

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JUNIPER NETWORKS, INC.,
Petitioner,

v.

MONARCH NETWORKING SOLUTIONS LLC,
Patent Owner.

U.S. Patent No. 8,130,775

“Mechanism for protecting a pseudo-wire”

IPR2024-00561

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EX1012	L. Ghein, "MPLS Fundamentals," Cisco Sys. (Nov. 2006)
EX1013	M. Sagheer & P. Shah, "L2VPN Tutorial: Path to Convergence," Cisco Sys. (2006)
EX1014	L. Martini et al., "Segmented Pseudo Wire," IETF (Oct. 2006), available at https://datatracker.ietf.org/doc/html/draft-ietf-pwe3-segmented-pw-03

EX1015	U.S. Patent No. 8,107,473 to Ijsbrand Wijnands et al. ("Wijnands")
EX1016	U.S. Patent No. 7,477,642 to Rahul Aggarwal et al. ("Aggarwal")
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EX1018	U.S. Patent No. 8,799,472 to Alan Noble ("Noble")
EX1019	B. Andrew & P. Machanick, "The Virtual Multicasting Approach to Bandwidth Conservation," Univ. of the Witwatersrand (2000)
EX1020	T. Yu Lo et al., "Design of Tunnel-Based Protection Schemes in Multigranularity Optical Cross-Connect Networks," Nat'l Chiao Tung Univ. (2005), available at https://ieeexplore.ieee.org/document/1589631
EX1021	U.S. Patent No. 5,115,495 to Paul Tsuchiya et al. ("Tsuchiya")
EX1022	M. Gupta et al., "A Feasibility Study for Power Management in LAN Switches," IEEE (Oct. 2004), available at https://ieeexplore.ieee.org/document/1348125
EX1023	T. Lo & C. Chen, "Tunnel Allocation and Protection in Hierarchical Cross-Connect WDM Networks," Nat'l Chiao Tung Univ. (June 2004), available at https://ir.nctu.edu.tw/handle/11536/53458
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I. INTRODUCTION

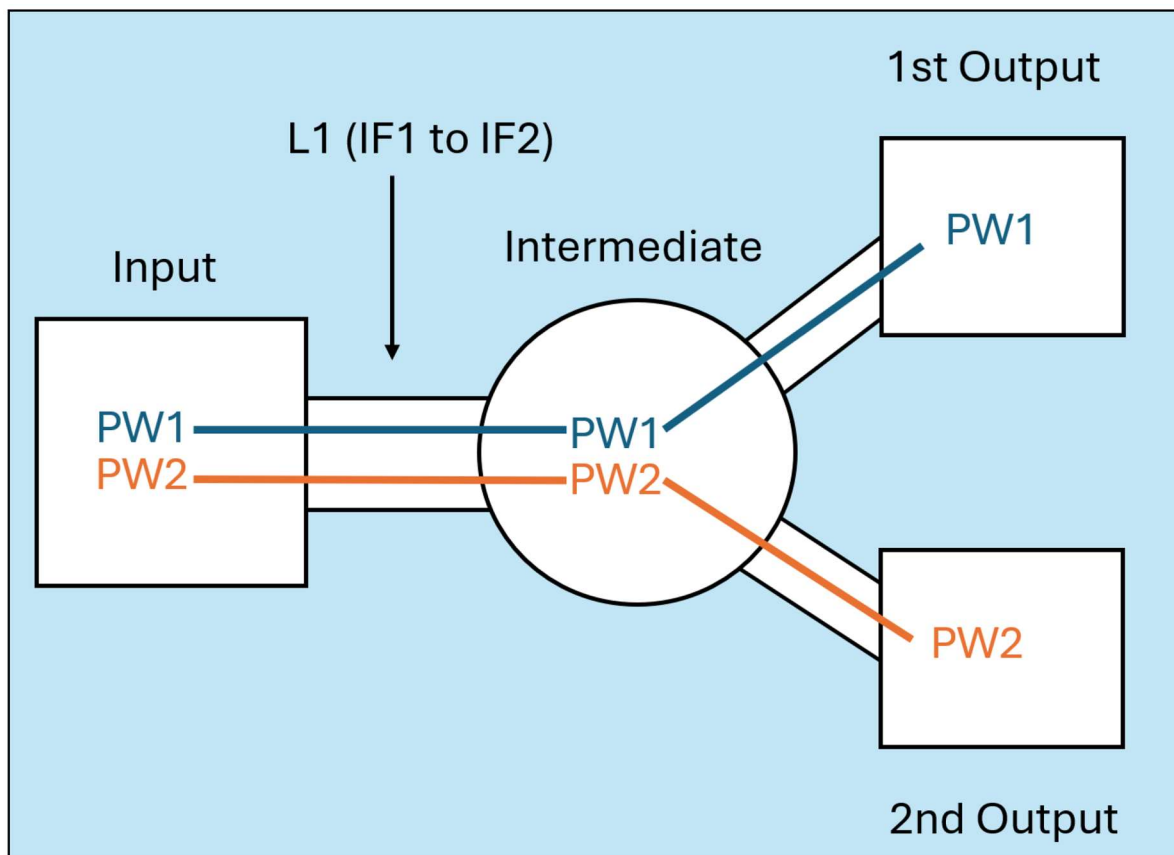
Patent Owner's only hope to save the challenged claims is to attempt to narrowly construe the claims to distinguish Juniper's prior art. In doing so, PO (1) repeatedly contradicts statements in the patent and previous arguments that PO made to the Board and to a prior district court about the meaning of the claims and (2) improperly imports narrow technical requirements into the claims that find no support in the claim language or the specification. Neither strategy works.

First, PO repeatedly contradicts representations it has made to past judicial bodies as well as disclosures in the '775 patent itself. In PO's previous litigation with Cisco, PO asserted that point-to-multipoint pseudo-wires infringe the challenged claims. Paper 3 ("Petition"), at 32-33; EX1033 ¶¶123, 127. But for purposes of invalidity, PO directly contradicts its prior position, distinguishing point-to-multipoint pseudo-wires because they allegedly cannot share a first link. Paper 13 ("POR"), at 28.

PO supports this argument by alleging that a multi-segment pseudo-wire, as defined in Bocci, is somehow technically unable to connect to the interface of an intermediate router. POR 27-30, 41. But the '775 patent itself explains that the multi-segment pseudo-wire described in Bocci *does* connect to the interface of the intermediate router. Specifically, the patent both depicts and explains that the multi-segment pseudo-wire described in Bocci has a "link" between the input router and

the intermediate router. EX1001, Fig. 1, 1:53-2:2. And PO itself agrees, (POR 18-19), and previously argued, (EX1008, 69), that a “link” is “a connection between an interface of a first router and an interface of a second router.” Thus, PO’s argument that a multi-segment pseudo-wire cannot connect to the interface of an intermediate router is not only unsupportable on a technical level, but it also contradicts express statements in the challenged patent.

In its final attempt to distinguish the claims from the prior art, PO generates the following demonstrative—which shows two pseudo-wires sharing a first physical connection but maintaining two separate virtual connections—and asserts the demonstrative depicts the alleged invention. It does not.



POR 34. This purported depiction of the alleged “invention” is not found or described anywhere in the '775 patent. To the contrary, this embodiment is disparaged by the patent's specification, (*see infra* § II.D.1), and was disparaged by PO itself in a previous IPR involving the '775 patent, in which PO distinguished a prior art reference that similarly disclosed “two links that use different interfaces but share the same physical path.” EX1027, 29 (emphasis in original). These contradictions are fatal to PO's arguments.

Second, PO argues that the claims differ from Juniper's prior art based on highly technical distinctions that are not required by the claims. The dispute here is simple. Under the construction of “link” that PO proposed in a prior district-court litigation and that Juniper adopted solely for purposes of this IPR, the '775 patent requires two pseudo-wires that connect from the same interface of an input router to the same interface of an intermediate router.

Both grounds in Juniper's petition teach this requirement. Wainner describes a pseudo-wire segment from an input router to an intermediate router that is shared between two pseudo-wires that span the network. Bocci supplements this disclosure, if necessary, to teach combining individual pseudo-wire segments to form a multi-segment pseudo-wire that maintains Wainner's disclosure of sharing the first segment. Kamite's Figure 10 similarly describes sharing the connection from an input router to an intermediate router such that “the traffic between [the input router]

and [the intermediate router] could be reduced to 1/3 of the conventional volume,” which Bocci additionally supplements in the same manner described above, if necessary. EX1041, 6. And to the extent the Board adopts PO's other, incorrect constructions and characterization of the '775 patent, then Kamite's Figure 3 depicts the pseudo-wire configuration that PO erroneously labels as the invention. Claims 1 and 6 of the '775 patent are therefore invalid as obvious, and Juniper respectfully asks the Board to cancel these claims.

II. PO'S CONSTRUCTIONS

Although Juniper disagrees with the construction of “link” that PO advocated for in a prior district court litigation, Juniper still applied it for purposes of this IPR because the prior art teaches the '775 claims even under PO's incorrect construction. But PO now deviates from the very construction it proposed and further limits “links” to physical connections. This erroneous construction compounds over the various terms that PO discusses in its response, ultimately changing the meaning of the limitation “said first link being shared by the first and second pseudo-wires” to cover a configuration that goes beyond what the '775 patent describes or at the very least is confusing and misleading. Although Juniper disputes and clarifies the meaning of the claim terms below, the '775 claims are still invalid in view of Kamite's Figure 3 and Bocci even if the Board adopts PO's incorrect constructions, as discussed further in the argument section of this reply.

A. “link”

For purposes of this IPR, the parties agree that a “link” is a connection between an interface of a first router and an interface of a second router. Petition 19-20; POR 18-19; EX1042 ¶4.

PO tries to further limit the construction of “link” to a “*physical connection* between router interfaces.” *E.g.*, POR 8, 19-20 (emphasis added). PO does not even try to show how the ’775 patent supports defining “link” as only a physical connection, and there is no such support. EX1042 ¶¶5-6. In fact, in the section titled “Link” in its response PO asserts only that “link” means a “connection between an *interface* of a first router and an *interface* of a second router,” without ever mentioning that the interface must be a physical interface. POR 18-19. It is not until the section titled “Pseudowire” that PO sneaks in its unsupported assumption that the interface must be a physical interface, arguing that “[a] pseudowire, unlike a link, is not a physical connection.” POR 19.

The prior art confirms that pseudo-wires can connect to any interface, “whether it is a physical, logical, or virtual interface.” EX1043, 10; *see also* EX1010, 3 (explaining that pseudo-wires encapsulate “data arriving at the PE-bound port (logical or physical)”); EX1010, 4 (explaining that the attachment circuit over which the pseudo-wire is established can be a “physical or virtual circuit”); EX1042

¶7. Regardless, the prior art teaches the '775 claims even if a “link” is only a physical connection.

B. “first link”

For purposes of this IPR, the parties agree that the “first link” is a connection between the interface of an input router and the interface of an intermediate router. POR 19; EX1042 ¶8.

C. “pseudo-wire”

For purposes of this IPR, the parties agree that a “pseudo-wire” is an emulated connection that transmits data packets. POR 19; EX1042 ¶9. However, PO is wrong about two other points. First, PO incorrectly states that “[t]he person skilled in the art has always considered a pseudo-wire as a point-to-point link set up between an input router and an output router.” POR, 5-6. To the contrary, at the time of the '775 patent's invention, a POSITA would have understood that pseudo-wires are not limited to point-to-point connections and rather included point-to-multipoint connections. EX1030, 1 (“A method, apparatus and computer program product for providing point-to-multipoint multihop distribution using Pseudowires (PWs) is presented.”); EX1041, 7 (“This method allows pseudo wire traffic to be forwarded using a multicast tunnel....”); EX1042 ¶9.

Second, pseudo-wires and links are not as distinct as PO suggests when it asserts that “[i]t is important to recognize that a ‘pseudowire’ (a type of emulated

connection) is not the same thing as a 'link' (a type of physical connection between router interfaces)." POR 20. As discussed, links are not necessarily physical connections. And a pseudo-wire is comparable to a link in the sense that it comprises multiple links. EX1042 ¶10. For example, '775 patent teaches that "[t]he first and second links *constitute* a first pseudo-wire pw1" and the second "pseudo-wire pw2 *consists of* the first link L1 and a second link L3." EX1001, 6:29-43 (emphases added). So if these links are physical connections, as PO asserts, then the pseudo-wire consists of these two physical connections. EX1042 ¶10.

D. "said first link being shared by the first and second pseudo-wires"

PO's errors and mischaracterizations above compound into an incorrect discussion of "said first link being shared by the first and second pseudo-wires." In fact, despite PO suggesting that this term needs to be construed and spending *17 pages* of its response¹ on it, PO is unable to offer a simple definition of what "said first link being shared by the first and second pseudo-wires" means under PO's understanding of the '775 patent.

Distilled down, PO's "analysis" is merely conclusion-driven reasoning in which PO arbitrarily labels Juniper's prior art as a non-inventive "one link, one pseudo-wire" or "two link, two pseudo-wire" approach, while arbitrarily labeling the

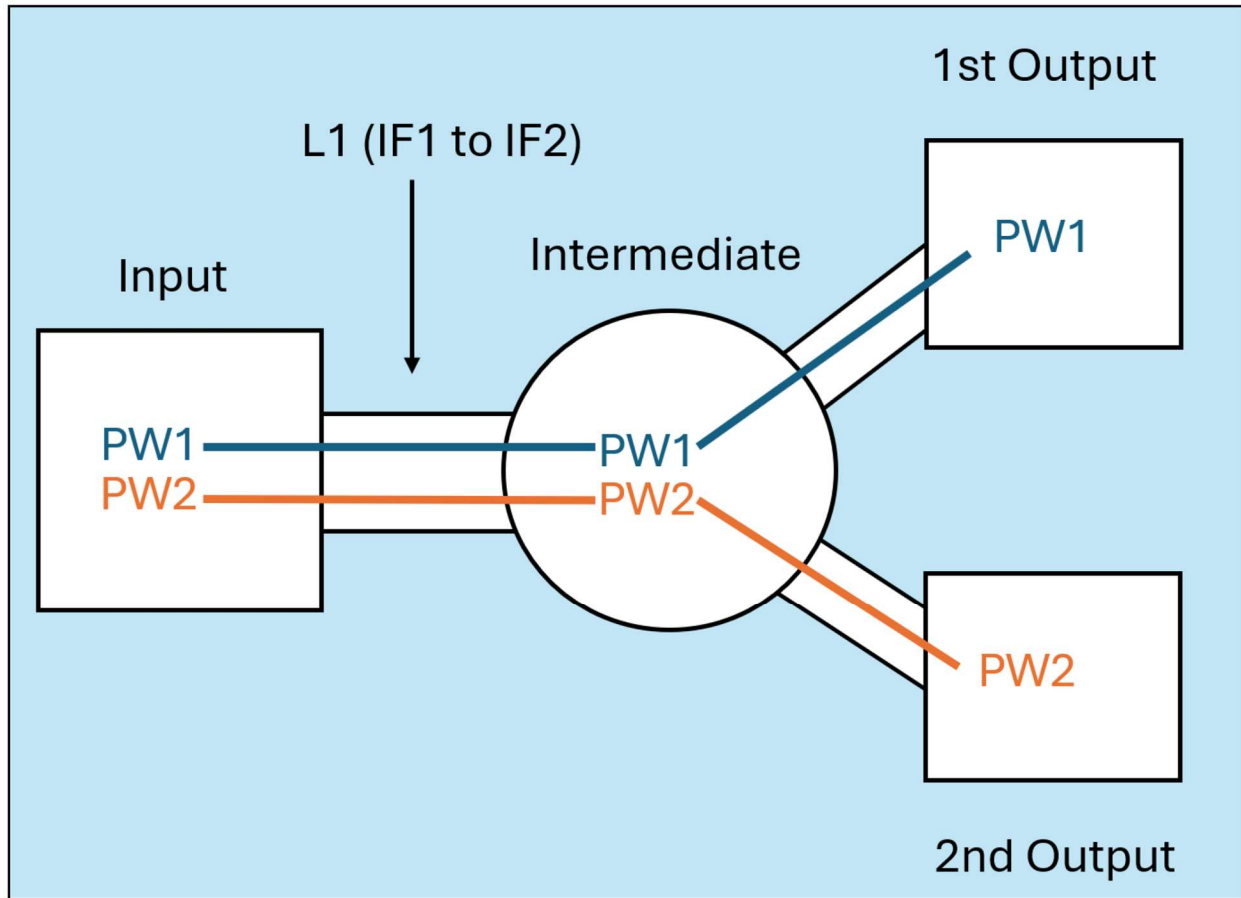
¹ More, if you count Patent Owner's analysis of the prior art.

'775 patent as a “one link, two pseudo-wire.” Due to its conclusion-driven analysis, PO never defines the meaning of this term. Regardless, the meaning of this term in view of PO's construction of “link” is simple; it requires the first segment of the two pseudo-wires to connect to the same interface of the initial router and the same interface of the intermediate router, which is what the prior art teaches. EX1042 ¶11. And the prior art, specifically Kamite's Figure 3, still invalidates the challenged claims even if the Board adopts Patent Owner's incorrect understanding of this term.

1. PO's Example of Sharing a Link Is Wrong

In its response, PO claims there are at least three approaches to using pseudo-wires in a network: “two links, two pseudo-wires,” “one link, one pseudo-wire,” and “one link, two pseudo-wires.” POR 20-37. PO then claims that the first two approaches are “inferior prior art approaches” and that the third approach “satisfies the '775 Patent's claims.” *Id.* at 21-22. PO's analysis is wrong.

For example, PO created the following demonstrative and contends (incorrectly) it depicts the “one link, two pseudo-wires” configuration of the claimed invention:



POR 34. In its demonstrative, PO depicts two pseudo-wires that are independent and not related. EX1042 ¶12. Although the two pseudo-wires pass through the same physical connection between the input router and the intermediate router—the white box labelled “L1 (IF1 to IF2)” —they use separate virtual connections—the orange and blue lines within L1. *Id.* PO’s demonstrative effectively interprets the claims to require two separate and distinct pseudo-wire segments within the first link. This is not supported by the claims. There is simply no language in the claims that require two separate and distinct pseudo-wire segments in the first link. The claims merely

require setting up two pseudo-wires that span the network and both “compris[e]” the first link, therefore sharing it. EX1001, 12:14-27 (claim 1), 13:12-29 (claim 6).

The specification does not support PO's demonstrative either. *Id.* ¶13. In fact, the demonstrative is the ***exact opposite*** of what the specification discloses and is disparaged repeatedly by the patent and was even distinguished by PO itself in a past IPR. *Id.* As the '775 patent explains, there were allegedly two main problems with the prior-art approach of requiring separate physical and/or virtual connections between the input router and the intermediate router. The '775 patent's alleged invention purportedly solves both inefficiencies, while PO's depiction of the alleged invention suffers both.

First, the '775 patent explains that prior art pseudo-wires wasted resources, like bandwidth, between the input router and the intermediate router. EX1042 ¶14. “In the prior art, the back-up pseudo-wire, although used only to broadcast data in the event of a fault affecting the main pseudo-wire, ***reserves resources used to set it up over the whole of the network*** between the input router and the output router.” EX1001, 3:20-24 (emphasis added). But after implementing the '775 patent's alleged invention, “[b]ecause the main pseudo-wire and the back-up pseudo-wire share the link set up between the input router and the intermediate router, ***the network resources that in the past were reserved for the back-up pseudo-wire are***

released and can be used in a manner closer to the optimum.” EX1001, 3:24-29 (emphasis added).

PO's demonstrative does not optimally use resources between the input router and intermediate router as the '775 patent teaches. EX1042 ¶15. PO's demonstrative depicts that the pseudo-wires operate as separate and independent connections. *Id.* Each pseudo-wire is a like separate tube from the input router to an output router, and the information sent down one tube cannot be extracted midway—*i.e.*, at the intermediate router—and put in the other tube for the last leg of the journey. *Id.* Accordingly, the second pseudo-wire must needlessly transmit duplicate information from the input router to the intermediate router in case of a fault affecting the first output router. *Id.*

Further, PO's demonstrative depicts reserving a portion of the first link's bandwidth for the first pseudo-wire's virtual connection (in blue) and reserving a separate portion for the second pseudo-wire's virtual connection (in orange). *Id.* ¶16. Thus, the second pseudo-wire occupies bandwidth in the first link even when it sits dormant. *Id.* This is like building two identical roads between two cities and keeping only one of them open at a time, instead of building one larger road that is fully open and can facilitate more traffic. Both inefficiencies in PO's demonstrative violate the '775 patent's teaching that the invention purportedly “optimizes use of

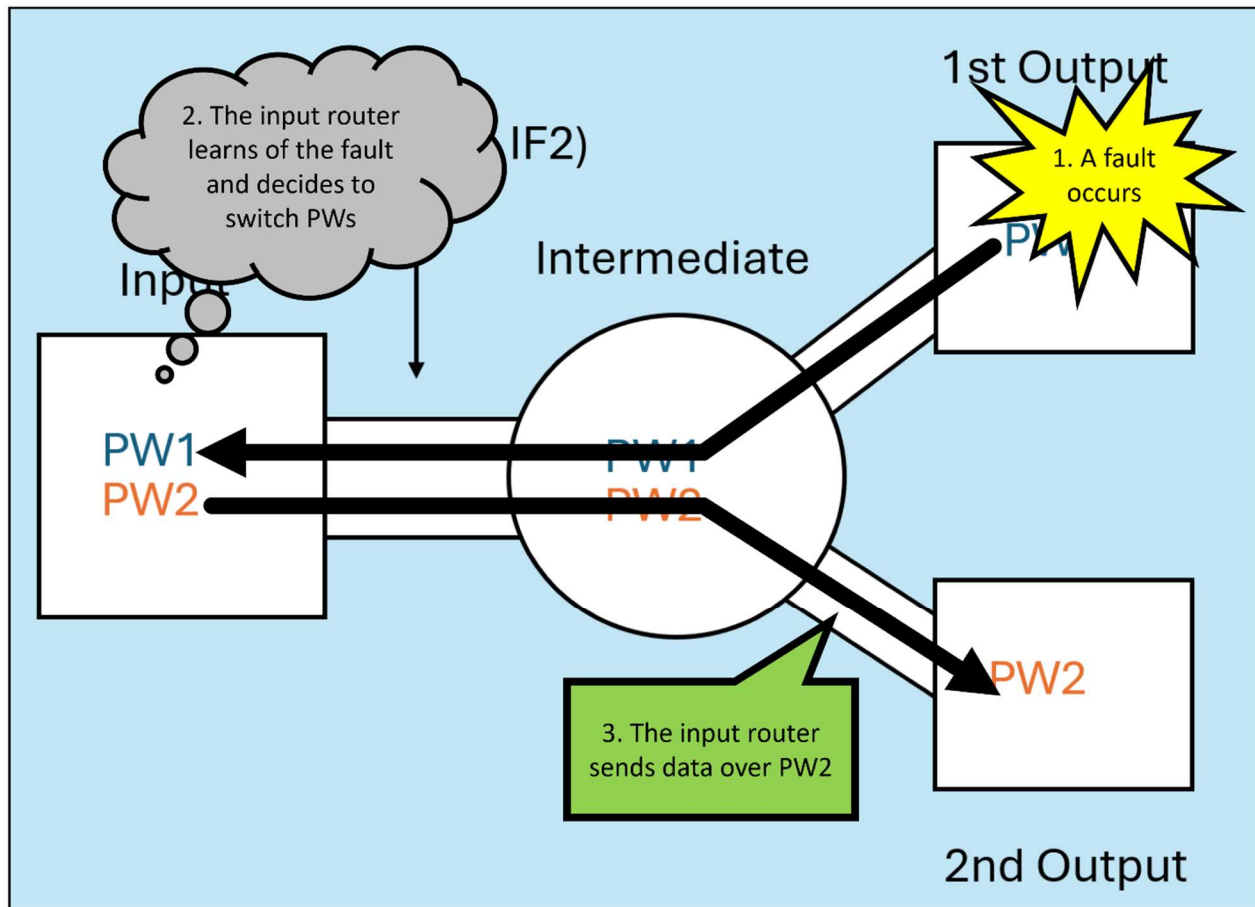
the resources of the network between the first router and the intermediate router.”

EX1042 ¶16; *e.g.*, EX1001, 4:47-50.

Second, the prior-art approach needlessly sent information across the entire network that could have been sent over a more limited distance. EX1042 ¶17. The ’775 patent discloses that, in the event of a fault affecting the first output router, the news of the fault and the decision to switch output routers does not need to travel all the way across the network and back again. EX1042 ¶17. Instead, if the first output router experiences a fault, the news of the fault needs to travel only to the intermediate router. *Id.* Additionally, the intermediate router is able to switch the data transfer to the second output router; the input router no longer needs to make that decision. *Id.* “This improves the responsiveness of the network because detection occurs as close as possible to the fault.” EX1001, 4:59-60; *see also* EX1001, 4:17-19. “Accordingly, a fault affecting the first output router is detected more quickly, as the information does not have to cross the network as far as the input router before being processed” and “[t]he function for switching the data stream” also “occurs faster because it is triggered on detection of the fault by the intermediate router.” EX1001, 4:60-5:2.

PO’s configuration violates this optimization as well. EX1042 ¶18. In PO’s configuration, each pseudo-wire is still an independent, unrelated connection between the input router and different output routers—they are impermeable tubes,

as described above. *Id.* Meaning, if a fault affects the first output router in PO's proposed configuration, then that news would have to travel all the way back to the input router through the first pseudo-wire, the input router would need to decide to switch to the second output router, and then the input router would have to send duplicate information through the intermediate router to the second output router:



Id. PO's demonstrative thus does not depict "said first link being shared by the first and second pseudo-wires" because it suffers the same inefficiencies that the patent intends to avoid. *Id.*

Further, PO's argument contradicts what PO previously represented to the Board about the '775 patent. In the IPR between Cisco and PO on this patent, PO distinguished a prior art reference that disclosed "two links that use different interfaces but share the same physical path." EX1027, 29 (emphasis in original). Yet that is exactly what PO is now advocating for in its demonstrative above. EX1042 ¶19. Thus, PO's demonstrative does not accurately depict the '775 patent's alleged invention, or at the least it is very misleading. *Id.*

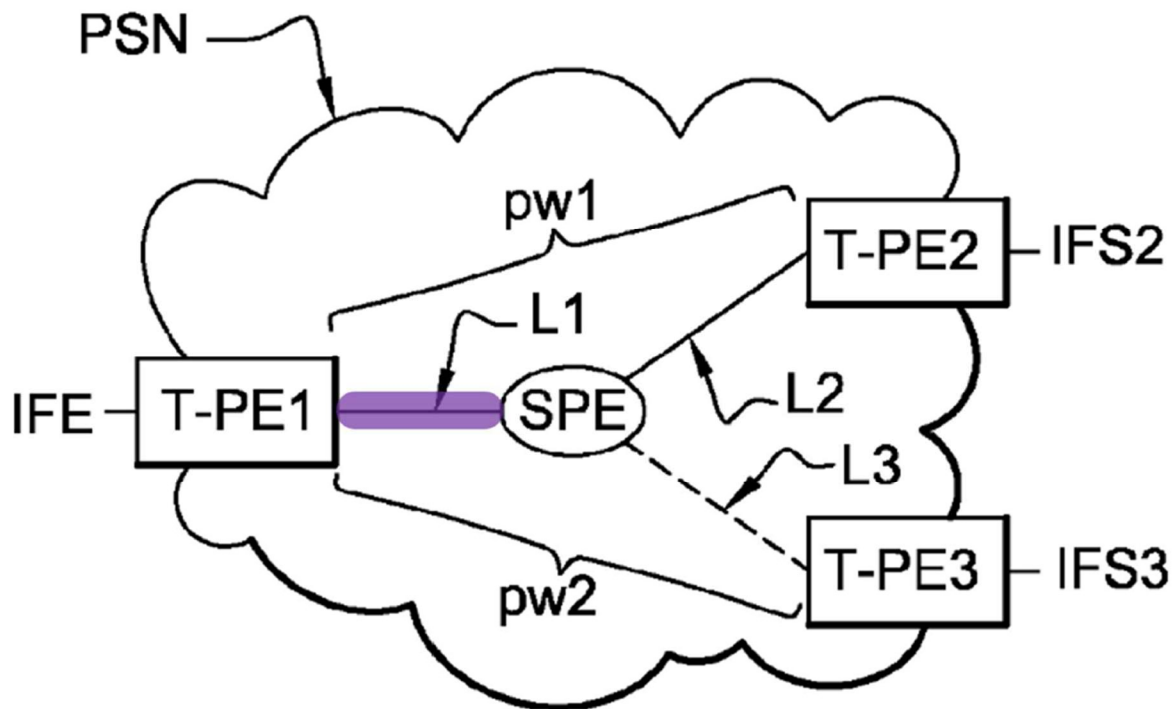
Regardless, if the Board decides to adopt PO's construction—whatever that construction actually is, since PO never defined the phrase at issue—the prior art still invalidates this configuration. In fact, Juniper anticipated that PO would play these semantic games and therefore preempted PO's argument by charting the combination of Kamite's Figure 3 and Bocci, which teaches PO's incorrect understanding of the patent as explained in the argument section below.

2. Sharing a Link Actually Requires Connecting to the Same Virtual Interface²

By trying to manufacture a distinction between the prior art and the '775 patent, PO has distorted the patent's teachings. In view of PO's original construction

² To the extent PO argues that a physical connection would somehow change this analysis, it does not. EX1042 ¶23. Implementing the invention over physical interfaces would operate identically to what is shown in Figure 3 of the '775 patent

of “link,” which Juniper adopted solely for purposes of this IPR, what the '775 patent actually requires is that the two pseudo-wires connect from the same interface of the input router to the same interface of the output router. EX1042 ¶20. This is what the '775 patent teaches as the purported invention, and it is accurately depicted in Figure 3 of the '775 patent:

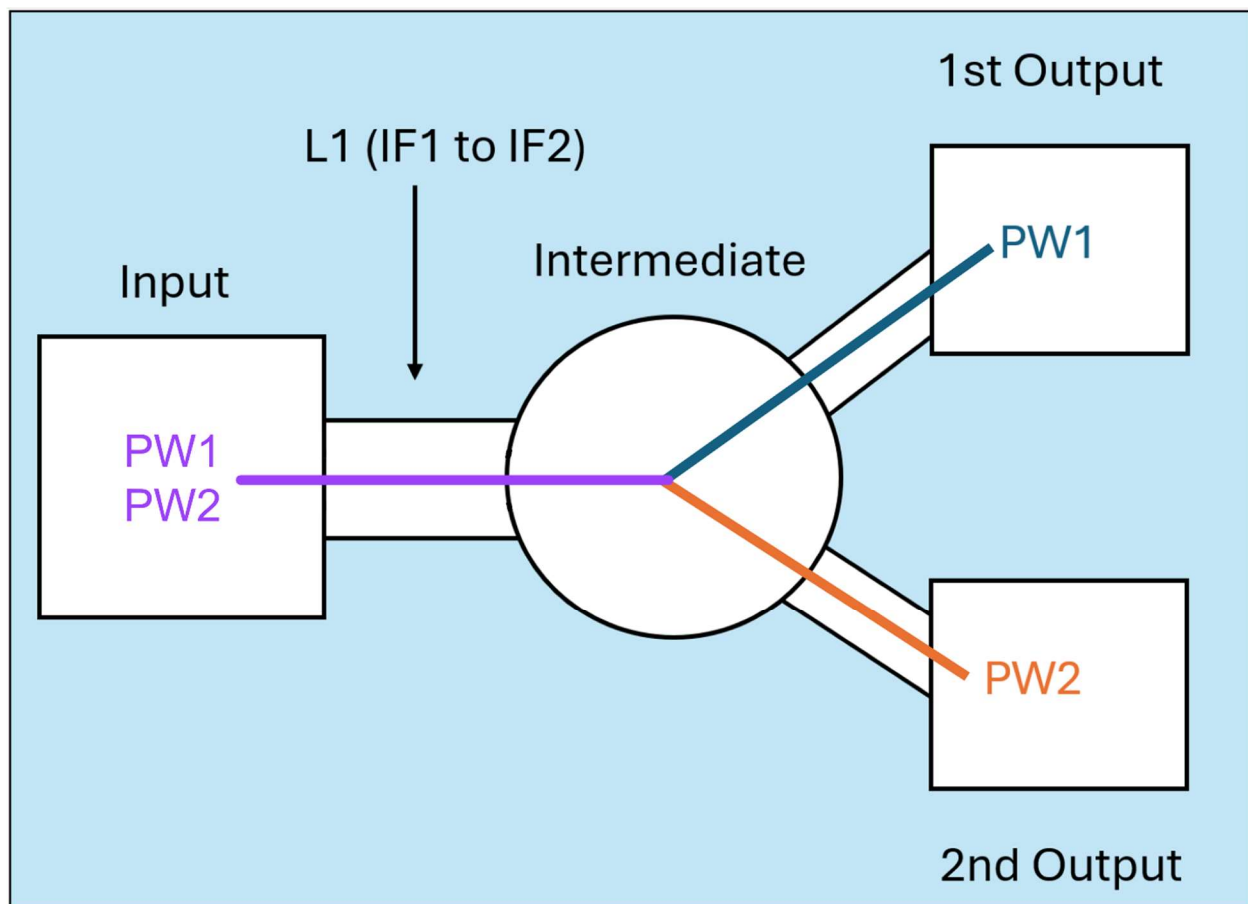


EX1001, Fig. 3 (highlighted). As shown, Figure 3 does not draw two separate pseudo-wires from the input router all the way to each output router, as PO does in

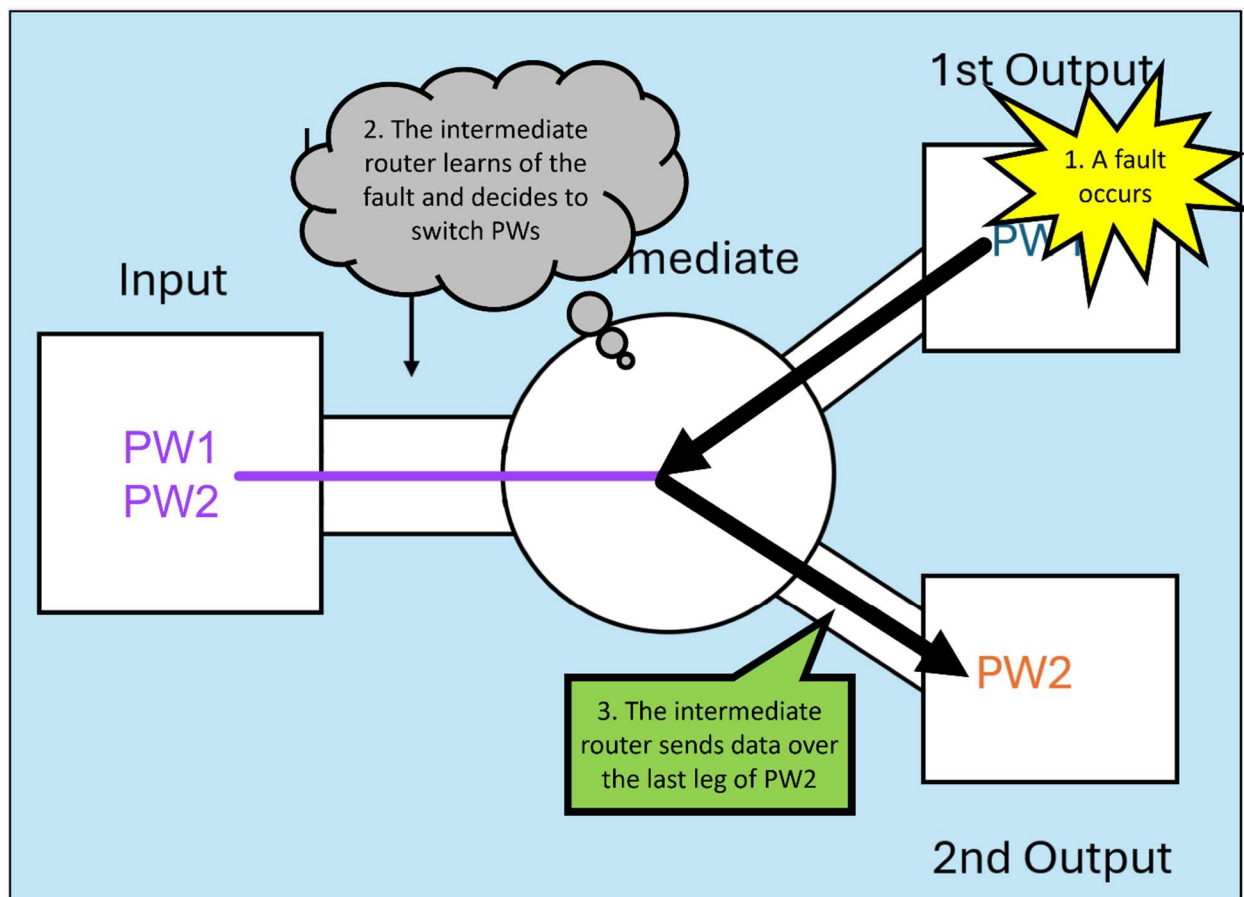
and in Juniper's modification to PO's demonstrative shown below, except that the purple connection from the input router to the intermediate router would occupy the entire space within the white box labelled “link 1.” *Id.*

its misleading figure above. EX1042 ¶20. Instead, Figure 3 intentionally uses curly braces (*i.e.*, “ { ”) to indicate that the pseudo-wires comprise the three links fully, rather than just portions of them as in PO's demonstrative. *Id.* This comports with the patent's statement that “[t]he first and second links **constitute** a first pseudo-wire pw1” and that the second “pseudo-wire pw2 **consists of** the first link L1 and a second link L3.” EX1001, 6:29-43 (emphases added).

Thus, the '775 patent's purported invention is more accurately depicted in the following modification to PO's figure:

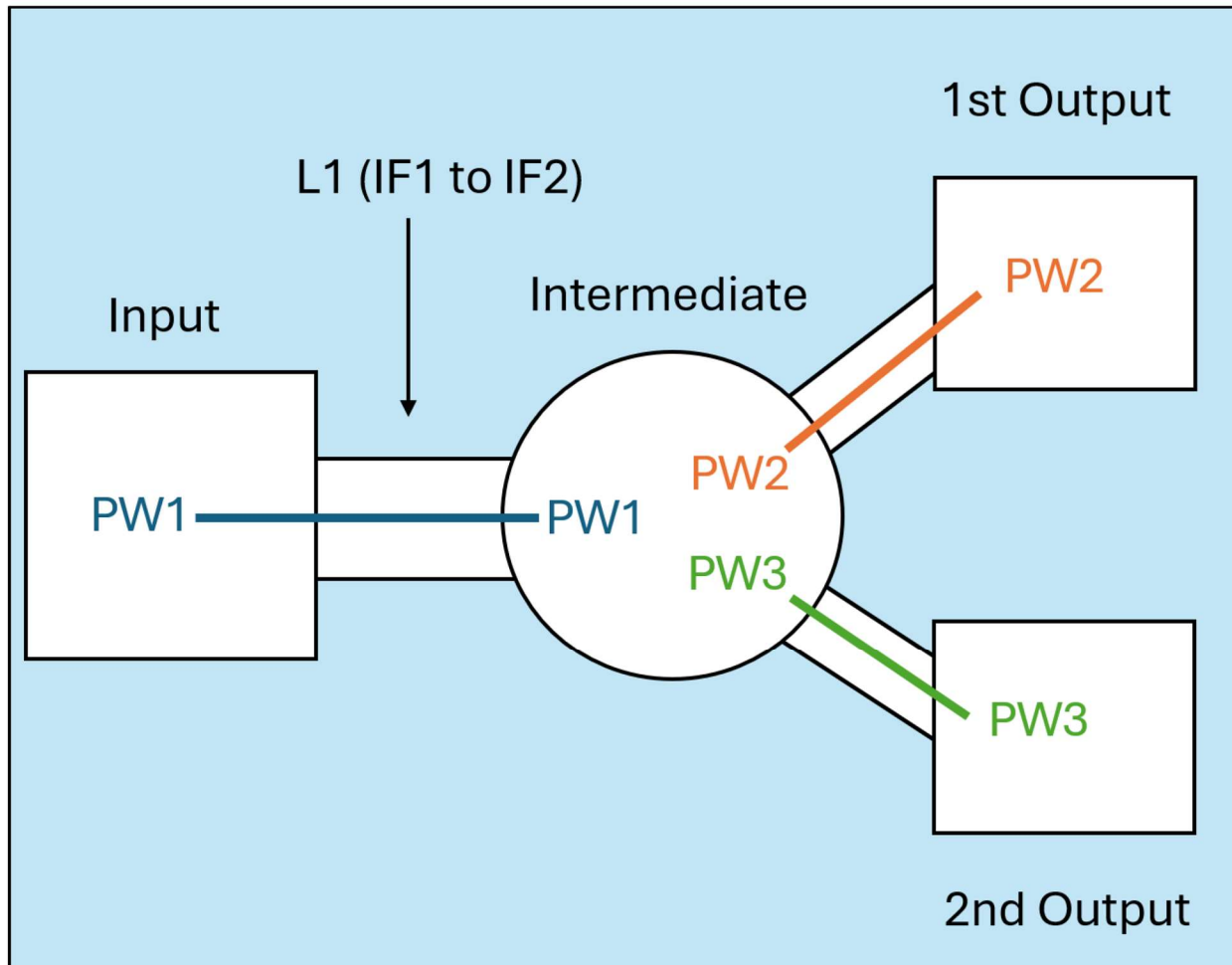


EX1042 ¶21. Here, the blue and orange connections from PO's figure combine to form a purple connection between the input router and the intermediate router, indicating that this connection is shared both physically and virtually between the two pseudo-wires. *Id.* Then, the pseudo-wires separate into their component parts: the first pseudo-wire's blue connection from the intermediate router to the first output router, and the second pseudo-wire's orange connection from the intermediate router to the second output router. *Id.* This configuration enables the '775 patent's purported invention:



Id.

The above is very similar to the configuration that PO disparages as a “one link, one pseudowire” configuration [that] does not meet the claim limitation”:



POR 26. That is not surprising, as the “one link, one pseudo-wire” configuration is functionally identical to what the ’775 patent teaches as the invention and is actually more faithful to the patent than PO’s “one link, two pseudo-wire” configuration. Petition 32-33; EX1042 ¶22.

In fact, PO tries to play both sides of the coin with the “one link, one pseudo-wire” configuration, accusing it of infringing the ’775 patent but then disparaging it

in the invalidity context. Petition 32-33. Juniper's petition explained in detail that PO itself has asserted that the '775 patent encompasses this configuration, often referred to as a "point-to-multipoint pseudo-wire." Petition 32-33. PO, apparently unable to refute this argument, instead ignores it and therefore forfeits the issue by not addressing it in the response brief. *Google LLC v. Ecofactor, Inc.*, IPR2022-00473 (PTAB Aug. 1, 2023), Paper 25, at 44.

III. ARGUMENT

A. Ground 1: Wainner and Bocci Teach Two Pseudo-Wires That Share a First Link

Wainner and Bocci teach two pseudo-wires that share a first link. Wainner, like the '775 patent, explains that its method deviates from conventional point-to-point pseudo-wires in an effort to conserve bandwidth and optimally utilize the system. Petition 22. The first segment, which connects to the interface of an input router and the interface of an intermediate router, is shared among multiple later segments. Petition 38-39, 45-53. Although Wainner refers to each segment as a pseudo-wire, Wainner further discloses that the sequential pseudo-wire segments can be combined to form larger pseudo-wires that span the network. Petition 21 n.3, 21-22, 30-31. In addition to Wainner alone teaching the challenged claims, Bocci further would have motivated a POSITA to combine Wainner's first, "shared" pseudo-wire segment with later pseudo-wire segments to form multi-segment pseudo-wires that still share the first link. Petition 24-28, 31-32. In fact, the

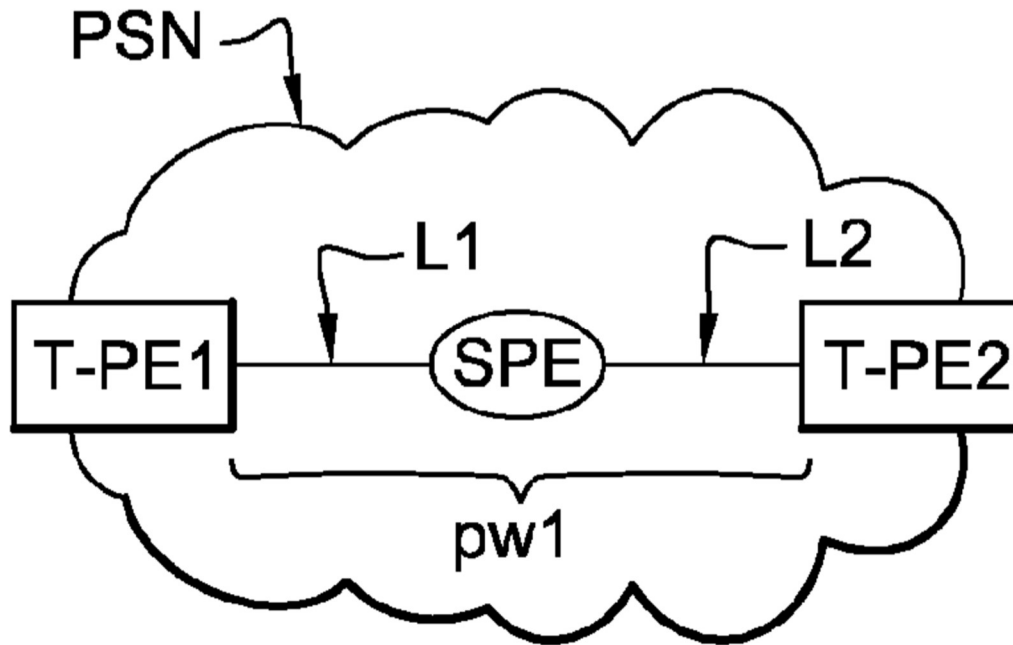
configuration embodied in these two examples is exactly what PO previously accused in its litigation with Cisco. Petition 32-33.

Tellingly, PO does not address these points and therefore forfeits a response to them; PO should not be allowed to belatedly cobble together a response in sur-reply, depriving Juniper an opportunity to respond. *Google*, IPR2022-00473, Paper 25, at 44. Instead, PO assumes without agreeing (or disputing) that the pseudo-wires in Wainner can be combined to form multi-segment pseudo-wires that PO titles “MSPW22-24” and “MSPW22-28,” which “both include PW22.” POR 40. In other words, PO accepts that Wainner teaches two pseudo-wires that span the network and that share the first pseudo-wire segment. EX1042 ¶24. PO’s only argument is that these multi-segment pseudo-wires still do not share *a link* because “multi-segment pseudowires cannot connect to any interface of the intermediate router.” POR 40-41. That is non-sensical. EX1042 ¶25. If multi-segment pseudo-wires do not connect to an interface of the intermediate router, how do they send data through that router? *Id.* How are they connected to that router at all? *Id.*

To arrive at this absurd conclusion, PO mischaracterizes Bocci, asserting “Bocci makes clear that multi-segment pseudowires can *only* connect to interfaces on [output] routers and cannot connect to interfaces on [intermediate] routers.” POR 41 (emphasis in original). PO’s only support for this sweeping and extreme statement is that Bocci says multi-segment pseudo-wires “behave and function as a

single point-to-point PW” and that “[e]ach end of a MS-PW by definition MUST terminate on” an output router. POR 27-20, 41 (quoting EX1031, 6). That says nothing about whether a multi-segment pseudo-wire connects to the interface of an intermediate router. EX1042 ¶26. Just because a multi-segment pseudo-wire traditionally looks, from the user’s perspective, like a direct connection from an input router to an output router does not mean that the pseudo-wire does not connect to interfaces of intermediate routers. *Id.* That is like arguing the Acela train line does not interface with Washington, D.C. because it begins in Atlanta and ends in Boston. Not true. The line still has a stop in and interfaces with D.C., just like a multi-segment pseudo-wire still passes through and interfaces with an intermediate router.

PO’s mischaracterization of Bocci contradicts even what the ’775 patent has to say about that reference. EX1042 ¶27. As PO acknowledges, Figure 1 of the ’775 patent depicts a multi-segment pseudo-wire as described in Bocci. POR 14-15.



EX1001, Fig. 1. The '775 patent labels—and describes in the specification—the connection from the input router to the intermediate router in this multi-segment pseudo-wire as a “link.” EX1001, 1:53-2:2. Under PO’s construction of “link,” that means the multi-segment pseudo-wire depicted in Figure 1 and described in Bocci connects to an interface of the intermediate router. EX1042 ¶27. Thus, the '775 patent itself contradicts PO’s argument.

PO missteps even further when it trumpets that the '775 patent goes “against th[e] received wisdom of the person skilled in the art” who “has always considered a pseudo-wire as a point-to-point link set up between an input router and an output router.” POR 41-42 (quoting EX1001, 3:9-18). As Juniper explained in the petition and above, *Wainner says the same thing*, noting that its invention “deviates from previous L2VPN concepts that define a point-to-point PW.” EX1030 ¶20; EX1042

¶29. This further underscores the similarities between Wainner and the '775 patent, and PO simply ignores it.

Finally, PO's argument about "seeing" incoming pseudo-wires does not distinguish Wainner from the '775 patent and is not rooted in the claims either. POR 36, 42-43; EX1042 ¶¶28, 30-31. As in the '775 patent, Wainner's intermediate router also "sees" an incoming connection and recognizes that the incoming connection branches out to multiple output routers. EX1042 ¶30. Tellingly, PO relies on a singular quote from Wainner to make its point—"The S-PE understands through the PW control plane that it is receiving the tail-end of the PW."—and then conveniently leaves out the very next sentence, which defeats PO's argument because it ties the incoming connection to multiple outgoing connections—***"Subsequently, the S-PE signals the establishment of PWs to one or more downstream receiving PE (R-PE)."*** EX1030 ¶25 (emphasis added). PO's actual complaint here is that Wainner does not disclose populating a switching table as in Figure 5 of the '775 patent, but that is not required by the challenged claims. EX1042 ¶31. Even if it were required, a POSITA would know that Wainner's intermediate router keeps state in order to distinguish the separate pseudo-wires, just like the switching table in Figure 5 of the '775 patent. *Id.* If the intermediate router were unable to "see" that the incoming connection is associated with multiple outgoing connections, then it would route data packets from the input router to only

one output router rather than all of them. *Id.* That would contradict Wainner's express teaching that "Packets received by PE1 from another network device (not shown) may be forwarded to *one or more* of PE2, PE3 and PE4." EX1030 ¶19 (emphasis added); EX1042 ¶31.

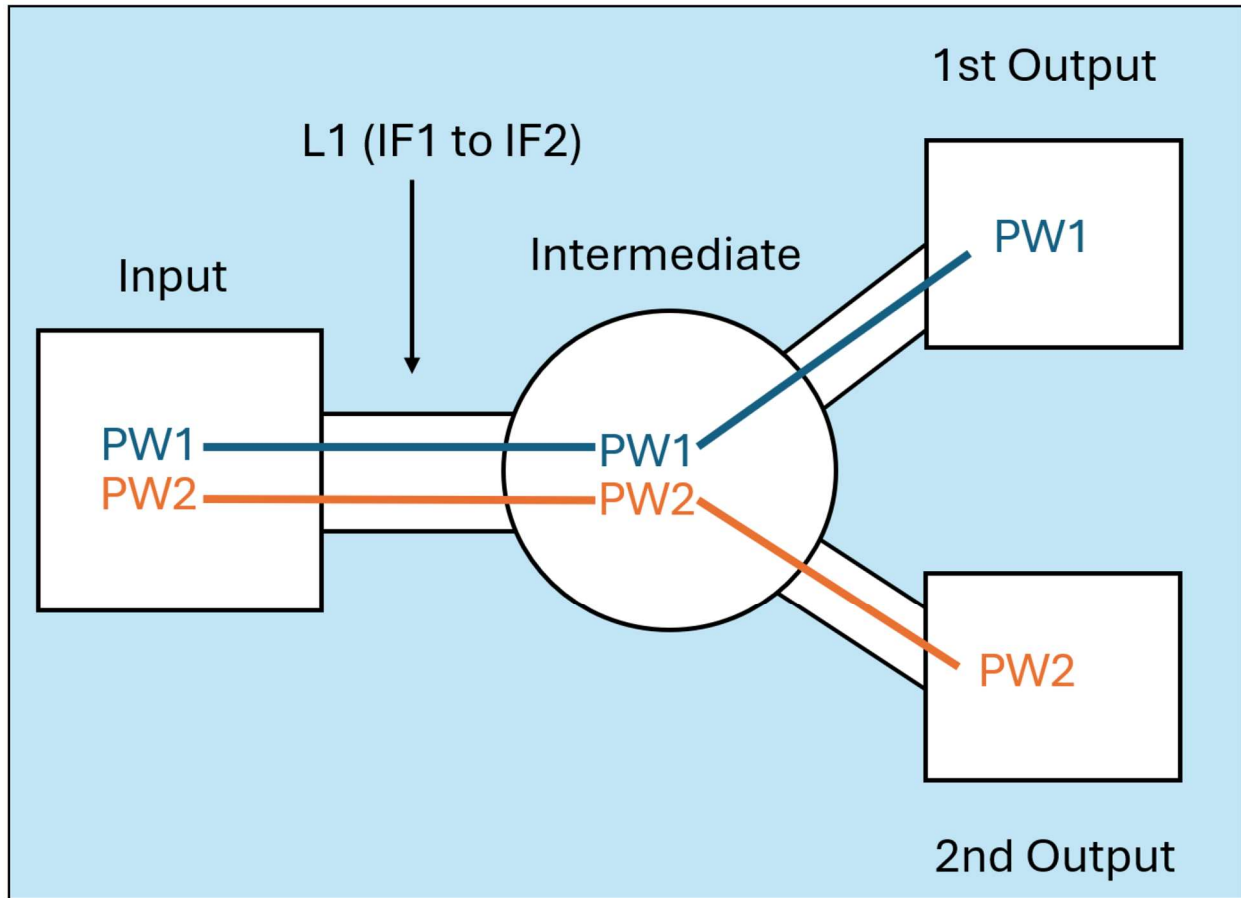
Juniper respectfully asks the Board to cancel claims 1 and 6 of the '775 patent because they are obvious in view of Wainner or, if necessary, Wainner combined with Bocci.

B. Ground 2: Kamite and Bocci Teach Two Pseudo-Wires That Share a First Link

PO's disjointed logic is on full display in how it treats Figures 3 and 10 of Kamite. PO is in a double bind here. If PO argues that the first physical connection must contain three distinct virtual connections, then Kamite's Figure 3 invalidates the challenged claims. And if PO argues that the first physical connection must contain a single virtual connection, then Kamite's Figure 10 invalidates. Recognizing this impossible situation, PO tries to get out of it by drawing a circuitous boundary line that selectively includes the challenged claims and excludes the prior art that encroaches on them. Unfortunately for PO, there is no clean distinction here; wherever PO draws the line, either Kamite's Figure 3 invalidates the claims or Figure 10 does.

1. Kamite's Figure 3 Teaches PO's Incorrect Understanding of the '775 Patent

Juniper anticipated that PO would play semantic games over the meaning of “link” and therefore charted Kamite's Figure 3 to preempt the exact argument PO now makes. Kamite's Figure 3 invalidates the challenged claims even if the Board adopts PO's incorrect understanding of the '775 patent and claim constructions. EX1042 ¶32. Under PO's constructions, “a link is a physical connection between router interfaces.” POR 8. Thus, PO's interpretation of “said first link being shared by the first and second pseudo-wires” means there are two distinct pseudo-wires that pass through the physical connection between the input router and the intermediate router. *See* POR 33-37; EX1042 ¶32. This is especially evident in PO's depiction of the alleged invention:



POR 34. That is what Kamite's Figure 3 teaches. EX1042 ¶32. As shown below—
 identically to PO's demonstrative of the alleged invention—there is one physical
 connection between the input router PE11₁ and intermediate router P12₁, highlighted
 in blue, and three pseudo-wires passing through it, highlighted in yellow:

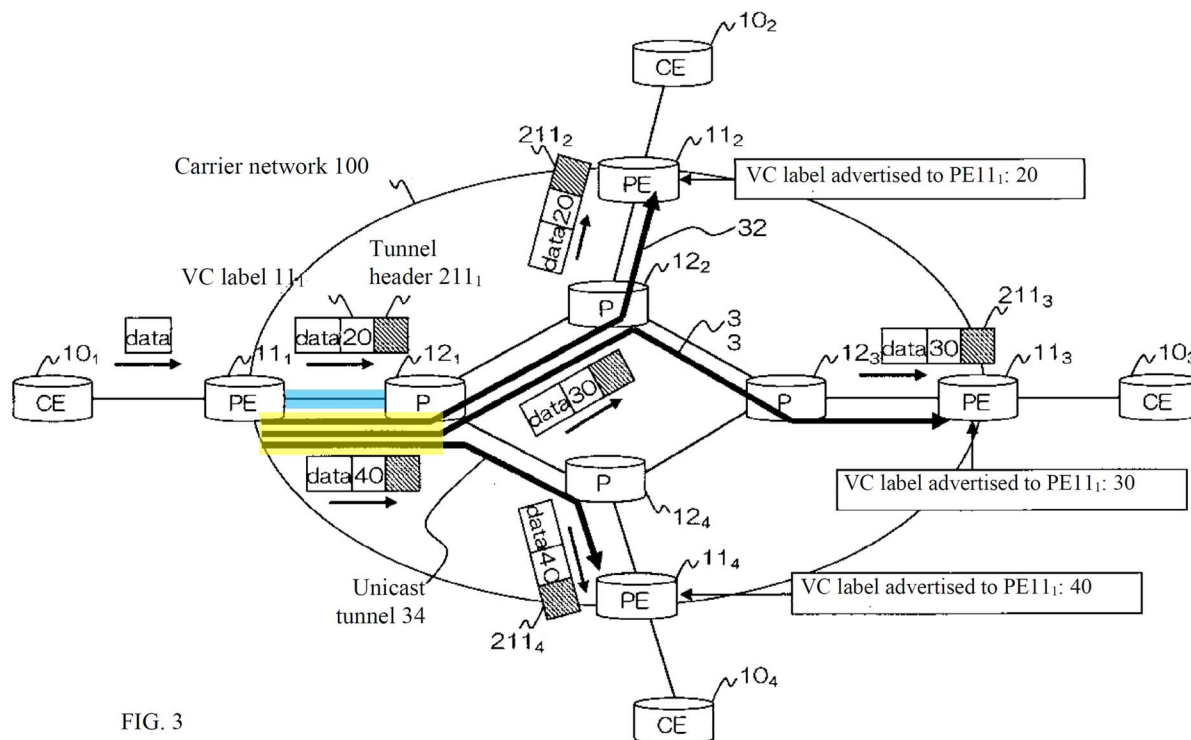


FIG. 3

EX1041, Fig. 3 (highlighted); EX1042 ¶32.

It is unclear why PO thinks these three pseudo-wires are implemented on different physical connections between the input router and the intermediate router. POR 25, 47-48. The only support PO is able to grasp at within Kamite is that “it assigns each pseudowire an ‘Interface Parameter.’” POR 47 (citing EX1041, 8). First, that statement does not suggest that Kamite assigns *different* interface parameters to each pseudo-wire. EX1042 ¶33. Second, that statement is describing how Kamite uses the parameter “[i]n the present invention,” not in Figure 3. EX1041, 8, 13; EX1042 ¶33. Third, even if Kamite assigns different interface parameters to each pseudo-wire, the figure above indicates that these would be different *virtual* interface parameters, which are distinct from the *physical* interfaces

that PO contends must be shared under its construction of “link.” POR 8; EX1042 ¶33. The pseudo-wires in Figure 3 share a physical interface, represented by the connection between PE11₁ and P12₁ highlighted in blue above. EX1042 ¶33.

Thus, even under PO's incorrect constructions, Kamite's Figure 3—in combination with Bocci, if necessary—still invalidates claims 1 and 6.

2. Kamite's Figure 10 Teaches the Correct Understanding of the '775 Patent

More accurately, though, Kamite's Figure 10 teaches the actual alleged invention of the '775 patent. EX1042 ¶34. Just like the '775 patent and Wainner, Kamite disparages the “point-to-point” nature of “conventional pseudo wire technology” in favor of “multicast tunnel technology” that transfers data “in multiple directions.” Petition 55 (citing EX1041, 5-6). This is the same configuration that PO has previously accused of infringing the '775 patent. Petition 32-33, 66. Kamite's Figure 10 teaches sharing the first link between input router PE11₁ and P12₁ by sending only one instance of data across it rather than the three instances of data required in Figure 3. Petition 77-78. In this manner, “the traffic between PE11₁ and P12₁ could be reduced to 1/3 of the conventional volume” required by prior-art pseudo-wires. EX1041, 6.

Again, PO does not dispute any of this and therefore forfeits a response. *Google*, IPR2022-00473, Paper 25, at 44. Instead, PO similarly assumes without agreeing (or disputing) that Kamite and Bocci teach setting up multi-segment

pseudo-wires and then makes the same complaints it did above. POR 45. To start, PO asserts that the connection between PE11₁ and P12₁ is a single pseudo-wire and therefore cannot be shared. POR 45. But that connection *is not* a component pseudo-wire—*i.e.*, an individual pseudo-wire that starts at PE11₁ and ends at P12₁—it is a segment of larger pseudo-wires that span the entire network in Figure 10. EX1042 ¶35. Juniper never asserted that it was a component pseudo-wire and that is not supported by Kamite either. The link between PE11₁ and P12₁ therefore does not “include[] only one pseudowire” as PO contends. POR 45.

This exemplifies the double bind that PO is in when it comes to Figures 3 and 10 of Kamite. EX1042 ¶36. PO asserted that Kamite's Figure 3 does not teach the challenged claims even though it explicitly depicts three separate pseudo-wires passing through a physical connection. POR 46-49. But now with Figure 10, PO asserts that it also fails to teach the challenged claims *because* it compresses these three pseudo-wires into one shared connection. POR 44-46. PO cannot play both sides. Either the '775 patent requires separate pseudo-wires passing through a single physical connection, as in Kamite's Figure 3, or it requires a single pseudo-wire connection that is shared between larger pseudo-wires that span the network, as in Kamite's Figure 10.

PO further argues that “multi-segment pseudowires cannot connect to interfaces on [intermediate] routers such as P12₁.” POR 48. This contradicts the

'775 patent's teaching that multi-segment pseudo-wires contain a "link" from an input router to an intermediate router that—according to PO's construction of "link"—is a connection from an interface on the input router to an interface on the intermediate router. *See supra* § III.A; EX1042 ¶37.

Finally, PO also suggests that the tunnels in Kamite are not equivalent to pseudo-wires and links. POR 12-13. Patent Owner does not adequately develop this argument, which appears nowhere in the argument section of its brief. Patent Owner cites only to a sentence in Bocci and says that "PWs are 'a separate layer to the PSN tunnel.'" POR 13 (citing EX1031, 7). This misrepresents Bocci, which says that its disclosures differ from the known pseudo-wire protocol in that "the pseudo-wires *may be considered* to be a separate layer to the PSN tunnel"—not that they *are* separate—and will nevertheless "reuse the protocols of the PSN and may use information that is extracted from the PSN." EX1031, 7-8 (emphasis added); EX1042 ¶38. Indeed, Bocci explains that its pseudo-wires are implemented on tunnels: Bocci "extends the architecture in" the known protocol "to enable pseudo wires to be extended *through multiple PSN tunnels*." EX1031, 3 (emphasis added); EX1042 ¶38. Additionally, Kamite teaches implementing pseudo-wires over a tunnel, (EX1041, 5), and Patent Owner fails to explain how combining Kamite with Bocci would destroy this teaching, (EX1042 ¶38).

None of these points are persuasive, and Juniper respectfully asks the Board to cancel claims 1 and 6 of the '775 patent because they are obvious in view of Kamite or, if necessary, Kamite combined with Bocci.

IV. CONCLUSION

For the reasons above and in Petitioner's petition, the Board should find the Challenged Claims of the '775 patent unpatentable.

Date: January 28, 2025

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CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. §42.24(d), Petitioner hereby certifies, in accordance with and reliance on the word count provided by the word-processing system used to prepare this Reply, that the number of words in this paper is 5,442. Pursuant to 37 C.F.R. §42.24(d), this word count excludes the table of contents, table of authorities, mandatory notices under §42.8, certificate of service, certificate of word count, appendix of exhibits, and any claim listing.

Date: January 28, 2025

Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing Petitioner's Reply to Patent Owner Response was served via e-mail pursuant to 37 C.F.R. §42.6(e) in its entirety to all counsel of record, as follows:

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