Trials@uspto.gov
571-272-7822

Paper 9
Entered: December 7, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ARISTA NETWORKS, INC.,
Petitioner,
v.
CORRIGENT CORPORATION,
Patent Owner.

IPR2023-00839
Patent 9,118,602 B2

Before KRISTEN L. DROESCH, CHARLES J. BOUDREAU, and CHRISTOPHER L. OGDEN, *Administrative Patent Judges*.

BOUDREAU, *Administrative Patent Judge*.

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

I. INTRODUCTION

Arista Networks, Inc. ("Petitioner" or "Arista") filed a Petition (Paper 2, "Pet.") requesting *inter partes* review of claims 1–26 of U.S. Patent No. 9,118,602 B2 (Ex. 1001, "the '602 patent"). Corrigent Corporation ("Patent Owner") filed a Preliminary Response. Paper 6 ("Prelim. Resp.").

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314(b) (2018); 37 C.F.R. § 42.4(a) (2023). Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless the information presented in the Petition and any response thereto shows "there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition."

Upon consideration of the arguments and evidence presented, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing with respect to at least one challenged claim, and accordingly, we institute an *inter partes* review as to all challenged claims of the '602 patent on the grounds of unpatentability presented. *See* 37 C.F.R. § 42.108(a) ("When instituting . . . review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.").

II. BACKGROUND

A. Real Parties in Interest

Petitioner and Patent Owner identify themselves as the real parties in interest in this proceeding. Pet. 64; Paper 8, 2 (Patent Owner's Updated Mandatory Notices).

B. Related Matters

The parties identify as related matters involving the '602 patent *Cisco Systems, Inc. v. Corrigent Corp.*, IPR2023-00447 (PTAB) ("Cisco IPR"),[1] *Corrigent Corp. v. Cisco Systems, Inc.*, No. 6:22-cv-396 (W.D. Tex.), *Corrigent Corp. v. Dell Technologies Inc.*, No. 1:22-cv-00496 (D. Del), and *Corrigent Corp. v. Arista Networks, Inc.*, No. 1:22-cv-497 (D. Del.). Pet. 64–65; Paper 8, 2–3. Petitioner additionally identifies *Corrigent Corp. v. Dell Technologies Inc.*, No. 1:22-cv-00496 (D. Del) as a related matter. Pet. 65.

C. The '602 Patent

The '602 patent, titled "Tunnel Provisioning with Link Aggregation," issued August 25, 2015, from U.S. Patent Application No. 13/969,520, filed August 17, 2013, as a continuation of U.S. Patent Application No. 13/116,696, filed May 26, 2011, which was in turn a continuation of U.S. Patent Application No. 11/123,801, filed May 6, 2005. Ex. 1001, codes (21), (22), (45), (54), (63). The patent relates generally to communication networks and describes a method for processing data packets in a communication network by establishing a path for a flow of the packets through the network, wherein a port is selected from among a plurality of aggregated ports at a node along the path and a label chosen responsively to the selected port is attached to the data packets in the flow at a point on the path upstream from the node, such that packets are switched through the selected node responsively to the label. *Id.* at code (57), 1:19–21. More particularly, methods and apparatus are described for assigning and utilizing

[1] *Inter partes* review was instituted in the Cisco IPR on August 8, 2023. IPR2023-00447, Paper 8.

an Ethernet physical data port in an Ethernet Link Aggregation Group ("LAG") in a Multiprotocol Label Switching ("MPLS") network. *Id.* at 2:30–3:29. In certain embodiments, the LAG is located downstream from a preceding node in an MPLS network tunnel employing Resource Reservation Protocol Traffic Engineering (RSVP-TE) tunnel provisioning. *Id.* at 3:4–11.

By way of background, the '602 patent explains that MPLS "has gained popularity as a method, for efficient transportation of data packets over connectionless networks, such as Internet Protocol (IP) networks." Ex. 1001, 1:26–29. According to the '602 patent, each packet in MPLS is assigned to a Forwarding Equivalence Class ("FEC") when it enters the network, depending on its destination address. *Id.* at 1:34–36. The '602 patent explains that "[t]he packet receives a fixed-length label, referred to as an 'MPLS label' identifying the FEC to which it belongs," and "[a]ll packets in a given FEC are passed through the network over the same path by label-switching routers (LSRs)." *Id.* at 1:36–40. Further, "[t]he flow of packets along a label-switched path (LSP) under MPLS is completely specified by the label applied at the ingress node of the path," and "[t]herefore, an LSP can be viewed as a tunnel through the network." *Id.* at 1:40–43. According to the '602 patent

> MPLS defines a label distribution protocol (LDP) by which one LSR informs another of the meaning of labels used to forward traffic between and through them. Another example is RSVP-TE, which is described by Awduche et al., in IETF RFC 3209 entitled "RSVP-TE: Extensions to RSVP for LSP Tunnels" (December 2001), which is incorporated herein by reference." *Id.* at 1:46–50. "RSVP-TE extends the well-known Resource Reservation Protocol (RSVP), allowing the establishment of explicitly-routed LSPs using RSVP as a signaling protocol. RSVP itself is described by Braden et al., in IETF RFC 2205,

> entitled "Resource ReSerVation Protocol (RSVP)-Version 1 Functional Specification" (September 1997), which is incorporated herein by reference.

Id. at 1:44–56.

The '602 patent further explains that LAG "is a technique by which a group of parallel physical links between two endpoints in a data network can be joined together into a single logical link (referred to as a 'LAG group')." Ex. 1001, 2:2–5. "Traffic transmitted between the endpoints is distributed among the physical links in a manner that is transparent to the clients that send and receive the traffic." *Id.* at 2:5–7. "For Ethernet networks, link aggregation is defined by Clause 43 of IEEE Standard 802.3ad, Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications (2002 Edition)," incorporated by reference in the '602 patent. *Id.* at 2:8–12.

D. Illustrative Claim

Of the challenged claims, claims 1, 15, and 26 are independent claims. Claim 1, reproduced below with bracketed element identifiers used in the Petition, is illustrative of the challenged claims.

> [1.0] A method for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) in a Multi-Protocol Label Switching (MPLS) network, the method comprising the steps of:
>
> [1.1] assigning, by a first MPLS/LAG switch, a single physical tunnel port of a LAG to a network tunnel, wherein the single physical tunnel port of the LAG meets a bandwidth requirement of the network tunnel, and wherein said single physical tunnel port of the LAG has a port serial number;
>
> [1.2] dedicating a sub-set of bits in a data packet label prepared by the first MPLS/LAG switch to encode said

port serial number of said single physical tunnel port of the LAG into the data packet label;

[1.3] sending, by said first MPLS/LAG switch, the data packet label, in which said port serial number of said single physical tunnel port is encoded, to a preceding node;

[1.4] receiving from the preceding node, by said first MPLS/LAG switch, a data packet comprising said data packet label, in which said port serial number of said single physical tunnel port is encoded; and

[1.5] sending said data packet from said first MPLS/LAG switch to a second MSPLS/LAG switch via said single physical tunnel port having the port serial number encoded in the data packet label.

Ex. 1001, 9:23–47.

E. Alleged Grounds of Unpatentability

Petitioner asserts that the challenged claims are unpatentable on the following grounds:

Claims Challenged	35 U.S.C. §[2]	Reference(s)/Basis
1–26	103(a)	RFC 3209,[3] Raz[4]
1–26	103(a)	RFC 3209, Raz, Ferguson[5]

[2] The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA"), amended 35 U.S.C. § 103, effective March 16, 2013. Because the application from which the '602 patent issued was a continuation of an application filed before March 16, 2013, we apply the pre-AIA version of § 103.

[3] D. Awduche et al., *RSVP-TE: Extensions to RSVP for LSP Tunnels*, Request for Comments 3209, Network Working Group (Dec. 2001) (Ex. 1010).

[4] Raz et al., US 7,466,697 B1, issued Dec. 16, 2008, filed July 23, 2002 (Ex. 1006).

[5] Ferguson et al., US 7,277,386 B1, issued Oct. 2, 2007, filed Nov. 12, 2002 (Ex. 1007).

Pet. 3–4. Petitioner also supports its challenge with a Declaration of Paul Min, Ph.D. Ex. 1003.

III. DISCRETIONARY DENIAL

Institution of *inter partes* review is discretionary. *See Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016); *see also* 35 U.S.C. § 314(a).

Patent Owner argues that the Board should exercise discretion under 35 U.S.C. § 314(a) and deny institution in view of the Cisco IPR, contending that "the instant Petition presents essentially the same grounds and challenges the same claims as Cisco's prior petition." Prelim. Resp. 2–3 (citing Ex. 2001 (Cisco IPR, Paper 1)). For the reasons that follow, we are not persuaded by Patent Owner's arguments for discretionary denial.

In *General Plastic Industrial Co. v. Canon Kabushiki Kaisha*, IPR2016-01357, Paper 19 (PTAB Sept. 6, 2017) (precedential as to § II.B.4.i), the Board set forth a number of factors that may merit denial of institution under § 314(a) when the same petitioner files multiple petitions challenging the same patent. Those factors are as follows:

1. whether the same petitioner previously filed a petition directed to the same claims of the same patent;
2. whether at the time of filing of the first petition the petitioner knew of the prior art asserted in the second petition or should have known of it;
3. whether at the time of filing of the second petition the petitioner already received the patent owner's preliminary response to the first petition or received the Board's decision on whether to institute review in the first petition;

4. the length of time that elapsed between the time the petitioner learned of the prior art asserted in the second petition and the filing of the second petition;
5. whether the petitioner provides adequate explanation for the time elapsed between the filings of multiple petitions directed to the same claims of the same patent;
6. the finite resources of the Board; and
7. the requirement under 35 U.S.C. § 316(a)(11) to issue a final determination not later than 1 year after the date on which the Director notices institution of review.

General Plastic, Paper 19 at 16. The *General Plastic* factors "are not dispositive, but part of a balanced assessment of all relevant circumstances in the case, including the merits." Consolidated Trial Practice Guide 58 (Nov. 2019) ("Trial Practice Guide"), https://go.usa.gov/xpvPF (citing *General Plastic*, Paper 19 at 15).

Patent Owner contends that *General Plastic* factors 1, 2, 4, 5, and 6 weigh strongly in favor of discretionary denial, whereas factors 3 and 7 are neutral. Prelim. Resp. 2. Below, we address each of these factors as they apply to the circumstances of this case, and determine that these circumstances do not warrant discretionary denial of institution.

A. Whether the Same Petitioner Previously Filed a Petition Directed to the Same Claims of the Same Patent

With respect to the first factor, Patent Owner argues that the Cisco IPR petition and the present Petition challenge the same claims, and although the petitions were not filed by the same petitioner, Patent Owner alleges that "there is a significant relationship between Arista and Cisco" "because Arista chose to use Cisco's Petition as a roadmap and thus 'implicitly created such a relationship by using [Cisco's] work as a menu and picking and choosing from their work product.'" Prelim. Resp. 3–4

(quoting *Ericsson Inc. v. Uniloc 2017, LLC*, IPR2019-01550, Paper 8 at 11–12 (PTAB Mar. 17, 2020); citing *Valve Corp. v. Elec. Scripting Prods., Inc.*, IPR2019-00062, Paper 11 at 9–10) (PTAB Apr. 2, 2019) (precedential)). Patent Owner contends that two of the three prior art references cited in the Petition are the same references that are asserted in the Cisco IPR and that Petitioner's asserted motivation to combine the asserted references in its second alleged ground is nearly identical to Cisco's motivation to combine Raz and Ferguson in the Cisco IPR. *Id.* at 4.

In *Valve*, the Board extended application of the *General Plastic* factors to a situation where multiple petitions for review of the same patent were filed by different petitioners, where a significant relationship was shown between the petitioners. *Valve*, Paper 11 at 2 ("when different petitioners challenge the same patent, we consider any relationship between those petitioners when weighing the *General Plastic* factors."). More particularly, the petitioner in *Valve* filed its petition after the Board had denied institution on a previous petition by HTC, who was its co-defendant in related district court litigation. *Id.* at 9–10. Because "Valve and HTC were co-defendants in the District Court litigation and were accused of infringing the [challenged] patent based on HTC's . . . devices that incorporate technology licensed from Valve," and because there was a complete overlap in the challenged claims, the Board held that "there is a significant relationship between Valve and HTC with respect to Patent Owner's assertion of the [challenged] patent." *Id.* at 10.

Notwithstanding Patent Owner's arguments, we find no evidence in the record of any significant relationship between Arista and prior petitioner Cisco. Although Arista is a defendant in a parallel litigation asserting that

Arista infringes the '602 patent, Cisco is not a co-defendant in that proceeding but is instead a defendant in a separate litigation involving the '602 patent. *See* Pet. 64–65; Paper 8, 2–3. Further, there is no evidence that the infringement allegations against Cisco in the latter litigation are based on Cisco's use of technology licensed from Arista, or vice versa, and there is no credible evidence of record that Petitioner and Cisco, potential business competitors, have developed any significant relationship as Valve had with HTC in *Valve*.

The present case is also distinguishable from *Ericsson*, in which a panel determined that the petitioner there had "implicitly created" a relationship with petitioners in four prior proceedings "by using the prior petitioners' work as a menu and picking and choosing from their work product." IPR2019-01550, Paper 8 at 3, 12. In contrast with that case, the evidence before us does not suggest that Arista is "picking and choosing" from the arguments made in the Cisco IPR in the same way as addressed in *Ericsson*. Although we observe that the Petition appears to incorporate annotated figures (*compare, e.g.*, Pet. 3 (Fig. 1A of the '602 patent), 18 (Fig. 1 of Raz), 24 (same), 58 (Figs. 2A–2C of Ferguson), *with* Ex. 2001, 4, 14, 17, 54 (same)) and includes a nearly word-for-word reproduction of the analysis with respect to the contributions of Ferguson to the second asserted ground from the petition in the Cisco IPR (*compare* Pet. 53–60, *with* Ex. 2001, 52–60), Arista relies principally on RFC 3209—a reference not relied upon as the basis for either asserted ground in the Cisco IPR[6]—in both

[6] To be sure, RFC 3209 is cited once in the petition in the Cisco IPR, but is proffered therein only as evidence of the background knowledge of a person of ordinary skill in the art, not as the basis for any asserted ground. *See* Ex. 2001, 34.

of its asserted grounds and cites Raz and Ferguson in support of additional alternative arguments.

We further note that the Director initiated a *sua sponte* Director review in *Code200, UAB v. Bright Data, Ltd.*, IPR2022-00861, "to clarify the application of *General Plastic*." *Code200*, Paper 18 at 3 (PTAB Aug. 23, 2022) (precedential). There, the Director explained that "*General Plastic* factor 1 must be read in conjunction with factors 2 and 3" and that "[w]here the first-filed petition under factor 1 was discretionarily denied or otherwise was not evaluated on the merits, [*General Plastic*] factors 1–3 only weigh in favor of discretionary denial when there are 'road-mapping' concerns under factor 3 or other concerns under factor 2." *Id.* at 5. Further, the Director stated that "'road-mapping' concerns are minimized when, as in this case, a petitioner files a later petition that raises unpatentability challenges substantially overlapping with those in the previously-filed petition and the later petition is not refined based on lessons learned from later developments." *Id.* That is precisely the situation here, where road-mapping concerns are minimized because the present Petition was filed only about three months after the petition in the Cisco IPR, before the patent owner preliminary response was filed and before issuance of the institution decision evaluating the merits of the petition in that case, and the record here is devoid of any evidence that the present Petition was refined based on lessons learned from any "later developments."

In conclusion, while we recognize that the Petition in this proceeding challenges the same claims and includes certain of the same arguments and evidence as the petition in the Cisco IPR, Petitioner has not previously filed any petition directed to any claims of the '602 patent, and the record is

devoid of any evidence of a substantial relationship between Arista and Cisco or any evidence of unfair gamesmanship. Thus, the first General Plastic factor weighs strongly against discretionary denial.

B. Whether at the Time of Filing of the First Petition the Petitioner Knew of the Prior Art Asserted in the Second Petition or Should Have Known of It

Regarding *General Plastic* factor 2, Patent Owner alleges that Petitioner "cannot dispute that they had knowledge of, or should have known of, the prior art asserted in its Petition at the time the Cisco IPR was filed." Prelim. Resp. 5. In support of that assertion, Patent Owner points out that Petitioner uses the same exhibit number for RFC 3209 (i.e., Ex. 1010) as was used in the Cisco IPR.

As an initial matter, we have already observed above that the Petition appears to borrow extensively from the petition in the Cisco IPR, including at least the same annotated figures and analysis regarding Ferguson as the earlier petition. We further observe that the instant Petition not only uses the same exhibit number as Cisco's petition for RFC 3209 but also uses the same exhibit numbers as Cisco for other references, including for Raz and Ferguson. Nevertheless, those commonalities do not establish that Petitioner was aware of the asserted references at the time *the earlier petition* was filed; rather, we can infer at most that Petitioner was aware of Cisco's petition sometime before *the instant Petition* was filed. On the record before us, we decline to weigh this factor more than marginally, if at all, in favor of the exercise of discretionary denial.

C. Whether at the Time of Filing of the Second Petition the Petitioner Already Received the Patent Owner's Preliminary Response to the First Petition or Received the Board's Decision on Whether to Institute Review in the First Petition

Patent Owner "admits that when Arista filed its Petition, Patent Owner had not yet filed its preliminary response in the Cisco IPR," but Patent Owner contends that "Arista, however, strategically delayed filing the instant Petition until the day before the one-year time bar [under 35 U.S.C. § 315(b)] expired" and "should not be rewarded for its gamesmanship." Prelim. Resp. 6.

Our analysis under the third *General Plastic* factor concerns whether the instant Petition was filed after Petitioner had received Patent Owner's preliminary response or the Board's institution decision in the Cisco IPR. It is undisputed that it was not. Further, we find no evidence of gamesmanship on the record before us. Accordingly, on the facts before us, we weigh the third *General Plastic* factor substantially against discretionary denial of institution.

D. The Length of Time that Elapsed Between the Time the Petitioner Learned of the Prior Art Asserted in the Second Petition and the Filing of the Second Petition; and

Whether the Petitioner Provides Adequate Explanation for the Time Elapsed Between the Filings of Multiple Petitions Directed to the Same Claims of the Same Patent

Patent Owner argues with respect to the fourth *General Plastic* factor, and similarly with respect to the fifth factor, that "Arista makes no attempt to explain why it waited over three months after Cisco filed its petition, which first disclosed this Petition's asserted prior art, to file its Petition." Prelim. Resp. 6–7. Accordingly, Patent Owner argues, both factors weigh in favor of denying institution. *Id.* (citing *Apple Inc. v. Uniloc 2017 LLC*,

IPR2020-00854, Paper 9 at 11 (PTAB Oct. 28, 2020)). We are not persuaded by Patent Owner's contentions. In *Apple*, the second petition at issue was filed over *eighteen months* after *the same petitioner* had filed its first petition. By contrast, this is Petitioner's first petition against the '602 patent and it was filed just about three months after unrelated petitioner Cisco's filing. Moreover, we find no indication in the record before us that Petitioner specifically waited to file the Petition in a strategic move to gain any sort of advantage. While relevant to our analysis, we do not find the three-month delay between the petition in the Cisco IPR and the instant Petition to be excessive because Petitioner has asserted additional art and acquired supporting declaratory testimony from a different declarant. Under the circumstances, we consider three months to be a reasonable amount of time for this, and see little need for further an explanation for this delay. On these facts, we find that the fourth and fifth factors are neutral.

E. The Finite Resources of the Board

Regarding the sixth *General Plastic* factor, Patent Owner argues that there is already a pending *inter partes* review challenging the same claims on grounds based on two of the three references asserted in the Petition and that "Arista fails to explain why the Board should further extend its resources to consider an additional, substantially similar *inter partes* review." Prelim. Resp. 7. Patent Owner further contends that "[i]nstead of seeking to join Cisco's IPR, Arista instead waited over three months after the Cisco IPR was filed to file its own, substantially similar, IPR Petition" and that "Arista's gamesmanship is an unnecessary waste of the Board's finite resources and should result in denial of institution." *Id.* Patent Owner's arguments are unpersuasive. As discussed above in connection with factor 3, at the time the instant Petition was filed, Patent Owner had not

yet filed its preliminary response in the Cisco IPR and the Board had not yet instituted *inter partes* review in that case. Moreover, as Patent Owner recognizes (*see id.* at 6), Petitioner was facing a time bar under 35 U.S.C. § 315(b) at the time the instant Petition was filed on April 18, 2023, in view of the complaint in the parallel litigation having been served on Petitioner on April 19, 2022, 3 (*see* Ex. 1016 (Case No. 22-cv-497 Docket Report)). Because Petitioner could not have known at that time whether the Cisco IPR would be instituted—a necessary predicate to joinder under 35 U.S.C. § 315(c)—we will not fault Petitioner for filing its own Petition, rather than taking the risk that the Cisco IPR might not be instituted (e.g., due, for example, to a determination on the merits, the Board's exercise of discretion, or a settlement of the parties involved), in which case Petitioner would have been barred.

F. The Requirement Under 35 U.S.C. § 316(a)(11) to Issue a Final Determination Not Later than 1 Year After the Date on Which the Director Notices Institution of Review

Finally, as Patent Owner recognizes, "[t]here is no indication that the Board could not issue a decision within 1 year after institution." Prelim. Resp. 8. We agree with Patent Owner that *General Plastic* factor 7, accordingly, "may be considered neutral." *Id.*

G. Conclusion as to Discretionary Denial

For the reasons above, we conclude that the first and third *General Plastic* factors weigh against discretionary denial, the second factor weighs at most slightly in favor of discretionary denial, and factors 4–7 are neutral. Although no single factor is dispositive, the first and third factors are particularly pertinent here, and as a whole, the factors weigh against discretionary denial.

IV. DISCUSSION OF THE ASSERTED GROUNDS

In an *inter partes* review, the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable. *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (2012) (requiring *inter partes* review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim")).

A patent claim is unpatentable for obviousness if the differences between the claimed subject matter 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). The question of obviousness is resolved based on underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when presented, objective evidence of obviousness or nonobviousness, i.e., secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Additionally, the obviousness inquiry typically requires an analysis of "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) (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring "articulated reasoning with some rational underpinning to support the legal conclusion of obviousness")). Petitioner cannot satisfy its burden of proving obviousness by employing "mere conclusory statements," but "must instead articulate specific reasoning, based on evidence of record,

to support the legal conclusion of obviousness." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

For the reasons below, we determine that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing that at least one of claims 1–26 of the '602 patent is unpatentable on the grounds asserted in the Petition. Before analyzing these grounds in detail, we address two matters that will underlie our analysis: the level of ordinary skill in the art and claim construction.

A. Level of Ordinary Skill in the Art

In determining the level of skill in the art, we consider the type of problems encountered in the art, the prior art solutions to those problems, the rapidity with which innovations are made, the sophistication of the technology, and the educational level of active workers in the field. *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986); *Orthopedic Equip. Co. v. U.S.*, 702 F.2d 1005, 1011 (Fed. Cir. 1983).

Petitioner contends a person of ordinary skill in the art at the time of the invention would have had "a bachelor's degree in electrical engineering, computer science, computer engineering or an equivalent, as well as at least two years of professional experience with computer networking" and "a working knowledge of hardware and software for packet-switched networking, MPLS and LAG." Pet. 4 (citing Ex. 1003 ¶ 60). Petitioner also states that "[a]dditional work experience could substitute for educational experience and vice versa. *Id.*

Patent Owner does not address the level of ordinary skill in its Preliminary Response. At this preliminary stage and on this record, we adopt Petitioner's articulation of the level of ordinary skill in the art, apart from the phrase "at least" modifying the number of years of professional

experience. Inclusion of such qualifiers renders the articulation vague by being open-ended thus encompassing the level of experience of an expert, someone with more than ordinary skill in the art. Petitioner's articulation otherwise appears consistent with the level of skill in the art at the time of the invention as reflected in the asserted prior art.

B. Claim Construction

We construe claims using the principles set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–17 (Fed. Cir. 2005) (*en banc*) and related cases. *See* 37 C.F.R. § 42.100(b). Under that precedent, the words of a claim are generally given their "ordinary and customary meaning," which is the meaning the term would have to a person of ordinary skill at the time of the invention, in the context of the entire patent including the specification. *Phillips*, 415 F.3d at 1312–13.

Neither party proposes any express claim constructions. Pet. 4; *see generally* Prelim. Resp. Based on the current record and without any opposition from Patent Owner, we see no need for express construction of any term at this stage of the proceeding. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) ("The Board is required to construe 'only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

C. Ground 1

Petitioner alleges claims 1–26 of the '602 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over RFC 3209 and Raz. Pet. 15–53. Petitioner provides a claim-by-claim, limitation-by-limitation comparison of each of the challenged claims to specific teachings of RFC 3209 and Raz,

with citations to testimony from Dr. Min as additional supporting evidence. *Id.*

Patent Owner argues that "[t]he Petition concedes that none of [the asserted] references discloses the invention claimed in the '602 Patent in its entirety by conceding that none of the references anticipates any of the claims." Prelim. Resp. 2. Patent Owner, however, does not address or rebut Petitioner's arguments with respect to any specific limitations of any of claims 1–26 or address the combined teachings of RFC 3209 and Raz.

We begin our analysis with a brief overview of each of the cited references, followed by a discussion of the alleged motivation to combine the references, before addressing Petitioner's contentions with respect to the challenged claims.

1. *RFC 3209*

RFC 3209 describes the use of RSVP and necessary extensions to establish LSPs in MPLS. Ex. 1010, 1. RFC 3209 explains that because "the flow along an LSP is completely identified by the label applied at the ingress node of the path, these paths may be treated as tunnels." *Id.* According to RFC 3209, "several additional objects that extend RSVP" are proposed, "allowing the establishment of explicitly routed label switched paths using RSVP as a signaling protocol," resulting in "the instantiation of label-switched tunnels which can be automatically routed away from network failures, congestion, and bottlenecks." *Id.*

RFC 3209 discloses that "routers that support both RSVP and Multi-Protocol Label Switching can associate labels with RSVP flows." Ex. 1010, 4. According to RFC 3209, "[w]hen MPLS and RSVP are combined, the definition of a flow can be made more flexible, and "[o]nce a label switched path (LSP) is established, the traffic through the path is defined by the label

applied at the ingress node of the LSP." *Id.* Further, "[t]he set of packets that are assigned the same label value by a specific node are said to belong to the same forwarding equivalence class (FEC) . . . , and effectively define the 'RSVP flow.'" *Id.* at 4–5. When traffic is mapped onto a LSP in this way, RFC 3209 explains, the LSP is referred to as an "LSP Tunnel." *Id.* at 5. RFC 3209 explains that "[w]hen labels are associated with traffic flows, it becomes possible for a router to identify the appropriate reservation state for a packet based on the packet's label value." *Id.* According to RFC 3209, "[a]n advantage of using RSVP to establish tunnels is that it enables the allocation of resources along the path." *Id.* at 6. Nonetheless, RFC 3209 explains, resource reservations are not mandatory, and "an LSP can be instantiated without any resource reservations whatsoever." *Id.* "Such LSPs without resource reservations can be used, for example, to carry best effort traffic" and "in many other contexts, including implementation of fall-back and recovery policies under fault conditions, and so forth." *Id.*

2. *Raz*

Raz, titled "Link Multiplexing Mechanism Utilizing Path Oriented Forwarding," describes a "subport forwarding and provisioning mechanism whereby a plurality of subports implemented using slower speed processors are used to perform the packet processing for a higher speed packet stream" in a label switching network. Ex. 1006, codes (54), (57), 2:41–43. "Outbound packets are assigned a subport based on their MPLS labels" and then forwarded to a particular subport. *Id.* at code (57).

Figure 1 of Raz is reproduced below.

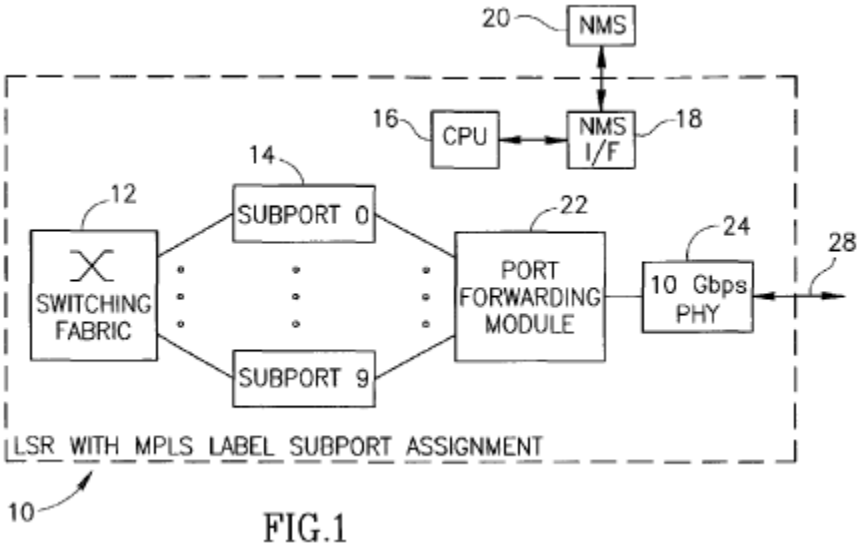

FIG.1

Figure 1, above, is a diagram illustrating an example LSR 10 having a label-based subport assignment constructed in accordance with an embodiment of Raz's invention. Ex. 1006, 4:8–10, 6:65–7:6. According to Raz, illustrated LSR 10 includes a 10G interface that is composed of ten individual 1G packet streams, each handled by one of ten subports 14. *Id.* at 6:67–7:10. Raz explains that the assignment of traffic to the 1G subports is based on LSPs, where CPU 16 in LSR 10 performs "conventional LSR functionality including the provisioning of LSPs." *Id.* at 7:17–18, 7:65–66. "In particular, the CPU functions to perform the assignment of supports to LSPs in response to LSP setup requests." *Id.* at 7:66–8:1. An MPLS label is used in order to assign an incoming packet to one of the subports, and the selected subport is the same for both sides of a 10G link, although the subport may be different in the next link in the path because the next link may have other connections in addition to the 10G link and therefore it may be the case that a different subport is the only subport (or the subport best suited) that can accept the LSP with the required bandwidth. *Id.* at 7:18–26.

Once a subpart is assigned, a label is generated so as to indicate the subport assignment, and the label is then sent to the requesting node or to a management entity to complete the LSP setup process. *Id.* at 8:4–7.

3. *Motivation to Combine RFC 3209 and Raz*

Citing the testimony of Dr. Min, Petitioner argues that a person of ordinary skill in the art would have been motivated to apply various techniques and implementation details disclosed in Raz to the MPLS network described in RFC 3209 at least because (1) both references deal with the same purposes of preserving resources for setting up an LSP and ensuring appropriate allocation of bandwidth to the path, as well as assisting the reroute of the path in the event of a failure, and (2) both references teach the same solution—using well-known label signaling protocols to perform downstream-on-demand label allocation after the downstream, intermediate node along the requested path assigns an interface (port) to the LSP. Pet. 9 (citing Ex. 1003 ¶¶ 84–91). More particularly, Petitioner contends, "[b]oth RFC 3209 and Raz are directed to a system for setup and use of label-switched paths as network tunnels in an MPLS network," and "[b]oth RFC 3209 and Raz discuss the advantages of using traffic engineering applications of the underlying MPLS and label signaling in order to 'allow the implementation of a variety of policies related to network performance optimization. . . .'" *Id.* at 9–10 (citing Ex. 1006, 1:22–25, 1:56–60, 2:41–43, 8:1–5, 11:3–12; Ex. 1010, Abstract, § 1.1). In addition to being directed to the same problem and using the same solution, Petitioner contends, RFC 3209 and Raz "analogously describe devices assigning network components to label-switched paths (LSPs) as network tunnels and allocating MPLS labels to advertise the assigned components." *Id.* at 10.

Petitioner identifies a number of techniques that it contends a person of ordinary skill in the art would have recognized to improve RFC 3209's MPLS network framework. Pet. 11–12 (citing Ex. 1003 ¶ 88; Ex. 1006, 5:20–28, 5:33–62, 7:6–8:5, 8:35–39, 9:41–48, 10:60–12:9, 14:42–44; Ex. 1010 § 4.1). Further, according to Petitioner, "RFC 3209 discloses or renders obvious the assignment of a physical interface to a network tunnel (i.e., a LSP operating as a network tunnel) in an MPLS network by an MPLS switch (i.e., an LSR) operating as the claimed 'first' switch," "where the physical interface is an outgoing interface connecting the LSR with another node on the next hop of the LSP." *Id.* at 12 (citing Ex. 1010 §§ 1.1, 1.2, 2.2, 4.3.4.1). Petitioner argues that applying Raz's technique "would disclose or renders obvious the assignment of a physical Ethernet LAG subport to a network tunnel . . . in an MPLS network by an MPLS/LAG switch (i.e., an LSR) operating as the claimed 'first' switch," "where the subport meets a bandwidth requirement of the network tunnel and has a port serial number." *Id.* (citing Ex. 1006, 7:7–29, 7:65–8:13, 8:22–29). According to Petitioner, a person of ordinary skill in the art "would have understood that RFC 3209's system could have been improved by incorporating these aspects of Raz" to ensure that LSPs, when they are set up, "(1) can pass through aggregated links (such as LAG) and still employ traffic engineering functions of reserving bandwidth of the aggregated link to the LSP, and (2) support traffic engineering so that LSPs can handle high speed packet streams and wide connections." *Id.* at 13 (citing Ex. 1003 ¶ 90).

Still further, Petitioner contends that "[e]ach of the components described by RFC 3209 and Raz would be operating as described in their respective references" and that "the references themselves demonstrate that a

[person of ordinary skill in the art] would have been able to combine the features of the systems and would have expected success in doing so." Pet. 14–15 (citing Ex. 1003 ¶ 91).

4. *Claim 1*

a) *[1.0] A method for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) in a Multi-Protocol Label Switching (MPLS) network, the method comprising the steps of:*

Petitioner relies on RFC 3209 and Raz as disclosing or rendering obvious the preamble of claim 1. Pet. 15–19. First, Petitioner contends RFC 3209 discloses that communication of data packets in an MPLS network using LSPs necessarily involves the use of physical data ports for transmission of packets along the LSP and that a person of ordinary skill in the art would have known not only that physical interfaces (i.e., physical ports) connect nodes in an MPLS network, but also that a packet forwarded from node to node must travel through physical interfaces that connect the nodes. Pet. 15–16 (citing Ex. 1003 ¶¶ 93–94; Ex. 1010 §§ 1, 1.1, 1.2). Further, Petitioner contends, "[i]n addition to the disclosures and suggestions of RFC 3209, Raz discloses implementation of a link aggregation group (LAG) in an MPLS network using Ethernet ports which a [person of ordinary skill in the art] would have understood to implement into the system of RFC 3209." *Id.* at 17 (citing Ex. 1006, 14:42–44). Specifically, Petitioner argues, "Raz discloses the use of link aggregation to transport high speed Ethernet network traffic within an LSR in an MPLS network." *Id.* at 17 (citing Ex. 1006, 2:41-51); *see also id.* at 18 (citing Ex. 1006, 7:7–16, 9:9–12). According to Petitioner, Raz teaches that packets from a high-speed Ethernet data stream are assigned to one of a plurality of subports for transportation through the LSR and then re-aggregated into the high-speed

packet stream before being forwarded to the next node in a network such as the next LSR. Pet. 17–18 (citing Ex. 1006, 2:41–67, 6:34–45, Fig. 1).

Petitioner argues that a person of ordinary skill in the art "would have found it obvious to implement the combination of RFC 3209 and Raz using Ethernet physical data ports of a LAG," as "[t]he concept of using aggregation to communicate individual packets of a high-speed Ethernet packet stream through LAG subports in an LSR, as taught by Raz, also applies to communicating individual packets through interfaces operating as links between LSRs in an MPLS network, as taught by RFC 3209." Pet. 19. Citing the testimony of Dr. Min, Petitioner argues further that a person of ordinary skill in the art "would have found it obvious to apply Raz's teaching of assigning a subport of an Ethernet LAG interface to the outgoing LSR interface which RFC 3209 renders obvious, because Ethernet was in widespread usage as of the priority date for the '602 Patent," and a person of ordinary skill in the art "would have found it desirable to use well-known and commercially accepted Ethernet link aggregation technology in implementing the inter-LSR link techniques in RFC 3209 and Raz." *Id.* (citing Ex. 1003 ¶ 97–99). Noting that "Raz discloses that its invention could be implemented in Ethernet networks and identifies transmission speeds used by Ethernet networks (e.g., 1G and 10G)," Petitioner argues that a person of ordinary skill would have understood that Raz discloses Ethernet subports in an Ethernet LAG. *Id.* (citing Ex. 1003 ¶¶ 84–91, 97–99; Ex. 1006, 1:16–19, 2:28–31, 4:52, 13:16–19, 14:42–44, 15:56–58).

Based on the current record and without any opposition from Patent Owner, we are persuaded that the combined teachings of RFC 3209 and Raz support Petitioner's contentions.

b) *[1.1] assigning, by a first MPLS/LAG switch, a single physical tunnel port of a LAG to a network tunnel, wherein the single physical tunnel port of the LAG meets a bandwidth requirement of the network tunnel, and wherein said single physical tunnel port of the LAG has a port serial number;*

Petitioner relies on RFC 3209 and Raz as disclosing or rendering obvious the "assigning" step of claim 1. Pet. 20–28. First, Petitioner contends, "RFC 3209 discloses or renders obvious the assignment of a physical interface to a network tunnel (i.e., an LSP operating as a network tunnel) in an MPLS network by an MPLS switch (i.e., a node, or LSR) operating as the claimed 'first' switch." *Id.* at 20–23. Petitioner cites RFC 3209 for its express disclosure of establishing LSP tunnels in MPLS. *Id.* at 20 (citing Ex. 1010, Abstract, § 1.1). Regarding "assigning" of tunnels "by a first MPLS/LAG switch," Petitioner argues, *inter alia*, that RFC 3209 discloses the MPLS network tunnels a set up by MPLS switches and that routers that support both RSVP and MPLS can associate labels with RSVP flows. *Id.* (citing Ex. 1010 §§ 1.1, 2.2), *see also id.* at 20–22 (citing Ex. 1003 § 102; Ex. 1010, Abstract, §§ 1.1, 2.2, 4.3.4.1). Petitioner contends that a person of ordinary skill in the art would have understood and found it obvious from this disclosure that "when a given node (i.e., a given LSR, claimed 'first' MPLS switch) assigns the 'next hop' to the requested LSP, this refers to the assignment of the next path segment along the LSP from the given node to an assigned next node" and that "[s]uch an assignment . . . necessarily refers to the assignment of the outgoing physical interface (i.e., a physical port) that connects the given node to the next node in the path." *Id.* at 22 (citing Ex. 1003 ¶¶ 103–105). Further, Petitioner contends, a person of ordinary skill "would have understood that in order to forward a packet, the node must be able to identify the outgoing physical

port/interface that it must use to forward the packet to the packet's 'next hop.'" *Id.* at 22–23 (citing Ex. 1003 ¶¶ 103–105).

Second, Petitioner argues, "[i]n addition to the disclosures and suggestions of RFC 3209, Raz discloses that the particular interface assigned to the network tunnel may be a port . . . of a LAG." Pet. 23. In particular, Petitioner contends, Raz discloses the assignment of one subport of a LAG (i.e., an Ethernet subport) to a network tunnel to communicate individual packets within a high-speed packet stream. *Id.* at 23–24 (citing Ex. 1003 ¶¶ 92–113; Ex. 1006, 4:52, 6:65–67, 7:11–14, 7:17–19, 7:30–38, 7:65–8:13, 8:22–29, 9:4–15, 9:41–48). Further, Petitioner contends, RFC 3209 and Raz render obvious that the assigned port meets a bandwidth requirement, citing, for example, disclosure in RFC 3209 that "bandwidth can be allocated to an LSP tunnel using standard RSVP reservations and Integrated Services service classes," and disclosure in Raz that "the invention comprises an algorithm for allocating subport bandwidth to LSPs" and that each subport is checked to see if the "requested bandwidth" for an LSP is lower than the bandwidth capacity of each subport. *Id.* at 25 (quoting Ex. 1006, 2:23–25; Ex. 1010 § 1.1) (citing Ex. 1003 ¶¶ 109–110; Ex. 1006, 7:7–16, 7:22–26, 11:3–12:9, 14:33–41, 15:47–55, 16:65–17:6, Fig. 5; Ex. 1010 §§ 1.1, 2.2). Moreover, Petitioner contends, RFC 3209 and Raz render obvious that the port has a serial number, as Raz explains, for example, that bits in the MPLS label indicate the subport's serial number. Pet. 26 (citing Ex. 1003 ¶ 111; Ex. 1006, 8:35–39, 9:41–48, Figs. 1, 4). Petitioner further contends that a person of ordinary skill in the art would have been motivated to assign a single physical tunnel port of the MPLS/LAG switch to a network tunnel "in order to provide a tunnel pathway from the switch to the LSP's next hop that

can meet the bandwidth requirements, for example 'in the event a wide connection is to be allocated' for forwarding packets in a high-speed packet stream." *Id.* at 27–28 (citing Ex. 1006, 2:23–25, 7:7–16, 7:22–26, 11:3–12:9, Fig. 5; Ex. 1003 ¶ 112).

Based on the current record and without any opposition from Patent Owner, we are persuaded that the combined teachings of RFC 3209 and Raz support Petitioner's contentions.

> c) *[1.2] dedicating a sub-set of bits in a data packet label prepared by the first MPLS/LAG switch to encode said port serial number of said single physical tunnel port of the LAG into the data packet label;*

Petitioner relies on RFC 3209 and Raz as disclosing or rendering obvious the "dedicating" step of claim 1. Pet. 29–32. First, Petitioner contends, "RFC 3209 discloses or renders obvious the preparation of a data packet label by the LSR having assigned its outgoing interface to the LSP tunnel to encode an identifier for the interface in the data packet label," citing RFC 3209's disclosure of "'instantiation of label-switched tunnels' through the MPLS network," together with its disclosure that "[t]he signaling protocol model uses downstream-on-demand label distribution. . . . [wherein] [l]abels are allocated downstream and distributed . . . by means of the RSVP Resv message." *Id.* at 29 (quoting Ex. 1010, Abstract, § 1.1). Petitioner also points to disclosure in RFC 3209 that

> [t]he destination node of a label-switched path responds to a LABEL_REQUEST by including a LABEL object in its response RSVP Resv message. . . . Each node that receives a Resv message containing a LABEL object uses that label for outgoing traffic associated with this LSP tunnel. If the node is not the sender, it allocates a new label and places that label in the corresponding LABEL object of the Resv message which it sends upstream to the PHOP [previous hop]. The label sent

> upstream in the LABEL object is the label which this node will use to identify incoming traffic associated with this LSP tunnel.

Id. at 29–30 (alterations in original) (emphases omitted) (quoting Ex. 1010 § 2.2). According to Petitioner, with support from Dr. Min, a person of ordinary skill in the art would have understood from RFC 3209 that the disclosed label "must contain information sufficient for the node to identify the pre-assigned next hop and corresponding outgoing interface," i.e., "the physical tunnel port which was assigned in Element [1.1]." *Id.* at 30–31 (citing Ex. 1003 ¶¶ 114–115; Ex. 1010 § 2.1).

Second, Petitioner contends that, "[t]o the extent not disclosed or rendered obvious by RFC 3209, Raz discloses that its data packet label has dedicated a subset of bits to encode the subport serial number of a physical subport of the LAG into the label." Pet. 31; Ex. 1003 ¶ 116 . In particular, Petitioner explains,

> For example, LSR C (which corresponds to the claimed "first MPLS/LAG switch" in the following example) dedicates "bits 16 to 13 [to] indicate the subport" (which is subport with serial number 1) of a LAG through which a packet should be sent from LSR B to LSR C in Figure 3 of Raz: "Consider an LSP to be setup through LSR A to LSR C. When the LSP is signaled, the CAC in LSR C decides to provision the LSP on subport 1 and therefore assigns the label 0x22003. With reference to [Figure 4], each label 140 comprises 20 bits or 5 nibbles where the first three bits indicate 1 of 8 line interface cards, bits 16 to 13 indicate the subport and bits 12 to 0 indicate the actual label. In this example, the label 0x22003 indicates line interface card 1, subport 1 and label 3."

Pet. 31 (alterations in original) (emphases omitted) (quoting Ex. 1006, 9:41–58; citing Ex. 1006, Figs. 3, 4). According to Petitioner, supported by the testimony of Dr. Min (Ex. 1003 ¶ 116), a person of ordinary skill in the art

"would have understood that the inclusion of the bits in a data packet label by the LSR to indicate the subport through which a packet should be sent constitutes encoding the subport serial number into the label." *Id.* In particular, Petitioner argues, "[a]s discussed above for Element [1.1], a serial number is a numerical identifier for the subport, and the series of bits in the label is a serial number that is encoded because it has been put into the label in a format in which it can be used to identify the subport." *Id.* at 31–32 (citing Ex. 1003 ¶¶ 84–91, 100–118).

Based on the current record and without any opposition from Patent Owner, we are persuaded that the combined teachings of RFC 3209 and Raz support Petitioner's contentions.

d) [1.3] sending, by said first MPLS/LAG switch, the data packet label, in which said port serial number of said single physical tunnel port is encoded, to a preceding node;

For the "sending" step of claim 1, Petitioner contends that "RFC 3209 discloses that the MPLS node (i.e., the LSR which corresponds to the claimed 'first MPLS/LAG switch') responsible for label creation sends the label that it allocated upstream to a preceding node" and that, "[a]s discussed above for Element [1.2], the serial number for the physical tunnel subport is encoded within the data packet label as taught by Raz." Pet. 32 (citing Ex. 1010 §§ 1.1, 4.1.1.1; Ex. 1003 ¶¶ 114–123).

Based on the current record and without any opposition from Patent Owner, we are persuaded that the combined teachings of RFC 3209 and Raz support Petitioner's contentions.

e) [1.4] receiving from the preceding node, by said first MPLS/LAG switch, a data packet comprising said data packet label, in which said port serial number of said single physical tunnel port is encoded; and

Petitioner contends that the combination of RFC 3209 and Raz renders the "receiving" step of claim 1 obvious. Pet. 33 (citing Ex. 1003 ¶¶ 124–128). More particularly, Petitioner contends that "[t]he combination of RFC 3209 and Raz involves receiving from the preceding node, by the LSR, a data packet comprising said data packet label," citing, for example, disclosure in RFC 3209 of data packets arriving from the previous hop of the LSP tunnel with the label value assigned by the LSR. *Id.* at 32–33 (citing Ex. 1010 §§ 2.1, 2.2). Further, Petitioner contends, "[a]s discussed above for Element [1.2], the serial number for the physical tunnel subport is encoded within the data packet label as taught by Raz." *Id.* at 33 (citing Ex. 1003 ¶¶ 114–118). Petitioner also contends that Raz's technique is similar, "insofar as the LSR receives a packet from a previous node in the LSP, wherein the packet has a data packet label indicating the physical tunnel subport over which the packet should be communicated." *Id.* (citing Ex. 1006, 7:39–45, 9:29–58, Figs. 3, 4).

Based on the current record and without any opposition from Patent Owner, we are persuaded that the combined teachings of RFC 3209 and Raz support Petitioner's contentions.

f) [1.5] sending said data packet from said first MPLS/LAG switch to a second MSPLS/LAG switch via said single physical tunnel port having the port serial number encoded in the data packet label.

Petitioner contends that RFC 3209 discloses or renders obvious sending a data packet from the LSR (i.e., the "first MPLS/LAG switch" of claim 1), to a second LSR via the outgoing interface that was assigned by the

LSR in element [1.1] (i.e., the "single physical tunnel port" of claim 1). Pet. 34. In particular, referring back to its arguments with respect to element [1.1] and with support from Dr. Min's testimony, Petitioner argues that "RFC 3209 discloses that each intermediate node (LSR, or MPLS switch) assigns the 'next hop' of a LSP tunnel during LSP setup," and that a person of ordinary skill in the art "would have found it obvious that this assignment includes the assignment of the LSR's outgoing interface (i.e., claimed 'physical tunnel port') which connects the LSR to the next LSR in the LSP." *Id.* (citing Ex. 1003 ¶¶ 100–113); *see also id.* at 21–22 (citing Ex. 1010 §§ 1.1, 2.2; Ex. 1003 ¶¶ 103–105).

Petitioner argues that the assignment of a subport of a LAG to a network tunnel is further disclosed or rendered obvious by Raz. Pet. 34. According to Petitioner, with citations to Dr. Min's testimony, the combined teachings of RFC 3209 and Raz "would lead a person of ordinary skill in the art to implement Raz's LAG subport assignment disclosure to the LSR's outgoing interface which connects an LSR to another LSR, as taught or suggested by RFC 3209." Pet. 34 (citing Ex. 1003 ¶¶ 92–113). Thus, according to Petitioner, it would have been obvious to a person of ordinary skill in the art, given the teachings of RFC 3209 and Raz, "for an LSR (i.e., claimed 'first MPLS/LAG switch') to assign to an LSP tunnel (claimed 'network tunnel') an outgoing interface (i.e., claimed 'physical tunnel port') which is specifically a subport of a LAG (i.e., claimed 'single physical tunnel port of a LAG') connecting the LSR to another LSR." *Id.* (citing Ex. 1003 ¶¶ 129–130); *see also id.* at 34–35 ("In view of the foregoing, RFC 3209 discloses forwarding a data packet received from the preceding node to another node (i.e., the LSR connected to it and the claimed 'second' MPLS

switch) via said previously assigned outgoing interface (i.e., said previously assigned LAG subport which is the claimed 'physical tunnel port')."), 35 (citing Ex. 1003 ¶¶ 131–132; Ex. 1010 §§1.2, 4.1.1.1).

Finally, Petitioner contends that, given the teachings of Raz, a person of ordinary skill in the art "would have understood that the data packet received from the previous LSR would be sent to another LSR, (which corresponds to the claimed second MPLS/LAG [sic] switch) *via* the physical tunnel subport having the port serial number encoded in the data packet label." *Id.* at 36 (citing Ex. 1003 ¶¶ 84–91, 129–134; Ex. 1006, 7:17–29, 9:29–58, 14:23–26 (claim 1), Figs. 3, 4).

Based on the current record and without any opposition from Patent Owner, we are persuaded that the combined teachings of RFC 3209 and Raz support Petitioner's contentions.

5. *Claims 2–26*

Petitioner additionally presents contentions for claims 2–26. As noted above, although Patent Owner argues that "[t]he Petition concedes that none of [the asserted] references discloses the invention claimed in the '602 Patent in its entirety by conceding that none of the references anticipates any of the claims" (Prelim. Resp. 2), Patent Owner does not address or rebut Petitioner's arguments with respect to any specific limitations of any of claims 1–26 or address the combined teachings of RFC 3209 and Raz.

Based on the current record and without any opposition from Patent Owner, we are persuaded that the combined teachings of RFC 3209 and Raz support Petitioner's contentions.

6. *Conclusion Regarding Ground 1*

Based on the current record, we preliminarily determine that Petitioner has shown a reasonable likelihood that it will prevail in its challenge to claims 1–26 as unpatentable in view of RFC 3209 and Raz.

D. Ground 2

Petitioner alleges claims 1–26 of the '602 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over RFC 3209, Raz, and Ferguson. Pet. 53–60.

1. *Ferguson*

Ferguson, titled "Distribution of Label Switched Packets," describes "techniques for distributing label switched packets, such as multiprotocol label switched (MPLS) packets, associated with a common label switched path (LSP)." Ex. 1007, codes (54), (57), 1:57–60. "The techniques may, for example, be used to load balance label switched packets of an LSP across an aggregated link having two or more logically associated physical interconnects." *Id.* at 1:60–63. "In addition, the techniques may be used to distribute label switched packets of a common LSP across multiple data paths within a network device, such as a router." *Id.* at 1:63–66.

2. *Motivation to Combine RFC 3209, Raz, and Ferguson*

According to Petitioner, among other reasons for combining the teachings of RFC 3209, Raz, and Ferguson, "each of RFC 3209, Raz, and Ferguson are directed to solving the problem of ensuring enough bandwidth is available to communicate high-speed packet streams through an MPLS network." Pet. 54–55 (citing Ex. 1010 §§ 1.1, 2.2; Ex. 1006, 10:60–11:12, 14:33–41, 15:47–55, Fig. 5; Ex. 1007, 1:28–42, 2:54–57, 4:55–60; Ex. 1003 ¶ 244); *see id.* at 53–56. Further, Petitioner contends a person of ordinary skill "would have understood from the disclosures in Ferguson that

techniques for utilizing an Ethernet physical data port in a LAG to communicate data packets between routers or switches in an MPLS network are also applicable to the use of subports transmitting the data packets within the routers or switches, and vice versa." Pet. 55–56 (citing Ex. 1003 ¶ 246; Ex. 1007, 5:61–6:6).

3. *Discussion*

Petitioner principally relies on its arguments with respect to the ground based on RFC 3209 and Raz, discussed in Section IV.C. above, but additionally cites Ferguson with respect to independent claims 1, 15, and 26 as, *inter alia*, "build[ing] on the previous analysis of Raz by disclosing a system for communicating packets between switches and routers in an MPLS network." Pet. 56 (citing Ex. 1003 ¶¶ 249–250); *see id.* at 56–60. Petitioner also cites Ferguson as teaching the limitations of dependent claims 14 and 25, citing Ferguson's teachings that link aggregation refers to a technique by which multiple physical interconnects are logically associated and treated as a single, aggregated link. Pet. 60 (citing Ex. 1007, 1:28–30, 1:60–63, 2:44–47, 3:42–44, 4:1–7; Ex. 1003 ¶¶ 243–246, 277–280, 312, 313).

Patent Owner does not address or rebut Petitioner's arguments with respect to any specific limitations of any of claims 1–26 or address the combined teachings of RFC 3209, Raz, and Ferguson.

Based on the current record and without any opposition from Patent Owner, we are persuaded that the combined teachings of RFC 3209, Raz, and Ferguson support Petitioner's contentions and we preliminarily determine that Petitioner has shown a reasonable likelihood that it will prevail in its challenge to claims 1–26 as unpatentable in view of RFC 3209, Raz, and Ferguson.

V. CONCLUSION

For the reasons set forth above, we determine that Petitioner has demonstrated a reasonable likelihood that it will prevail with respect to at least one of claims 1–26 of the '602 patent. Accordingly, we institute an *inter partes* review on all claims and all grounds raised in the Petition. *See SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018); *see also* 37 C.F.R. § 42.108(a) ("When instituting . . . review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim."); *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1359–60 (Fed. Cir. 2018) (interpreting the relevant statutory provisions, in light of *SAS*, to require "a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition").

VI. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), *inter partes* review is instituted as to claims 1–26 of the '602 patent on each of the grounds set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of the '602 patent shall commence on the entry date of this Decision, and notice is hereby given of the institution of a trial.

FOR PETITIONER:

Eliot D. Williams
Kurt Pankratz
Jeremy J. Taylor
BAKER BOTTS L.L.P.
eliot.williams@bakerbotts.com
kurt.pankratz@bakerbotts.com
jeremy.taylor@bakerbotts.com

FOR PATENT OWNER:

James R. Nuttall
Katherine D. Cappaert
Christopher A. Suarez
Benjamin R. Holt
Heather P. Hildreth
STEPTOE & JOHNSON LLP
jnuttall@steptoe.com
kcappaert@steptoe.com
csuarez@steptoe.com
bholt@steptoe.com
hhildreth@steptoe.com