

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC.,
Petitioner

v.

ORCKIT IP, LLC.
Patent Owner

IPR2023-00714
U.S. Patent No. 6,680,904

PETITIONER'S REPLY

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PETITIONER'S EXHIBIT LIST

1001	U.S. Patent No. 6,680,904 to Cohn et al. ("904 patent)
1002	Prosecution History of U.S. Patent No. 6,680,904
1003	Declaration of Dr. Henry Houh
1004	<i>Curriculum Vitae</i> of Dr. Houh
1005	International Patent Publication No. WO 91/14324 ("Vink")
1006	U.S. Patent No. 5,790,541 ("Patrick")
1007	U.S. Patent No. 6,631,136 ("Chowdhury")
1008	U.S. Patent No. 5,425,026 ("Mori")
1009	ATM Volume I: Foundation for Broadband Networks
1010	First Amended Docket Control Order, <i>Orckit Corporation v. Cisco Systems, Inc.</i> , Civil Action No. 2:22-cv-276-JRG-RSP (E.D. Tex, January 15, 2023)
1011	Scheduling Order in <i>Orckit Corp. v. Cisco Systems, Inc.</i> , Case No. 2:22-cv-00276 (E.D. Tex. October 18, 2022)
1012	Annotated Figure 5 of U.S. 6,680,904
1013	Transcript of April 18, 2024, Deposition of Miguel Gomez
1014	U.S. Patent No. 6,389,462 ("Cohen")
1015	U.S. Patent No. 5,802,316 ("Ito")
1016	U.S. Patent No. 6,470,008 ("Khuc")
1017	U.S. Patent No. 6,530,025 ("Nakagawa")

*** Unless indicated otherwise, all annotations in figures and emphases in quoted material have been added throughout the Petition.

*** Counsel Objections from reproductions of deposition transcript have been removed.

I. CLAIM CONSTRUCTION

Patent Owner (“PO”) proposes construing “subscriber lines” as “communication lines to users of subscription-based network services,” which allegedly “reflects the term’s plain and ordinary meaning.”¹ PO’s Response (“POR”), 20.

Here, no construction is needed because, as explained in Section II.B, PO relies on the proposed construction to argue that Vink alone does not teach this limitation (POR, 45). However, the Petition relies on Patrick/AAPA as teaching “subscriber lines.” Petition, 33. PO does not dispute this. Indeed, PO’s only dispute is that “a POSA would not be motivated to combine Vink with either Patrick or AAPA.” POR, 46. No claim construction is required to “resolve the controversy.” *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019).

¹PO’s proposed construction may be narrower than the term’s plain and ordinary meaning.

II. CLAIMS 1, 4, 6, 8, 9, 11, 14, 17, 19, 20, AND 23 ARE OBVIOUS

A. Claims 1, 4, 11, 14, And 19: PO Misinterprets The Claims

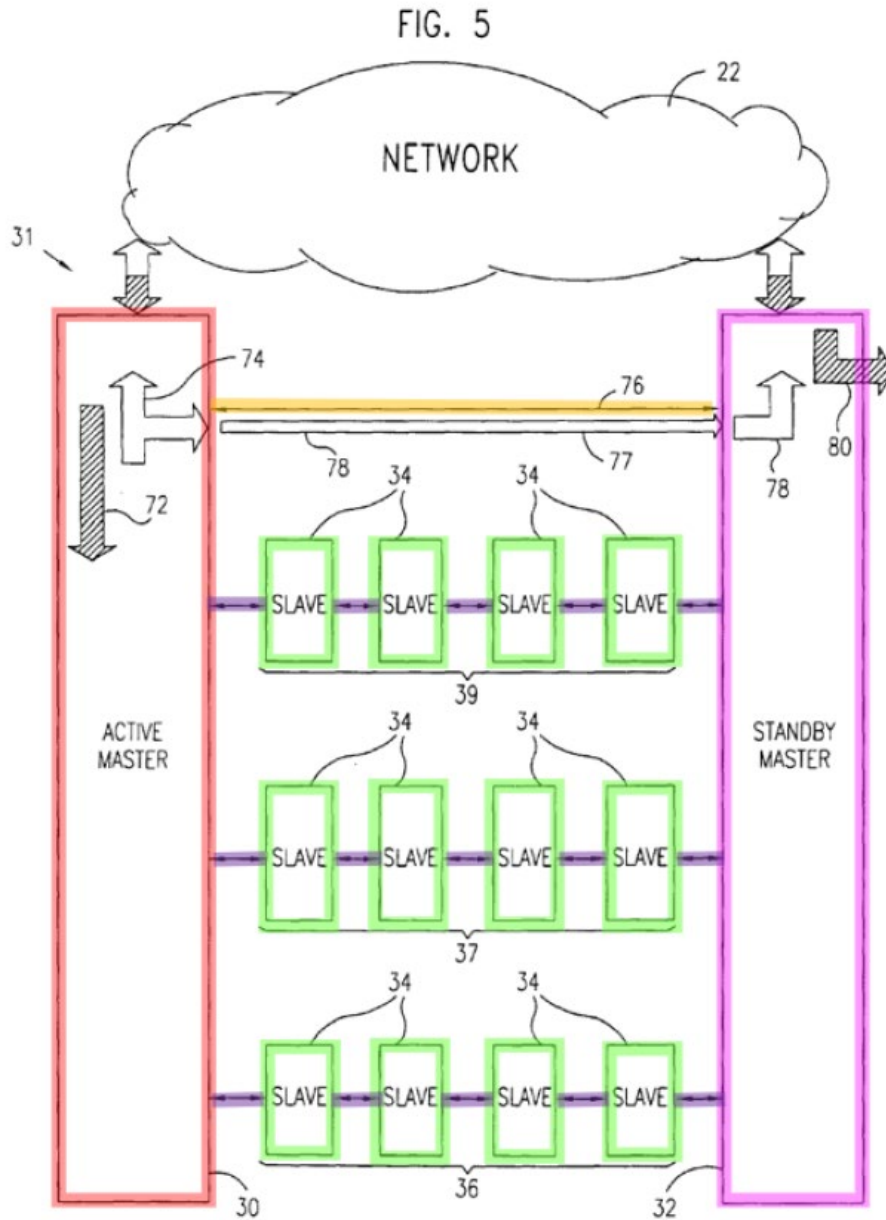
PO applies a restrictive view of the claims, arguing that “the presence of an *external* network—and that the claimed master units provide an interface to such a network—is a key limitation.” POR, 25. Not so.

Limitations [1a/4a/9a/11a] recite the “**first [master]** and **second master** units, each comprising a **physical interface** to a packet-switched network”—they do not recite “to a[n] [external] packet-switched network.” PO’s reliance on “a preferred embodiment” to inject a requirement that “the claimed ‘packet-switched network’ is a ‘*core*’ network that is *external* to the one or more loops formed by the two masters and each of the daisy chains” is improper. POR, 24-25.

Superguide Corp. v. DirecTV Enterprises, Inc., 358 F.3d 870, 875, (Fed. Cir. 2004) (“[A] particular embodiment appearing in the written description may not be read into a claim when the claim language is broader than the embodiment.”).

Alternatively, if PO is interpreting the term “**physical interface**” in “**first [master]** and **second master** units, each comprising a **physical interface** to a packet-switched network” to require a connection to an *external* network, that, too, would be improper. Such an interpretation contradicts the language in limitation [14b], which recites “**first and second physical interfaces**, coupled to exchange

packets with **preceding and succeeding units**, respectively, along the daisy chain.”



Petition, 9. As shown above, the term “**physical interface**” encompasses connections between the **slave units** in the “internal” network. Hence, limitations [1a/4a/9a/11a] need not be limited to a “**physical interface**” formed between the

master 30/master 32 and an *external* network. Rather, the term is broad enough to encompass an *internal* packet-switched network² formed between the **master 30/master 32** and the **slave units 39**.

1. “Master Units...Comprising A Physical Interface To A Packet-Switched Network” Is Taught By Vink Or Vink And Patrick (And AAPA)

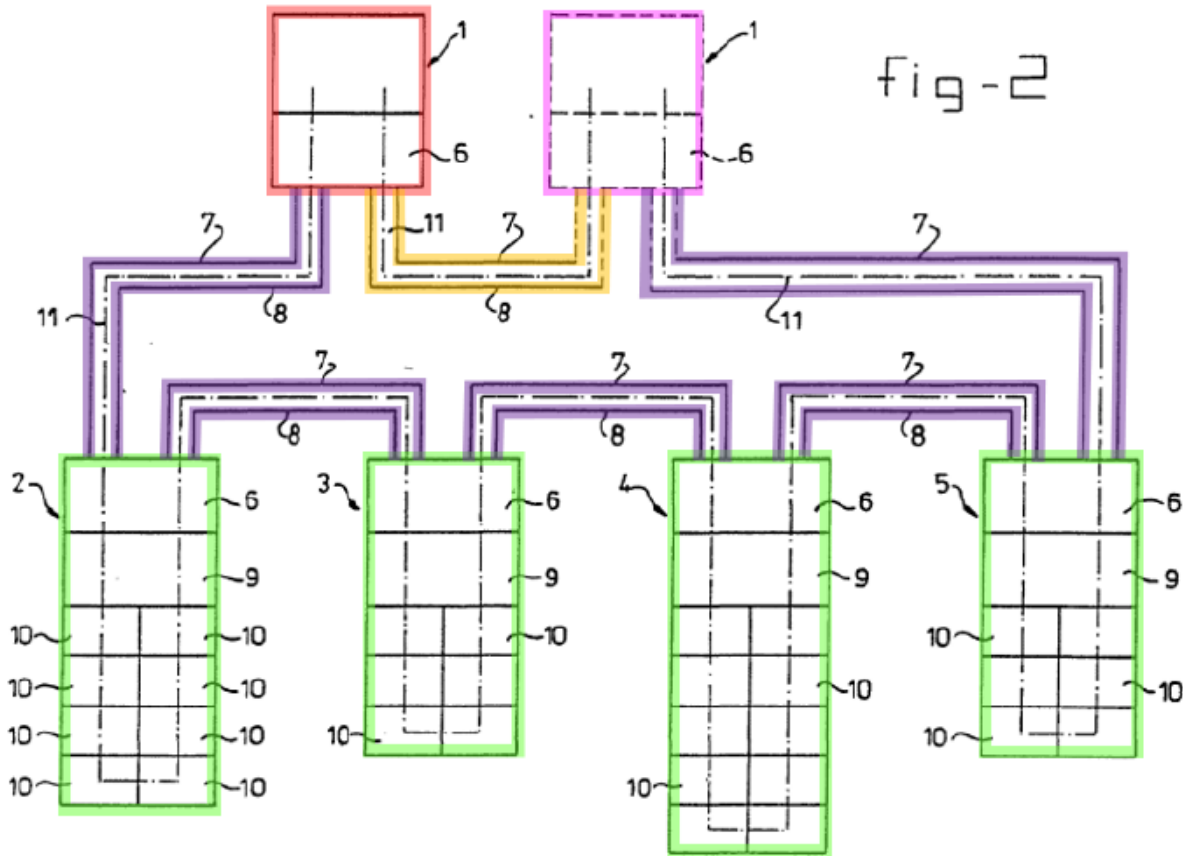
Based on PO's narrowed interpretation of the claims, PO argues that (a) “there is no teaching in Vink about connecting its local network to a core [*i.e.*, external] network” (POR, 28) and that (b) “a POSA would not modify Vink to provide an interface to a core network,” (POR, 28). These arguments fail for the following reasons.

a) Vink's “Internal” Network Satisfies Limitations [1a/4a/9a/11a]

PO's argument that “there is no teaching in Vink about connecting its local network to a core [*i.e.*, external] network,” (POR, 28, 24-25), is based on an improperly narrowed reading of the claims. As explained in Section II.A, limitations [1a/4a/9a/11a] can encompass a “**physical interface**” formed between the **master units** and the **slave units**. Indeed, the Petition identified

² As PO's expert admitted, “a packet-switched network is a broad term that refers to the network that utilizes packets.” Ex-1013, 80:8-10.

“transmission lines 7, 8” formed between **master units** and **slave units** as one possible option.



Petition, 24-26. And Vink’s “internal” network formed between the **master units** and **slave units** is a “packet-switched network,” “designed to transmit or receive *packets of data bits* via a transmission system ring in one and/or the other direction.” Ex-1005, 14:28-34; Petition 25. Hence, under the proper reading of the claim, Vink alone satisfies limitations [1a/4a/9a/11a].

b) Vink Combined With Patrick (And AAPA) Satisfies Limitations [1a/4a/9a/11a]

The Petition alternatively identified a “**physical interface**” formed between the **master units** and an *external* network, relying on Patrick and AAPA. *See* Petition, 26-31.

PO raises three sub-arguments directed to this combination: (1) Vink’s system is incompatible with an external network; (2) Petition does not provide sufficient reasons for the combination; and (3) the modification would have been beyond a POSITA’s skill. POR, 28-29. Each argument fails.

i. Vink’s System Is Compatible With External Networks

PO argues Vink teaches away from the combination because Vink *only* “discloses a non-hierarchical (or flat) address system, in which each slave is assigned *a fixed address based on its position in the cascade sequence employed in the Vink LAN.*” POR 34; *see also id.*, 29-36. That is incorrect because Vink discloses *both* non-hierarchical and hierarchical addressing schemes.

Specifically, Vink discloses a two-level hierarchical addressing scheme that includes (1) a slave address and (2) added address information bits. *See* Ex-1005, 11:29-37 (“In order, however, to allow the slaves to operate mutually as independently of one another as possible with retention, ...it is advantageous to provide *a slave* with an unambiguous *address* and to *add address information bits*

to the data bits to be exchanged.”); *see also* Petition, 90 (citing Ex-1005, 11:29-37).

Vink’s two-level hierarchical addressing scheme is just like the ’904 Patent’s that utilizes (1) *a slave address, e.g., a “pre-switch address”* (PSA), used to address the packets to a corresponding slave, and (2) an added address information bits, such as *a port address, e.g., a port number*, to route the packet to the appropriate port. Ex-1001, 2:29-34 (“*[E]very packet passed between the masters and slaves has a pre-switch address.*”); 6:60-61; 7:34-40 (“If the PSA corresponds to this slave..., *a port number (PORT 0) is appended to the packet...*, [switching fabric] *then routes the packet to the appropriate port...*”). Indeed, PO’s expert admitted that “one level of the hierarchy would be the *slave address* (pre-switch address) and the second level would be the *port address.*” EX-1013, 128:2-14; *see also, id.*, 120:15-19.

Unsurprising, PO’s alleged teaching away argument merely cites only to PO’s expert’s declaration, without any additional citation to objective evidence. Such conclusory expert opinion, unsupported by objective evidence, has routinely been discredited by the Board. *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9, 15-16 (Aug. 24, 2022) (precedential) (“[T]he cited declaration testimony is conclusory and unsupported, adds little to the conclusory assertion for which it is offered to support, and is entitled to little weight”).

But PO's mistakes do not stop there. Even if Vink only taught a non-hierarchical addressing scheme, the '904 Patent discloses that same non-hierarchical addressing scheme as one possible embodiment. Specifically, the '904 Patent discloses a "next" neighbor addressing scheme, which assigns an address based on the position of a slave in the cascade sequence. Ex-1001, 2:41-43 ("The pre-switch similarly accepts packets carrying a 'next' address, i.e., packets that are sent from one slave to its immediate neighbor..."). That is the same in Vink. *See* POR, 34 ("Vink expressly discloses a non-hierarchical (or flat) address system, in which each slave is assigned a fixed *address based on its position in the cascade sequence* employed in the Vink LAN.").

The proposed combination cannot be taught away when both Vink and the '904 Patent describe similar non-hierarchical and hierarchical addressing schemes as possible embodiments.

ii. Petition Articulated Why And How A POSITA Would Have Been Motivated To Combine Vink With Patrick

PO's argument that the Petition "fails to provide a rationale...to modify Vink in light of Patrick or AAPA," (POR, 36), is incorrect.

The Petition identified the "well-known benefits of gaining access to [Patrick's external network]," which "include networks such as the Internet, on line services, telephone and cable networks, and other communication systems."

Petition, 22-24 (citing Ex-1006, 3:20-24). A POSITA would have been motivated to combine Vink with Patrick, because Patrick identifies a known problem (providing secondary stations with access to an external network) and provides a solution (using a primary station to access the external network). Petition, 22-24. “Nothing more is required to show a motivation to combine under *KSR*...” See *Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1381 (Fed. Cir. 2023) (holding that it was “enough for [Petitioner] to show that there was a known problem” in the art and that the referenced prior art helped address that issue).

Patrick’s use of a primary station to provide secondary stations with access to an external network, thereby allowing the secondary stations to gain access to “the Internet, on line services, telephone and cable networks, and other communication systems” (Ex-1006, 3:20-24) is a “universal motivation” known in the field of providing users with access to information and improves the technology, by “provid[ing]...routing of information between a terminal and a primary node,...without excessive utilization of internetwork addresses, and implementable utilizing comparatively less expensive secondary node equipment....” Ex-1006, 2:22-28. “‘Universal’ motivations known in a particular field to improve technology provide ‘a motivation to combine prior art references even absent any hint of suggestion in the references themselves.’” *Intel Corp.*, 61 F.4th, 1380.

PO relies on *Kinetic Concepts* as allegedly supporting that a POSITA “would have no reason to combine the features of both devices into a single device.” POR, 39-40 (citing *Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1369 (Fed. Cir. 2012)). But in *Kinetic*, there was admittedly no benefit in combining the two references. See *Kinetic*, 688 F.3d, 1369 (explaining that the “record is devoid of any reason someone would combine these references, however. Indeed, *Wake Forest's experts testified that there was no reason to combine them.*”). Here, PO does not dispute that gaining access to external networks would have been beneficial. See POR, 36 (merely arguing that the Petition “fails to provide a rationale”).

PO also argues that “a POSA could simply practice AAPA or Patrick...and would have no reason [to adapt] Vink, as there is nothing suggesting that Vink’s topology would render the systems of Patrick or AAPA *more effective*” POR, 40. But “[i]t’s not necessary to show that a combination is the best option, only that it be a suitable option.” *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 784, 800 (Fed. Cir. 2021).

Finally, PO’s argument that “there is no reason to connect Vink’s system—which is directed to peripherals and does not teach subscribers—to provide access to an external network” is moot. POR, 37, 39. PO’s expert admitted that modems were peripheral devices used subscribers. Ex-1013, 40:1-19. Hence, while true

that Vink does not utilize the word “subscriber,” a POSITA would have readily combined Vink with Patrick and/or AAPA to teach “one or more ports to respective subscriber lines.” *See* Petition, 33-36.

iii. Connecting LANs To External Networks Was Routinely Done

PO argues the proposed “combination[s] would require steps beyond the ordinary level of skill at the time of the invention.” POR, 41. PO alleges that “there is a complete dearth [of] evidentiary support as to a POSA’s background knowledge in the record,” and accuses Dr. Houh (Petitioner’s expert) of being “unable to identify a single protocol available to a POSA...that could interface Vink’s system with an external network.” POR, 42-43.

That mischaracterizes the record. When asked in his deposition, Dr. Houh explained exemplary software, such as open-source operating systems like Red Hat Linux, that predate the ’904 Patent that would have allowed connecting Vink’s system to an external network. *See* EX-2027, 110:4-113:24. And despite PO’s invitation to provide such additional details, PO now complains that “Dr. Houh cannot be permitted to plug that gap on the fly during cross-examination.” POR, 42. But there was no gap-filling here, because the Petition already established that LANs were routinely connected to external networks.

Specifically, the Petition demonstrated that Patrick’s CableCommTM and AAPA’s Internet/ATM communication systems are two well-known systems that

connected LANs to external networks prior to the '904 Patent. *See, e.g.,* Petition, 26 (citing Ex-1006, 3:20-24 (“***The primary station 101 is also coupled to a network 105***, which may include networks such as the Internet, on line services, telephone and cable networks, and other communication systems.”)); *see also* Petition, 27 (citing Ex-1001, 1:39-42 (“***Master unit 25 communicates with a core network 22, such as an ATM network***. The master unit comprises a core network interface element...providing the necessary physical layer...and data link layer (for example, ATM) functions.”)).

Taking Patrick as an example, Patrick's primary and secondary stations are connected just like Vink's master and slave units. For example, both Vink's and Patrick's secondary stations are connected in the same way, such as using fiber cable and/or a coaxial cable. *See, e.g.,* Ex-1001, 15:34-35 (“The transmission lines 7, 8 may, for example, consist of coaxial cable, optical fibre cable and the like.”); Ex-1006, 3:17-20 (“[T]he communication media may be coaxial cable, fiber optic cable, twisted pair wires, and so on...”); *see also* Petition, 33 (discussing Patrick's CableCommTM connected through a hybrid optical fiber and coaxial cable), 36 (discussing Vink's use of coaxial cable/optical fiber cable and the like to connect the slaves), 34 (discussing the secondary stations receiving downstream data from the external network through the primary station). And just like Patrick's network of secondary stations were routinely connected to external networks through a

primary station, a POSITA would have been able to readily connect Vink's slaves to an external network through the master stations just as readily.

Indeed, there is nothing extraordinary about connecting a LAN to external networks. Numerous examples exist that demonstrate that a POSITA would have been able to readily connect LANs to the internet. *See, e.g.*, Ex-1014, 6:23-28 (discussing "a plurality of clients...connected to a local area network (LAN)...which, in turn...interfaces...with a wide area network...such as the Internet"), Figure 1; Ex-1015, 1:6-9; Ex-1016, 1:22-25; Ex-1017, 1:7-11.

B. PO Ignores Petitioner's Combination For "Slave Unit Comprising One Or More Ports To Respective Subscriber Lines"

PO relies on the proposed construction of "subscriber lines" as "communication lines to users of subscription-based network services" to argue that "Vink teaches that its slaves are devices connected...to peripherals—not subscribers." POR, 45. But the Petition does not rely on Vink alone for "subscribers." Rather, the Petition makes clear that it is Patrick/AAPA, when combined with Vink, that teach "subscriber lines" and "ports." Petition, 33. PO does not dispute that Patrick/AAPA teach the claimed "subscriber lines"/"ports." *See* POR, 44-47.

As for the combination, PO relies on the same flawed incompatibility argument discussed above in Section II.A.1.b.i. For the same reasons, that argument should be rejected.

C. Claim 4: PO Does Not Address Arguments Presented In The Petition

1. The Combination Of Vink And Patrick Suggests [4d]

PO argues that the “Petition does not show that the data transmitted on *Vink*’s LAN is passed by the slaves in opposite directions—*i.e.*, via the first slave—when it travels upstream/downstream from each of the slaves in Vink’s topology.” POR, 48. Specifically, PO argues that “*Vink* must transmit data from the master to the slaves and receive data from the slaves to the master in the same direction (*i.e.*, clockwise or counterclockwise, but not clockwise and counterclockwise depending on whether the data is upstream or downstream).” POR, 49.

PO is incorrect. Vink teaches transmitting data in either direction. Ex-1005, 26:4-7 (“[T]he at least one master (1) and the slaves (2, 3, 4, 5) are arranged to transmit or receive data bits via a transmission ring (7, 8) *in one and/or the other direction.*”); Figures 3-4. That is, the data sequentially supplied to the slaves can be in an ascending order (*e.g.*, slave 1→2→3→4) or sequentially received by the slaves in a descending order (*e.g.*, slave 4→3→2→1).

Besides, the Petition makes clear that it is the combination of “*Vink with Patrick* [that] suggests [4d].” Petition, 39-44. For instance, the Petition discussed that “Patrick teaches that data is normally transmitted in the downstream direction from the network down to the slaves via the master and in the upstream direction

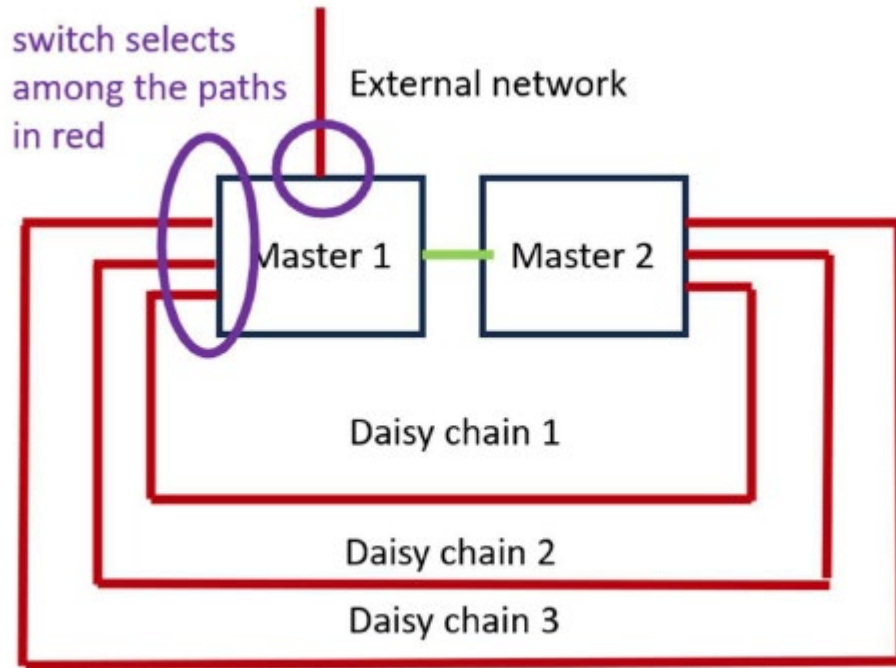
from the slave to the network via the master.” Petition, 39. The Petition further discussed that it would have been obvious for Vink’s system to transmit in the same manner as it is merely one of finite number of ways data can be transmitted and would have been a trivial modification. Petition, 43-44. Indeed, it is well-settled law that a POSITA “is also a person of ordinary creativity, not an automaton.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007). It is proper to consider “the inferences and creative steps that a person of ordinary skill in the art would employ.” *Id.* at 418. The POR does not address the arguments raised in the Petition.

D. Claim 9: PO Misinterprets The Claims And Does Not Address Arguments Presented In The Petition

PO argues that Vink’s masters, which disclose both a switch and a pre-switch, do not render obvious limitations [9e]/[9f]. PO’s argument regarding limitation [9e] is based on an improper understanding of the claim scope, and PO’s argument regarding limitation [9f] is directed to attacking Vink alone (again) while the Petition relied on Vink combined with Patrick.

1. [9e]: PO’s Interpretation Of “A Switch, Configured To Route Data Packets Between The Respective Physical Interface And The One Or More Daisy Chains” Is Incorrect

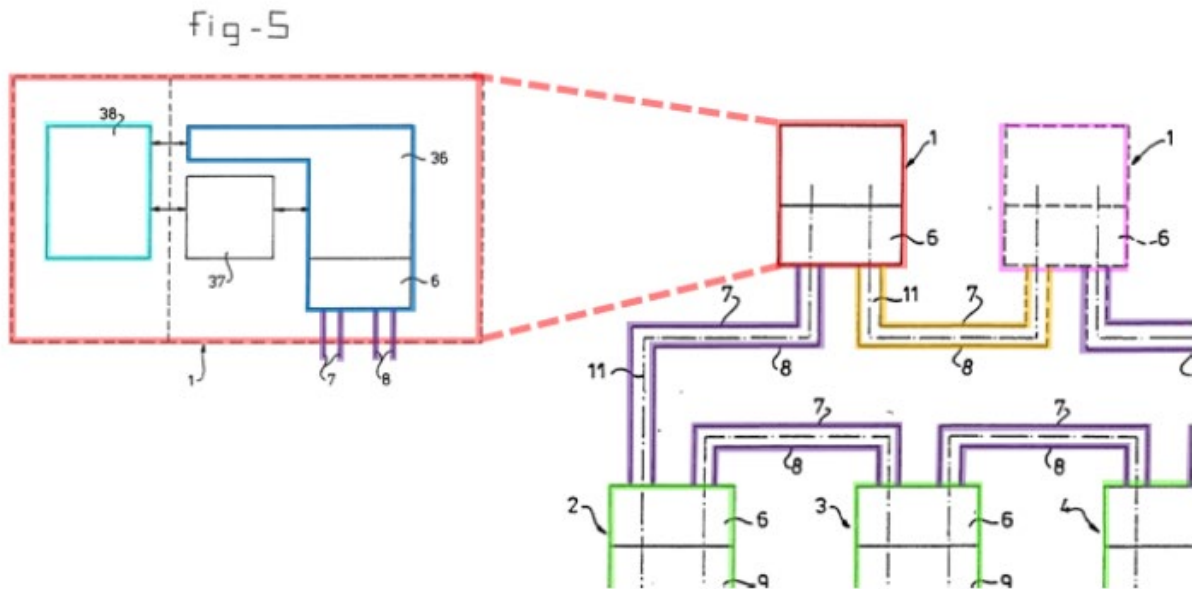
PO asserts that limitation [9e] requires a “switch that selects between either the external network or one of the potentially several daisy chains to route data packets, as shown in the following diagram:”



POR, 50-51.

However, PO's interpretation is incorrect for at least two reasons. ***First***, PO's interpretation is based on the erroneous insertion of "external" not found in the claim language, discussed above in Section II.A.

Second, the claim limitation does not require selection among multiple daisy chains. Rather, the claim recites "***one*** or more daisy chains," which encompasses a switch that routes data packets in the **physical interfaces** within even a single daisy chain. The Petition demonstrated that the **master unit switch** routes the data packets to respective **physical interfaces** within a single daisy chain. This is all that is required in limitation [9e]. PO's improper attempt to read out "one" in the claim language should be rejected.



See Petition, 45-48.

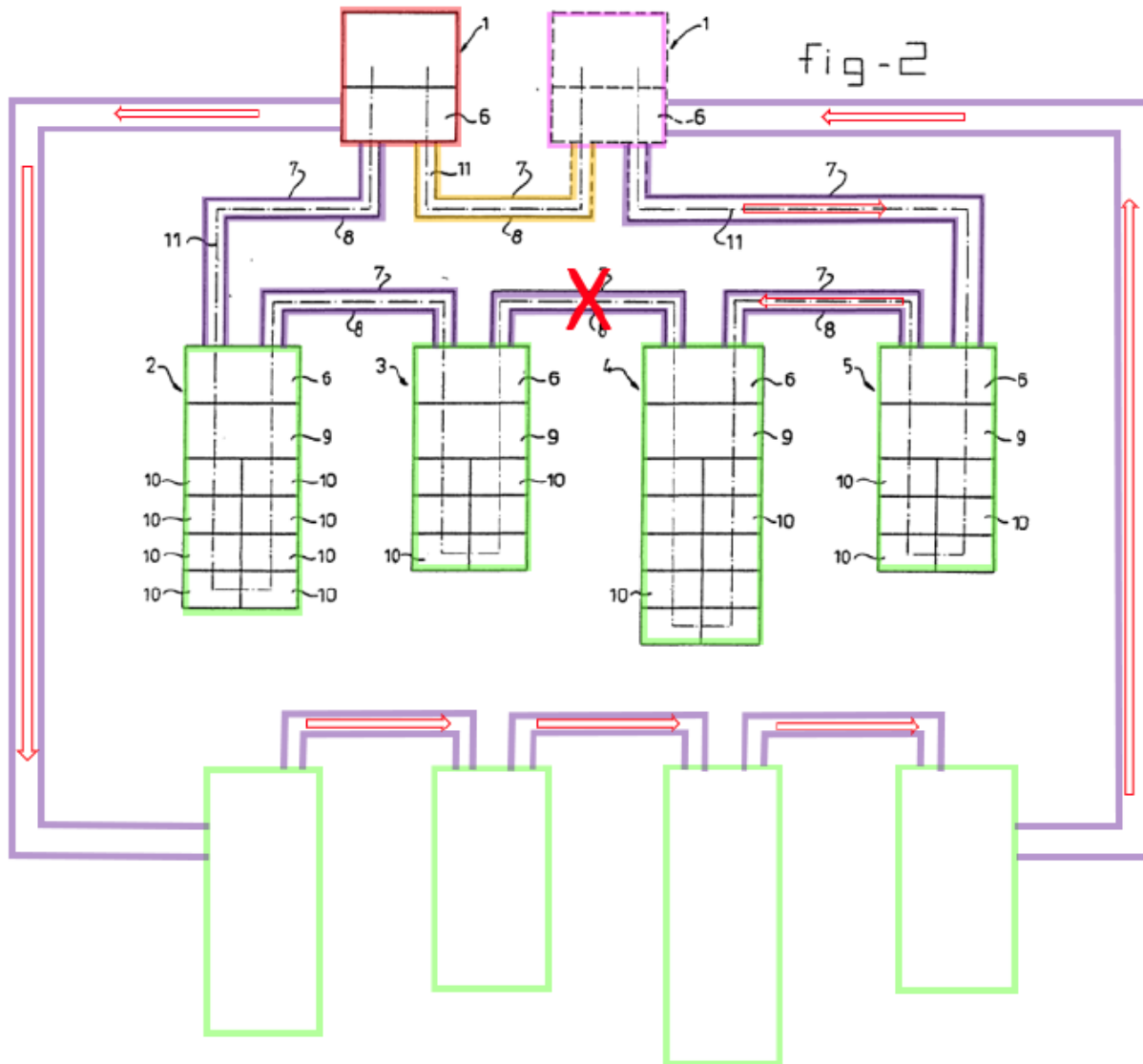
2. [9f]: PO's Arguments Do Not Address The Arguments Raised In The Petition

Limitation [9f] specifies that the pre-switch “re-routes at least a portion of the data packets exchanged with one or more of the slaves in the daisy chain in which the fault has occurred through another one of the daisy chains” “in the event of a fault at a location in one of the daisy chains.”

PO asserts that the “Petition presents no evidence that *Vink* [alone] routes data through one of several daisy chains, besides conjecture that it could do so because it teaches configurations with ‘more than two rings.’” POR, 54. But the Petition relied on the teachings of *Vink and Patrick*. See Petition, 48-55 (citing Ex-1005 16:14-17 (“Although a double-ring transmission system is shown, it will

be clear that it is possible to work with either a single-ring transmission system or with a transmission system containing more than two rings.”); Ex-1006, FIG. 1, 3:24-27 (showing secondary stations 110a through 110n that are “connected to the primary station 101 on two segments or branches of a communication medium, such as communication media 115 and 116.”)).

Specifically, the Petition relied on *Patrick* to demonstrate that it was well within the skill of a POSITA to “utilize[e] more ... branches, segments or sections of any communication medium.” Petition, 55 (citing Ex-1006, 3:30-32); *see also* Ex-105, 16:13-17 (explaining that “more than two rings” can be utilized). Based on the well-known fact that multiple branches or segments can be utilized, the Petition added a second daisy chain to *Vink’s* figure and explained that “transmission of data across the other daisy chain is merely one out of two possible re-routing of data packets that is possible, and it would at least have been obvious to try to transmit data in either one of two possible re-routing paths.” Petition, 54.



Indeed, it is well-settled law that a POSITA “is also a person of ordinary creativity, not an automaton.” *KSR*, 550 U.S., 421. A POSITA would have been able to readily figure out this alternate data flow path because it is merely one of two options to get data to **slave 4** when the transmission path between **slaves 3** and **4** was broken. It is proper to consider “the inferences and creative steps that a person of ordinary skill in the art would employ.” *Id.*, 418. The POR does not

address the arguments raised in the Petition.

E. Claims 6, 20, And 23: PO Misinterprets The Petition And Claims

PO groups the arguments for claims 6, 20, and 23 together. However, because these claims are directed to two different concepts, Petitioner addresses claim 20 separately from claims 6/23.

1. Claims 6/23: Petition Did Not Remove “Bi” In “Bicasts”/“Bicasting” Of Claims 6/23

PO also alleges that the Petition removed “bi” from “bicasts”/“bicasting” recited in claims 6 and 23. POR, 56. That is incorrect. The Petition *first* discussed the “casts”/“casting” portion by explaining that data packets are conveyed to the network by Vink’s active master. *See* Petition, 70 (“Vink with Patrick suggests sending [by the first master unit] ‘upstream data packets that it receives from the slave units to the network.’”) (pointing to the evidence for [4d]).

The Petition *then* discussed the “bi” portion of “bicasts”/“bicasting” by explaining that the passive master transmits upstream packets to the network, after having received them from the active master. Specifically, the Petition explained that “Vink with Patrick suggests that the passive master transmits the upstream data packets to the network because ‘[a]ll the masters are so designed that they can assume the function of the active master, for example in the event of faults.’” Petition, 70 (citing Ex-1005, 16:24-26) (and pointing to the evidence for [5a],

which discusses the 1+1 APS fault protection mechanism.). Hence, the Petition treated in detail the full “bcasts”/“bcasting” terms recited in claims 6 and 23.

PO also argues that “Vink does not disclose that the master [transmits upstream packets to a network and transmits upstream packets to a second master] for the same upstream data” (POR, 57) and that Petitioner’s reliance on 1+1 Automatic Protection Switching “fails for three reasons.”

First, PO argues that the 1+1 APS “is only discussed in connection with bcasting packets from the active masters to the network as in claims 6 and 23 and is not discussed in connection with claim 20’s requirement that packets received from the network passed from the first masters to the slaves and also from the first master to the second master to the slaves.” POR, 57. This argument relates to claim 20 and is discussed below in Section II.E.2.

Second, PO argues that Vink’s active master somehow stops transmitting the upstream packets to the network when a fault occurs or that when the passive master performs an action, Vink’s active master stops functioning. *See* POR 58-59. Even if this were true, PO is again arguing against a Ground not actually raised. The Petition proposed modifying Vink to implement the 1+1 APS technique. Specifically, the 1+1 APS protection in the context of the modification is described as follows:

The active master bicast these packets, sending them both to network 22 and to standby master 32 over a protection interface 76 between the two masters....*The standby master also transmits the upstream packets over network 22, ...This redundancy in transmission* is in accordance with fault protection mechanisms used in high-speed networks *known in the art*, such as the standard “*1+1 APS*”....

Ex-1001, 8:44-52. Accordingly, the prior art 1+1 APS technique provides that both the active master and the standby master will transmit the same upstream packets to the network.

Third, PO argues that “‘1+1 APS’ refers generically to a source providing two copies of the same transmission and does not suggest a master bicast upstream data through a second master.” POR, 59. But as discussed above, the 1+1 APS technique provides that both the active master and the standby master will transmit the same upstream packets to the network. Besides, the Petition proposed modifying Vink to implement the “1+1 APS” fault protection mechanism (1) between the two masters and (2) between the two masters and the network:

A POSITA would have been motivated to implement *such 1+1 APS fault protection mechanism [1] between the two masters and [2] between the two masters and the network* in case one of the links between the masters or the links from the masters to the network fails. Combining such well-known fault protection mechanism in Vink’s communication system, which already has two master stations that has a communication path therebetween, and as modified with

Patrick/AAPA, which connects the master units to a network, would have been a trivial modification that a POSITA would have been motivated to do as well as able to readily implement with a reasonable expectation of success.

Petition, 69-70 (addressing [5a], which [6a] cites to). That is, the Petition explained that if the link between the **first master** and the network fails, the 1+1 APS fault protection would allow a second separate link from the **second master** to the network that would allow the copy to reach the network destination. The POR fails to address the arguments actually raised in the Petition.

2. Claim 20: PO Mischaracterizes Claim 20

As discussed in Section II.E.1, PO argues that the 1+1 APS “is only discussed in connection with multicasting packets from the active masters to the network as in claims 6 and 23 and is not discussed in connection with claim 20’s requirement that packets received from the network passed from the first masters to the slaves and also from the first master to the second master to the slaves....” POR, 57. However, PO’s argument is based on PO’s incorrect interpretation of claim 20 as requiring that “*the same* downstream data is conveyed to the same slave *twice*.” POR, 56 (original emphasis). Claim 20 only requires conveying the initial download data and further download data to the same slave *only once*.

Indeed, independent claim 19 requires that “*initial* downstream data

packets” are conveyed in a “first direction,” while “*further* downstream data packets” are conveyed in a “second direction” in the event of a fault in the daisy chain. Ex-1001, claim 19. The “initial” and “further” downstream data packets are not the same “physical” downstream data packets and are conveyed to the slaves *only once*.

And PO’s expert agrees. During his deposition, PO’s expert admitted that the “initial download data” and the “further download data” are received *only once*:

Q. ...The initial downstream data packets will be conveyed to *the slaves only once; correct?*

A. Well, packets -- data can be retransmitted. But if you're looking at just those instances, those very specific packets, and excluding any retransmissions, *they get sent once*.

Q. And excluding any retransmissions, *the further downstream packets of Claim 20 are also conveyed to the slaves in the second direction only once; right?*

A. So the Claim 20 requires that the packets received from the first downstream unit -- by the first downstream unit are conveyed to the second master unit. And that could be construed as a transmission.

And then from the second master unit to the slave units, *they are only sent once to the slave* but they are sent through the second master.

Q. Okay. Understood. Neither Claim 19 nor Claim 20 discuss retransmissions; correct?

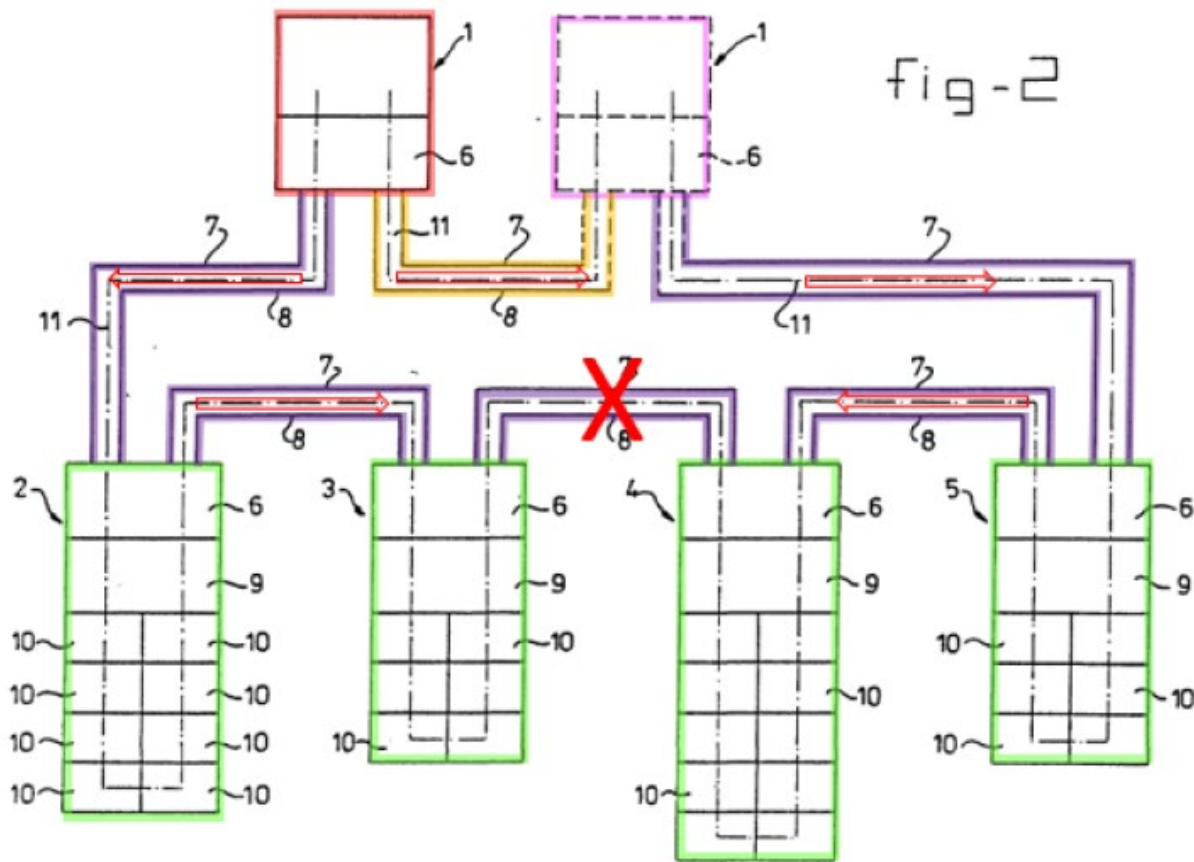
A. That's not -- that's not here.

Ex-1013, 174:21-175:19.

The Petition applied this proper interpretation of claim 20. For example, the Petition discussed that “*initial* downstream data packets” intended for **slave 4** is received by **active master** and conveyed to **slave 4** through **slaves 2** and **3** in a first direction.

But in the event of a fault in the **transmission lines 7, 8** between **slaves 3** and **4**, “*further* downstream data packets” are received by the **active master**, which transmits the packets across **transmission lines 7, 8**, to **passive master**, which then conveys the data packets to **slave 4** in a second direction through **slave**

5.



Ex-1005, Figure 2; *see also*, Petition, 93 (citing to Sections VI.B.2.b, VI.B.4.b, and/or VI.B.1.i), 65-70). Hence, the Petition demonstrated claim 20 under the proper understanding of the claim.

F. Claim 8: PO Mischaracterizes Claim 8

Claim 8 recites “the downstream packets... are *conveyed to the second master unit* from the first master unit *via another one of the daisy chains.*” Ex-1001, 12:32-36. But PO asserts that “claim 8 requires the slave’s downstream packets *reach the first master via another daisy chain*, and the **first master** to

then pass the downstream packets to the **second master**.” POR, 60. PO’s assertion is inconsistent with the actual claim language.

Indeed, PO’s expert confirmed that PO’s reading is inconsistent with the actual language of claim 8:

Q. So the sentence [in paragraph 108] that starts, "Thus, Claim 8 explicitly states that the slave's downstream packets reach the first master via another daisy chain" *is inconsistent with the language of Claim 8; correct?*

A. *There appears to be an error here that I need to correct.*

Ex-1013, 185:16-22; *See also*, Ex-1013, 184:2-185:22, 185:23-187:11.

In fact, interpreting claim 8 in the manner proffered in the POR would lead to a nonsensical result. As explained in claim 4, the downstream packets were already received from the network by the **first master**. Accordingly, PO’s interpretation requires the downstream packets—already received by the **first master** from the network—to travel via another daisy chain and traverse through the slave units and to be received by the **first master** yet again. That is nonsensical as to why the **first master** would be set up to re-receive data that it had already received from the network.

G. Claim 17: PO’s Arguments Ignores Petition’s Express Illustration Of A Multicast Packet Example

PO argues that the “Petition simply does not address claim 17’s recital of a multi-cast packet or identify where in Vink a packet is disclosed as being both

retained by the slave and passed to subsequent slaves in the cascade.” POR, 62.

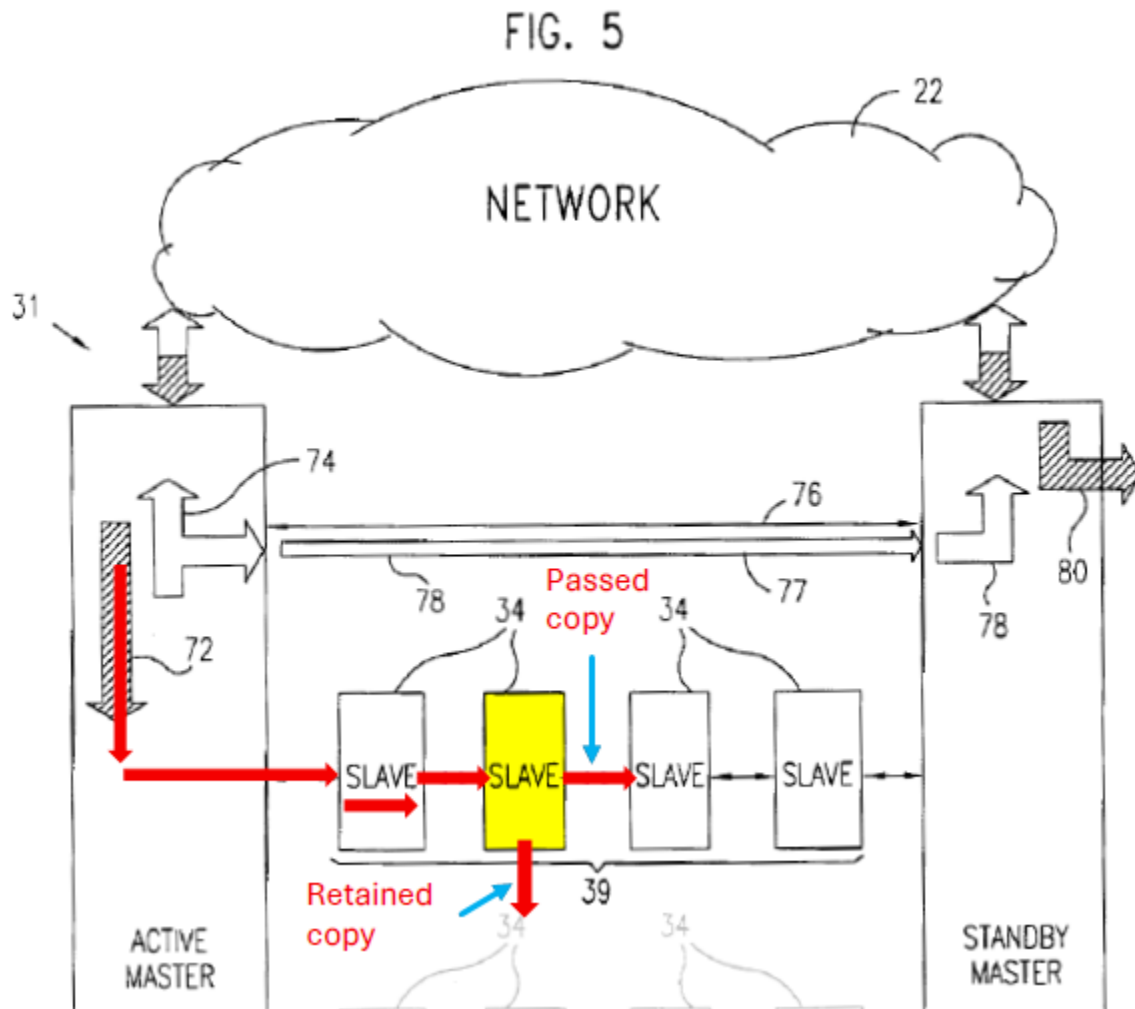
But PO ignores the illustration provided in the Petition.

A multicast packet is a packet that is targeted to more than one slaves. *See* Ex-1013, 105:8-13 (“Q. Okay. First, what is a multicast packet, can you explain? A. It's a packet that would be targeted to more than one node or location. Q. By node, do you mean slaves or -- A. Slaves.”).

And PO's expert explained how claim 17 would operate—namely a slave (1) retains a copy of the multicast packet to convey it to the switch/switching fabric of the slave and (2) passes a copy of the multicast packet down the chain. Ex-1013, 106:19-23 ([A] multicast packet with an appropriate pre-switch address [of a slave], the pre-switch both *conveys a copy of the packet to the switch or switching fabric of the slave and passes the packet down the chain.*”); *see also id.*, 153:21-154:1 (“When we looked at the language earlier, it discussed retaining -- for *the slave that the multicast packet was appropriate for retaining a copy and then passing it down the line* and for the slaves that were not appropriate for, the slave rejected that packet and passed it on down the line.”).

When asked whether the illustration below is consistent with the embodiment that's described in the '904 Patent pertaining to claim 17, PO's expert confirmed its accuracy. *See* Ex-1013, 153:6-154:1 (“Q. Is [the illustration of Ex-1012] consistent with your understanding of a multicast packet according to the

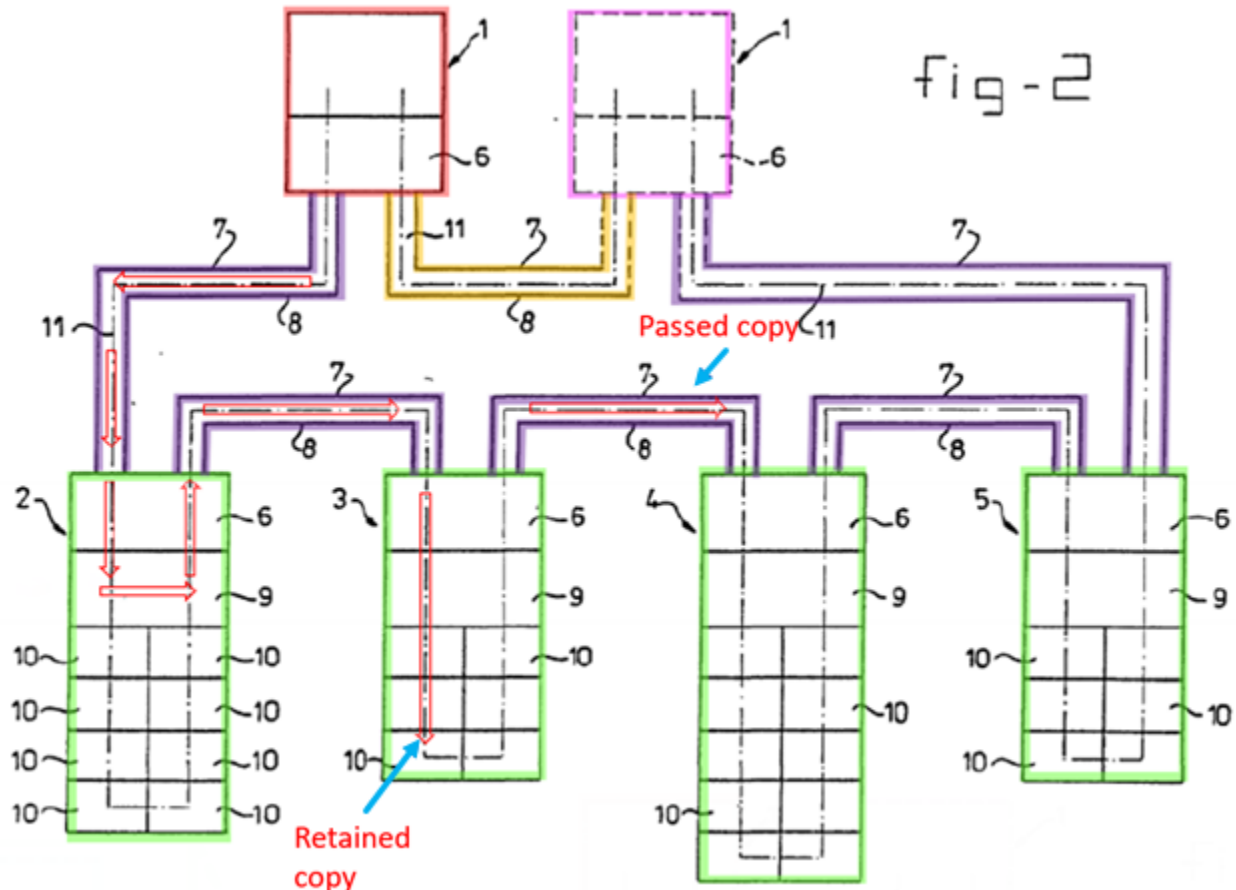
'904 patent? A. I think that's consistent with the description embodiment that's described in the '904 patent.”); *see also*, Ex-1013, 148:10-151:11, 152:3-153:5.



Ex-1012, 1.

The Petition provided the nearly identical illustration in the context of Vink. Specifically, as reproduced below (with only the blue arrows, “passed copy,” and “retained copy” annotations added), the Petition illustrated that **slave 3** retains the multicast packet while that multicast packet continues on through the subsequent

physical interface (towards **slave 4**). In contrast, **slave 2** simply passes along the data packets to **slave 3**.



See Petition, 61-65; *see also*, Petition, 89 (citing Sections VI.B.1.j [11d], VI.B.1.l [11f], and VI.B.9.d [14c]); *see also*, Ex-1003, ¶156. Hence, the Petition addressed claim 17's recital of a multicast packet that is retained by the slave and passed to subsequent slaves in the cascade.

Finally, PO alleges that “the Petition’s characterization of Vink as ‘retain[ing] **only** data packets addressed to the ports (e.g., output 33) of any I/O module 10 of the particular slave, while passing data packets addressed to other

slaves onto the other slaves through the next transmission lines 7, 8' is a clear teaching away from a multi-cast packet that is both retained and passed.” POR, 62. However, that is not teaching away. The illustration described above is entirely consistent with the fact that only the data packets addressed to **slave 3** were retained while the other data packets—including multicast data packets—are passed onto the next slaves, such as **slave 3**.

III. DEPENDENT CLAIMS 2, 3, 5, 7, 10, 12, 13, 15, 16, 18, 21, 22, AND 24-26 ARE OBVIOUS

PO provides no arguments as to dependent claims 2, 3, 5, 7, 10, 12, 13, 15, 16, 18, 21, 22, and 24-26.

IV. CONCLUSION

For the reasons stated above and in the Petition, Cisco respectfully requests cancellation of all challenged claims.

Respectfully submitted,

Dated: May 28, 2024
Desmarais LLP
230 Park Ave
New York, NY 10023

/Yung-Hoon Ha/
Yung-Hoon Ha
Lead Counsel for Petitioner
Registration No. 56,368

CERTIFICATE OF WORD COUNT

I hereby certify that this paper, excluding the portions exempted under 37 C.F.R. § 42.24(c), has 5,575 words as counted by Microsoft Word for Office 365, the word-processing program used to prepare this paper.

Dated: May 28, 2024

/Yung-Hoon Ha/
Yung-Hoon Ha
Lead Counsel for Petitioner
Registration No. 56,368

CERTIFICATE OF SERVICE

The undersigned certifies that, in accordance with 37 C.F.R. § 42.6(e) and 37 C.F.R. § 42.105, service was made on Patent Owner at the correspondence address of record, as detailed below.

Date of service May 28, 2024

Manner of service Electronic Email:
jim@carmichaelip.com;
stevemcbride@carmichaelip.com;
mitch@carmichaelip.com;
George.Stamatopoulos@kobrekim.com;
Michael.Ng@kobrekim.com;
Orckit-IPRs@carmichaelip.com

Documents served Petitioner's Reply
EX1012 – EX1017

Persons served James T. Carmichael
Stephen McBride
Minghui Yang
CARMICHAEL IP, PLLC
8000 Towers Crescent Drive, 13th Floor
Tysons, VA 22182

George Stamatopoulos
KOBRE & KIM LLP
800 Third Avenue
New York, NY 10022

Michael Ng
KOBRE & KIM LLP
150 California Street
19th Floor
San Francisco, CA 94111

/Theodoros Konstantakopoulos/
Theodoros Konstantakopoulos
Counsel for Petitioner
Registration No. 74,155