

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Assistant Commissioner for Patents
Washington, D.C. 20231

Atty. Dkt.: 233-101

Date: August 30, 2001

Sir:

J1033 U.S. PTO
09/941723
08/30/01

Attached for filing is the patent application of:

Inventor: Yossi BARSHESET

Entitled: FAST PROTECTION IN RING TOPOLOGIES

and including attachments as noted below:

☐ Newly executed Declaration, ☐ Copy of Declaration from prior application, ☒ Abstract
pages of specification and claims (including 16 numbered claims), and
sheets of accompanying drawing/s.

Record the attached assignment and return to the undersigned.

Attached is a Power of Attorney.

☐ Priority is hereby claimed under 35 U.S.C. § 119 based on the following foreign applications:

Application Number	Country	Day/Month/Year Filed
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☐ , respectively, the entire content of which is hereby incorporated by reference in this application..

☐ Certified copy(ies) of foreign application(s) is/are attached.

☐ Certified copy(ies) filed on _____ in prior appln. no. _____ filed _____

☐ Please amend the specification by inserting the following paragraph before the first line: --This application claims the benefit of Provisional Application No. _____, filed _____, the entire content of which is hereby incorporated by reference in this application.--

☐ Please amend the specification by inserting the following paragraph before the first line: --This application is a ☐ continuation/☐ division/☐ continuation-in-part of Application No. _____, filed _____, the entire content of which is hereby incorporated by reference in this application.--

☐ Petition filed in prior application to extend its life to insure co-pendency.

☐ The prior application is assigned to CORRIGENT SYSTEMS LTD..

☐ It is hereby requested that the Examiner consider the art cited in the parent application by applicant and/or the Examiner for the reasons stated therein. A listing of that art is attached.

☐ Applicant claims "small entity" status. ☐ "Small entity" statement attached.

☐ Please enter the attached and/or below preliminary amendment prior to calculation of filing fee:

☐ Also attached: ☐ Information Disclosure Statement; ☐ Non-Publication Request; ☐ Nucleotide and/or Amino Acid Sequence Submission; ☐ Statement deleting Inventor(s) named in prior application; ☐ Other:

FILING FEE IS BASED ON CLAIMS AS FILED LESS ANY HEREWITH CANCELED

Basic Filing Fee		\$	710.00
Total effective claims	16 - 20 (at least 20) = 0	x \$ 18.00	\$ 0.00
Independent claims	2 - 3 (at least 3) = 0	x \$ 80.00	\$ 0.00
If any proper multiple dependent claims now added for first time, add \$270.00 (ignore improper)			\$ 0.00
		SUBTOTAL	\$ 710.00
If "small entity," then enter half (1/2) of subtotal and subtract		-\$ (	0.00)
		SECOND SUBTOTAL	\$ 710.00
Assignment Recording Fee (\$40.00)			\$ 40.00
		TOTAL FEE ENCLOSED	\$ 750.00

Any future submission requiring an extension of time is hereby stated to include a petition for such time extension.

The Commissioner is hereby authorized to charge any deficiency in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our **Account No. 14-1140**. A duplicate copy of this sheet is attached.

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Signature: Larry S. Nixon

555740

Our Ref.: 233-101
42348

U.S. PATENT APPLICATION

Inventor(s): Yossi BARSHESET

Invention: FAST PROTECTION IN RING TOPOLOGIES

03/13/2004 10:00:00 AM

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SPECIFICATION

FAST PROTECTION IN RING TOPOLOGIES**FIELD OF THE INVENTION**

The present invention relates generally to communication networks, and specifically to high-speed packet rings.

BACKGROUND OF THE INVENTION

Network ring topologies are gaining in popularity, particularly in Internet Protocol (IP) networks. Such networks enable carriers to offer large bandwidth to users in a cost-effective manner. They also lend themselves to fast rerouting in the event of network failures, since two alternative routes - in clockwise and counterclockwise directions - are generally available for connecting any two nodes on the ring. A drawback of traditional ring implementations, such as SONET/SDH, is that one of the directions is designated as the active ring, while the other direction remains on standby for fault protection when needed. In other words, at any given time, all of the nodes in the ring transmit and receive data only in the active direction. Therefore, ordinarily half of the available bandwidth in these rings is reserved for fault protection and is not exploited under normal operating conditions.

Some recently-developed bidirectional protocols provide more efficient bandwidth utilization by enabling data to be transferred between any pair of nodes in either direction around the ring. The two opposing traffic directions are commonly referred to as an inner ring and an outer ring. It will be understood, however, that in the context of the present patent application and

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in the claims, the terms "inner" and "outer," as well as "clockwise" and "counterclockwise," are used arbitrarily to distinguish between the two opposing directions of packet flow in a ring network. These terms are chosen solely for convenience of explanation, and do not necessarily bear any relation to the physical characteristics of the network.

The leading bidirectional protocol for high-speed packet rings is the Resilient Packet Rings (RPR) protocol, which is in the process of being defined as IEEE standard 802.17. Network-layer routing over RPR is described, for example, by Jogalekar et al., in "IP over Resilient Packet Rings" (Internet Draft draft-jogalekar-iporpr-00), and by Herrera et al., in "A Framework for IP over Packet Transport Rings" (Internet Draft draft-ietf-ipoptr-framework-00). A proposed solution for Media Access Control (MAC - protocol layer 2) in bidirectional ring networks is the Spatial Reuse Protocol (SRP), which is described by Tsiang et al., in Request for Comments (RFC) 2892 of the Internet Engineering Task Force (IETF). These documents are incorporated herein by reference. They are available at www.ietf.org. Using protocols such as these, each node in a ring network can communicate directly with all other nodes through either the inner or the outer ring, using the appropriate Media Access Control (MAC) addresses of the nodes.

When a node detects a fault in a ring network (typically due to failure of a segment or of one of the other nodes in the network), it sends a failure alarm around the network to the other nodes. Based on the alarm location, each of the nodes must decide how to

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handle data flows that it is transmitting. Various protection mechanisms are known in the art for dealing with such failures, such as wrapping traffic from one of the rings onto the other in order to avoid the failed node or segment, and steering traffic at each node away from the failed node or segment. It is generally required that the protection mechanism take no more than 50 ms to start operating following occurrence of the fault, in line with the standard performance of SONET/SDH rings. Therefore, each of the nodes must be capable of deciding rapidly whether or not it is necessary to divert its current data flows from their previously-determined paths. In order to conserve bandwidth, it may even be desirable to stop a given flow entirely if the destination node has become unreachable due to the fault.

CONFIDENTIAL

SUMMARY OF THE INVENTION

It is an object of some aspects of the present invention to provide improved methods and devices for determining paths over which data flows are to be conveyed in a ring network.

It is a further object of some aspects of the present invention to provide an improved mechanism for rapid fault protection in a ring network.

In preferred embodiments of the present invention, each of the nodes in a ring network responds to a fault by constructing a general mask, which indicates the segment or segments of the network that have become unreachable as a result of the fault. Preferably, the mask has the form of a bitmap, with a bit for each segment, in which the bits corresponding to the unreachable segments are set. In addition, for each data flow that it must transmit, the node constructs a specific mask, preferably in bitmap form similar to the general mask, indicating the segments over which the flow was to be conveyed to the destination node before the fault occurred.

To determine the disposition of the data flow, the node mathematically superimposes the general and specific masks, preferably by means of a Boolean conjunction operation. When the result is null (no overlap between general and specific masks), the node can simply transmit the flow without change. When the result corresponds exactly to the general mask (showing that the unreachable segments are all contained within the intended path), the node steers the flow in the opposite direction, away from the failed segments. In any other case (only partial overlap of the unreachable segments with the desired

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path), the node concludes that the destination node has been isolated by the fault, and is no longer reachable in either ring direction. The data flow is therefore delayed or discarded entirely. In any case, the node is able to decide rapidly, with minimal computational cost, on the course of action that makes optimal use of the network resources remaining after the fault.

There is therefore provided, in accordance with a preferred embodiment of the present invention, in a bidirectional ring network, in which nodes are mutually connected by network segments, a method of fault protection, including:

constructing a general mask indicating which of the segments can be reached;

for a given data flow to be conveyed through the network from a source node to a destination node, constructing a specific mask indicating the segments on a desired path of the flow; and

superimposing the general and specific masks in order to determine a disposition of the flow.

Preferably, constructing the general mask includes assigning a respective general mask bit to each of the segments, indicating whether the segment can be reached following occurrence of the fault. Most preferably, constructing the specific mask includes assigning a respective specific mask bit to each of the segments, indicating whether the flow was to be conveyed over the segment had the fault not occurred.

Preferably, superimposing the masks includes combining the masks by means of a Boolean operation.

In a preferred embodiment, superimposing the masks includes determining whether to convey the data flow over

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the desired path, to steer the data flow over an alternative path, or to stop conveying the data flow. Preferably, superimposing the masks includes generating a combined mask, and determining that the data flow should be conveyed over the desired path when the combined mask is null, that the data flow should be steered over the alternative path when the combined mask corresponds to the general mask, and that the data flow should not be conveyed when the combined mask is neither null, nor does it correspond to the general mask.

There is also provided, in accordance with a preferred embodiment of the present invention, a communication device for use in a bidirectional ring network, in which nodes are mutually connected by network segments, the device including a network processor, which is adapted to construct a general mask indicating which of the segments can be reached in the event of a fault in the network, and to construct a specific mask for a given data flow to be conveyed through the network from a source node to a destination node, the specific mask indicating the segments on a desired path of the flow, and to superimpose the general and specific masks in order to determine a disposition of the flow.

The present invention will be more fully understood from the following detailed description of the preferred embodiments thereof, taken together with the drawings in which:

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a block diagram that schematically illustrates a ring network, in accordance with a preferred embodiment of the present invention;

Fig. 2 is a block diagram that schematically shows a detail of a node in the network of Fig. 1;

Fig. 3 is a block diagram that schematically illustrates steering of packets in the network of Fig. 1 following occurrence of a fault, in accordance with a preferred embodiment of the present invention; and

Fig. 4 is a flow chart that schematically illustrates a method of fault protection in a ring network, in accordance with a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Fig. 1 is a block diagram that schematically illustrates a bidirectional ring network 20, in accordance with a preferred embodiment of the present invention. Network 20 comprises a plurality of nodes 22, labeled A through G, which are mutually connected by network segments 31, 32, 33, 34, 35, 36 and 37. The nodes typically comprise switching equipment, and may serve as either gateways to other networks (aggregation points) or access points. The network segments comprise a bidirectional communication medium, such as optical fibers or conductive wires. The communication medium is configured to define an inner ring 24, over which packets are conveyed between the nodes in a clockwise direction, and an outer ring 26, over which the packets are conveyed in a counterclockwise direction.

The sequence of dashed arrows in the figure shows the path of an exemplary data flow on ring 26 from source node F to destination node B via segments 31, 32, 33 and 34. In one preferred embodiment of the present invention, the flow corresponds to a Multiprotocol Label Switching (MPLS) tunnel provided between nodes F and B, in accordance with IETF RFC 3031, entitled "Multiprotocol Label Switching Architecture" (January, 2001), which is incorporated herein by reference. (This RFC is available at www.ietf.org/rfc.html.) Alternatively, the flow may be created using any other suitable communication protocol known in the art.

Fig. 2 is a block diagram that schematically shows details of one of nodes 22, in accordance with a preferred embodiment of the present invention. Typically, the node comprises a pair of MAC blocks 40 and

42, with block 40 serving inner ring 24, and block 42 serving outer ring 26. MAC blocks 40 and 42 are coupled to and controlled by a network processor 44. The network processor preferably comprises a chip or chip set that is able to access and process higher-layer protocol information. It performs network-layer functions, such as IP processing and routing of data flows, as well as delivery of packets to users (in the case of access nodes) or to another network (in the case of gateway nodes). Optionally, the network processor handles other, higher-level functions, as well, such as Quality of Service (QoS) and network security. In addition (and most centrally from the point of view of the present invention), processor 44 is responsible for fault protection, as described in detail hereinbelow.

Fig. 3 is a block diagram showing an alternative route taken by the data flow from node F to node B, in accordance with a preferred embodiment of the present invention, following occurrence of a fault in segment 33. Node F has received an alarm indicating that segment 33 is not reachable and has determined accordingly, using the method described below, that the flow to node B that previously passed through this segment (as shown in Fig. 1) must be redirected. Accordingly node F steers the data flow to node B over ring 24 through segments 37, 36 and 35. In the case of MPLS, mentioned above, steering is carried out by directing the flow through a different tunnel, running in the clockwise direction, rather than counterclockwise, as before the fault occurred.

Fig. 4 is a flow chart that schematically illustrates a method of fault protection that is used by nodes 22 in network 20 in determining how to handle

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faults when they occur, in accordance with a preferred embodiment of the present invention. For the purposes of this method, each node builds and maintains two masks - a general mask and a specific mask - preferably in an ordered bitmap form, with one bit for each of segments 31-37. At a general mask building step 50, the node builds a general mask indicating which of the segments cannot be reached as a result of the fault. In the situation shown in Fig. 3, the general mask constructed by node F would have the form 0000100, wherein the bits run in a counterclockwise direction from segment 31 (least significant bit) to segment 37 (most significant bit). The third bit is set to "1" to indicate that segment 33 is broken. Alternative orders and representations of the bits may also be used. The general mask in the absence of any fault in network 20 has the form 0000000.

The node builds a specific mask to represent each of its data flows, at a specific mask building step 52. In order to save time in implementing protection when a fault occurs, the specific mask for each data flow may be built at the time the data flow is initiated, rather than waiting for a fault to occur. For the flow shown in Fig. 1, the specific mask at node F has the form 0001111, to indicate that the flow passes through segments 31, 32, 33 and 34.

In order to determine how to handle the data flow following the fault, node F mathematically superimposes the applicable general and specific masks, preferably by taking the Boolean conjunction (AND) of the masks, at a conjunction step 54. If the conjunction is 0000000, the node can conclude that there is no overlap between this

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data flow and the failed segments in network 20, and therefore determines that no steering of this flow is required, at a non-action step 56. (As long as there is no fault in the network, the general mask itself is 00000000, so that the conjunction remains zero, and no steering is performed.)

In the situation shown in Fig. 3, however, the conjunction of the masks is 0000100, which is equal to the general mask itself. In this case, the node concludes that the current data flow overlaps all of the unreachable segments, and therefore steers the data flow around the ring in the opposite direction, at a steering step 58, as shown in the figure. On the other hand, if the conjunction is non-zero but is not equal to the general mask, the source node of the flow concludes that there are unreachable segments on both sides of the destination node, making the destination node itself unreachable. When this occurs, the source node preferably discards the packets in the data flow, at a discard step 60, in order to avoid wasting network bandwidth. Alternatively, the source node may hold the flow, and attempt to resend it later.

The following are some further examples of network faults and their handling with respect to the data flow of Fig. 1, using the method described above:

- If node E fails, then the general mask is 0000011. The conjunction of this mask with the specific mask 0001111 is 000011 (equal to the general mask), and the data flow is steered as in the case shown in Fig. 3.

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- If node A fails, the general mask is 0110000. The conjunction with the specific mask is 0000000, so that no steering is performed.
- If segments 33 and 35 fail, the general mask is 0011100 (since segment 34 is also unreachable). The conjunction with the specific mask is 0001100, which is different from the general mask. In this case, the flow is discarded.

Although the preferred embodiment described above uses a certain type of bitmap representation of the ring network, along with the Boolean conjunction operator for superimposing the general and specific masks, it will be apparent to those skilled in the art that other mask representations and mathematical and/or logical operations may be used for the same purpose. Moreover, although this embodiment is described with reference to certain specific network configurations and communication protocols, the principles of the present invention may also be applied in ring networks of other types, which implement different protocols, such as SONET Bi-Directional Line-Switched Rings (BLSR). This protocol is described in Bellcore document GR-1230, entitled "SONET Bi-Directional Line-Switched Ring Equipment Generic Criteria," (December, 1998), which is incorporated herein by reference.

It will therefore be appreciated that the preferred embodiments described above are cited by way of example, and that the present invention is not limited to what has been particularly shown and described hereinabove. Rather, the scope of the present invention includes both combinations and subcombinations of the various features described hereinabove, as well as variations and

Physical Properties		Chemical Properties		Thermal Properties		Mechanical Properties		Electrical Properties		Optical Properties		Acoustic Properties		Magnetic Properties		Biological Properties		Environmental Properties	
Property	Value	Property	Value	Property	Value	Property	Value	Property	Value	Property	Value	Property	Value	Property	Value	Property	Value	Property	Value
Density	1.2	Boiling Point	100	Melting Point	0	Tensile Strength	100	Resistivity	100	Refractive Index	1.0	Sound Speed	340	Magnetic Susceptibility	1.0	Toxicity	Low	Biodegradability	High
Viscosity	1.0	Freezing Point	0	Heat of Fusion	336	Elongation	100	Capacitance	100	Dispersion	0.0	Attenuation	0.1	Permeability	1.0	Flammability	Low	Stability	High
Surface Tension	72	Specific Heat	4.18	Heat of Vaporization	2260	Modulus	100	Inductance	100	Absorption	0.0	Impedance	100	Conductivity	1.0	Corrosion	Low	Compatibility	High
Thermal Conductivity	0.6	Thermal Expansion	0.0001	Thermal Stability	100	Impact Resistance	100	Frequency Response	100	Scattering	0.0	Phase Shift	0.0	Dielectric Loss	0.0	Hardness	100	Biocompatibility	High
Electrical Conductivity	1.0	Electrical Breakdown	100	Electrical Stability	100	Thermal Conductivity	0.6	Optical Conductivity	1.0	Acoustic Conductivity	1.0	Magnetic Conductivity	1.0	Biological Conductivity	1.0	Environmental Conductivity	1.0	Chemical Conductivity	1.0

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CLAIMS

1. In a bidirectional ring network, in which nodes are mutually connected by network segments, a method of fault protection, comprising:

constructing a general mask indicating which of the segments can be reached;

for a given data flow to be conveyed through the network from a source node to a destination node, constructing a specific mask indicating the segments on a desired path of the flow; and

superimposing the general and specific masks in order to determine a disposition of the flow.

2. A method according to claim 1, wherein constructing the general mask comprises assigning a respective general mask bit to each of the segments, indicating whether the segment can be reached following occurrence of the fault.

3. A method according to claim 2, wherein constructing the specific mask comprises assigning a respective specific mask bit to each of the segments, indicating whether the flow was to be conveyed over the segment had the fault not occurred.

4. A method according to claim 1, wherein superimposing the masks comprises combining the masks by means of a Boolean operation.

5. A method according to claim 1, wherein superimposing the masks comprises determining whether to convey the data flow over the desired path, to steer the data flow over an alternative path, or to stop conveying the data flow.

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6. A method according to claim 5, wherein superimposing the masks comprises generating a combined mask, and determining that the data flow should be conveyed over the desired path when the combined mask is null.

7. A method according to claim 5, wherein superimposing the masks comprises generating a combined mask, and determining that the data flow should be steered over the alternative path when the combined mask corresponds to the general mask.

8. A method according to claim 5, wherein superimposing the masks comprises generating a combined mask, and determining that the data flow should not be conveyed when the combined mask is neither null, nor does it correspond to the general mask.

9. A communication device for use in a bidirectional ring network, in which nodes are mutually connected by network segments, the device comprising a network processor, which is adapted to construct a general mask indicating which of the segments can be reached in the event of a fault in the network, and to construct a specific mask for a given data flow to be conveyed through the network from a source node to a destination node, the specific mask indicating the segments on a desired path of the flow, and to superimpose the general and specific masks in order to determine a disposition of the flow.

10. A device according to claim 9, wherein the general mask comprises a respective general mask bit for each of the segments, indicating whether the segment can be reached following occurrence of the fault.

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11. A device according to claim 10, wherein the specific mask comprises a respective specific mask bit for each of the segments, indicating whether the flow was to be conveyed over the segment had the fault not occurred.

12. A device according to claim 9, wherein the processor is adapted to superimpose the masks by performing a Boolean operation on the masks.

13. A device according to claim 9, wherein the processor is adapted to determine whether to convey the data flow over the desired path, to steer the data flow over an alternative path, or to stop conveying the data flow based on the superimposed masks.

14. A device according to claim 13, wherein the processor is adapted to superimpose the masks so as to generate a combined mask, and to determine that the data flow should be conveyed over the desired path when the combined mask is null.

15. A device according to claim 13, wherein the processor is adapted to superimpose the masks so as to generate a combined mask, and to determine that the data flow should be steered over the alternative path when the combined mask corresponds to the general mask.

16. A device according to claim 13, wherein the processor is adapted to superimpose the masks so as to generate a combined mask, and to determine that the data flow should not be conveyed when the combined mask is neither null, nor does it correspond to the general mask.

FIG. 1

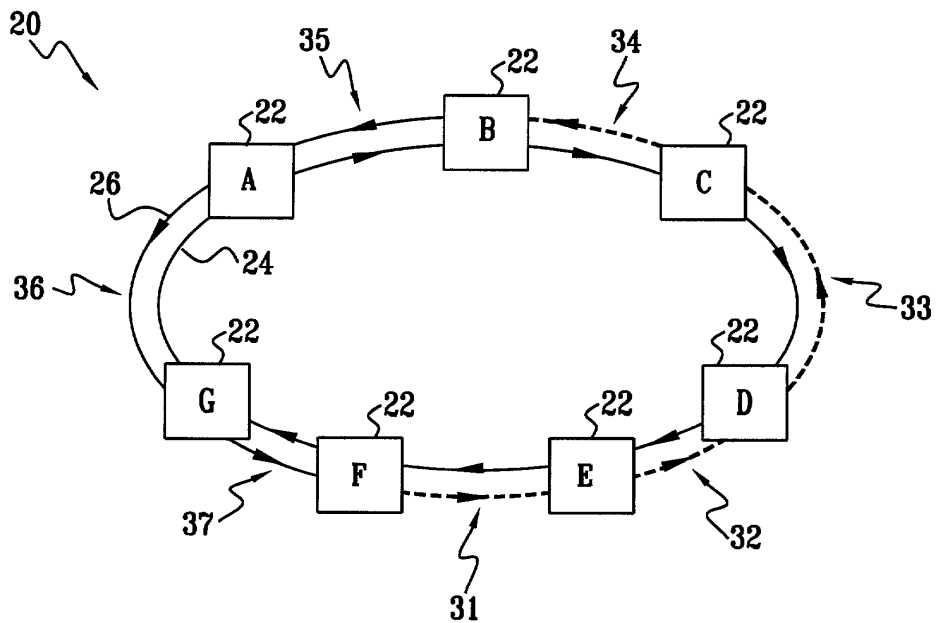
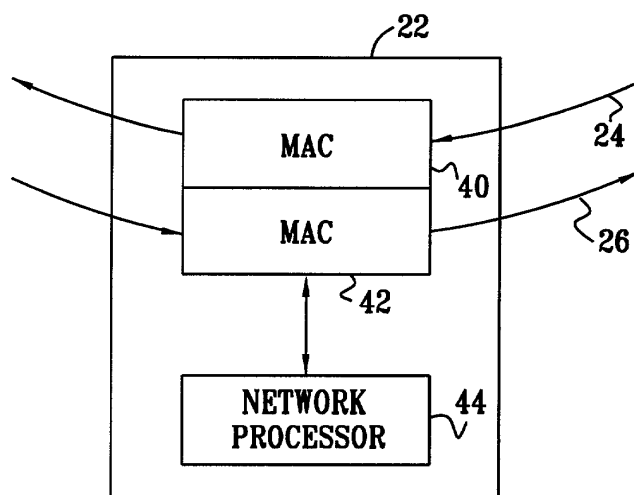


FIG. 2



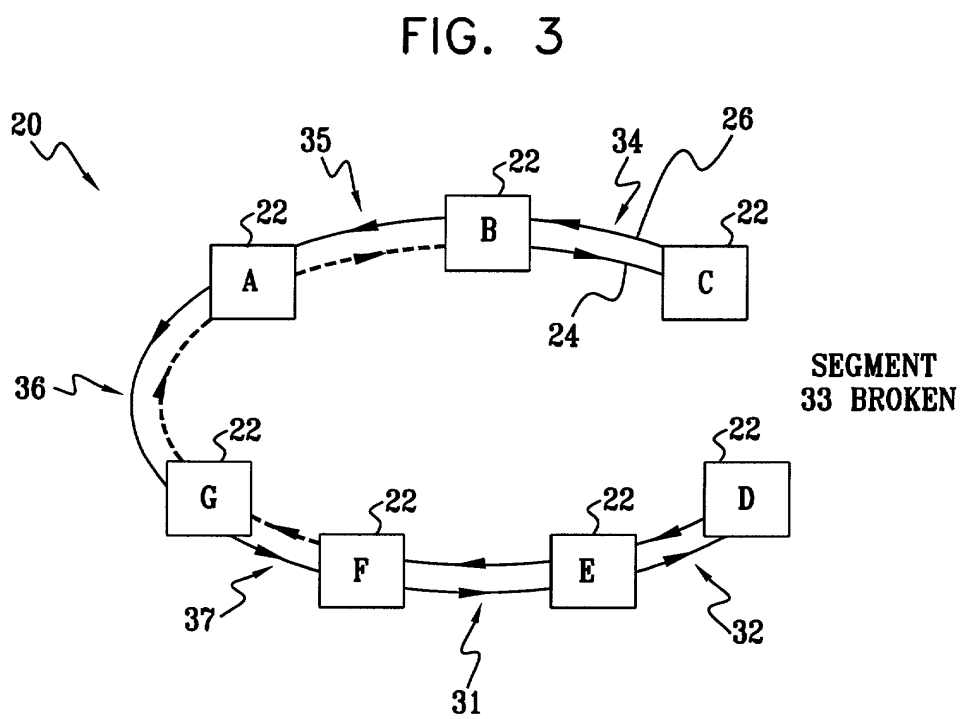
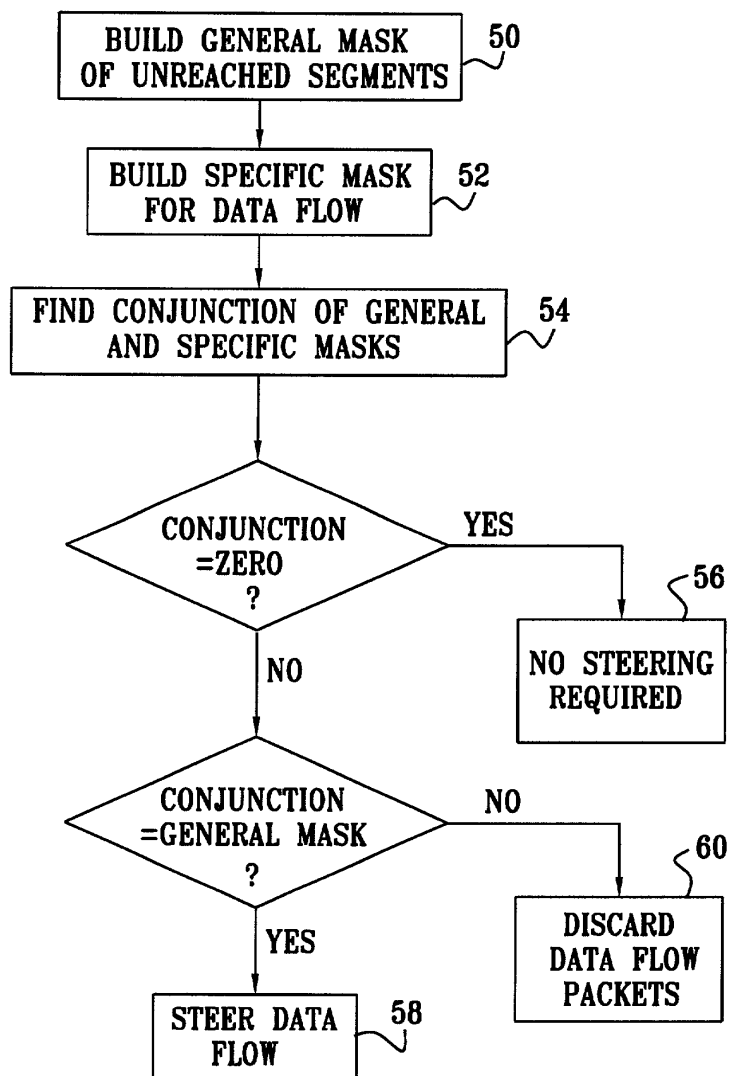


FIG. 4



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ase No. _____

Nixon & Vanderhye P.C. (12/97)

RULE 63 (37 C.F.R. 1.63)
DECLARATION AND POWER OF ATTORNEY
FOR PATENT APPLICATION
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

I, as below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name, and I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

FAST PROTECTION IN RING TOPOLOGIES

specification of which (check applicable box(es)):

is attached hereto

was filed on _____

as U.S. Application Serial No. _____

was filed as PCT International application No. _____

on _____

d (if applicable to U.S. or PCT application) was amended on _____

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with 37 C.F.R. 1.56. I hereby claim foreign priority benefits under 35 U.S.C. 119/365 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed or, if no priority is claimed, before the filing date of this application:

Priority Foreign Application(s):

Application Number

Country

Day/Month/Year Filed

I hereby claim the benefit under 35 U.S.C. §119(e) of any United States provisional application(s) listed below.

Application Number

Date/Month/Year Filed

I hereby claim the benefit under 35 U.S.C. 120/365 of all prior United States and PCT international applications listed above or below and, insofar as subject matter of each of the claims of this application is not disclosed in such prior applications in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose material information as defined in 37 C.F.R. 1.56 which occurred between the filing date of the prior applications and the national or PCT international filing date of this application:

or U.S./PCT Application(s):

Application Serial No.

Day/Month/Year Filed

Status: patented
 pending, abandoned

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon. And I hereby appoint NIXON & VANDERHYE P.C., 1100 North Glebe Rd., 8th Floor, Arlington, VA 20147, telephone number (703) 816-4000 (to whom all communications are to be directed), and the following attorneys thereof (of the same address) individually and collectively my attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith and with the resulting patent: Arthur R. Crawford, 25327; Larry S. Nixon, 25640; Robert A. Vanderhye, 27076; James T. Hosmer, 84; Robert W. Faris, 31352; Richard G. Besha, 22770; Mark E. Nusbaum, 32348; Michael J. Keenan, 32106; Bryan H. Davidson, 30251; Stanley C. Conner, 29393; Leonard C. Mitchard, 29009; Duane M. Byers, 33363; Jeffrey H. Nelson, 30481; John R. Lastova, 33149; H. Warren Burnam, Jr. 29366; Thomas E. Byrne, 32205; Mary J. Wilson, 32955; J. Scott Davidson, 33489; Alan M. Kagen, 36178; William J. Griffin, 31260; Robert A. Molan, 29834; J. Saroff, 36663; James D. Berquist, 34776; Updeep S. Gill, 37334.

Inventor's Signature: _____

Date: 30/07/01

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(last)

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Date: _____

Inventor:

(first)

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(last)

(citizenship)

Residence: (city)

(state/country)

Post Office Address:

(Zip Code)

Inventor's Signature: _____

Date: _____

Inventor:

(first)

MI

(last)

(citizenship)

Residence: (city)

(state/country)

Post Office Address:

(Zip Code)

FOR ADDITIONAL INVENTORS, check box ☐ and attach sheet with same information and signature and date for each.

264641

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Assistant Commissioner for Patents
Washington, D.C. 20231

Atty. Dkt.: 233-101

Date: August 30, 2001

Sir:

J1033 U.S. PTO
09/941723
08/30/01

Attached for filing is the patent application of:

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pages of specification and claims (including 16 numbered claims), and
sheets of accompanying drawing/s.

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☐ Certified copy(ies) of foreign application(s) is/are attached.

☐ Certified copy(ies) filed on _____ in prior appln. no. _____ filed _____

☐ Please amend the specification by inserting the following paragraph before the first line: --This application claims the benefit of Provisional Application No. _____, filed _____, the entire content of which is hereby incorporated by reference in this application.--

☐ Please amend the specification by inserting the following paragraph before the first line: --This application is a ☐ continuation/☐ division/☐ continuation-in-part of Application No. _____, filed _____, the entire content of which is hereby incorporated by reference in this application.--

☐ Petition filed in prior application to extend its life to insure co-pendency.

☐ The prior application is assigned to CORRIGENT SYSTEMS LTD..

☐ It is hereby requested that the Examiner consider the art cited in the parent application by applicant and/or the Examiner for the reasons stated therein. A listing of that art is attached.

☐ Applicant claims "small entity" status. ☐ "Small entity" statement attached.

☐ Please enter the attached and/or below preliminary amendment prior to calculation of filing fee:

☐ Also attached: ☐ Information Disclosure Statement; ☐ Non-Publication Request; ☐ Nucleotide and/or Amino Acid Sequence Submission; ☐ Statement deleting Inventor(s) named in prior application; ☐ Other:

FILING FEE IS BASED ON CLAIMS AS FILED LESS ANY HEREWITH CANCELED

Basic Filing Fee		\$	710.00
Total effective claims	16 - 20 (at least 20) =	0 x \$ 18.00	\$ 0.00
Independent claims	2 - 3 (at least 3) =	0 x \$ 80.00	\$ 0.00
If any proper multiple dependent claims now added for first time, add \$270.00 (ignore improper)		\$	0.00
		SUBTOTAL	\$ 710.00
If "small entity," then enter half (1/2) of subtotal and subtract		-\$	(0.00)
		SECOND SUBTOTAL	\$ 710.00
Assignment Recording Fee (\$40.00)		\$	40.00
		TOTAL FEE ENCLOSED	\$ 750.00

Any future submission requiring an extension of time is hereby stated to include a petition for such time extension.

The Commissioner is hereby authorized to charge any deficiency in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our **Account No. 14-1140**. A duplicate copy of this sheet is attached.

1100 North Glebe Road, 8th Floor
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LSN:mss

NIXON & VANDERHYE P.C.
By Atty: Larry S. Nixon, Reg. No. 25,640

Signature: Larry S. Nixon

555740



UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. 20231
www.uspto.gov



Bib Data Sheet

CONFIRMATION NO. 7150

SERIAL NUMBER 09/941,723	FILING DATE 08/30/2001 RULE	CLASS 370	GROUP ART UNIT 2661	ATTORNEY DOCKET NO. 233-101	
APPLICANTS Yossi Barsheshet, Givatayim, ISRAEL; ** CONTINUING DATA ***** ** FOREIGN APPLICATIONS ***** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 09/29/2001					
Foreign Priority claimed ☐ yes ☐ no 35 USC 119 (a-d) conditions ☐ yes ☐ no ☐ Met after met Allowance Verified and Acknowledged _____ Examiner's Signature Initials		STATE OR COUNTRY ISRAEL	SHEETS DRAWING 3	TOTAL CLAIMS 16	INDEPENDENT CLAIMS 2
ADDRESS NIXON & VANDERHYE P.C. 8th Floor 1100 North Glebe Road Arlington, VA 22201-4714					
TITLE Fast protection in ring topologies					
FILING FEE RECEIVED 710	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit		

PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

08/31/2001 ANABI1 00000010 09941723

01 FC:101 710.00 OP

PTO-1556
(5/87)

*U.S. GPO: 1999-459-082/19144

PATENT APPLICATION FEE DETERMINATION RECORD
Effective October 1, 2000

Application or Docket Number

233-101

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	<i>16</i>	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	<i>16</i> minus 20 = *	<i>9</i>
INDEPENDENT CLAIMS	<i>2</i> minus 3 = *	<i>9</i>
MULTIPLE DEPENDENT CLAIM PRESENT ☐		

* If the difference in column 1 is less than zero, enter "0" in column 2

CLAIMS AS AMENDED - PART II

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	* Minus **	=
	Independent	* Minus ***	=
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐		

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	* Minus **	=
	Independent	* Minus ***	=
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐		

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	* Minus **	=
	Independent	* Minus ***	=
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐		

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

SMALL ENTITY TYPE ☐

OR OTHER THAN SMALL ENTITY

RATE	FEE
BASIC FEE	355.00
X\$ 9=	
X40=	
+135=	
TOTAL	

RATE	FEE
BASIC FEE	710.00
X\$18=	
X80=	
+270=	
TOTAL	<i>710.00</i>

SMALL ENTITY

OR OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
X\$ 9=	
X40=	
+135=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X80=	
+270=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$ 9=	
X40=	
+135=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X80=	
+270=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$ 9=	
X40=	
+135=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X80=	
+270=	
TOTAL ADDIT. FEE	

CLAIMS ONLY							SERIAL NO. <u>09941723</u>	FILING DATE <u>08-31-01</u>
							APPLICANT(S)	
CLAIMS								
	AS FILED		AFTER 1st AMENDMENT		AFTER 2nd AMENDMENT			
	IND.	DEP.	IND.	DEP.	IND.	DEP.		
1	/						51	
2		/					52	
3		/					53	
4		/					54	
5		/					55	
6		/					56	
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8		/					58	
9	/						59	
10		/					60	
11		/					61	
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43							93	
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45							95	
46							96	
47							97	
48							98	
49							99	
50							100	
TOTAL IND.	2	↓		↓		↓	TOTAL IND.	↓
TOTAL DEP.	14	←		←		←	TOTAL DEP.	←
TOTAL CLAIMS	16						TOTAL CLAIMS	

* MAY BE USED FOR ADDITIONAL CLAIMS OR ADMENDMENTS

U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office

FORM PTO-2022 (1-98)

U.S. Government Printing Office: 1998 - 433-214/70303

#2
BT
12-06-01

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application

Yossi BARSHESHET

Serial No. 09/941,723

Filed: August 30, 2001

For: FAST PROTECTION IN RING TOPOLOGIES



Atty. Ref.: 233-101

Group: 2661

Examiner:

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DEC 04 2001
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* * * * *

November 27, 2001

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

INFORMATION DISCLOSURE STATEMENT

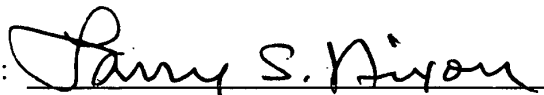
Attention is directed to the attached documents. A PTO-1449 is also attached.

Official consideration and citation of each such reference is requested.

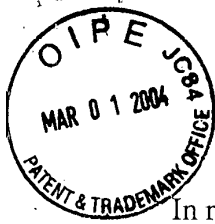
Respectfully submitted,

NIXON & VANDERHYE P.C.

By:


Larry S. Nixon
Reg. No. 25,640

LSN:vc
1100 North Glebe Road, 8th Floor
Arlington, VA 22201-4714
Telephone: (703) 816-4000
Facsimile: (703) 816-4100



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IFW

In re Patent Application of

7061859

Yossi BARSHESET

Atty. Ref.: 233-101

Serial No. 09/941,723

TC/A.U.: 2661

Filed: August 30, 2001

Examiner:

For: FAST PROTECTION IN RING TOPOLOGIES

* * * * *

March 1, 2004

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

MAR 3 2004

STATUS INQUIRY

Initials: MB

An application was filed on August 30, 2001. However, since then applicant has not received any Official Action from the Patent Office regarding the application.

Inquiry is made as to when an Action will be forthcoming.

TC 2600 CSO
STATUS RESPONSE DATE

Respectfully submitted,

MAR 3 2004

NIXON & VANDERHYE P.C.

Initials: MB
EXPIRATION: First Office action 15 mo.

By:

Larry S. Nixon

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*Chg of address
Matched with Case*

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TC 2600 CSO
STATUS INQUIRY
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

3

In re Patent Application of

Yossi BARSHESET

Atty. Ref.: 233-101

Serial No. 09/941,723

TC/A.U.: 2661

Filed: August 30, 2001

Examiner:

For: FAST PROTECTION IN RING TOPOLOGIES

* * * * *

June 9, 2004

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Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

JUN 10 2004

Technology Center 2600

Sir:

INFORMATION DISCLOSURE STATEMENT

Attention is directed to the attached documents (including PTO-892 "Notice of Reference Cited" issued March 11, 8 and 12 (2004) respectively in possibly related co-pending US applications 09/637,757, 09/637758 and 09/637,759. A PTO-1449 is also attached.

Official consideration and citation of each such document is requested.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: Larry S. Nixon
Larry S. Nixon
Reg. No. 25,640

LSN:vc

1100 North Glebe Road, 8th Floor

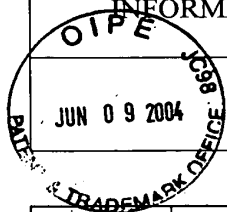
Arlington, VA 22201-4714

Telephone: (703) 816-4000

Facsimile: (703) 816-4100

850384

FORM PTO-1449 (Colb)	ATTY DOCKET NO. 233-101	SERIAL NUMBER 09/941,723
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANTS' INFORMATION STATEMENT	APPLICANT Yossi BARSHESHET	EXAMINER (N/A)
	FILING DATE August 30, 2001	GROUP ART UNIT (N/A)



U.S. PATENT DOCUMENTS

Examiner's Initials		DOCUMENT NO.	DATE	NAME	CLASS	SUB	FILING DATE
	AA	5,436,886	07-1995	McGill			
	AB	6,075,767	06-2000	Sakamoto, et al.			
	AC	6,466,576	10-2002	Sekine, et al.			
	AD	5,663,949	09-1997	Ishibashi, et al.			
	AE	6,687,231	02-2004	Czerwiec, et al.			
	AF	5,283,782	02-1994	Takase, et al.			
	AG	6,351,452	02-2002	Koenig, et al.			

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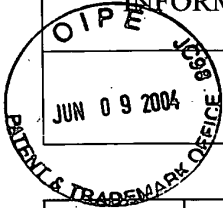
FOREIGN PATENT DOCUMENTS

		DOCUMENT NO.	DATE	COUNTRY	CLASS	SUB	TRANS- LATION
	AH	EP 1 006 702	06-2000	EUROPE			
	AI	WO 99/04596	01-1999	PCT			
	AJ						

OTHER ART (Including Author, Bills, Pertinent Pages, Etc.)

AK	"Inverse Multiplexing for ATM (IMA) Specification Version 1.1", ATM FORUM. 'Online! March 1999.
AL	Papa Del J, et al, "DSLAM - A BROADBAND DIGITAL SUBSCRIBER LINE ACCESS MULTIPLEXER SYSTEM", NEC RESEARCH AND DEVELOPMENT, NIPPON ELECTRIC LTD. TOKYO, JAPAN, Vol. 40, no. 1, January 1999, pp. 103-107.
AM	
EXAMINER: DATE CONSIDERED:	
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

FORM PTO-1449 (Colb)	ATTY DOCKET NO. 233-101	SERIAL NUMBER 09/941,723
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANTS' INFORMATION STATEMENT	APPLICANT Yossi BARSHESHET	EXAMINER (N/A)
	FILING DATE August 30, 2001	GROUP ART UNIT (N/A)



U.S. PATENT DOCUMENTS

Examiner's Initials		DOCUMENT NO.	DATE	NAME	CLASS	SUB	FILING DATE
	AA	6,438,144	08-2002	Guzikevitz, et al.			
	AB	6,314,102	11-2001	Czerwiec, et al.			
	AC	5,796,717	08-1998	Shinbashi, et al.			
	AD	6,597,689	07-2003	Chiu, et al.			
	AE	6,680,904	01-2004	Kaplan, et al.			
	AF						
	AG						

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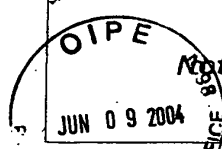
FOREIGN PATENT DOCUMENTS

		DOCUMENT NO.	DATE	COUNTRY	CLASS	SUB	TRANS- LATION
	AH						
	AI						
	AJ						

OTHER ART (Including Author, Bills, Pertinent Pages, Etc.)

AK	
AL	
AM	
EXAMINER:	DATE CONSIDERED:
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

3713

	Notice of References Cited		Application/Control No. 09/637,758	Applicant(s)/Patent Under Reexamination ZELIG ET AL.	
			Examiner Steven HD Nguyen	Art Unit 2665	Page 1 of 1

U.S. PATENT DOCUMENTS

		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-6,687,231	02-2004	Czerwiec et al.	370/228
	B	US-5,283,782	02-1994	Takase et al.	370/219
	C	US-6,351,452	02-2002	Koenig et al.	370/217
	D	US-6,438,144	08-2002	Guzikevits et al.	370/535
	E	US-6,314,102	11-2001	Czerwiec et al.	370/463
	F	US-5,796,717	08-1998	Shinbashi et al.	370/216
	G	US-6,597,689	07-2003	Chiu et al.	370/354
	H	US-6,680,904	01-2004	Kaplan et al.	370/217
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
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	P					
	Q					
	R					
	S					
	T					

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NON-PATENT DOCUMENTS

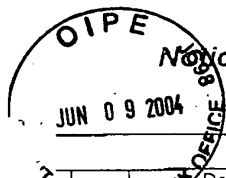
*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
 Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

U.S. Patent and Trademark Office
 PTO-892 (Rev. 01-2001)

Notice of References Cited

Part of Paper No. 7



Notice of References Cited

Application/Control No.

09/637,757

Applicant(s)/Patent Under
Reexamination
ZELIG ET AL.

Examiner

Steven HD Nguyen

Art Unit

2665

Page 1 of 1

U.S. PATENT DOCUMENTS

	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
A	US-6,687,231	02-2004	Czerwiec et al.	370/228
B	US-6,680,904	01-2004	Kaplan et al.	370/217
C	US-6,597,589	07-2003	Chiu et al.	370/395.1
D	US-6,438,144	08-2002	Guzikevits et al.	370/535
E	US-5,796,717	08-1998	Shinbashi et al.	370/216
F	US-5,283,782	02-1994	Takase et al.	370/219
G	US-6,314,102	11-2001	Czerwiec et al.	370/463
H	US-6,351,452	02-2002	Koenig et al.	370/217
I	US-			
J	US-			
K	US-			
L	US-			
M	US-			

FOREIGN PATENT DOCUMENTS

	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
N	EP 1006702	06-2000	EPO	Srikanth	--
O	WO 9904596	01-1999	WO	Lund	--
P					
Q					
R					
S					
T					

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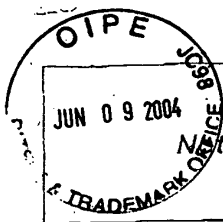
JUN 10 2004

Technology Center 2600

NON-PATENT DOCUMENTS

	Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
U	ATM Forum, Inverse Multiplexing for ATM Specification Version 1.1, Pages 1-8.
V	Delpapa, DSLAM - A broadband Digital Subscriber Line Access Multiplexer System, NEC, Pages 103-107
W	
X	

Copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.



36975

Notice of References Cited	Application/Control No. 09/637,759	Applicant(s)/Patent Under Reexamination ZELIG ET AL.	
	Examiner Steven HD Nguyen	Art Unit 2665	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-5,283,782	02-1994	Takase et al.	370/219
	B	US-5,436,886	07-1995	McGill, Richard T.	370/219
	C	US-6,597,689	07-2003	Chiu et al.	370/395.1
	D	US-6,075,767	06-2000	Sakamoto et al.	370/228
	E	US-6,466,576	10-2002	Sekine et al.	370/217
	F	US-6,314,102	11-2001	Czerwiec et al.	370/463
	G	US-6,687,231	02-2004	Czerwiec et al.	370/228
	H	US-6,351,452	02-2002	Koenig et al.	370/217
	I	US-6,680,904	01-2004	Kaplan et al.	370/217
	J	US-5,796,717	08-1998	Shinbashi et al.	370/216
	K	US-5,663,949	09-1997	Ishibashi et al.	370/220
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
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	S					
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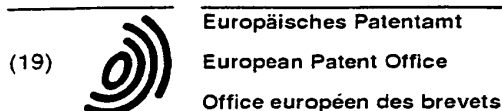
JUN 10 2004

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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
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	X	

* A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.



(11) **EP 1 006 702 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
07.06.2000 Bulletin 2000/23

(51) Int Cl.7: **H04L 29/14, H04L 12/56**

(21) Application number: **99309720.3**

(22) Date of filing: **03.12.1999**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE
 Designated Extension States:
AL LT LV MK RO SI

- **Mujeeb, Hamayon**
Chelmsford, Massachusetts 01824 (US)
- **Meehan, Tom**
New York, 10002 (US)

(30) Priority: **04.12.1998 US 205084**

(71) Applicant: **NORTEL NETWORKS CORPORATION**
Montreal, Quebec H2Y 3Y4 (CA)

(74) Representative: **Dearling, Bruce Clive et al**
Hepworth Lawrence Bryer & Bizley,
Merlin House,
Falconry Court,
Bakers Lane
Epping, Essex CM16 5DQ (GB)

(72) Inventors:
 • **Srikanth, Ayikudy K**
Reading, Massachusetts 01867 (US)

(54) **Method and apparatus providing for an improved VRRP (Virtual Router Redundancy Protocol)**

(57) A router attached to a network is a member of a virtual router for the network in accordance with VRRP. A port or interface on the router other than a port that attaches the router to the network is specified as critical. VRRP is not enabled for the critical port. (Alternatively, VRRP may be enabled for the critical port to provide routing redundancy for a different network and would not affect the virtual router associated with this network). If the critical port on a master virtual router fails or is oth-

erwise unable to forward packets, a state change is nevertheless triggered within the VRRP finite state machine that exists at the port on the master virtual router for which VRRP is enabled. The change in the VRRP finite state machine triggers the router to transition from the master virtual router to the new backup virtual router. The master virtual router can directly notify the backup virtual router to transition to master virtual router by transmitting a VRRP packet commanding the backup virtual router to become the master virtual router.

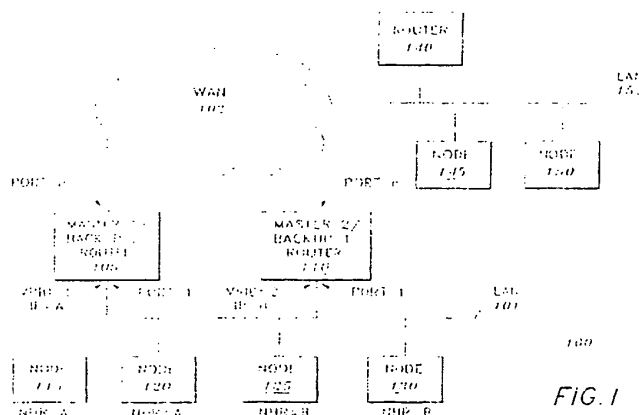


FIG. 1

EP 1 006 702 A2

router for virtual router 1, has an IP address of "A" assigned to port 1, and forwards IP datagrams received at port 1 from the nodes having a statically configured default next hop router IP address of "A".

[0008] The master virtual router periodically transmits advertisements to the backup virtual router(s) on the local network to indicate to the backup(s) that it is still functioning as the master virtual router. If master virtual router 1 fails, the backup virtual router 1 takes over as the new master virtual router 1, providing routing capability for nodes 115 and 120. Since both routers share the same IP address ("IP A") on their respective entry ports, (port 1) and both share the VRRP based media access control (MAC) address on their respective entry ports, no reconfiguration of the static default next hop router IP address is required at each of the nodes that transmit IP datagrams destined for nodes on other IP networks to virtual router 1. Likewise, if master virtual router 2 fails, backup virtual router 2 provides routing for nodes 125 and 130.

[0009] Fig. 2 illustrates a prior art finite state machine 200 for VRRP. An instance of the finite state machine exists for each virtual router in which a VRRP based router is participating. For example, router 105 is a master virtual router in virtual router 1, and a backup virtual router in virtual router 2. Hence, two instances of the finite state machine exist on router 105. In particular, each instance of the finite state machine is associated with a port on VRRP based router. Thus, router 105 has two instances of the VRRP finite state machine associated with port 1 - one instance for virtual router 1, and a second instance for virtual router 2. A VRRP based router begins in initialize state 205, and on a startup event either transition to a master state 215 or a backup state 210, based on its priority. If the router's priority is high, e.g., 255, it transitions to a master state upon the occurrence of a startup event. If the router's priority is less than 255, it transitions to a backup state upon the occurrence of a startup event. In either state, the router returns to the initialize state 205 upon the occurrence of a shutdown event.

[0010] Master virtual routers periodically transmit VRRP advertisements to the appropriate ports of other routers participating in the virtual router, using IP multicast datagrams. If a master virtual router, i.e., a virtual router in master state, receives a VRRP advertisement from a backup virtual router, i.e., a virtual router in backup state, with a priority greater than the master virtual router's priority, or with a priority equal to the master virtual router's priority and a greater IP address (the IP address acts as a tiebreaker), the master virtual router transitions to backup state 210. Conversely, the backup virtual router transitions to master state 215 upon expiration of a master_down_timer, i.e., the backup virtual router fails to receive an advertisement from the master virtual router for a period of time equal to master_down_timer. What is needed is the ability to transition a port associated with the VRRP finite state

machine from a master state to a backup state in the event of failure of another port not associated with the VRRP finite state machine.

[0011] The present invention relates to an improvement, or extension of, the virtual routing redundancy protocol (VRRP), as set forth in the Internet Society's Request For Comments 2338 (RFC 2338). In a network that has multiple redundant paths over which packets may be forwarded by VRRP based routers to another network, nodes attached to the network dynamically select which of the routers will forward packets to nodes attached to the other network. VRRP is enabled at the port on each router that attaches the router to the network. A method is described for transitioning responsibility among the routers for routing data packets from the network to another network. One router is initialized to function as a master virtual router for the network. At least a second router is initialized to function as a backup virtual router for the network. If a port fails on the master virtual router other than the port that attaches the router to the network, even though VRRP is not enabled on the failed port, the master virtual router nevertheless transitions to function as the backup virtual router for the network. The backup virtual router, meanwhile, either times out waiting to receive an advertisement from the master virtual router that would indicate the master virtual router is still functioning as the master virtual router for the network, or the master virtual router, after transitioning to become the new backup virtual router, sends a VRRP packet to the backup virtual router indicating the backup virtual router should become the new master virtual router for the network.

[0012] The present invention is illustrated by way of example and not limitation in the following figures, in which:

[0013] Figure 1 is a diagram of a data communications internetwork.

[0014] Figure 2 is a diagram of a finite state machine for a prior art virtual router redundancy protocol.

[0015] Figure 3 is a diagram of a finite state machine for an improved virtual router redundancy protocol as may be embodied by the present invention.

[0016] Described is an improved virtual router redundancy protocol. In the following description, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It will be apparent, however, to one of ordinary skill in the art that the present invention may be practiced without these specific details. In other instances, well-known architectures, steps, and techniques have not been shown to avoid unnecessarily obscuring the present invention. For example, specific details are not provided as to whether the method is implemented in a switch as a software routine, hardware circuit, firmware, or a combination thereof. Indeed, with respect to an existing network, operation functionality provided by a software upgrade could be supported by the download of code through the network itself.

the present master virtual router to transition to the back-up virtual router, as depicted at 315.

[0022] In accordance with the invention, there is provided a method for transitioning responsibility for routing data traffic among routers in a network in which a first router is coupled to the network via a first port and a second router is coupled to the network via a first port, the method comprising:-

- a) configuring the first router to function as a master virtual router for the network; and
- b) configuring the second router to function as a backup virtual router for the network; and
- c) if a port on the first router other than the first port fails, transitioning the first router to function as the backup virtual router for the network and transitioning the second router to function as the master virtual router for the network.

Claims

1. A method for transitioning responsibility for routing data traffic among routers in a network in which a first router is coupled to the network via a first port and a second router is coupled to the network via a first port, the method comprising:-

- a) configuring the first router to function as a master virtual router for the network; and
- b) configuring the second router to function as a backup virtual router for the network; and
- c) if a port on the first router other than the first port fails, transitioning the first router to function as the backup virtual router for the network and transitioning the second router to function as the master virtual router for the network, there being provided transitioning means operable to effect the aforesaid transitioning of the first and second routers.

2. A method as claimed in Claim 1 wherein, responsive to the port on the first router other than the first port suffering failure and subsequently becoming re-available, the first router is transitioned to function as the master virtual router for the network and the second router is transitioned to function as the backup virtual router for the network.

3. The method for transitioning responsibility for routing data traffic among routers in a network according to claim wherein 1 or 2,

transitioning the first router to the backup virtual router and
transitioning the second router to the master virtual router is responsive to failure of a critical port of the first router.

4. The method of claim 3, wherein responsive to the critical port on the first router suffering failure and subsequently becoming re-available again, the first router is transitioned to function as the master virtual router and the second router is transitioned to function as the back-up virtual router.

5. The method of any preceding claim, wherein configuring the first router as a master virtual router comprises configuring a priority for the first router, the priority determining that the first router becomes the master virtual router, and network preferably operating a virtual routing redundancy protocol (VRRP) and wherein the priority is a VRRP priority.

6. The method of any preceding claim, wherein configuring the second router as a backup virtual router comprises configuring a priority for the second router, the priority determining that the second router becomes the backup virtual router, the network preferably operating a virtual routing redundancy protocol (VRRP) and wherein the priority for the second router is a VRRP priority.

7. The method for transitioning responsibility for routing data traffic among routers in a network according to any preceding claim, further comprising transmitting a message, upon failure of the port on the first router, from the first router to the second router that instructs the second router to become the new master virtual router, and transitioning the first router to become the new backup virtual router.

8. The method of claim 7, wherein transmitting a message from the first router to the second router comprises transmitting a virtual routing redundancy protocol message from the first router to the second router.

9. The method of any one of claims 1 to 6, further comprising: at the second router, periodically receiving a multicast advertisement generated from the first router else causing the second router to become the new master router after a predetermined time has elapsed in which the multicast advertisement has not been received by the second router.

10. A computer program element comprising computer program code means to make a computer-controlled router execute procedure to perform the method steps of any preceding claim.

11. The computer program element of claim 10, embodied on a computer readable medium.

12. Electronic signals representing instructions or statements to make a computer-controlled router execute procedure to perform the method steps of

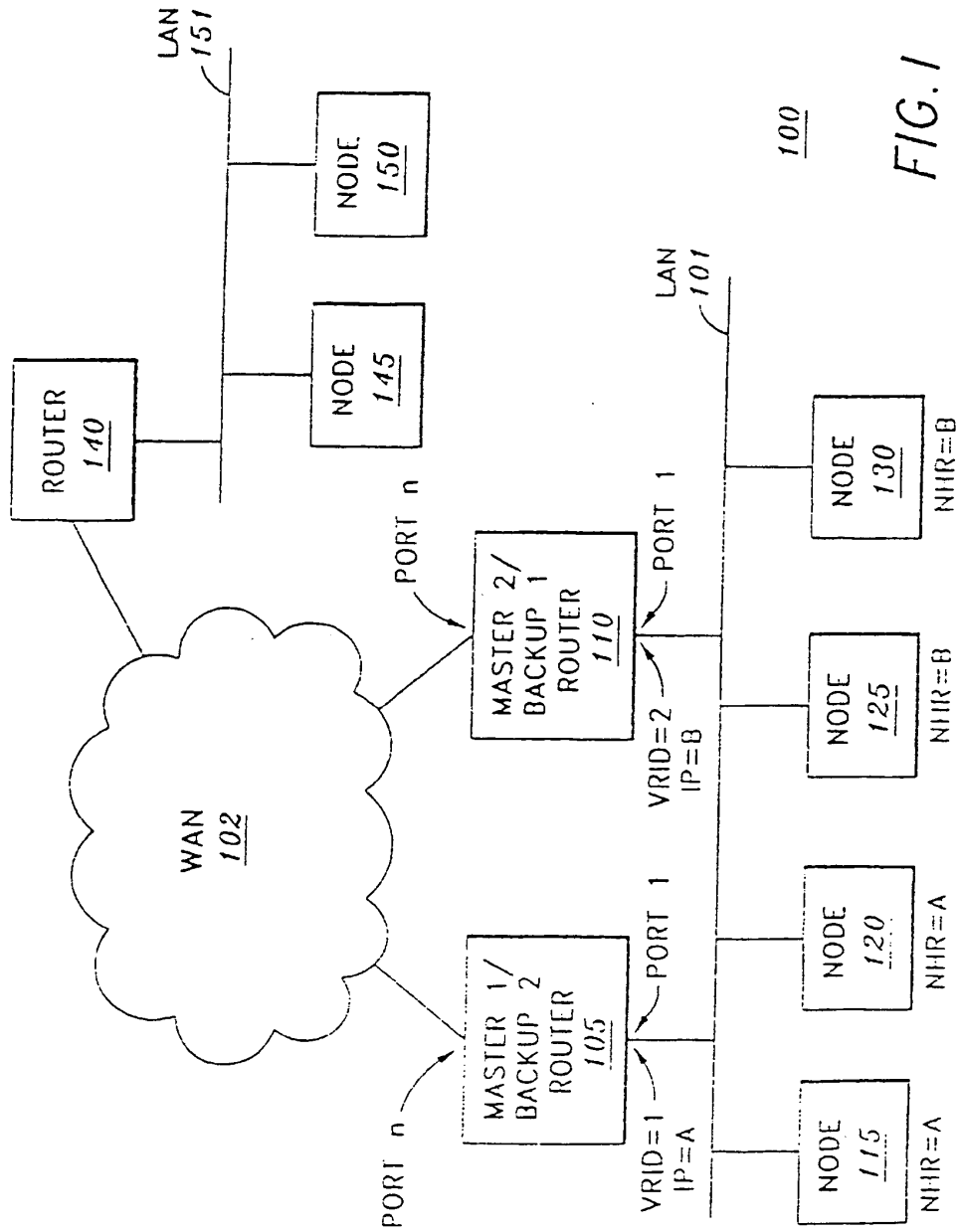
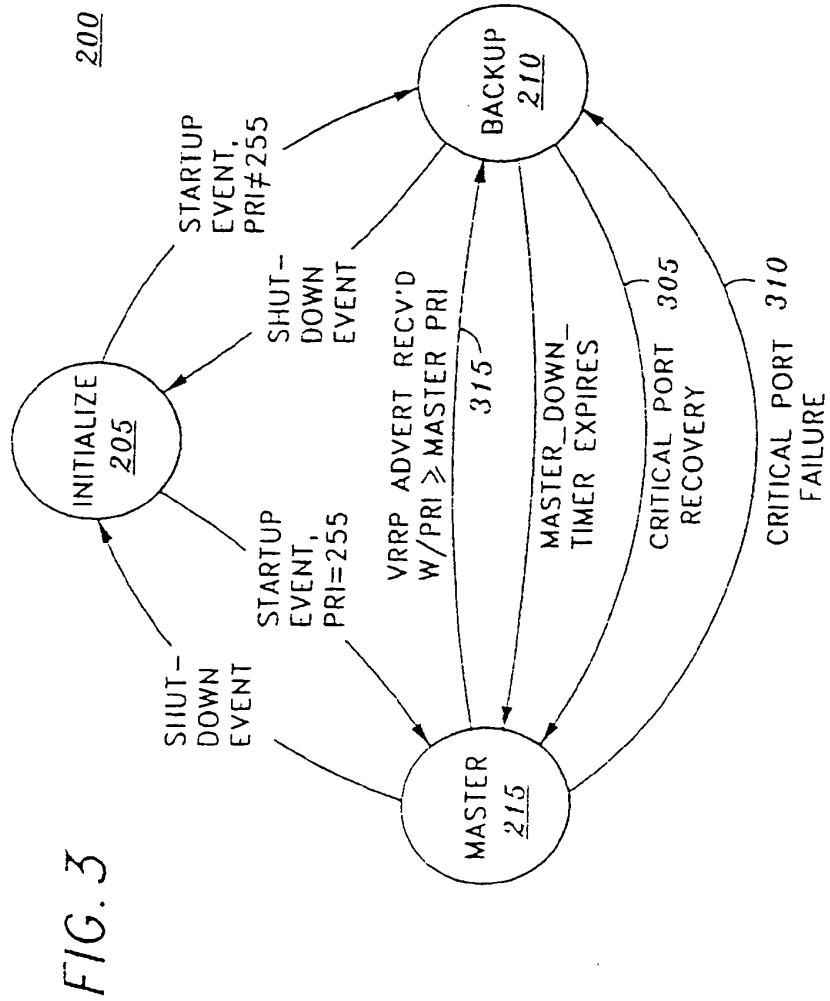


FIG. 1





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(54) **Method and apparatus providing for an improved VRRP (Virtual Router Redundancy Protocol)**

(57) A router attached to a network is a member of a virtual router for the network in accordance with VRRP. A port or interface on the router other than a port that attaches the router to the network is specified as critical. VRRP is not enabled for the critical port. (Alternatively, VRRP may be enabled for the critical port to provide routing redundancy for a different network and would not affect the virtual router associated with this network). If the critical port on a master virtual router fails or is oth-

erwise unable to forward packets, a state change is nevertheless triggered within the VRRP finite state machine that exists at the port on the master virtual router for which VRRP is enabled. The change in the VRRP finite state machine triggers the router to transition from the master virtual router to the new backup virtual router. The master virtual router can directly notify the backup virtual router to transition to master virtual router by transmitting a VRRP packet commanding the backup virtual router to become the master virtual router.

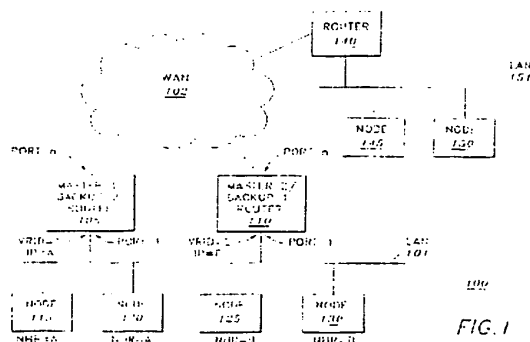


FIG. 1

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EP 99 30 9720

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(21) International Application Number: PCT/US98/14712 (22) International Filing Date: 16 July 1998 (16.07.98) (30) Priority Data: 08/896,165 17 July 1997 (17.07.97) US (63) Related by Continuation (CON) or Continuation-in-Part (CIP) to Earlier Application US 08/896,165 (CON) Filed on 17 July 1997 (17.07.97) (71) Applicant (for all designated States except US): AMERITECH CORPORATION [US/US]; 2000 West Ameritech Center Drive, Hoffman Estates, IL 60196-1025 (US). (72) Inventor; and (75) Inventor/Applicant (for US only): LUND, Arnold, M. [US/US]; 972 St. Andrews Lane, Louisville, CO 80027 (US). (74) Agent: GENIN, Kent, E.; Brinks Hofer Gilson & Lione, NBC Tower, Suite 3600, 455 North Cityfront Plaza Drive, Chicago, IL 60611-5599 (US).			(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>
(54) Title: METHOD AND APPARATUS FOR PROVIDING BROADBAND ACCESS CONFERENCING SERVICES			
(57) Abstract A method and apparatus for providing broadband conferencing services is provided. The method includes the steps of establishing a voice channel over a circuit switched telephone network and a virtual data channel over a packet data network (40) between at least two parties. The apparatus includes a telephone line and a digital data line sharing a single subscriber loop (12) in addition to establishing a virtual data channel over a packet data network. Further, an advanced intelligent network telephone network having a first database (81) of customer premise equipment and a second database (83) having data addresses associated with the customer premise equipment is disclosed.			
<pre>graph TD 86[CALLER MAKES PHONE CALL] --> 88[SWITCH RECOGNIZES AIN CALL] 88 --> 90[SCP QUERIES DATABASE TO DETERMINE PROPERTIES OF CPE'S] 90 --> 92[IF CPE'S SIMILARLY CONFIGURED, SCP IDENTIFIES DATA ADDRESS FOR EACH CPE] 92 --> 94[SCP CREATES VIRTUAL DATA CHANNEL] 94 --> 96[VOICE INFORMATION SENT OVER CIRCUIT SWITCHED NETWORK AND ASSOCIATED DATA INFORMATION SENT OVER PACKET DATA NETWORK] 96 --> 98[TERMINATING THE VIRTUAL DATA CHANNEL UPON TERMINATION OF THE VOICE CONVERSATION]</pre>			

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METHOD AND APPARATUS FOR PROVIDING BROADBAND ACCESS CONFERENCING SERVICES

BACKGROUND OF THE INVENTION

The present invention relates to broadband conferencing services. More particularly, the present invention relates to a method and apparatus for providing voice and data services by coordinating standard telephone network and packet data network resources.

A majority of telephone service subscribers use analog Plain Old Telephone Services (POTS) when placing ordinary voice telephone calls. POTS is often delivered over a subscriber loop of copper wires installed between each subscriber and a local telephone company (telco) central office. The telco central office contains circuit switches that interconnect subscribers and establish call connections. Typically, a circuit connection is established for each telephone call and this connection is maintained for the duration of a call.

The increased use of computers in businesses and homes has lead to an increased load on standard telephone networks. Also, video telephone conferencing is becoming a more popular and utilized tool. Data and video often require large amounts of bandwidth that are not readily available over a standard telephone line. Subscribers wishing to hold a conversation with someone while simultaneously transmitting an associated video signal or other types of data are typically limited to using separate subscriber loops or a specialized software package that encodes the data on top of the voice information.

The use of separate subscriber loops is disadvantageous due to the expense of installing the extra subscriber loop wiring and switching capabilities in the network. Further, a subscriber would need to maintain records of the telephone number for the voice connection and the telephone number of the data connection. Each number would be dialed separately when a connection was desired.

A method of communicating both voice and data information over a single subscriber loop is described in U.S. Patent No. 5,184,345. The disclosed method implements integrated services digital network (ISDN) facilities to carry both data and voice information over a circuit switched telephone network. Although the method used in U.S. Patent No. 5,184,345 permits data and voice information over a single subscriber loop, the method is designed for end-to-end calls between the caller and called party only and does not support simultaneous voice and data to multiple parties. The disclosed ISDN embodiment requires that both the caller and called party have ISDN facilities. In addition, the voice and data communication paths are both established through dedicated circuits in the circuit switched telephone network and may impose a high demand on network resources.

Accordingly, there is a need for an improved system and method of communicating both voice and data information over a single subscriber loop, providing flexible and efficient use of existing infrastructure, reducing the load on circuit switched telephone network resources, and permitting multiple parties to participate in the same voice and data communication.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram of a telephone network system.

FIG. 2 is a diagram of the central office of the telephone network system of FIG. 1.

FIG. 3 is a diagram of a subscriber location in the telephone network system of FIG. 1.

FIG. 4 is a diagram of the tandem location of the telephone network of FIG. 1.

FIG. 5 is a block diagram of the interworking unit of FIG. 4.

FIG. 6 is a flow diagram illustrating a method of implementing broadband access conferencing services using the telephone network system of FIG. 1.

FIG. 7 is a flow diagram illustrating a method of establishing a broadband conference call for multiple parties using the method of FIG. 6 and the telephone network system of FIG. 1.

DETAILED DESCRIPTION OF PRESENTLY PREFERRED EMBODIMENTS

FIG. 1 shows a diagram of a telephone network. Telephone subscribers 10 are typically serviced by analog telephone lines carried to the central office 20 by a subscriber loop 12 including twisted pairs of copper wires. Groups of subscribers 14 may also be connected by subscriber loops to a remote terminal 16 which combines a number of subscribers onto a digital multiplexed data line 18 for transmission to the central office 20. One suitable digital multiplexed data line may be a 24-channel multiplexed T1 line.

Typically, a number of central offices 20 are connected by direct trunk circuits 22 or through tandem locations 30. The tandem locations 30 provide trunk circuits 22 to connect two central offices or other tandem locations 30.

The tandem locations 30 can thus provide connections between central offices that do not have direct interconnecting trunks. It is to be understood that the telephone switching network may have multiple levels of tandem switching or other network topologies.

5 The central office 20, more commonly known as a service switching point (SSP), is a programmable switch having the ability to recognize advanced intelligent network (AIN) triggers for calls requiring special services. The central office 20 communicates with a service control point (SCP) 80. The SCP 80 is a network element containing logic and data necessary to
0 provide the functionality required for the execution of a desired communications service. For example, the SCP 80 can contain call control service software that blocks certain numbers predetermined to be restricted to callers calling from a particular location. In this example, the call control service function would compare a dialed number with a list of restricted
5 numbers to see if the call is permissible. An SCP 80 generally permits separation of service logic from switching functionality so that additional services may be developed without the need to alter the equipment or logic used in each individual central office 20. The SCP 80 preferably includes a customer premise equipment (CPE) database 81 and a data address
0 database 83 that can cross reference the telephone number of a party originating a call and receiving a call with the type of CPE and data address of each party. A suitable SCP 80 is the AXE SCP manufactured by Ericsson Inc. The SCP 80 is preferably in communication with a central office 20 via a signal transfer point (STP) 82 and one or more switches such as a tandem
5 switch 30. The STP 82 routes signals between different network elements. A suitable data signaling standard for use in a preferred embodiment of the

present invention is the American National Standards Institute (ANSI) Signaling System No. 7 (SS7).

The SCP 80 may communicate with an intelligent peripheral 84 over a data path. The data path leads from the SCP 80 to the STP 82 over a data line utilizing SS7 standard protocol. The STP 82 then communicates with the central office 20 over another leg in the data path using the SS7 protocol. The central office 20 reformats the message from the SCP 80 from SS7 into an Integrated Services Digital Network (ISDN) standard message which is then forwarded over the final leg of the data path to the intelligent peripheral 84. The intelligent peripheral 84 may return messages along the same data path.

The intelligent peripheral 84 is an AIN network element that contains resources to exchange information with a telephone subscriber 10 and perform other functions such as call origination and tone generation. The intelligent peripheral 84 provides special resources for interactions between the telephone subscriber 10 and the network such as DTMF recognition, playing announcements and tone generation. In a preferred embodiment, an application using the database 85 in the intelligent peripheral 84 may be programmed with the necessary functionality to manage concurrent data and voice communications between multiple parties under the direction of the SCP 80. A services node/intelligent peripheral (SN/IP) platform is manufactured by Comverse Technology, Inc. that is suitable for use with a presently preferred system and method. A voice/information channel may also link the intelligent peripheral to a central office 20. Although the telephone network illustrated in FIG. 1 shows one network configuration, those of ordinary skill in the art will understand that the presently preferred

method may be performed on more complex networks having a plurality of interconnected SCP's and intelligent peripheral's.

FIG. 2 shows a block diagram of the central office 20 of FIG. 1. The central office 20 preferably includes equipment to handle analog telephone lines such as conventional POTS. Conventional POTS is typically handled by a local telephone switching device 23. Suitable local telephone switching devices are Northern Telecom DMS-100 or ATT No. 5 ESS switches. Alternatively, an analog telephone line may also be provided by a Centrex type service or private branch exchange (PBX). As known to those skilled in the art, an analog telephone service may also be provided by a digital carrier system such as a T1 carrier or other type of concentrator.

In addition to providing POTS service, the central office may also be configured to provide a digital data line. For example, a digital data line may be implemented by a digital subscriber line access multiplexer (DSLAM) 24 to multiplex traffic from digital subscriber loops. Digital subscriber loops or digital carrier systems provided by a remote terminal 16 or an office terminal 25 provide digital data lines which enable subscribers 10 to transmit large amounts of digital multiplex data traffic over the POTS twisted pair telephone line. Preferably, the digital subscriber loop is an asymmetric digital subscriber line (ADSL). ADSL typically implements a digital subscriber line with a maximum data rate from the central office 20 to the subscriber 10 which is higher than the maximum available data rate from the subscriber 10 to the central office 20. For example, ADSL typically provides an asymmetric data rate of 1.5 megabytes-per-second (mbs) to the subscriber from the central office and about 400 kilabytes-per-second (kbs) from the subscriber location to the central office. Most preferably, ADSL implements an asynchronous

transfer mode (ATM) data transmission protocol between the subscriber 10 and the central office 20. It will be recognized that other types of data transmission protocols, such as ISDN and Radish, may be utilized. Although these other protocols can be used to implement the present invention, the present invention is not dependent on any one protocol. In alternate embodiments, the digital data line may be provided by other types of digital carrier systems such as a Sonet based digital system.

Referring to FIG. 2, the subscriber loops pairs 12 carrying both analog voice and digital data traffic from subscribers 10 to the central office 20 terminate at a main distribution frame (MDF) 26. From the MDF 26, the subscriber loops 12 are connected to a means for separating POTS voice 32 frequencies from digital data traffic 34 such as a splitter 28. Preferably, the splitter 28 is implemented by the DSLAM 24. The internal operation of the splitter 28 is described in more detail below in connection with a splitter at the subscriber 10. The splitter 28 preferably has an output for POTS signals and another output for data traffic. From the splitter 28, the separated POTS voice signals 32 are connected back to the MDF 26 and onto the local switching device 23 handling POTS telephone calls. The data traffic output of the splitter 28 is directed to the DSLAM 24 to multiplex the digital data into a format suitable for transport on a data network 40. Depending on the data network 40, the DSLAM 24 may operate at higher bit rates such as those appropriate for Sonet OC-12. The data network 40 may be configured in different topologies and is preferably connected to a tandem location 30 to allow access to other central offices.

In the case of subscriber loops that are connected to the central office through a digital loop carrier system (i.e. a remote terminal 16 and an office

terminal 25), the DSLAM 24 and its splitter 28 are preferably placed at the remote terminal 16. The data and voice signals are separated with a splitter 28 as described above. The voice signals are carried on digital loop carrier system to the office terminal 25 where they are connected through the MDF 26 to the local circuit switch 23. Preferably, the data signals are carried on a
5 separate optical fiber or Sonet frame in the carrier system so that they can easily be separated from the voice signals in the office terminal 25. These signals are transmitted from the office terminal to the data network 40.

FIG. 3 shows a diagram of a telephone subscriber location 10 such as a typical home or small office. A network interface device (NID) 41 connects
10 the subscriber to the public switched telephone network (PSTN). The subscriber loop 12 between the subscriber 10 and the central office 20 is terminated at the NID 41. Customer premise equipment (CPE) 52, such as a standard telephone set, a key system, PBX, or a computer network to access
5 the PSTN is connected at the NID 41. Voice signals from an analog telephone line 53 and data signals from a digital data line 55 are typically carried to the subscriber 10 on the same subscriber loop 12.

In the preferred embodiment of the invention, the NID 41 includes a means for separating voice frequency signals from data signals. Preferably, a
15 splitter 44 separates voice frequency signals from the data traffic sharing the subscriber loop 12 wire pair. For example, to separate POTS from data traffic, the splitter 44 typically includes a high-pass filter 46 and a low-pass filter 48. To separate POTS voice signals, the low-pass filter 48 blocks high frequency signals, for example signals above 5 KHz, passing only lower voice
5 frequency signals on a conventional CPE POTS loop 50. The voice signals on the CPE POTS loop 50 are connected to standard telephones 52 such as

a Bell 103 set providing conventional POTS service. It should be noted that a conventional computer modem 54 can also utilize the conventional CPE POTS loop 50.

To recover data traffic, the high-pass filter 42 blocks low frequency signals, for example signals below 5 KHz, leaving only high frequency data traffic signals to be sent out on a separate CPE data network loop 56. The CPE data network loop 56 is connected to CPE equipped to access data traffic, for example, a network of personal computers. In one embodiment, the CPE data network 56 implements an asynchronous transfer mode network (ATM). Each of the personal computers 58 is equipped with an ATM network interface card (NIC) to allow the computer to access the CPE data network 56. The NIC 41 preferably also includes data segmentation and reassembly (SAR) capability to packetize data for transmission on the data network 56. Of course, other types of computer networks, such as an Ethernet network, may also be implemented.

Preferably, the CPE data network 56 is also equipped with one or more digital telephones 60 capable of interfacing the data network 56 to allow a subscriber to place a voice telephone call over the CPE data network 56. For example, a digital telephone 60 may be implemented with one of the personal computers 58 on the data network 56 by adding a telephone handset and an appropriate NIC with telephony functions. The telephone handset transmits and receives analog voice signals similar to a conventional handset. The computer/NIC provides SAR capability for converting analog voice to a digital packet stream for transmission over the CPE data network 56. The data network 56 also carries the basic telephony signaling functions. One such

system capable of providing such a digital telephone is an ATM network based telephone system from Sphere Communications in Lake Bluff, Illinois.

Using the CPE data network 56, the subscriber 10 can place a voice call using a telephone line derived from the digital data line. POTS service operates as a usual over the POTS wiring 50 to provide regular telephone service such as a telephone line carrying analog voice signals. In addition, the data network 56 with digital telephone 60 also has the capability to place voice telephone calls using one or more derived voice lines implemented through the data network.

FIG. 4 shows a block diagram of a tandem location which contains a tandem voice switch (not shown), a Class 5 local switch 70 and a means for providing access to digital data networks. The Class 5 local switch 70 typically connects local subscriber loops to the telephone network, while a separate tandem voice switch (not shown) provides conventional circuit-switched connections for directing POTS traffic between central offices 20 (FIG. 1) of the PSTN. Class 5 local switches such as the AT&T 5 ESS and the Nortel DMS 100, and tandem voice switches such as the AT&T 4ESS and the Nortel-DMS 250 are known to those skilled in the art. In comparison, the means for providing data access to data networks is preferably a packet switch handling digital data traffic. For example, a data access tandem switch 72 provides access to data networks carrying digital data traffic. Preferably, the data networks 40 are equipped to accept ATM packet-switched connections. Although the internet is a preferred packet data network, other data networks 40 supporting packet data formats, such as intranets or corporate local area networks, may be used. The data access tandem switch 72 is an ATM fabric switch configured to provide virtual

connections on demand between end users and providers of data networks and services. The data access tandem switch 72 may connect end users to various network service providers (NSPs) such as UUNet, MCI, Sprintnet, and AADS.

5 The tandem location 30 may also include a means to interface the data access tandem 72 and the Class 5 switch. For example, an interworking unit (IWU) 74 may implement an interface between the data access tandem switch 72 and the Class 5 switch 70 of the PSTN. The IWU 74 enables voice telephone calls carried by the data network 40 to access the PSTN through
10 the Class 5 switch 70. The IWU 74 is capable of converting a voice telephone call in the data network protocol from the data access tandem switch 72 into the circuit-switch protocol of the Class 5 switch 70. Preferably, the IWU 74 interfaces an ATM packet data stream to a multiplexed circuit-switch protocol with dynamic allocation of voice channels such as TR-
15 303.

 For example, as seen in FIG. 5, the IWU 74 performs the SAR 76 of voice data from an ATM stream into an analog voice signal. The analog voice signal is then converted 78 into the TR-303 protocol, as known to those skilled in the art. More preferably, the IWU 74 converts the packetized ATM
20 voice streams to a digital PCM format which is then converted to the desired TR-303 protocol. It should be noted that the local switch 70 may also be directly connected to a data access tandem 72 without the IWU interface 74. Newer generation digital switches may be capable of directly interfacing with the data transfer protocol of the data access tandem 72. For example, new
25 generation circuit-switches may directly accept an ATM data stream for switching into the PSTN without the need for an IWU.

Utilizing the above-described system, a method of implementing broad band access conferencing services may be accomplished as described below and shown in FIG. 6. A caller makes telephone call in order to reach another party, such as a business (at step 86). At the switch, the calling party's call
5 creates an AIN trigger that alerts the SCP of the call (at step 88). The SCP makes a data base query to determine the properties of the calling parties CPE and the called party's CPE (at step 90). If the CPEs for caller and called party are similarly configured, for example both CPEs are capable of supporting ADSL broadband protocol, the addresses of the data interfaces at
10 the caller CPE and called CPE are identified (at step 92). The data addresses may be Internet Protocol (IP) addresses of the data CPE at both locations. The system then automatically uses the data addresses of the two sides to set up a virtual data channel between the caller and the called party (at step 94) over a packet data network.

Preferably, the SCP looks up the IP addresses of the parties in a database and sends the appropriate address or addresses to the data CPE of each party at the beginning of the voice call. The database may be a local database 83 in the SCP or the database may be remotely located and accessible by the SCP. Each CPE would then store the received IP address
15 until needed. Another preferred method of providing the IP addresses is for the SCP to periodically transmit the addresses to each party after the voice call is connected. Because the data connection is established after the voice conversation begins in this embodiment, the IP connections are not yet running in the CPE of the different parties to the communication at the
20 beginning of a call. The SCP preferably places the IP addresses for all the parties into a memory buffer in the network such as within the SCP.

Preferably, the applications running at each of the CPEs are preprogrammed to know where to find the memory buffer containing the IP addresses. A service provider supplying the telephone network capability allowing parallel circuit switched voice calling and packet data communications over a virtual data channel preferably utilizes a standard protocol compatible with application software running at the CPEs.

A CPE does not always need to look to a specific memory buffer in a network element, such as an SCP, to find IP addresses for other parties. Standard caller ID information associated with circuit switched voice telephone calls is usable by the CPE for each party to index a standard database containing IP addresses. An example of this is set forth below where the caller is an individual seeking consumer/repair information and the called party is a company customer service center. In this example, the caller can initiate a software application at the caller's CPE that would retrieve the IP address associated with the service center, in a data sharing session with an application running at the computer work station of a service representative with whom the caller is speaking over the circuit switched connection. The service representative's application may use the calling party's caller ID to index the IP address at the application supporting the network side of the service center's ADSL access line.

Referring again to FIG. 6, after providing the IP addresses to the parties and establishing the virtual data channel, data is transmitted between the caller and the called party over the virtual data channel created on a packetized data network 40 (at step 96). Upon termination of the voice call over the circuit switched network, the virtual data channel is terminated (at step 98). The switch connected to the calling party or the called party informs

the SCP managing the call that the calling or called party has hung up in one preferred embodiment. The SCP then notifies the applications running in the CPE of the caller and called parties over the data channel that the call has been terminated. The applications then know to cease communicating.

5 The data transmission that takes place over the established virtual data channel on the packet data network may be in the form of real-time video so that the standard telephone call initially made by the caller results in a video telephone conversation. In this embodiment, both the caller and the called party would utilize video cameras connected to the personal computer
10 58 at their respective subscriber locations. Other types of video equipment and digital interface equipment capable of communication over a digital data line may be used. Alternatively, a simple one way transmission of data from one party to the other may be accomplished in parallel with a voice conversation. This data, such as a digitized photograph or a text file, can be
15 manually sent between the parties at any time during the voice conversation.

 In another embodiment, an interactive software application may be launched over the virtual data channel on the packet data network and shared between the two or more ends of the virtual data channel. One
20 example of a software application is an internet web page for a company customer service center. In this example, a person calling to find out about a company's product dials a standard telephone number and, as set forth above, would establish a circuit switched voice connection and a virtual data channel. The IP addresses of both parties are passed to applications
25 supporting the network side of the access lines and applications running in the CPE are able to retrieve the addresses to establish the virtual connection.

An advantage of the present system and method over systems requiring ISDN to transmit voice and data is that the present system and method does not require all parties in the network to possess special equipment. Unlike ISDN calls, which do not use packet data type protocols, the present method permits efficient use of packet data networks such as ADSL to synchronize voice and data transmission by simply dialing a standard telephone number. Using the packet data network in conjunction with the POTS network also enables multiple parties to conference in on both the voice and data communications. Multi-party conferencing is attained using ordinary voice call conferencing techniques in conjunction with the processes of distributing IP addresses described above.

One preferred embodiment of a method for establishing a voice and data conference call is shown in FIG. 7. Party A, desiring to set up a voice and data conference call with parties B and C, initiates the conference call by first dialing party B (at step 100). The SCP distributes IP addresses for the two parties as set forth above (at step 102). Party A next initiates a call to party C using standard voice conference call services and adds party C to the call (at step 104). The application in the SCP identifies that party C is properly equipped for a data connection and distributes party C's data address to both A and B (at step 106). The SCP also provides party C with the IP addresses for A and B. An application in A or B would then use the receipt of C's IP address as a trigger to send a copy of the screen (data) being shared by A and B to C's display (at step 108). Once the circuit switched voice channels and virtual data channels between the parties have been established, a three way voice and data conference call may commence. Additional parties may be added to this broadband conference

call by any of the current parties to the call using the method described above.

The preferred method and apparatus for enabling broadband conferencing using a combination of circuit switched voice calls and associated packet data network data channels provides flexibility in adapting existing infrastructure to accommodate enhanced capabilities. Rather than having to create an entirely new communications application, such as a multi-media conferencing exclusively communicated over the internet, some of the functionality already existing on an analog telephone network having AIN capability may be used. Thus, broadband access conferencing services can be introduced without the need for every subscriber of network provider to have special equipment. Subscribers can choose to delay upgrading their CPEs until they are ready and still participate in the voice portion of communications between one or several other subscribers having CPEs upgraded for voice and data communication.

As has been described above, by using emerging broadband access technology such as ADSL a conferencing service can be created that supplements an ordinary telephone call by automatically providing a second, virtual communication path between two or more parties. The preferred method can support a video conferencing service wherein the voice communication is carried on over a traditional telephone network and the video associated with the voice is transmitted over the internet. Other applications of the present method and system are a screen sharing service wherein a company and a caller are simultaneously looking at a page in a catalog while discussing the page over the telephone call. Additionally, an interactive voice response service may be initiated with the present system

and method wherein a caller can use an ordinary telephone line to interact with a series of prompts and choices resulting in changes on the video screen. For instance, different web pages may be sent to the caller's computer or a multipoint game with voice conferencing may be implemented. The present system and method also has the advantage of allowing telephone companies to leverage the functionality of an embedded base of systems, for example AIN, to more quickly and inexpensively offer new and enhanced services using new technologies such as ADSL.

It is intended that the foregoing detailed description be regarded as illustrative rather than limiting, and that it be understood that the following claims, including all equivalents, are intended to define the scope of this invention.

I Claim:

1. A method of providing a broadband conferencing service comprising the steps of:

5 receiving a telephone call from a calling party at a switch in a circuit switched telephone network;

establishing a voice channel over the circuit switched telephone network between a called party and the calling party; and,

0 automatically establishing a virtual data channel between the called party and the calling party over a packet data network, whereby the virtual data channel established on the packet data network reduces a load on circuit switched telephone network resources.

2. The method of claim 1, wherein the step of establishing a virtual data channel further comprises:

5 determining a configuration of customer premise equipment (CPE) for the calling party;

determining a configuration of CPE for the called party; and,

0 establishing the virtual data channel between the calling party and the called party if the configuration of CPE for the calling party is compatible with the configuration of CPE for the called party.

3. The method of claim 1, further comprising the step of launching an application over the virtual data channel, the application capable of
5 interacting with both the calling party and the called party.

4. The method of claim 1, further comprising the calling party sending data to the called party over the virtual data channel.

5. The method of claim 2, wherein the steps of determining the configuration of the calling party's CPE and the called party's CPE comprise interrogating a database having configuration information to determine if the calling party's and called party's CPEs have compatible broadband access capabilities.

6. The method of claim 5, wherein the step of determining configuration of CPE for the calling party comprises the switch communicating with a service control point (SCP) and wherein the database is located at the SCP.

7. The method of claim 1, further comprising the step of establishing a voice channel and a virtual data channel with at least one additional party, wherein the voice channel is established over the circuit switched network and the virtual channel is established over the packet data network.

8. The method of claim 1, wherein the step of automatically establishing a virtual data channel comprises the SCP providing a data address of the calling party to the called party over the packet data network, and providing a data address of the called party to the calling party over the packet data network.

17

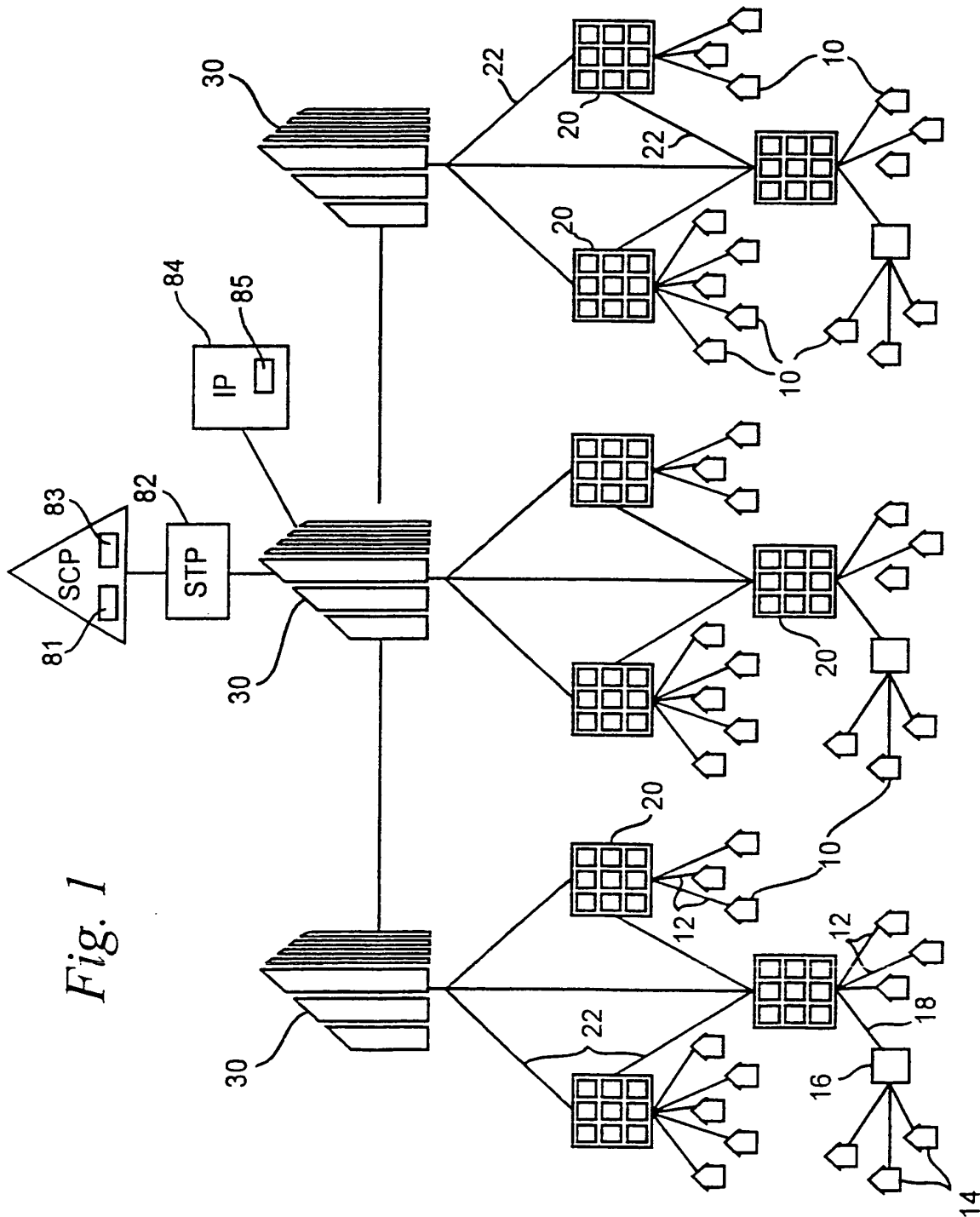


Fig. 1

means for establishing a virtual data channel between the CPE of at least two parties over a packet data network, the means for establishing a virtual data channel in communication with the first and second database and responsive to voice calls received at the telephone network.

1/7

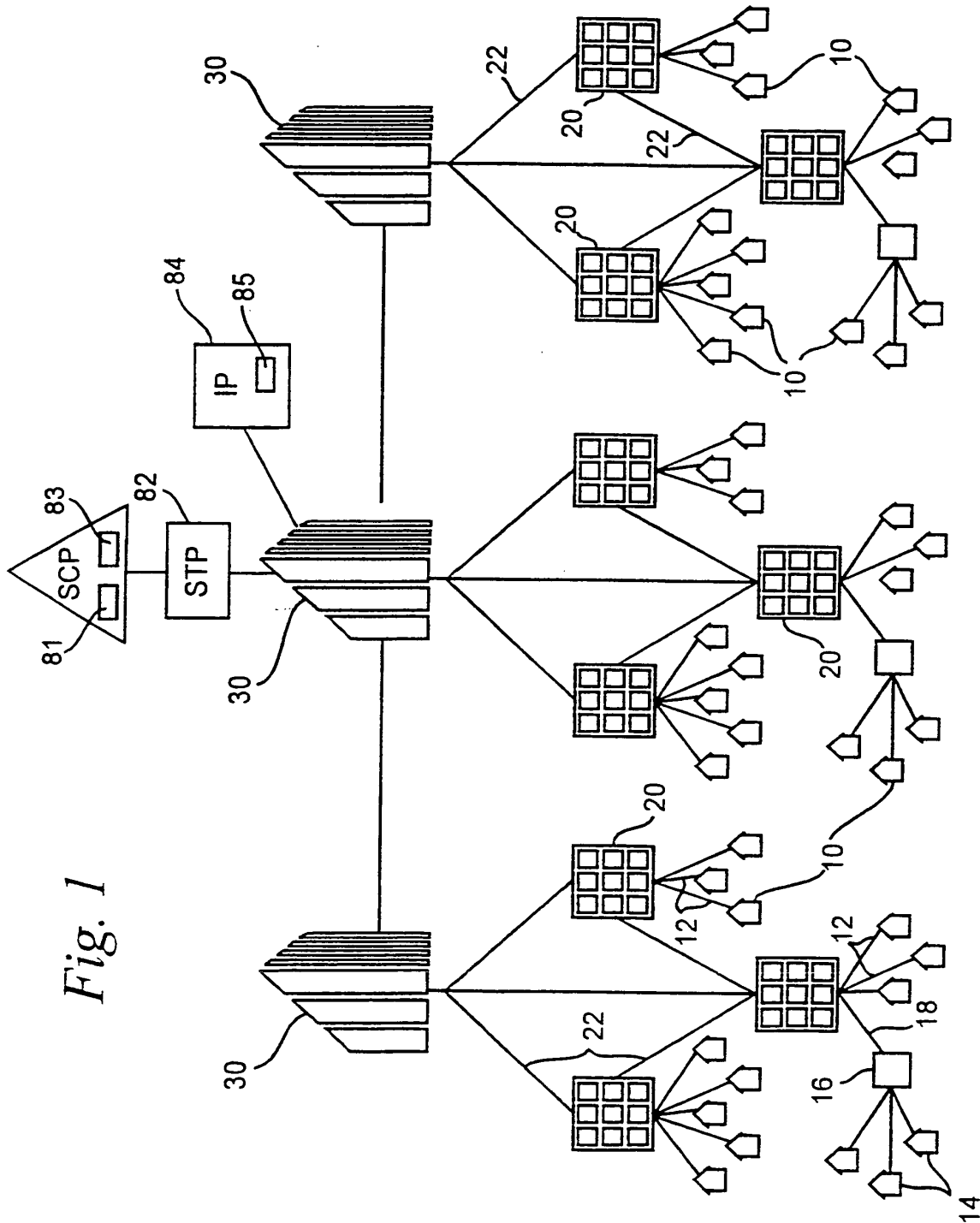


Fig. 1

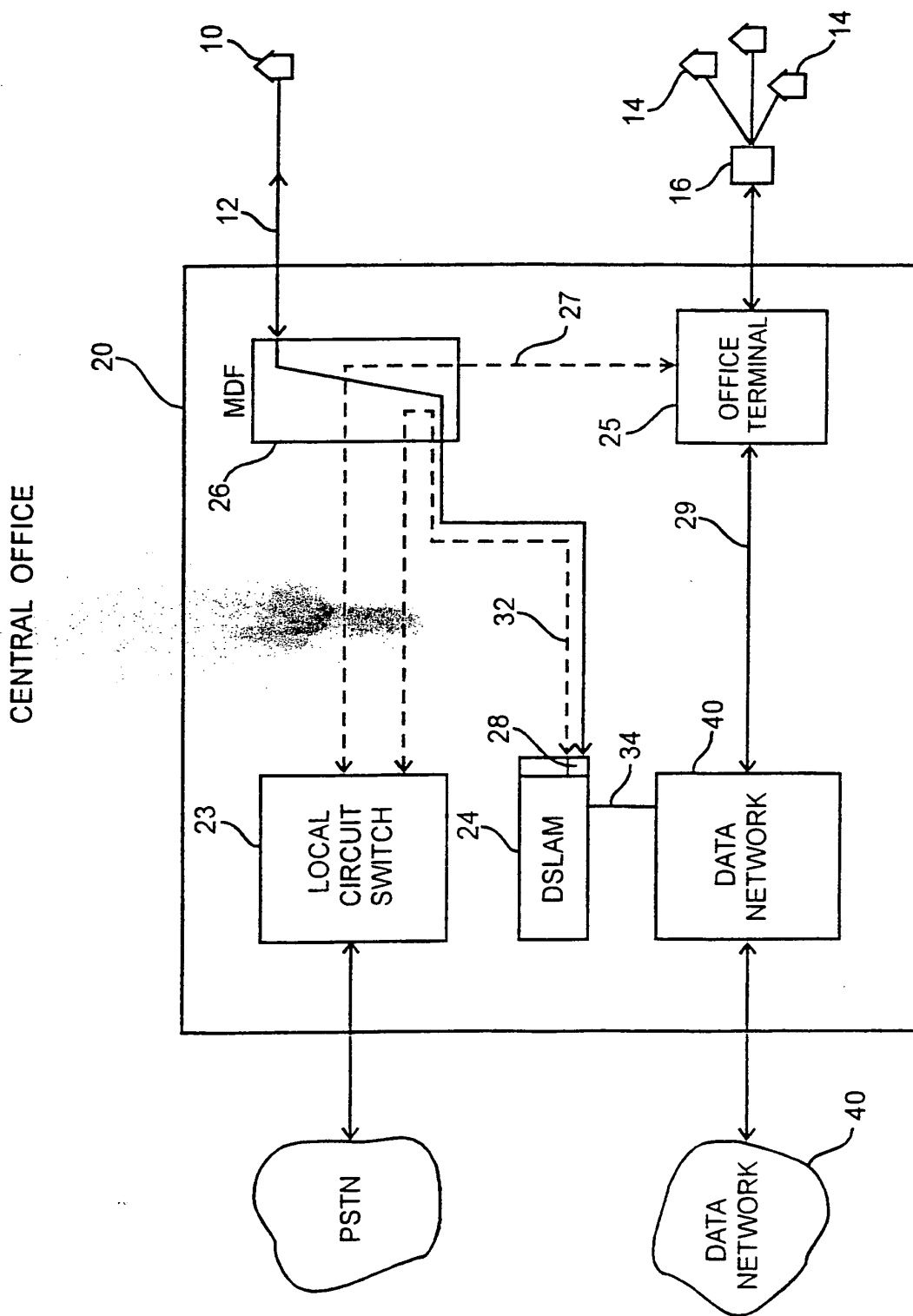


Fig. 2

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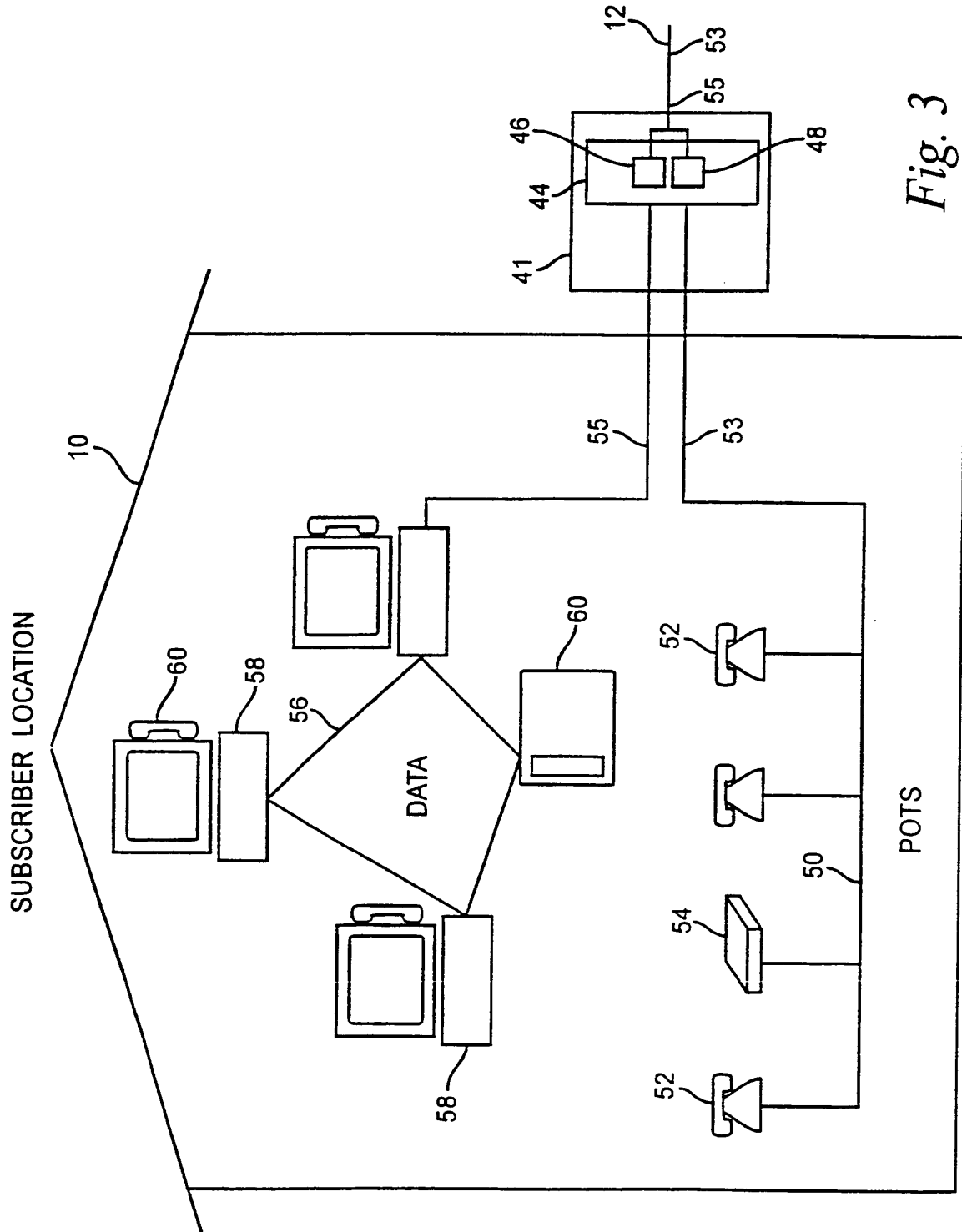


Fig. 3

4/7

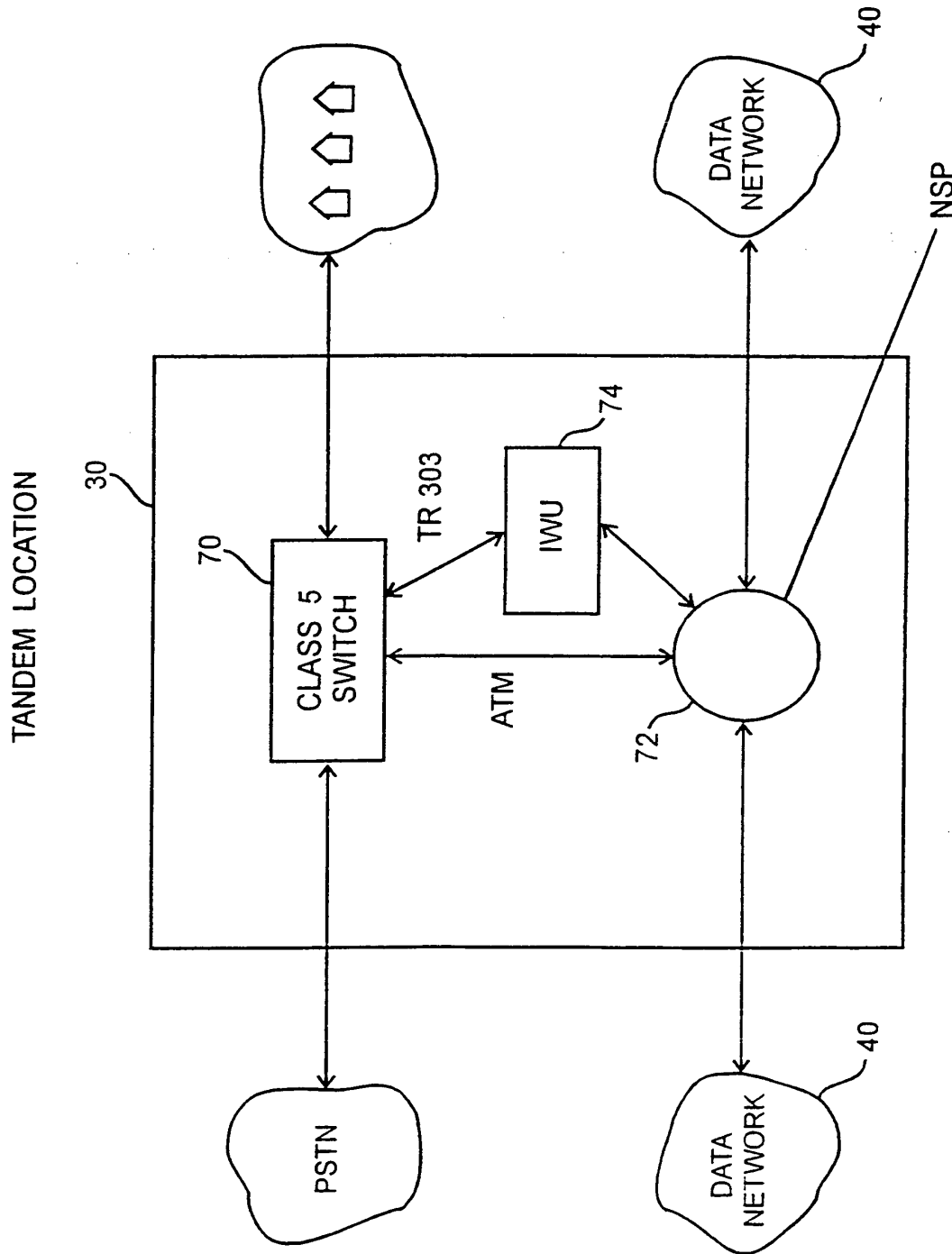


Fig. 4

5/7

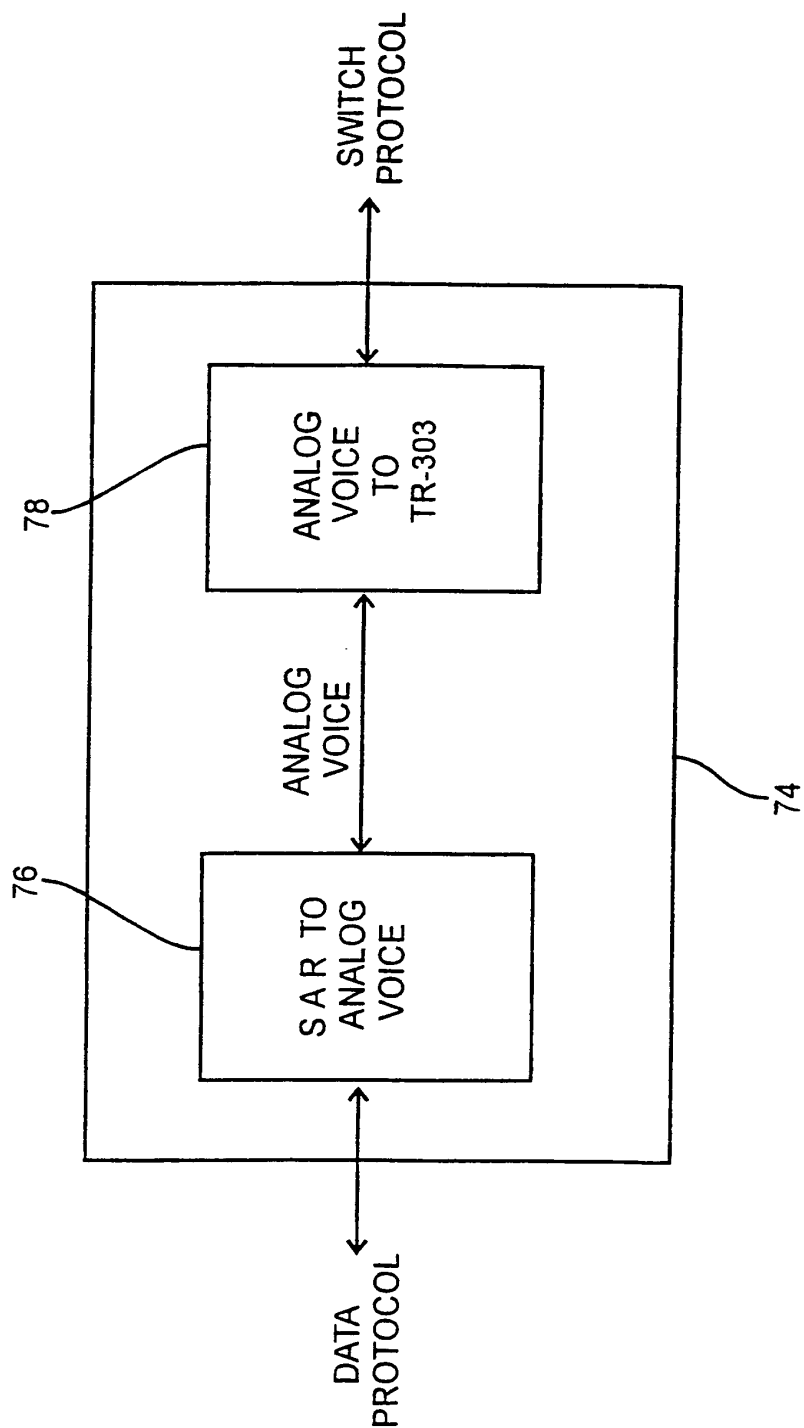
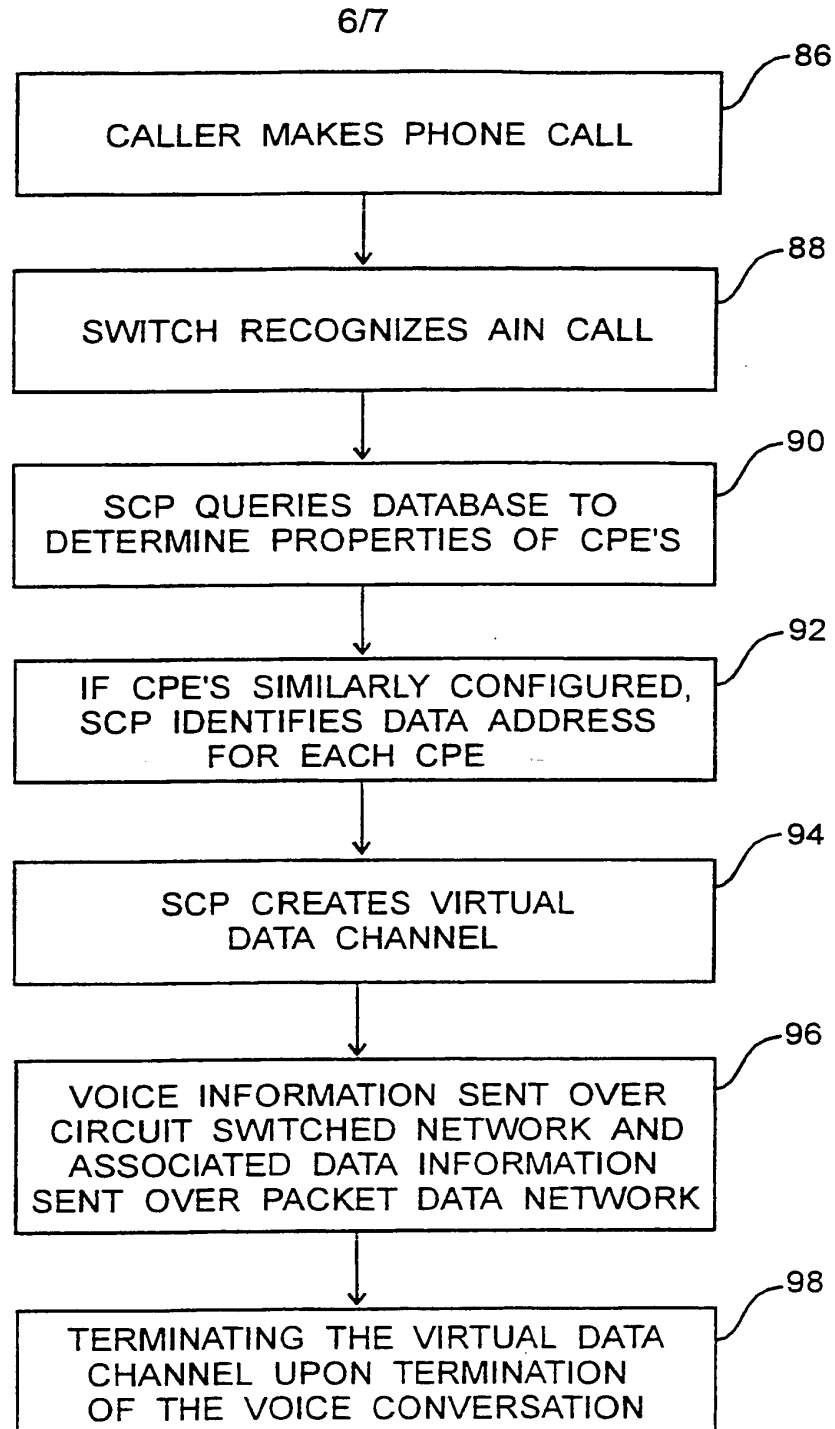
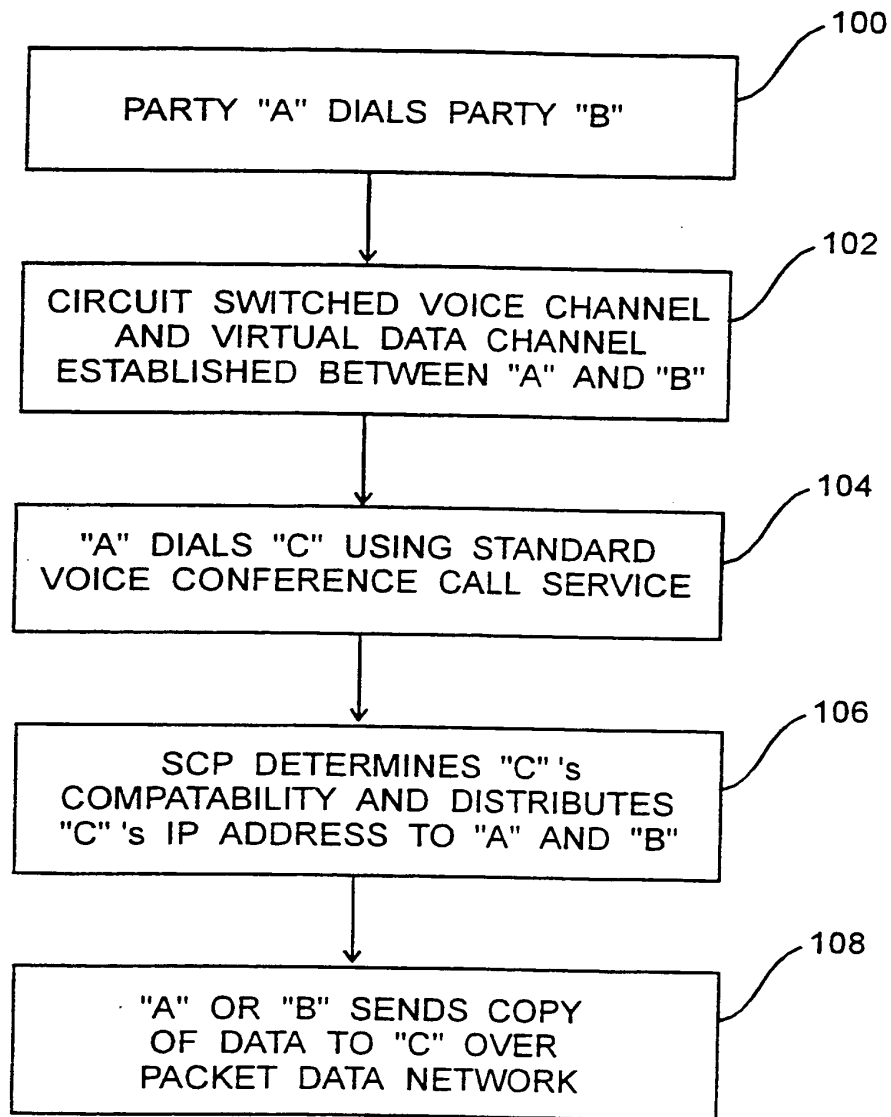


Fig. 5

*Fig. 6*

7/7

*Fig. 7*

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US98/14712**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(6) : H04Q 11/04; H04J 1/02; H04H 1/08; H04M 11/00, 1/64

US CL : Please See Extra Sheet.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 370/260, 261, 265, 270, 271, 485, 486, 487, 490; 379/88.13, 88.17, 90.01, 93.01

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS

search terms: broadband, databases, telephone numbers

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,592,538 A (KOSOWSKY ET AL) 07 JANUARY 1997, COL. 11	8, 9, 17, 20
Y	US 5,592,538 A (KOSOWSKY ET AL) 07 JANUARY 1997, COL. 11 LINE 29-41, COL. 11 LINE 62 TO COL. 12 LINE 26, COL. 2 LINE 41 TO COL. 3 LINE 5, AND COL. 15 LINE 49 TO COL. 16 LINE 9.	1, 3, 4, 18, 19
Y	US 5,528,281 A (GRADY ET AL) 18 JUNE 1996, COL. 5 LINES 37-46.	18, 19
Y,P	US 5,768,280 A (WAY) 16 JUNE 1998, COL. 1 LINE 44 TO COL. 2 LINE 14.	1, 3, 4
A	US 5,184,345 A (SAHNI) 02 FEBRUARY 1993, SEE ENTIRE DOCUMENT.	1-20
A	US 5,572,583 A (WHELLER, JR. ET AL) 05 NOVEMBER 1996, SEE ENTIRE DOCUMENT.	1-20

☐ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
E earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*G* document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means	
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

10 OCTOBER 1998

Date of mailing of the international search report

10 NOV 1998

Name and mailing address of the ISA/US
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Facsimile No. (703) 305-3230

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SHICK HOM

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US98/14712

A. CLASSIFICATION OF SUBJECT MATTER:

US CL :

370/260, 261, 265, 270, 271, 485, 486, 487, 490; 379/88.13, 88.17, 90.01, 93.01

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Yossi BARSHESHET

Serial No. 09/941,723

Filed: August 30, 2001



Atty. Ref.: 233-101

TC/A.U.: 2661

Examiner:

For: FAST PROTECTION IN RING TOPOLOGIES

* * * * *

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AUG 31 2004

Commissioner for Patents

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Alexandria, VA 22313-1450

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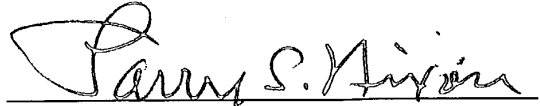
Sir:

INFORMATION DISCLOSURE STATEMENT

Attention is directed to the attached Office Action for USSN 09/969,839 possibly related to this application and each reference cited therein. A PTO-1449 is also attached.

Official consideration and citation of each such reference is requested.

Respectfully submitted,

NIXON & VANDERHYE P.C.By: Larry S. Nixon
Reg. No. 25,640

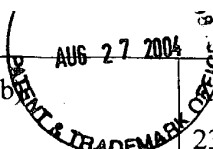
LSN:vc

1100 North Glebe Road, 8th Floor

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FORM PTO-1449 (Colb)	 PRIORITY DOCKET NO. 233-101	SERIAL NUMBER 09/941,723
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANTS' INFORMATION STATEMENT	APPLICANT Yossi BARSHESHET	EXAMINER (N/A)
	FILING DATE August 30, 2001	GROUP ART UNIT (N/A)

U.S. PATENT DOCUMENTS

Examiner's Initials		DOCUMENT NO.	DATE	NAME	CLASS	SUB	FILING DATE
	AA	6,246,667	06-2001	Ballintine, et al.			
	AB	6,680,906	01-2004	Nguyen			
	AC	5,307,353	04-1994	Yamashita, et al.			
	AD	5,925,137	07-1999	Okanoue, et al.			
	AE	5,159,595	10-1992	Flanagan, et al.			
	AF						
	AG						

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FOREIGN PATENT DOCUMENTS

		DOCUMENT NO.	DATE	COUNTRY	CLASS	SUB	TRANSLATION
	AH						
	AI						
	AJ						

OTHER ART (Including Author, Bills, Pertinent Pages, Etc.)

	AK	
	AL	
	AM	
EXAMINER:		DATE CONSIDERED:
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.		



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,723	08/30/2001	Yossi Barsheshet	233-101	7150

7590 04/04/2005
NIXON & VANDERHYE P.C.
8th Floor
1100 North Glebe Road
Arlington, VA 22201-4714

EXAMINER

EMDADI, KAMRAN

ART UNIT	PAPER NUMBER
----------	--------------

2667

DATE MAILED: 04/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/941,723	BARSHESHET, YOSSI	
	Examiner	Art Unit	
	Kamran Emdadi	2667	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3-22-2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) ☒ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413) |
| 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) ☐ Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>4 sheets</u> . | 6) ☐ Other: _____ |

DETAILED ACTION

Specification

The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01. See paragraph 2, page 8. Examiner recommends rewording the "incorporated herein by reference" absent the hyperlink to refer only to IETF-RFC 3031.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Ballintine et al. (U.S. Patent No. 6,366,556).

Regarding claims 1 and 9, Ballintine teaches a self-healing network that operates as a bidirectional ring network with a plurality of nodes (A-F) and segments (see figure 2). When a fault occurs on a communication path segment (i.e. link 11a/12a of figure 2) it is detected and data bits are used to identify the source and destination of the communication (see column 6, lines 12-18). In addition, figure 7 illustrates bit groups

identifying the broken path segment at source, intermediate and destination nodes.

With regard to the general mask and the specific mask Ballintine teaches Z3 POH bytes used to represent parity errors received. A first general mask of bits is set based on a current interpretation of the network configuration, which is compensated by new information contained in a specific mask of a Z3 byte, and an XOR operation is used in the compensation procedure (see column 11, lines 25-30 and 50-55; and column 12, lines 14-20).

Regarding claims 2-3 and 10-11, Ballintine teaches an individual bit assigned to each segment (see column 7, lines 15-20).

Regarding claims 4 and 12, Ballintine teaches, as noted above an XOR operation used to superimpose the general and specific masks.

Regarding claims 5-7 and 13-15, Ballintine teaches, in addition to the above noted discussion, re-routing data (column 8, lines 28-30).

Regarding claims 8 and 16, Ballintine teaches determining whether a restoration should take place (column 8, lines 30-36).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kamran Emdadi whose telephone number is 571-272-6047. The examiner can normally be reached M-F between the hours of 7am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

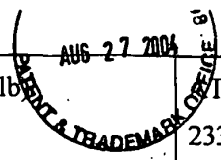
Kamran Emdadi

March 22, 2005


CHI PHAM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800 3/21/05

Date: July 13, 2004

Page 1 of 1

FORM PTO-1449 (Colb)	 CITY DOCKET NO. 233-101	SERIAL NUMBER 09/941,723
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANTS' INFORMATION STATEMENT	APPLICANT Yossi BARSHESHET	EXAMINER (N/A) KAMRAN EMDADI
	FILING DATE August 30, 2001	GROUP ART UNIT (N/A) 2667

U.S. PATENT DOCUMENTS

Examiner's Initials		DOCUMENT NO.	DATE	NAME	CLASS	SUB	FILING DATE
KE	AA	6,246,667	06-2001	Ballintine, et al.			
	AB	6,680,906	01-2004	Nguyen			
	AC	5,307,353	04-1994	Yamashita, et al.			
	AD	5,925,137	07-1999	Okanoue, et al.			
↓	AE	5,159,595	10-1992	Flanagan, et al.			
	AF						
	AG						

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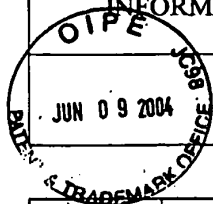
FOREIGN PATENT DOCUMENTS

		DOCUMENT NO.	DATE	COUNTRY	CLASS	SUB	TRANS- LATION
	AH						
	AI						
	AJ						

OTHER ART (Including Author, Bills, Pertinent Pages, Etc.)

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EXAMINER: 	DATE CONSIDERED: 3/21/2005
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

FORM PTO-1449 (Colb)	ATTY DOCKET NO. 233-101	SERIAL NUMBER 09/941,723
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANTS' INFORMATION STATEMENT	APPLICANT Yossi BARSHESHET	EXAMINER (N/A) KAMRAN EMDADI
	FILING DATE August 30, 2001	GROUP ART UNIT (N/A) 2667



U.S. PATENT DOCUMENTS

Examiner's Initials		DOCUMENT NO.	DATE	NAME	CLASS	SUB	FILING DATE
KE	AA	5,436,886	07-1995	McGill			
	AB	6,075,767	06-2000	Sakamoto, et al.			
	AC	6,466,576	10-2002	Sekine, et al.			
	AD	5,663,949	09-1997	Ishibashi, et al.			
	AE	6,687,231	02-2004	Czerwicz, et al.			
	AF	5,283,782	02-1994	Takase, et al.			
	AG	6,351,452	02-2002	Koenig, et al.			

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FOREIGN PATENT DOCUMENTS

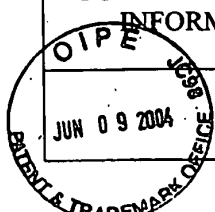
		DOCUMENT NO.	DATE	COUNTRY	CLASS	SUB	TRANS- LATION
KE	AH	EP 1 006 702	06-2000	EUROPE			
KE	AI	WO 99/04596	01-1999	PCT			
	AJ						

OTHER ART (Including Author, Bills, Pertinent Pages, Etc.)

KE	AK	"Inverse Multiplexing for ATM (IMA) Specification Version 1.1", ATM FORUM. 'Online! March 1999.
KE	AL	Papa Del J, et al, "DSLAM - A BROADBAND DIGITAL SUBSCRIBER LINE ACCESS MULTIPLEXER SYSTEM", NEC RESEARCH AND DEVELOPMENT, NIPPON ELECTRIC LTD. TOKYO, JAPAN, Vol. 40, no. 1, January 1999, pp. 103-107.
	AM	
EXAMINER: <i>[Signature]</i>		DATE CONSIDERED: 3-21-2005
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.		

Date: May 12, 2004

Page 2 of 2

FORM PTO-1449 (Colb)	ATTY DOCKET NO. 233-101	SERIAL NUMBER 09/941,723
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANTS' INFORMATION STATEMENT	APPLICANT Yossi BARSHESHET	EXAMINER (N/A) KAMRAN EMDADI
	FILING DATE August 30, 2001	GROUP ART UNIT (N/A) 2667

U.S. PATENT DOCUMENTS

Examiner's Initials		DOCUMENT NO.	DATE	NAME	CLASS	SUB	FILING DATE
KE	AA	6,438,144	08-2002	Guzikevitz, et al.			
	AB	6,314,102	11-2001	Czerwicz, et al.			
	AC	5,796,717	08-1998	Shinbashi, et al.			
	AD	6,597,689	07-2003	Chiu, et al.			
	AE	6,680,904	01-2004	Kaplan, et al.			
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FOREIGN PATENT DOCUMENTS

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OTHER ART (Including Author, Bills, Pertinent Pages, Etc.)

AK	
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EXAMINER: <i>KE</i>	DATE CONSIDERED: 3/22/2005
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

Notice of References Cited	Application/Control No. 09/941,723	Applicant(s)/Patent Under Reexamination BARSHESHET, YOSSI	
	Examiner Kamran Emdadi	Art Unit 2667	Page 1 of 1

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-6,456,587	09-2002	Taniguchi, Atsuki	370/216
	B	US-6,366,556	04-2002	Ballintine et al.	370/216
	C	US-6,233,073	05-2001	Bowers et al.	398/16
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
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	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes 	Application/Control No.		Applicant(s)/Patent under Reexamination	
	09/941,723		BARSHESHET, YOSSEI	
	Examiner		Art Unit	
	Kamran Emdadi		2667	

SEARCHED			
Class	Subclass	Date	Examiner
370	217	3/22/2005	KE
370	221	3/22/2005	KE
370	222	3/22/2005	KE
370	223	3/22/2005	KE

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
Discussed with Kwang Yao, his suggestion is search for SONET features: AIS, K1 and K2 byte and SDH.	3/22/2005	KE

Index of Claims 	Application/Control No.		Applicant(s)/Patent under Reexamination	
	09/941,723		BARSHESHET, YOSSI	
	Examiner		Art Unit	
	Kamran Emdadi		2667	

✓	Rejected
=	Allowed

–	(Through numeral) Cancelled
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N	Non-Elected
I	Interference

A	Appeal
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Claim		Date											
Final	Original	3/23/05											
	1	✓											
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Bib Data Sheet

CONFIRMATION NO. 7150

SERIAL NUMBER 09/941,723	FILING DATE 08/30/2001 RULE	CLASS 370	GROUP ART UNIT 2661	ATTORNEY DOCKET NO. 233-101	
APPLICANTS Yossi Barsheshet, Givatayim, ISRAEL; ** CONTINUING DATA ***** None ** FOREIGN APPLICATIONS ***** None					
IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 09/29/2001					
Foreign Priority claimed ☐ yes ☒ no 35 USC 119 (a-d) conditions ☒ yes ☐ no ☐ Met after met <u>Allowance</u> Verified and Acknowledged <u>Examiner's Signature</u> Initials		STATE OR COUNTRY ISRAEL	SHEETS DRAWING 3	TOTAL CLAIMS 16	INDEPENDENT CLAIMS 2
ADDRESS NIXON & VANDERHYE P.C. 8th Floor 1100 North Glebe Road Arlington, VA 22201-4714					
TITLE Fast protection in ring topologies					
FILING FEE RECEIVED 710	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit		

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IFW

PTO/SB/121 (10-00)

Approved for use through 10/31/2002. OMB 0651-0035

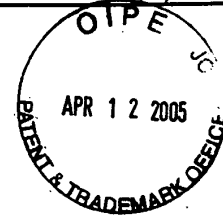
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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Request for Customer Number (PTO/SB/125) submitted herewith.

in the following listed application(s) or patent(s):

Patent Number (if appropriate)	Application Number	Patent Date (if appropriate)	U.S. Filing Date
	09/941,723		August 30, 2001

Typed or Printed Name	Larry S. Nixon	(check one) ☐ Applicant or Patentee ☐ Assignee of record of the entire interest. Statement under 37 C.F.R. § 3.73(b) is enclosed. (Form PTO/SB/96) ☒ Attorney or Agent of record 25,640 (Reg. No.)
Signature		
Date	April 13, 2005	
Address of signer:	1100 North Glebe Road, 8 th Floor Arlington, VA 22201	

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.*

☒ *Total of 1 forms are submitted.

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS: SEND TO: Assistant Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Yossi BARSHESHET

Atty. Ref.: 233-101; Confirmation No. 7150

Appl. No. 09/941,723

TC/A.U. 2667

Filed: August 30, 2001

Examiner: K. Emdadi

For: FAST PROTECTION IN RING TOPOLOGIES

* * * * *

July 5, 2005

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

AMENDMENT

In response to the Office Action dated 04/04/2005, please amend this application
as shown below:

Yossi BARSHESHET
Appl. No. 09/941,723
July 5, 2005

AMENDMENTS TO THE SPECIFICATION:

Please amend the specification at page 8, paragraph beginning at line 17 as follows:

The sequence of dashed arrows in the figure shows the path of an exemplary data flow on ring 26 from source node F to destination node B via segments 31, 32, 33 and 34. In one preferred embodiment of the present invention, the flow corresponds to a Multiprotocol Label Switching (MPLS) tunnel provided between nodes F and B, in accordance with IETF RFC 3031, entitled "Multiprotocol Label Switching Architecture" (January, 2001), which is incorporated herein by reference. ~~(This RFC is available at www.ietf.org/rfc.html.)~~ Alternatively, the flow may be created using any other suitable communication protocol known in the art.

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) In a bidirectional ring network, in which nodes are mutually connected by network segments, a method of fault protection, comprising:

constructing a general mask indicating which of the segments can be reached in the event of a fault in the network by assigning a respective general mask bit to each segment, indicating whether the segment can be reached following occurrence of the fault;

for a given data flow to be conveyed through the network from a source node to a destination node, constructing a specific mask indicating the segments on a desired path of the flow by assigning a respective specific mask bit to each of the segments, indicating whether the flow was to be conveyed over the segment had the fault not occurred; and

superimposing the general and specific masks in order to determine a disposition of the flow.

2-3. Cancelled.

4. (Original) A method according to claim 1, wherein superimposing the masks comprises combining the masks by means of a Boolean operation.

5. (Original) A method according to claim 1, wherein superimposing the masks comprises determining whether to convey the data flow over the desired path, to steer the data flow over an alternative path, or to stop conveying the data flow.

6. (Original) A method according to claim 5, wherein superimposing the masks comprises generating a combined mask, and determining that the data flow should be conveyed over the desired path when the combined mask is null.

7. (Original) A method according to claim 5, wherein superimposing the masks comprises generating a combined mask, and determining that the data flow should be steered over the alternative path when the combined mask corresponds to the general mask.

8. (Original) A method according to claim 5, wherein superimposing the masks comprises generating a combined mask, and determining that the data flow should not be conveyed when the combined mask is neither null, nor does it correspond to the general mask.

9. (Currently amended) A communication device for use in a bidirectional ring network, in which nodes are mutually connected by network segments, the device comprising a network processor, which is adapted to construct a general mask indicating which of the segments can be reached in the event of a fault in the network, the general mask comprising a respective general mask bit for each segment, indicating whether the

segment can be reached following occurrence of the fault, and to construct a specific mask for a given data flow to be conveyed through the network from a source node to a destination node, the specific mask indicating the segments on a desired path of the flow by comprising a respective specific mask bit for each segment, indicating whether the flow was to be conveyed over the segment had the fault not occurred, and to superimpose the general and specific masks in order to determine a disposition of the flow.

10-11. Cancelled.

12. (Original) A device according to claim 9, wherein the processor is adapted to superimpose the masks by performing a Boolean operation on the masks.

13. (Original) A device according to claim 9, wherein the processor is adapted to determine whether to convey the data flow over the desired path, to steer the data flow over an alternative path, or to stop conveying the data flow based on the superimposed masks.

14. (Original) A device according to claim 13, wherein the processor is adapted to superimpose the masks so as to generate a combined mask, and to determine that the data flow should be conveyed over the desired path when the combined mask is null.

15. (Original) A device according to claim 13, wherein the processor is adapted to superimpose the masks so as to generate a combined mask, and to determine

Yossi BARSHESHET
Appl. No. 09/941,723
July 5, 2005

that the data flow should be steered over the alternative path when the combined mask corresponds to the general mask.

16. (Original) A device according to claim 13, wherein the processor is adapted to superimpose the masks so as to generate a combined mask, and to determine that the data flow should not be conveyed when the combined mask is neither null, nor does it correspond to the general mask.

Yossi BARSHESET
Appl. No. 09/941,723
July 5, 2005

REMARKS/ARGUMENTS

Reconsideration of this application is respectfully requested.

Claims 2, 3, 10 and 11 have been canceled without prejudice. Claims 1 and 9 are amended above.

Attention is also directed to the attached Fourth Information Disclosure Statement (submitted re prior art cited in related copending application 09/876,414). The IDS fee for this stage of prosecution is also attached.

The specification was objected to for including a hyperlink in paragraph 2, page 8. Applicant has accordingly amended the specification to delete the hyperlink.

The rejection of claims 1-16 under 35 U.S.C. 102(e) as allegedly anticipated by Ballintine et al. (U.S. Patent 6,366,556) is respectfully traversed.

Applicant has amended independent claims 1 and 10 to clarify distinction over Ballintine '556. Amended claim 1 incorporates the limitations of canceled claims 2 and 3, while amended claim 9 incorporates the limitations of canceled claims 10 and 11.

Ballintine '556 describes methods for providing virtual rings in SONET networks. An unused byte in the SONET path overhead (POH) is used to provide a finer granularity of protection (abstract). For this purpose, either the Z3 or Z4 byte of the POH is used for

addressing the nodes in a virtual ring (col. 7, lines 16-20). The specific use of the Z3 bits in a multiframe structure is described by Ballintine as follows (col. 10, lines 50-59):

- Bits 1-4 specify requests (standard APS messages, per col. 10, lines 65-67).
- Bits 5-10 provide destination node addresses.
- Bits 11-16 provide source node addresses.
- Bit 17 indicates a short path request or a request.
- Bits 18-20 specify maintenance signals or states of the ring switching protocol.
- Bit 21 is reserved.
- Bits 22-24 are parity bits.

It can be seen that none of the Z3 bits are assigned to indicate specific network segments.

Claim 1 recites a method of fault protection in a bidirectional ring network. A general mask is constructed to indicate which of the segments in the network can be reached in the event of a network fault. A specific mask is constructed for a given data flow indicating the segments on a desired path of the flow through the network. Claim 1 has been amended to clarify that the general and specific masks in the context of the present invention have the form of bitmaps, with a bit assigned to each network segment.

In other words, the general and specific masks recited in claim 1 are structured and used completely differently from Ballintine's POH bits. Ballintine's bits are used for node addressing and protocol requests, as shown above. Ballintine neither teaches nor suggests using the POH bits (or any other bits) to specifically indicate certain segments in

Yossi BARSHESET
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July 5, 2005

the network, as recited in claim 1. Therefore, amended claim 1 is believed to be patentable over the cited art.

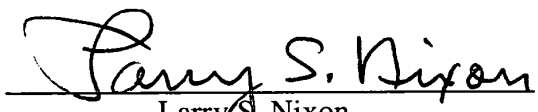
In view of the patentability of claim 1, dependent claims 4-8 are also believed to be patentable – because they add yet further patentable distinctions.

Claim 9 recites a communication device, which operates on similar principles to the method of claim 1. Claim 9 has been amended in like fashion to claim 1 and is therefore believed to be patentable for reasons such as those stated above. In view of the patentability of claim 9, claims 12-16 are also believed to be patentable – because they add yet further patentable distinctions.

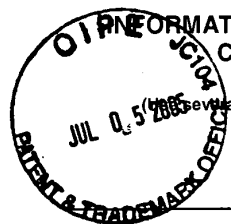
Accordingly, this entire application is now believed to be in allowable form and a formal Notice to that effect is respectfully requested.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: 
Larry S. Nixon
Reg. No. 25,640

LSN:vc
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100


**INFORMATION DISCLOSURE
CITATION**

(Attach several sheets if necessary)

Atty. Docket No.	Serial No.
233-101	09/941,723
Applicant	
Yossi	
Filing Date	TC/A.U.
August	2667

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	6442134	08/2002	Mitchell			
	6680912	01/2004	Kalman et al.			
	6711125	03/2004	Walrand et al.			
	6795394	09/2004	Swinkels et al.			
	6820210	11/2004	Daruwalla et al.			
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	6456587	09/2002	Taniguchi			
	6366556	04/2002	Ballintine et al.			
	6233073	05/2001	Bowers et al.			

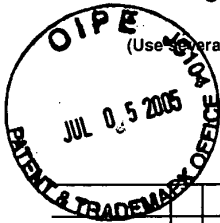
FOREIGN PATENT DOCUMENTS

TRANSLATION

*Examiner	Date Considered
-----------	-----------------

Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to application.

Document4

**INFORMATION DISCLOSURE
CITATION**


(Use several sheets if necessary)

Atty. Docket No.

Serial No.

233-101**09/941,723**

Applicant

Yossi

Filing Date

TC/A.U.

August**2667**

DOCUMENT	DATE	COUNTRY	CLASS	SUBCLASS	YES	NO

OTHER DOCUMENTS (including Author, Title, Date, Pertinent pages, etc.)

	UETF RFC 3031, "Multiprotocol Label Switching Architecture", January 2001 (Available at www.ietf.org/rfc.html)
	Office Action from USSN 09/876,414, dated December 30, 2004

*Examiner		Date Considered	
-----------	--	-----------------	--

Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Atty Dkt. 233-101

C# M#

Yossi BARSHESHET

PC/A.U.

2667

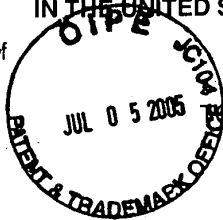
Serial No. 09/941,723

Examiner: K. Emdadi

Filed: August 30, 2001

Date: July 5, 2005

Title: FAST PROTECTION IN RING TOPOLOGIES



TRW 26674

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

RESPONSE/AMENDMENT/LETTER

This is a response/amendment/letter in the above-identified application and includes an attachment which is hereby incorporated by reference and the signature below serves as the signature to the attachment in the absence of any other signature thereon.

☐ **Correspondence Address Indication Form Attached.****Fees are attached as calculated below:**

Total effective claims after amendment 12 minus highest number
previously paid for 20 (at least 20) = 0 x \$50.00 \$0.00 (1202)/\$0.00 (2202) \$

Independent claims after amendment 2 minus highest number
previously paid for 3 (at least 3) = 0 x \$200.00 \$0.00 (1201)/\$0.00 (2201) \$

If proper multiple dependent claims now added for first time, (ignore improper); add
\$360.00 (1051)/\$180.00 (2051) \$

Petition is hereby made to extend the current due date so as to cover the filing date of this
paper and attachment(s)

One Month Extension \$120.00 (1251)/\$60.00 (2251)

Two Month Extensions \$450.00 (1252)/\$225.00 (2252)

Three Month Extensions \$1020.00 (1253)/\$510.00 (2253)

Four Month Extensions \$1590.00 (1254)/\$795.00 (2254) \$

Terminal disclaimer enclosed, add \$130.00 (1814)/\$65.00 (2814) \$

☐ Applicant claims "small entity" status. ☐ Statement filed herewith

Rule 56 Information Disclosure Statement Filing Fee \$180.00 (1806) \$ 180.00

Assignment Recording Fee \$40.00 (8021) \$

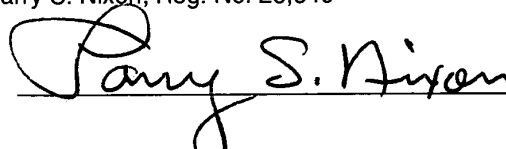
Other: \$

TOTAL FEE ENCLOSED \$ 180.00

The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Account No. 14-1140. A duplicate copy of this sheet is attached.

901 North Glebe Road, 11th Floor
Arlington, Virginia 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100
LSN:vc

NIXON & VANDERHYTE P.C.
By Atty: Larry S. Nixon, Reg. No. 25,640

Signature: 

07/06/2005 SZEWDIE1 00000015 09941723

01 FC:1806

180.00 OP

#967484 V1 - 233-101.Cvr/Amd

PATENT APPLICATION FEE DETERMINATION RECORD

Effective October 1, 2000

Application or Docket Number

233-101
0941723

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	16	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	16 minus 20 =	9
INDEPENDENT CLAIMS	2 minus 3 =	9
MULTIPLE DEPENDENT CLAIM PRESENT ☐		

* If the difference in column 1 is less than zero, enter "0" in column 2

CLAIMS AS AMENDED - PART II

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	12	Minus	16 =
Independent	2	Minus	2 =
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total		Minus	.. =
Independent		Minus	... =
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total		Minus	.. =
Independent		Minus	... =
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

SMALL ENTITY TYPE ☐

OR OTHER THAN SMALL ENTITY

RATE	FEE
BASIC FEE	355.00
X\$ 9=	
X40=	
+135=	
TOTAL	

RATE	FEE
BASIC FEE	710.00
X\$18=	
X80=	
+270=	
TOTAL	710.00

SMALL ENTITY

OR OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
X\$ 9=	
X40=	
+135=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X80=	
+270=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$ 9=	
X40=	
+135=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X80=	
+270=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$ 9=	
X40=	
+135=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X80=	
+270=	
TOTAL ADDIT. FEE	



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,723	08/30/2001	Yossi Barsheshet	233-101	7150

7590 08/19/2005
NIXON & VANDERHYE P.C.
8th Floor
1100 North Glebe Road
Arlington, VA 22201-4714

EXAMINER

EMDADI, KAMRAN

ART UNIT PAPER NUMBER

2667

DATE MAILED: 08/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/941,723	Applicant(s) BARSHESHET, YOSSİ	
	Examiner Kamran Emdadi	Art Unit 2667	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-9 and 12-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-9 and 12-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) ☐ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) ☐ Notice of Informal Patent Application (PTO-152) |
| 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7-5-2005, 2 sheets</u> . | 6) ☐ Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed July 5, 2005 have been fully considered but they are not persuasive. A new grounds of rejection has been presented in addition to the previous grounds of rejection which is hereby maintained.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "indicating whether the flow was to be conveyed over the segment had the fault not occurred" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New

Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 4-9 and 12-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The feature recited in claims 1 and 9:

"assigning a respective specific mask bit to each of the segments, indicating whether the flow was to be conveyed over the segment had the fault not occurred"

is not enabled by the specification. The examiner does not dispute that the feature is recited in the summary of the invention portion of the specification, however, the feature is recited in the same indefinite and non-descriptive manner as the claim language. The claimed feature does not enable one skilled in the art to make and use the invention and, neither does the specification. Therefore, the specification is not enabling as to the above noted feature.

The Examiner notes that the drawings, specifically, figure no. 3 refers to a finite number of possibilities for handling data flow through the network. These include no steering 56, steering 58 or discarding 60 the data flow. The Examiner's suggests that the Applicant consider these results as described in figure no. 3 when considering a new form for the claim language in an effort to overcome the drawing objection and the 112 1st paragraph rejection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Ballintine et al. (U.S. Patent No. 6,366,556).

Regarding claims 1 and 9, Ballintine teaches a self-healing network that operates as a bidirectional ring network with a plurality of nodes (A-F) and segments (see figure 2). When a fault occurs on a communication path segment (i.e. link 11a/12a of figure 2) it is detected and data bits are used to identify the source and destination of the communication (see column 6, lines 12-18). In addition, figure 7 illustrates bit groups identifying the broken path segment at source, intermediate and destination

nodes. With regard to the general mask and the specific mask Ballintine teaches Z3 POH bytes used to represent parity errors received. A first general mask of bits is set based on a current interpretation of the network configuration, which is compensated by new information contained in a specific mask of a Z3 byte, and an XOR operation is used in the compensation procedure (see column 11, lines 25-30 and 50-55; and column 12, lines 14-20). Ballintine also teaches an individual bit assigned to each segment (see column 7, lines 15-20).

Regarding claims 4 and 12, Ballintine teaches, as noted above an XOR operation used to superimpose the general and specific masks.

Regarding claims 5-7 and 13-15, Ballintine teaches, in addition to the above noted discussion, re-routing data (column 8, lines 28-30).

Regarding claims 8 and 16, Ballintine teaches determining whether a restoration should take place (column 8, lines 30-36).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kamran Emdadi whose telephone number is 571-272-6047. The examiner can normally be reached on M-F between the hours of 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Application/Control Number: 09/941,723
Art Unit: 2667

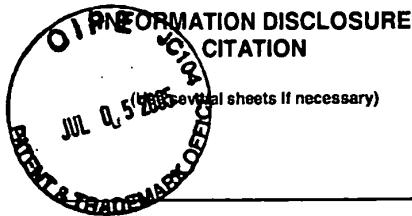
Page 6

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kamran Emdadi

August 16, 2005


CHI PHAM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800 8/18/05



Atty. Docket No.

Serial No.

233-101**09/941,723**

Applicant

Yossi

Filing Date

TC/A.U.

August**2667**

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
KE	6442134	08/2002	Mitchell			
	6680912	01/2004	Kalman et al.			
	6711125	03/2004	Walrand et al.			
	6795394	09/2004	Swinkels et al.			
	6820210	11/2004	Daruwalla et al.			
	6256292	07/2001	Ellis et al.			
	6731597	05/2004	Batchellor et al.			
	6456407	09/2002	Tammela et al.			
	2002/0176371	11/2002	Behzadi			
	6826158	11/2004	Seaman et al.			
	2002/0018481	02/2002	Mor et al.			
	2002/0186667	12/2002	Mor et al.			
	4527270	07/1985	Sweeton			
	6680912	01/2004	Kalman et al.			
	6865149	03/2005	Kalman et al.			
	5307353	04/1994	Yamashita et al.			
	5159595	10/1992	Flanagan et al.			
	6795394	09/2004	Swinkels et al.			
	6820210	11/2004	Daruwalla et al.			
	2003/0031126	02/2003	Mayweather et al.			
	2001/0026384	10/2001	Sakano et al.			
	6839514	01/2005	Sharma et al.			
	6748175	06/2004	Adams et al.			
	6707823	03/2004	Miyao			
	6400682	06/2002	Regula			
	6226111	05/2001	Chang et al.			
	6212161	04/2001	Regula			
	6091705	07/2000	Regula			
	5933258	08/1999	Flanagan et al.			
	5327427	07/1994	Sandesara			
	5218604	06/1993	Sosnosky			
	2002/0003639	01/2002	Arecco et al.			
	2002/0048066	04/2002	Antoniades et al.			
	6456587	09/2002	Taniguchi			
	6366556	04/2002	Ballintine et al.			
	6233073	05/2001	Bowers et al.			

FOREIGN PATENT DOCUMENTS

TRANSLATION

*Examiner

Date Considered

8-15-2005

Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to application.

Document4

**INFORMATION DISCLOSURE
CITATION**


(Use several sheets if necessary)

Atty. Docket No.

Serial No.

233-101**09/941,723**

Applicant

Yossi

Filing Date

TC/A.U.

August**2667**

DOCUMENT	DATE	COUNTRY	CLASS	SUBCLASS	YES	NO

OTHER DOCUMENTS (including Author, Title, Date, Pertinent pages, etc.)

KE	IETF RFC 3031, "Multiprotocol Label Switching Architecture", January 2001 (Available at www.ietf.org/rfc.html) Office Action from USSN 09/876,414, dated December 30, 2004

*Examiner	<i>[Signature]</i>	Date Considered	8-15-2005
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Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to application.

Document4

Index of Claims 	Application/Control No.		Applicant(s)/Patent under Reexamination	
	09/941,723		BARSHESHET, YOSSI	
	Examiner		Art Unit	
	Kamran Emdadi		2667	

✓	Rejected
=	Allowed

—	(Through numeral) Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claim		Date									
Final	Original	8/15/05									
	1	✓									
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	3	·									
	4	✓									
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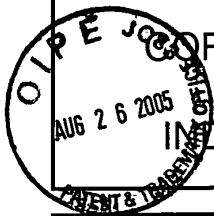


233-101

PTO/SB/121 (10-00)

Approved for use through 10/31/2002. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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Alexandria, VA 22313-1450

Direct all correspondence to:



Customer Number:

23117

Place Customer
Number Bar
Label Here →

OR

Type Customer Number here



Request for Customer Number (PTO/SB/125) submitted herewith.

in the following listed application(s) or patent(s):

Patent Number (if appropriate)	Application Number	Patent Date (if appropriate)	U.S. Filing Date
	09/941,723		August 30, 2001

Typed or
Printed Name

Larry S. Nixon

Signature

Larry S. Nixon

Date

August 26, 2005

Address of signer:

901 North Glebe Road, 11th Floor
Arlington, VA 22203

(check one)



Applicant or Patentee



Assignee of record of the entire
interest. Statement under 37 C.F.R. §
3.73(b) is enclosed. (Form
PTO/SB/96)



Attorney or Agent of record

25,640

(Reg. No.)

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.*

☒ *Total of 1 forms are submitted.

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS: SEND TO: Assistant Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Document5



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,723	08/30/2001	Yossi Barsheshet	233-101	7150
23117	7590	10/06/2005		
NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			EXAMINER EMDADI, KAMRAN	
			ART UNIT	PAPER NUMBER
			2667	

DATE MAILED: 10/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Interview Summary	Application No.		Applicant(s)	
	09/941,723		BARSHESHET, YOSSI	
	Examiner		Art Unit	
	Kamran Emdadi		2667	

All participants (applicant, applicant's representative, PTO personnel):

(1) Kamran Emdadi. (3) Daniel Kligler.

(2) Kwang Yao. (4) _____.

Date of Interview: 27 September 2005.

Type: a) ☐ Telephonic b) ☐ Video Conference
c) ☒ Personal [copy given to: 1) ☐ applicant 2) ☒ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☐ No.
If Yes, brief description: _____.

Claim(s) discussed: 1 and 9.

Identification of prior art discussed: Ballantine US # 6,366,556.

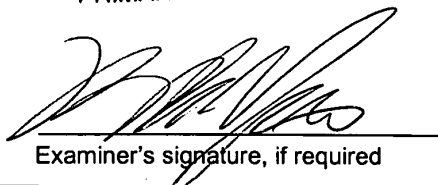
Agreement with respect to the claims f) ☐ was reached. g) ☐ was not reached. h) ☒ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: See Continuation Sheet.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

KWANG BIN YAO
PRIMARY EXAMINER



Examiner's signature, if required

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

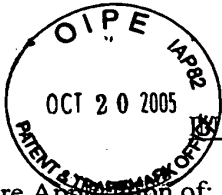
- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Continuation of Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: Applicant overcame the 112 1st paragraph rejection by pointing out the features in the specification supporting the claim language in claim 1. The Applicant noted certain claim language improvements that overcome passive language and better describe the superimposing feature, supported by page 10 of the specification. Applicant also plans to amend Fig. 4 to better support the superimposing feature of claim 1. The prior art reference Ballantine was also discussed, and the Applicant noted that Ballantine does not have a specific and general mask each representing a bit per segment of the network.



2661
IF

BY THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	Art Unit: 2661
Yossi BARSHESHET	)	Examiner: (N/A)
Serial No.: 09/941,723	)	Washington, D.C.
Filed: August 30, 2001	)	October 20, 2005
For: FAST PROTECTION IN RING	)	Docket No.: 233-101
TOPOLOGIES	)	

INFORMATION DISCLOSURE STATEMENT [IDS]

Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

This Information Disclosure Statement is submitted in accordance with 37 C.F.R. 1.97, 1.98, and it is requested that the information set forth in this statement and in the listed documents be considered during the pendency of the above-identified application, and any other application relying on the filing date of the above-identified application or cross-referencing it as a related application.

☒ 1. This IDS should be considered, in accordance with 37 C.F.R. 1.97, as it is filed:

(Check one of the boxes A-D)

☐ A. within three months of the filing date of the above-identified national application or within three months of the entry into the national stage of the above-identified international application.

☐ B. before the mailing date of a first office action on the merits.

☒ C. after (A) and (B) above, but before final rejection or allowance, and Applicants have made the necessary certification (box "i" below) or paid the necessary fee (box "ii" below).

(check one of the boxes "i" and "ii" below:)

☐ i. Counsel certifies that, upon information and belief, each item of information listed herein was either (a) cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this IDS; or (b) was not cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of undersigned after making reasonable inquiry, was not known to any individual designated in 1.56(c) more than three months prior to the filing of this IDS.

10/21/2005 MDAMTE1 00000067 09941723

01 FC:1806

180.00 OP

[x] ii. A check for the fee set forth in 1.17(p), presently believed to be \$180, is enclosed

☐ D. after (A), (B) and (C) above, but before payment of the issue fee: Applicant petitions under 37 C.F.R. 1.97(d) for the consideration of this IDS. A check for the fee set forth in §1.17(i), presently believed to be \$130 is enclosed (check no. _____). Counsel certifies that, upon information and belief, each item of information listed herein was either (i) cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the IDS; or (ii) was not cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the undersigned after making reasonable inquiry, was not known to any individual designated in 1.56(c) more than three months prior to the filing of this IDS.

☐ 2. In accordance with 37 C.F.R. 1.98, this IDS includes a list (e.g., form PTO-1449) of all patents, publications, or other information submitted for consideration by the office, either incorporated into this IDS or as an attachment hereto. A copy of each document listed is attached, except as explained below.

(check boxes A and/or B and fill in blanks, if appropriate.)

☐ A. Document(s) _____ is (are) deemed substantially cumulative to document(s) _____, and, in accordance with 1.98(c), only a copy of each of the latter documents is enclosed.

☐ B. Certain documents were previously cited by or submitted to the Office in the following prior application(s), which are relied upon under 35 U.S.C. 120:

[insert serial numbers and filing dates of prior applications]

Applicant identifies these documents by attaching hereto copies of the forms PTO-892 and PTO-1449 from the files of the prior application(s) or a fresh PTO-1449 listing these documents, and request that they be considered and made of record in accordance with 1.98(d). Per 37 CFR 1.98(d), copies of these documents need not be filed in this application.

☐ 3. Document(s) _____ is(are) not in the English language. In accordance with 1.98(c), Applicant states:

☐ An English translation of each document (or of the pertinent portions thereof), or a copy of each corresponding English-language patent or application, or English-language abstract (or claim) is enclosed.

☐ A concise explanation of the relevance of document(s) _____ is found in the attached search report (see reply to Comment 68 in the preamble to the final rules; 1135 OG 13 at 20).

☐ A concise explanation of the relevance of document(s) _____ is set forth as follows:
[Insert concise explanation of relevance]

☐ A concise explanation of the relevance of document(s) _____ can be found on page(s) _____ of the specification.

☐ A concise explanation of document(s) _____ can be found on the attached sheet.

4. No explanation of relevance is necessary for documents in the English language (see reply to Comments 67 and 68 in the preamble to the final rules; 1135 OG 13 at 20).

[X] 5. Other information being provided for the examiner's consideration follows:

An Official Action dated June 27, 2005, which issued during the prosecution of Applicant's U.S. Patent Application Number 10/211,065.

6. In accordance with 37 C.F.R. 1.97(g) and (h), the filing of this IDS should not be construed as a representation that a search has been made or that information cited is, or is considered to be, material to patentability as defined in §1.56 (b), or that any cited document listed or attached is (or constitutes) prior art. Unless otherwise indicated, the date of publication indicated for an item is taken from the face of the item and Applicant reserves the right to prove that the date of publication is in fact different.

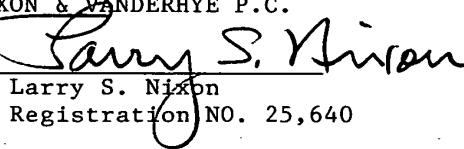
CROSS REFERENCE UNDER 37 C.F.R. §1.78 TO RELATED APPLICATIONS

Pursuant to 37 C.F.R. § 1.78, Applicant notes that the above-identified patent application may be related to the following U.S. Patent Applications:

Respectfully submitted,

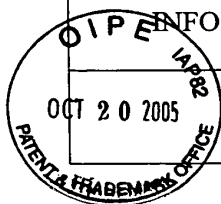
NIXON & VANDERHYE P.C.

By:


Larry S. Nixon
Registration NO. 25,640

901 North Glebe Road
Suite 1100
Arlington, VA 22203-1808
Telephone: 703-816-4000
Facsimile: 703-816-4100

FORM PTO-1449 (Colb)	ATTY DOCKET NO. 233-101	SERIAL NUMBER 09/941,723
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANTS' INFORMATION STATEMENT	APPLICANT Yossi BARSHESHET	EXAMINER (N/A)
	FILING DATE August 30, 2001	GROUP ART UNIT 2661



U.S. PATENT DOCUMENTS

Examiner's Initials		DOCUMENT NO.	DATE	NAME	CLASS	SUB	FILING DATE
	AA	5,321,393	06-1994	Carlton, et al.			
	AB	5,638,358	06-1997	Hagi			
	AC	5,596,569	01-1997	Madonna, et al.			
	AD	6,879,559	04-2005	Blackmon, et al.			
	AE	6,359,858	03-2002	Smith, et al.			
	AF	2002/0179720	12-2002	Liva, et al.			
	AG	2003/0196135	10-2003	Gottlieb			
	AH	6,724,880	04-2004	Lynch			
	AI	6,636,478	10-2003	Sensel, et al.			

FOREIGN PATENT DOCUMENTS

		DOCUMENT NO.	DATE	COUNTRY	CLASS	SUB	TRANS- LATION
	AJ						

OTHER ART (Including Author, Bills, Pertinent Pages, Etc.)

AK	Office Action dated 06/27/2005 from USSN 10/211,065
AL	
AM	
EXAMINER:	DATE CONSIDERED:
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Atty Dkt. 233-101

C# M#

Yossi BARSHESHET

TC/A.U.

2667

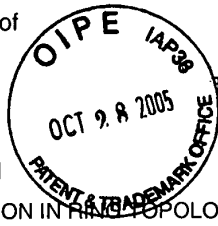
Serial No. 09/941,723

Examiner: K. Emdadi

Filed: August 30, 2001

Date: October 28, 2005

Title: FAST PROTECTION IN FIBER TOPOLOGIES



2667
SW

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

RESPONSE/AMENDMENT/LETTER

This is a response/amendment/letter in the above-identified application and includes an attachment which is hereby incorporated by reference and the signature below serves as the signature to the attachment in the absence of any other signature thereon.

☐ **Correspondence Address Indication Form Attached.**

Fees are attached as calculated below:

Total effective claims after amendment	12	minus highest number	
previously paid for	20	(at least 20) =	0 x \$50.00
			\$0.00 (1202)/\$0.00 (2202) \$

Independent claims after amendment	2	minus highest number	
previously paid for	3	(at least 3) =	0 x \$200.00
			\$0.00 (1201)/\$0.00 (2201) \$

If proper multiple dependent claims now added for first time, (ignore improper); add
\$360.00 (1051)/\$180.00 (2051) \$

Petition is hereby made to extend the current due date so as to cover the filing date of this
paper and attachment(s)
One Month Extension \$120.00 (1251)/\$60.00 (2251)
Two Month Extensions \$450.00 (1252)/\$225.00 (2252)
Three Month Extensions \$1020.00 (1253)/\$510.00 (2253)
Four Month Extensions \$1590.00 (1254)/\$795.00 (2254) \$

Terminal disclaimer enclosed, add
\$130.00 (1814)/\$65.00 (2814) \$

☐ Applicant claims "small entity" status. ☐ Statement filed herewith

Rule 56 Information Disclosure Statement Filing Fee
\$180.00 (1806) \$

Assignment Recording Fee
\$40.00 (8021) \$

Other:
\$

TOTAL FEE ENCLOSED \$ 0.00

The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Account No. 14-1140. A duplicate copy of this sheet is attached.

901 North Glebe Road, 11th Floor
Arlington, Virginia 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100
LSN:vc

NIXON & VANDERHYTE P.C.
By Atty: Larry S. Nixon, Reg. No. 25,640

Signature:

Larry S. Nixon



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Yossi BARSHESET

Atty. Ref.: 233-101; Confirmation No. 7150

Appl. No. 09/941,723

TC/A.U. 2667

Filed: August 30, 2001

Examiner: K. Emdadi

For: FAST PROTECTION IN RING TOPOLOGIES

* * * * *

October 28, 2005

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

AMENDMENT

In response to an Office Action dated August 19, 2005 and to an interview with
Examiners Embadi and Yao on September 27, 2005, please amend the above-identified
application as shown below:

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) In a bidirectional ring network, in which nodes are mutually connected by network segments, a method of fault protection, comprising:

constructing a general mask indicating which of the segments are reachable ~~can be reached~~ in the event of a fault in the network by assigning a respective general mask bit to each segment, indicating whether the segment ~~can be reached~~ is reachable following occurrence of the fault;

for a given data flow to be conveyed through the network from a source node to a destination node, constructing a specific mask indicating the segments on a desired path of the flow by assigning a respective specific mask bit to each of the segments, indicating whether the flow was to be conveyed over the segment had occurrence of the segment been operational before the fault ~~not occurred~~; and

superimposing the general and specific masks in order to determine a disposition of the flow.

2-3. Cancelled.

4. (Original) A method according to claim 1, wherein superimposing the masks comprises combining the masks by means of a Boolean operation.

5. (Original) A method according to claim 1, wherein superimposing the masks comprises determining whether to convey the data flow over the desired path, to steer the data flow over an alternative path, or to stop conveying the data flow.

6. (Original) A method according to claim 5, wherein superimposing the masks comprises generating a combined mask, and determining that the data flow should be conveyed over the desired path when the combined mask is null.

7. (Original) A method according to claim 5, wherein superimposing the masks comprises generating a combined mask, and determining that the data flow should be steered over the alternative path when the combined mask corresponds to the general mask.

8. (Original) A method according to claim 5, wherein superimposing the masks comprises generating a combined mask, and determining that the data flow should not be conveyed when the combined mask is neither null, nor does it correspond to the general mask.

9. (Currently amended) A communication device for use in a bidirectional ring network, in which nodes are mutually connected by network segments, the device comprising a network processor, which is adapted to construct a general mask indicating which of the segments ~~can be reached~~ are reachable in the event of a fault in the network, the general mask comprising a respective general mask bit for each segment, indicating

whether the segment ~~can be reached~~ is reachable following occurrence of the fault, and to construct a specific mask for a given data flow to be conveyed through the network from a source node to a destination node, the specific mask indicating the segments on a desired path of the flow by comprising a respective specific mask bit for each segment, indicating whether the flow was to be conveyed over the segment had occurrence of the segment been operational before the fault-not occurred, and to superimpose the general and specific masks in order to determine a disposition of the flow.

10-11. Cancelled.

12. (Original) A device according to claim 9, wherein the processor is adapted to superimpose the masks by performing a Boolean operation on the masks.

13. (Original) A device according to claim 9, wherein the processor is adapted to determine whether to convey the data flow over the desired path, to steer the data flow over an alternative path, or to stop conveying the data flow based on the superimposed masks.

14. (Original) A device according to claim 13, wherein the processor is adapted to superimpose the masks so as to generate a combined mask, and to determine that the data flow should be conveyed over the desired path when the combined mask is null.

15. (Original) A device according to claim 13, wherein the processor is adapted to superimpose the masks so as to generate a combined mask, and to determine that the data flow should be steered over the alternative path when the combined mask corresponds to the general mask.

16. (Original) A device according to claim 13, wherein the processor is adapted to superimpose the masks so as to generate a combined mask, and to determine that the data flow should not be conveyed when the combined mask is neither null, nor does it correspond to the general mask.

Yossi BARSHESHET
Appl. No. 09/941,723
October 28, 2005

AMENDMENTS TO THE DRAWINGS

Attached is a sheet showing proposed changes to Figure 4 in red and a replacement sheet incorporating such changes.

Attachment: Replacement Sheet(s)
Annotated Sheet Showing Changes

REMARKS/ARGUMENTS

Reconsideration of this application is respectfully requested.

Applicant thanks Examiners Emdadi and Yao for the courtesy of a personal interview with Applicant's representative, Daniel Kligler (Reg. No. 41,120), held in the USPTO on September 27. At the interview, Applicant's representative pointed out support in the specification for the invention recited in independent claims 1 and 9, and it was agreed that the rejection of the claims under 35 U.S.C. 112, first paragraph, would be withdrawn. Applicant's representative also presented a draft amendment to claim 1 and argued the patentability of the amended claims over the cited art (Ballintine, U.S. Patent 6,366,556). The Examiners suggested further changes in the language of claim 1 to clarify the meaning of the claim and its distinction over the cited art, and requested that the language of Fig. 4 be amended in literal support of the claim. Applicant has amended the claims and Fig. 4 as agreed in the interview.

The drawings were objected to for not showing the claimed feature of the specific mask "indicating whether the flow was to be conveyed over the segment had the fault not occurred." Applicant has accordingly amended Fig. 4, as noted above, in order to recite explicitly in step 52 that the specific mask indicates the segments on the desired path of data flow. The language of step 54 has also been amended, as agreed in the interview, to recite that the general and specific masks are superimposed in order to find their

Yossi BARSHESHET
Appl. No. 09/941,723
October 28, 2005

conjunction. In view of these amendments to Fig. 4, Applicant believes that the objection to the drawings should now be withdrawn.

Applicant respectfully traverses the rejection of claims 1, 4-9 and 12-16 under 35 U.S.C. §112, first paragraph, for alleged lack of enablement in the specification for the step of “assigning a respective specific mask bit to each of the segments, indicating whether the flow was to be conveyed over the segment had the fault not occurred.” Applicant has amended the language of independent claims 1 and 9, as suggested by the Examiners in the interview, to clarify that each specific mask bit indicates “whether the flow was to be conveyed over the segment had the segment been operational before occurrence of the fault.” The claimed technique for building the specific mask is described in the specification on page 10, lines 18-26, along with a concrete example of a specific mask corresponding to the data flow shown in Fig. 1. Thus, as agreed in the interview, all the claims in this application now meet the requirements of 35 U.S.C. §112, first paragraph.

Claims 1, 4-9 and 12-16 were also rejected under 35 U.S.C. 102(e) over Ballintine et al. (U.S. Patent 6,366,556). Applicant also respectfully traverses this ground of rejection.

Independent claims 1 and 9 recite a method of fault protection and a communication device for use in a bidirectional ring network. The method uses a general

mask and a specific mask, both of which have the form of bitmaps, with a bit assigned to each network segment. When a fault occurs in the network, the general mask indicates which of the segments is reachable following the fault. In the specific mask, each bit indicates whether the flow was to be conveyed over the corresponding segment had the segment been operational before occurrence of the fault. To determine the disposition of the flow, the general and specific bitmap masks are superimposed. Thus, the nodes in the network are able to decide rapidly and simply, with minimal computational cost, how to allocate network resources to data flows when the fault occurs (see page 5, lines 4-7, in the specification).

Ballintine describes methods for providing virtual rings in SONET networks. An unused byte in the SONET path overhead (POH) is used to provide a finer granularity of protection (abstract). For this purpose, either the Z3 or Z4 byte of the POH is used for addressing the nodes in a virtual ring (col. 7, lines 16-20). The specific use of the Z3 bits in a multiframe structure is described by Ballintine in col. 10, lines 50-59. It can be clearly observed (as pointed out in the interview) that none of these bits are used as mask bits, with a bit assigned to each segment as required by claims 1 and 9 in the present application. The bits referred to in Ballintine's Fig. 7 are used simply for framing and parity checking (col. 12, line 63 – col. 13, line 21).

To summarize, claims 1 and 9 in the present patent application recite a well-defined mechanism for fault protection, based on superimposing two bitmap masks, each

Yossi BARSHESET
Appl. No. 09/941,723
October 28, 2005

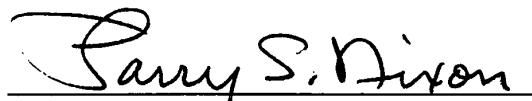
with a bit per segment. Ballintine's fault protection mechanism is fundamentally different, using POH bits to address individual nodes. He neither teaches nor suggests using the POH bits (or any other bits) to specifically indicate certain network segments with a bit per segment in two different masks, and thus cannot be taken to teach or suggest superimposing such masks.

Therefore, independent claims 1 and 9 are believed to be patentable over the cited art. In view of the patentability of claims 1 and 9, it is not believed necessary to discuss the further patentable distinctions for dependent claims 4-8 and 12-16.

Applicant believes the amendments and remarks stated above to be fully responsive to all of the objections and grounds of rejection raised by the Examiner. In view of these amendments and remarks, all the claims in the present patent application are believed to be in condition for allowance. Prompt notice to this effect is requested.

Respectfully submitted,

NIXON & VANDERHYE P.C.

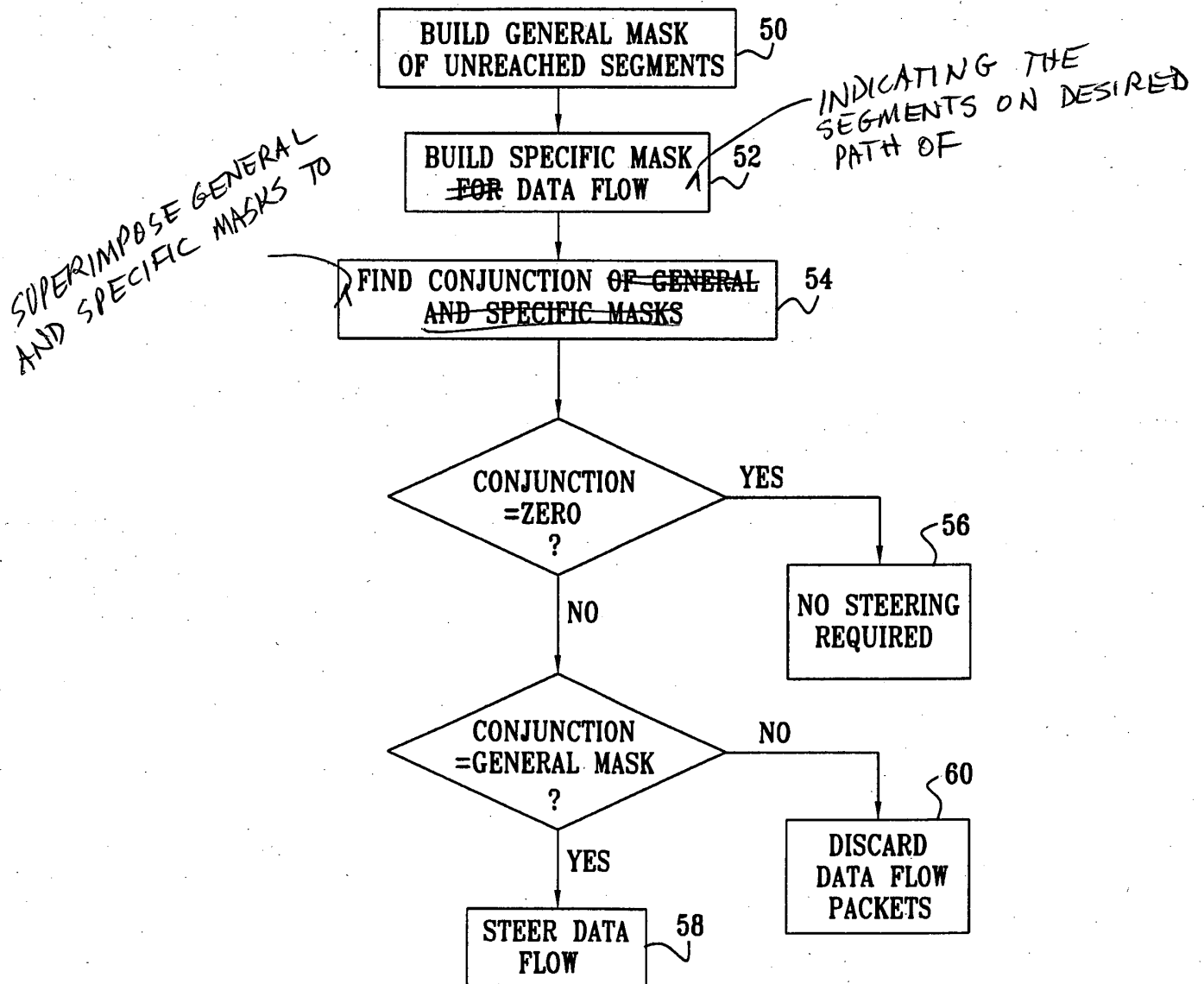
By: 
Larry S. Nixon
Reg. No. 25,640

LSN:vc
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100



Annotated Sheet Showing Changes
PROPOSED DRAWING AMENDMENTS
FOR SN 09/941,723

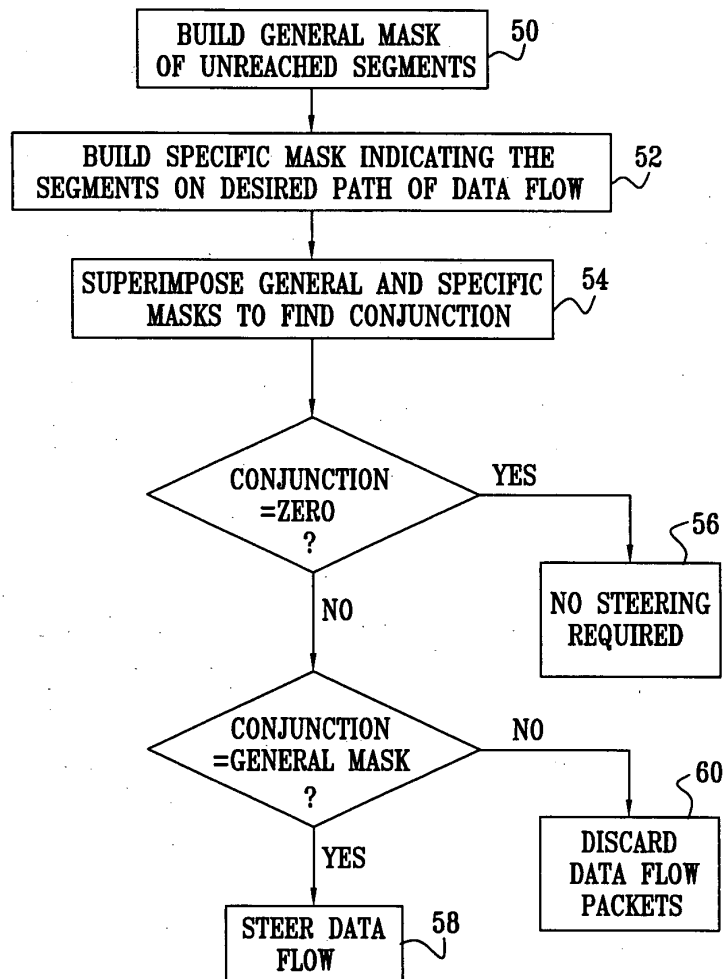
FIG. 4





REPLACEMENT SHEET

FIG. 4



Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	30	((mask near3 bit) with (fault or failure or disrupt\$5 or interrupt\$5 or broken or protection)) same (network)	US-PGPUB; USPAT; USOCR; EPO; DERWENT	OR	ON	2005/11/17 15:37
L2	15	((mask near3 bit) with (fault or failure or disrupt\$5 or interrupt\$5 or broken or protection))[bsum] and (network)[bsum]	US-PGPUB; USPAT; USOCR; EPO; DERWENT	OR	ON	2005/11/17 15:40
L3	9	((mask near3 bit) with (fault or failure or disrupt\$5 or interrupt\$5 or broken or protection))[bsum] and (path)[bsum]	US-PGPUB; USPAT; USOCR; EPO; DERWENT	OR	ON	2005/11/17 15:40
L4	23	((mask near3 bit) with (fault or failure or disrupt\$5 or interrupt\$5 or broken or protection))[bsum] and (channel)[bsum]	US-PGPUB; USPAT; USOCR; EPO; DERWENT	OR	ON	2005/11/17 15:41
L5	12	((mask near3 bit) with (fault or failure or disrupt\$5 or interrupt\$5 or broken or protection))[bsum] and (link)[bsum]	US-PGPUB; USPAT; USOCR; EPO; DERWENT	OR	ON	2005/11/17 16:32
L6	3542	(370/216,217,218,221,222,223,224,241,250,408,424,527,528,529).CCLS.	US-PGPUB; USPAT	OR	OFF	2005/11/17 16:34

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	789	(370/225,227,228).CCLS.	US-PGPUB; USPAT	OR	OFF	2005/11/18 10:08

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	0	((((mask near3 bit) with (fault or failure or disrupt\$5 or interrupt\$5 or broken or protection)) same (superimpos\$5 or insert\$5))[clm]	US-PGPUB	OR	ON	2005/11/18 10:47



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NOTICE OF ALLOWANCE AND FEE(S) DUE

23117 7590 11/28/2005
NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

EXAMINER

YAO, KWANG BIN

ART UNIT

PAPER NUMBER

2667

DATE MAILED: 11/28/2005

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,723	08/30/2001	Yossi Barsheshet	233-101	7150

TITLE OF INVENTION: FAST PROTECTION IN RING TOPOLOGIES

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1400	\$300	\$1700	02/28/2006

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS** FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail**

**Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
(571) 273-2885**

or **Fax**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

23117 7590 11/28/2005

**NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203**

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,723	08/30/2001	Yossi Barsheshet	233-101	7150

TITLE OF INVENTION: FAST PROTECTION IN RING TOPOLOGIES

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1400	\$300	\$1700	02/28/2006

EXAMINER	ART UNIT	CLASS-SUBCLASS
YAO, KWANG BIN	2667	370-225000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1	_____
2	_____
3	_____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are enclosed:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s):

- ☐ A check in the amount of the fee(s) is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above. NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,723	08/30/2001	Yossi Barsheshet	233-101	7150
23117	7590	11/28/2005	EXAMINER	
NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			YAO, KWANG BIN	
			ART UNIT	PAPER NUMBER
			2667	
DATE MAILED: 11/28/2005				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 886 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 886 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571) 272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

Notice of Allowability	Application No.	Applicant(s)	
	09/941,723	BARSHESHET, YOSSI	
	Examiner	Art Unit	
	Kwang B. Yao	2667	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed 10/28/05.
2. ☒ The allowed claim(s) is/are 1,4-9,12-16, renumbered 1-12, respectively.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

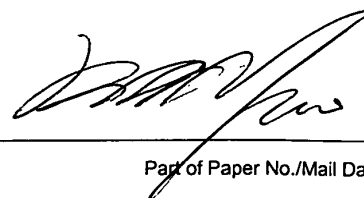
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

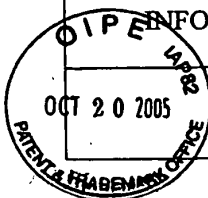
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. ☐ Notice of References Cited (PTO-892) | 5. ☐ Notice of Informal Patent Application (PTO-152) |
| 2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>10/20/05</u> | 7. ☐ Examiner's Amendment/Comment |
| 4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. ☐ Examiner's Statement of Reasons for Allowance |
| | 9. ☐ Other _____. |



FORM PTO-1449 (Colb)	ATTY DOCKET NO. 233-101	SERIAL NUMBER 09/941,723
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANTS' INFORMATION STATEMENT	APPLICANT Yossi BARSHESHET	EXAMINER (N/A)
	FILING DATE August 30, 2001	GROUP ART UNIT 2661



U.S. PATENT DOCUMENTS

Examiner's Initials		DOCUMENT NO.	DATE	NAME	CLASS	SUB	FILING DATE
RB1	AA	5,321,393	06-1994	Carlton, et al.			
	AB	5,638,358	06-1997	Hagi			
	AC	5,596,569	01-1997	Madonna, et al.			
	AD	6,879,559	04-2005	Blackmon, et al.			
	AE	6,359,858	03-2002	Smith, et al.			
	AF	2002/0179720	12-2002	Liva, et al.			
	AG	2003/0196135	10-2003	Gottlieb			
	AH	6,724,880	04-2004	Lynch			
✓	AI	6,636,478	10-2003	Sensel, et al.			

FOREIGN PATENT DOCUMENTS

		DOCUMENT NO.	DATE	COUNTRY	CLASS	SUB	TRANS- LATION
	AJ						

OTHER ART (Including Author, Bills, Pertinent Pages, Etc.)

RB1	AK	Office Action dated 06/27/2005 from USSN 10/211,065
	AL	
	AM	
EXAMINER: <i>[Signature]</i>		DATE CONSIDERED: 11/17/05
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.		



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Bib Data Sheet

CONFIRMATION NO. 7150

SERIAL NUMBER 09/941,723	FILING DATE 08/30/2001 RULE	CLASS 370	GROUP ART UNIT 2667	ATTORNEY DOCKET NO. 233-101
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APPLICANTS

Yossi Barsheshet, Givatayim, ISRAEL;

** CONTINUING DATA ***** *None KB*

** FOREIGN APPLICATIONS ***** *None KB*

IF REQUIRED, FOREIGN FILING LICENSE GRANTED
** 09/29/2001

Foreign Priority claimed ☐ yes ☒ no	STATE OR COUNTRY ISRAEL	SHEETS DRAWING 3	TOTAL CLAIMS 16	INDEPENDENT CLAIMS 2
35 USC 119 (a-d) conditions met ☐ yes ☒ no ☐ Met after Allowance				
Verified and Acknowledged Examiner's Signature <i>[Signature]</i> Initials				

ADDRESS

23117
NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA
22203

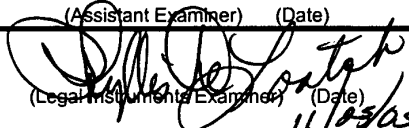
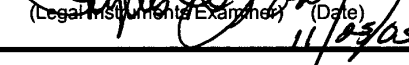
TITLE

Fast protection in ring topologies

FILING FEE RECEIVED 710	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit
-----------------------------------	---	---

Issue Classification 	Application/Control No.	Applicant(s)/Patent under Reexamination	
	09/941,723	BARSHESHET, YOSSI	
	Examiner	Art Unit	
	Kwang B. Yao	2667	

ISSUE CLASSIFICATION									
ORIGINAL				CROSS REFERENCE(S)					
CLASS	SUBCLASS			CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
370	225			370	529				
INTERNATIONAL CLASSIFICATION									
H	0	4	L						
				12	126				
				/					
				/					
				/					
				/					

 (Assistant Examiner) (Date)		KWANG BIN YAO PRIMARY EXAMINER <i>Kwang B. Yao</i> 11/18/05 (Primary Examiner) (Date)		Total Claims Allowed: 12	
 (Legal Instruments Examiner) (Date)				O.G. Print Claim(s) 1	O.G. Print Fig. 4

☐ Claims renumbered in the same order as presented by applicant										☐ CPA		☐ T.D.		☐ R.1.47	
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1		31		61		91		121		151		181		
	2		32		62		92		122		152		182		
	3		33		63		93		123		153		183		
2	4		34		64		94		124		154		184		
3	5		35		65		95		125		155		185		
4	6		36		66		96		126		156		186		
5	7		37		67		97		127		157		187		
6	8		38		68		98		128		158		188		
7	9		39		69		99		129		159		189		
	10		40		70		100		130		160		190		
	11		41		71		101		131		161		191		
8	12		42		72		102		132		162		192		
9	13		43		73		103		133		163		193		
10	14		44		74		104		134		164		194		
11	15		45		75		105		135		165		195		
12	16		46		76		106		136		166		196		
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	18		48		78		108		138		168		198		
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Kwang B. Yao

2667

[illegible]

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner
PGPUB TEXT SEARCH See Interference Search Printout		11/18/05	KBj

[illegible]

Index of Claims 	Application/Control No.		Applicant(s)/Patent under Reexamination	
	09/941,723		BARSHESHET, YOSSEI	
	Examiner		Art Unit	
	Kwang B. Yao		2667	

✓	Rejected
=	Allowed

—	(Through numeral) Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claim		Date			
Final	Original				
1	1	11/12/05			
	2				
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Yossi BARSHESHET

Serial No.: 09/941,723

Filed: August 30, 2001

For: FAST PROTECTION IN RING
TOPOLOGIES



) Art Unit: 2661

) Examiner: (N/A)

) Washington, D.C.

) November 29, 2005

) Docket No.: 233-101
December 16, 2005

INFORMATION DISCLOSURE STATEMENT [IDS]

Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

This Information Disclosure Statement is submitted in accordance with 37 C.F.R. 1.97, 1.98, and it is requested that the information set forth in this statement and in the listed documents be considered during the pendency of the above-identified application, and any other application relying on the filing date of the above-identified application or cross-referencing it as a related application.

[X] 1. This IDS should be considered, in accordance with 37 C.F.R. 1.97, as it is filed:

(Check one of the boxes A-D)

☐ A. within three months of the filing date of the above-identified national application or within three months of the entry into the national stage of the above-identified international application.

☐ B. before the mailing date of a first office action on the merits.

[X] C. after (A) and (B) above, but before final rejection or allowance, and Applicants have made the necessary certification (box "i" below) or paid the necessary fee (box "ii" below).

(check one of the boxes "i" and "ii" below:)

[X] i. Counsel certifies that, upon information and belief, each item of information listed herein was either (a) cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this IDS; or (b) was not cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of undersigned after making reasonable inquiry, was not known to any individual designated in 1.56(c) more than three months prior to the filing of this IDS.

☐ ii. A check for the fee set forth in 1.17(p), presently believed to be \$240, is enclosed (check no. _____).

☐ D. after (A), (B) and (C) above, but before payment of the issue fee: Applicant petitions under 37 C.F.R. 1.97(d) for the consideration of this IDS. A check for the fee set forth in §1.17(i), presently believed to be \$130 is enclosed (check no. _____). Counsel certifies that, upon information and belief, each item of information listed herein was either (i) cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the IDS; or (ii) was not cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the undersigned after making reasonable inquiry, was not known to any individual designated in 1.56(c) more than three months prior to the filing of this IDS.

☐ 2. In accordance with 37 C.F.R. 1.98, this IDS includes a list (e.g., form PTO-1449) of all patents, publications, or other information submitted for consideration by the office, either incorporated into this IDS or as an attachment hereto. A copy of each document listed is attached, except as explained below.

(check boxes A and/or B and fill in blanks, if appropriate.)

☐ A. Document(s) _____ is (are) deemed substantially cumulative to document(s) _____, and, in accordance with 1.98(c), only a copy of each of the latter documents is enclosed.

☐ B. Certain documents were previously cited by or submitted to the Office in the following prior application(s), which are relied upon under 35 U.S.C. 120:

[insert serial numbers and filing dates of prior applications]

Applicant identifies these documents by attaching hereto copies of the forms PTO-892 and PTO-1449 from the files of the prior application(s) or a fresh PTO-1449 listing these documents, and request that they be considered and made of record in accordance with 1.98(d). Per 37 CFR 1.98(d), copies of these documents need not be filed in this application.

☐ 3. Document(s) _____ is(are) not in the English language. In accordance with 1.98(c), Applicant states:

☐ An English translation of each document (or of the pertinent portions thereof), or a copy of each corresponding English-language patent or application, or English-language abstract (or claim) is enclosed.

☐ A concise explanation of the relevance of document(s) _____ is found in the attached search report (see reply to Comment 68 in the preamble to the final rules; 1135 OG 13 at 20).

☐ A concise explanation of the relevance of document(s) _____ is set forth as follows:
[Insert concise explanation of relevance]

☐ A concise explanation of the relevance of document(s) _____ can be found on page(s) _____ of the specification.

☐ A concise explanation of document(s) _____ can be found on the attached sheet.

4. No explanation of relevance is necessary for documents in the English language (see reply to Comments 67 and 68 in the preamble to the final rules; 1135 OG 13 at 20).

[X] 5. Other information being provided for the examiner's consideration follows:

An Official Action dated October 21, 2005, which issued during the prosecution of Applicant's U.S. Patent Application Number 10/337,382.

6. In accordance with 37 C.F.R. 1.97(g) and (h), the filing of this IDS should not be construed as a representation that a search has been made or that information cited is, or is considered to be, material to patentability as defined in §1.56 (b), or that any cited document listed or attached is (or constitutes) prior art. Unless otherwise indicated, the date of publication indicated for an item is taken from the face of the item and Applicant reserves the right to prove that the date of publication is in fact different.

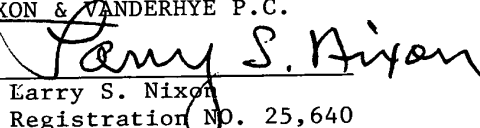
CROSS REFERENCE UNDER 37 C.F.R. §1.78 TO RELATED APPLICATIONS

Pursuant to 37 C.F.R. § 1.78, Applicant notes that the above-identified patent application may be related to the following U.S. Patent Applications:

Respectfully submitted,

NIXON & VANDERHYE P.C.

By:


Larry S. Nixon

Registration NO. 25,640

11th Floor
901 North Glebe Road
Arlington, Virginia 22203-1808
Telephone: 703-816-4000
Facsimile: 703-816-4100



Date: November 29, 2005

Page 1 of 1

FORM PTO-1449 (Colb)	APPlicant DOCKET NO. 233-101	SERIAL NUMBER 09/941,723
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANTS' INFORMATION STATEMENT	APPLICANT Yossi BARSHESHET	EXAMINER (N/A)
	FILING DATE August 30, 2001	GROUP ART UNIT 2661

U.S. PATENT DOCUMENTS

Examiner's Initials		DOCUMENT NO.	DATE	NAME	CLASS	SUB	FILING DATE
	AA	2003/0147344	08-2003	Stewart, et al.			
	AB	2003/0088698	05-2003	Singh, et al.			
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						

FOREIGN PATENT DOCUMENTS

		DOCUMENT NO.	DATE	COUNTRY	CLASS	SUB	TRANS- LATION
	AJ						

OTHER ART (Including Author, Bills, Pertinent Pages, Etc.)

	AK	"Star Network" "Star Topology" "Mesh Network", Microsoft Computer Dictionary (Fifth Edition), 2002. Microsoft Press.
	AL	Null, Linda, The Essentials of Computer Organization and Architecture 2003, Jones and Barlett Computer Science, page 536.
	AM	
EXAMINER:		DATE CONSIDERED:
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.		

PART B - FEE(S) TRANSMITTAL

* Complete and send this form, together with applicable fee(s), to: Mail

Mail Stop ISSUE FEE
 Commissioner for Patents
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 or Fax (571) 273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence, including patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

23117 7590 11/28/2005

NIXON & VANDERHYE, PC
 901 NORTH GLEBE ROAD, 11TH FLOOR
 ARLINGTON, VA 22203

03/01/2006 HBEYENE2 00000998 09941723

01 FC:1504 300.00 OP
 02 FC:2501 700.00 OP
 03 FC:8001 12.00 OP

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,723	08/30/2001	Yossi Barsheshet	233-101	7150

TITLE OF INVENTION: FAST PROTECTION IN RING TOPOLOGIES

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	no <i>yes</i>	~~\$1400~~ 700.00	\$300	~~\$1700~~ 1000.00	02/28/2006
EXAMINER	ART UNIT	CLASS-SUBCLASS			
YAO, KWANG BIN	2667	370-225000			

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 NIXON & VANDERHYE P.C.

2

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3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

Corrigent Systems Ltd.

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Tel Aviv, Israel

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are enclosed:

- ☒ Issue Fee
☒ Publication Fee (No small entity discount permitted)
☒ Advance Order - # of Copies 4

4b. Payment of Fee(s):

- ☒ A check in the amount of the fee(s) is enclosed. \$1012.00
☐ Payment by credit card. Form PTO-2038 is attached.
☒ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number 14-1140 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above. NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature

Larry S. Nixon

Date February 28, 2006

Typed or printed name Larry S. Nixon

Registration No. 25,640

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
 United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 www.uspto.gov

BIBDATASHEET

Bib Data Sheet

CONFIRMATION NO. 7150

SERIAL NUMBER 09/941,723	FILING OR 371(c) DATE 08/30/2001 RULE	CLASS 370	GROUP ART UNIT 2667	ATTORNEY DOCKET NO. 233-101	
APPLICANTS Yossi Barsheshet, Givatayim, ISRAEL; ** CONTINUING DATA ***** ** FOREIGN APPLICATIONS ***** IF REQUIRED, FOREIGN FILING LICENSE GRANTED** SMALL ENTITY ** ** 09/29/2001					
Foreign Priority claimed ☐ yes ☐ no 35 USC 119 (a-d) conditions ☐ yes ☐ no ☐ Met after met Allowance Verified and Acknowledged _____ Examiner's Signature Initials		STATE OR COUNTRY ISRAEL	SHEETS DRAWING 3	TOTAL CLAIMS 16	INDEPENDENT CLAIMS 2
ADDRESS 23117					
TITLE FAST PROTECTION IN RING TOPOLOGIES					
FILING FEE RECEIVED 1010	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit		



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,723	08/30/2001	Yossi Barsheshet	233-101	7150
23117	7590	05/05/2006	EXAMINER	
NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			QURESHI, AFSAR M	
			ART UNIT	PAPER NUMBER
			2616	

DATE MAILED: 05/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Supplemental Notice of Allowability	Application No.	Applicant(s)	
	09/941,723	BARSHESHET, YOSSI	
	Examiner	Art Unit	
	Afsar M. Qureshi	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Request for consideration of IDS, rcvd. after Allowance.
2. ☒ The allowed claim(s) is/are 1,4-9,12-16 (renumbered as 1-12).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. ☐ Notice of References Cited (PTO-892) 2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>12/16/2005</u> 4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. ☐ Notice of Informal Patent Application (PTO-152) 6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____. 7. ☐ Examiner's Amendment/Comment 8. ☐ Examiner's Statement of Reasons for Allowance 9. ☒ Other <u>subject to fee.</u> |
|---|--|


AFSAR QURESHI
PRIMARY EXAMINER
4/26/06



Date: November 29, 2005

Page 1 of 1

FORM PTO-1449 (Colb)	APPENDIX DOCKET NO. 233-101	SERIAL NUMBER 09/941,723
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANTS' INFORMATION STATEMENT	APPLICANT Yossi BARSHESHET	EXAMINER (N/A)
	FILING DATE August 30, 2001	GROUP ART UNIT 2661

U.S. PATENT DOCUMENTS

Examiner's Initials		DOCUMENT NO.	DATE	NAME	CLASS	SUB	FILING DATE
AR	AA	2003/0147344	08-2003	Stewart, et al. ✓	370/216		2/7/2002
AR	AB	2003/0088698	05-2003	Singh, et al.	✓ 709/239		8/16/2002
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						

FOREIGN PATENT DOCUMENTS

		DOCUMENT NO.	DATE	COUNTRY	CLASS	SUB	TRANS- LATION
	AJ						

OTHER ART (Including Author, Bills, Pertinent Pages, Etc.)

AR	AK	"Star Network" "Star Topology" "Mesh Network", Microsoft Computer Dictionary (Fifth Edition), 2002. Microsoft Press. ✓
AR	AL	Null, Linda, The Essentials of Computer Organization and Architecture 2003, Jones and Barlett Computer Science, page 536. ~
	AM	
EXAMINER: Afsar Qureshi		DATE CONSIDERED: 4/26/06
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.		

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

**COMBINED REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF
ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS AND STATEMENT
UNDER 37 CFR 3.73(B)**

To: Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

CORRIGENT SYSTEMS LTD., a corporation organized under the laws of Israel, states that it is:

1. The assignee of the entire, right, title and interest in each of the patents and patent applications identified on the attached Schedule A by virtue of either an assignment from the inventor(s) of each of the identified patents and patent applications to the current assignee as identified on the attached Schedule A, or a chain of title from the inventor(s) of the patent application/patents to the current assignee as identified on the attached Schedule A, said assignments recorded with the United States Patent and Trademark Office at the reel and frame identified on the attached Schedule A or for which a copy therefore is attached; and
2. As required by 37 CFR 3.73(b)(1)(i), for each of the patents and patent applications listed on the attached Schedule A the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

FURTHER, Corrigent Systems Ltd. states

3. That it hereby revokes all previous Powers of Attorney in the patents and patent applications identified on the attached Schedule A, and hereby appoints Practitioners associated with Customer Number 57449 as its attorneys and agents with respect to the patents and patent applications identified in the attached Schedule A, and to transact all business in the United States Patent and Trademark Office connected therewith; and
4. Requests that this Office please change the correspondence address for the patents and patent applications identified in the attached Schedule A to the address associated with Customer Number 57449.

The undersigned has reviewed all documents in the chain of title for the patents and patent applications identified in the attached Schedule A, and to the best of the undersigned's knowledge and belief, right, title and interest to the applications identified is in the assignee identified above. The undersigned is empowered to act on behalf of the assignee.

CORRIGENT SYSTEMS LTD.

Signature: *Raf. Ram* Date: 24-Jan-2011

Printed Name: RAFI RAM

Title: PATENT ASSIGNEE

SCHEDULE A

Matter No.	Patent name	Application Nr.	Recorded
40552-6103	Multiple Data Links Aggregation With Nested Packet Interruption	09/756,553	Assignment from Inventors to Corrigent Systems Ltd. recorded 7/15/2003 at 014274/0423
40552-6100	Dynamic Fragmentation in Low Rate Channels	09/756,554	Assignment from Inventors to Orekit Communications, Ltd. recorded 3/15/2001 at 011593/0881; Assignment from Orekit Communications Ltd. to Corrigent Systems Ltd. recorded 4/26/2002 at 012866/0880
40552-6102	Flows Allocation in IP Ring Topologies	09/756,946	Assignment from Inventors to Orekit Communications, Ltd. recorded 1/9/2001 at 011435/0015; Assignment from Orekit Communications Ltd. to Corrigent Systems Ltd. recorded 4/26/2002 at 012866/0880
40552-6101	Resource Reservation in a Ring Network	09/794,898	Assignment from Inventors to Orekit Communications, Ltd. recorded 2/26/2001 at 011580/0893; Assignment from Orekit Communications Ltd. to Corrigent Systems Ltd. recorded 4/26/2002 at 012866/0880
40552-6104	One Sided RPR	09/876,414	Assignment from Inventors to Corrigent Systems Ltd. recorded 6/7/2001 at 011888/0028
40552-6107	Interconnect And Gateway Protection In Bidirectional Rings Networks	09/910,790	Assignment from Inventors to Corrigent Systems Ltd. recorded 7/24/2001 at 012017/0934
40552-6108	Fast Protection in Ring Topologies	09/941,723	Assignment from Inventors to Corrigent Systems Ltd. recorded 8/30/2001 at 012130/0608
40552-6109	Latency evaluation in a ring network	09/947,183	Assignment from Inventors to Corrigent Systems Ltd. recorded 11/29/2001 at 012336/0419
40552-6106	Selective protection for ring topologies	09/969,839	Assignment from Inventors to Corrigent Systems Ltd. recorded 10/3/2001 at 012229/0832
40552-6110	Sonet circuit emulation with VT compression	09/978,342	Assignment from Inventors to Corrigent Systems Ltd. recorded 10/17/2001 at 012270-0165
40552-6111	Configuration of network interfaces in a bidirectional ring network	09/978,642	Assignment from Inventors to Corrigent Systems Ltd. recorded 10/16/2001 at 012274/0607
40552-6117	Generic Framework for Embedded Software Development	10/005,030	Assignment from Inventors to Corrigent Systems Ltd. recorded 12/3/2001 at 012358/0508
40552-6118	Fast failure protection using redundant network edge ports	10/036,518	Assignment from Inventors to Corrigent Systems Ltd. recorded 1/7/2002 at 012442/0914
40552-6114	Avoiding Overlapping Segments in ring based TLS	10/054,845	Assignment from Inventors to Corrigent Systems Ltd. recorded 1/25/2002 at 012523/0691
40552-6115	Spanning Tree Protocol For Transparent LAN Services	10/057,332	Assignment from Inventors to Corrigent Systems Ltd. recorded 1/25/2002 at 012535/0510
40552-6112	Protecting the Filtering Data Base in Virtual B rldges	10/061,721	Assignment from Inventors to Corrigent Systems Ltd. recorded 2/1/2002 at 012568/0664
40552-6113	Protecting the filtering database in virtual bridges	10/061,721	Assignment from Inventors to Corrigent Systems Ltd. recorded 2/1/2002 at 012568/0664

40552-6121	Performance monitoring of multiple channels in an automatic protection switched network	10/082,771	Assignment from Inventors to Corrigent Systems Ltd. recorded 2/25/2002 at 012645/0029
40552-6120	Differentiated services with multiple lagging levels	10/128,454	Assignment from Inventors to Corrigent Systems Ltd. recorded 4/24/2002 at 012833/0049
40552-6116	Performance Monitoring of high speed communications network	10/128,459	Assignment from Inventors to Corrigent Systems Ltd. recorded 4/24/2002 at 012832/0932
40552-6122	Hidden Failure Detection	10/156,851	Assignment from Inventors to Corrigent Systems Ltd. recorded 5/30/2002 at 012954/0104
40552-6123	Equipment Protection Using a Partial Star Architecture	10/211,065	Assignment from Inventors to Corrigent Systems Ltd. recorded 8/2/2002 at 013170/0387
40552-6119	Traffic Engineerings in Bi-directional Ring Networks	10/211,066	Assignment from Inventors to Corrigent Systems Ltd. recorded 8/2/2002 at 013172/0613
40552-6125	VPLS using a multicast protocol	10/226,525	Assignment from Inventors to Corrigent Systems Ltd. recorded 8/23/2002 at 013242/0050
40552-6126	Hierarchical VPLS protection	10/337,382	Assignment from Inventors to Corrigent Systems Ltd. recorded 1/7/2003 at 013638/0975
40552-6124	MPLS signaling over RPR	10/369,953	Assignment from Inventors to Corrigent Systems Ltd. recorded 2/20/2003 at 013807/0903
40552-6130	Ring network with variable rate	10/387,657	Assignment from Inventors to Corrigent Systems Ltd. recorded 3/12/2003 at 013884/0505
40552-6128	Efficient Transport of TDM Services	10/396,008	Assignment from Inventors to Corrigent Systems Ltd. recorded 3/24/2003 at 013915/0077
40552-6131	Bandwidth Allocations for Link Aggregation	10/436,516	Assignment from Inventors to Corrigent Systems Ltd. recorded 5/13/2003 at 014072/0524
40552-6132	Multiprotocol media conversion	10/461,807	Assignment from Inventors to Corrigent Systems Ltd. recorded 6/13/2003 at 014190/0326
40552-6133	Layer 3 network routing with RPR Layer 2 visibility	10/812,321	Assignment from Inventors to Corrigent Systems Ltd. recorded 3/29/2004 at 015161/0655
40552-6134	Weight calculation for traffic management	10/861,272	Assignment from Inventors to Corrigent Systems Ltd. recorded 6/3/2004 at 015444/0178
40552-6135	Multipoint to multipoint communication over ring topologies	10/933,572	Assignment from Inventors to Corrigent Systems Ltd. recorded 11/17/2004 at 015389/0644
40552-6137	Synchronized Ring Software Download (SRDL)	10/951,575	Assignment from Inventors to Corrigent Systems Ltd. recorded 9/27/2004 at 015844/0428
40552-6136	VPLS over ring networks	10/993,882	Assignment from Inventors to Corrigent Systems Ltd. recorded 11/19/2004 at 016019/0425
40552-6138	Link aggregation With Tunneling	11/123,801	Assignment from Inventors to Corrigent Systems Ltd. recorded 5/6/2005 at 016545/0876
40552-6140	Two Way Link Aggregation	11/279,045	Assignment from Inventors to Corrigent Systems Ltd. recorded 4/7/2006 at 017441/0881

40552-6142	Resource Sharing Among Network Tunnels	11/305,486	Assignment from Inventors to Corrigent Systems Ltd. recorded 1/11/2006 at 017001/0167
40552-6144	VPLS Failure Protection In Ring Networks	11/335,770	Assignment from Inventors to Corrigent Systems Ltd. recorded 1/18/2006 at 017502/0055
40552-6143	Route Selection with Bandwidth Sharing Optimization Over Rings	11/339,148	Assignment from Inventors to Corrigent Systems Ltd. recorded 1/24/2006 at 017504/0802
40552-6145	High capacity ring communication network	11/367,231	Assignment from Inventors to Corrigent Systems Ltd. recorded 3/2/2006 at 017651/0359; corrective assignment to add the additional name of a conveying party recorded 6/27/2006 at 017868/0544; corrective assignment to correct the 5th assignor's name previously recorded, recorded 7/31/2006 at 018035/0163
40552-6146	MAC address learning in a distributed bridge	11/419,444	Assignment from Inventors to Corrigent Systems Ltd. recorded 7/10/2006 at 017904/0311
40552-6139	Transparent Transport of Fibre Channel Traffic Over Packet-Switched Networks	11/479,595	Assignment from Inventors to Corrigent Systems Ltd. recorded 6/29/2006 at 018034/0195
40552-6149	Connectivity Fault Management (CFM) In Networks With Link Aggregation Group Connections	11/483,650	Assignment from Inventors to Corrigent Systems Ltd. recorded 7/11/2006 at 018103/0490
40552-6150	Point-to-multipoint functionality in a bridged network	11/508,599	Assignment from Inventors to Corrigent Systems Ltd. recorded 8/22/2006 at 018222/0834
40552-6151	Fault-tolerant medium access control (MAC) address assignment in network elements	11/534,536	Assignment from Inventors to Corrigent Systems Ltd. recorded 9/22/2006 at 018292/0823
40552-6154	Hash-based multi-homing	11/559,037	Assignment from Inventors to Corrigent Systems Ltd. recorded 12/27/2007 at 020292/0128
40552-6152	Forwarding Multicast Traffic Over link Aggregation Ports	11/644,773	Assignment from Inventors to Corrigent Systems Ltd. recorded 12/21/2006 at 018743/0396
40552-6155	Frame Concatenation with Drop Precedence Assignment	11/704,615	Assignment from Inventors to Corrigent Systems Ltd. recorded 2/8/2007 at 018986/0082
40552-6153	MAC ADDRESS SCALABILITY IN INTERCONNECTED RINGS	11/764,764	Assignment from Inventors to Corrigent Systems Ltd. recorded 6/18/2007 at 019459/0806
40552-6156	Prevention Of Frame Duplication In Interconnected Ring Network	12/044,158	Assignment from Inventors to Corrigent Systems Ltd. recorded 3/7/2008 at 020615/0339
40552-6141	VPLS remote failure indicator	12/093,824	Assignment from Inventors to Corrigent Systems Ltd. recorded 7/22/2008 at 021269/0633
40552-6158	A Device Method and System for providing a media stream	12/143,944	Assignment from Inventors to Corrigent Systems Ltd. recorded 2/2/2009 at 022186/0537

40552-6159	Efficient Full Mesh Load Testing of Packet based Communication Systems	12/261,072	Assignment from Inventors to Corrigent Systems Ltd. recorded 10/30/2008 at 021759/0438
40552-6162	Ring Network Aggregate Rates	12/348,361	Assignment from Inventors to Corrigent Systems Ltd. recorded 1/5/2009 at 022053/0650
40552-6160	High-Speed Processing of Multicast Content Requests	12/369,011	Assignment from Inventors to Corrigent Systems Ltd. recorded 2/11/2009 at 022238/0791
40552-6129	Efficient transport of TDM services over packet networks	12/404,444	Assignment from Inventors to Corrigent Systems Ltd. recorded 3/17/2009 at 022405/0541
40552-6161	Method for unicast streaming of multicast content	12/628,247	Assignment from Inventors to Corrigent Systems Ltd. recorded 12/1/2009 at 023582/0533

Electronic Acknowledgement Receipt	
EFS ID:	9288458
Application Number:	09941723
International Application Number:	
Confirmation Number:	7150
Title of Invention:	FAST PROTECTION IN RING TOPOLOGIES
First Named Inventor/Applicant Name:	Yossi Barsheshet
Customer Number:	23117
Filer:	Peter Anthony Nieves/Elaine Cote
Filer Authorized By:	Peter Anthony Nieves
Attorney Docket Number:	233-101
Receipt Date:	24-JAN-2011
Filing Date:	30-AUG-2001
Time Stamp:	12:34:22
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	executedpoaTOFILE.pdf	347366 df9ee8608d5bb0d5e838df4303fbb4d7577dc3	no	6

Warnings:

Information:

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/941,723	08/30/2001	Yossi Barsheshet	233-101

23117
NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

CONFIRMATION NO. 7150
POWER OF ATTORNEY NOTICE



Date Mailed: 01/28/2011

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 01/24/2011.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/hgray/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/941,723	08/30/2001	Yossi Barsheshet	233-101

57449
SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

CONFIRMATION NO. 7150
POA ACCEPTANCE LETTER



Date Mailed: 01/28/2011

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 01/24/2011.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/hgray/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(b).

I hereby appoint:



Practitioners associated with the Customer Number:

131926

OR



Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(b) to:



The address associated with Customer Number:

131926

OR

Firm or
Individual Name

Address

City

State

Zip

Country

Telephone

Email

Assignee Name and Address:

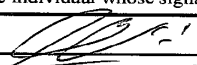
Orckit IP, LLC

874 Walker Road, Suite C, Dover, Delaware, USA

A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	June 5, 2016
Name	Yehuda Binder	Telephone	+972-54-4444577
Title	CEO and Owner of Orckit IP LLC		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Yossi Barsheshet

Application No./Patent No.: 09/941,723

Filed/Issue Date: 08-30-2001

Titled: FAST PROTECTION IN RING TOPOLOGIES

ORCKIT IP, LLC

, a Limited Liability Company

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. ☒ the assignee of the entire right, title, and interest in;
2. ☐ an assignee of less than the entire right, title, and interest in
(The extent (by percentage) of its ownership interest is _____ %); or
3. ☐ the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

the patent application/patent identified above, by virtue of either:

- A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy therefore is attached.

OR

- B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Yossi Barsheshet

To: CORRIGENT SYSTEMS LTD

The document was recorded in the United States Patent and Trademark Office at

Reel 012130, Frame 0608, or for which a copy thereof is attached.

2. From: CORRIGENT SYSTEMS LTD

To: ORCKIT-CORRIGENT LTD

The document was recorded in the United States Patent and Trademark Office at

Reel 032579, Frame 0201, or for which a copy thereof is attached.

3. From: ORCKIT-CORRIGENT LTD

To: ORCKIT IP, LLC

The document was recorded in the United States Patent and Trademark Office at

Reel 038529, Frame 0087, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☐ As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Yehuda Binder/

Signature

Yehuda Binder

Printed or Typed Name



ORCKIT IP, LLC
DE LLC # 5886551
831 Beacon St. # 307
Newton, MA 02459-1840

June 19, 2016

Date

CEO and Owner of Orckit IP LLC

Title

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
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4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt	
EFS ID:	26106887
Application Number:	09941723
International Application Number:	
Confirmation Number:	7150
Title of Invention:	FAST PROTECTION IN RING TOPOLOGIES
First Named Inventor/Applicant Name:	Yossi Barsheshet
Customer Number:	57449
Filer:	Yehuda Binder
Filer Authorized By:	
Attorney Docket Number:	233-101
Receipt Date:	19-JUN-2016
Filing Date:	30-AUG-2001
Time Stamp:	13:54:56
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	Signed-POA.pdf	137789 03199d6fc2535ea8201418fc7d2606b12fcefb97	no	2

Warnings:

Information:

2	Assignee showing of ownership per 37 CFR 3.73	SIGNED-sb0096-48.pdf	140641 fb7b6256cddb67b184be277f8797bbd24f5c432c	no	2
Warnings:					
Information:					
Total Files Size (in bytes):				278430	
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/941,723	08/30/2001	Yossi Barsheshet	

131926
May Patents Ltd. c/o Dorit Shem-Tov
P.O.B 7230
Ramat-Gan, 5217102
ISRAEL

CONFIRMATION NO. 7150
POA ACCEPTANCE LETTER



Date Mailed: 06/24/2016

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/19/2016.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/rmtturner myles/



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
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57449
SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

CONFIRMATION NO. 7150
POWER OF ATTORNEY NOTICE



Date Mailed: 06/24/2016

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/19/2016.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

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