

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JUNIPER NETWORKS, INC.,
Petitioner,

v.

MONARCH NETWORKING SOLUTIONS LLC,
Patent Owner.

Case IPR2024-00561
Patent 8,130,775

**PATENT OWNER'S PRELIMINARY RESPONSE UNDER 37
C.F.R. § 42.107 TO PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 8,130,775**

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EXHIBIT LIST

Patent Owner's Exhibits

Exhibit	Description
EX2001	Declaration In Support of Motion For Pro Hac Vice Admission of Alden G. Harris under 37 C.F.R. § 42.10(c)
EX2002	RFC3031 - Multiprotocol Label Switching Architecture
EX2003	An Architecture for Multi-Segment Pseudo-Wire Emulation Edge-to-Edge' (draft-ietf-pwe3-ms-pw-arch-02.txt) [as filed in <i>ex parte</i> reexamination no. 90/014,701]
EX2004	Redline comparing draft-ietf-pwe3-ms-pw-arch-00 with draft-ietf-pwe3-ms-pw-arch-02
EX2005	U.S. Patent No. 7,602,702 to Aggarwal

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I. Introduction

Patent Owner Monarch Networking Solutions LLC (“Monarch” or “Patent Owner”) respectfully requests that the Board refuse to institute *inter partes* review of U.S. Patent No. 8,130,775 (“the ’775 Patent”) because Petitioner Juniper Networks Inc. (“Juniper” or “Petitioner”) has not shown a reasonable likelihood of prevailing on its challenge to Claims 1 and 6 of the ’775 Patent (the “Challenged Claims”). In addition, the Board should exercise its discretion and deny institution under § 325(d) because the Amended Petition (Paper 3, “Pet.”) relies wholly on art and arguments that were addressed on the record (and rejected) in prior USPTO proceedings.

Petitioner cannot prevail because none of the references alone or in combination disclose the “said first link being shared by the first and second pseudo-wires” limitation present in each independent claim. Petitioner does not even attempt to allege that Bocci discloses this limitation. *See, e.g.*, Pet. at 50-53 (citing nothing in Bocci related to Petitioner’s analysis of “said first link being shared by the first and second pseudo-wires”). For the Wainner and Kamite references, rather than pointing to one link shared by two pseudowires as the ’775 claims require, Petitioner alleges these references disclose a single “shared pseudo-wire.” *See, e.g.*, Pet. at 50 (arguing “the shared pseudo-wire 22” meets this limitation); *id.* at 65 (alleging “Kamite’s Figure 10 depicts multiple [pseudowire] segments, the first of which—

between PE11₁ and P12₁—is shared between the others”). Sharing one pseudowire is not the same thing as two pseudowires sharing one link. Even if Petitioner’s allegations about Wainner and Kamite are taken as true, Petitioner has not shown that either reference discloses a “first link being share by the first and second pseudowires.”

II. Background

A. State of the Art

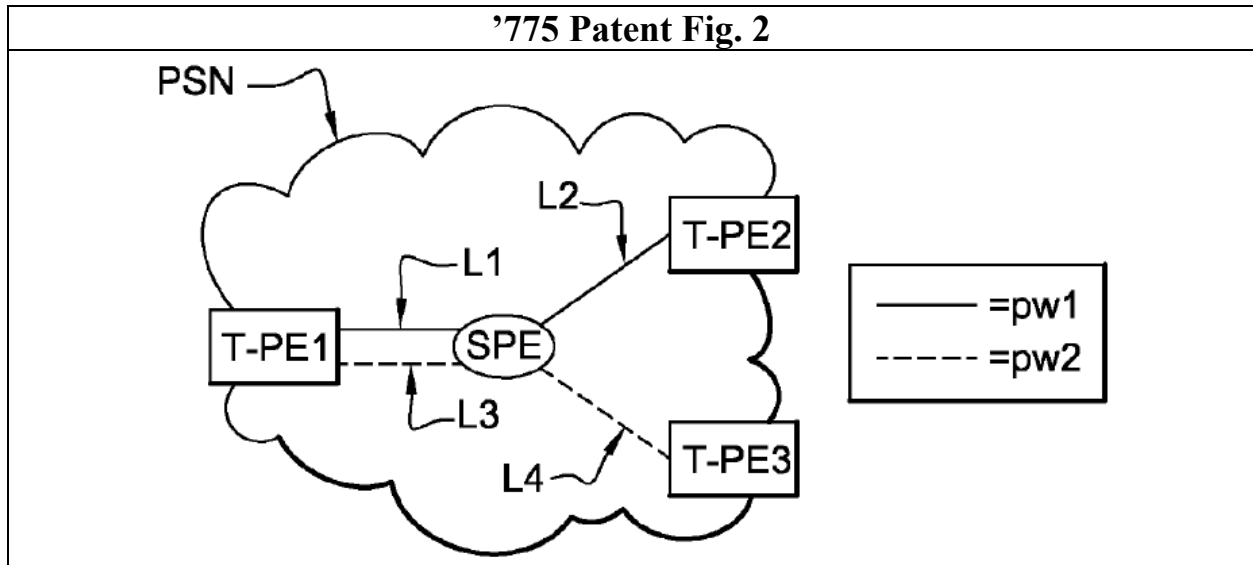
In a packet-switched network (PSN), data is transmitted and routed in the form of packets, which are processed and forwarded by routers until the packets reach their destination. EX1001 at 1:30-32. Various prior art techniques existed for routing these packets through the network, including multi-protocol label switching (MPLS). *Id.* at 1:34-36. MPLS works by adding labels to the headers of data packets; these labels contain information the routers can use to determine the next “hop” (*i.e.* the path to the next router) along which the packet can travel to reach its intended destination. *See id.* at 1:36-39. MPLS is discussed in RFC3031. *See generally* EX2002; *see also* EX1001 at 1:34-42.

One limitation of MPLS is that it can only route a particular type of data packet: a packet that conforms to the Internet Protocol (“IP”). EX1001 at 1:43-44. To address this limitation, the Internet Engineering Task Force (IETF) promulgated RFC3985, which describes a concept known as a “pseudo-wire” or “PW.” *Id.* at

1:45-50; EX1010. Pseudo-wires have the advantage of allowing non-IP packets (*e.g.*, ATM protocol packets) to be transmitted and routed across a packet-switched network. EX1001 at 1:49-52; *see also* EX1010 at 17. Once a pseudo-wire has been set up, it can transmit a data stream across the packet-switched network, from an input router to an output router. EX1001 at 1:53-2:2; EX1010 at 3 (“The required functions of PWs include encapsulating service-specific bit streams, cells, or PDUs arriving at an ingress port and carrying them across an IP path or MPLS tunnel.”).

Pseudo-wires are a distinct concept from the tunnels in which they can be carried. Pseudo-wires are “a separate layer to the PSN tunnel” and operate “independent of the PSN tunnel routing, operations, signaling and maintenance.” EX1031 at 7-8; *see also id.* (“It is expected that other layers will provide...PSN tunnel setup, maintenance and routing”). While a pseudo-wire can be carried within a tunnel, tunnels are often used for other purposes as well, and the existence of a tunnel—without more—does not imply anything about the presence or absence of pseudo-wire(s).

It was known in the art that a network operator might want to set up two or more pseudo-wires within the same network. *See* EX1001 at 2:3-27. For example, the operator may wish to set up a second pseudo-wire that acts as a “backup” in case the first pseudo-wire fails. *Id.* An example of this configuration is shown in Figure 2 of the ’775 Patent:



In Figure 2, a first pseudo-wire pw1 is set up across the PSN from input router T-PE1 to output router T-PE2. EX1001 at 2:12-15. This pw1 consists of two links: L1 from input router T-PE1 to intermediate router SPE, and L2 from intermediate router SPE to output router T-PE2. *Id.* at 2:15-20.

In case of a fault affecting pw1 (*e.g.*, a fault at link L2 or output router T-PE2), pw1 will cease to function properly, so a “backup” pseudo-wire pw2 is also set up across the PSN to ensure continuity of service. *See id.* at 2:20-23, 2:33-39. This pw2 goes from input router T-PE1 to output router T-PE3, and also consists of two links: L3 from input router T-PE1 to intermediate router SPE, and L4 from intermediate router SPE to output router T-PE3. *Id.* at 2:20-27. In the event of a fault affecting pw1, the PSN can relay a message indicating the fault to T-PE1, which can switch the data stream from pw1 to pw2 to bypass the fault. *Id.* at 2:33-39.

It was uniformly understood in the prior art that two pseudo-wires would always use different links and would not share any links between them. For example,

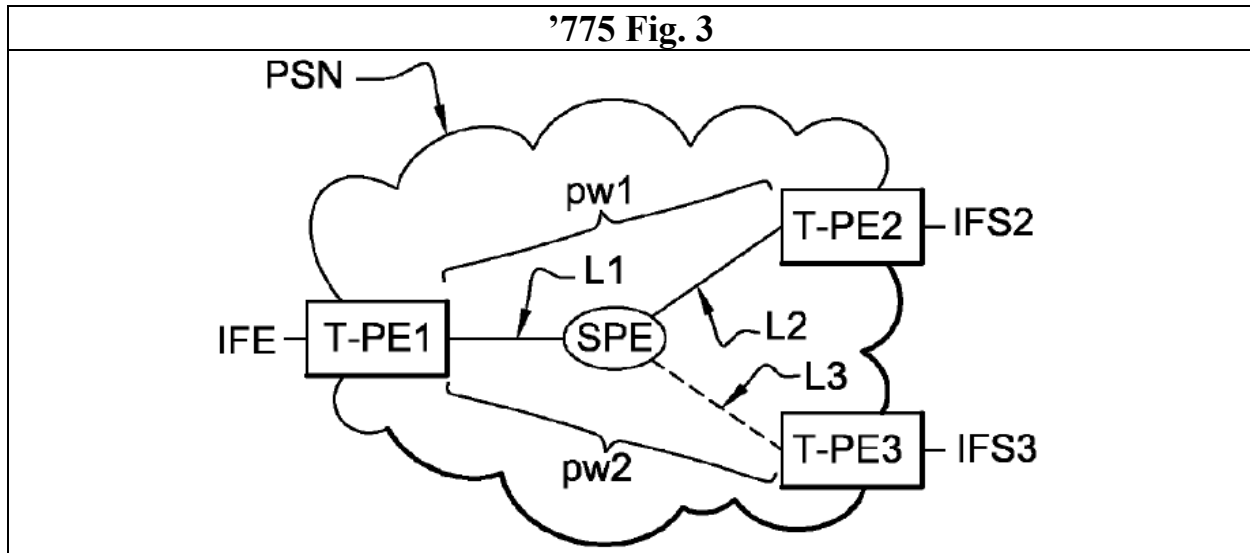
RFC3985 states that a “PW is characterized as an **unshared link** or circuit of the chosen service.” EX1010 at 3. Links were not shared even when the two pseudo-wires shared the same connection path between the same two routers; for example even though pw1 and pw2 share the same connection path between T-PE1 and SPE, they use two separate links L1 and L3 to traverse their common connection path. EX1001 at Fig. 2. The ’775 Patent explains that “In the prior art, when a main pseudo-wire and a back-up pseudo-wire are set up between an input router and a first, respectively a second, output router, **a link is set up between the input router and the intermediate router for each pseudo-wire, i.e. two links**. The 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, with the result that each input router/output router pair is associated with a pseudo-wire. Moreover, this kind of approach is recommended in the standards.” *Id.* at 3:5-14 (emphasis added).

As a result of this view in the prior art that pseudo-wires should use “unshared” links to traverse the PSN, network operators would set up multiple pseudo-wires in a configuration like the one shown in Figure 2, in which the pseudo-wires are shaped like the letter “Y” (laying on its side) with a double-lined stem (representing the two unshared links from T-PE1 to SPE). Thus, the use of a shared pseudo-wire link was not known in the art prior to the ’775 Patent.

B. The '775 Patent Invention

The '775 Patent inventors recognized a drawback of the prior art “double-stem Y” approach shown, for example, in Fig. 2: “this kind of solution has the drawback of consuming network resources, for example processing resources in the network equipments (storage capacity, computation capacity, etc.), signaling streams for setting-up two pseudowires, and bandwidth, especially between the input router and the intermediate router.” EX1001 at 2:40-45.

The '775 Patent inventors realized this drawback of the prior art could be avoided with a “single-stem Y” configuration, in which the two pseudo-wires share the same link along their shared connection path. “Going against this received wisdom of the person skilled in the art, the inventors of the present application propose, in contrast, to share the link set up between the input router and the intermediate router, which improves the use of network resources ... Because 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.” *Id.* at 3:15-29 (emphasis added). This novel approach is shown, for example, in '775 Patent Figure 3:



See also EX1001 at 6:44-48 (“the first link L1 is shared by the two pseudowires pw1 and pw2. This optimizes the use of network resources, such as bandwidth, between the input router T-PE1 and the intermediate router S-PE, as only one link is set up between these two routers.”).

A “link” is different from a “pseudowire” or a “segment of a pseudo-wire.” As discussed below, Petitioner proposes that a “link” should be construed as a “connection between an interface of a first router and an interface of a second router.” Pet. at 19. In other words, a link is a physical connection between router interfaces. A “segment of a pseudowire,” on the other hand, is not a term that appears in the claims and this term does not refer to a physical link. Rather, a “segment of a pseudowire” is itself a pseudowire that forms part of a single-segment or multi-segment pseudowire. See, e.g., EX1031 at 6 (“PW Segment. A part of a single-segment or multi-segment PW, which is set up between two PE devices, T-PEs and/or S-PEs.”). Petitioners do not appear to dispute this. See, e.g., Pet at 9 (“it was

known at the time that consecutive pseudo-wires could be combined to form a multi-segment pseudo-wire”).

Nevertheless, Petitioner routinely confuses the concepts of a shared “link” with a shared “pseudowire” or “segment of a pseudowire.” *See, e.g.,* Pet. at 31 (“Wainner’s Figure 2 depicts four pseudo-wire segments, the first of which—pseudo-wire 22—is shared between the other three—pseudo-wires 24, 26, and 28”); *id.* at 50 (“Wainner explains that the first link (*e.g.*, pseudo-wire 22) is shared by the first and second pseudo-wires.” (emphasis omitted)). Sharing a *pseudo-wire* (such as Wainner’s PW22) is not the same thing as *two* pseudo-wires sharing a *link* as required by the ’775 Patent’s claims. Rather, sharing a *single pseudo-wire* is contrary to the ’775 Patent’s claim language, which requires “said first link being shared *by the first and second pseudo-wires*” and is also contrary to the ’775 Patent specification’s teaching that “the first link L1 is shared by the *two pseudo-wires* pw1 and pw2.” EX1001 at 6:44-48, Claim 1, Claim 6 (emphasis added). If only *one* pseudowire (such as Wainner’s PW22) traverses a given link, that link is not shared by *two* pseudowires as the claims require. Petitioner’s repeated need to conflate a shared link and a shared pseudowire highlights the inability of Petitioner’s prior art to disclose the claim limitations.

C. Petitioner's References

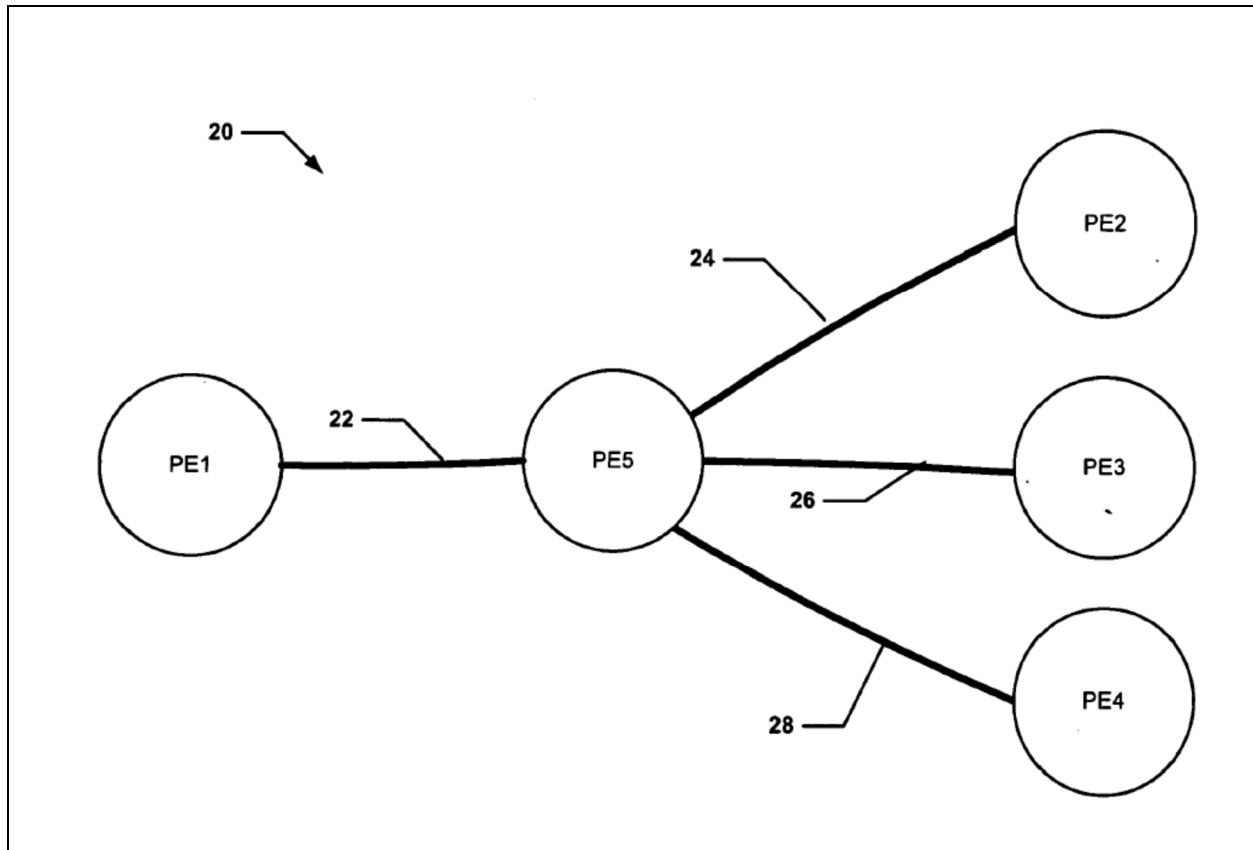
1. Wainner [EX1030]

“Wainner” is a US Patent Application (Pub. No. 2007/0239891) to Wainner et al. titled “Method and Apparatus for Point-to-Multipoint Distribution Using Pseudowires.” EX1030 at 1. The document shows a filing date of April 6, 2006.

Wainner purports to solve a problem of prior multicast distribution methods that required “the transport provider to interact with the services plane.” *Id.* at [0004]. It solves this by setting up one pseudo wire between the ingress router and the intermediate router, and setting up one pseudowire between the intermediate router and each egress router:

[0006] In a particular embodiment of a method for providing point-to-multipoint multihop distribution using Pseudowires (PWs), the method includes receiving data at a switching provider edge (S-PE) router from an upstream originating provider edge (O-PE) router by way of a first PW, the first PW having a head-end coupled to the O-PE and a tail end coupled to the S-PE. The method also includes replicating the data received by the S-PE to at least one receiver provider edge (R-PE) router by way of a respective PW for each of the at least one R-PE, each of the respective PW between the S-PE and the R-PE having a head end coupled to the SPE and a tail end coupled to the R-PE.

Id. at [0006] (Wainner refers to a pseudowire using the abbreviation “PWs.” *Id.* at Abstract, [0006]). This configuration is shown, for example, in Figure 2 of Wainner:

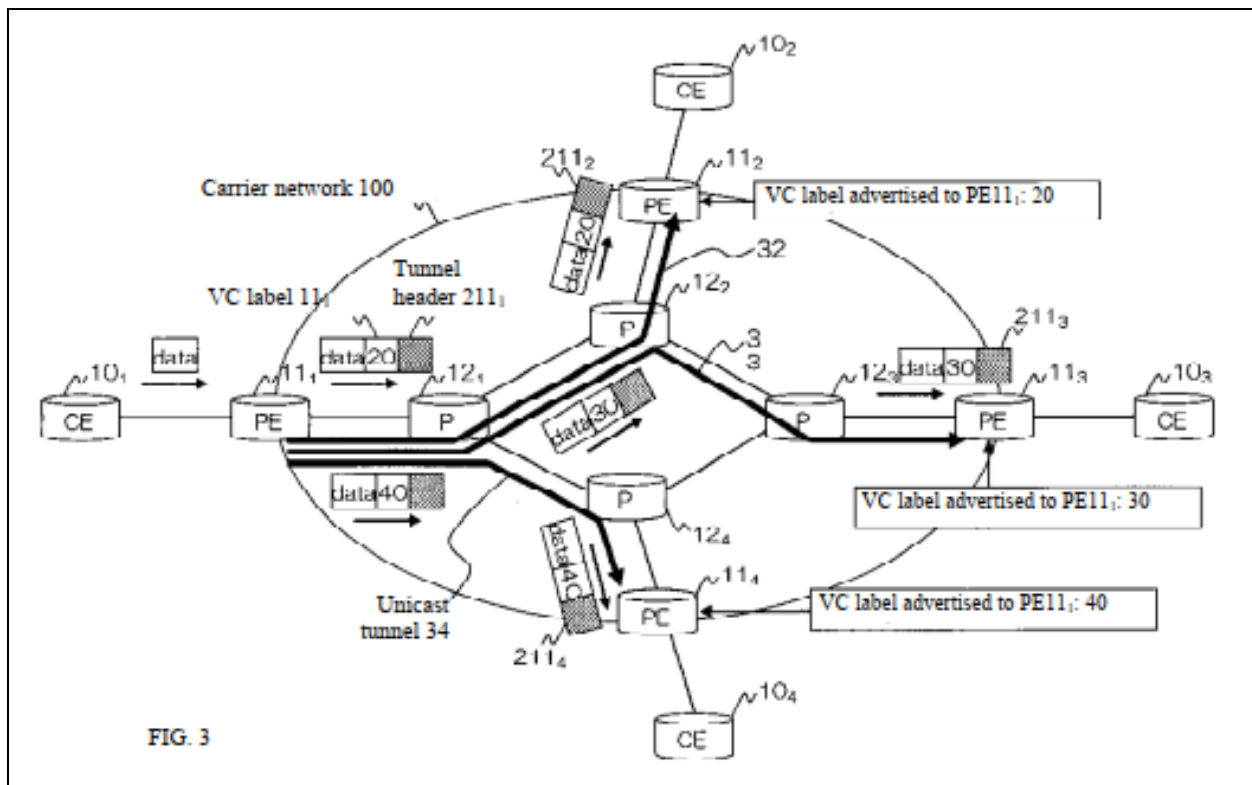


Id. at Fig. 2. Each black line depicted in Figure 2 (numbered 22, 24, 26, and 28) represents one single pseudowire. *Id.* at [0023]. The same is true of Figures 3, 4, and 5. *Id.* at [0025]-[0027].

Contrary to Petitioner’s claim that Wainner discloses “pseudo-wire segments,” (Pet. at 22) Wainner never mentions pseudowire segments or multi-segment pseudowires. Terms like “pseudo-wire segment” do not appear in Wainner, and the concept of multi-segment pseudowires is never mentioned. Additionally, Wainner does not disclose the concept of shared links. Each connection between routers in Wainner consists of at most one pseudo-wire, and there are no links shared by more than one pseudo-wire as required by the claims of the ’775 Patent.

2. Kamite [EX1041]

Kamite is purportedly a translation of Japanese Patent Application 2006-12359. EX1041 at 2. It shows a publication date of May 18, 2006. *Id.* Kamite addresses a problem stemming from the fact that “conventional pseudo wire technology and multicast tunneling technology could not be combined.” EX1041 at 6. It purports to teach a solution which “allows pseudo wire traffic to be forwarded using a multicast tunnel.” *Id.* at 7. It shows a conventional solution in Fig. 3, in which three PWs are carried over three “separate unicast tunnels.” *Id.* at 6.



EX1041 Fig. 3.

Kamite solves this problem by using identical VC labels for all downstream PEs. *Id.* at 7. This results in the use of a single multicast tunnel instead of multiple

separate unicast tunnels. *Id.* Petitioner’s grounds repeatedly conflate Kamite’s tunnel with other concepts such as pseudo-wires and links, despite the fact that Petitioner’s own references stress that tunnels, PWs, and links are distinct concepts. *See, e.g.*, EX1031 at 7 (noting PWs are “a separate layer to the PSN tunnel” and “independent of the PSN tunnel routing, operations, signaling and maintenance”). Kamite did not purport to improve on PWs, but rather on MPLS tunnels. And Kamite never mentions the concept of sharing a link. Kamite’s Abstract Problem and Solution statements do not mention pseudo-wires or links, nor do its claims, focusing instead on MPLS tunnels. *See* EX1041 at 2-5.

3. Bocci [EX1031]

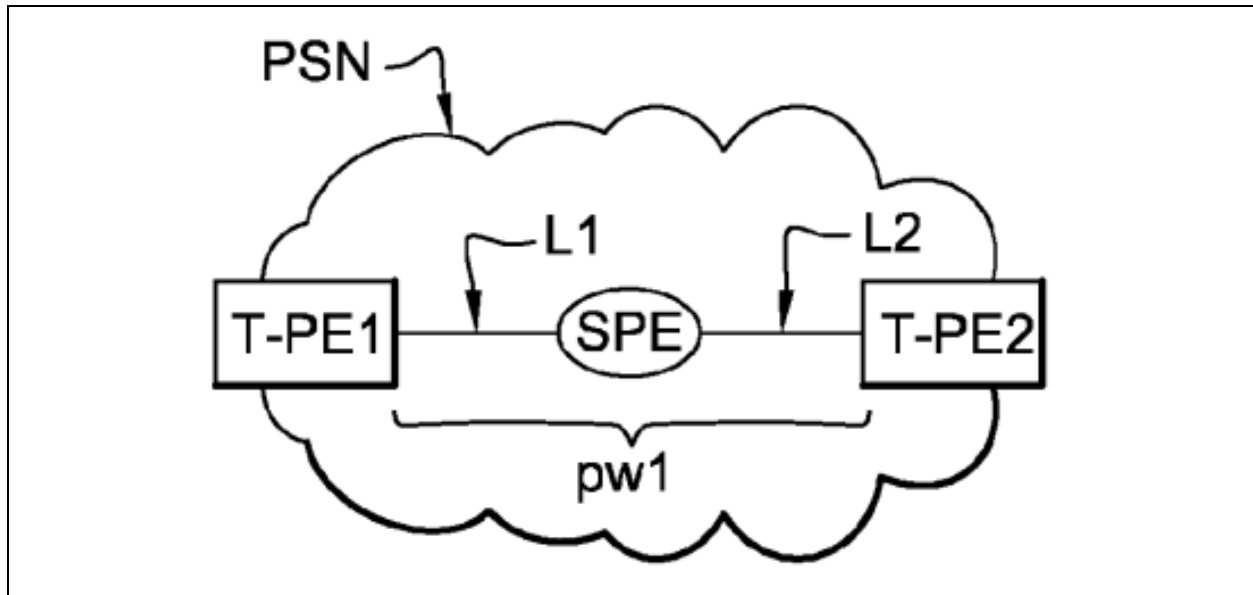
Bocci is an IETF Draft titled “An Architecture for Multi-Segment Pseudo Wire Emulation Edge-to-Edge.” EX1031 at 1. It shows a date of January 11, 2006.¹ Bocci appears to be a version² of the IETF document that the ’775 Patent disparaged

¹ Patent Owner does not concede that EX1031 (which identifies itself as a “Draft” document) was publicly available or otherwise qualified as a printed publication as of the date shown on the document.

² Petitioner relies on a version of Bocci bearing an apparent file name of “draft-ietf-pwe3-ms-pw-arch-00.txt” dated January 11, 2006, whereas the ’775 Patent addresses a version of Bocci bearing the file name “draft-ietf-pwe3-ms-pw-

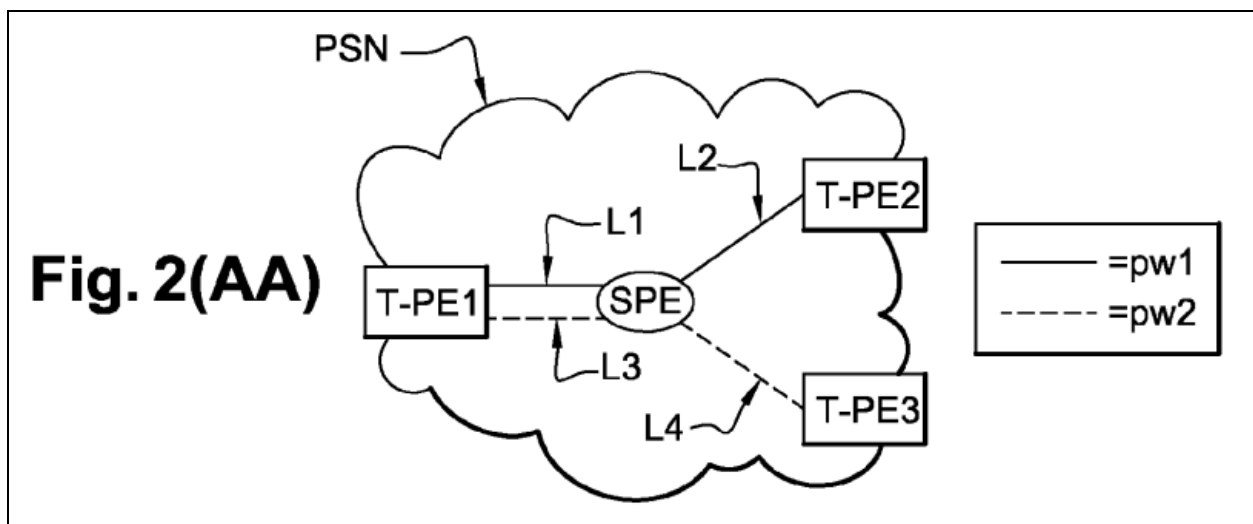
and improved on. As the '775 Patent explains, Bocci explained how to set up “[a] first link L1 that is part of the pseudo-wire pw 1 [] between the first router T-PE1 and an intermediate router S-PE” and “[a] second link L2 that is also part of the pseudo-wire pw1 [] between the intermediate router S-PE and the second router T-PE2.” EX1001 at 1:53-2:2 (discussing PW setup and noting it was defined in more detail in Bocci). This Bocci approach is shown in '775 Patent Figure 1:

arch-02.txt”, dated October 20, 2006. *Compare* EX1031 at 1 *with* EX1001 at 1:66-2:2; EX2003 at 2; EX2004 (redline between versions) at 1. Petitioner does not identify any differences in their teachings or otherwise distinguish between (a) the version of Bocci cited previously and discussed in the specification, and (b) the version relied upon as prior art in this proceeding. *See, e.g.*, Pet. at 83, 85. For purposes of simplicity, this Preliminary Response will refer to both as “Bocci.”



EX1001 Fig. 1.

The '775 Patent further explains that the approach taught by Bocci was not fault tolerant and that the same technique used to setup two distinct PWs with two separate links was inefficient and negatively impacted quality of service. EX1001 at 2:3-47. This deficient approach based on Bocci (upon which the '775 Patent improved) is shown in '775 Patent Fig. 2:



EX1001 Fig. 2.

Petitioner relies on Bocci for both of its invalidity grounds. The fact that all Petitioner theories rely on the very reference the '775 Patent disparaged as deficient demonstrates that Petitioner's grounds are driven solely by hindsight, using the '775 Patent as a guide. It is undisputed that Bocci fails to teach two PWs that share a link (which Petitioner defines as a "connection between an interface of a first router and an interface of a second router"). Thus, it cannot overcome the deficiencies of Wainner or Kamite (which also fail to teach a shared link) regardless of how it is combined with those references.

D. Prior '775 Patent Proceedings

The '775 Patent PCT Application was filed on Feb. 26, 2008, claiming priority to a Feb. 26, 2007 foreign application. EX1001. The international search report identified Bocci as a "document of particular relevance," and the examiner identified Wainner and made findings as to why it was pertinent but not sufficient to issue a rejection over. EX1002 at 105-106, 304-305.

Cisco Systems, Inc. was sued for infringing the '775 Patent on January 21, 2020. *See Monarch Networking Solutions LLC v. Cisco Systems, Inc. et al*, No. 20-cv-00015 (E.D. Tex.). Cisco filed an IPR Petition challenging the '775 Patent on July 6, 2020, based on U.S. Patent No. 7,602,702 to Aggarwal and FAULT-TOLERANT IP AND MPLS NETWORKS by Iftekhar Hussain. *See Cisco Systems, Inc. v. Monarch Networking Solutions LLC*, IPR2020-01226, Paper 2 at 16 (PTAB).

The PTAB rejected Cisco's IPR Petition on March 4, 2021, IPR2020-01226 Paper 11, and Cisco filed a subsequent request for *ex parte* reexamination request based on the same grounds in reexamination no. 90/014,701. Patentability of the '775 Patent was confirmed over the proposed reexamination grounds, and Cisco agreed to settle the parallel district court litigation after service of expert reports on validity.

Petitioner Juniper Networks, Inc. was sued for infringing the '775 Patent on May 23, 2023. It filed its initial Petition in this proceeding on Feb. 8, 2024, and then filed an amended Petition on Feb. 15, 2024. References to the "Petition" or "Pet." in this Preliminary Response refer to the amended Petition (Paper 3) unless otherwise noted.

III. Legal Standards

An IPR should not be instituted unless Petitioner has shown a likelihood of success on the invalidity grounds *presented in the petition*. See *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016) ("[T]he Board must base its decision on arguments that were advanced by a party, and to which the opposing party was given a chance to respond.").

"In an IPR, the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (petitions must identify "with particularity . . . the evidence that supports the grounds for the challenge to each

claim”); 35 U.S.C. § 312(a)(3). This burden of persuasion never shifts to the patent owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

“To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l*, 829 F.3d at 1380. The obviousness inquiry requires considering whether one of skill in the art “would have been motivated to combine the prior art to achieve the claimed invention.” *In re NuVasive, Inc.*, 842 F.3d 1376, 1381 (Fed. Cir. 2016) (quoting *In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1333 (Fed. Cir. 2016)). “[T]he factual inquiry whether to combine references must be thorough and searching...” *Id.*

IV. Level of Ordinary Skill in the Art

For purposes of this Preliminary Response, Patent Owner does not contest Petitioner’s recitation of the level of skill in the art, because even under Petitioner’s proposed level of skill Petitioner has failed to demonstrate a reasonable likelihood of success. *See* Pet. at 19. Patent Owner reserves the right to propose its own definition of a person of ordinary skill in the art (“POSITA”) in the future if necessary.

V. Claim Construction

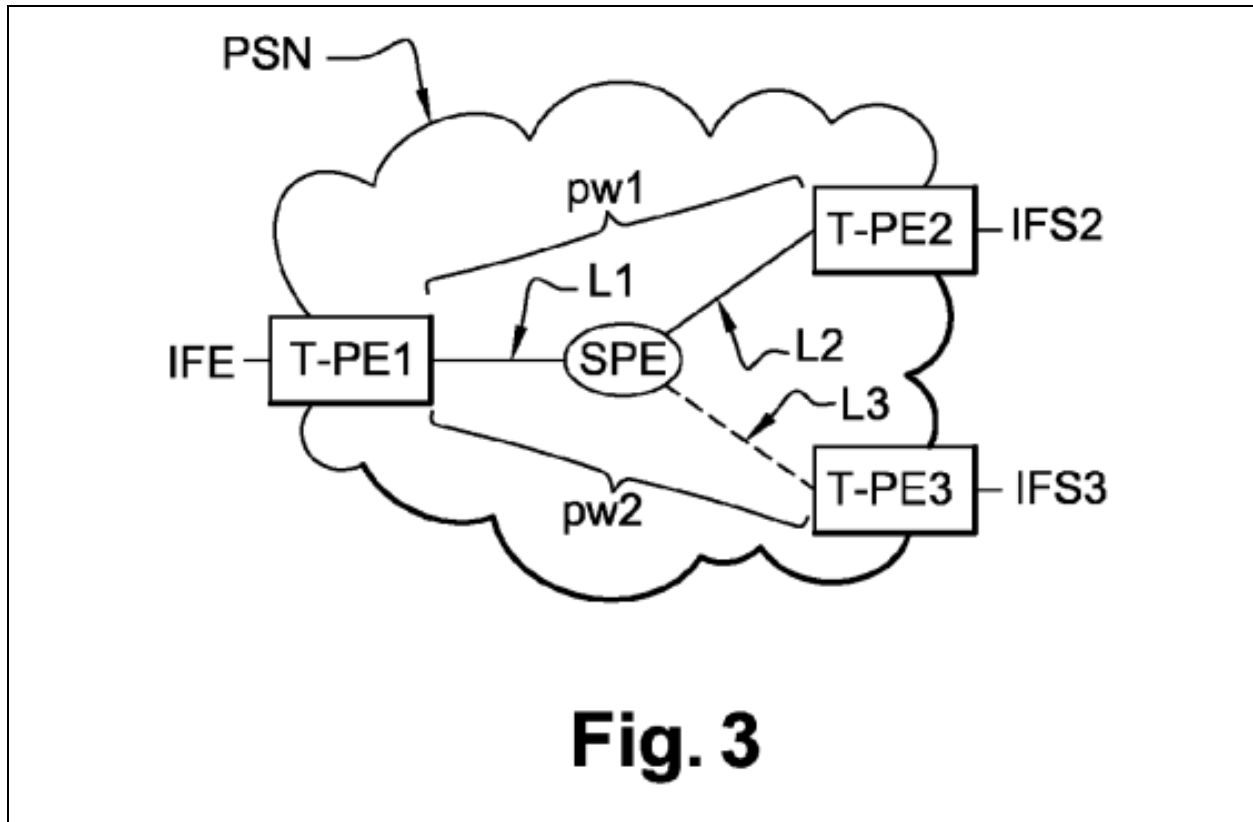
Claims are construed according to *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.100(b). “Any prior claim construction determination concerning a term of the claim in a civil action...will be considered.” *Id.*

Petitioner suggests that it has applied the construction for the claim term “link” previously identified by the Eastern District of Texas Court as a “connection between an interface of a first router and an interface of a second router.” Pet. at 19-20. Petitioner does not propose any additional constructions. *Id.* For purposes of this Preliminary Response, Patent Owner accepts Petitioner’s proposed construction of link and does not propose any additional constructions, because even under the claim interpretations relied on by Petitioner, the Petition fails to present a reasonable likelihood of invalidating any claims.³

VI. Argument

Both grounds fail to present a reasonable likelihood of rendering obvious either Challenged Claim. All Challenged Claims require:

³ Patent Owner may propose its own constructions if the Petition is instituted.



'775 Patent Fig. 3.

- (1) a first pseudo-wire [**pw1**] comprising a first link [**L1**] set up between an input router [**T-PE1**] of a packet-switched network and an intermediate router [**SPE**] of the packet-switched network and a second link [**L2**] set up between said intermediate router [**SPE**] and a first output router [**T-PE2**] of the packet-switched network;
- (2) a second pseudo-wire [**pw2**] between said input router [**T-PE1**] and a second output router [**T-PE3**] of the packet-switched network, wherein the second pseudo-wire comprises said first link [**L1**] and a third link [**L3**] setup between said intermediate router and said second output router,
- (3) said first link being shared by the first and second pseudo-wires.

Thus, the claims require that there must be at least two PWs, each PW must span at least two links between an input router, an intermediate router, and an output router, and the two PWs must share a first link (a “connection between an interface of a first router and an interface of a second router”). Each of the proposed grounds fail because none of the proposed grounds satisfy these requirements.

A. Ground 1 Does Not Present A Reasonable Likelihood Of Prevailing

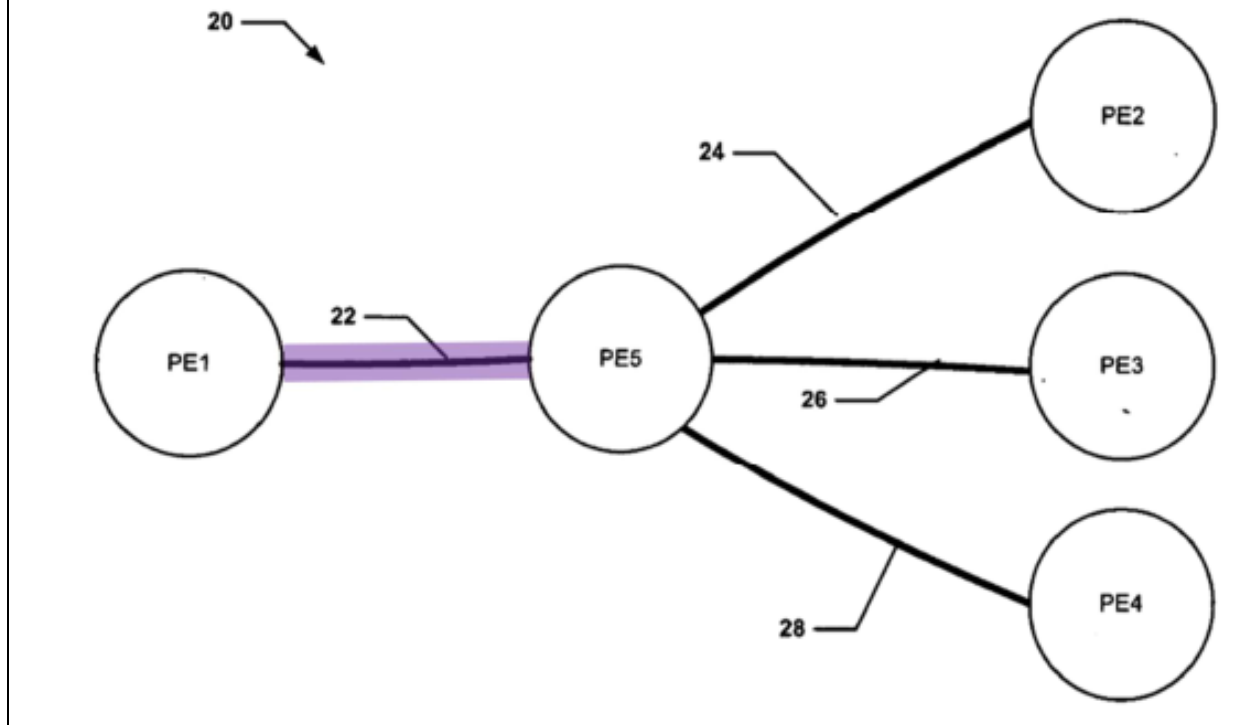
Ground 1 fails to present a reasonable likelihood of invalidating any challenged claims, at least because no reference teaches “said first link being shared by the first and second pseudo-wires” as required by all Challenged Claims.

1. Wainner Teaches The Use Of Multiple PWs—Not A Shared Link

’775 Patent Claims 1 and 6 require a first and second pw, where the two PWs share a first link from an input router to an intermediate router, but have separate links between the intermediate router and an output router. Notably, the Claims require two PWs that share a link. Petitioner relies on Wainner to render obvious this limitation, but Wainner cannot render it obvious because Wainner’s alleged first link only has *one* pseudowire (22) traversing it. The link is not shared by “*first and second* pseudowires” as required by the claims.

Petitioner relies on element 22 of Wainner Figure 2 to render obvious the limitations relating to a shared link:

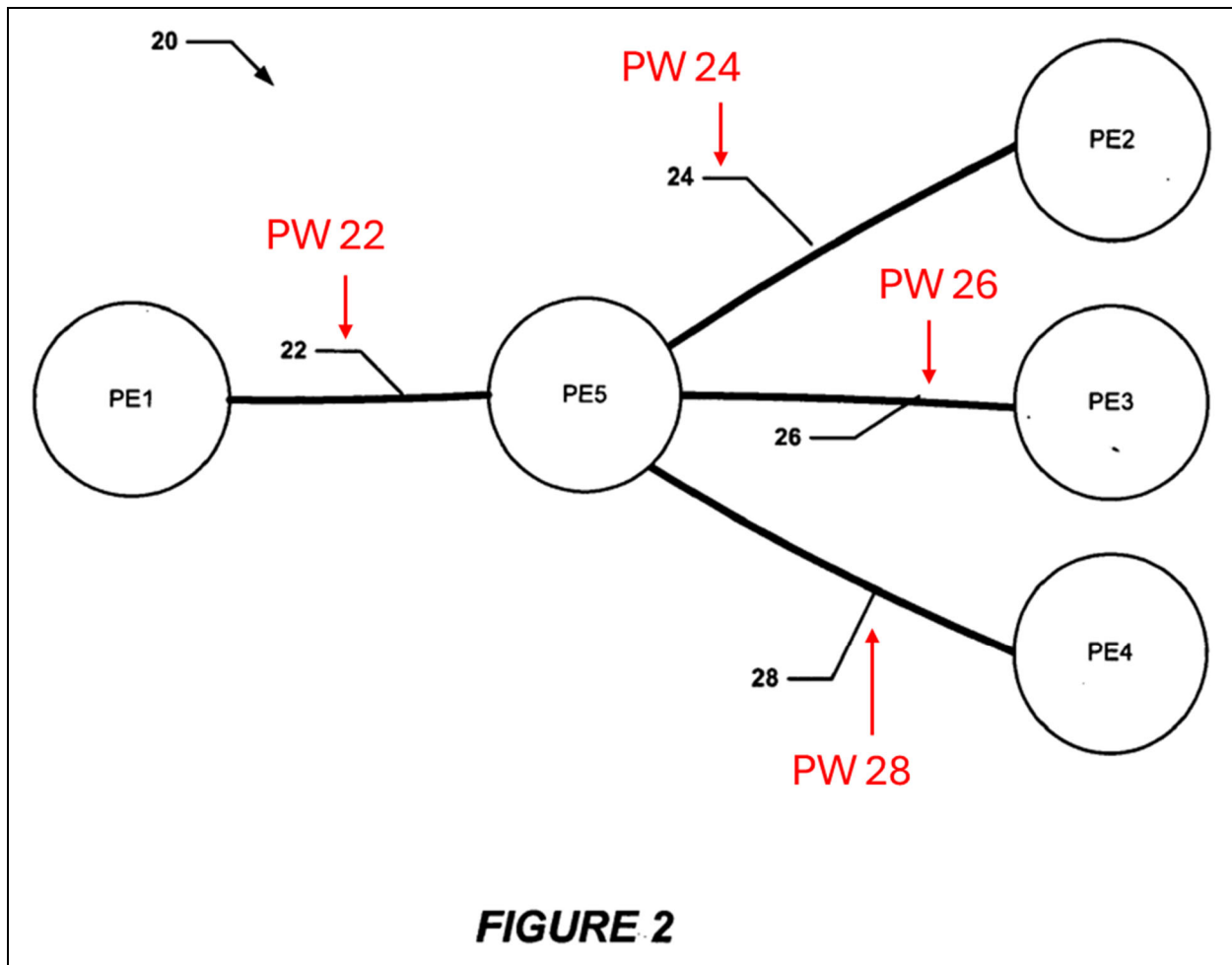
said first link being shared by the first and second pseudo-wires. Wainner explains that the first link (e.g., pseudo-wire 22) is shared by the first and second pseudo-wires. EX1040, ¶95. To start, Wainner's Figure 2 shows that this link (purple) is shared among the pseudo-wires:



Pet. at 50. Yet, Petitioner's argument fails because purple element 22 shown above is not a link shared by two PWs as the Challenged Claims recite, rather it is a single PW (which Petitioner even concedes is “pseudo-wire 22”).

In Wainner Figure 2, elements 22, 24, 26, and 28 are all separate PWs. Wainner confirms this, explaining that “PW 22 is signaled between an origination PE (O-PE) (PE1) and an S-PE (PE5),” and that “PW 24 is established between PE5 and PE2, PW26 is established between PE5 and PE3 and PW28 is established

between PE5 and PE4.” EX1030 at [0023]. Thus, there are no links shared by two PWs in Wainner, because each edge is a single PW.

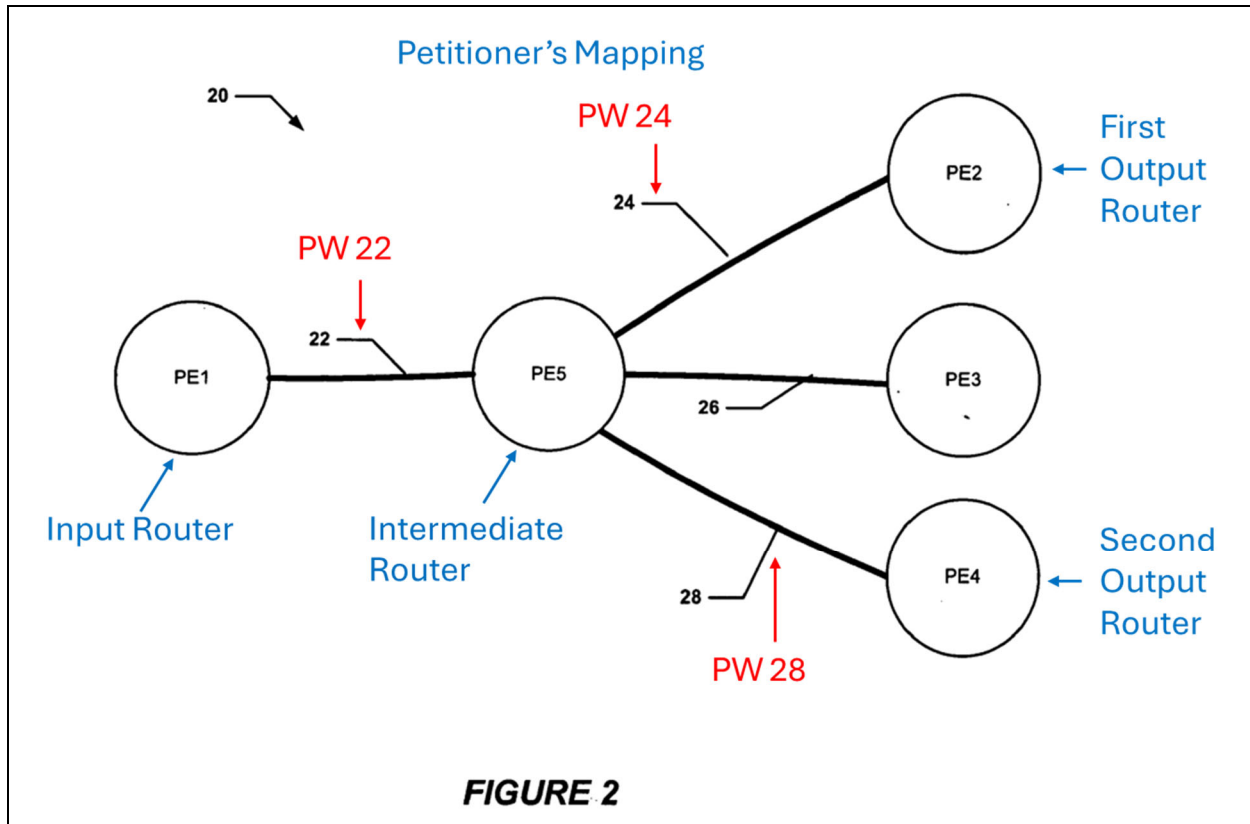


EX1030 Fig. 2 (annotated).

Petitioner tries to skip over this clear failing, suggesting that “single upstream pseudo-wire 22 is bound to (*i.e.*, shared between) **both** downstream pseudo-wires 24 and 28.” Pet. at 50-51 (citing EX1030 at [0020]). Yet, that is not what Wainner teaches. Wainner states that the “model statically binds an upstream PW to one or more downstream PW.” EX1030 at [0020]. Wainner says nothing about sharing a PW link. Furthermore, neither Wainner nor Petitioner ever explains what it means

to “bind” one PW to another PW. This intentional ambiguity by Petitioner alone is sufficient reason to deny the Petition, yet Petitioner’s failure goes much further: no matter what “binding” an upstream and downstream PW means, Petitioner’s grounds still fail.

For example, if “binding” two PWs means that the two PWs remain separate but are somehow related/sharing resources/etc., then Petitioner’s grounds fail. As explained above, the Challenged Claims require at least two PWs which span from an input router to an output router. Petitioner suggests that the input router of Wainner is PE1, the intermediate router is PE5, the first output router is PE2, and the second output router is PE4. Pet. at 33-34, 45. Petitioner’s mapping is shown below:



EX1030 Fig. 2 (annotated with Petitioner's mapping).

If PW22 and PW24 remain separate PWs after being “bound” (as suggested by Wainner, which refers to them separately), then Wainner fails to render obvious the Challenged Claims because neither PW 22 nor PW 24 span from the purported input router to the purported first output router. Instead, PW22 would merely span from the purported input router to the purported intermediate router, and PW24 would merely span from the purported intermediate router to the purported first output router. Similarly, neither PW 22 nor PW 28 spans from the purported input router to the purported second output router. Accordingly, there is also no “first link” shared by two PWs between the input router PE1 and the intermediate router PE5.

The link between those routers only has one pseudowire (PW 22), not two pseudowires sharing it.

Even if Wainner had taught that binding two PWs transforms them into a single PW, Wainner would still fail to render obvious the Challenged Claims. The Challenged Claims require two separate PWs which share a link, rather than simply combining multiple PWs into a single PW. *See, e.g.*, EX1001 Claim 1 (reciting “setting up at least two pseudo-wires,” “a first pseudo-wire,” and “a second pseudo wire”), Claim 6 (same). Thus, if “binding an upstream PW [22] to one or more downstream PWs [24 and 28]” meant that they were combined into a single PW, then Wainner would still fail to render obvious the claimed two separate PWs. *See* EX1030 at [0020]. Here again, there would be no “first link” shared by two PWs between the input router PE1 and the intermediate router PE5, because under this combined pseudowire theory there is still only one pseudowire that traverses the first link, not two.

Petitioner also suggests that because “switching provider edge router **PE5** [] duplicates the data packet before sending it to the receiver provider edge routers **PE2**, **PE3**, and **PE4**” that means the link between PE1 and PE5 is shared and somehow satisfies the claim language. Pet. at 52-53. This wholly ignores the actual claim language, which requires two PWs that share a link, not merely a purported intermediate router (PE 5) that duplicates data packets received from a single PW

22. Thus, regardless of how Petitioner's ambiguous grounds are interpreted, Petitioner's challenges fail.

Petitioner also suggests that “[u]nder Patent Owner's infringement allegations, sharing a first link between two point-to-point pseudo-wires is functionally identical to implementing a point-to-multipoint pseudo-wire.” Pet. at 32-33. This is an inaccurate characterization of Patent Owner's infringement allegations. Patent Owner's complaint did not conflate “sharing a first link” with “implementing a point-to-multipoint pseudo-wire.” Rather, Patent Owner made clear that Cisco's accused product infringed because there were *two separate* point-to-multipoint pseudowires sharing the first link. *See, e.g.,* EX1033 ¶135 (“The Path for the underlying S2L Sub-LSP confirms that the link 209.165.201.2 is used for both S2L LSPs to PE2 and PE3 confirming that this link is common to first and second P2MP pseudo-wires.” (emphasis added)). While a product that uses point-to-multipoint pseudowires can infringe (as Cisco's product did), it will only infringe if there are two pseudowires sharing a first link. Wainner's point-to-multipoint implementation does not use a shared link for two pseudowires like Cisco did. Rather, in Wainner, there is only *one* pseudowire (PW 22) traversing the alleged first link.

2. Bocci Cannot Overcome Wainner's Shortcomings

As discussed above, there is no interpretation of Petitioner's grounds under which Wainner teaches the claimed two separate PWs with a shared link. Petitioner does not even assert that Bocci teaches two PWs with a shared link, and thus it cannot overcome Wainner's shortcomings or render obvious the Challenged Claims. *See* Pet. at 50-53 (citing nothing in Bocci related to Petitioner's analysis of "said first link being shared by the first and second pseudo-wires").

Despite Petitioner's claim that Wainner teaches all limitations, Petitioner suggests that "Bocci would have supplemented Wainner's disclosures and further taught combining consecutive pseudo-wire segments into a multi-segment pseudo-wire." Pet. at 24. Yet, even if that was true, Bocci teaches nothing related to two PWs sharing a link—the '775 Patent specification referred to Bocci ("An Architecture for Multi-Segment Pseudo-Wire Emulation Edge-to-Edge" (draft-ietf-pwe3-ms-pw-arch-02.txt).") and explained that failing was one of the reasons it needed to be improved on. EX1001 at 1:66-2:47. Neither Wainner nor Bocci teaches two separate PWs that share a link, therefore no combination of either reference could possibly render obvious claim limitations requiring that arrangement.

3. The Proposed Combination of Wainner and Bocci is Purely Hindsight Motivated

Even though the proposed combination fails to present a reasonable likelihood of rendering obvious the Challenged Claims, it should be noted that Petitioner's

reasons for combining the references are purely hindsight based. Petitioner started with the very reference the '775 Patent identified as being deficient (Bocci), and then worked its way backwards to try to arrive at the claimed invention. *See* EX1001 at 1:66-2:47. None of the purported motivations to combine Wainner and Bocci even address the specific modification of a two separate PWs sharing a link—instead Petitioner repeatedly refers to modifying Bocci to use “multi-segment pseudo-wires.” *See* Pet. at 24-28. Nothing about multi-segment PWs suggests a shared link. Thus, even if Petitioner’s proposed combination taught the claimed combination, its improper hindsight basis should be rejected.

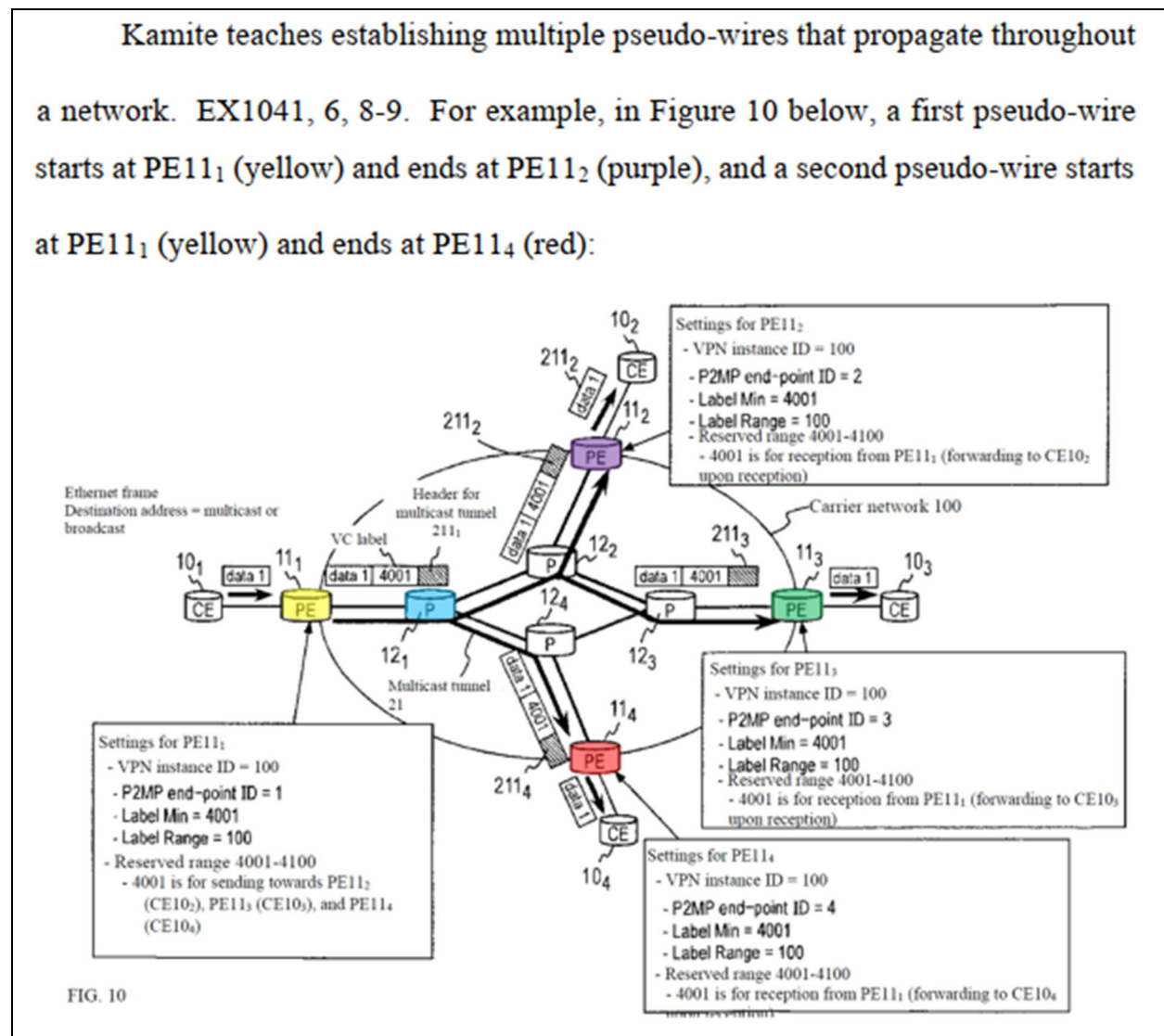
B. Ground 2 Does Not Present A Reasonable Likelihood Of Prevailing

Petitioner’s Ground 2 is also deficient and cannot present a reasonable likelihood of rendering obvious any of the Challenged Claims. Petitioner asserts that “Kamite discloses the entirety of claims 1 and 6—in particular, setting up two pseudo-wires that share a first link.” Pet. at 57. Yet, Petitioner’s Kamite mapping cherry picks from different embodiments that Kamite itself suggests are mutually exclusive, and relies on conflating “tunnels” (which are not recited in the claims) with “PWs”—two concepts that Petitioner’s own references explain are distinct. Even if Kamite’s disparate embodiments could be combined (they cannot) and even if tunnels were the same thing as pseudowires (they are not) Kamite still fails to teach two pseudowires sharing one link. Furthermore, Bocci cannot overcome

Kamite's shortcoming for the same reasons it could not overcome Wainner's shortcomings.

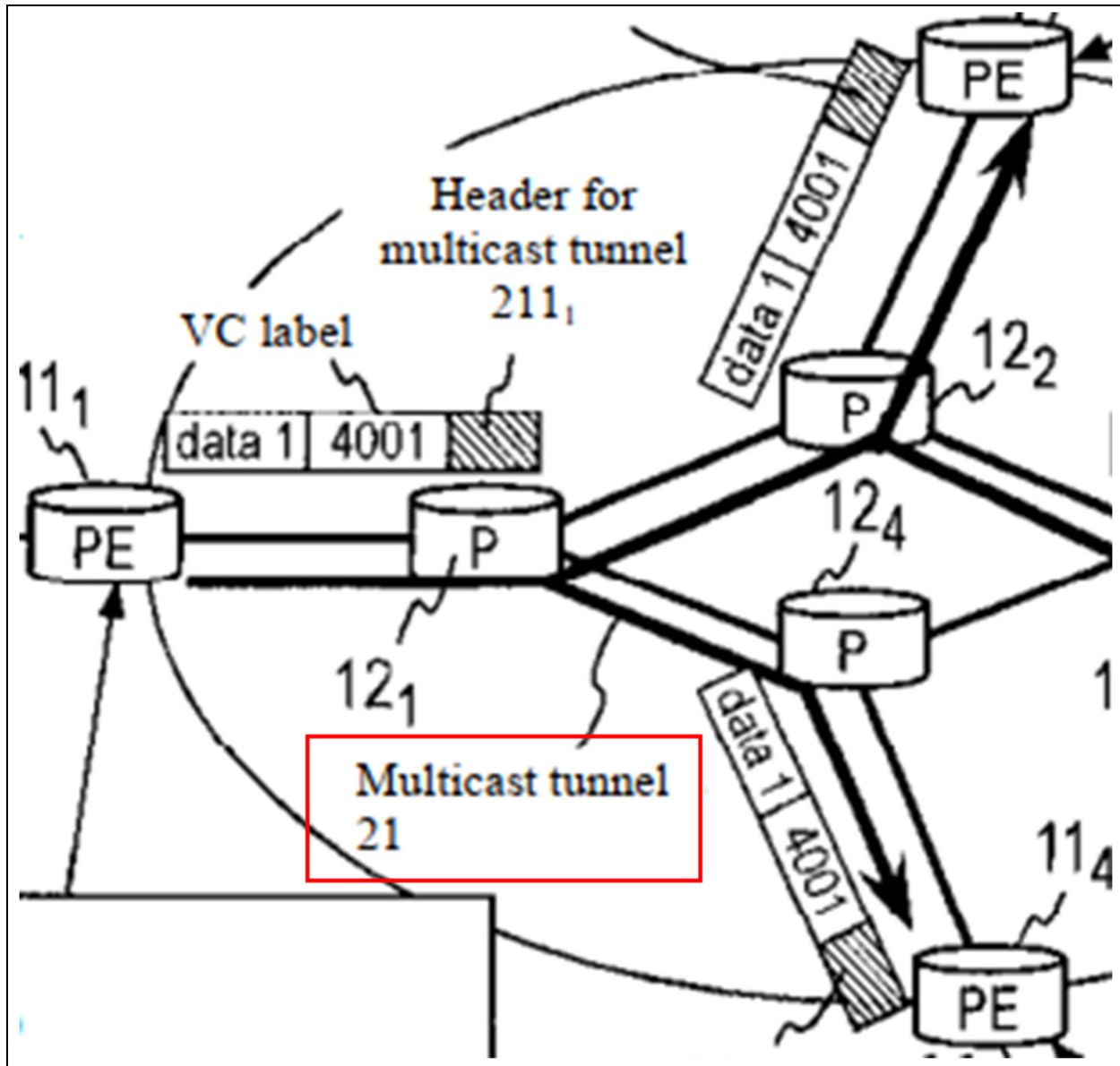
1. Kamite Does Not Render Obvious Two Separate PWs With A Shared Link

Petitioner starts off its Ground 2 challenge by relying on Kamite Fig. 10, suggesting the following mapping:



Pet. at 62-63.

However, in Kamite Figure 10, the edge between PE11₁ (yellow) and P12₁ (blue) represents a tunnel, not a PW: “The upstream PE confirms that a VC-LSP has been established to each downstream PE and initiates forwarding of traffic. This is shown in FIG. 10. In this example, multicast tunnel 21 is also using MPLS, so the labels are stacked.” EX1041 at 9 (emphasis added). Thus, the single line that Petitioner relies on does not represent a PW—it represents a tunnel:



EX1041 Fig. 10 (excerpted and annotated).

Petitioner's own references explain that tunnels and PWs are distinct and should not be conflated. For example, Bocci explains that:

[T]he pseudo-wires may be considered to be a separate layer to the PSN tunnel. That is, they are independent of the PSN tunnel routing, operations, signaling and maintenance. The design of PW routing

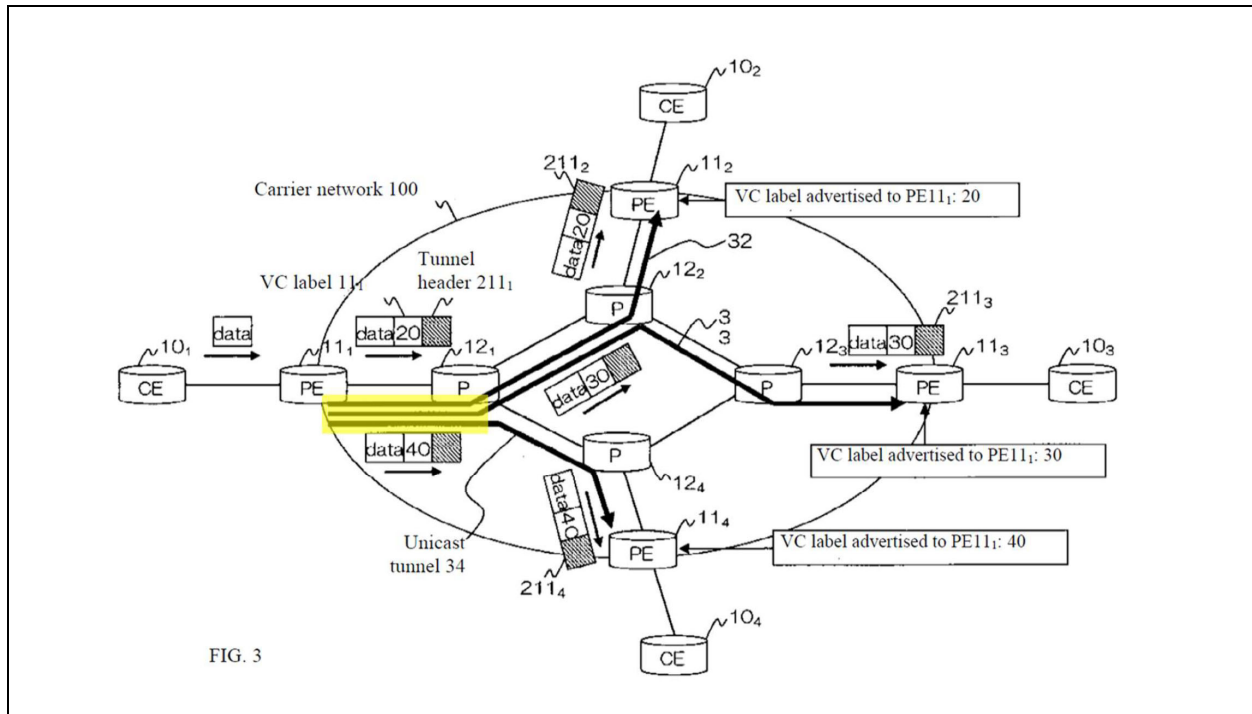
domains should not imply that the underlying PSN routing domains are the same.

EX1031 at 7; *see also id.* at 8 (noting “[i]t is expected that other layers will provide the [] PSN tunnel setup.”). Kamite did not purport to improve on PWs, but rather on MPLS tunnels. Kamite’s Abstract Problem and Solution statements do not mention PWs, nor do its claims. *See* EX1041 at 2-5.

Furthermore, even under petitioner’s incorrect interpretation in which tunnel 21 is a pseudowire, there is still at most *one pseudowire* (tunnel 21) traversing the “first link” between the input router PE and the intermediate router P. For this reason, Figure 10 fails to disclose the “said first link being shared by the *first and second pseudo-wires*” claim limitation. Even under petitioner’s incorrect interpretation of Kamite, Figure 10 shows only one pseudowire between the input and intermediate routers, not two pseudowires sharing one link as required by the claims.

Petitioner next suggests that the claims are met because “[t]hese pseudo-wires [of Kamite] broadcast data.” Pet. at 63 (citing EX1041, 6). However, the language Petitioner quotes in support is specifically referring to “conventional pseudo wire technology” which the ’775 Patent distinguished and which did not teach two PWs sharing a link (otherwise Petitioner would have asserted that as its grounds). *See* EX1041 at 6. Furthermore, Kamite never refers to multicast PWs—the “multicasting” which Kamite is referring to is “multicast tunnel technology,” which as explained above is different than a PW. *See* EX1041 at 6-7.

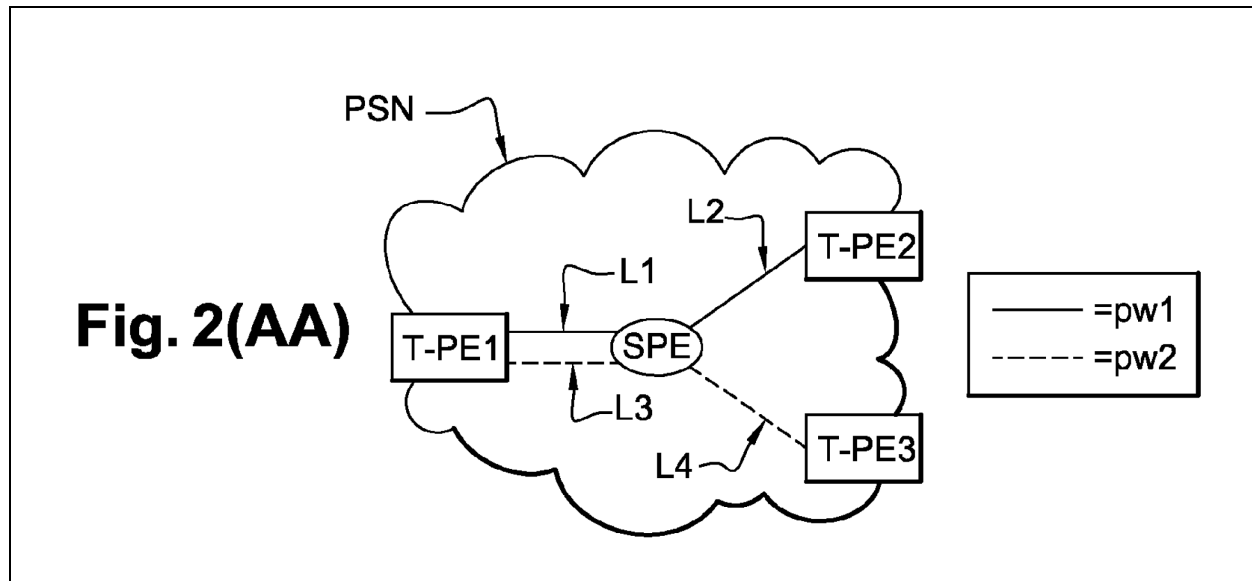
Petitioner then switches course, suggesting that Kamite Fig. 3 “discloses two point-to-point pseudo-wires that share the first link.” Pet. at 64. This is incorrect because Fig. 3 describes “establish[ing] separate unicast tunnels,” and as Petitioner’s own references explained, tunnels are not PWs. See EX1041 at 6.



EX1041 Fig. 3 (annotated).

However, even if the tunnels in Kamite Figure 3 were pseudowires as Petitioner claims, they still would not meet the “said *first link being shared* by the first and second pseudo-wires” claim limitation. Kamite states that Figure 3 uses “conventional pseudo wire technology” in which “there are three instances of traffic between PE111 and P121.” EX1041 at 6. Thus the three tunnels in Figure 3 do not share a “first link”—they use three separate links. The “conventional pseudo wire technology” in Figure 3 of Kamite is analogous to the “prior art” depicted in ’775

Patent Figure 2, in which two separate pseudowires (pw1 and pw2) are carried on two separate links (L1 and L3) between the same input router (T-PE1) and intermediate router (SPE).



EX1001 Fig. 2.

This use of two redundant links to send redundant traffic (as in Kamite) is a prior art problem the '775 Patent criticizes and solves. *See, e.g.*, EX1001 at 2:40-45 (“this kind of solution has the drawback of consuming network resources, ... signaling streams for setting-up two pseudo wires, and bandwidth, especially between the input router and the intermediate router.”). Rather than using two separate and redundant links to carry two pseudowires, the '775 Patent claims using a single shared link to carry two pseudowires. This is not what is shown in Kamite’s Figure 3. Rather, Figure 3 shows three separate links on which “there are three instances of traffic between PE1₁ and P12₁.” EX1041 at 6.

Further underscoring that the three tunnels in Kamite’s Figure 3 do not share a link and instead use three separate links, Kamite teaches that it assigns each pseudowire an “Interface Parameter.” EX1041 at 8. Because each pseudowire is assigned its own “Interface Parameter” in Kamite, Kamite does not teach that pseudowires can share the same interfaces. Petitioner’s proposed construction for a “link” is a “connection between *an interface* of a first router and *an interface* of a second router.” Pet. at 19 (emphasis added). In order for two pseudowires to share one link under that construction, they need to at least share the same interfaces. But Kamite never teaches or suggests that two pseudowires can share the same interfaces or the same “Interface Parameter[s].” So Kamite does not teach or suggest two pseudowires sharing a link, even if the tunnels in Kamite’s Figure 3 are (incorrectly) assumed to be PWs.

2. Bocci Cannot Overcome Kamite’s Shortcomings

Once again, Petitioner suggests that Bocci (which does not teach two PWs sharing a link) overcomes Kamite’s shortcomings. Pet. at 65-66, 72-73. Once again, Petitioner is wrong—Bocci cannot render obvious a concept it does not even contemplate (two PWs sharing a link), regardless of whether it is considered alone or in combination with Kamite (which also does not contemplate two PWs sharing a link).

3. The Proposed Combination of Kamite and Bocci is Purely Hindsight Motivated

For the same reasons discussed above for Ground 1, Petitioner's combination based on Bocci is purely hindsight motivated and should be rejected.

C. The Petition Should Be Denied Under § 325(d) Because The Same Art And Arguments Were Previously Presented and Considered

The Board should deny the Petition because the same art and arguments were previously presented to the Office and patentability of the challenged claims was confirmed over that art and those arguments. As a result, the Board should deny this Petition as duplicative of the art and arguments the Office has already considered and over which it has already confirmed patentability.

1. § 325(d) Legal Standard

“Section 325(d) provides that the Director may elect not to institute[] a proceeding if the challenge to the patent is based on matters previously presented to the Office.” *Advanced Bionics, LLC, v. Med-el Elektromedizinische Geräte GMBH*, IPR2019-01469, Paper 6 at 7 (Feb. 13, 2020) (precedential). “35 U.S.C. § 325(d) identifies two separate issues for the Director to consider in exercising discretion to deny institution of review: whether the petition presents to the Office the same or substantially the same art previously presented to the Office, or whether the petition presents to the Office the same or substantially the same arguments previously presented to the Office.” *Id.*

“[U]nder § 325(d), the Board uses the following two-part framework: (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and (2) if either condition of first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.” *Id.* at 8.

[If] petitioner fails to make a showing of material error, the Director generally will exercise discretion not to institute *inter partes* review. If reasonable minds can disagree regarding the purported treatment of the art or arguments, it cannot be said that the Office erred in a manner material to patentability. At bottom, this framework reflects a commitment to defer to previous Office evaluations of the evidence of record unless material error is shown.

Id. at 8-9.

In evaluating whether to deny institution when the same or substantially the same prior art was previously presented to the Office, the Board considers:

(1) the similarities and material differences between the asserted art and the prior art involved during examination;

(2) the cumulative nature of the asserted art and the prior art evaluated during examination;

(3) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection;

(4) the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art;

(5) whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art; and

(6) the extent to which additional evidence and facts presented in the Petition warrant reconsideration of the prior art or arguments.

Becton, Dickinson and Company v. B. Braun Melsungen AG, IPR2017-01586, Paper 8 at 17-18 (Dec. 15, 2017) (precedential).

2. The § 325(d) Factors Favor Denial

(a) All Art And Arguments Were Previously Considered

(i) Wainner

Petitioner's grounds based on Wainner do not constitute new art or arguments, at least because it was expressly considered on the record during prosecution and the prior reexamination. Wainner appears in the list of references cited on the face of the patent.

(56)	References Cited				
U.S. PATENT DOCUMENTS					
2007/0239891	A1 *	10/2007	Wainner et al.		709/238
2008/0089227	A1 *	4/2008	Guichard et al.		370/228
2008/0175234	A1 *	7/2008	Li		370/389

EX1001 at (56) (highlighting added).

The examiner identified the reference during the initial prosecution of the '775 Patent. EX1002 at 108. The examiner determined that it was “pertinent to the applicant’s disclosure” and made express findings on the record as to what he understood Wainner to teach:

7. The prior art made of record and not relied upon is considered pertinent to applicant’s disclosure. **Wainner et al.** (US 20070239891 A1) is cited to show a method, apparatus and computer program product for providing point-to-multipoint multihop distribution using Pseudowires (PWs). Data is received at a switching provider edge (S-PE) router from an upstream originating provider edge (O-PE) router by way of a first PW, the first PW having a head-end coupled to the O-PE and a tail end coupled to the S-PE. The data received is replicated by the S-PE to at least one receiver provider edge (R-PE) router by way of a respective PW for each of the at least one R-PE, each of the respective PW between the S-PE and the R-PE having a head end coupled to the SPE and a tail end coupled to the R-PE, which is similar to aspects of the claimed invention.

EX1002 at 105-106.

When the '775 Patent underwent reexamination in 90/014,701, the Patent Owner once again submitted the Wainner reference for consideration, and the reexamination examiner considered it again. EX1008 at 152. In the Order Granting Request for *Ex Parte* Reexamination, the examiner once again discussed Wainner and its role during prosecution, further evidencing the fact that it had been

recognized and considered yet again during the reexamination. EX1008 at 196. All of this demonstrates that Wainner has been repeatedly presented to (and considered by) the Office.

Petitioner concedes that Wainner was discussed on the record during the initial prosecution but suggests the examiner “did not analyze whether Wainner taught the ’775 claims.” Petitioner cites no support for that conclusion, which directly contradicts what the prosecution history actually shows. The examiner could not have made a determination that Wainner was “pertinent” unless he analyzed whether it taught the ’775 Claims. Nor would the examiner have created his summary of the relevant portions of the Wainner disclosure unless he had compared the disclosure to the claims and evaluated its applicability as a ground of rejection. As the MPEP explains:

During the examination of an application or reexamination of a patent, the examiner should cite appropriate prior art which is *nearest to the subject matter defined in the claims*. When such prior art is cited, its pertinence should be explained.

MPEP 707.05 (emphasis added). This is done “even if no claim presented during the prosecution was considered unpatentable over such prior art.” *Id.* The MPEP even gives the form paragraph to be used when the examiner cites the art “nearest to the subject matter defined in the claims” but does not reject under that art—the same form paragraph used by the examiner during prosecution. *Compare* MPEP 707.05

with EX1002 at 14-15 (“The prior art made of record and not relied upon is considered pertinent to applicant’s disclosure...”). Thus, Petitioner is incorrect in its assertion that Wainner “was not substantively analyzed.” Pet. at 84.

(ii) Bocci

Similarly, Petitioner is incorrect in its assertion that Bocci was not previously presented or considered on the merits. In fact, Bocci⁴ is substantively addressed ***in the specification of the ’775 Patent itself***. In “BACKGROUND OF THE DISCLOSURE,” the ’775 Patent discusses the process of setting up a PW, and then

⁴ Petitioner relies on a version of Bocci bearing an apparent file name of “draft-ietf-pwe3-ms-pw-arch-**00**.txt” dated ***January 11***, 2006, whereas the ’775 Patent addresses a version of Bocci bearing the apparent file name “draft-ietf-pwe3-ms-pw-arch-**02**.txt”, dated ***October 20***, 2006. Compare EX1031 at 1 with EX1001 at 1:66-2:2; EX2003 at 2. As shown in the EX2004 redline, the later version of Bocci addressed in the ’775 Patent specification, prosecution, and reexamination is simply an expanded version of the document that Petitioner relies on. Thus, everything disclosed in the version Petitioner relies on has been previously considered. Petitioner itself considers them to be equivalent, as demonstrated by the fact that it does not distinguish between the versions cited previously and the version relied upon in this proceeding. See, e.g., Pet. at 83, 85.

specifically refers to Bocci for additional detail on the topic of setting up PWs in the manner that the '775 Patent explained was deficient. EX1001 at 1:53-2:2. Thus, the examiner would have been well aware of the relevance of the document from reviewing the specification alone.

Bocci was cited as a “document of particular relevance” in the International Search Report accompanying the filing of the '775 Patent. EX1002 at 304-305 (identifying Bocci as a Category “X” suggesting it is a “document of particular relevance”). The Applicant also cited the document in its IDS, and the examiner considered it. EX1002 at 114.

In the reexamination, both the reexamination requester and the Patent Owner submitted Bocci as an exhibit for further consideration, along with filing it in an IDS where the examiner once again indicated that it was considered. *See* EX1008 at 306 (citing Bocci as exhibit 1027 to the Reexamination Request), 47 (citing Bocci as exhibit 2009 to the Patent Owner’s Office Action Response), 20 (examiner indicating consideration of reference cited in the IDS); EX2003 (version of Bocci submitted in *ex parte* reexamination). The Order Granting Request for *Ex Parte* Reexamination also discussed the results of the previous “international search report,” noting that Bocci had been “cited as an anticipatory reference.” EX1008 at 194. Thus, Bocci has been repeatedly presented to and considered by the Office, including in the specification of the '775 Patent.

Petitioner's suggestion that Bocci was not considered during initial prosecution or the reexamination is again in conflict with the actual record. *See* Pet. at 83, 85. Petitioner completely ignores the fact that Bocci is referenced and discussed directly within the '775 Patent specification in regard to setting up PWs. Petitioner's implicit argument that the examiners somehow examined the '775 Patent without viewing the specification or applying the background regarding PWs strains credulity and must be rejected. *See* EX1001 at 1:66-2:2.

(iii) Kamite

Kamite is a translation of a foreign reference that Petitioner has included as a transparent attempt to try to avoid this Petition being rejected under § 325(d), given the overwhelming evidence that Wainner and Bocci (which make up the lead ground) have repeatedly been presented to—and considered by—the USPTO. This is further demonstrated by the fact that Kamite is included as part of Petitioner's secondary proposed ground, yet it is Petitioner's lead (and primary) focus throughout its § 325(d) arguments. *See* Pet. at 83-87. However, the § 325(d) analysis is not limited to identical references—a Petition can also be rejected if similar arguments had been previously made to the USPTO, or if the Petitioner relies on a reference in “substantially the same manner” as it was previously relied on. *See, e.g., Advanced Bionics*, IPR2019-01469, Paper 6 at 15. Petitioner here relies on Kamite in substantially the same manner that the examiner relied on U.S. Patent No. 7,602,702

to Aggarwal (“Aggarwal”) in the prior reexamination. *See* EX2005 (Aggarwal); EX1008 at 112-113.

Petitioner describes Kamite as “disclos[ing] how to establish a ‘point-to-multipoint pseudo wire.’” Pet. at 57. The requester in the *ex parte* reexamination described Aggarwal as disclosing the same thing. EX1008 at 269-270 (“Aggarwal describes the claimed pseudo-wire limitation in that the Point-to-Multipoint (P2MP) Label Switched Path (LSP) includes branch LSPs.”).

The mappings are similar as well, both relying on a purported multicast tunnel as teaching the claimed shared link. For example, Petitioner here argues that Kamite teaches using a single “multicast tunnel” shown in Kamite Fig. 10. Pet. at 56-57. Similarly, the reexamination requester argued that the purported “first link” of Aggarwal was shared because two branches were merged “relying on MPLS label multicast.” EX1008 at 300-301.

Thus, even if Kamite was not identified by name during prior prosecution and reexamination of the ’775 Patent, Petitioner relies on it in substantially the same manner as Aggarwal⁵ was relied upon during the prior reexamination. Thus, all art and arguments considered here were previously considered by the office.

⁵ Petitioner cited and analyzed Aggarwal and its use in the previous reexamination in the Petition, so it was clearly aware of Aggarwal’s content and the

(b) Petitioner Has Identified No Material Error

At step two, Petitioner identifies no material error in the Office's prior filings. Petitioner does not even address the duplicative subject matter of Kamite and Aggarwal, and instead ignores the issue, suggesting that step two should not be reached because Kamite was not cited by name during prosecution. Pet. at 85. However, as discussed above, that is not the test under *Advanced Bionics*.

Petitioner's only real argument for material error is that Wainner, Kamite, and Bocci were not substantively analyzed previously. Pet. at 85-87. As discussed above, Petitioner is wrong on all three counts. Petitioner proposes no material error in the actual analysis because it cannot—none of the asserted references teaches the limitations of the Challenged Claims. That Petitioner might have a slightly different interpretation of the references than the prior examiners does not matter—Petitioner cannot succeed in its challenge without identifying some material error made by the Office. “If reasonable minds can disagree regarding the purported treatment of the art or arguments, it cannot be said that the Office erred in a manner material to patentability. At bottom, this framework reflects a commitment to defer to previous Office evaluations of the evidence of record unless material error is shown.”

prior arguments regarding Aggarwal when it filed its Petition. Pet. at 17-18. Despite this, Petitioner chose not to address the obvious overlap.

Advanced Bionics, IPR2019-01469, Paper 6 at 9. Therefore, the Office should deny institution under 35 U.S.C. § 325(d).

VII. Conclusion

Patent Owner respectfully requests that the Board refuse to institute *inter partes* review for the reasons stated herein.

Dated: May 16, 2024

Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned certifies that pursuant to 37 C.F.R. § 42.6(e), a copy of the foregoing was served via email to lead and backup counsel of record for Petitioners as follows:

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CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), the undersigned hereby certifies that this brief complies with the type-volume limitation of 37 C.F.R. § 42.24 because this brief contains 8,198 words.

Dated: May 16, 2024

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