

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JUNIPER NETWORKS, INC.,
Petitioner,

v.

SMART PATH CONNECTIONS, LLC,
Patent Owner.

IPR2021-01170
Patent 7,463,580 B2

Before DAVID C. McKONE, NATHAN A. ENGELS, and
STEVEN M. AMUNDSON, *Administrative Patent Judges*.

Opinion for the Board filed by *Administrative Patent Judge* AMUNDSON.

Opinion Concurring filed by *Administrative Patent Judge* McKONE.

AMUNDSON, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Juniper Networks, Inc. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–22 in U.S. Patent No. 7,463,580 B2 (Ex. 1001, “the ’580 patent”) under 35 U.S.C. §§ 311–319. Paper 1 (“Pet.”). Smart Path Connections, LLC (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”). Further, after receiving Board authorization, Petitioner filed a Preliminary Reply, and Patent Owner filed a Preliminary Sur-reply. Paper 8 (“Prelim. Reply”); Paper 9 (“Prelim. Sur-reply”).

Under 37 C.F.R. § 42.4(a), we have authority to determine whether to institute an *inter partes* review. We may institute an *inter partes* review only if “the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a) (2018).

After considering the Petition, the Preliminary Response, and the evidence of record, and for the reasons explained below, we determine that Petitioner has not demonstrated a reasonable likelihood that it would prevail with respect to at least one claim challenged in the Petition. Hence, we deny the Petition and do not institute an *inter partes* review.

II. BACKGROUND

A. *Real Parties in Interest*

Petitioner identifies itself as the real party in interest. Pet. x. Patent Owner identifies itself as the real party in interest. Paper 5, 1. The parties do not raise any issue about real parties in interest.

B. Related Matters

Petitioner and Patent Owner identify the following civil actions as related matters:

- *Smart Path Connections, LLC v. ADTRAN, Inc.*, No. 6:21-cv-326 (W.D. Tex.); and
- *Smart Path Connections, LLC v. Juniper Networks, Inc.*, No. 6:21-cv-327 (W.D. Tex.).

Pet. x; Paper 5, 1. Patent Owner voluntarily dismissed the civil action against Petitioner without prejudice. Ex. 2003, 1.

C. The '580 Patent (Exhibit 1001)

The '580 patent, titled “Resource Sharing Among Network Tunnels,” issued on December 9, 2008, from an application filed on December 15, 2005. Ex. 1001, codes (22), (45), (54). The patent states that the invention relates to “methods and systems for sharing resources of network elements in tunneled networks.” *Id.* at 1:6–8.

The '580 patent explains that “Multiprotocol Label Switching (MPLS) has gained popularity as a method for efficient transportation of data packets over connectionless networks, such as Internet Protocol (IP) networks.” Ex. 1001, 1:12–15. The patent notes that each of the following Internet Engineering Task Force (IETF) Request for Comments (RFC) describes MPLS:

- RFC3031, titled “Multiprotocol Label Switching Architecture” and dated January 2001; and
- RFC3036, titled “Label Distribution Protocol Specification” and dated January 2001.

Id. at 1:15–19.

In MPLS, “each packet is assigned to a Forwarding Equivalence Class (FEC) when it enters the network, depending on its destination address.”

Ex. 1001, 1:23–25. Each packet “receives a label, referred to as an ‘MPLS label’ identifying the FEC to which it belongs,” and all packets in the same FEC travel “through the network over the same path by label-switching routers (LSRs).” *Id.* at 1:25–28. The “label applied at the ingress node of the path” determines packet flow “along a label-switched path (LSP).” *Id.* at 1:28–31. Hence, “an LSP can be viewed as a tunnel through the network,” commonly called an MPLS tunnel. *Id.* at 1:31–33.

The ’580 patent explains that RFC3209, titled “RSVP-TE: Extensions to RSVP for LSP Tunnels” and dated December 2001, concerns the Resource Reservation Protocol Traffic Engineering (RSVP-TE). Ex. 1001, 1:46–50; *see id.* at 3:8–9. The RSVP-TE protocol “extends the well-known Resource Reservation Protocol (RSVP)” and allows “the establishment of explicitly-routed LSPs using RSVP as a signaling protocol.” *Id.* at 1:50–52.

The ’580 patent identifies a deficiency in the RSVP-TE protocol and other “tunnel-oriented resource reservation protocols” because they do not “enable resource sharing between separate tunnels.” Ex. 1001, 5:43–46; *see id.* at 1:57–58, 2:22–27. Although the RSVP-TE protocol “defines a shared explicit (SE) reservation style that enables some bandwidth sharing” between “different instances” of the same tunnel, those “different instances” are “not considered to be separate communication paths,” i.e., separate tunnels. *Id.* at 1:57–58, 2:22–27; *see id.* at 5:43–46, 7:10–13.

To address that deficiency, the ’580 patent discloses methods and systems for (1) defining a resource-sharing group including two or more communication paths through a network, (2) distributing over the network a

notification of an affiliation of the two or more communication paths with the resource-sharing group, and (3) allocating a resource “responsively” to the notification. Ex. 1001, 2:58–3:4, 3:39–4:16, code (57). When two paths traverse a common network element or node, “it is desirable to share at least some of the resources allocated by the common network element.” *Id.* at 5:30–34.

Resource sharing “increases the available capacity of the network elements and enables them to support a higher number of MPLS tunnels and/or to offer improved [quality of service] QoS.” Ex. 1001, 6:49–52. Resource sharing may involve “any hardware and/or software resource of the network element in question, such as bandwidth allocation, port utilization and memory space.” *Id.* at 5:12–17; *see id.* at 2:46–49, 3:37–39.

Figure 1 in the ’580 patent (reproduced below) depicts a communication network with multiple communication paths:

FIG. 1

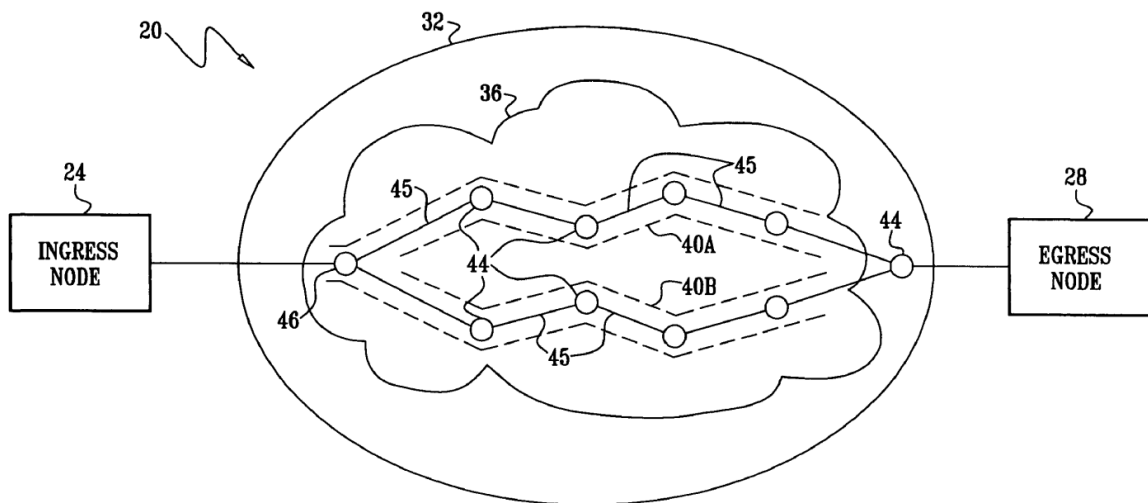


Figure 1 illustrates communication network 20 including ingress node 24, egress node 28, IP network 32, and MPLS network 36 within IP network 32. Ex. 1001, 4:23–25, 6:1–8, Fig. 1. “IP network 32 comprises network

elements 44, such as routers, switches, concentrators and aggregators.” *Id.* at 6:8–10. “Network elements 44 communicate with one another using communication links or other shared communication media,” identified “as network segments 45.” *Id.* at 6:12–15.

As Figure 1 shows, “two MPLS tunnels denoted 40A and 40B are set up through MPLS network 36” and “traverse two different routes through network 36.” Ex. 1001, 6:18–21, Fig. 1. “Some of network elements 44 and/or segments 45 may be common to the two tunnels,” e.g., “common network element 46 compris[ing] a network element similar to elements 44.” *Id.* at 6:21–24. “MPLS tunnels 40A and 40B are established independently, therefore MPLS reservation protocols cannot share resource allocations between them.” *Id.* at 6:43–45.

Figure 2 in the ’580 patent (reproduced below) depicts a communication network with multiple communication paths:

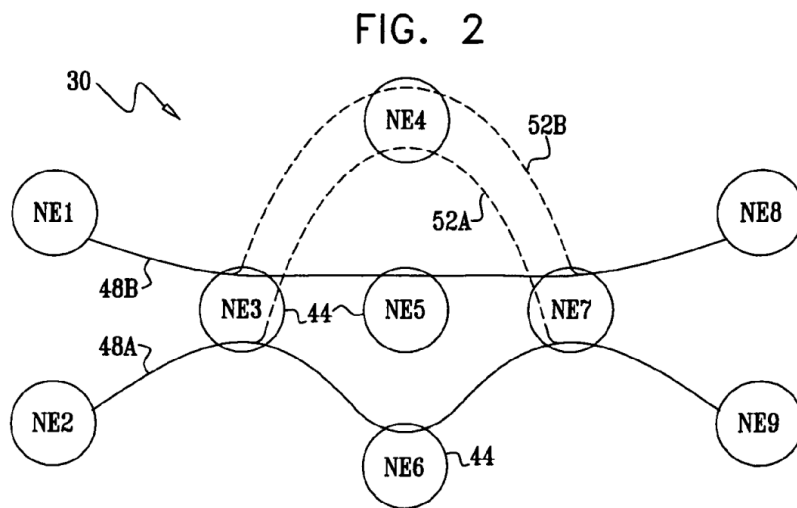


Figure 2 illustrates communication network 30 including nine network elements denoted NE1 through NE9. Ex. 1001, 4:26–28, 6:58–62, Fig. 2. The ’580 patent notes that “the nominal path used is referred to as a primary path, and the protecting path is referred to as an alternative path.” *Id.* at

4:45–47. As Figure 2 shows, network 30 includes primary tunnel 48A, primary tunnel 48B, alternative tunnel 52A, and alternative tunnel 52B. *Id.* at 6:62–67.

Primary tunnel 48A “connects NE2 with NE9.” Ex. 1001, 6:63. Primary tunnel 48B “connects NE1 with NE8.” *Id.* at 6:64. Alternative tunnel 52A protects primary tunnel 48A “against a failure in element NE6.” *Id.* at 6:64–66. Alternative tunnel 52B protects primary tunnel 48B “against a failure in element NE5.” *Id.* at 6:66–67. Alternative tunnel 52A and alternative tunnel 52B each traverse network element NE4 and may share resources of that network element. *Id.* at 7:1–2, 7:13–15.

Figure 4 in the ’580 patent (reproduced below) depicts a flowchart for a method for sharing resources at a network element:

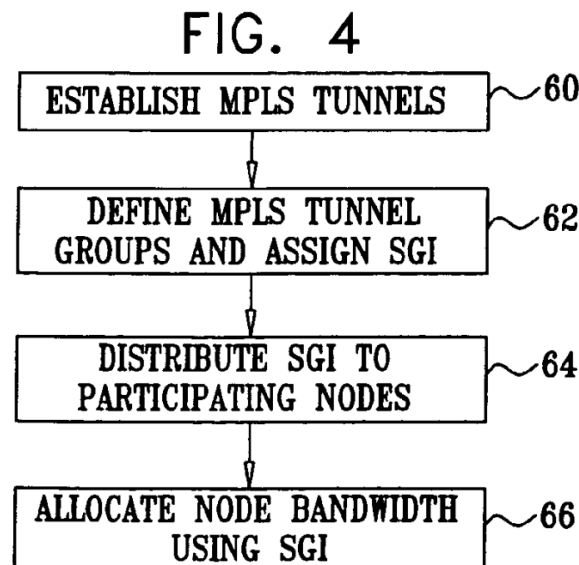


Figure 4 illustrates steps 60 through 66 in “a method for sharing network element resources in an MPLS communication network.” Ex. 1001, 7:54–57, Fig. 4; *see id.* at 4:32–35.

At step 60, “an operator, such as a network administrator or designer, establish[es] two or more MPLS tunnels.” Ex. 1001, 7:57–59. “In general,

each MPLS tunnel traverses the communication network from an ingress node to an egress node and uses resources of a number of network elements 44 and network segments 45 along its route.” *Id.* at 7:62–65.

At step 62, “the operator selects one or more tunnel groups” for resource sharing. Ex. 1001, 7:66–67. “Each resource-sharing group comprises two or more tunnels that may share resources among them” and “is a virtual entity that indicates resource sharing dependence between the group members.” *Id.* at 7:67–8:4. For instance, “a resource-sharing group may comprise a pair of tunnels that are set up to protect one another.” *Id.* at 8:6–7.

At step 64, “a notification regarding the affiliation of the MPLS tunnels affiliated with each resource-sharing group” is “distributed to network elements 44 in the network” to “indicate to the network elements which tunnels are affiliated with each resource-sharing group.” Ex. 1001, 8:21–26. For instance, a network element may receive a reservation message containing a unique identifier for the resource-sharing group called a sharing group index (SGI). *Id.* at 8:7–9, 8:31–37; *see id.* at 3:12–13.

At step 66, “[t]he network elements receive the reservation messages” and “allocate appropriate resources to the different tunnels.” Ex. 1001, 8:38–40.

D. The Challenged Claims

Petitioner challenges claims 1–22 in the ’580 patent, i.e., every claim in the patent. *See* Pet. 2, 9–85. Independent claims 1 and 8 exemplify the

challenged claims and read as follows (with formatting added for clarity and with numbers added for reference purposes¹):

1. A method for communication, comprising:

[1.1] defining a resource-sharing group comprising at least first and second tunnels, which have respective origin network elements and termination network elements and which traverse different routes through a communication network, the routes traversing at least one common network element,

[1.2] wherein the tunnels meet at least one condition selected from a group of conditions consisting of:

the respective origin network elements of the first and second tunnels are different; and

the respective termination network elements of the first and second tunnels are different;

[1.3] distributing a notification over the network of an affiliation of the tunnels with the resource-sharing group; and

[1.4] allocating a resource associated with the at least one common network element so as to share an allocation of the resource among the tunnels in the resource-sharing group responsively to the notification.

8. A network element, comprising:

[8.1] a network interface for communicating with other elements in a communication network; and a processor, which is arranged

[8.2] to accept, via the network interface, a notification distributed over the communication network of an affiliation with a resource-sharing group of at least first and second tunnels, which have respective origin network elements and termination network elements and which traverse different routes through the network,

¹ We use the same numbers that Petitioner uses to identify the claim limitations.

[8.3] wherein the tunnels meet at least one condition selected from a group of conditions consisting of:

the respective origin network elements of the first and second tunnels are different; and

the respective termination network elements of the first and second tunnels are different,

[8.4] the processor comprising a call admission control (CAC) module, which is arranged, when the network element is traversed by at least some of the tunnels in the resource-sharing group, to allocate a resource associated with the network element so as to share an allocation of the resource among the at least some of the tunnels responsively to the notification.

Ex. 1001, 9:9–27, 9:63–10:18.

E. The Asserted References

For its challenges, Petitioner relies on the following references:

Name	Reference	Exhibit
RFC4090	P. Pan et al., Request for Comments 4090 for “Fast Reroute Extensions to RSVP-TE for LSP Tunnels,” dated May 2005	1005
FastReroute-07	P. Pan et al., Internet Draft for “Fast Reroute Extensions to RSVP-TE for LSP Tunnels,” dated Feb. 2005	1006
deBoer	U.S. Patent Application Publication No. 2003/0161304 A1, published Aug. 28, 2003	1007
Doshi	U.S. Patent Application Publication No. 2004/0193728 A1, published Sept. 30, 2004	1008

Petitioner asserts that RFC4090 “is prior art under § 102(a)” and that FastReroute-07, deBoer, and Doshi “are prior art under § 102(b).” Pet. 3; *see* 35 U.S.C. § 102(a)–(b) (2006).²

Patent Owner asserts that Petitioner fails to demonstrate that RFC4090 and FastReroute-07 “qualify as printed publications.” Prelim. Resp. 3, 41–46. At this stage of the proceeding, Patent Owner does not dispute that deBoer and Doshi qualify as prior art. *See id.* at 3–4, 66–71.

F. The Asserted Challenges to Patentability

Petitioner asserts the following challenges to patentability:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–22	103(a)	RFC4090, Doshi
1–22	103(a)	FastReroute-07, Doshi
1–22	103(a)	deBoer, Doshi

Pet. 2, 9–85.

G. Testimonial Evidence

To support its challenges, Petitioner relies on the declaration of Tal Lavian, Ph.D. (Ex. 1003, “Lavian Decl.”). Dr. Lavian states, “I have been retained on behalf of Juniper Networks, Inc. to offer technical opinions with respect to the ’580 Patent and the prior art.” Ex. 1003 ¶ 2.

To support its positions, Patent Owner relies on the declaration of Robert Akl, D.Sc. (Ex. 2001, “Akl Decl.”). Dr. Akl states, “I have been

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284 (2011), amended 35 U.S.C. § 102 and § 103 effective March 16, 2013. Because the ’580 patent’s filing date predates the AIA’s amendments to § 102 and § 103, this decision refers to the pre-AIA versions of § 102 and § 103.

retained by counsel for Patent Owner Smart Path Connections, LLC” as “an expert in the field of telecommunication systems.” Ex. 2001 ¶¶ 2–3.

III. DISCRETIONARY DENIAL

Patent Owner argues that we should exercise our discretion under § 325(d) to deny institution because Petitioner “relies on references that are the same or substantially the same” as art the Examiner considered during the ’580 patent’s prosecution. *See* Prelim. Resp. 14–30; Prelim. Sur-reply 1–3. For instance, Patent Owner asserts that the Examiner considered Huang³ during the ’580 patent’s prosecution and that Huang “discloses path protection in MPLS networks” similar to RFC4090, FastReroute-07, deBoer, and Doshi. Prelim. Resp. 21, 25–26; *see id.* at 18–19, 29–30; Prelim. Sur-reply 4.

Petitioner argues that “the Petition’s prior art and obviousness combinations aren’t similar or cumulative” to art the Examiner considered during the ’580 patent’s prosecution. Pet. 85.

For the reasons explained below, we determine that Petitioner has not demonstrated a reasonable likelihood that it would prevail in proving the unpatentability of any challenged claim on any ground of unpatentability presented in the Petition. *See infra* §§ IV.E.3(e)–(f), IV.F, IV.G.2(d)–(f). Hence, we do not consider discretionary denial under § 325(d).

³ C. Huang et al., *Building Reliable MPLS Networks Using a Path Protection Mechanism*, IEEE COMMUNICATIONS MAGAZINE, Mar. 2002, at 156–62 (Ex. 1002, 561–67).

IV. PATENTABILITY ANALYSIS

A. *Legal Principles: Obviousness*

A patent may not be obtained “if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” 35 U.S.C. § 103(a). An obviousness analysis involves underlying factual inquiries including (1) the scope and content of the prior art; (2) differences between the claimed invention and the prior art; (3) the level of ordinary skill in the art; and (4) where in evidence, objective indicia of nonobviousness, such as commercial success, long-felt but unsolved needs, and failure of others.⁴ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18, 35–36 (1966); *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1047–48 (Fed. Cir. 2016) (en banc). When evaluating a combination of references, an obviousness analysis should address “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

We analyze the obviousness issues according to these principles.

B. *Level of Ordinary Skill in the Art*

Factors pertinent to determining the level of ordinary skill in the art include (1) the educational level of the inventor; (2) the type of problems encountered in the art; (3) prior-art solutions to those problems; (4) the rapidity with which innovations are made; (5) the sophistication of the technology; and (6) the educational level of workers active in the field.

⁴ The record does not include evidence or arguments regarding objective indicia of nonobviousness.

Envtl. Designs, Ltd. v. Union Oil Co., 713 F.2d 693, 696–97 (Fed. Cir. 1983). Not all factors may exist in every case, and one or more of these or other factors may predominate in a particular case. *Id.* Further, these factors are not exhaustive, but merely a guide to determining the level of ordinary skill in the art. *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007). Moreover, the prior art itself may reflect an appropriate skill level. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

Based on Dr. Lavian’s testimony, Petitioner asserts that a person of ordinary skill in the art would have had either “a bachelor’s degree in electrical engineering, computer engineering, computer science, or a closely related field, and three to four years of experience in the design and development of telecommunication networks and components using RFC-based architectures and protocols” or “a Master’s degree or similar post-graduate work in electrical engineering, computer engineering, computer science, or a closely related field, and less years of design and development experience.” Pet. 7 (citing Ex. 1003 ¶¶ 95–97).

Patent Owner asserts that Petitioner’s “proposed level of ordinary skill does not affect the ultimate analysis.” Prelim. Resp. 40. Patent Owner “takes no position with respect to Petitioner’s proposed level of skill.” *Id.*

Based on the current record, we accept Petitioner’s description of an ordinarily skilled artisan as consistent with the ’580 patent and the asserted references.

C. Claim Construction

Because Petitioner filed the Petition after November 13, 2018, we construe claim terms “using the same claim construction standard” that district courts use to construe claim terms in civil actions under 35 U.S.C.

§ 282(b). *See* 37 C.F.R. § 42.100(b) (2021). Under that standard, “[c]laim terms are given their ordinary and customary meaning, which is the meaning the term would have to a person of ordinary skill in the art at the time of the invention.” *Power Integrations, Inc. v. Fairchild Semiconductor Int’l, Inc.*, 904 F.3d 965, 971 (Fed. Cir. 2018) (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc)). The meaning of claim terms may be determined by “look[ing] principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Petitioner “construes each of the ’580 claim terms as having its ordinary and customer [sic] meaning” and does not propose a construction for any claim term. Pet. 8.

Patent Owner “requests that the Board adopt the ordinary and customary meaning of the claim terms as understood by one of ordinary skill in the art.” Prelim. Resp. 11.

Based on the current record, we determine that no claim term requires an explicit construction to decide whether Petitioner satisfies the “reasonable likelihood” standard for instituting trial. “[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.” *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999); *see Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

*D. Whether RFC4090 and FastReroute-07
Qualify as Printed Publications*

1. BACKGROUND

(a) RFC4090

RFC4090 is a document prepared by the Network Working Group of the Internet Engineering Task Force (IETF), titled “Fast Reroute Extensions to RSVP-TE for LSP Tunnels,” that lists as editors Ping Pan, George Swallow, and Alia Atlas. Ex. 1005, 1, 37–38. After the list of editors on page 1, RFC4090 includes the date “May 2005.” *Id.* at 1.

RFC4090 states that it specifies a protocol “for the Internet community” and “requests discussion and suggestions for improvements.” Ex. 1005, 1. RFC4090 describes its distribution as “unlimited.” *Id.*

(b) FastReroute-07

FastReroute-07 is a document prepared by the IETF, titled “Fast Reroute Extensions to RSVP-TE for LSP Tunnels,” that lists as editors Ping Pan, George Swallow, and Alia Atlas. Ex. 1006, 1, 36–37. Under the title on page 1, FastReroute-07 includes the identifier “draft-ietf-mpls-rsvp-lsp-fastreroute-07.txt.” *Id.* at 1. FastReroute-07 includes the date “February 2005” as an expiration date but does not specify a preparation date. *See, e.g., id.* at 1–4.

FastReroute-07 states that it “is an Internet-Draft” and that “Internet-Drafts are working documents” of the IETF. Ex. 1006, 1. FastReroute-07 explains that “Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time.” *Id.* According to FastReroute-07, “[t]he list of current Internet-Drafts can be accessed at <http://www.ietf.org/ietf/1id-abstracts.txt>.”

Id. FastReroute-07 also states that “[t]his document and translations of it may be copied and furnished to others” *Id.* at 35.

2. THE CONTENTIONS OF THE PARTIES

Petitioner contends that “RFC4090 and FastReroute-07 are printed publications from the IETF standards organization.” Pet. 2. Specifically, Petitioner asserts that the IETF “published RFC4090 on May 27, 2005, and FastReroute-07 on September 7, 2004.” *Id.* (footnotes omitted). As support for those publication dates, Petitioner cites a document titled “History for draft-ietf-mpls-rsvp-lsp-fastreroute-07” (“FastReroute History”). *Id.* at 2 nn.4–5 (citing Ex. 1015).

On page 1, the FastReroute History identifies the following revisions: “draft-ietf-mpls-rsvp-lsp-fastreroute-07 (2004-09-07)” and “rfc4090 (2005-05-27).” Ex. 1015, 1. The FastReroute History contains a “Document history” table with a column of dates and a column of actions associated with dates. *Id.* at 1–7. Among other entries, the table includes the following dates and actions:

- the date “2004-09-07” followed by the action “New version available: draft-ietf-mpls-rsvp-lsp-fastreroute-07.txt”; and
- the date “2005-05-27” followed by the action “RFC published.”

Id. at 2.

Petitioner notes that RFC4090 was submitted to the Office on August 30, 2005, with an information disclosure statement during the prosecution of an unrelated application that issued as U.S. Patent No. 7,848,321 B2 to Akahane et al. (“Akahane”) on December 7, 2010. Pet. 2–3 & n.6 (citing Ex. 1019, 6–15, 114–16); see Ex. 1019, 6–15, 114–16, 337;

Ex. 3001, code (45). Petitioner notes that FastReroute-07 was submitted to the Office on December 29, 2004, with an information disclosure statement during the prosecution of an unrelated application that issued as U.S. Patent No. 8,068,411 B2 to Vasseur et al. (“Vasseur”) on November 29, 2011. Pet. 2–3 & n.6 (citing Ex. 1020, 447–49, 481–546); *see* Ex. 1020, 447–49, 481–546; Ex. 3002, code (45).

Further, Petitioner asserts that the ’580 patent’s “original assignee acknowledged it was known ‘drafts are available from [IETF] at www.ietf.org/internet-drafts.’” Pet. 2 n.5 (alteration by Petitioner) (quoting Ex. 1016, 1:28–30).

Patent Owner contends that Petitioner “provides no substantive evidence to support its contention of a May 2005” publication date for RFC4090, “such as a declaration or authenticating document.” Prelim. Resp. 43. Patent Owner asserts that submitting RFC4090 to the Office during Akahane’s prosecution “has no bearing on what was available to the public” on the ’580 patent’s December 15, 2005, filing date because “the cited file history did not publish until April 6, 2006, several months after” the ’580 patent’s filing date. *Id.* (citing U.S. Patent Application Publication No. 2006/0072574 A1 to Akahane et al.).

For FastReroute-07, Patent Owner argues that Petitioner “largely repeats the same mistakes it made” for RFC4090 and “again fails to establish that the reference it relies upon was published prior to the effective filing date of the claimed invention.” Prelim. Resp. 44–45. Patent Owner asserts that submitting FastReroute-07 to the Office during Vasseur’s prosecution “has no bearing on what was available to the public” on the ’580 patent’s December 15, 2005, filing date because “the cited file history

did not publish until June 29, 2006, several months after” the ’580 patent’s filing date. *Id.* at 45 (citing U.S. Patent Application Publication No. 2006/0140111 A1 to Vasseur et al.). Patent Owner also asserts that Petitioner “provides no explanation at all as to where” FastReroute-07 arrived on the alleged publication date of September 7, 2004. *Id.*

Additionally, Patent Owner contends that the FastReroute History has “no value because Petitioner offers no explanation as to what portions, if any, of this document support its arguments regarding publication” of FastReroute-07. Prelim. Resp. 45–46. Patent Owner also contends that “there is no evidence” that the FastReroute History relates “in any way” to FastReroute-07. *Id.* at 46.

Further, Patent Owner asserts that even if FastReroute-07 was created in 2004 and RFC4090 was created in 2005, that “alone still does not demonstrate public accessibility because ‘[p]ublic accessibility requires more than technical accessibility.’” Prelim. Resp. 44, 46 (alteration by Patent Owner) (emphasis omitted) (quoting *Hulu, LLC v. Sound View Innovations, LLC*, IPR2018-01039, Paper 29 at 10 (PTAB Dec. 20, 2019) (precedential)).

3. ANALYSIS

“Whether a reference qualifies as a printed publication under § 102 is a legal conclusion based on underlying fact findings.” *Acceleration Bay, LLC v. Activision Blizzard Inc.*, 908 F.3d 765, 772 (Fed. Cir. 2018). In an *inter partes* review, a petitioner has “the burden to prove” that a reference “is a printed publication.” *Id.*

To qualify as a printed publication, a reference “must have been sufficiently accessible to the public interested in the art.” *In re Cronyn*,

890 F.2d 1158, 1160 (Fed. Cir. 1989). The Federal Circuit has described public accessibility as “the touchstone in determining whether a reference constitutes” a printed publication under § 102. *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1348 (Fed. Cir. 2016) (quoting *In re Hall*, 781 F.2d 897, 898–99 (Fed. Cir. 1986)).

A patent challenger establishes public accessibility by demonstrating that a reference was “disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art, exercising reasonable diligence, can locate it.” *Jazz Pharm., Inc. v. Amneal Pharm., LLC*, 895 F.3d 1347, 1355–56 (Fed. Cir. 2018). Uploading a reference to a website may make it technically accessible since “someone could theoretically find it on the Internet,” but uploading alone does not make a reference publicly accessible. *Samsung Elecs. Co. v. Infobridge Pte. Ltd.*, 929 F.3d 1363, 1369 (Fed. Cir. 2019); see *Acceleration Bay*, 908 F.3d at 772–74. “[W]hile indexing is not required to show that a work is publicly accessible, some evidence that a person of ordinary skill could have reasonably found the website and then found the reference on that website is critical.” *Samsung*, 929 F.3d at 1369.

Thus, a “factor relevant to public accessibility is whether a repository indexes its documents or otherwise categorizes them by subject matter.” *M&K Holdings, Inc. v. Samsung Elecs. Co.*, 985 F.3d 1376, 1382 (Fed. Cir. 2021); see *Voter Verified, Inc. v. Premier Election Sols., Inc.*, 698 F.3d 1374, 1380 (Fed. Cir. 2012). Evidence that users of a prominent standard-setting organization’s website “could have located [a reference] through reasonable diligence” may establish public accessibility. *M&K Holdings*, 985 F.3d at 1381.

Also, at the institution stage of an *inter partes* review, “the statutory ‘reasonable likelihood’ standard for institution applies to the issue of whether a reference is a printed publication.” *Hulu, LLC v. Sound View Innovations, LLC*, IPR2018-01039, Paper 29 at 12 (PTAB Dec. 20, 2019) (precedential) (citing 35 U.S.C. § 314(a)). Hence, a petitioner must “identify with particularity evidence sufficient to establish a reasonable likelihood that the reference was publicly accessible” before the challenged patent’s effective filing date and “therefore that there is a reasonable likelihood that it qualifies as a printed publication.” *Id.* at 16; *see id.* at 13.

Here, Petitioner does little to establish the public accessibility of RFC4090 and FastReroute-07. *See, e.g.*, Pet. 2–3. Petitioner identifies no evidence indicating who could access IETF’s website, e.g., any person with access to the Internet or only those with passwords for the website. *Id.* Petitioner identifies no evidence indicating how someone who could access IETF’s website could locate RFC4090 or FastReroute-07. *Id.* For instance, Petitioner identifies no evidence that RFC4090 or FastReroute-07 was indexed to allow someone to locate it using a search engine and search query or that IETF’s website included search functionality. *Id.*

That RFC4090 and FastReroute-07 were submitted to the Office before the ’580 patent’s filing date with information disclosure statements for unrelated applications does not convert the documents “into printed publication prior art.” *See ResQNet.com, Inc. v. Lansa, Inc.*, 594 F.3d 860, 866 (Fed. Cir. 2010). Petitioner offers no explanation how the Akahane applicants obtained a copy of RFC4090 or how the Vasseur applicants obtained a copy of FastReroute-07. *See* Pet. 2–3. Further, as Patent Owner asserts, “the cited file history [for Akahane] did not publish until April 6,

2006,” and “the cited file history [for Vasseur] did not publish until June 29, 2006.” See Prelim. Resp. 43, 45 (citing U.S. Patent Application Publication No. 2006/0072574 A1 to Akahane et al.; U.S. Patent Application Publication No. 2006/0140111 A1 to Vasseur et al.); Ex. 3001, code (65); Ex. 3002, code (65). The ’580 patent’s December 15, 2005, filing date precedes the dates those file histories became publicly available. See Ex. 1001, code (22); 37 C.F.R. § 1.14(a).

As Petitioner asserts, the ’580 patent’s original assignee acknowledged that certain IETF draft documents were available from an IETF website. Ex. 1016, 1:22–30; see Pet. 2 n.5. But the list of available IETF draft documents does not include FastReroute-07. See Ex. 1016, 1:22–30.

Although Petitioner does not cite Dr. Lavian’s testimony, he provides background information about IETF publications and the RFC development process helpful to resolve the printed-publication issue. Ex. 1003 ¶¶ 27, 46, 48, 75–76, 80–81; see Pet. 2–3. For instance, Dr. Lavian testifies that before the ’580 patent’s filing date the IETF “had published Requests For Comment (‘RFC’) that address issues relating to networking issues, such as rerouting around network failures and protecting and maintaining connections and bandwidth.” Ex. 1003 ¶ 27. He explains that the “IETF charter” states as follows: “The IETF publishes RFCs authored by network operators, engineers, and computer scientists to document methods, behaviors, research, or innovations applicable to the Internet.” *Id.* ¶ 48.

Additionally, Dr. Lavian describes the RFC development process as follows:

The IETF [working groups] WGs develop drafts of these RFCs over several years before the finalization of the specific RFC. Those in the industry participate in RFC drafting and endorse all information in the RFCs, and ensure RFCs are supported by network pieces of equipment. RFC industry-standard development is a significant public-industry activity with active work of the key players over the years. This process includes publications of thousands of pages of proposals, debates, suggestions, active public email discussions, online discussions, public WG meetings, and public, quarterly IETF meetings that include public discussions and proposals over several days each quarter. This is an example of a significant industrial, academic, and public research collaboration by the mainstream and the core industrial players.

Ex. 1003 ¶ 48.

Further, Dr. Lavian testifies that (1) FastReroute-07 is an IETF publication and was “published on September 7, 2004” and (2) RFC4090 is an IETF publication and was “published on May 27, 2005.” Ex. 1003 ¶¶ 75–76, 80–81. He explains that FastReroute-07 and RFC4090 “share the same title” and that FastReroute-07 is a “draft version that immediately preceded RFC4090.” *Id.* ¶ 80. Additionally, Dr. Lavian identifies the original draft as “draft-ietf-mpls-rsvp-lsp-fastreroute-00.txt” from 2002. *Id.* ¶ 82.

Dr. Lavian’s testimony comports with the FastReroute History. As an example, the FastReroute History’s “Document history” table includes as its first entry the date “2002-02-26” followed by the action “New version available: draft-ietf-mpls-rsvp-lsp-fastreroute-00.txt.” Ex. 1015, 7; *see* Ex. 1003 ¶ 82.

As another example, the FastReroute History’s “Document history” table includes the date “2004-09-07” followed by the action “New version

available: draft-ietf-mpls-rsvp-lsp-fastreroute-07.txt.” Ex. 1015, 2; *see* Ex. 1003 ¶ 81. The identifier “draft-ietf-mpls-rsvp-lsp-fastreroute-07.txt” corresponds to the identifier “draft-ietf-mpls-rsvp-lsp-fastreroute-07.txt” on page 1 in FastReroute-07. *See* Ex. 1006, 1. Further, the FastReroute History identifies “draft-ietf-mpls-rsvp-lsp-fastreroute-07 (2004-09-07)” as a revision. Ex. 1015, 1; *see* Ex. 1003 ¶ 81. Hence, the FastReroute History supports Dr. Lavian’s testimony that FastReroute-07 was “published on September 7, 2004.” *See* Ex. 1003 ¶ 81; Ex. 1015, 1–2. And consistent with Dr. Lavian’s testimony, FastReroute-07 states that “[t]his document and translations of it may be copied and furnished to others” Ex. 1006, 35.

As another example, the FastReroute History’s “Document history” table includes the date “2005-05-27” followed by the action “RFC published.” Ex. 1015, 2; *see* Ex. 1003 ¶ 76. Further, the FastReroute History identifies “rfc4090 (2005-05-27)” as a revision. Ex. 1015, 1; *see* Ex. 1003 ¶ 76. Hence, the FastReroute History supports Dr. Lavian’s testimony that RFC4090 was “published on May 27, 2005.” *See* Ex. 1003 ¶ 76; Ex. 1015, 1–2. And, consistent with Dr. Lavian’s testimony, RFC4090 includes the date “May 2005.” Ex. 1005, 1.

Also consistent with Dr. Lavian’s testimony, RFC4090 describes its distribution as “unlimited,” states that it specifies a protocol “for the Internet community,” and “requests discussion and suggestions for improvements.” Ex. 1005, 1; *see* Ex. 1003 ¶¶ 46, 48. Where a document’s “purpose is ‘dialogue with the intended audience,’ that purpose indicates public accessibility.” *Valve Corp. v. Ironburg Inventions Ltd.*, 8 F.4th 1364, 1374 (Fed. Cir. 2021) (quoting *Suffolk Techs., LLC v. AOL Inc.*, 752 F.3d 1358, 1365 (Fed. Cir. 2014)).

Further, a protocol for “the Internet community” with “unlimited” distribution has hallmarks of dissemination to the public interested in the art. *See Grünenthal GMBH v. Antecip Bioventures II LLC*, PGR2019-00003, Paper 22 at 15–17 (PTAB May 5, 2020); *Auris Health, Inc. v. Intuitive Surgical Operations, Inc.*, IPR2019-01448, Paper 11 at 39 (PTAB Feb. 5, 2020); *see also Telefonaktiebolaget LM Ericsson v. TCL Corp.*, 941 F.3d 1341, 1344, 1347 (Fed. Cir. 2019) (determining that the substantial evidence supporting the Board’s finding that a reference qualified as prior art included “the date on the face of” the reference). As the Board explained in *Hulu*, the totality of the evidence includes “the indicia on the face of a reference.” *Hulu*, IPR2018-01039, Paper 29 at 17–18.

Also consistent with Dr. Lavian’s testimony, the Vasseur applicants obtained a copy of FastReroute-07, and the Akahane applicants obtained a copy of RFC4090. *See* Ex. 1019, 6–15, 114–16; Ex. 1020, 447–49, 481–546.

Additionally, Dr. Akl does not dispute Dr. Lavian’s testimony about the RFC development process or the publication dates for FastReroute-07 and RFC4090. *See, e.g.*, Ex. 2001 ¶¶ 26–37.

Based on the totality of the evidence, including Dr. Lavian’s testimony, the FastReroute History, and the indicia in FastReroute-07 and RFC4090, we will assume without deciding that Petitioner satisfies the “reasonable likelihood” standard for establishing that FastReroute-07 and RFC4090 were publicly accessible before the ’580 patent’s filing date. We need not decide whether Petitioner satisfies that standard because, as explained below, Petitioner does not establish sufficiently for purposes of

institution that either FastReroute-07 or RFC4090 teaches certain claim limitations. *See infra* §§ IV.E.3(e), IV.E.4, IV.F.

E. Alleged Obviousness over RFC4090 and Doshi: Claims 1–22

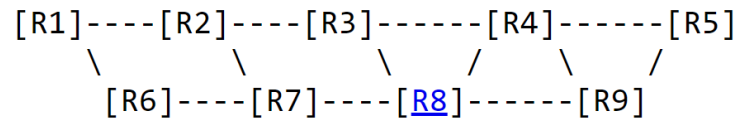
Petitioner contends that claims 1–22 are unpatentable under § 103(a) as obvious over RFC4090 and Doshi. *See* Pet. 2, 9–51. Below, we provide overviews of RFC4090 and Doshi, and then we consider obviousness issues raised by the parties. For the reasons explained below, Petitioner does not establish sufficiently for purposes of institution that the combined disclosures in RFC4090 and Doshi teach the subject matter of claims 1–22.

1. RFC4090 (EXHIBIT 1005)

RFC4090 concerns label-switched path (LSP) tunnels for communication over a network and extensions to the Resource Reservation Protocol Traffic Engineering (RSVP-TE). Ex. 1005, 1, 3. Specifically, RFC4090 discloses RSVP-TE extensions to establish backup tunnels for “local repair of LSP tunnels” to “enable the re-direction of traffic” onto a backup tunnel if a protected LSP tunnel fails. *Id.* at 1.

RFC4090 defines two methods for establishing backup tunnels: the “one-to-one backup method” and the “facility backup method.” Ex. 1005, 1, 6–8. The “one-to-one backup method creates detour LSPs for each protected LSP at each potential point of local repair.” *Id.* at 1, 6–7. The “facility backup method creates a bypass tunnel to protect a potential failure point” along a protected LSP, and “this bypass tunnel can protect a set of LSPs that have similar backup constraints.” *Id.* at 1, 7–8.

RFC4090's Example 1 (reproduced below) exemplifies the one-to-one backup method for establishing backup tunnels:

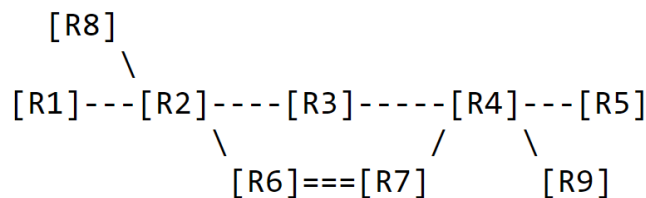


Protected LSP: [R1->R2->R3->R4->R5]
R1's Backup: [R1->R6->R7->R8->R3]
R2's Backup: [R2->R7->R8->R4]
R3's Backup: [R3->R8->R9->R5]
R4's Backup: [R4->R9->R5]

Example 1. One-to-One Backup Technique

Example 1 identifies a protected LSP over path R1→R2→R3→R4→R5, node R1's backup over path R1→R6→R7→R8→R3, node R2's backup over path R2→R7→R8→R4, node R3's backup over path R3→R8→R9→R5, and node R4's backup over path R4→R9→R5. Ex. 1005, 6. RFC4090 refers to "a partial one-to-one backup LSP" as "a detour." *Id.*

RFC4090's Example 2 (reproduced below) exemplifies the facility backup method for establishing backup tunnels:



Protected LSP 1: [R1->R2->R3->R4->R5]
Protected LSP 2: [R8->R2->R3->R4]
Protected LSP 3: [R2->R3->R4->R9]
Bypass LSP Tunnel: [R2->R6->R7->R4]

Example 2. Facility Backup Technique

Example 2 identifies protected LSP 1 over path R1→R2→R3→R4→R5, protected LSP 2 over path R8→R2→R3→R4, protected LSP 3 over path R2→R3→R4→R9, and a bypass tunnel over path R2→R6→R7→R4.

Ex. 1005, 7. Example 2 “describes three different protected LSPs” that use “the same bypass tunnel for protection.” *Id.*

RFC4090 discloses signaling between nodes using messages containing information, e.g., notification flags, arranged in objects. *See* Ex. 1005, 8–11, 13–19, 24–26, 28–29; *see also* Ex. 1012, 9, 31–35, 39–42. A message may include one or more of the following objects:

- FAST_REROUTE object;
- SESSION object;
- SESSION_ATTRIBUTE object;
- SENDER_TEMPLATE object; and
- RECORD_ROUTE object.

Ex. 1005, 8–11, 13–19, 24–26, 28–29.

As an example, the SESSION_ATTRIBUTE object includes a “bandwidth protection desired” flag indicating to nodes “along the protected LSP path that a backup path with a bandwidth guarantee” matching the protected LSP’s bandwidth is desired. Ex. 1005, 13–14. As another example, the RECORD_ROUTE object includes a “bandwidth protection” flag that a node sets “when the protected LSP has a backup path that is guaranteed to provide the desired bandwidth.” *Id.* at 14. The RECORD_ROUTE object also includes a “local protection available” flag indicating that a downstream link “is protected via a local repair mechanism.” *Id.*

2. DOSHI (EXHIBIT 1008)

Doshi is a U.S. patent application publication titled “Calculation, Representation, and Maint[e]nence of Sharing Information in Mesh Networks,” filed on September 26, 2003, and published on September 30, 2004. Ex. 1008, codes (22), (43), (54). Doshi states that the invention

“relates to network communications and, more specifically, to restoration path sharing.” *Id.* ¶ 4.

Doshi identifies deficiencies in conventional networking applications as follows:

[M]any of the restoration and recovery schemes in the prior art fail to provide a compact representation of the relevant information, methods to utilize the data in path calculations in consideration of multiple cost criteria in a way that benefit from sharing of protection link resources, and efficient, distributed mechanisms for making that data available where and when it is needed.

Ex. 1008 ¶ 8. Doshi addresses those deficiencies by providing “a shared mesh network (SMN) that includes components for compact representation and maintenance of network sharing information, dissemination of the sharing information within the network, and improved service primary and restoration path calculation as a function of the sharing information.” *Id.* ¶ 9. The shared mesh network “includes components that determine primary/restoration path pairs in consideration of the grouping of certain links within the network into shared-risk link groups (SRLGs).” *Id.* ¶ 11.

Doshi's Figure 1 (reproduced below) depicts a shared mesh network:

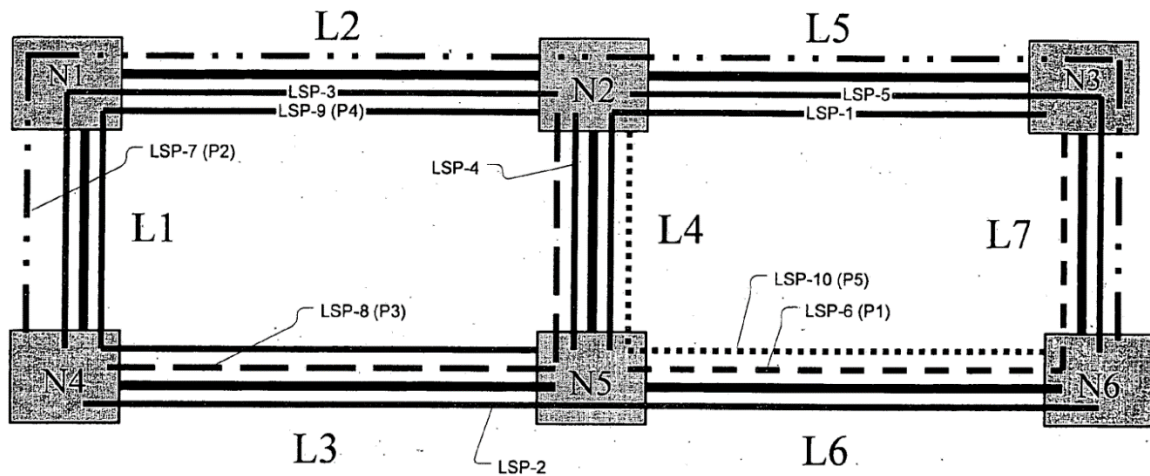


FIG.1

Figure 1 illustrates shared mesh network 100 with “six ingress/egress nodes N1 to N6 interconnected by seven bidirectional links L1 to L7.” Ex. 1008 ¶¶ 16, 48, Fig. 1. “These nodes and links provide different paths between different pairs of nodes.” *Id.* ¶ 48.

As Figure 1 shows, shared mesh network 100 “has been provisioned with five primary label-switched paths (LSPs) LSP-1 to LSP-5” and “five exemplary protection paths LSP-6 to LSP-10” as follows:

- “LSP-1 carries traffic along path N3-N2-N5”;
- “LSP-2 carries traffic along path N4-N5-N6”;
- “LSP-3 carries traffic along path N2-N1-N4”;
- “LSP-4 carries traffic along path N2-N5”;
- “LSP-5 carries traffic along path N2-N3-N6”;
- “LSP-6 (along path N3-N6-N5) protects LSP-1”;
- “LSP-7 (along path N4-N1-N2-N3-N6) protects LSP-2”;
- “LSP-8 (along path N2-N5-N4) protects LSP-3”;
- “LSP-9 (along path N2-N1-N4-N5) protects LSP-4”; and

- “LSP-10 (along path N2-N5-N6) protects LSP-5.”

Ex. 1008 ¶¶ 50, 52, 54, Fig. 1. For clarity in Figure 1, “the tag for each protection LSP carries a parenthetical suffix indicating the primary LSP it protects.” *Id.* ¶ 54. For example, “LSP-6 (P1) indicates the protection role that LSP-6 plays for primary LSP-1.” *Id.*

Doshi explains that the “amount of bandwidth reserved on a given link for protection purposes is chosen to accommodate the worst-case traffic demand that would be placed upon that link given the failure of any other one link or any one node in the network.” Ex. 1008 ¶ 66. The “effect of the failure of each node and each of the other links in the network is independently considered and the worst-case capacity is reserved.” *Id.* ¶ 68. The “sharing of protection capacity between different failures can be realized” with a table indicating “the amount of protection capacity required on each link for recovering from every possible single link or node failure” in the network. *Id.* ¶ 70.

Doshi’s Figure 2 (reproduced below) depicts a table indicating the amount of protection capacity required on each link for recovering from every possible single link or node failure in network 100 in Figure 1:

Link	L1	L2	L3	L4	L5	L6	L7	N1	N2	N3	N4	N5	N6	Max
L1			1	1		1						1		1
L2			1	1		1						1		1
L3	1	1		1				1						1
L4	1	1			1		1	1		1				1
L5			1			1						1		1
L6				1	2		1		1	1				2
L7			1	1	1	1			1			1		1

FIG. 2

Figure 2 shows a table with rows corresponding to links in network 100 and columns corresponding to links and nodes in network 100. Ex. 1008

¶¶ 17, 70, Fig. 2. “For each row (corresponding to a particular link), each column entry identifies the protection capacity for that link in order to protect service in the event of a failure of the link or node associated with that column in the table.” *Id.* ¶ 70; *see id.* ¶ 17.

As an example, the “entry of ‘1’ in the column labeled L3 for the first row indicates that there is one unit of traffic on link L3 (due to LSP-2) that would employ link L1 on its recovery route if link L3 gets impacted by a failure.” Ex. 1008 ¶ 71. As another example, the “entry of ‘1’ in the column labeled N5 addresses the case of a failure of node N5 and its impact on link L1.” *Id.*

Doshi explains that the “process of reserving bandwidth on the restoration path is similar to the process of connection setup on the primary path.” Ex. 1008 ¶ 84. In particular, “a reservation message is sent” along “the restoration path to each of the transit (i.e., intermediate) nodes along the path.” *Id.* The reservation message “is analogous to the connection setup message that is sent along the primary path.” *Id.* But “the reservation message contains not only restoration path structure information, but additionally information” about “the primary path structure, while the connection setup message contains structure information about only the primary path.” *Id.* Thus, a reservation message for a restoration path contains information about an affiliation between a primary path and a restoration path. *See id.*

3. INDEPENDENT CLAIM 1

(a) Preamble

Claim 1's preamble recites "[a] method for communication."
Ex. 1001, 9:9.

Petitioner contends that RFC4090 discloses claim 1's preamble because RFC4090 describes "a communication method protected by backup LSP tunnels." Pet. 15.

Patent Owner makes no arguments specific to claim 1's preamble. *See, e.g.*, Prelim. Resp. 46–63. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

Generally, a preamble does not limit a claim. *Allen Eng'g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1346 (Fed. Cir. 2002). We need not decide whether claim 1's preamble limits the claim because Petitioner establishes sufficiently that RFC4090 teaches claim 1's preamble. *See* Pet. 15; Ex. 1003 ¶¶ 77–79, 107–108.

Specifically, RFC4090 discloses LSP tunnels for communication over a network and establishing backup tunnels for "local repair of LSP tunnels" to "enable the re-direction of traffic" onto a backup tunnel if a protected LSP tunnel fails. Ex. 1005, 1; *see* Ex. 1003 ¶¶ 77, 108. RFC4090 defines two methods for establishing backup tunnels: the "one-to-one backup method" and the "facility backup method." Ex. 1005, 1, 6–8; *see* Ex. 1003 ¶¶ 77, 108. The "one-to-one backup method creates detour LSPs for each protected LSP at each potential point of local repair." Ex. 1005, 1, 6–7; *see* Ex. 1003 ¶ 108. The "facility backup method creates a bypass tunnel to protect a potential failure point" along a protected LSP, and "this bypass

tunnel can protect a set of LSPs that have similar backup constraints.”

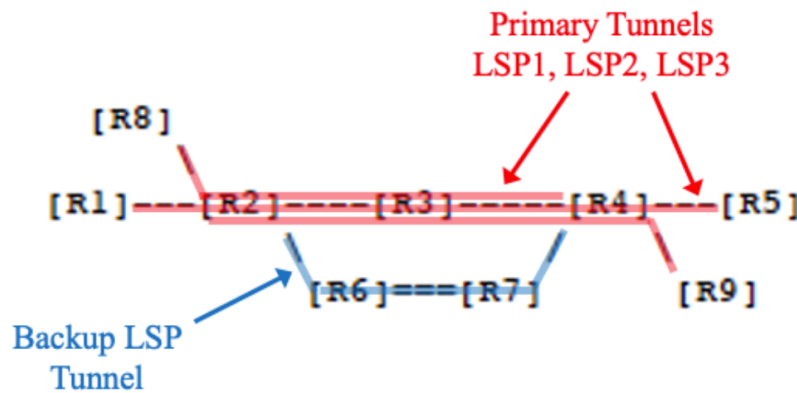
Ex. 1005, 1, 7–8; *see* Ex. 1003 ¶¶ 78, 108.

(b) Limitation 1.1

Claim 1 recites “defining a resource-sharing group comprising at least first and second tunnels, which have respective origin network elements and termination network elements and which traverse different routes through a communication network, the routes traversing at least one common network element.” Ex. 1001, 9:10–15.

Petitioner contends that RFC4090 “alone or in view of” Doshi “renders obvious” limitation 1.1. Pet. 16; *see id.* at 18–28. Specifically, Petitioner asserts that RFC4090 “defines a group of LSP tunnels having one or more primary tunnels and a secondary bypass tunnel protecting the primary tunnel(s),” where each tunnel “includes a set of network elements (e.g., nodes) and link segments connecting the network elements.” *Id.* at 16. Petitioner asserts that RFC4090’s Example 2 discloses a first tunnel identified as protected LSP 1 and a second tunnel identified as a bypass tunnel “traversing different routes wherein the first tunnel has origin and termination network elements (R1, R5), and the second tunnel has different origin and termination network elements (R2, R4).” *Id.* at 16–17. Petitioner also asserts that RFC4090 discloses “sharing bandwidth among tunnels,” i.e., “sharing between multiple backup paths.” *Id.* at 19 (quoting Ex. 1005, 19).

To support Petitioner’s assertions, Dr. Lavian provides an annotated version of RFC4090’s Example 2 as reproduced below (Ex. 1003 ¶ 78):



RFC4090 Example 2 (Annotated)

This annotated version of Example 2 includes a red line denoting protected LSP 1 over path R1→R2→R3→R4→R5, a red line denoting protected LSP 2 over path R8→R2→R3→R4, a red line denoting protected LSP 3 over path R2→R3→R4→R9, the red annotation “Primary Tunnels LSP 1, LSP 2, LSP 3,” a blue line denoting a bypass tunnel over path R2→R6→R7→R4, and the blue annotation “Backup LSP Tunnel.” See Ex. 1003 ¶ 78.

In addition, Petitioner contends that Doshi discloses (1) “network 100 includes primary tunnels (LSP-3, LSP-5) and two backup tunnels (LSP-8, LSP-10) sharing segment L4” and (2) “defining a resource-sharing group based on tunnels sharing segment L4.” Pet. 22–23. Petitioner also contends that Doshi discloses indexing “resource allocation of shared links” to determine a “Max” bandwidth value for each shared link. *Id.* at 24.

Patent Owner disputes that the combined disclosures in RFC4090 and Doshi teach limitation 1.1. See Prelim. Resp. 47–63. Specifically, Patent Owner asserts that “RFC4090 in view of Doshi fails to disclose” a

“resource-sharing group comprising at least first and second tunnels.” *See id.* at 47–48 (emphasis omitted).

For RFC4090’s Example 2, Patent Owner contends that protected LSP 1 and the bypass tunnel “do not meet the required limitations of a separate first and second tunnel” because protected LSP 1 and the bypass tunnel “clearly are not ‘independent MPLS tunnels,’ but instead are ‘instances’ of the same tunnel.” Prelim. Resp. 48, 52. Patent Owner contends that protected LSP 1 and the bypass tunnel “share instances at R2 and R4, as opposed to ‘sharing resources’ as required” by claim 1. *Id.* at 52. Patent Owner also contends that the bypass tunnel “serves no purpose without a link failure and is not an independent MPLS tunnel as required” by claim 1. *Id.* at 52–53. Further, Patent Owner asserts that “a ‘first and second tunnel’ is not a backup tunnel.” *Id.* at 52.

Based on the current record, Petitioner establishes sufficiently that RFC4090 teaches limitation 1.1. *See* Pet. 16–22; Ex. 1003 ¶¶ 78, 108, 110–123. Specifically, RFC4090 discloses the “facility backup method” that “creates a bypass tunnel to protect a potential failure point” along a protected LSP tunnel. Ex. 1005, 1, 7–8; *see* Ex. 1003 ¶¶ 78, 108. Creating a bypass tunnel for a protected LSP tunnel defines a “resource-sharing group comprising at least first and second tunnels” because the bypass tunnel and the protected LSP tunnel may share resources at common nodes. *See* Ex. 1005, 1, 7–8.

RFC4090’s Example 2 “describes three different protected LSPs” that use “the same bypass tunnel for protection.” Ex. 1005, 7; *see* Ex. 1003 ¶¶ 78, 111. In particular, the bypass tunnel over path R2→R6→R7→R4

protects the following LSP tunnels against a failure of link R2→R3 or node R3:

- (1) LSP 1 over path R1→R2→R3→R4→R5;
- (2) LSP 2 over path R8→R2→R3→R4; and
- (3) LSP 3 over path R2→R3→R4→R9.

Ex. 1005, 7; *see* Ex. 1003 ¶¶ 78, 111. For instance, if link R2→R3 fails, node R2 switches traffic received from node R1 in protected LSP 1 onto link R2→R6 in the bypass tunnel. Ex. 1005, 8.

Thus, protected LSP 1 and the bypass tunnel may share resources at common node R2. *See* Ex. 1003 ¶ 121; Ex. 1005, 7. Also, protected LSP 1 and the bypass tunnel may share resources at common node R4 where the tunnels merge. *See* Ex. 1003 ¶¶ 121–122; Ex. 1005, 7. Regarding common nodes R2 and R4 sharing resources, Dr. Lavian testifies that “it was known in the art that sharing resources among LSPs was desirable to help ensure routers could accommodate all connected LSPs.” Ex. 1003 ¶ 44.

Similarly, the ’580 patent explains that when two paths traverse a common network element or node, “it is desirable to share at least some of the resources allocated by the common network element.” Ex. 1001, 5:30–34. The patent also explains that resource sharing may involve “any hardware and/or software resource of the network element in question, such as bandwidth allocation, port utilization and memory space.” *Id.* at 5:12–17; *see id.* at 2:46–49, 3:37–39.

Because protected LSP 1 and the bypass tunnel may share resources at common nodes R2 and R4, we disagree with Patent Owner’s contention that protected LSP 1 and the bypass tunnel “share instances at R2 and R4, as

opposed to ‘sharing resources.’” See Prelim. Resp. 52. R2 and R4 are nodes in a network, not different instances of the same tunnel. See Ex. 1005, 7–8.

We also disagree with Patent Owner’s assertion that “a ‘first and second tunnel’ is not a backup tunnel.” See Prelim. Resp. 52. Nothing in claim 1’s language excludes a backup tunnel from the “resource-sharing group comprising at least first and second tunnels.” See Ex. 1001, 9:9–27.

Moreover, claim 4 depends from claim 1 and defines a protection or backup tunnel by specifying that:

one of the tunnels affiliated with the resource-sharing group comprises an alternative tunnel traversing a first route, which is set up to protect a primary tunnel affiliated with the resource-sharing group traversing a second route, different from the first route, against a failure in at least one of a network element and a network segment along the second route.

Ex. 1001, 9:43–49. Thus, claim 4’s “alternative tunnel traversing a first route” corresponds to claim 1’s “first tunnel,” and claim 4’s “primary tunnel . . . traversing a second route” corresponds to claim 1’s “second tunnel.” Compare *id.* at 9:10–15, with *id.* at 9:43–49. The claimed “alternative tunnel” protects the claimed “primary tunnel” by serving as a backup to guard a “communication path” between two nodes against a “failure of a network element or a communication link (segment) along the path.” See *id.* at 3:21–27, 4:39–43, 5:35–37, 9:43–49; see also *id.* at 6:16–37, 6:58–7:9, Figs. 1–2.

Consistent with the claim language, the ’580 patent’s specification notes that “the nominal path used is referred to as a primary path, and the protecting path is referred to as an alternative path.” Ex. 1001, 4:45–47. The specification then explains that “[i]f one or more communication links or one or more of the network elements along the primary path fail, packets

are sent over the alternative path and communication is maintained.” *Id.* at 4:47–50. Thus, the specification describes an “alternative path” or tunnel protecting a “primary path” or tunnel by serving as a backup to guard against a failure. *See id.* at 4:39–50.

Also, because the claim language and the ’580 patent’s specification contemplate an “alternative tunnel” or “alternative path” protecting a “primary tunnel” or “primary path” by serving as a backup to guard against a failure, we disagree with Patent Owner’s contention that claim 1 requires “independent” tunnels as the “first and second tunnels.” *See* Prelim. Resp. 52–53; Ex. 1001, 3:21–27, 4:39–50, 5:35–37, 6:16–37, 6:58–7:9, 9:9–27, 9:43–49, Figs. 1–2.

(c) Limitation 1.2

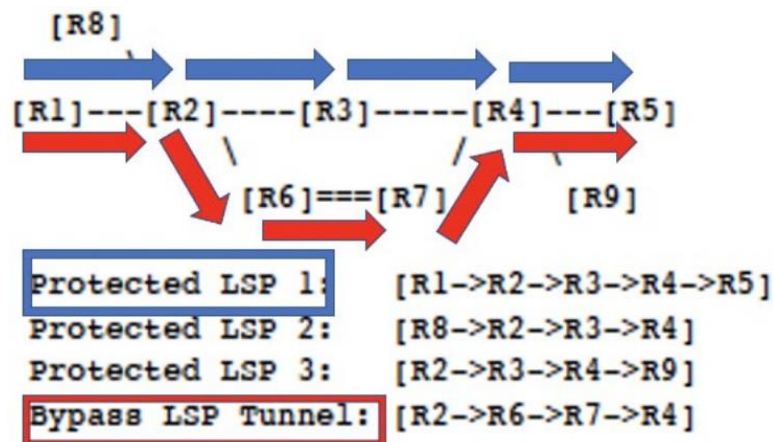
Claim 1 recites “wherein the tunnels meet at least one condition selected from a group of conditions consisting of: the respective origin network elements of the first and second tunnels are different; and the respective termination network elements of the first and second tunnels are different.” Ex. 1001, 9:15–21.

Petitioner contends that RFC4090 discloses limitation 1.2. *See* Pet. 28–29. Specifically, Petitioner asserts that in Example 2 protected LSP 1 and the bypass tunnel have “different origin network elements (R1 and R2, respectively) and different termination network elements (R5 and R4, respectively).” *Id.* at 28.

Patent Owner disputes that RFC4090 discloses limitation 1.2. *See* Prelim. Resp. 53–55; Prelim. Sur-reply 1–2. Specifically, Patent Owner asserts that protected LSP 1 and the bypass tunnel in Example 2 have “an origin network element at R1 and a termination network element at R5”

even “in the event of a link failure,” i.e., where the bypass tunnel carries traffic. Prelim. Resp. 54–55; see Prelim. Sur-reply 1–2. Patent Owner also asserts that the “bypass tunnel simply provides an alternate route for packets originating at R1 and terminating at R5.” Prelim. Sur-reply 2.

To support its assertions, Patent Owner provides an annotated version of Example 2 as reproduced below (Prelim. Resp. 55):



This annotated version of Example 2 includes blue arrows denoting protected LSP 1 over path R1→R2→R3→R4→R5, a blue box around the words “Protected LSP 1,” red arrows denoting the path over R1→R2→R6→R7→R4→R5, and a red box around the words “Bypass LSP Tunnel.” See Prelim. Resp. 55; Prelim. Sur-reply 2.

Based on the current record, Petitioner establishes sufficiently that RFC4090 teaches limitation 1.2. See Pet. 28–29; Ex. 1003 ¶¶ 132–134. Specifically, Example 2 shows protected LSP 1 over path R1→R2→R3→R4→R5 and the bypass tunnel over path R2→R6→R7→R4. Ex. 1005, 7–8; see Ex. 1003 ¶¶ 78, 111, 133. Hence, RFC4090 discloses both conditions recited in limitation 1.2.

First, protected LSP 1 has node R1 as its “origin network element,” and the bypass tunnel has node R2 as its “origin network element.”

Ex. 1005, 7–8; *see* Ex. 1003 ¶¶ 78, 111, 132–133. Thus, “the respective origin network elements of the first and second tunnels are different” according to limitation 1.2. Ex. 1005, 7–8; *see* Ex. 1003 ¶ 132.

Second, protected LSP 1 has node R5 as its “termination network element,” and the bypass tunnel has node R4 as its “termination network element.” Ex. 1005, 7–8; *see* Ex. 1003 ¶¶ 78, 111, 132–133. Thus, “the respective termination network elements of the first and second tunnels are different” according to limitation 1.2. Ex. 1005, 7–8; *see* Ex. 1003 ¶ 132.

Patent Owner’s assertion that protected LSP 1 and the bypass tunnel have “an origin network element at R1 and a termination network element at R5” even “in the event of a link failure” conflicts with RFC4090’s description of Example 2. *See* Prelim. Resp. 54–55; Ex. 1005, 7–8. RFC4090 describes the bypass tunnel as path R2→R6→R7→R4. Ex. 1005, 7; *see* Ex. 1003 ¶¶ 78, 111, 133. RFC4090 explains that when node R2 uses the “bypass tunnel for protected LSP 1,” traffic takes the path R1→R2→R6→R7→R4→R5. Ex. 1005, 8. Immediately after that explanation, RFC4090 states that “the bypass tunnel is the connection between R2 and R4.” *Id.* Although Patent Owner quotes that statement, Patent Owner does nothing to reconcile that statement with its position that the bypass tunnel originates at node R1 and terminates at node R5 even “in the event of a link failure.” *See* Prelim. Resp. 54–55.

(d) Limitation 1.3

Claim 1 recites “distributing a notification over the network of an affiliation of the tunnels with the resource-sharing group.” Ex. 1001, 9:22–23.

Petitioner contends that RFC4090 discloses limitation 1.3. *See* Pet. 29–31. Specifically, Petitioner asserts that RFC4090 discloses sending Path messages to determine labels “for each affiliated protected tunnel and backup tunnel and to control merge node behavior.” *Id.* at 29–30. Petitioner also asserts that RFC4090 discloses sending the following notification flags to establish “an affiliation among protected and backup tunnels”:

- (1) “bandwidth protection desired”; (2) “bandwidth protection”; and
- (3) “local protection available.” *Id.* at 30.

Patent Owner makes no arguments specific to limitation 1.3. *See, e.g.,* Prelim. Resp. 46–63. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Based on the current record, Petitioner establishes sufficiently that RFC4090 teaches limitation 1.3. *See* Pet. 29–30; Ex. 1003 ¶¶ 135–138. Specifically, RFC4090 discloses signaling between nodes using messages containing information, e.g., notification flags, arranged in objects, e.g., the SESSION_ATTRIBUTE object and the RECORD_ROUTE object. *See* Ex. 1005, 8–11, 13–19, 24–26, 28–29; *see also* Ex. 1012, 9, 31–35, 39–42. The SESSION_ATTRIBUTE object includes a “bandwidth protection desired” flag indicating to nodes “along the protected LSP path that a backup path with a bandwidth guarantee” matching the protected LSP’s bandwidth is desired. Ex. 1005, 13–14. The RECORD_ROUTE object includes a “bandwidth protection” flag that a node sets “when the protected LSP has a backup path that is guaranteed to provide the desired bandwidth.” *Id.* at 14. The RECORD_ROUTE object also includes a “local protection available” flag indicating that a downstream link “is protected via a local repair mechanism.” *Id.*

(e) Limitation 1.4

Claim 1 recites “allocating a resource associated with the at least one common network element so as to share an allocation of the resource among the tunnels in the resource-sharing group responsively to the notification.” Ex. 1001, 9:24–27.

Petitioner contends that RFC4090 discloses or “alone renders obvious” limitation 1.4. See Pet. 31–33. Specifically, Petitioner asserts that RFC4090 teaches the following:

- (1) “affiliat[ing] first and second tunnels”;
- (2) “allocat[ing] bandwidth resources associated with common network elements (e.g., nodes)”;
- (3) “distribut[ing] a notification of an affiliation among the tunnels regarding available merge nodes and bandwidth.”

Id. at 31. Petitioner also asserts that based on those teachings an ordinarily skilled artisan “would have understood” that RFC4090 “discloses or renders obvious allocating network-element resources to share this allocation among the tunnels in the resource-sharing group responsively to the notification.” *Id.*

Patent Owner disputes that RFC4090 teaches limitation 1.4. See Prelim. Resp. 58–61. Specifically, Patent Owner asserts that Petitioner “presents absolutely no support for its conclusion that allocating network element resources responsively to the notification would be obvious.” *Id.* at 59–60. Patent Owner notes that the Petition cites Dr. Lavian’s testimony as support. *Id.* at 60 (citing Pet. 29). Patent Owner then contends that Dr. Lavian “repeats the same conclusory statement that ‘RFC4090 discloses or renders obvious’ the limitation without any explanation or citation to any evidence.” *Id.* Regarding RFC4090’s messages and notification flags,

Patent Owner asserts that Petitioner “points to nothing in RFC4090 as to how or why” the messages or notification flags “would be responded to, or how RFC4090 would allocate bandwidth or other resources in response to alleged notifications.” *Id.*

Based on the current record, Petitioner does not establish sufficiently for purposes of institution that RFC4090 teaches limitation 1.4. *See* Pet. 31–33; Ex. 1003 ¶¶ 139–141. As discussed above, RFC4090 discloses signaling using messages containing information, e.g., notification flags, arranged in objects. *See* Ex. 1005, 8–11, 13–19, 24–26, 28–29; *see also* Ex. 1012, 9, 31–35, 39–42; *supra* §§ IV.E.1, IV.E.3(d). For limitation 1.3, Petitioner identifies three notification flags for establishing “an affiliation among protected and backup tunnels”: (1) “bandwidth protection desired”; (2) “bandwidth protection”; and (3) “local protection available.” Pet. 30. For limitation 1.4, however, Petitioner fails to explain how RFC4090 teaches “allocating a resource associated with” a common node “responsively” to receiving a message containing any of those notification flags. *See* Pet. 31–33; Ex. 1003 ¶¶ 139–141.

For example, Petitioner fails to explain how a node along a protected LSP tunnel receives a message containing a “bandwidth protection desired” flag and “responsively” to the received message allocates bandwidth or another resource “so as to share an allocation of the resource among the tunnels in the resource-sharing group” according to limitation 1.4. *See* Pet. 31–33; Ex. 1003 ¶¶ 139–141. Further, RFC4090 discloses setting the “bandwidth protection” flag when a backup path “is guaranteed to provide the desired bandwidth,” not “responsively” to receiving an allocation-notification message so as to cause resource sharing. Ex. 1005, 14.

Similarly, RFC4090 discloses setting the “local protection available” flag when a downstream link “is protected via a local repair mechanism,” not “responsively” to receiving an allocation-notification message so as to cause resource sharing. *Id.* Additionally, Dr. Akl testifies that an ordinarily skilled artisan would not have understood these flags to “cause any type of responsive allocation.” Ex. 2001 ¶ 32; *see id.* ¶ 26.

Petitioner argues that Patent Owner “acknowledges” that RFC4090 teaches limitation 1.4 because Patent Owner cited portions of RFC4090 in a complaint to support an allegation that Petitioner infringes claim 1. *See* Pet. 31–32; Ex. 1017, 35–39. For instance, Patent Owner asserted in the complaint that RFC4090 “is a non-limiting example of an apparatus that meets all limitations of claim 1.” Ex. 1017, 35. Patent Owner then cited portions of RFC4090 for each of limitations 1.1, 1.2, 1.3, and 1.4. *See id.* at 36–39.

But Patent Owner amended the complaint and replaced the citations to RFC4090 with citations to an accused product. *See* Pet. 9 n.30; Prelim. Resp. 3; Ex. 2002, 35–44. Patent Owner characterizes the original complaint as “inoperative.” Prelim. Resp. 59. Further, as discussed above, Patent Owner now disputes that RFC4090 teaches limitation 1.4. *See id.* at 58–61. Additionally, Dr. Akl testifies that the portions of RFC4090 cited in the original complaint for limitation 1.4 do not “disclose or render obvious the concept of allocating a resource in response to a message or notification” and fail to “even address the ‘responsively’ limitation.” Ex. 2001 ¶ 26; *see id.* ¶ 31.

A petitioner bears the burden to show “with particularity” why a challenged claim is unpatentable. *Harmonic Inc. v. Avid Tech., Inc.*,

815 F.3d 1356, 1363 (Fed. Cir. 2016); *see* 35 U.S.C. § 312(a)(3) (requiring that a petition identify “with particularity” the “evidence that supports the grounds for the challenge to each claim”). Moreover, our rules require that a petition provide “a detailed explanation of the significance of the evidence.” 37 C.F.R. § 42.22(a)(2).

Petitioner’s citation to an infringement allegation that Patent Owner now disputes in this proceeding does not suffice to show “with particularity” why RFC4090 teaches limitation 1.4. *See* Pet. 30–31; Prelim. Resp. 58–61; Ex. 1003 ¶¶ 140–141; Ex. 2001 ¶¶ 26–31. Nor does Petitioner’s citation to Patent Owner’s now-disputed infringement allegation provide “a detailed explanation of the significance of the evidence.” *See R.J. Reynolds Vapor Co. v. Altria Client Services LLC*, IPR2021-00744, Paper 9 at 19–20 (PTAB Oct. 8, 2021) (determining that the petitioner failed to explain how the patent owner’s infringement contentions in a related civil action were “sufficient to show that the claim limitation reads on the prior art”).

(f) Conclusion for Claim 1

Because Petitioner does not establish sufficiently for purposes of institution that RFC4090 teaches limitation 1.4 and because Petitioner does not assert that Doshi teaches limitation 1.4, Petitioner does not establish sufficiently that the combined disclosures in RFC4090 and Doshi teach claim 1’s subject matter. *See* Pet. 31–33; Ex. 1003 ¶¶ 139–141; *supra* § IV.E.3(e). Hence, Petitioner does not demonstrate a reasonable likelihood of prevailing in proving claim 1 unpatentable under § 103(a) as obvious over RFC4090 and Doshi.

4. INDEPENDENT CLAIMS 8, 15, AND 22

Independent claims 8, 15, and 22 each include a limitation similar to limitation 1.4. *Compare* Ex. 1001, 9:24–27, *with id.* at 10:12–18, *and id.* at 10:59–64, *and id.* at 12:20–26. Patent Owner describes those limitations in claims 8, 15, and 22 as “similar” to limitation 1.4. Prelim. Resp. 60. Petitioner describes those limitations in claims 8, 15, and 22 as “substantially similar” to limitation 1.4. Pet. 38.

For the reasons discussed above for claim 1, Petitioner does not establish sufficiently for purposes of institution that the combined disclosures in RFC4090 and Doshi teach the subject matter of claims 8, 15, and 22. *See supra* § IV.E.3(e)–(f). Hence, Petitioner does not demonstrate a reasonable likelihood of prevailing in proving claims 8, 15, and 22 unpatentable under § 103(a) as obvious over RFC4090 and Doshi.

5. DEPENDENT CLAIMS 2–7, 9–14, AND 16–21

Claims 2–7 depend directly or indirectly from claim 1; claims 9–14 depend directly or indirectly from claim 8; and claims 16–21 depend directly or indirectly from claim 15. Ex. 1001, 9:28–62, 10:19–50, 11:3–12:6. The dependent claims incorporate all limitations in their respective independent claims. 35 U.S.C. § 112 ¶ 4. Because Petitioner does not establish sufficiently for purposes of institution that the combined disclosures in RFC4090 and Doshi teach all limitations in the independent claims, Petitioner also does not establish sufficiently that the combined disclosures teach all limitations in the dependent claims. Hence, Petitioner does not demonstrate a reasonable likelihood of prevailing in proving claims 2–7, 9–14, and 16–21 unpatentable under § 103(a) as obvious over RFC4090 and Doshi.

*F. Alleged Obviousness over
FastReroute-07 and Doshi: Claims 1–22*

Petitioner contends that claims 1–22 are unpatentable under § 103(a) as obvious over FastReroute-07 and Doshi to “the extent Patent Owner argues RFC4090 isn’t prior art.” See Pet. 2, 51–62. Further, Petitioner asserts that FastReroute-07 is a “draft of RFC4090” with “substantially the same” disclosures as RFC4090 but with an earlier publication date than RFC4090. *Id.* at 52; see Ex. 1003 ¶¶ 76, 81–83.

To show that claims 1–22 are unpatentable under § 103(a) as obvious over FastReroute-07 and Doshi, Petitioner relies on substantially the same disclosures in FastReroute-07 as in RFC4090. See Pet. 15–22, 28–42, 46–53, 55–62; Ex. 1018, 1–6.

Patent Owner contends that the challenge based on FastReroute-07 and Doshi fails for “the reasons explained with respect to” the challenge based on RFC4090 and Doshi. Prelim. Resp. 63–64; see *id.* at 64–66.

We agree with Patent Owner that the challenge based on FastReroute-07 and Doshi fails for “the reasons explained with respect to” the challenge based on RFC4090 and Doshi. See Prelim. Resp. 63–64; *supra* § IV.E.3(e)–(f). Based on the current record, Petitioner does not establish sufficiently for purposes of institution that FastReroute-07 teaches limitation 1.4 and the similar limitations in claims 8, 15, and 22. See Pet. 31–33, 57–59; Ex. 1003 ¶¶ 139–141, 210–222.

Because Petitioner does not establish sufficiently for purposes of institution that FastReroute-07 teaches limitation 1.4 and the similar limitations in claims 8, 15, and 22 and because Petitioner does not assert that Doshi teaches those limitations, Petitioner does not establish sufficiently that

the combined disclosures in FastReroute-07 and Doshi teach the subject matter of the independent claims or the dependent claims. *See* Pet. 31–33, 57–59; Ex. 1003 ¶¶ 139–141, 210–222; *supra* §§ IV.E.3(e)–(f), IV.E.4, IV.E.5. Hence, Petitioner does not demonstrate a reasonable likelihood of prevailing in proving claims 1–22 unpatentable under § 103(a) as obvious over FastReroute-07 and Doshi.

G. Alleged Obviousness over deBoer and Doshi: Claims 1–22

Petitioner contends that claims 1–22 are unpatentable under § 103(a) as obvious over deBoer and Doshi. *See* Pet. 2, 62–85. Above, we provided an overview of Doshi. *See supra* § IV.E.2. Below, we provide an overview of deBoer, and then we consider obviousness issues raised by the parties. For the reasons explained below, Petitioner does not establish sufficiently for purposes of institution that the combined disclosures in deBoer and Doshi teach the subject matter of claims 1–22.

1. DEBOER (EXHIBIT 1007)

deBoer is a U.S. patent application publication titled “Methods, Devices and Software for Combining Protection Paths Across a Communications Network,” filed on February 28, 2002, and published on August 28, 2003. Ex. 1007, codes (22), (43), (54). deBoer discloses “a mesh communications network” where “nodes are interconnected to multiple neighboring nodes.” *Id.* ¶¶ 7, 11, 20, code (57). deBoer also discloses “a method, device and software for establishing protection paths that share bandwidth across” the network. *Id.* ¶ 1. “In the event of a fault, exemplified by failed or degraded signal, traffic from a working path may be switched to a provisioned protection path, thereby limiting the effects of a fault.” *Id.* ¶ 3.

deBoer's Figure 2A (reproduced below) depicts a mesh communications network:

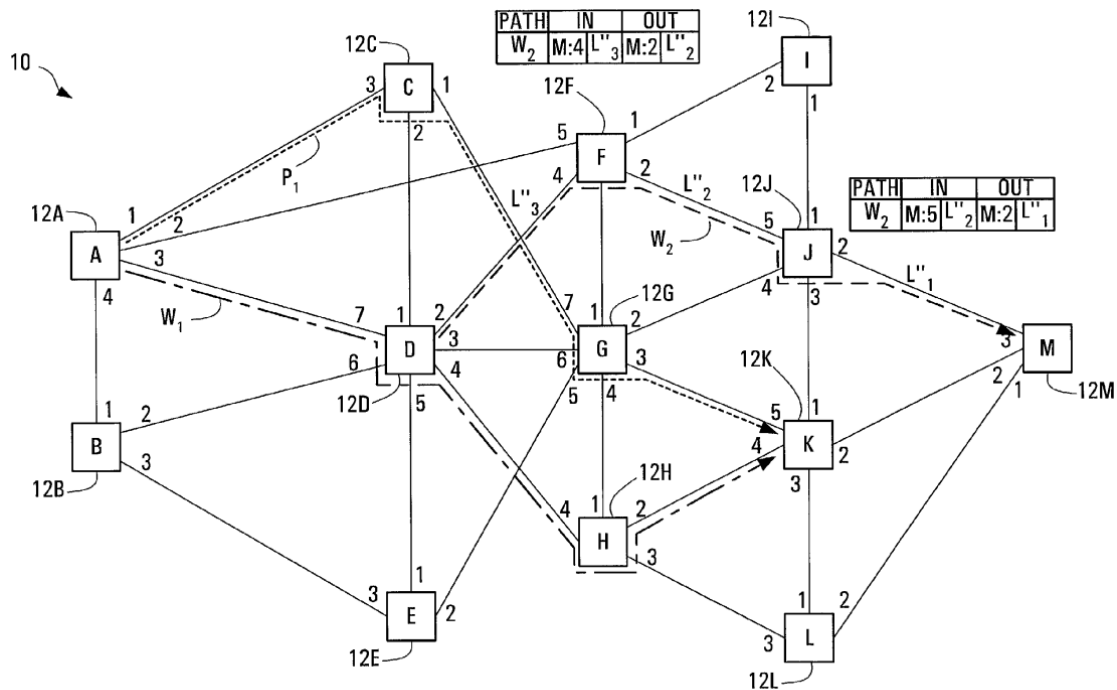


FIG. 2A

Figure 2A illustrates network 10 including nodes 12a–12m (also identified by letters A–M) where one or more physical links, e.g., fiber-optic cables, connect each node to one or more other nodes. Ex. 1007 ¶¶ 16–17, 20, 43, Fig. 2A. “Each node is controlled by a processor under software control, allowing the establishment of communication paths between pairs of nodes, and the exchange of data between nodes along these paths.” *Id.* ¶ 21.

Paths “across network 10 may be established in redundancy, with one protection path offering an alternate path for one or more working paths in the event of fault along the working path.” Ex. 1007 ¶ 29. Paths “may be established using known path establishment protocols,” such as MPLS, “modified to function in manners exemplary of the present invention and embodied in software at the nodes.” *Id.* ¶ 22; *see id.* ¶¶ 30–31, 33, 38.

In network 10, working path W1 extends from source node A through intermediate nodes D and H to destination node K, and protection path P1 for working path W1 extends from source node A through intermediate nodes C and G to destination node K. Ex. 1007 ¶¶ 32–33, 35, 40–41, Fig. 2A. Further, working path W2 extends from source node D through intermediate nodes F and J to destination node M, and protection path P2 for working path W2 extends from source node D through intermediate nodes C, G, and K to destination node M. *Id.* ¶¶ 43–44, Fig. 2A. Hence, protection path P1 and protection path P2 have a common link between nodes C and G and another common link between nodes G and K. *Id.* ¶ 45, Figs. 2A–2B.

deBoer discloses that each node in a network determines “whether or not existing protection channels may be shared,” e.g., “shared in a downstream direction.” Ex. 1007 ¶¶ 46–47; *see id.* ¶¶ 51–55, Fig. 3. For instance, “node G may examine locally stored routing/connection information to assess if a protection channel between node G and node K has already been established.” *Id.* ¶ 48, Fig. 3. If so, “node G checks for a possible common point of failure between W2 and P1, or W1 and P2, or W1 and W2,” because an “existing protection channel may not be shared” if “a common point of failure exists” along the candidate paths. *Id.* ¶ 50, Fig. 3; *see id.* ¶¶ 51–53, 55.

If existing protection channels may be shared, path information at the node “may be updated to reflect” channel sharing between the node and an adjacent node, e.g., by updating routing tables or reconfiguring cross-connects. Ex. 1007 ¶ 56. Also, an existing protection channel “may be released” to permit protection paths, e.g., “protection paths P1 and P2

between nodes G and K,” to share bandwidth. *Id.* ¶ 56, Fig. 2A. As “protection channels and thus protection paths are combined, between adjacent nodes, network protection bandwidth is effectively shared.” *Id.* ¶ 60; *see id.* ¶ 62.

2. INDEPENDENT CLAIM 1

(a) Preamble

Claim 1’s preamble recites “[a] method for communication.” Ex. 1001, 9:9.

Petitioner contends that deBoer discloses claim 1’s preamble because deBoer describes “a communication method” that establishes “working LSP tunnels” and “protection LSP tunnels” to protect against failures. Pet. 65.

Patent Owner makes no arguments specific to claim 1’s preamble. *See, e.g.*, Prelim. Resp. 66–71. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Generally, a preamble does not limit a claim. *Allen Eng’g*, 299 F.3d at 1346. We need not decide whether claim 1’s preamble limits the claim because Petitioner establishes sufficiently that deBoer teaches claim 1’s preamble. *See* Pet. 65; Ex. 1003 ¶¶ 87, 240–241.

Specifically, deBoer discloses “a mesh communications network” and “a method, device and software for establishing protection paths that share bandwidth across” the network. Ex. 1007 ¶¶ 1, 7, 11, 20, code (57); *see* Ex. 1003 ¶¶ 87, 240.

(b) Limitation 1.1

Claim 1 recites “defining a resource-sharing group comprising at least first and second tunnels, which have respective origin network elements and

termination network elements and which traverse different routes through a communication network, the routes traversing at least one common network element.” Ex. 1001, 9:10–15.

Petitioner contends that deBoer “alone or in view of” Doshi “renders obvious” limitation 1.1. Pet. 66; *see id.* at 67–71. Specifically, Petitioner asserts that deBoer discloses “working tunnel W1, protection tunnel P1 to backup tunnel W1, working tunnel W2, and protection tunnel P2 to backup tunnel W2.” *Id.* at 66. Petitioner identifies protection tunnels P1 and P2 as the claimed “first and second tunnels.” *Id.* Petitioner also asserts that deBoer discloses using a table at each node “to identify shared resources.” *Id.* at 68–69.

Patent Owner makes no arguments specific to limitation 1.1. *See, e.g.,* Prelim. Resp. 66–71. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Based on the current record, Petitioner establishes sufficiently that deBoer teaches limitation 1.1. *See* Pet. 66–69; Ex. 1003 ¶¶ 87–88, 242–248. Specifically, deBoer discloses that each node in a network determines “whether or not existing protection channels may be shared.” Ex. 1007 ¶¶ 46–47; *see id.* ¶¶ 51–55, Fig. 3; Ex. 1003 ¶¶ 88, 244–246. If existing protection channels may be shared, path information at the node “may be updated to reflect” channel sharing between the node and an adjacent node, e.g., by updating routing tables or reconfiguring cross-connects. Ex. 1007 ¶ 56; *see* Ex. 1003 ¶ 248. Protection paths that share a protection channel correspond to “a resource-sharing group” according to limitation 1.1. *See* Ex. 1003 ¶¶ 242–248.

Additionally, deBoer discloses the following tunnels or paths:

- working path W1 that extends from source node A through intermediate nodes D and H to destination node K;
- protection path P1 for working path W1 that extends from source node A through intermediate nodes C and G to destination node K;
- working path W2 that extends from source node D through intermediate nodes F and J to destination node M; and
- protection path P2 for working path W2 that extends from source node D through intermediate nodes C, G, and K to destination node M.

Ex. 1007 ¶¶ 32–33, 35, 40–41, 43–44, Fig. 2A; *see* Ex. 1003 ¶¶ 87, 242.

Protection paths P1 and P2 traverse different routes through network 10, and the routes traverse common nodes C, G, and K. Ex. 1007 ¶¶ 41, 43–44, Fig. 2A; *see* Ex. 1003 ¶ 243. Protection paths P1 and P2 may share a protection channel, e.g., between common nodes G and K. Ex. 1007 ¶¶ 45, 48–53, 55–56, 60, Fig. 3; *see* Ex. 1003 ¶ 249. Protection paths P1 and P2 correspond to “first and second tunnels” according to limitation 1.1. *See* Ex. 1003 ¶ 250.

(c) Limitation 1.2

Claim 1 recites “wherein the tunnels meet at least one condition selected from a group of conditions consisting of: the respective origin network elements of the first and second tunnels are different; and the respective termination network elements of the first and second tunnels are different.” Ex. 1001, 9:15–21.

Petitioner contends that deBoer discloses limitation 1.2. *See* Pet. 74–75. Specifically, Petitioner asserts that protection paths P1 and P2 “have

different origin network element[s] (A, D, respectively) and different termination network elements (K, M, respectively).” *Id.* at 74.

Patent Owner makes no arguments specific to limitation 1.2. *See, e.g.*, Prelim. Resp. 66–71. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Based on the current record, Petitioner establishes sufficiently that deBoer teaches limitation 1.2. *See* Pet. 74–75; Ex. 1003 ¶¶ 87, 260, 262. Specifically, deBoer discloses both conditions recited in limitation 1.2. Ex. 1007 ¶¶ 41, 43–44, Fig. 2A; *see* Ex. 1003 ¶¶ 87, 260.

First, protection path P1 has node A as its “origin network element,” and protection path P2 has node D as its “origin network element.” Ex. 1007 ¶¶ 41, 43–44, Fig. 2A; *see* Ex. 1003 ¶¶ 87, 260. Thus, “the respective origin network elements of the first and second tunnels are different” according to limitation 1.2. Ex. 1007 ¶¶ 41, 43–44, Fig. 2A; *see* Ex. 1003 ¶ 260.

Second, protection path P1 has node K as its “termination network element,” and protection path P2 has node M as its “termination network element.” Ex. 1007 ¶¶ 41, 43–44, Fig. 2A; *see* Ex. 1003 ¶¶ 87, 260. Thus, “the respective termination network elements of the first and second tunnels are different” according to limitation 1.2. Ex. 1007 ¶¶ 41, 43–44, Fig. 2A; *see* Ex. 1003 ¶ 260.

(d) Limitation 1.3

Claim 1 recites “distributing a notification over the network of an affiliation of the tunnels with the resource-sharing group.” Ex. 1001, 9:22–23.

Petitioner contends that deBoer discloses limitation 1.3. *See* Pet. 75–76; *see also id.* at 67–68. Specifically, Petitioner asserts that deBoer distributes a notification in three separate ways. *See id.* at 67–68, 75–76. First, Petitioner asserts that deBoer sends resource-assessment messages “to identify common link segments for bandwidth sharing” in protection paths P1 and P2. *Id.* at 75–76. Second, Petitioner asserts that deBoer sends RSVP-TE messages “to notify nodes of the affiliation of link segments” in protection paths P1 and P2 “in order to share those segments to conserve bandwidth.” *Id.* at 76. Third, Petitioner asserts that deBoer gathers resource identifiers and then distributes resource identifiers to nodes performing resource assessments. *Id.* at 67–68 (citing Ex. 1007 ¶¶ 52–55); *see id.* at 75.

Relevant to limitations 1.3 and 1.4, Patent Owner contends that “neither of the alleged ‘notifications’ identified by Petitioner,” i.e., resource-assessment messages and RSVP-TE messages, “is actually used to allocate network element resources.” Prelim. Resp. 68 (citing Ex. 2001 ¶ 44). Specifically, Patent Owner asserts that a node “doesn’t make the decision to combine the paths until” after receiving resource-assessment messages for the resources along the candidate paths. *Id.* (citing Ex. 1007 ¶ 56). Patent Owner further asserts that RSVP-TE messages “establish the protection paths in the first instance.” *Id.* at 68–69 (citing Ex. 1007 ¶ 44).

Based on the current record, Petitioner does not establish sufficiently for purposes of institution that deBoer teaches limitation 1.3. *See* Pet. 67–68, 75–76; Ex. 1003 ¶¶ 245, 263–265. First, Petitioner does not establish sufficiently that resource-assessment messages provide “a notification . . . of an affiliation of the tunnels with the resource-sharing group.” *See* Pet. 75–76. Resource-assessment messages include

information about node resources, e.g., “ports, trenches, cables, wavelengths, shared risk groups, and the like,” and preferably include a unique identifier for each resource. Ex. 1007 ¶ 52. The node performing the resource assessment receives resource-assessment messages for the resources along the candidate paths. *Id.* ¶¶ 49–53, Fig. 3. Then, the node evaluates the information in the received messages “to ensure no common resources (i.e. common points of failure)” exist along the candidate paths. *Id.* ¶ 55, Fig. 3. An “existing protection channel may not be shared” if “a common point of failure exists” along the candidate paths. *Id.* ¶ 50, Fig. 3. If, after receiving resource-assessment messages, the node determines that “no common points of failure” exist along the candidate paths, the node may release an existing protection channel to permit protection paths to share bandwidth. *Id.* ¶ 56, Fig. 3.

So the node performing the resource assessment receives resource-assessment messages before—not after—determining whether to permit protection paths to share bandwidth, i.e., before a resource-sharing group is defined and “an affiliation of the tunnels” is determined. Hence, resource-assessment messages do not provide “a notification . . . of an affiliation of the tunnels with the resource-sharing group” according to limitation 1.3. See Ex. 1007 ¶¶ 50–53, 55–56, Fig. 3.

Second, Petitioner does not establish sufficiently that RSVP-TE messages provide “a notification . . . of an affiliation of the tunnels with the resource-sharing group.” See Pet. 76. RSVP-TE messages serve as path-establishment messages for a single path, not notification messages for resource sharing between or among paths. See Ex. 1007 ¶¶ 31–33, 35, 38, 44, 60. For example, “establishment of the protection path may be effected

by sending a suitable MPLS path establishment message” from a source node to a destination node. *Id.* ¶ 44. After the destination node receives a path-establishment message, “messages may be passed upstream and used to establish label based routing entries” at the other nodes along the path. *Id.* Consistent with this, the ’580 patent explains that the RSVP-TE protocol “extends the well-known Resource Reservation Protocol (RSVP)” and allows “the establishment of explicitly-routed LSPs using RSVP as a signaling protocol.” Ex. 1001, 1:46–52. Hence, RSVP TE messages are sent before, not after, a resource-sharing group is defined and “an affiliation of the tunnels” is determined. *See* Ex. 1007 ¶¶ 31–33, 35, 38, 44, 60. Because RSVP TE messages are sent before a resource-sharing group is defined and “an affiliation of the tunnels” is determined, RSVP TE messages do not provide “a notification . . . of an affiliation of the tunnels with the resource-sharing group” according to limitation 1.3. *See id.* ¶¶ 31–33, 35, 38, 44, 60.

Third, Petitioner does not establish sufficiently that distributing resource identifiers to nodes performing resource assessments provides “a notification . . . of an affiliation of the tunnels with the resource-sharing group.” *See* Pet. 67–68, 75. deBoer discloses an alternative to each node sending resource-assessment messages along working and protection paths. Ex. 1007 ¶ 54. In particular, “resources for each node may be assessed as working and/or protection paths are established.” *Id.* If so, resource identifiers “may be passed to the source node for a working or protection path” or “distributed to one or more nodes.” *Id.* Distributing resource identifiers to nodes performing resource assessments occurs before, not after, a node determines whether to permit protection paths to share

bandwidth. *Id.* ¶¶ 55–56, Fig. 3. Hence, resource identifiers are distributed to nodes performing resource assessments before a resource-sharing group is defined and “an affiliation of the tunnels” is determined. *Id.* ¶¶ 55–56, Fig. 3. Because that distribution occurs before a resource-sharing group is defined and “an affiliation of the tunnels” is determined, that distribution does not provide “a notification . . . of an affiliation of the tunnels with the resource-sharing group” according to limitation 1.3. *See id.* ¶¶ 55–56, Fig. 3.

(e) Limitation 1.4

Claim 1 recites “allocating a resource associated with the at least one common network element so as to share an allocation of the resource among the tunnels in the resource-sharing group responsively to the notification.” Ex. 1001, 9:24–27.

Petitioner contends that deBoer discloses or “alone renders obvious” limitation 1.4. *See* Pet. 76. Specifically, Petitioner asserts that deBoer teaches the following:

- (1) “affiliat[ing] first and second tunnels P1-P2”;
- (2) “allocat[ing] bandwidth resources associated with common network elements (e.g., nodes)”; and
- (3) “distribut[ing] notifications of an affiliation among the tunnels regarding available bandwidth.”

Id. Petitioner also asserts that based on those teachings an ordinarily skilled artisan “would have understood” that deBoer “discloses or renders obvious allocating network-element resources to share this allocation among the tunnels in the resource-sharing group responsively to the notification.” *Id.*

Patent Owner disputes that deBoer teaches limitation 1.4. *See* Prelim. Resp. 66–70. Specifically, Patent Owner asserts that “Petitioner’s analysis

fails because it provides no evidence as to how any resource” in deBoer “is allocated responsively to a notification.” *Id.* at 67. Patent Owner asserts that resource-assessment messages and RSVP-TE messages are not “actually used to allocate network element resources.” *Id.* at 68. Patent Owner also asserts that resource-assessment messages and RSVP-TE messages do not trigger “any action by the network to combine protected paths P1 and P2, let alone ‘allocating a resource associated with the at least one common network element so as to share an allocation of the resource among the tunnels in the resource-sharing group responsively to the notification.’” *Id.* at 69 (emphasis omitted).

Based on the current record, Petitioner does not establish sufficiently for purposes of institution that deBoer teaches limitation 1.4. *See* Pet. 76; Ex. 1003 ¶¶ 266–267. As discussed above, the node performing the resource assessment receives resource-assessment messages before—not after—determining whether to permit protection paths to share bandwidth. *See* Ex. 1007 ¶¶ 50–53, 55–56, Fig. 3; *supra* § IV.G.2(d). Hence, resource sharing does not occur “responsively” to resource-assessment messages as limitation 1.4 requires. *See* Ex. 2001 ¶ 44. As also discussed above, RSVP-TE messages serve as path-establishment messages for a single path, not notification messages for resource sharing between or among paths. *See* Ex. 1007 ¶¶ 31–33, 35, 38, 44, 60; *supra* § IV.G.2(d). Again, resource sharing does not occur “responsively” to RSVP-TE messages as limitation 1.4 requires. Consistent with this, the ’580 patent explains that the RSVP-TE protocol does not “enable resource sharing between separate tunnels,” e.g., deBoer’s protection paths P1 and P2. Ex. 1001, 5:43–46; *see id.* at 1:57–58, 2:22–27, 7:10–13.

(f) Conclusion for Claim 1

Because Petitioner does not establish sufficiently for purposes of institution that deBoer teaches limitations 1.3 and 1.4 and because Petitioner does not assert that Doshi teaches limitations 1.3 and 1.4, Petitioner does not establish sufficiently that the combined disclosures in deBoer and Doshi teach claim 1's subject matter. *See* Pet. 75–76; Ex. 1003 ¶¶ 245, 263–267; *supra* § IV.G.2(d)–(e). Hence, Petitioner does not demonstrate a reasonable likelihood of prevailing in proving claim 1 unpatentable under § 103(a) as obvious over deBoer and Doshi.

3. INDEPENDENT CLAIMS 8, 15, AND 22

Independent claims 8, 15, and 22 each include limitations similar to limitations 1.3 and 1.4. *Compare* Ex. 1001, 9:22–27, *with id.* at 9:66–10:2, 10:12–18, *and id.* at 10:53–64, *and id.* at 12:7–11, 12:20–26. Patent Owner describes those limitations in claims 8, 15, and 22 as “similar” to limitations 1.3 and 1.4. Prelim. Resp. 60. Petitioner describes those limitations in claims 8, 15, and 22 as “substantially the same” as limitation 1.3 and “substantially similar” to limitation 1.4. Pet. 36–38.

For the reasons discussed above for claim 1, Petitioner does not establish sufficiently for purposes of institution that the combined disclosures in deBoer and Doshi teach the subject matter of claims 8, 15, and 22. *See supra* § IV.G.2(d)–(f). Hence, Petitioner does not demonstrate a reasonable likelihood of prevailing in proving claims 8, 15, and 22 unpatentable under § 103(a) as obvious over deBoer and Doshi.

4. DEPENDENT CLAIMS 2–7, 9–14, AND 16–21

Claims 2–7 depend directly or indirectly from claim 1; claims 9–14 depend directly or indirectly from claim 8; and claims 16–21 depend directly

or indirectly from claim 15. Ex. 1001, 9:28–62, 10:19–50, 11:3–12:6. The dependent claims incorporate all limitations in their respective independent claims. 35 U.S.C. § 112 ¶ 4. Because Petitioner does not establish sufficiently for purposes of institution that the combined disclosures in deBoer and Doshi teach all limitations in the independent claims, Petitioner also does not establish sufficiently that the combined disclosures teach all limitations in the dependent claims. Hence, Petitioner does not demonstrate a reasonable likelihood of prevailing in proving claims 2–7, 9–14, and 16–21 unpatentable under § 103(a) as obvious over deBoer and Doshi.

V. CONCLUSION

After considering the Petition, the Preliminary Response, and the evidence of record, we determine that Petitioner has not demonstrated a reasonable likelihood that it would prevail in proving the unpatentability of any challenged claim on any ground of unpatentability presented in the Petition. Hence, we deny the Petition and do not institute an *inter partes* review.

VI. ORDER

Accordingly, it is

ORDERED that the Petition is denied and no trial is instituted.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JUNIPER NETWORKS, INC.,
Petitioner,

v.

SMART PATH CONNECTIONS, LLC,
Patent Owner.

IPR2021-01170
Patent 7,463,580 B2

Before DAVID C. McKONE, NATHAN A. ENGELS, and
STEVEN M. AMUNDSON, *Administrative Patent Judges*.

McKONE, *Administrative Patent Judge*, concurring.

I disagree with my colleagues on two points, although I would reach the same result. Accordingly, I concur in the decision to deny institution.

First, I would find that Petitioner has made a sufficient showing that RFC4090 teaches claim limitation 1.4, “allocating a resource associated with the at least one common network element so as to share an allocation of the resource among the tunnels in the resource-sharing group responsively to the

notification,” and the similar limitations of independent claims 8, 15, and 22. Patent Owner has admitted this. Ex. 1017 (Patent Owner’s district court Complaint) ¶¶ 44–57. Thus, I am of the view that Petitioner made a sufficient showing that RFC4090 would have rendered obvious the challenged claims of the ’580 patent, at least as to the substance of the reference. Second, because I would find that Petitioner’s showing on the substance of RFC4090 is sufficient, I would also find it necessary to reach the issue whether Petitioner has shown sufficiently that RFC4090 is a printed publication. I would determine that Petitioner made an insufficient showing on that point. Accordingly, I would still deny institution, albeit based on different reasoning.¹

Initially, I agree with the Majority that Petitioner establishes sufficiently that RFC4090 teaches claim limitations 1.1, 1.2, and 1.3. As to claim limitation 1.4, Petitioner refers to its arguments for limitation 1.1 that RFC4090 teaches affiliating first and second tunnels with each other and allocating bandwidth resources to common network elements, and to its arguments for limitation 1.3 identifying Path messages and notification flags to establish the affiliation and guarantee sufficient bandwidth allocation. Pet. 16–22, 30–31. Petitioner supports this with expert testimony.

¹ I agree with the Majority that Petitioner’s other two grounds do not support institution. As to Petitioner’s second ground, based on FastReroute-07 and Doshi, I would find that Petitioner has not shown FastReroute-07 to be a printed publication, as explained below. As to Petitioner’s third ground, based on DeBoer and Doshi, I would find that Petitioner has provided virtually no explanation or evidence supporting its contention that DoBoer teaches claim limitation 1.4 and the similar limitations of claim 8, 15, and 22. Thus, I would find that Petitioner does not present a sufficient case for obviousness based on DeBoer and Doshi.

Id. (citing Ex. 1003 ¶¶ 110–123, 135–141). I would find, and the Majority appears to agree, that RFC4090 teaches affiliating tunnels with a resource-sharing group for protecting routes and allocating bandwidth resources at common network elements to implement that protection, as well as sending Path messages with various flags related to allocating bandwidth at the network elements in protection situations. The conclusion most logical to me, on the preliminary record, is that a resource (e.g., bandwidth) is allocated at a common network element responsively to those Path messages and that the result is tunnels in the resource-sharing group sharing the resource. As Dr. Lavian testifies, “a [person of ordinary skill in the art] would have understood that RFC4090 discloses or renders obvious allocating network-element resources to share this allocation among the tunnels in the resource-sharing group responsively to the notification.” Ex. 1003 ¶ 139. Thus, I would find that RFC4090 at least suggests claim limitation 1.4.

Unlike the Majority, I would also find it persuasive that Patent Owner has admitted (and affirmatively advocated) that RFC4090 teaches claim limitation 1.4, along with the rest of claim 1. Patent Owner filed a Complaint against Petitioner alleging infringement of the ’580 patent based on Petitioner’s products that allegedly practiced the techniques specified in RFC4090. Ex. 1017 ¶¶ 44–57. This is not a case where Petitioner alleges, at a high level of generality, that its accused products are akin to the prior art and that, if its products infringe, the claims must be invalid. Rather, Patent Owner has provided a detailed mapping of the disclosure in RFC4090 to each of limitations 1.1, 1.2, 1.3, and 1.4 of claim 1. *Id.* ¶¶ 48–52. Thus, Patent Owner has stated in a district court Complaint that RFC4090

discloses each limitation of claim 1. The Petition includes substantially the same mapping, and Dr. Lavian agrees with it. Pet. 15–33 (citing Ex. 1017, pp. 35–39); Ex. 1003 ¶¶ 107–122, 130–141. If the allegations in the Complaint do not constitute an outright admission by Patent Owner, they at least refute Patent Owner’s argument that RFC4090 does not teach claim limitation 1.4. They also bolster the credibility of Dr. Lavian and substantially undermine the credibility of Dr. Akl.

Patent Owner argues that “Petitioner’s reliance on the original complaint . . . has no impact on how a person of ordinary skill in the art would understand the ’580 Patent at the time it issued.” Prelim. Resp. 3. Such a statement is simply not credible. When Patent Owner filed its Complaint, it was alleging precisely what it thought a skilled artisan would have understood regarding the ’580 patent and RFC4090. *See* Fed. R. Civ. P. 11(b)(3) (“By presenting to the court a pleading, written motion, or other paper—whether by signing, filing, submitting, or later advocating it—an attorney or unrepresented party certifies that to the best of the person’s knowledge, information, and belief, formed after an inquiry reasonable under the circumstances: . . . (3) the factual contentions have evidentiary support or, if specifically so identified, will likely have evidentiary support after a reasonable opportunity for further investigation or discovery.”). At the time Patent Owner made those allegations, Patent Owner presumably believed them and had sound factual support to make them (and indeed cited and quoted that support in the Complaint).

Patent Owner also argues that it amended its Complaint and that the district court litigation ultimately was dismissed. Prelim. Resp. 3 (citing Exs. 2002, 2003). Patent Owner refers to the original Complaint as

“inoperative,” without explaining what it means by that term. *Id.* at 59. The Majority finds these statements convincing, but I do not. Although Patent Owner’s Amended Complaint provided citations tailored more directly to Petitioner’s accused products (Ex. 2002 ¶¶ 44–57), nothing in the Amended Complaint purported to withdraw Patent Owner’s earlier allegations because they were incorrect. Nor does Patent Owner’s voluntary dismissal of its Amended Complaint state that the case was being dismissed because RFC4090 was not sufficient evidence of infringement. Ex. 2003. Patent Owner points to nothing in its district court filings that cast doubt on its mapping of RFC4090 to claim 1 of the ’580 patent. Patent Owner only now, in this proceeding, attempts to walk away from its earlier allegations, as it faces potential cancellation of its patent. I would find that “[t]his case falls squarely within the principle that a ‘patent may not, like a nose of wax, be twisted one way to avoid anticipation and another to find infringement.’” *CommScope Techs. LLC v. Dali Wireless Inc.*, 10 F.4th 1289, 1299 (Fed. Cir. 2021) (quoting *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1351 (Fed. Cir. 2001)).

Nevertheless, I would deny institution because, in my view, Petitioner has not shown sufficiently that either RFC4090 or FastReroute-07 is a

printed publication and prior art to the '580 patent.² As the Majority points out, at this stage of the proceeding, Petitioner must “identify with particularity evidence sufficient to establish a reasonable likelihood that the reference was publicly accessible” before the '580 patent’s effective filing date and “therefore that there is a reasonable likelihood that it qualifies as a printed publication.” *Hulu, LLC v. Sound View Innovations, LLC*, IPR2018-01039, Paper 29 at 13 (PTAB Dec. 20, 2019) (precedential). I also agree generally with the Majority’s statement of the law of public accessibility and the tools that we use to assess it.

Petitioner argues that “[i]n the related litigation, Patent Owner acknowledges RFC4090 is a printed publication relevant to the technology.” Pet. 9 (citing Ex. 1017, pp. 35–39). Patent Owner’s district court Complaint did not include a statement that RFC4090 was a printed publication, and Petitioner does not explain why inclusion of a document in an infringement allegation should be construed as an admission that the document is a printed publication for purposes of prior art. I would find no such admission.

The Petition also contends that “RFC4090 and FastReroute-07 are printed publications from the IETF standards organization,” and that “[t]he

² I note that the Majority acknowledges that Petitioner does little to establish public accessibility of RFC4090 and FastReroute-07 in the Petition. However, the Majority then finds that Dr. Lavian’s testimony mitigates the deficiencies they find in the Petition’s showing. The Majority then declines to decide whether Petitioner has shown a reasonable likelihood that RFC4090 and FastReroute-07 are printed publications. Thus, my disagreement with the Majority is with their decision not to reach this issue. I also would not find that any of Dr. Lavian’s testimony mitigates the Petition’s deficiencies.

IETF published RFC4090 on May 27, 2005, and FastReroute-07 on September 7, 2004.” Pet. 2 (citing Ex. 1005, 1; Ex. 1015, 2; Ex. 1016, 1:20–30) (footnotes omitted). Petitioner argues that these references “were published and available before the ’580 Patent’s filing date and more than one year before ’580 Patent’s filing date, respectively,” and therefore are prior art under 35 U.S.C. § 102(a) and § 102(b), respectively. *Id.* at 2–3 (citing Ex. 1019, 6–15, 114–16; Ex. 1020, 447–49, 481–546).

Although Petitioner does not explain its conclusions with specificity, Petitioner appears to rely on the “May 2005” date printed on the first page of RFC4090, and the statements “2005-05-27 07 (System) RFC published” and “2004-09-07 07 (System) New version available: draft-ietf-mpls-rsvp-lsp-fastreroute-07.txt” on page 2 of Exhibit 1015. Exhibit 1015 is a June 8, 2021, document purporting to provide a “Document history” for “Fast Reroute Extensions to RSVP-TE for LSP Tunnels.” Petitioner does not explain the relevance of the purported document history and I would not speculate as to what it might show. As to the May 2005 date printed on RFC4090, “the indicia on the face of a reference, such as printed dates and stamps, are considered as part of the totality of the evidence.” *Hulu*, at 17–18. However, the printed date alone does not provide any information about whether RFC4090 was distributed or sufficiently made available to the interested public. *Cf. Hulu*, at 19 (“Further, the Board previously concluded that a conference paper, bearing a copyright date of 2012 and including a date of September 2012 on its cover, was insufficient to show that the paper had been disseminated prior to the conference (November 2012).” (citing *In-Depth Geophysical, Inc. v. Conocophillips Co.*, IPR2019-00849, Paper 14 at 4–13 (PTAB Sept. 6, 2019))).

Petitioner also appears to rely on a statement in an unrelated patent, filed on March 2, 2006, that drafts of certain documents “are available from the Internet Engineering Task Force (IETF) at www.ietf.org/internet-drafts.” Ex. 1016, 1:20–30. Neither RFC4090 nor FastReroute-07 appear among the list of such documents. Petitioner does not explain why an unrelated patent’s statement that IETF makes some documents available on its website shows that RFC4090 and Fast-Reroute-07 were among those documents. Nor does this statement explain what “are available” means. As the Majority observes, merely placing a document on a website typically is not sufficient to make it publicly accessible. *See Samsung Elecs. Co. v. Infobridge Pte. Ltd.*, 929 F.3d 1363, 1369 (Fed. Cir. 2019); *Acceleration Bay, LLC v. Activision Blizzard Inc.*, 908 F.3d 765, 772–74 (Fed. Cir. 2018). Petitioner does not introduce evidence that either RFC4090 or FastReroute-07 were placed on IETF’s website prior to the critical date (and in fact does not actually state that this is its theory of public accessibility). Pet. 2–3. But, even if Petitioner had made that allegation, Petitioner has not argued or introduced evidence that an interested member of the public would have found them.

Petitioner also appears to rely on citations to RFC4090 and FastReroute-07 in information disclosures statements (IDS) submitted during the prosecutions of unrelated patents. Pet. 2–3 (citing Ex. 1019, 6–15, 114–16; Ex. 1020, 447–49, 481–546). Petitioner does not explain the relevance of this information, and I see it having little bearing on whether either document was distributed or made available sufficiently prior to the critical date. At most, it shows that two third parties were in possession of the documents.

The Majority notes that RFC4090 states that “[d]istribution of this memo is unlimited,” and its audience is “the Internet community.”

Ex. 1005, 1. The Majority finds that this indicates public accessibility, but I would not. The purported intent of the document might be relevant if there was evidence that copies of RFC4090 were distributed to interested members of the public prior to the effective filing date of the ’580 patent, but Petitioner points to no such evidence and does not allege that such evidence exists. Indeed, Petitioner does not argue that the statements found persuasive by the Majority are evidence of public accessibility.

As noted above, the Majority finds that Dr. Lavian’s testimony, specifically the testimony at Exhibit 1003 ¶¶ 27, 48, 75, 76, and 80–82, mitigates the deficiencies of the Petition. Petitioner does not cite any of this testimony as supporting an allegation that either RFC4090 or FastReroute-07 is a printed publication. Petitioner cites to paragraph 48 in a bulk citation to support an argument that “MPLS allows for explicitly choosing routes for packets at or before the time packets enter the network” and paragraph 27 in a bulk citation to support an argument that “[b]efore the ’580 Patent, those of skill in the field developed protocols to help manage those resources.” Pet. 3–4 (citing Ex. 1003 ¶¶ 27–36, 37–38, 45–54). Petitioner does not cite to paragraphs 75, 76, and 80–82 for any purpose. Thus, Petitioner does not “identify with particularity” Dr. Lavian’s testimony, and I would not rely upon it to conclude that Petitioner has shown a reasonable likelihood that RFC4090 or FastReroute-07 qualify as printed publications. *Hulu*, at 13.

In any case, this testimony does not mitigate the Petition’s deficiencies or support Petitioner’s general allegations that RFC4090 and FastReroute-07 are printed publications. Paragraph 27 merely states that

prior to the '580 patent's filing date, IETF had published requests for comments. Ex. 1003 ¶ 27. Dr. Lavian does not identify either RFC4090 or FastReroute-07 as among those requests for comments or explain what he means by "had published." Nor does Dr. Lavian identify the basis for his testimony or explain why he is knowledgeable about IETF's procedures for publishing requests for comments. Paragraph 48 of his testimony quotes from IETF's current charter describing a request for comment process. *Id.* ¶ 48. He provides no testimony here specific to RFC4090 or FastReroute-07. Paragraphs 75, 76 and 80–82 do little more than repeat the insufficient allegations from the Petition without adding to them materially, and do not identify the basis for the testimony. *Compare* Ex. 1003 ¶¶ 75–76, 80–82 with Pet. 2–3, 9.

In sum, I would find that the evidence and arguments in the Petition are insufficient to show a reasonable likelihood that RFC4090 and FastReroute-07 are printed publications.

As the Board has stated, "[w]hile the petitioner must submit evidence sufficient to meet the reasonable likelihood standard, some limited opportunities exist for the petitioner to present new evidence later, including: (1) in a reply to a patent owner preliminary response; (2) in a reply to the patent owner response; and (3) in a motion to file supplemental information." *Hulu*, at 14 (citing 37 C.F.R. §§ 42.108(c), 42.23, 42.123). However, in this case, I do not see an opportunity fair to Patent Owner for Petitioner to supplement the record. Petitioner has presented almost no evidence or argument showing that RFC4090 and FastReroute-07 are printed publications—certainly not evidence sufficient to meet the reasonable likelihood standard. Petitioner would have to submit virtually its entire case

on public accessibility in a reply or supplemental briefing. That would exceed the proper scope of a reply. *See* 37 C.F.R. § 42.23(b) (“A reply may only respond to arguments raised in the corresponding opposition, patent owner preliminary response, patent owner response, or decision on institution.”); Patent Trial and Appeal Board Consolidated Trial Practice Guide (Nov. 2019) at 73 (“Petitioner may not submit new evidence or argument in reply that it could have presented earlier, e.g. to make out a *prima facie* case of unpatentability.”), 74 (“Generally, a reply or sur-reply may only respond to arguments raised in the preceding brief. 37 C.F.R. § 42.23, except as noted above. ‘Respond,’ in the context of 37 C.F.R. § 42.23(b), does not mean proceed in a new direction with a new approach as compared to the positions taken in a prior filing. While replies and sur-replies can help crystalize issues for decision, a reply or sur-reply that raises a new issue or belatedly presents evidence may not be considered.”).

Thus, I would deny the Petition on the basis that Petitioner has not shown a reasonable likelihood that RFC4090 and FastReroute-07 are printed publications and has not shown a reasonable likelihood that the challenged claims are unpatentable for obviousness based on DeBoer and Doshi.

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