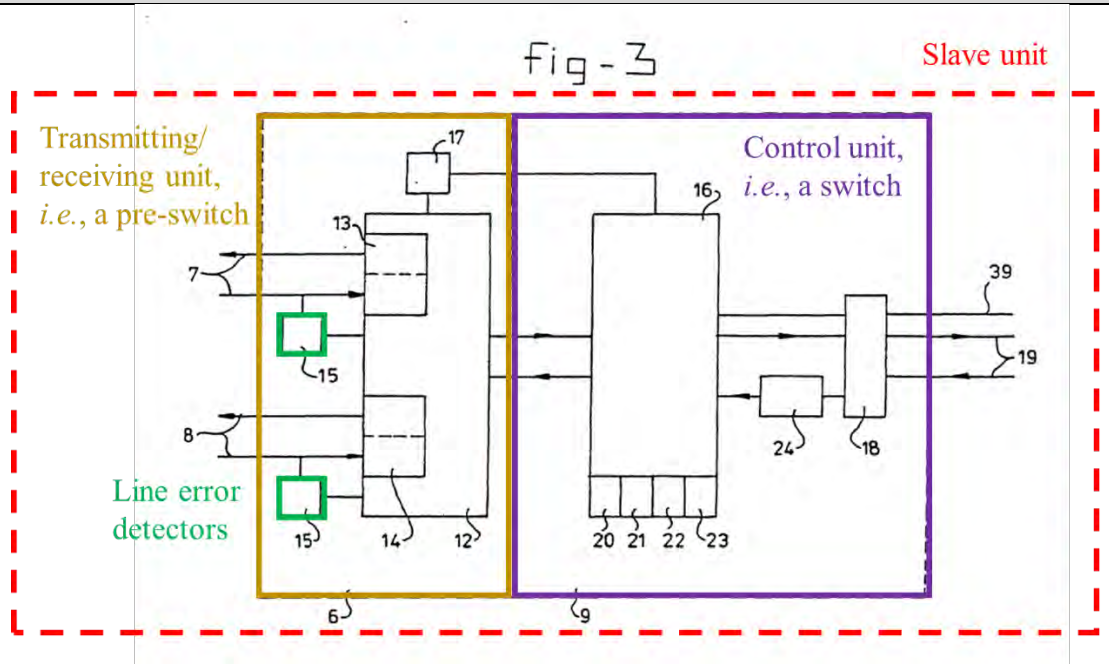
No.	'904 Patent Claim 11	TRENDnet Stackable Hubs
		BroadcastPkts. This statistics counts the number of good broadcast packets received on the segment. MulticastPkts. This statistics counts the number of good multicast packets received on the segment. CRCAlignErrors. This statistic counts the number of valid length packets (64 to 1518 bytes) that had a bad Frame Check Sequence (FCS). UndersizePkts. This statistic counts the number of well-formed packets that were smaller than 64 octets. OversizePkts. This statistic counts the number of well-formed packets that were longer than 1518 octets. Fragments. This statistic counts the number of ill formed packets less than 64 octets and all events without a start-of-frame delimiter regardless of their length.]"). TRENDNET00000086. TRENDnet Stackable Hubs at Page No. 37 ("[You can stack up to five hubs using the daisy-chain ports to form one logical hub. In this configuration, the interconnected hubs constitute a single logical unit, providing a maximum of 120 twisted-pair ports. Use the provided daisy-chain cable to connect the Daisy-Chain OUT port on the rear panel of one hub to the Daisy-Chain IN port on the hub below it, as shown in the figure below. Repeat this procedure for each hub to be included in the stack."). TRENDNET00000041. TRENDnet Stackable Hubs at Page No. 38; TRENDNET00000042.

No.	'904 Patent Claim 11	TRENDnet Stackable Hubs
		 TRENDnet Stackable Hubs at Page No. 26 ("[Daisy-Chain IN Port When cascading a set of stackable dual-speed hubs, this port should be connected to the Daisy-Chain OUT port of the previous hub in the stack (usually placed immediately above it). A cascade of five hubs can be created in this way. The first and last hubs in the stack use only one of the daisy-chain ports, while the others use both." "Daisy-Chain OUT Port Works in conjunction with the Daisy-Chain IN Port (see above). Connect this port to the Daisy-Chain IN Port of the next hub in ack (usually placed immediately below it), using the enclosed daisy-chain cable.]"). TRENDNET00000030. TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack

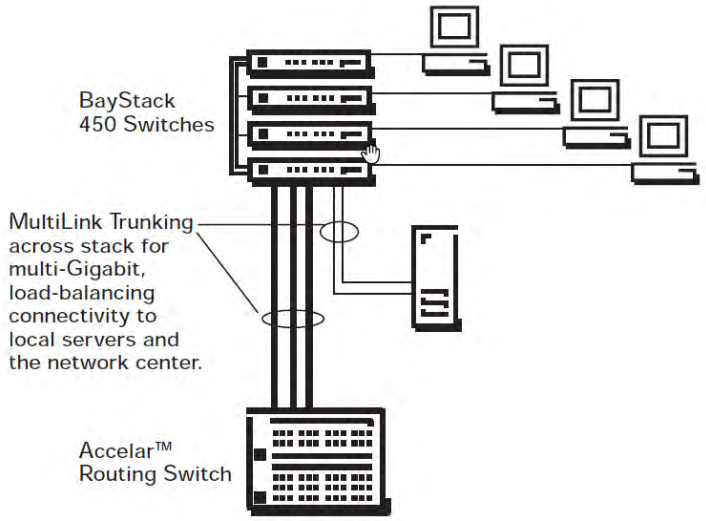
No.	'904 Patent Claim 11	TRENDnet Stackable Hubs
		Note: In this context, "Group" means "Hub." The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077. In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, TRENDnet Stackable Hubs in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 11[g] of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. For example, Vink '324 discloses a transmitting/receiving unit that routes information across the system, including accepting information received across a transmission or receiving line by a substation and, if the address information of the packet corresponds to the address allocated to the relevant substation, initiating an exchange, and in the absence of address coincidence, not altering the packet information as it passes through the chain which receives the data packets from one of the physical interface lines connected to the slave unit and passes those of the data packets that are addressed to any of the ports on the slave unit to the switch fabric, while passing packets not addressed to any of the ports on the slave unit for output through another of the physical interface lines.

No.	'904 Patent Claim 11	TRENDnet Stackable Hubs
		Vink '324 Claim 8 ("Communication system according to one or more of Claims 7 to 10 inclusive, wherein a slave (2, 3, 4, 5) is provided with means (15, 18, 23) for monitoring the serial transfer of data bits via the transmission system (7, 8) and/or the local data bus (19)."). Vink '324 3:35-4:10 ("European Patent Application 0,253,381 discloses a communication system in which the data bits are transferred serially up to I/O level. In this process, address information is added to the data bits intended for a particular substation. Information received by a-substation and transmitted under the control of a master station is investigated for address coincidence. In the case of a positive result, that is to say, when the address information added to a group of data bits corresponds to the address allocated to the relevant substation, exchange is initiated. In this process, the data bits intended for a substation are replaced in the same format by data bits originating from the relevant substation and intended for the master station. In the absence of address coincidence, the information concerned is not altered.").

No.	'904 Patent Claim 11	TRENDnet Stackable Hubs
		 Fig. 1 (annotation added) Vink '324 17:3-12 "Figure 3 shows a block diagram of an exemplary embodiment of a portion of a slave 2, 3, 4, 5. Data bits are transported via connections provided with an arrow. The transmitting/receiving unit 6 comprises a multiplexer 12 consisting of two moderns 13, 14 which are respectively connected to the first transmission ring 7 and to the second transmission ring 8. For the transmission of the data via the transmission system, signal coding techniques known per se in practice may be used. The operation of the relevant transmission ring 7, 8 can be monitored by means of line error detectors 15.").

No.	'904 Patent Claim 11	TRENDnet Stackable Hubs
		 Fig. 3 (annotation added) Vink '324 17:38-18:13 ("As already discussed in the introduction, every slave can be provided with an unambiguous address and the addressing of the separate I/0 modules 10 can take place on the bases of their sequence in the cascade arrangement. Consequently, a unit 20 which is capable of decoding the address of a slave, a unit 21 which is capable of detecting information about the number of data bits for a relevant slave and, if necessary, a unit 22 which is capable of reading out information about the type coding of the I/O modules connected to the local data bus, for example a module having only an input side or a module having only an output side, are provided. A further unit 23 is provided for a content check of the data bits received, for example on the basis of error detection techniques known per se. The relevant units 20, 21, 22, 23 are all connected to the unit 16 or form part thereof.").

No.	'904 Patent Claim 11	TRENDnet Stackable Hubs
		In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. In addition, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below.

No.	'904 Patent Claim 11	TRENDnet Stackable Hubs
		Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.  BayStack 450 Data Sheet at 4 of 8, FIG. 2. Further, Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. Nortel Networks' BayStack 450 Switches disclose a BootP Automatic IP/MAC Address: "The BayStack 450 switch has a unique 48-bit hardware address, or MAC address, that is printed on a label on the back panel. You use this MAC address when you configure the network BootP server to recognize the BayStack 450 switch BootP requests. A properly configured BootP server enables the switch to automatically learn its assigned IP address, subnet mask, IP address of the default router (default gateway), and software image file name.

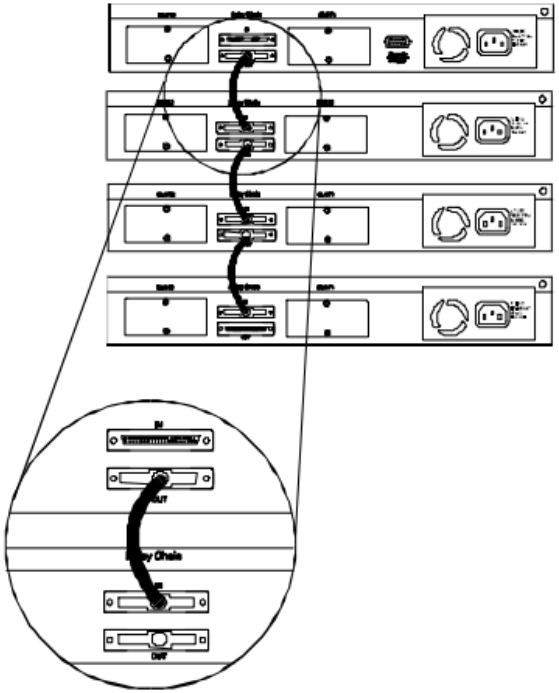
No.	'904 Patent Claim 11	TRENDnet Stackable Hubs
		When the switch is participating in a stack configuration, a Stack MAC address is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If another unit in the stack is assigned as the base unit, the MAC address of the new base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit." BayStack 450 Manual at 43 of 290.

No.	'904 Patent Claim 12	TRENDnet Stackable Hubs
12	Apparatus according to claim 11, wherein each of the slave units is coupled to receive packets transferred thereto from the first and second master units over first and second ones of the physical interface lines, respectively, and wherein the pre-switch passes the packets received through the first and second physical interface line and addressed to any	TRENDnet Stackable Hubs discloses apparatus according to claim 11, apparatus according to claim 11, wherein each of the slave units is coupled to receive packets transferred thereto from the first and second master units over first and second ones of the physical interface lines, respectively, and wherein the pre-switch passes the packets received through the first and second physical interface line and addressed to any of the ports on the slave unit to respective first and second addresses in the switch fabric. *See supra* at Claim 11[f].

No.	'904 Patent Claim 12	TRENDnet Stackable Hubs
	of the ports on the slave unit to respective first and second addresses in the switch fabric.	

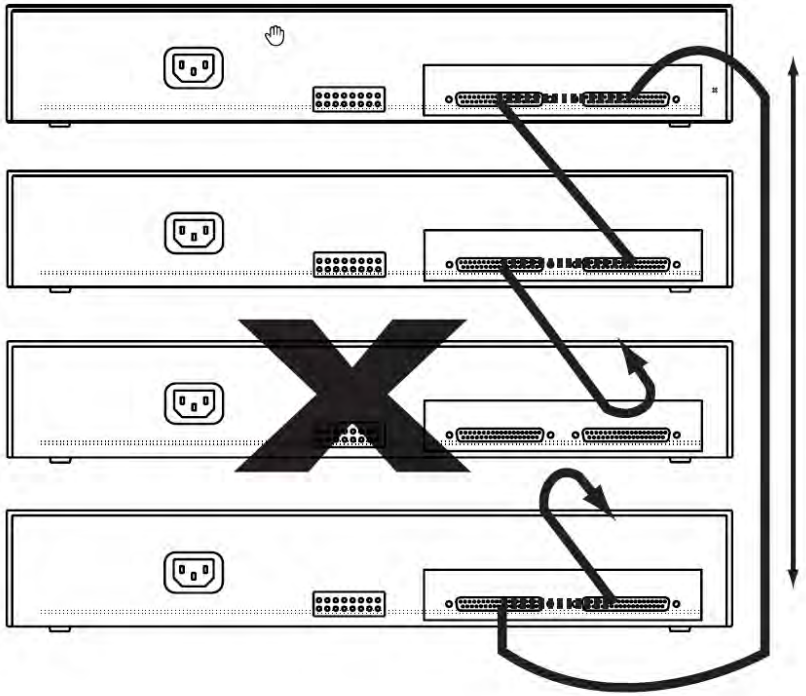
No.	'904 Patent Claim 13	TRENDnet Stackable Hubs
13	Apparatus according to claim 12, wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second addresses are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required.	TRENDnet Stackable Hubs discloses apparatus according to claim 12, wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second addresses are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required. For example, each of the slave units includes switch circuitry for forwarding packets to connecting devices, including through another one of the stacks of hubs when a fault has occurred in one of the stacks of hubs connected by daisy-chain ports. A person of ordinary skill in the art would understand from the disclosures of TRENDnet, that this would include the ability to reverse upstream and downstream traffic. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that the TRENDnet Stackable Hubs is found to not meet this limitation, Apparatus according to claim 12, wherein in response to a reversal of a direction of data flow in the daisy chain, the first and second addresses are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required would have been obvious to a person having ordinary skill in the art, as explained below. TRENDnet Stackable Hubs at Page No. 78 ("[The hub supports several monitoring functions, allowing you to keep statistics on the operation of each port, each hub, and the entire network segment, as well as to monitor the addresses of the packets received at each port.]"). TRENDNET00000082. TRENDnet Stackable Hubs at Page No. 80 ("[Multicast. This statistic counts the number of good multicast packets received. Multicast events are messages sent from one node to multiple nodes on the segment.

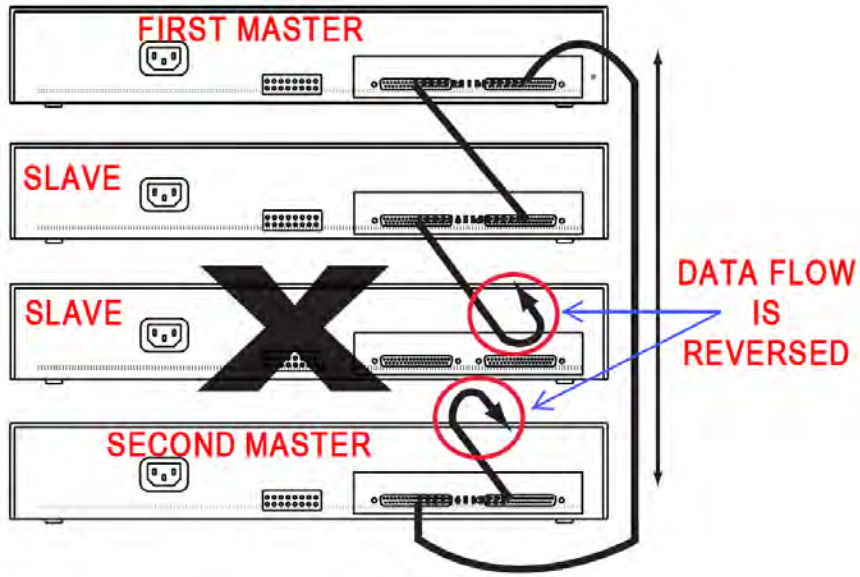
No.	'904 Patent Claim 13	TRENDnet Stackable Hubs
		Broadcast. This statistic counts the number of good broadcast packets received. Broadcast events are messages sent to all nodes on the segment.]"). TRENDNET00000084. TRENDnet Stackable Hubs at Page No. 82 ("[Displaying Segment Statistics The hub stack collects network transmission statistics for each segment in the stack. You can choose to view them from the Statistics menu, accessible under the Network Monitoring menu. StatsPkts. This statistic displays the number of packets received from the network, including error packets. BroadcastPkts. This statistics counts the number of good broadcast packets received on the segment. MulticastPkts. This statistics counts the number of good multicast packets received on the segment. CRCAlignErrors. This statistic counts the number of valid length packets (64 to 1518 bytes) that had a bad Frame Check Sequence (FCS). UndersizePkts. This statistic counts the number of well-formed packets that were smaller than 64 octets. OversizePkts. This statistic counts the number of well-formed packets that were longer than 1518 octets. Fragments. This statistic counts the number of ill formed packets less than 64 octets and all events without a start-of-frame delimiter regardless of their length.]"). TRENDNET00000086. TRENDnet Stackable Hubs at Page No. 37 ("[You can stack up to five hubs using the daisy-chain ports to form one logical hub. In this configuration, the interconnected hubs constitute a single logical unit, providing a maximum of 120 twisted-pair ports. Use the provided daisy-chain cable to connect the Daisy-Chain OUT port on the rear panel of one hub to the Daisy-Chain IN port on the hub below it, as shown in the figure below. Repeat this procedure for each hub to be included in the stack.]"). TRENDNET00000041.

No.	'904 Patent Claim 13	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 38; TRENDNET00000042.  TRENDnet Stackable Hubs at Page No. 26 ("[Daisy-Chain IN Port When cascading a set of stackable dual-speed hubs, this port should be connected to the Daisy-Chain OUT port of the previous hub in the stack (usually placed immediately above it). A cascade of five hubs can be created in this way. The first and last hubs in the stack use only one of the daisy-chain ports, while the others use both." "Daisy-Chain OUT Port Works in conjunction with the Daisy-Chain IN Port (see above). Connect this port to the Daisy-Chain IN Port of the next hub in ack (usually placed immediately below it), using the enclosed daisy-chain cable.]"). TRENDNET00000030.

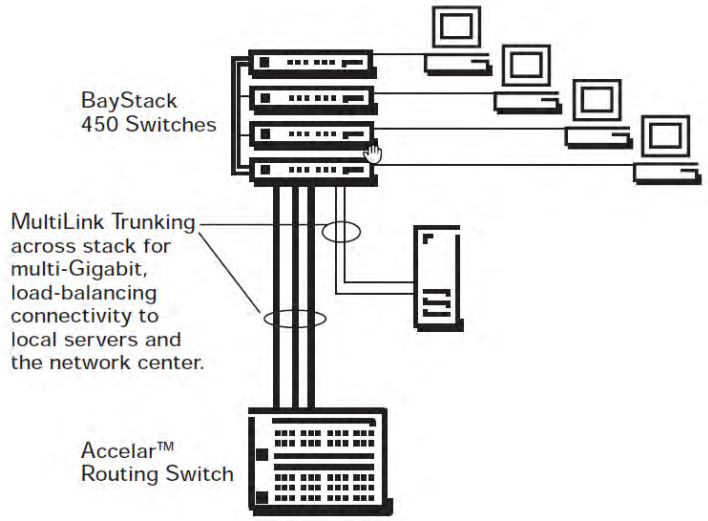
No.	'904 Patent Claim 13	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack Note: In this context, "Group" means "Hub." The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077. In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, TRENDnet Stackable Hubs in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 13 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. For example, Vink '324 discloses directing the packet to a different transmission ring. Vink '324 Claim 14 ("Communication system according to Claim 13, wherein the at least one master (1) and the slaves (2, 3, 4, 5) are arranged to transmit or receive data bits via a transmission ring (7, 8) in one and/or the other direction."). Vink '324 21:3-9 ("The transmitting/receiving unit 6 provides for the monitoring of the transmission and the control computer 38 provides for and monitors the correct sequence of the data bits for a relevant slave, related to the sequence in which the I/O modules are

No.	'904 Patent Claim 13	TRENDnet Stackable Hubs
		arranged. The information about this sequence is extracted by the control unit 36 from the status information received from the relevant slaves. In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about whether the connection to the transmission system is or is not operating correctly."). For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

No.	'904 Patent Claim 13	TRENDnet Stackable Hubs
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

No.	'904 Patent Claim 13	TRENDnet Stackable Hubs
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. In this example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features where "[e]ach unit in the stack has a full copy of the stack configuration so in the unlikely event of any unit failure, operation of the stack continues without affecting application connectivity." BayStack 450 Data Sheet at 3 of 8.

No.	'904 Patent Claim 13	TRENDnet Stackable Hubs
		In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches further disclose its fail-safe design features includes that "[e]ach switch includes a Redundant Power Supply Unit connection. Should the switch's built-in power supply fail, the Bay Networks RPSU (sold separately) will automatically supply power to the switch for uninterrupted operation." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below.

No.	'904 Patent Claim 13	TRENDnet Stackable Hubs
		Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.  BayStack 450 Data Sheet at 4 of 8, FIG. 2. And Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. Nortel Networks' BayStack 450 Switches also disclose a "Fail-Safe Stack Application." BayStack 450 Manual at 48 of 290. More specifically, that Nortel Networks' BayStack 450 Switches disclose that "Figure 1-9 shows an example of eight BayStack 450 switches that are stacked together as a single managed unit. If any single unit in the stack fails, the remaining stack remains operational,

No.	'904 Patent Claim 13	TRENDnet Stackable Hubs
		without interruption." BayStack 450 Manual at 48 of 290. Figure 1-9 of the BayStack 450 Manual depicts a plurality of slaves and is shown below.

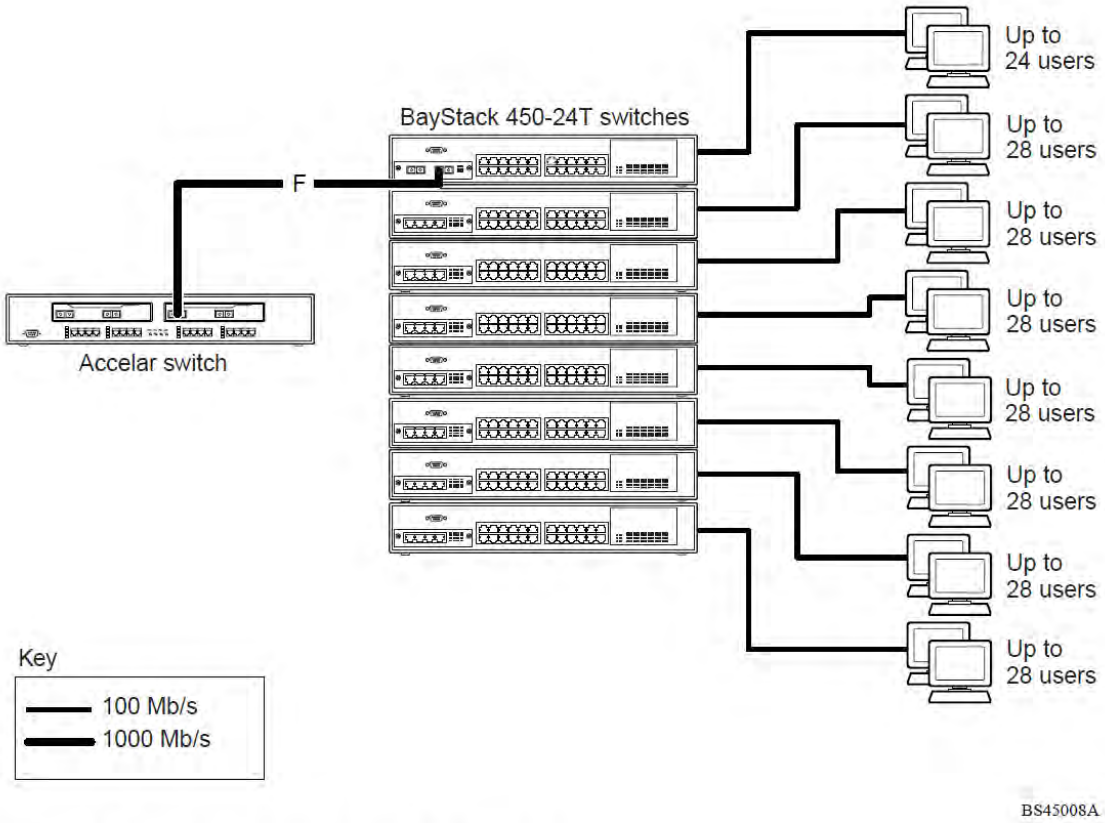
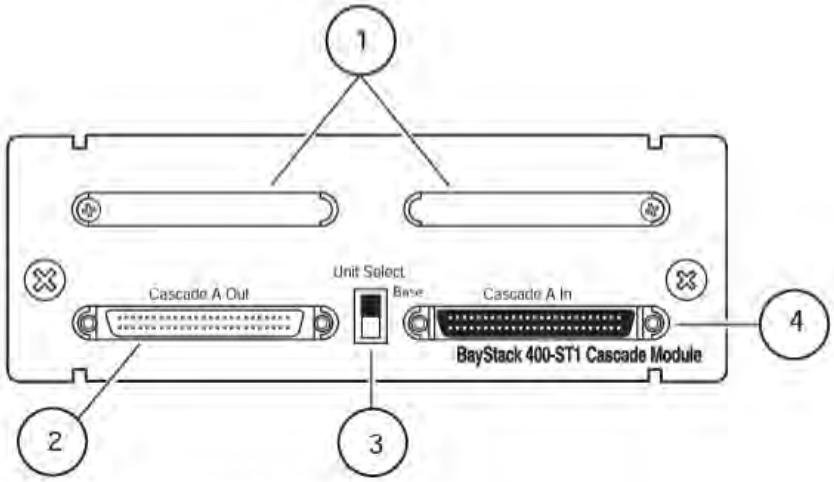


Figure 1-9. Fail-Safe Stack Example

BayStack 450 Manual at 48 of 290, FIG. 1-9.

Nortel Networks' BayStack 450 Switches further disclose that "[a]s shown in Figure 1-9, the Accelar 1100 switch is used as a backbone switch, connecting to the BayStack 450 switch with an optional gigabit (1000BASE-SX) MDA for maximum bandwidth. This configuration

No.	'904 Patent Claim 13	TRENDnet Stackable Hubs
		uses optional BayStack 400-ST1 Cascade Modules to connect the switches in the fail-safe stack." BayStack 450 Manual at 48 of 290. Nortel Networks' BayStack 450 Switches disclose that "[f]or an overview of the fail-safe stacking feature that is available for the BayStack 450 switches, see 'Stack Operation' following this section." BayStack 450 Manual at 48 of 290. Indeed, Nortel Networks' BayStack 450 Switches provide an overview of the fail-safe stacking feature, which discloses "BayStack 450 switches that are configured with BayStack 450 software version V1.1.0 or later provide fail-safe stackability when you install the optional BayStack 400-ST1 Cascade Module. You can connect up to eight switches to provide uninterrupted connectivity for up to 224 ports (see 'Fail-Safe Stack Application' on page 1-22). The entire stack is manageable as a single unit. Installation instructions are provided with the BayStack 400-ST1 Cascade Module (see your Nortel Networks sales representative for ordering information)." BayStack 450 Manual at 49 of 290. Further, Nortel Networks' BayStack 450 Switches disclose that the "BayStack 400-ST1 Cascade Module," which is shown in Figure 1-10 below. BayStack 450 Manual at 49 of 290.

No.	'904 Patent Claim 13	TRENDnet Stackable Hubs
		 **Figure 1-10. BayStack 400-ST1 Front-Panel Components** BayStack 450 Manual at 49 of 290, FIG. 1-10. In addition, Nortel Networks' BayStack 450 Switches disclose that the "Unit Select switch (up = Base) determines the base unit for the stack configuration (see "Base Unit " on page 1-25). The Unit Select switch status is displayed on the BayStack 450 LED display panel. When the Unit Select switch is in the Base (up) position, all other Unit Select switches in the stack configuration must be set to Off (down)." BayStack 450 Manual at 50 of 290. Further still, Nortel Networks' BayStack 450 Switches disclose a Cascade A In Connector that provides "an attachment point for accepting a cascade cable connection from an adjacent unit in the stack. A return cable from this unit's Cascade A Out connector to the adjacent

No.	'904 Patent Claim 13	TRENDnet Stackable Hubs
		unit's Cascade A In connector completes the stack connection (see the example shown in Figure 1-11)." BayStack 450 Manual at 50 of 290. Figure 1-11 is reproduced below. BayStack 450 Manual at 50 of 290, FIG. 1-11.

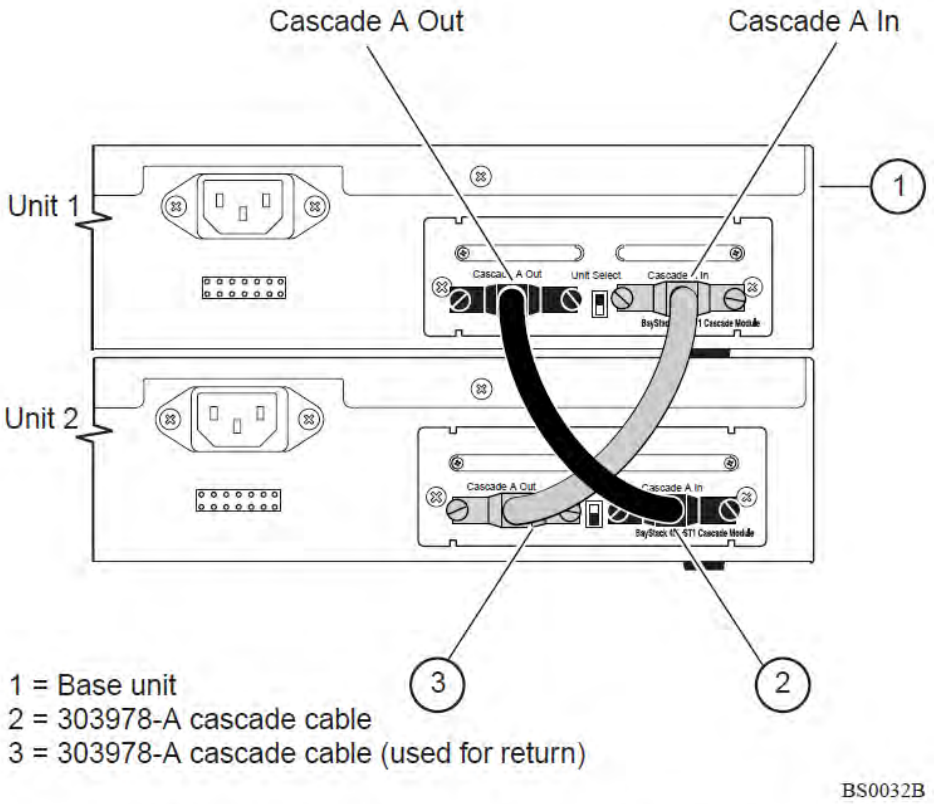
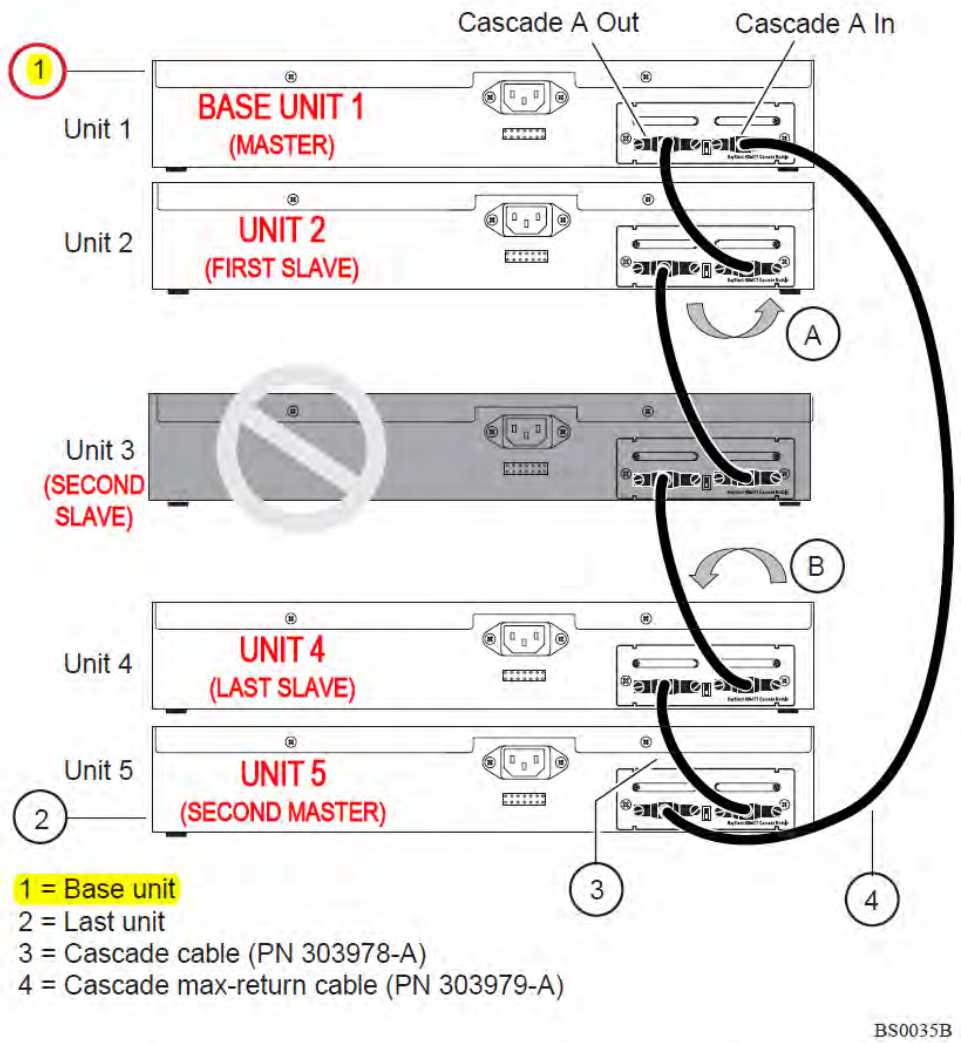


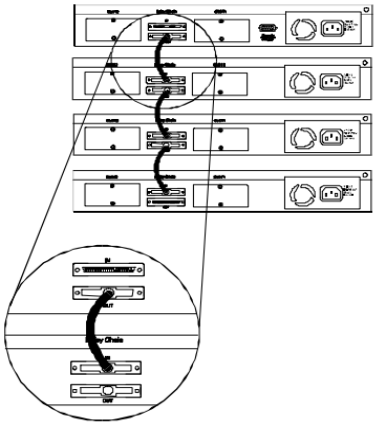
Figure 1-11. Connecting Cascade Cables

In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290.

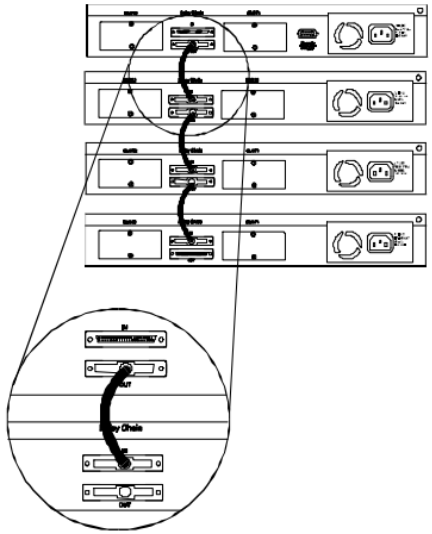
No.	'904 Patent Claim 13	TRENDnet Stackable Hubs
		Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

No.	'904 Patent Claim 13	TRENDnet Stackable Hubs
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

No.	'904 Patent Claim 14	TRENDnet Stackable Hubs
14[preamble]	In a network access multiplexing system,	TRENDnet Stackable Hubs disclose a network access system. For example, TRENDnet Stackable Hubs disclose TE100-DM/DS hub stack designed to allow easy migration and integration between 10Mbps Ethernet and 100Mbps Fast Ethernet. *See generally* TRENDNET0000001-130. *See supra at* 1 [preamble].
14[a]	in which a master unit is connected by a physical interface to a packet-switched network,	TRENDnet Stackable Hubs disclose in which a master unit is connected by a physical interface to a packet-switched network. For example, TRENDnet Stackable Hubs disclose two master units (one primary master and one standby backup master) that connect to an Ethernet network via cables. *See supra* at 1[a].
14[b]	a slave unit configured to be coupled to the master unit in a daisy chain of such slave units, the slave unit comprising:	TRENDnet Stackable Hubs disclose a slave unit configured to be coupled to the master unit in a daisy chain. For example, TRENDnet Stackable Hubs disclose Trendnet TE100-DM/DS Hub Stack may include several stacked hub units. Wherein, out of these several stacked hub units, two hub units are master units, and the rest are slave units. Also, the Group Configuration Menu screen displays information about each of the hubs in the stack. Wherein, the Group Role shows what role the hub is currently playing in the hub stack e.g., primary master, standby master, or slave. TE100-DM/DS Hub Stack has a primary master which manages the stack and is at higher in the stack. The reference also discloses that when cascading a set of stackable dual-speed hubs, the daisy-chain IN port should be connected to the daisy-chain OUT port of the previous hub in the stack. At least under the apparent claim scope of Orckit's Infringement Contentions, this limitation is met.

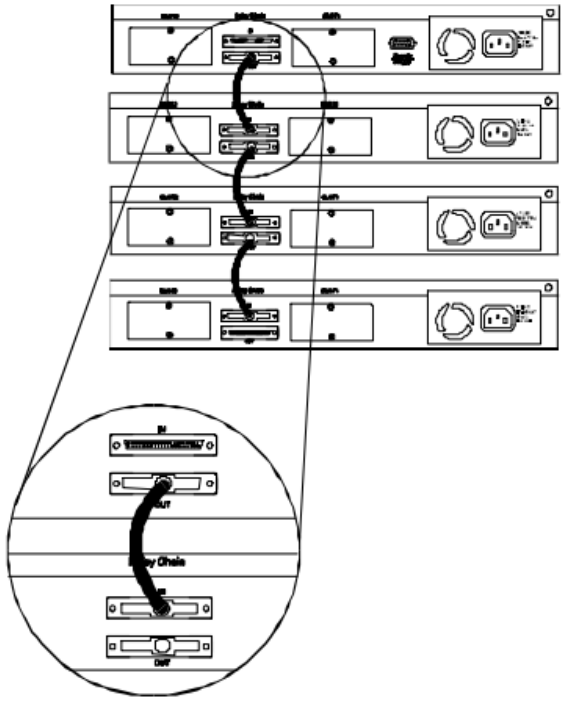
No.	'904 Patent Claim 14	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 38; TRENDNET00000042.  TRENDnet Stackable Hubs at Page No. 26 ("[Daisy-Chain IN Port When cascading a set of stackable dual-speed hubs, this port should be connected to the Daisy-Chain OUT port of the previous hub in the stack (usually placed immediately above it). A cascade of five hubs can be created in this way. The first and last hubs in the stack use only one of the daisy-chain ports, while the others use both. Daisy-Chain OUT Port Works in conjunction with the Daisy-Chain IN Port (see above). Connect this port to the Daisy-Chain IN Port of the next hub in e stack (usually placed immediately below it), using the enclosed daisy-chain cable.]"). TRENDNET00000030. TRENDnet Stackable Hubs at Page No. 54 ("[Within a TE100-DM/DS series hub stack, in addition to a master hub for management purposes, a standby backup master can also be installed. If a hub stack has two master units, the first powered-on Master unit or the unit that is higher in the stack will manage the stack and be designated as the "Primary Master." Master hubs in the series include a built-in contention algorithm which determines which hub will manage the stack and which will operate in standby mode. If, during power-on, the two master hubs in the stack both attempt to initialize as the Primary Master, this collision will result in an automatic stack reset indicated by all hub ID numbers changing to 0 temporarily. If the current Primary Master Hub fails or loses power, the standby master will take over and manage the hub stack.]"). TRENDNET00000058.

No.	'904 Patent Claim 14	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. Note: In this context, "Group" means "Hub." The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077.
14[c]	a plurality of ports, for coupling the slave unit to respective subscriber lines;	TRENDnet Stackable Hubs disclose a plurality of ports, for coupling the slave unit to respective subscriber lines. For example, TRENDnet Stackable Hubs disclose each hub unit in the Trendnet TE100-DM/DS Hub Stack includes MDI-X ports that connect it to PCs, workstations, or servers. *See supra* at 1[c].
14[d]	first and second physical interfaces, coupled to exchange packets with preceding and succeeding units, respectively, along the daisy chain;	TRENDnet Stackable Hubs disclose first and second physical interfaces, coupled with preceding and succeeding units, respectively, along the daisy chain For example, TRENDnet Stackable Hubs disclose Trendnet TE100-DM/DS Hub Stack includes multiple hubs that can be stacked through the daisy-chain ports to form one logical hub using a cable. A cascade of five hubs can be created, wherein, the first and last hub in the stack use only one of the daisy-chain ports, while the others use both. Thus, at least under the apparent claim scope in Orckit's Infringement Disclosures, this limitation is met.

No.	'904 Patent Claim 14	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 37 ("[You can stack up to five hubs using the daisy-chain ports to form one logical hub. In this configuration, the interconnected hubs constitute a single logical unit, providing a maximum of 120 twisted-pair ports. Use the provided daisy-chain cable to connect the Daisy-Chain OUT port on the rear panel of one hub to the Daisy-Chain IN port on the hub below it, as shown in the figure below. Repeat this procedure for each hub to be included in the stack.]") TRENDnet Stackable Hubs at Page No. 38; TRENDNET00000042.  TRENDnet Stackable Hubs at Page No. 26 ("[Daisy-Chain IN Port When cascading a set of stackable dual-speed hubs, this port should be connected to the Daisy-Chain OUT port of the previous hub in the stack (usually placed immediately above it). A cascade of five hubs can be created in this way. The first and last hubs in the stack use only one of the daisy-chain ports, while the others use both." "Daisy-Chain OUT Port

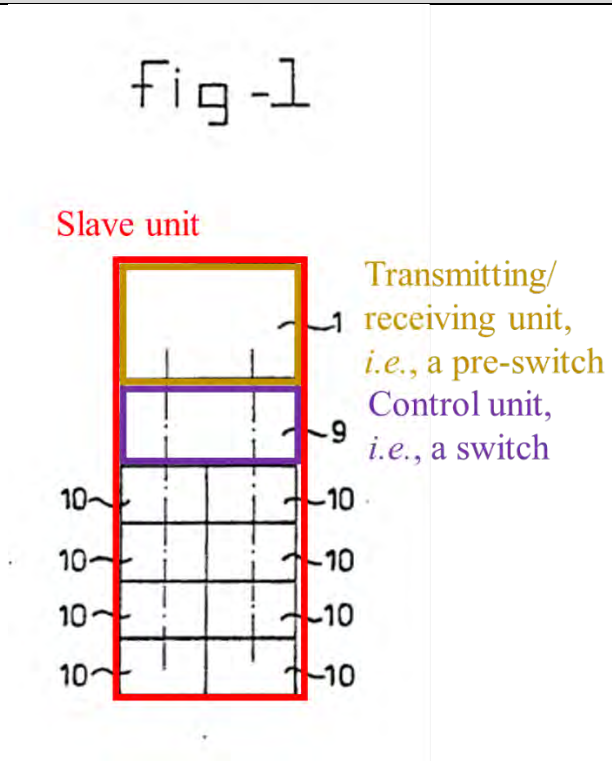
No.	'904 Patent Claim 14	TRENDnet Stackable Hubs
		Works in conjunction with the Daisy-Chain IN Port (see above). Connect this port to the Daisy-Chain IN Port of the next hub in ack (usually placed immediately below it), using the enclosed daisy-chain cable.]"). TRENDNET00000030. TRENDnet Stackable Hubs at Page No. 48 ("[The Fast Ethernet module uses a MDI-X connector (not a straight MDI) and, therefore, a crossover cable must be used when connecting the module to another module (and under most other circumstances). See Appendix A for pin-out information. The Fast Ethernet module includes the following LED indicators: ?Power/Txthis LED is lit when the hub is on and blinks when the module is transmitting packets. ?Link/Rxthis LED is lit when the port is properly connected to a powered-on device and blinks when the module is receiving packets.]"). TRENDNET00000052. TRENDnet Stackable Hubs at Page No. 80 ("[Multicast. This statistic counts the number of good multicast packets received. Multicast events are messages sent from one node to multiple nodes on the segment. Broadcast. This statistic counts the number of good broadcast packets received. Broadcast events are messages sent to all nodes on the segment.]"). TRENDNET00000084.
14[e]	a pre-switch, coupled to receive packets from the first physical interface and responsive to address data carried by the packets, to sort the packets such that packets addressed to the slave unit are retained, and packets addressed to the succeeding units	TRENDnet Stackable Hubs disclose a pre-switch, coupled to receive packets from the first physical interface and responsive to address data carried by the packets, to sort the packets such that packets addressed to the slave unit are retained, and packets addressed to the succeeding units are passed to the second physical interface. For example, each of the slave units includes switch circuitry for forwarding packets to connecting devices, including through another one of the stacks of hubs when a fault has occurred in one of the stacks of hubs connected by daisy-chain ports. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that the TRENDnet Stackable Hubs is found to not meet this limitation, a pre-switch, coupled to receive packets from the first physical interface and responsive to address data carried by the packets, to sort the packets such that packets addressed to the slave unit are retained, and packets addressed to the succeeding units are passed to the second physical

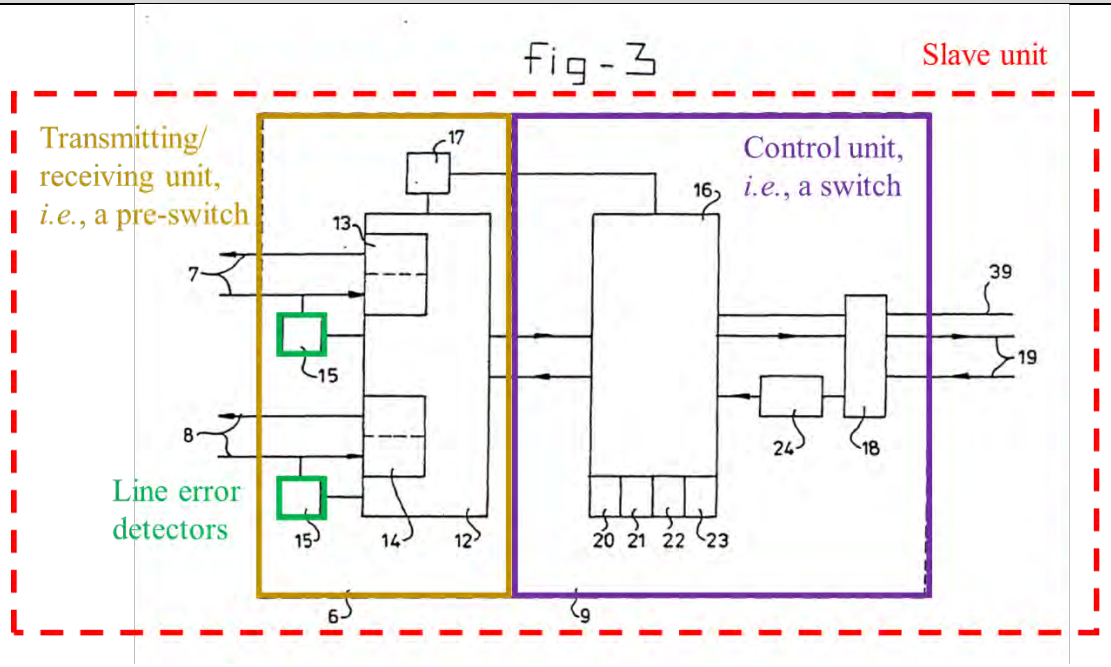
No.	'904 Patent Claim 14	TRENDnet Stackable Hubs
	are passed to the second physical interface, and	interface would have been obvious to a person having ordinary skill in the art, as explained below. TRENDnet Stackable Hubs at Page No. 78 ("[The hub supports several monitoring functions, allowing you to keep statistics on the operation of each port, each hub, and the entire network segment, as well as to monitor the addresses of the packets received at each port.]"). TRENDNET00000082. TRENDnet Stackable Hubs at Page No. 80 ("[Multicast. This statistic counts the number of good multicast packets received. Multicast events are messages sent from one node to multiple nodes on the segment. Broadcast. This statistic counts the number of good broadcast packets received. Broadcast events are messages sent to all nodes on the segment.]"). TRENDNET00000084. TRENDnet Stackable Hubs at Page No. 82 ("[Displaying Segment Statistics The hub stack collects network transmission statistics for each segment in the stack. You can choose to view them from the Statistics menu, accessible under the Network Monitoring menu. StatsPkts. This statistic displays the number of packets received from the network, including error packets. BroadcastPkts. This statistics counts the number of good broadcast packets received on the segment. MulticastPkts. This statistics counts the number of good multicast packets received on the segment. CRCAlignErrors. This statistic counts the number of valid length packets (64 to 1518 bytes) that had a bad Frame Check Sequence (FCS). UndersizePkts. This statistic counts the number of well-formed packets that were smaller than 64 octets. OversizePkts. This statistic counts the number of well-formed packets that were longer than 1518 octets.

No.	'904 Patent Claim 14	TRENDnet Stackable Hubs
		Fragments. This statistic counts the number of ill formed packets less than 64 octets and all events without a start-of-frame delimiter regardless of their length.]"). TRENDNET00000086. TRENDnet Stackable Hubs at Page No. 37 ("[You can stack up to five hubs using the daisy-chain ports to form one logical hub. In this configuration, the interconnected hubs constitute a single logical unit, providing a maximum of 120 twisted-pair ports. Use the provided daisy-chain cable to connect the Daisy-Chain OUT port on the rear panel of one hub to the Daisy-Chain IN port on the hub below it, as shown in the figure below. Repeat this procedure for each hub to be included in the stack.]"). TRENDNET00000041. TRENDnet Stackable Hubs at Page No. 38; TRENDNET00000042. 

No.	'904 Patent Claim 14	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 26 ("[Daisy-Chain IN Port When cascading a set of stackable dual-speed hubs, this port should be connected to the Daisy-Chain OUT port of the previous hub in the stack (usually placed immediately above it). A cascade of five hubs can be created in this way. The first and last hubs in the stack use only one of the daisy-chain ports, while the others use both." "Daisy-Chain OUT Port Works in conjunction with the Daisy-Chain IN Port (see above). Connect this port to the Daisy-Chain IN Port of the next hub in ack (usually placed immediately below it), using the enclosed daisy-chain cable.]"). TRENDNET00000030. TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack Note: In this context, "Group" means "Hub." The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077.

No.	'904 Patent Claim 14	TRENDnet Stackable Hubs
		In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, TRENDnet Stackable Hubs in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 14[e] of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. For example, Vink '324 discloses a transmission/receiving unit that receives packets from the receiving line that when received by a substation, if there is address coincidence, exchange is initiated, and in the absence of address coincidence, the information is not altered and is passed along. Vink '324 Claim 8 ("Communication system according to one or more of Claims 7 to 10 inclusive, wherein a slave (2, 3, 4, 5) is provided with means(15, 18, 23) for monitoring the serial transfer of data bits via the transmission system (7, 8) and/or the local data bus (19)."). Vink '324 3:35-4:10 ("European Patent Application 0,253,381 discloses a communication system in which the data bits are transferred serially up to I/O level. In this process, address information is added to the data bits intended for a particular substation. Information received by a-substation and transmitted under the control of a master station is investigated for address coincidence. In the case of a positive result, that is to say, when the address information added to a group of data bits corresponds to the address allocated to the relevant substation, exchange is initiated. In this process, the data bits intended for a substation are replaced in the same format by data bits originating from the relevant substation and intended for the master station. In the absence of address coincidence, the information concerned is not altered.").

No.	'904 Patent Claim 14	TRENDnet Stackable Hubs
		 Fig. 1 (annotation added) Vink '324 17:3-12 ("Figure 3 shows a block diagram of an exemplary embodiment of a portion of a slave 2, 3, 4, 5. Data bits are transported via connections provided with an arrow. The transmitting/receiving unit 6 comprises a multiplexer 12 consisting of two moderns 13, 14 which are respectively connected to the first transmission ring 7 and to the second transmission ring 8. For the transmission of the data via the transmission system, signal coding techniques known per se in practice may be used. The operation of the relevant transmission ring 7, 8 can be monitored by means of line error detectors 15.").

No.	'904 Patent Claim 14	TRENDnet Stackable Hubs
		 Fig. 3 (annotation added) Vink '324 17:38-18:13 ("As already discussed in the introduction, every slave can be provided with an unambiguous address and the addressing of the separate I/0 modules 10 can take place on the bases of their sequence in the cascade arrangement. Consequently, a unit 20 which is capable of decoding the address of a slave, a unit 21 which is capable of detecting information about the number of data bits for a relevant slave and, if necessary, a unit 22 which is capable of reading out information about the type coding of the I/O modules connected to the local data bus, for example a module having only an input side or a module having only an output side, are provided. A further unit 23 is provided for a content check of the data bits received, for example on the basis of error detection techniques known per se. The relevant units 20, 21, 22, 23 are all connected to the unit 16 or form part thereof.").

No.	'904 Patent Claim 14	TRENDnet Stackable Hubs
		For example, Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Nortel Networks' BayStack 450 Switches disclose a BootP Automatic IP/MAC Address: "The BayStack 450 switch has a unique 48-bit hardware address, or MAC address, that is printed on a label on the back panel. You use this MAC address when you configure the network BootP server to recognize the BayStack 450 switch BootP requests. A properly configured BootP server enables the switch to automatically learn its assigned IP address, subnet mask, IP address of the default router (default gateway), and software image file name. When the switch is participating in a stack configuration, a Stack MAC address is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If another unit in the stack is assigned as the base unit, the MAC address of the new base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit." BayStack 450 Manual at 43 of 290.

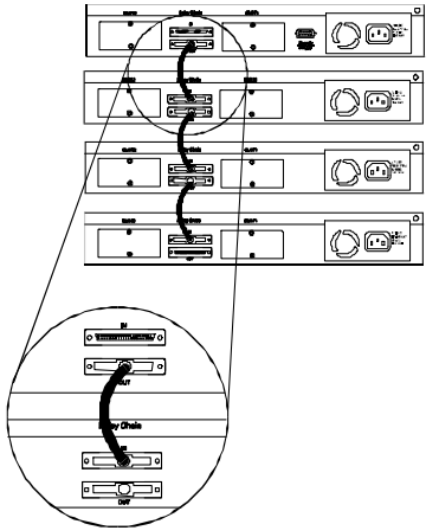
No.	'904 Patent Claim 14	TRENDnet Stackable Hubs
		Stack MAC Address The *Stack MAC address* is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If you designate another unit in the stack as the base unit, the MAC address of the *new* base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit. BayStack 450 Manual at 52 of 290.
14[f]	a fabric of one or more switches, which convey the retained packets to the ports, responsive to the address data.	TRENDnet Stackable Hubs discloses a fabric of one or more switches, which convey the retained packets to the ports, responsive to the address data. For example, TRENDnet Stackable Hubs disclose that each of the slave units is a switch with several ports to which data is routed through switch circuitry. TRENDnet Stackable Hubs at Page No. 15 ("[The TE100-DM/DS series dual-speed stackable Ethernet/Fast Ethernet hubs are designed to allow easy migration and integration between 10Mbps Ethernet and 100Mbps Fast Ethernet, while providing manageability and flexibility in cable connections. The TE100-DM/DS hubs can operate with either IEEE 802.3 10BASE-T connections (twisted-pair Ethernet operating at 10 megabits per second), or IEEE 802.3u 100BASE-TX connections (twisted pair Fast Ethernet operating at 100 megabits per second).

No.	'904 Patent Claim 14	TRENDnet Stackable Hubs
		All of the twisted-pair ports support NWay auto-negotiation, allowing the hub to automatically detect the speed of a network connection. This means you can connect all of your Ethernet and Fast Ethernet hosts to a TE100-DM/DS series hub stack, without any rewiring required when a host is upgraded from 10Mbps to 100Mbps.]"). TRENDNET00000019. TRENDnet Stackable Hubs at Page No. 15 ("[The TE100-DM/DS series hubs, available in 16-port and 24-port models, can be stacked with up to five hubs in a stack. A stack of five 24-port hubs gives a total of 120 Ethernet or Fast Ethernet ports.]"). TRENDNET00000019. TRENDnet Stackable Hubs at Page No. 16 ("[The list below highlights the features and specifications of the TE100-DM/DS series hubs. Compatible with the IEEE 802.3 10BASE-T Ethernet and 802.3u 100BASE-TX Fast Ethernet industry standards for interoperability with other Ethernet/Fast Ethernet network devices. Ethernet connections support Category 3 or better twisted-pair cables. Fast Ethernet connections support both shielded twisted pair and Category 5 unshielded twisted-pair cables. Fast Ethernet connections support a maximum distance of 100 meters from end-station to hub, and a total network diameter of 205 meters. Sixteen (TE100-DS16, TE100-DS16X, TE100-DM16, TE100-DM16X) or twenty-four (TE100-DS24, TE100-DS24X, TE100-DM24, TE100-DM24X) NWay RJ-45 ports for connecting stations to the network. Full hub stack and network management provided via a SNMP management agent (TE100-DM16, TE100-DM16X, TE100-DM24, TE100-DM24X). An optional slide-in switch module allows bridging between 10Mbps and 100Mbps segments. Only one switch module is needed per stack, but managed hub stacks can make use of additional switch modules for redundancy. LED indicators for power, collisions, link, network activity, partitioning status, disable, operating speed (10 or 100Mbps) and network utilization. Digital hub ID number front panel display. Auto-partition protection. Data collision detection and handling.

No.	'904 Patent Claim 14	TRENDnet Stackable Hubs
		Preamble regeneration, signal re-timing. Two proprietary daisy-chain ports for cascading up to five hubs to form one logical hub; management provided via a master hub. Standby backup master capability when two master model hubs are present within a single stack. Uplink port allows easy linking of two Fast Ethernet hub stacks to further expand your network. Standard-size (19", 1.25U height), rack mountable Built-in, removable power supply, replaceable without opening the hub. Power supply is easily removed and replaced.]"). TRENDNET00000020-021. TRENDnet Stackable Hubs at Page No. 37 ("[This chapter discusses how to make connections to the hub's twisted-pair ports and console port, cascading hubs to create a stack, and linking with other hubs (or hub stacks).]"). TRENDNET00000041.

No.	'904 Patent Claim 15	TRENDnet Stackable Hubs
15	The slave unit according to claim 14, wherein the pre-switch is further coupled to receive packets transferred thereto from the second physical interface and to sort the packets in like manner to the packets received through the first physical interface.	TRENDnet Stackable Hubs discloses the slave unit according to claim 14, wherein the pre-switch is further coupled to receive packets transferred thereto from the second physical interface and to sort the packets in like manner to the packets received through the first physical interface. For example, each of the slave units includes switch circuitry for forwarding packets to connecting devices, including through another one of the stacks of hubs when a fault has occurred in one of the stacks of hubs connected by daisy-chain ports. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that the TRENDnet Stackable Hubs is found to not meet this limitation, The slave unit according to claim 14, wherein the pre-switch is further coupled to receive packets transferred thereto from the second physical interface and to sort the packets in like manner to the packets received through the first physical interface would have been obvious to a person having ordinary skill in the art, as explained below.

No.	'904 Patent Claim 15	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 78 ("[The hub supports several monitoring functions, allowing you to keep statistics on the operation of each port, each hub, and the entire network segment, as well as to monitor the addresses of the packets received at each port.]"). TRENDNET00000082. TRENDnet Stackable Hubs at Page No. 80 ("[Multicast. This statistic counts the number of good multicast packets received. Multicast events are messages sent from one node to multiple nodes on the segment. Broadcast. This statistic counts the number of good broadcast packets received. Broadcast events are messages sent to all nodes on the segment.]"). TRENDNET00000084. TRENDnet Stackable Hubs at Page No. 82 ("[Displaying Segment Statistics The hub stack collects network transmission statistics for each segment in the stack. You can choose to view them from the Statistics menu, accessible under the Network Monitoring menu. StatsPkts. This statistic displays the number of packets received from the network, including error packets. BroadcastPkts. This statistics counts the number of good broadcast packets received on the segment. MulticastPkts. This statistics counts the number of good multicast packets received on the segment. CRCAlignErrors. This statistic counts the number of valid length packets (64 to 1518 bytes) that had a bad Frame Check Sequence (FCS). UndersizePkts. This statistic counts the number of well-formed packets that were smaller than 64 octets. OversizePkts. This statistic counts the number of well-formed packets that were longer than 1518 octets. Fragments. This statistic counts the number of ill formed packets less than 64 octets and all events without a start-of-frame delimiter regardless of their length.]"). TRENDNET00000086.

No.	'904 Patent Claim 15	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 37 ("[You can stack up to five hubs using the daisy-chain ports to form one logical hub. In this configuration, the interconnected hubs constitute a single logical unit, providing a maximum of 120 twisted-pair ports. Use the provided daisy-chain cable to connect the Daisy-Chain OUT port on the rear panel of one hub to the Daisy-Chain IN port on the hub below it, as shown in the figure below. Repeat this procedure for each hub to be included in the stack.]"). TRENDNET00000041. TRENDnet Stackable Hubs at Page No. 38; TRENDNET00000042.  TRENDnet Stackable Hubs at Page No. 26 ("[Daisy-Chain IN Port When cascading a set of stackable dual-speed hubs, this port should be connected to the Daisy-Chain OUT port of the previous hub in the stack (usually placed immediately above it). A cascade of five hubs can be created in this way. The first and last hubs in the stack use only one of the daisy-chain ports, while the others use both." "Daisy-Chain OUT Port

No.	'904 Patent Claim 15	TRENDnet Stackable Hubs
		Works in conjunction with the Daisy-Chain IN Port (see above). Connect this port to the Daisy-Chain IN Port of the next hub in ack (usually placed immediately below it), using the enclosed daisy-chain cable.]"). TRENDNET00000030. TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack Note: In this context, "Group" means "Hub." The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077. In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, TRENDnet Stackable Hubs in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 15 of Exhibit E-1 renders the claim, including the present limitation, obvious. Below are examples of two such references. For example, Vink '324 discloses the capability to receive and transmit packets from both interface lines on either side of the slave, and once received by the slave in either direction, is analyzed for address coincidence by the transmitting/receiving unit.

No.	'904 Patent Claim 15	TRENDnet Stackable Hubs
		Vink '324 21:10-16 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly.").

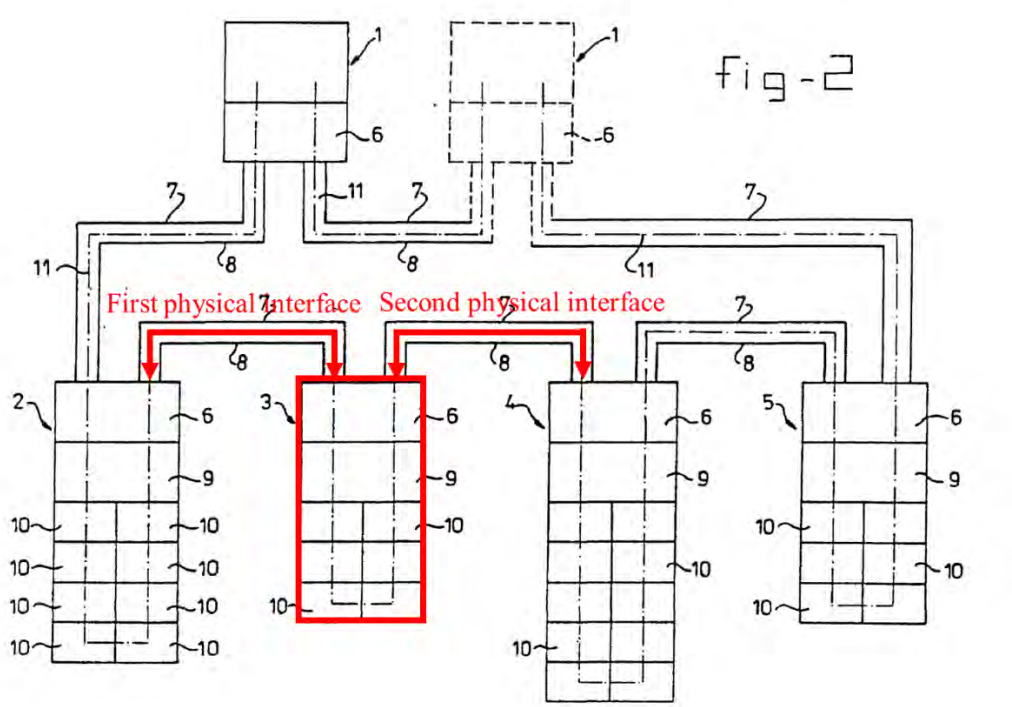
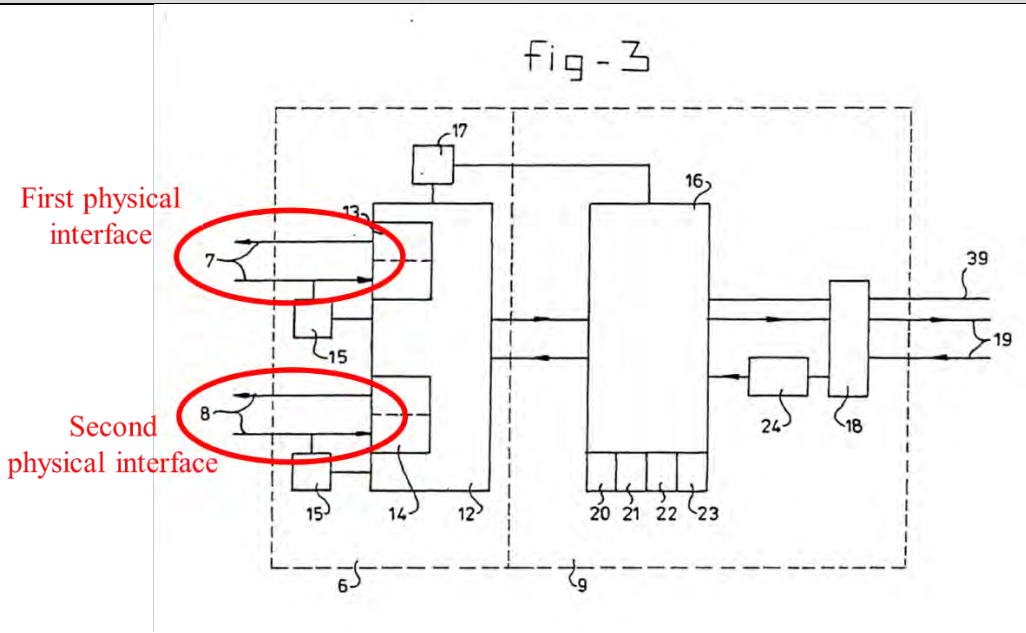


Fig. 2 (annotation added)

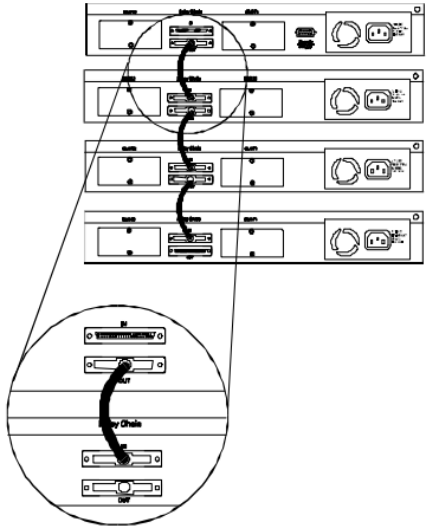
No.	'904 Patent Claim 15	TRENDnet Stackable Hubs
		 Fig. 3 (annotation added) Vink '324 3:35-4:10 ("European Patent Application 0,253,381 discloses a communication system in which the data bits are transferred serially up to I/O level. In this process, address information is added to the data bits intended for a particular substation. Information received by a-substation and transmitted under the control of a master station is investigated for address coincidence. In the case of a positive result, that is to say, when the address information added to a group of data bits corresponds to the address allocated to the relevant substation, exchange is initiated. In this process, the data bits intended for a substation are replaced in the same format by data bits originating from the relevant substation and intended for the master station. In the absence of address coincidence, the information concerned is not altered."). For example, Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment,

No.	'904 Patent Claim 15	TRENDnet Stackable Hubs
		software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. Nortel Networks' BayStack 450 Switches disclose a BootP Automatic IP/MAC Address: "The BayStack 450 switch has a unique 48-bit hardware address, or MAC address, that is printed on a label on the back panel. You use this MAC address when you configure the network BootP server to recognize the BayStack 450 switch BootP requests. A properly configured BootP server enables the switch to automatically learn its assigned IP address, subnet mask, IP address of the default router (default gateway), and software image file name. When the switch is participating in a stack configuration, a Stack MAC address is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If another unit in the stack is assigned as the base unit, the MAC address of the new base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit." BayStack 450 Manual at 43 of 290.

No.	'904 Patent Claim 15	TRENDnet Stackable Hubs
		Stack MAC Address The *Stack MAC address* is automatically assigned during the stack initialization. The base unit's MAC address, with a software offset, is used for the Stack MAC address. For example, if the base unit's MAC address is: 00-00-82-99-44-00 and the Stack software offset is: 1F then the Stack MAC address becomes: 00-00-82-99-44-1F If you designate another unit in the stack as the base unit, the MAC address of the *new* base unit (with offset) now applies to the stack configuration. The original stack IP address still applies to the new base unit. BayStack 450 Manual at 52 of 290.

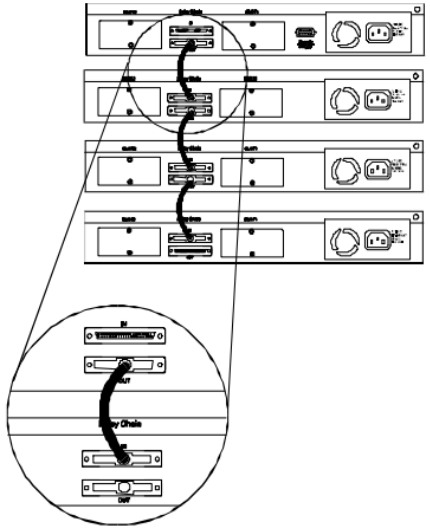
No.	'904 Patent Claim 16	TRENDnet Stackable Hubs
16[a]	The slave unit according to claim 15, wherein the retained packets that were received from the first and second physical interfaces and are passed by the pre-switch to the switch fabric are identified by	TRENDnet Stackable Hubs disclose The slave unit according to claim 15, wherein the retained packets that were received from the first and second physical interfaces and are passed by the pre-switch to the switch fabric are identified by respective first and second port numbers. For example, TRENDnet Stackable Hubs discloses that when a fault has occurred in one of the stacks of hubs connected by daisy-chain ports. A person of ordinary skill in the art would understand from the disclosures of TRENDnet Stackable Hubs that the retained packets that were received from the first and second physical interfaces and are passed by the pre-switch to the switch fabric are identified by respective first and second port numbers. Thus, at least

No.	'904 Patent Claim 16	TRENDnet Stackable Hubs
	respective first and second port numbers,	under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. TRENDnet Stackable Hubs at Page No. 78 ("[The hub supports several monitoring functions, allowing you to keep statistics on the operation of each port, each hub, and the entire network segment, as well as to monitor the addresses of the packets received at each port.]"). TRENDNET00000082. TRENDnet Stackable Hubs at Page No. 80 ("[Multicast. This statistic counts the number of good multicast packets received. Multicast events are messages sent from one node to multiple nodes on the segment. Broadcast. This statistic counts the number of good broadcast packets received. Broadcast events are messages sent to all nodes on the segment.]"). TRENDNET00000084. TRENDnet Stackable Hubs at Page No. 82 ("[Displaying Segment Statistics The hub stack collects network transmission statistics for each segment in the stack. You can choose to view them from the Statistics menu, accessible under the Network Monitoring menu. StatsPkts. This statistic displays the number of packets received from the network, including error packets. BroadcastPkts. This statistics counts the number of good broadcast packets received on the segment. MulticastPkts. This statistics counts the number of good multicast packets received on the segment. CRCAlignErrors. This statistic counts the number of valid length packets (64 to 1518 bytes) that had a bad Frame Check Sequence (FCS). UndersizePkts. This statistic counts the number of well-formed packets that were smaller than 64 octets. OversizePkts. This statistic counts the number of well-formed packets that were longer than 1518 octets.

No.	'904 Patent Claim 16	TRENDnet Stackable Hubs
		Fragments. This statistic counts the number of ill formed packets less than 64 octets and all events without a start-of-frame delimiter regardless of their length.]"). TRENDNET00000086. TRENDnet Stackable Hubs at Page No. 37 ("[You can stack up to five hubs using the daisy-chain ports to form one logical hub. In this configuration, the interconnected hubs constitute a single logical unit, providing a maximum of 120 twisted-pair ports. Use the provided daisy-chain cable to connect the Daisy-Chain OUT port on the rear panel of one hub to the Daisy-Chain IN port on the hub below it, as shown in the figure below. Repeat this procedure for each hub to be included in the stack.]"). TRENDNET00000041. TRENDnet Stackable Hubs at Page No. 38; TRENDNET00000042.  TRENDnet Stackable Hubs at Page No. 26 ("[Daisy-Chain IN Port When cascading a set of stackable dual-speed hubs, this port should be connected to the Daisy-Chain OUT port of the previous hub in the stack (usually placed immediately above

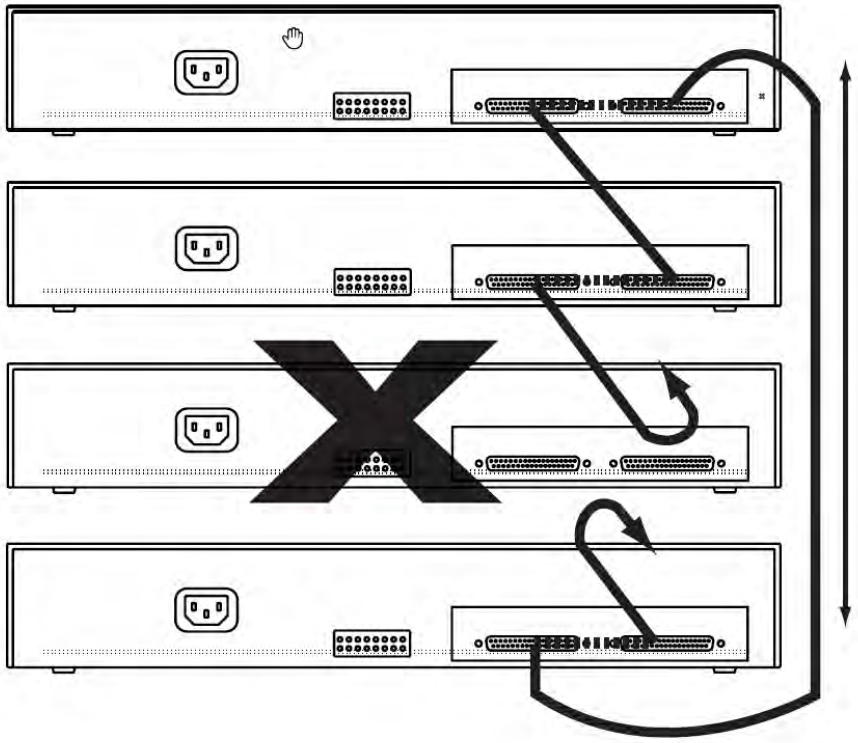
No.	'904 Patent Claim 16	TRENDnet Stackable Hubs
		it). A cascade of five hubs can be created in this way. The first and last hubs in the stack use only one of the daisy-chain ports, while the others use both." "Daisy-Chain OUT Port Works in conjunction with the Daisy-Chain IN Port (see above). Connect this port to the Daisy-Chain IN Port of the next hub in ack (usually placed immediately below it), using the enclosed daisy-chain cable.]") TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack Note: In this context, "Group" means "Hub." The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077.
16[b]	and wherein in response to a reversal of direction of data flow in the daisy chain, the first and second port numbers are swapped in the pre-switch, so that	TRENDnet Stackable Hubs disclose and wherein in response to a reversal of direction of data flow in the daisy chain, the first and second port numbers are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required in response to the reversal. For example, each of the slave units includes switch circuitry for forwarding packets to connecting devices, including through another one of the stacks of hubs when a fault has occurred in one of the stacks of hubs connected by daisy-chain ports. A person of ordinary skill in the art would understand from the disclosures of TRENDnet, that this would include

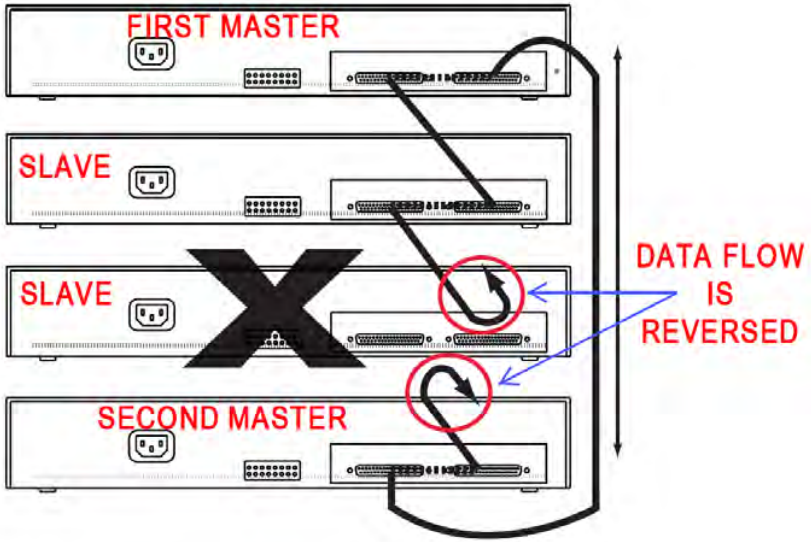
No.	'904 Patent Claim 16	TRENDnet Stackable Hubs
	substantially no reconfiguration of the switch fabric is required in response to the reversal.	the ability to reverse upstream and downstream traffic. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. To the extent that the TRENDnet Stackable Hubs is found to not meet this limitation, and wherein in response to a reversal of direction of data flow in the daisy chain, the first and second port numbers are swapped in the pre-switch, so that substantially no reconfiguration of the switch fabric is required in response to the reversal, as explained below. TRENDnet Stackable Hubs at Page No. 78 ("[The hub supports several monitoring functions, allowing you to keep statistics on the operation of each port, each hub, and the entire network segment, as well as to monitor the addresses of the packets received at each port.]"). TRENDNET00000082. TRENDnet Stackable Hubs at Page No. 80 ("[Multicast. This statistic counts the number of good multicast packets received. Multicast events are messages sent from one node to multiple nodes on the segment. Broadcast. This statistic counts the number of good broadcast packets received. Broadcast events are messages sent to all nodes on the segment.]"). TRENDNET00000084. TRENDnet Stackable Hubs at Page No. 82 ("[Displaying Segment Statistics The hub stack collects network transmission statistics for each segment in the stack. You can choose to view them from the Statistics menu, accessible under the Network Monitoring menu. StatsPkts. This statistic displays the number of packets received from the network, including error packets. BroadcastPkts. This statistics counts the number of good broadcast packets received on the segment. MulticastPkts. This statistics counts the number of good multicast packets received on the segment. CRCAlignErrors. This statistic counts the number of valid length packets (64 to 1518 bytes) that had a bad Frame Check Sequence (FCS). UndersizePkts. This statistic counts the number of well-formed packets that were smaller than 64 octets.

No.	'904 Patent Claim 16	TRENDnet Stackable Hubs
		OversizePkts. This statistic counts the number of well-formed packets that were longer than 1518 octets. Fragments. This statistic counts the number of ill formed packets less than 64 octets and all events without a start-of-frame delimiter regardless of their length.]"). TRENDNET00000086. TRENDnet Stackable Hubs at Page No. 37 ("[You can stack up to five hubs using the daisy-chain ports to form one logical hub. In this configuration, the interconnected hubs constitute a single logical unit, providing a maximum of 120 twisted-pair ports. Use the provided daisy-chain cable to connect the Daisy-Chain OUT port on the rear panel of one hub to the Daisy-Chain IN port on the hub below it, as shown in the figure below. Repeat this procedure for each hub to be included in the stack.]"). TRENDNET00000041. TRENDnet Stackable Hubs at Page No. 38; TRENDNET00000042.  TRENDnet Stackable Hubs at Page No. 26 ("[Daisy-Chain IN Port

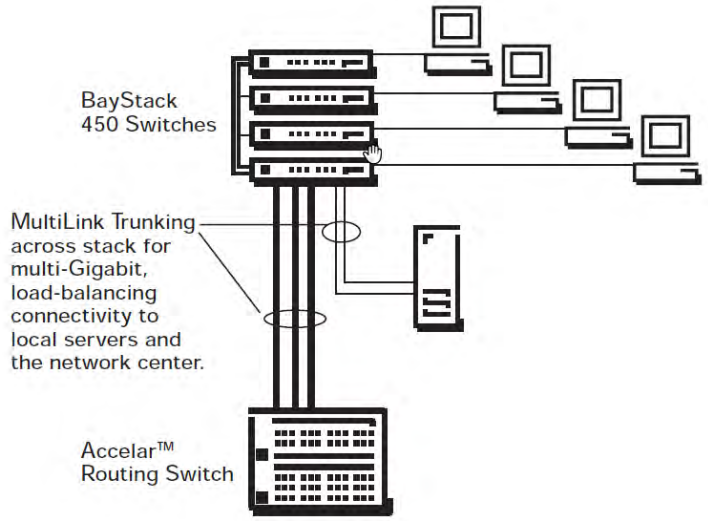
No.	'904 Patent Claim 16	TRENDnet Stackable Hubs
		When cascading a set of stackable dual-speed hubs, this port should be connected to the Daisy-Chain OUT port of the previous hub in the stack (usually placed immediately above it). A cascade of five hubs can be created in this way. The first and last hubs in the stack use only one of the daisy-chain ports, while the others use both." "Daisy-Chain OUT Port Works in conjunction with the Daisy-Chain IN Port (see above). Connect this port to the Daisy-Chain IN Port of the next hub in ack (usually placed immediately below it), using the enclosed daisy-chain cable.]"). TRENDNET00000030. TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack Note: In this context, "Group" means "Hub." The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077. In addition, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, TRENDnet Stackable Hubs in combination with (1) the knowledge of a person of ordinary skill in the art, alone or in further combination with (2) each (individually, as well as one or more together) of the references identified in element 16[b] of Exhibit E-1

No.	'904 Patent Claim 16	TRENDnet Stackable Hubs
		renders the claim, including the present limitation, obvious. Below are examples of two such references. For example, Vink '324 discloses that the flow of traffic can be switched. Vink '324 further discloses a means for providing for the switching of the flow of traffic. Vink '324 21:10-17 ("In the case where the transmission system is constructed, as shown in Figure 2, as a multiple ring transmission system, the transmitting/receiving unit 6 also provides for the switching of the transmission ring or of the communication direction of the data flow. All this being on the basis of the information obtained about 15 whether the connection to the transmission system is or is not operating correctly. For use in the communication system according to Figure 1 the unit 6 can be omitted."). Vink '324 Claim 13 ("Communication system according to one or more of Claims 7 to 12 inclusive, wherein the slaves (2, 3, 4, 5) are connected to the at least one master (1) via a multiple ring transmission system, the at least one master (1) and the slaves (2, 3, 4, 5) being provided with means (6) for changeover of a transmission system ring (7, 8)."). For instance, Nortel Networks' BayStack 450 Switches "are designed with a fail-safe cascade stacking architecture (see Figure 1). Cascade cables connect up to 8 stacked switches into a self-healing configuration that protects the stack's connectivity by looping connection signals back at a point of failure. In the unlikely event of a switch failure, all other units in a stack remain operational without interruption. The redundant cascade stacking architecture is a safer, smarter alternative to current 'matrix' stacking switches, which suffer from a single point of failure design flaw—should the base unit fail, all connectivity to all switches in the stack is lost." BayStack 450 Data Sheet at 2 of 8. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

No.	'904 Patent Claim 16	TRENDnet Stackable Hubs
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1.

No.	'904 Patent Claim 16	TRENDnet Stackable Hubs
		Figure 1: In the unlikely event of a switch failure, the stack integrity is maintained: signals loop back at point of failure.  BayStack 450 Data Sheet at 2 of 8, FIG. 1 (annotated). In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features that include a "[r]edundant cascade stacking architecture." BayStack 450 Data Sheet at 3 of 8. In this example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features where "[e]ach unit in the stack has a full copy of the stack configuration so in the unlikely event of any unit failure, operation of the stack continues without affecting application connectivity." BayStack 450 Data Sheet at 3 of 8.

No.	'904 Patent Claim 16	TRENDnet Stackable Hubs
		In one example, Nortel Networks' BayStack 450 Switches disclose fail-safe design features in which "[g]igabit uplinks feature LinkSafe, which provides two different physical fiber connectors for each Gigabit uplink. Upon primary path failure, the traffic is diverted to the redundant path in microseconds, protecting critical Gigabit Ethernet connections to servers or the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches further disclose its fail-safe design features includes that "[e]ach switch includes a Redundant Power Supply Unit connection. Should the switch's built-in power supply fail, the Bay Networks RPSU (sold separately) will automatically supply power to the switch for uninterrupted operation." BayStack 450 Data Sheet at 3 of 8. Moreover, Nortel Networks' BayStack 450 Switches further disclose its multilink trunking "[e]nables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 4 Gigabits per second (when used with Gigabit uplink ports) with active redundant links. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center." BayStack 450 Data Sheet at 3 of 8. Nortel Networks' BayStack 450 Switches depicts its fail-safe stackability in Figure 2 below.

No.	'904 Patent Claim 16	TRENDnet Stackable Hubs
		Figure 2: High-density 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and MultiLink Trunking for redundant connections to local servers and the network center.  BayStack 450 Data Sheet at 4 of 8, FIG. 2. And Nortel Networks' BayStack 450 Switches disclose other advanced management features, such as "BootP and TFTP support allows centralized switch IP address assignment, software upgrades, and SNMP agent updates over the network." BayStack 450 Data Sheet at 4 of 8. In one example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the bottom of the stack in an aptly-named "Stack Up Configuration." BayStack 450 Manual at 54 of 290.

No.	'904 Patent Claim 16	TRENDnet Stackable Hubs

Stack Up Configurations

In Figure 1-12, data flows from the base unit (unit 1) to the next switch, which is assigned as unit 2, and continues until the last switch in the stack is assigned as unit 8. The physical order of the switches is *from bottom to top* (unit 1 to unit 8).

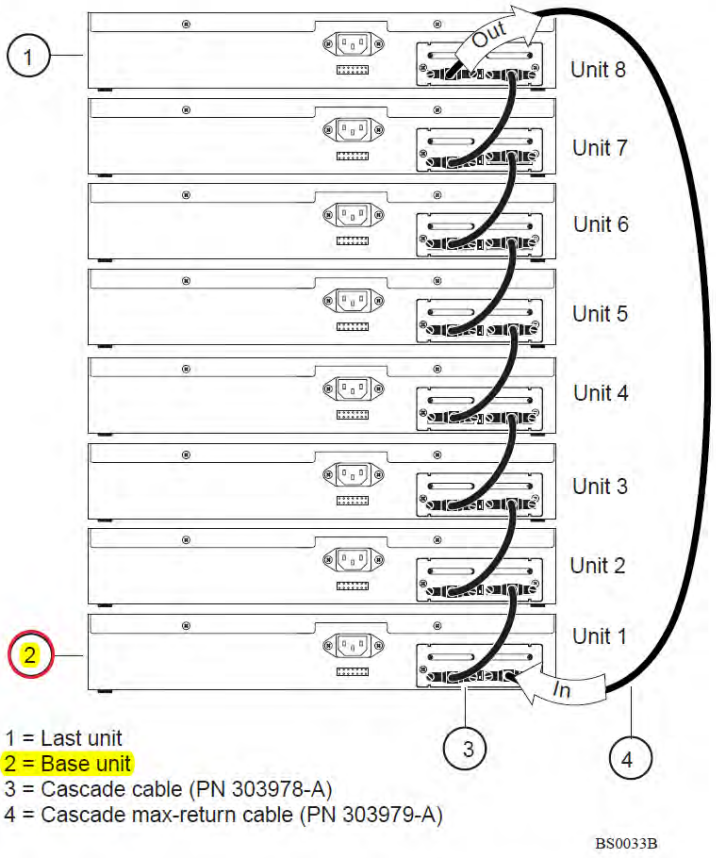


Figure 1-12. Stack Up Configuration Example

BayStack 450 Manual at 54 of 290, FIG. 1-12 (annotated).

No.	'904 Patent Claim 16	TRENDnet Stackable Hubs
		In another example, Nortel Networks' BayStack 450 Switches disclose the first master or base unit is at the top of the stack in the also aptly-named "Stack Down Configuration." BayStack 450 Manual at 55 of 290.

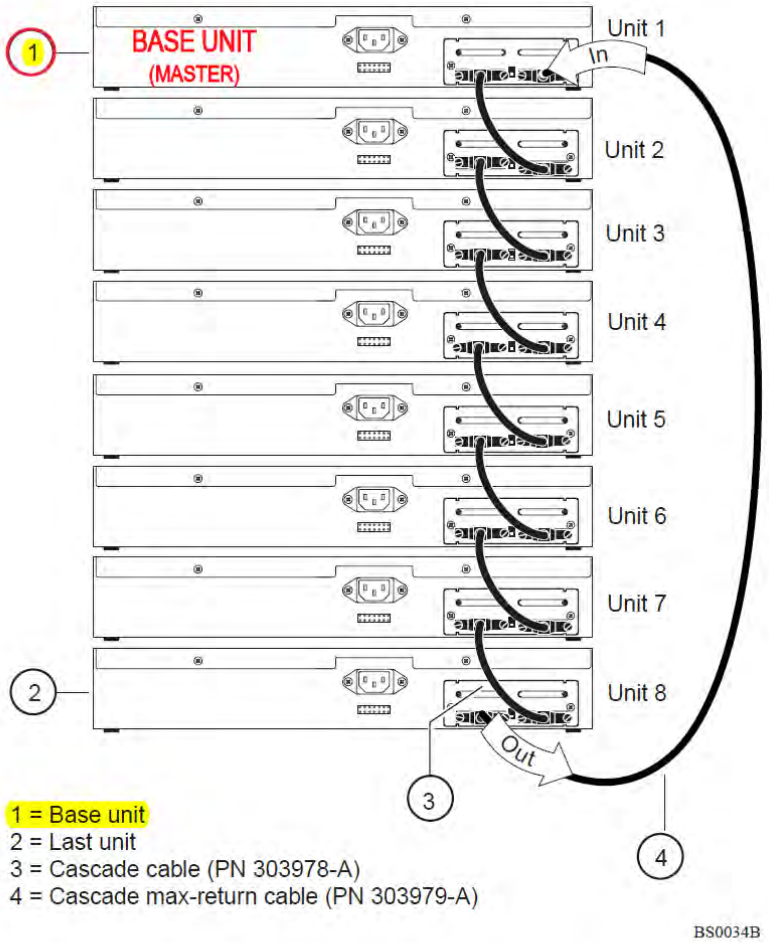
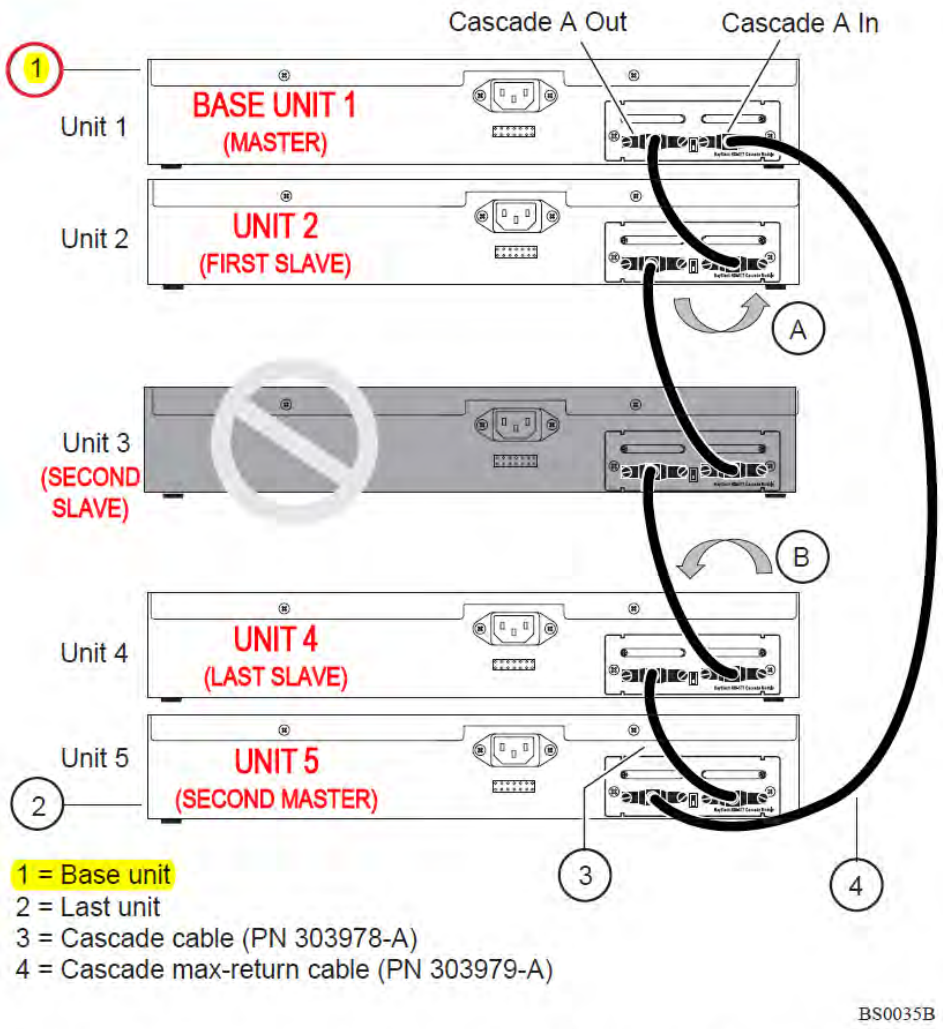


Figure 1-13. Stack Down Configuration Example

BayStack 450 Manual at 55 of 290, FIG. 1-13 (annotated).

No.	'904 Patent Claim 16	TRENDnet Stackable Hubs
		In one example, the BayStack 450 Switches disclose a Redundant Cascade Stacking Feature. BayStack 450 Manual at 56 of 290. Specifically, the BayStack 450 Switches disclose "BayStack 450 switches allow you to connect up to 8 units into a redundant cascade stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational, without interruption." BayStack 450 Manual at 56 of 290. In this example, the BayStack 450 Switches disclose "Figure 1-14 shows an example of how a stack configuration reacts to a failed or powered-down unit in the stack configuration: 1. As shown in Figure 1-14, unit 3 becomes nonoperational. This can be the result of a failed unit, or simply because the unit was powered down. 2. Unit 2 and unit 4, directly upstream and downstream from unit 3, sense the loss of link signals from unit 3. a. b. Units 2 and 4 automatically loop their internal stack signals (A and B). The Cas Up LED for unit 2 and the Cas Dwn LED for unit 4 turn on (amber) to indicate that the stack signals are looped. 3. The remaining stack units remain connected. Although the example shown in Figure 1-14 shows a failed unit causing the stack to loop signals at the points of failure (A and B), the system reacts the same way if a cable is removed." BayStack 450 Manual at 56 of 290. Continuing with this example, Figure 1-14 of the BayStack 450 Manual is annotated and shown below.

No.	'904 Patent Claim 16	TRENDnet Stackable Hubs
		 **Figure 1-14. Redundant Cascade Stacking Feature** BayStack 450 Manual at 57 of 290, FIG. 1-14 (annotated).

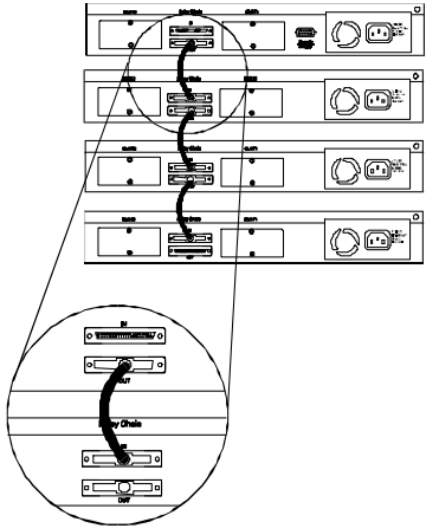
No.	'904 Patent Claim 17	TRENDnet Stackable Hubs
17	The slave unit according to claim 14, wherein when one of the packets received by the pre-switch comprises a multicast packet addressed to one or more of the ports on the slave unit, the pre-switch sorts the multicast packet such that one copy of the packet is retained and another copy of the packet is passed to the second physical interface.	TRENDnet Stackable Hubs disclose the slave unit according to claim 14, wherein when one of the packets received by the pre-switch comprises a multicast packet addressed to one or more of the ports on the slave unit, the pre-switch sorts the multicast packet such that one copy of the packet is retained and another copy of the packet is passed to the second physical interface. For example, TRENDnet Stackable Hubs discloses that the received packet can be a multicast packet. As explained above in Claim 14 *supra*, TRENDnet Stackable Hubs discloses a slave unit according to claim 14, that can retain copies of the packets passed between various hubs that are connected by daisy-chain ports. TRENDnet Stackable Hubs at Page No. 80 ("[Multicast. This statistic counts the number of good multicast packets received. Multicast events are messages sent from one node to multiple nodes on the segment. Broadcast. This statistic counts the number of good broadcast packets received. Broadcast events are messages sent to all nodes on the segment.]"). TRENDNET00000084. TRENDnet Stackable Hubs at Page No. 82 ("[Displaying Segment Statistics The hub stack collects network transmission statistics for each segment in the stack. You can choose to view them from the Statistics menu, accessible under the Network Monitoring menu. StatsPkts. This statistic displays the number of packets received from the network, including error packets. BroadcastPkts. This statistics counts the number of good broadcast packets received on the segment. MulticastPkts. This statistics counts the number of good multicast packets received on the segment. CRCAlignErrors. This statistic counts the number of valid length packets (64 to 1518 bytes) that had a bad Frame Check Sequence (FCS). UndersizePkts. This statistic counts the number of well-formed packets that were smaller than 64 octets.

No.	'904 Patent Claim 17	TRENDnet Stackable Hubs
		OversizePkts. This statistic counts the number of well-formed packets that were longer than 1518 octets. Fragments. This statistic counts the number of ill formed packets less than 64 octets and all events without a start-of-frame delimiter regardless of their length.]"). TRENDNET00000086.

No.	'904 Patent Claim 18	TRENDnet Stackable Hubs
18	The slave unit according to claim 14, wherein in the event of a fault in the switch fabric, the pre-switch continues to pass the packets addressed to the succeeding units on to the succeeding units without significant interruption.	TRENDnet Stackable Hubs disclose The slave unit according to claim 14, wherein in the event of a fault in the switch fabric, the pre-switch continues to pass the packets addressed to the succeeding units on to the succeeding units without significant interruption. For example, TRENDnet Stackable Hubs discloses a plurality of hubs connected via daisy-chain ports, and a pre-switch that continues to pass packets without significant interruption in response to a network connection going down. *See* Claim 14 *supra*.

No.	'904 Patent Claim 19	TRENDnet Stackable Hubs
19[preamble]	A method for providing access to a network, comprising:	TRENDnet Stackable Hubs disclose network access apparatus, comprising For example, TRENDnet Stackable Hubs disclose TE100-DM/DS hub stack designed to allow easy migration and integration between 10Mbps Ethernet and 100Mbps Fast Ethernet. *See generally* TRENDNET0000001-130. *See supra* at 1[preamble].

No.	'904 Patent Claim 19	TRENDnet Stackable Hubs
19[a]	coupling first and second master units to interface with the network,	TRENDnet Stackable Hubs disclose coupling first and second master units to interface with the network. For example, TRENDnet Stackable Hubs disclose two master units (one primary master and one standby backup master) that connect to an Ethernet network. *See supra* at 1[a].
19[b]	linking a plurality of slave units,	TRENDnet Stackable Hubs disclose linking a plurality of slave units. For example, TRENDnet Stackable Hubs disclose Trendnet TE100-DM/DS Hub Stack that includes several stacked hub units. Wherein, out of these several stacked hub units, two hub units are master units, and the rest are slave units. Further, the hub units are stacked using daisy chain ports. TRENDnet Stackable Hubs at Page No. 37 ("[You can stack up to five hubs using the daisy-chain ports to form one logical hub. In this configuration, the interconnected hubs constitute a single logical unit, providing a maximum of 120 twisted-pair ports. Use the provided daisy-chain cable to connect the Daisy-Chain OUT port on the rear panel of one hub to the Daisy-Chain IN port on the hub below it, as shown in the figure below. Repeat this procedure for each hub to be included in the stack.]"). TRENDNET00000041. TRENDnet Stackable Hubs at Page No. 38; TRENDNET00000042.

No.	'904 Patent Claim 19	TRENDnet Stackable Hubs
		 TRENDnet Stackable Hubs at Page No. 26 ("[Daisy-Chain IN Port When cascading a set of stackable dual-speed hubs, this port should be connected to the Daisy-Chain OUT port of the previous hub in the stack (usually placed immediately above it). A cascade of five hubs can be created in this way. The first and last hubs in the stack use only one of the daisy-chain ports, while the others use both." "Daisy-Chain OUT Port Works in conjunction with the Daisy-Chain IN Port (see above). Connect this port to the Daisy-Chain IN Port of the next hub in ack (usually placed immediately below it), using the enclosed daisy-chain cable.]"). TRENDNET00000030. TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack **Note: In this context, "Group" means "Hub."**

No.	'904 Patent Claim 19	TRENDnet Stackable Hubs
		The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077 (emphasis added).
19[c]	each slave unit comprising one or more ports to respective subscriber lines, in a daisy chain between the first and second master units,	TRENDnet Stackable Hubs disclose each slave unit comprising one or more ports to respective subscriber lines, in a daisy chain between the first and second master units. For example, TRENDnet Stackable Hubs disclose each hub unit in the Trendnet TE100-DM/DS Hub Stack includes MDI-X ports that connect it to PCs, workstations, or servers. Further, Trendnet TE100-DM/DS Hub Stack includes multiple hubs that can be stacked through the daisy-chain ports to form one logical hub. In hub stack, the uppermost unit is referred as a first master unit and the last unit is a second master unit. Additionaly, the hubs inbetween the uppermost unit and the last unit are slave units. *See supra* at 1[c] and 1 [e]
19[d]	conveying initial downstream data packets, received from the network by one of the master units, along the daisy chain in a first direction, so as to	TRENDnet Stackable Hubs disclose downstream data packets received from the network. For example, TRENDnet Stackable Hubs discloses receiving packets from the network and sending packets to the network. Since the TE100-DM/DS Hub Stack has a primary master to manage the stack, the slave units receive the downstream data packets from the primary master via daisy-chain ports. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met.

No.	'904 Patent Claim 19	TRENDnet Stackable Hubs
	deliver the packets to the ports of the slave units, and	*See supra at* 4[f].
19[e]	in the event of a fault in the daisy chain, conveying further downstream data packets, received from the network by one of the master units, along the daisy chain in a second direction, opposite to the first direction, so as to deliver the further packets to the ports of at least some of the slave units.	TRENDnet Stackable Hubs discloses in the event of a fault in the daisy chain, conveying further downstream data packets, received from the network by one of the master units, along the daisy chain in a second direction, opposite to the first direction, so as to deliver the further packets to the ports of at least some of the slave units. *See supra* at Claim 7.

No.	'904 Patent Claim 20	TRENDnet Stackable Hubs
20	A method according to claim 19, wherein the initial and further downstream packets are received from the network by the first master unit, and wherein conveying the further downstream packets in the second direction comprises conveying the further	TRENDnet Stackable Hubs disclose a method according to claim 19, wherein the initial and further downstream packets are received from the network by the first master unit, and wherein conveying the further downstream packets in the second direction comprises conveying the further downstream packets from the first master unit to the second master unit, and then conveying the further downstream packets from the second master unit to the daisy chain. For example, TRENDnet Stackable Hubs disclose that packets are received from the network. TRENDnet Stackable Hubs further disclose that the Trendnet TE100-DM/DS Hub Stack is connected to multiple networks, *e.g.*, a10Mbps Ethernet network and a 100Mbps Fast Ethernet network. TRENDnet Stackable Hubs further disclose that the hubs within the Trendnet TE100-DM/DS Hub Stack contain more than one daisy-chain port, *e.g.*, two daisy-

No.	'904 Patent Claim 20	TRENDnet Stackable Hubs
	downstream packets from the first master unit to the second master unit, and then conveying the further downstream packets from the second master unit to the daisy chain.	chain ports. Thus, a person of ordinary skill in the art would understand from the teachings of TRENDnet Stackable Hubs that data packets can be received from either a downstream or upstream direction, and that the slave units can receive the downstream data packets from the primary master and can transmit the upstream data packets to the primary master. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. TRENDnet Stackable Hubs at Page No. 47 ("[The Fast Ethernet module includes the following LED indicators: • Power/Tx—this LED is lit when the hub is on and blinks when the module is transmitting packets. • Link/Rx—this LED is lit when the port is properly connected to a powered-on device and blinks when the module is receiving packets.]"). TRENDNET00000051. TRENDnet Stackable Hubs at Page No. 16 ("[The list below highlights the features and specifications of the TE100-DM/DS series hubs. Compatible with the IEEE 802.3 10BASE-T Ethernet and 802.3u 100BASE-TX Fast Ethernet industry standards for interoperability with other Ethernet/Fast Ethernet network devices. Ethernet connections support Category 3 or better twisted-pair cables. Fast Ethernet connections support both shielded twisted pair and Category 5 unshielded twisted-pair cables. Fast Ethernet connections support a maximum distance of 100 meters from end-station to hub, and a total network diameter of 205 meters. Sixteen (TE100-DS16, TE100-DS16X, TE100-DM16, TE100-DM16X) or twenty-four (TE100-DS24, TE100-DS24X, TE100-DM24, TE100-DM24X) NWay RJ-45 ports for connecting stations to the network.]"). TRENDNET00000020-021. TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack Note: In this context, "Group" means "Hub." The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are:

No.	'904 Patent Claim 20	TRENDnet Stackable Hubs
		Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077. TRENDnet Stackable Hubs at Page No. 78 ("[The hub supports several monitoring functions, allowing you to keep statistics on the operation of each port, each hub, and the entire network segment, as well as to monitor the addresses of the packets received at each port.]"). TRENDNET00000082. TRENDnet Stackable Hubs at Page No. 80 ("[Multicast. This statistic counts the number of good multicast packets received. Multicast events are messages sent from one node to multiple nodes on the segment. Broadcast. This statistic counts the number of good broadcast packets received. Broadcast events are messages sent to all nodes on the segment.]"). TRENDNET00000084. TRENDnet Stackable Hubs at Page No. 82 ("[Displaying Segment Statistics The hub stack collects network transmission statistics for each segment in the stack. You can choose to view them from the Statistics menu, accessible under the Network Monitoring menu. StatsPkts. This statistic displays the number of packets received from the network, including error packets. BroadcastPkts. This statistics counts the number of good broadcast packets received on the segment. MulticastPkts. This statistics counts the number of good multicast packets received on the segment.

No.	'904 Patent Claim 20	TRENDnet Stackable Hubs
		CRCAlignErrors. This statistic counts the number of valid length packets (64 to 1518 bytes) that had a bad Frame Check Sequence (FCS). UndersizePkts. This statistic counts the number of well-formed packets that were smaller than 64 octets. OversizePkts. This statistic counts the number of well-formed packets that were longer than 1518 octets. Fragments. This statistic counts the number of ill formed packets less than 64 octets and all events without a start-of-frame delimiter regardless of their length.]"). TRENDNET00000086. TRENDnet Stackable Hubs at Page No. 54 ("[Within a TE100-DM/DS series hub stack, in addition to a master hub for management purposes, a standby backup master can also be installed. If a hub stack has two master units, the first powered-on Master unit or the unit that is higher in the stack will manage the stack and be designated as the "Primary Master." Master hubs in the series include a built-in contention algorithm which determines which hub will manage the stack and which will operate in standby mode. If, during power-on, the two master hubs in the stack both attempt to initialize as the Primary Master, this collision will result in an automatic stack reset indicated by all hub ID numbers changing to 0 temporarily. If the current Primary Master Hub fails or loses power, the standby master will take over and manage the hub stack.]"). TRENDNET00000058.

No.	'904 Patent Claim 21	TRENDnet Stackable Hubs
21	A method according to claim 20, wherein conveying the further downstream packets from the first master unit to the second master unit comprises linking further slave units in an additional daisy chain between	TRENDnet Stackable Hubs disclose a method according to claim 20, conveying the further downstream packets from the first master unit to the second master unit comprises linking further slave units in an additional daisy chain between the first and second master units, and conveying the further downstream packets from the first master unit to the second master unit over the additional daisy chain. For example, TRENDnet Stackable Hubs disclose that packets are received from the network. TRENDnet Stackable Hubs further disclose that the Trendnet TE100-DM/DS Hub Stack is connected to multiple networks, *e.g.*, a10Mbps Ethernet network and a 100Mbps Fast Ethernet network. TRENDnet Stackable Hubs further disclose that the hubs within the

No.	'904 Patent Claim 21	TRENDnet Stackable Hubs
	the first and second master units, and conveying the further downstream packets from the first master unit to the second master unit over the additional daisy chain.	Trendnet TE100-DM/DS Hub Stack contain more than one daisy-chain port, *e.g.*, two daisy-chain ports. Additionally, TRENDnet Stackable Hubs discloses that multiple stacks of hubs can be connected over a network. Thus, a person of ordinary skill in the art would understand from the teachings of TRENDnet Stackable Hubs that data packets can be received from either a downstream or upstream direction, and that the slave units can receive the downstream data packets from the primary master and can transmit the upstream data packets to the primary master and across multiple stacks of hubs. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. TRENDnet Stackable Hubs at Page No. 47 ("[The Fast Ethernet module includes the following LED indicators: • Power/Tx—this LED is lit when the hub is on and blinks when the module is transmitting packets. • Link/Rx—this LED is lit when the port is properly connected to a powered-on device and blinks when the module is receiving packets.]"). TRENDNET00000051. TRENDnet Stackable Hubs at Page No. 16 ("[The list below highlights the features and specifications of the TE100-DM/DS series hubs. Compatible with the IEEE 802.3 10BASE-T Ethernet and 802.3u 100BASE-TX Fast Ethernet industry standards for interoperability with other Ethernet/Fast Ethernet network devices. Ethernet connections support Category 3 or better twisted-pair cables. Fast Ethernet connections support both shielded twisted pair and Category 5 unshielded twisted-pair cables. Fast Ethernet connections support a maximum distance of 100 meters from end-station to hub, and a total network diameter of 205 meters. Sixteen (TE100-DS16, TE100-DS16X, TE100-DM16, TE100-DM16X) or twenty-four (TE100-DS24, TE100-DS24X, TE100-DM24, TE100-DM24X) NWay RJ-45 ports for connecting stations to the network.]"). TRENDNET00000020-021. TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack Note: In this context, "Group" means "Hub."

No.	'904 Patent Claim 21	TRENDnet Stackable Hubs
		The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077. TRENDnet Stackable Hubs at Page No. 78 ("[The hub supports several monitoring functions, allowing you to keep statistics on the operation of each port, each hub, and the entire network segment, as well as to monitor the addresses of the packets received at each port.]"). TRENDNET00000082. TRENDnet Stackable Hubs at Page No. 80 ("[Multicast. This statistic counts the number of good multicast packets received. Multicast events are messages sent from one node to multiple nodes on the segment. Broadcast. This statistic counts the number of good broadcast packets received. Broadcast events are messages sent to all nodes on the segment.]"). TRENDNET00000084. TRENDnet Stackable Hubs at Page No. 82 ("[Displaying Segment Statistics The hub stack collects network transmission statistics for each segment in the stack. You can choose to view them from the Statistics menu, accessible under the Network Monitoring menu. StatsPkts. This statistic displays the number of packets received from the network, including error packets. BroadcastPkts. This statistics counts the number of good broadcast packets received on the segment.

No.	'904 Patent Claim 21	TRENDnet Stackable Hubs
		MulticastPkts. This statistics counts the number of good multicast packets received on the segment. CRCAlignErrors. This statistic counts the number of valid length packets (64 to 1518 bytes) that had a bad Frame Check Sequence (FCS). UndersizePkts. This statistic counts the number of well-formed packets that were smaller than 64 octets. OversizePkts. This statistic counts the number of well-formed packets that were longer than 1518 octets. Fragments. This statistic counts the number of ill formed packets less than 64 octets and all events without a start-of-frame delimiter regardless of their length.]"). TRENDNET00000086. TRENDnet Stackable Hubs at Page No. 54 ("[Within a TE100-DM/DS series hub stack, in addition to a master hub for management purposes, a standby backup master can also be installed. If a hub stack has two master units, the first powered-on Master unit or the unit that is higher in the stack will manage the stack and be designated as the "Primary Master." Master hubs in the series include a built-in contention algorithm which determines which hub will manage the stack and which will operate in standby mode. If, during power-on, the two master hubs in the stack both attempt to initialize as the Primary Master, this collision will result in an automatic stack reset indicated by all hub ID numbers changing to 0 temporarily. If the current Primary Master Hub fails or loses power, the standby master will take over and manage the hub stack.]"). TRENDNET00000058.

No.	'904 Patent Claim 22	TRENDnet Stackable Hubs
22[a]	A method according to claim 19, and comprising conveying initial upstream data packets, received by the slave units from the subscriber lines, along the daisy chain	TRENDnet Stackable Hubs disclose a method according to claim 19, and comprising conveying initial upstream data packets, received by the slave units from the subscriber lines, along the daisy chain in the second direction so as to transmit the upstream data packets via the first master unit over the network.. For example, TRENDnet Stackable Hubs disclose the number of packets received from the network. The TE100-DM/DS Hub Stack has a primary master to manage the stack. So, the slave units transmit the upstream data packets to the primary master. Further, the TE100-

No.	'904 Patent Claim 22	TRENDnet Stackable Hubs
	in the second direction so as to transmit the upstream data packets via the first master unit over the network,	DM/DS Hub Stack disclose MDI-X ports that connect hub units to PCs, workstations, or servers. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. TRENDnet Stackable Hubs at Page No. 16 ("[The list below highlights the features and specifications of the TE100-DM/DS series hubs. Compatible with the IEEE 802.3 10BASE-T Ethernet and 802.3u 100BASE-TX Fast Ethernet industry standards for interoperability with other Ethernet/Fast Ethernet network devices. Ethernet connections support Category 3 or better twisted-pair cables. Fast Ethernet connections support both shielded twisted pair and Category 5 unshielded twisted-pair cables. Fast Ethernet connections support a maximum distance of 100 meters from end-station to hub, and a total network diameter of 205 meters. Sixteen (TE100-DS16, TE100-DS16X, TE100-DM16, TE100-DM16X) or twenty-four (TE100-DS24, TE100-DS24X, TE100-DM24, TE100-DM24X) NWay RJ-45 ports for connecting stations to the network.]"). TRENDNET00000020-021. TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack Note: In this context, "Group" means "Hub." The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077.

No.	'904 Patent Claim 22	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 78 ("[The hub supports several monitoring functions, allowing you to keep statistics on the operation of each port, each hub, and the entire network segment, as well as to monitor the addresses of the packets received at each port.]"). TRENDNET00000082. TRENDnet Stackable Hubs at Page No. 80 ("[Multicast. This statistic counts the number of good multicast packets received. Multicast events are messages sent from one node to multiple nodes on the segment. Broadcast. This statistic counts the number of good broadcast packets received. Broadcast events are messages sent to all nodes on the segment.]"). TRENDNET00000084. TRENDnet Stackable Hubs at Page No. 82 ("[Displaying Segment Statistics The hub stack collects network transmission statistics for each segment in the stack. You can choose to view them from the Statistics menu, accessible under the Network Monitoring menu. StatsPkts. This statistic displays the number of packets received from the network, including error packets. BroadcastPkts. This statistics counts the number of good broadcast packets received on the segment. MulticastPkts. This statistics counts the number of good multicast packets received on the segment. CRCAlignErrors. This statistic counts the number of valid length packets (64 to 1518 bytes) that had a bad Frame Check Sequence (FCS). UndersizePkts. This statistic counts the number of well-formed packets that were smaller than 64 octets. OversizePkts. This statistic counts the number of well-formed packets that were longer than 1518 octets. Fragments. This statistic counts the number of ill formed packets less than 64 octets and all events without a start-of-frame delimiter regardless of their length.]"). TRENDNET00000086.

No.	'904 Patent Claim 22	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 54 ("[Within a TE100-DM/DS series hub stack, in addition to a master hub for management purposes, a standby backup master can also be installed. If a hub stack has two master units, the first powered-on Master unit or the unit that is higher in the stack will manage the stack and be designated as the "Primary Master." Master hubs in the series include a built-in contention algorithm which determines which hub will manage the stack and which will operate in standby mode. If, during power-on, the two master hubs in the stack both attempt to initialize as the Primary Master, this collision will result in an automatic stack reset indicated by all hub ID numbers changing to 0 temporarily. If the current Primary Master Hub fails or loses power, the standby master will take over and manage the hub stack.]"). TRENDNET00000058.
22[b]	and in the event of the fault, conveying further upstream data packets received by one or more of the slave units along the daisy chain in the first direction via the second master unit.	TRENDnet Stackable Hubs disclose and in the event of the fault, conveying further upstream data packets received by one or more of the slave units along the daisy chain in the first direction via the second master unit. For example, TRENDnet Stackable Hubs disclose that packets are received from the network. TRENDnet Stackable Hubs further disclose that the Trendnet TE100-DM/DS Hub Stack is connected to multiple networks, *e.g.*, a10Mbps Ethernet network and a 100Mbps Fast Ethernet network. TRENDnet Stackable Hubs further disclose that the hubs within the Trendnet TE100-DM/DS Hub Stack contain more than one daisy-chain port, *e.g.*, two daisy-chain ports. TRENDnet Stackable Hubs disclose that packets are rerouted in response to a fault in order to minimize disruption. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. TRENDnet Stackable Hubs at Page No. 47 ("[The Fast Ethernet module includes the following LED indicators: • Power/Tx—this LED is lit when the hub is on and blinks when the module is transmitting packets. • Link/Rx—this LED is lit when the port is properly connected to a powered-on device and blinks when the module is receiving packets.]"). TRENDNET00000051.

No.	'904 Patent Claim 22	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 16 ("[The list below highlights the features and specifications of the TE100-DM/DS series hubs. Compatible with the IEEE 802.3 10BASE-T Ethernet and 802.3u 100BASE-TX Fast Ethernet industry standards for interoperability with other Ethernet/Fast Ethernet network devices. Ethernet connections support Category 3 or better twisted-pair cables. Fast Ethernet connections support both shielded twisted pair and Category 5 unshielded twisted-pair cables. Fast Ethernet connections support a maximum distance of 100 meters from end-station to hub, and a total network diameter of 205 meters. Sixteen (TE100-DS16, TE100-DS16X, TE100-DM16, TE100-DM16X) or twenty-four (TE100-DS24, TE100-DS24X, TE100-DM24, TE100-DM24X) NWay RJ-45 ports for connecting stations to the network.]"). TRENDNET00000020-021. TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack Note: In this context, "Group" means "Hub." The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077. TRENDnet Stackable Hubs at Page No. 78 ("[The hub supports several monitoring functions, allowing you to keep statistics on the operation of each port, each hub, and the entire network segment, as well as to monitor the addresses of the packets received at each port.]"). TRENDNET00000082.

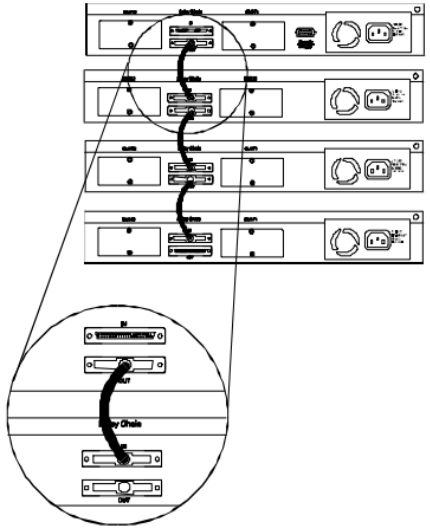
No.	'904 Patent Claim 22	TRENDnet Stackable Hubs
		TRENDnet Stackable Hubs at Page No. 80 ("[Multicast. This statistic counts the number of good multicast packets received. Multicast events are messages sent from one node to multiple nodes on the segment. Broadcast. This statistic counts the number of good broadcast packets received. Broadcast events are messages sent to all nodes on the segment.]"). TRENDNET00000084. TRENDnet Stackable Hubs at Page No. 82 ("[Displaying Segment Statistics The hub stack collects network transmission statistics for each segment in the stack. You can choose to view them from the Statistics menu, accessible under the Network Monitoring menu. StatsPkts. This statistic displays the number of packets received from the network, including error packets. BroadcastPkts. This statistics counts the number of good broadcast packets received on the segment. MulticastPkts. This statistics counts the number of good multicast packets received on the segment. CRCAlignErrors. This statistic counts the number of valid length packets (64 to 1518 bytes) that had a bad Frame Check Sequence (FCS). UndersizePkts. This statistic counts the number of well-formed packets that were smaller than 64 octets. OversizePkts. This statistic counts the number of well-formed packets that were longer than 1518 octets. Fragments. This statistic counts the number of ill formed packets less than 64 octets and all events without a start-of-frame delimiter regardless of their length.]"). TRENDNET00000086. TRENDnet Stackable Hubs at Page No. 54 ("[Within a TE100-DM/DS series hub stack, in addition to a master hub for management purposes, a standby backup master can also be installed. If a hub stack has two master units, the first powered-on Master unit or the unit that is higher in the stack will manage the stack and be designated as the "Primary Master." Master hubs in the series include a built-in contention algorithm which determines which hub will

No.	'904 Patent Claim 22	TRENDnet Stackable Hubs
		manage the stack and which will operate in standby mode. If, during power-on, the two master hubs in the stack both attempt to initialize as the Primary Master, this collision will result in an automatic stack reset indicated by all hub ID numbers changing to 0 temporarily. If the current Primary Master Hub fails or loses power, the standby master will take over and manage the hub stack.]"). TRENDNET00000058. *See supra* Claim 4[f].

No.	'904 Patent Claim 23	TRENDnet Stackable Hubs
23	A method according to claim 22, and comprising bicasting the upstream data packets from the first master unit to the network and to the second master unit, which transmits the bicast upstream data packets over the network.	TRENDnet Stackable Hubs disclose a method according to claim 22, and comprising bicasting the upstream data packets from the first master unit to the network and to the second master unit, which transmits the bicast upstream data packets over the network. For example, TRENDnet Stackable Hubs disclose Trendnet TE100-DM/DS Hub Stack that include several stacked hub units. Wherein, out of these several stacked hub units, two hub units are master units, and the rest are slave units. Also, the group configuration menu screen displays information about each of the hubs in the stack; wherein, the group role shows what role the hub is currently playing in the hub stack e.g., primary master, standby master, or slave. Since the TE100-DM/DS Hub Stack has a primary master to manage the stack. So, the slave units transmit the upstream data packets to the primary master. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. *See supra at* 6.

No.	'904 Patent Claim 24	TRENDnet Stackable Hubs
24	A method according to claim 19, wherein conveying the initial downstream data packets along the daisy chain comprises pre-switching the packets	TRENDnet Stackable Hubs disclose a method according to claim 19, wherein conveying the initial downstream data packets along the daisy chain comprises pre-switching the packets at each of the slave units, so that packets not addressed to any of the ports on the slave unit are passed to the next slave unit in the daisy chain, while packets that are addressed to one or more of the ports on the slave unit are passed to a switch fabric that directs the packets to the ports to which they are addressed.

No.	'904 Patent Claim 24	TRENDnet Stackable Hubs
	at each of the slave units, so that packets not addressed to any of the ports on the slave unit are passed to the next slave unit in the daisy chain, while packets that are addressed to one or more of the ports on the slave unit are passed to a switch fabric that directs the packets to the ports to which they are addressed.	For example, each of the slave units includes switch circuitry for forwarding packets to connecting devices, including through another one of the stacks of hubs when a fault has occurred in one of the stacks of hubs connected by daisy-chain ports. Thus, at least under the apparent claim scope alleged by Orckit's Infringement Disclosures, this limitation is met. TRENDnet Stackable Hubs at Page No. 78 ("[The hub supports several monitoring functions, allowing you to keep statistics on the operation of each port, each hub, and the entire network segment, as well as to monitor the addresses of the packets received at each port.]"). TRENDNET00000082. TRENDnet Stackable Hubs at Page No. 80 ("[Multicast. This statistic counts the number of good multicast packets received. Multicast events are messages sent from one node to multiple nodes on the segment. Broadcast. This statistic counts the number of good broadcast packets received. Broadcast events are messages sent to all nodes on the segment.]"). TRENDNET00000084. TRENDnet Stackable Hubs at Page No. 82 ("[Displaying Segment Statistics The hub stack collects network transmission statistics for each segment in the stack. You can choose to view them from the Statistics menu, accessible under the Network Monitoring menu. StatsPkts. This statistic displays the number of packets received from the network, including error packets. BroadcastPkts. This statistics counts the number of good broadcast packets received on the segment. MulticastPkts. This statistics counts the number of good multicast packets received on the segment. CRCAlignErrors. This statistic counts the number of valid length packets (64 to 1518 bytes) that had a bad Frame Check Sequence (FCS). UndersizePkts. This statistic counts the number of well-formed packets that were smaller than 64 octets.

No.	'904 Patent Claim 24	TRENDnet Stackable Hubs
		OversizePkts. This statistic counts the number of well-formed packets that were longer than 1518 octets. Fragments. This statistic counts the number of ill formed packets less than 64 octets and all events without a start-of-frame delimiter regardless of their length.]"). TRENDNET00000086. TRENDnet Stackable Hubs at Page No. 37 ("[You can stack up to five hubs using the daisy-chain ports to form one logical hub. In this configuration, the interconnected hubs constitute a single logical unit, providing a maximum of 120 twisted-pair ports. Use the provided daisy-chain cable to connect the Daisy-Chain OUT port on the rear panel of one hub to the Daisy-Chain IN port on the hub below it, as shown in the figure below. Repeat this procedure for each hub to be included in the stack.]") TRENDnet Stackable Hubs at Page No. 38; TRENDNET00000042.  TRENDnet Stackable Hubs at Page No. 26 ("[Daisy-Chain IN Port

No.	'904 Patent Claim 24	TRENDnet Stackable Hubs
		When cascading a set of stackable dual-speed hubs, this port should be connected to the Daisy-Chain OUT port of the previous hub in the stack (usually placed immediately above it). A cascade of five hubs can be created in this way. The first and last hubs in the stack use only one of the daisy-chain ports, while the others use both." "Daisy-Chain OUT Port Works in conjunction with the Daisy-Chain IN Port (see above). Connect this port to the Daisy-Chain IN Port of the next hub in ack (usually placed immediately below it), using the enclosed daisy-chain cable.]"). TRENDNET00000030. TRENDnet Stackable Hubs at Page No. 73 ("[Controlling Hubs in the Hub Stack Note: In this context, "Group" means "Hub." The Group Configuration Menu screen, found under the Network Monitoring menu, displays information about each of the hubs in the stack. The items displayed on this screen are: Group ID. This field indicates which hub is being displayed. Group Serial Number. Displays the hub's factory assigned serial number. Group Position Number. Displays the hub's stack position relative to the other hubs (1 is the highest in the stack, 5 the lowest). Group Description. This field gives a description of the given hub, showing its model number. Group Role. Shows what role the hub is currently playing in the hub stack (primary master, standby master, or slave). Group Port Capacity. This field shows the total number of network ports on the hub.]"). TRENDNET00000077.

No.	'904 Patent Claim 25	TRENDnet Stackable Hubs
25	A method according to claim 19, wherein the network comprises an asynchronous transfer mode (ATM) network.	TRENDnet Stackable Hubs disclose a method according to claim 19, wherein the network comprises an asynchronous transfer mode (ATM) network. For example, TRENDnet Stackable Hubs disclose a network using the TCP/IP TELNET protocol, Trivial File Transfer Protocol and Fast Ethernet Network. *See supra at* 2.

No.	'904 Patent Claim 26	TRENDnet Stackable Hubs
26	A method according to claim 19, wherein the network comprises an Internet protocol (IP) network.	TRENDnet Stackable Hubs disclose a method according to claim 19, wherein the network comprises an Internet protocol (IP) network. For example, TRENDnet Stackable Hubs disclose network using the TCP/IP TELNET protocol and Trivial File Transfer Protocol; a low overhead protocol for file transmission over TCP/IP networks. *See supra at* 3.