

Filed on Behalf of: Arista Networks, Inc.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ARISTA NETWORKS, INC.,

Petitioner,

- vs. -

CORRIGENT CORPORATION,

Patent Owner.

IPR2023-00839

U.S. Patent No. 9,118,602

**PETITIONER'S NOTICE OF APPEAL
OF FINAL WRITTEN DECISION**

via PTAB P-TACTS
Patent Trial and Appeal Board

via email to efileSO@uspto.gov
Director of the United States Patent and Trademark Office
c/o Office of the Solicitor

via CM/ECF
United States Court of Appeals for the Federal Circuit

Notice is hereby given, pursuant to 37 C.F.R. § 90.2(a), that Petitioner Arista Networks, Inc. (“Petitioner”) appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision of the Patent Trial and Appeals Board in Case No. IPR2023-00839, dated December 3, 2024 (Paper 34), attached as **Exhibit A**. In accordance with 37 C.F.R. § 90.2(a)(3)(ii), Petitioner indicates that the issues on appeal include, but are not limited to, the following:

1. Whether the PTAB erred in finding that Petitioner has not shown by a preponderance of the evidence that claims 1-26 of U.S. 9,118,602 (“the ’602 Patent”) are unpatentable under 35 U.S.C. § 103 in view of RFC 3209 over Raz (U.S. Patent No. 7,466,697);
2. Whether the PTAB erred in finding that Petitioner has not shown by a preponderance of the evidence that claims 1-26 of the ’602 Patent are unpatentable under 35 U.S.C. § 103 in view of RFC 3209 over Raz and Ferguson (U.S. Patent No. 7,277,386);
3. Whether the PTAB erred in its interpretation of Link Aggregation Group as claimed in the ’602 Patent;
4. Whether the PTAB erred by failing to adequately address the arguments made by Petitioner;

5. Whether the PTAB erred by failing to adequately consider evidence presented by Petitioner;
6. Whether the PTAB erred by failing to adequately address Petitioner's motivation to combine RFC 3209 with Raz, and motivation to combine RFC 3209 with Raz and Ferguson;
7. Whether the PTAB erred by failing to adequately explain its conclusion.

Simultaneous with this submission, copies of this Notice of Appeal are being filed with the Patent Trial and Appeal Board and the Clerk's Office for the United States Court of Appeals for the Federal Circuit along with the required docketing fees, as set forth in the accompanying Certificates of Filing and Service.

Respectfully submitted,

Date: February 4, 2025

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Case No. IPR2023-00839

U.S. Patent 9,118,602

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CERTIFICATE OF FILING

I hereby certify that, in addition to being filed electronically through the Patent Trial and Appeal Board's P-TACTS system, a true and correct copy of the above-captioned **Petitioner's Notice of Appeal of Final Written Decision** is also being filed pursuant to 37 C.F.R. § 90.2(a) with the Director of the United States Patent and Trademark Office, on February 4, 2025, by electronic mail to efileSO@uspto.gov, which is the email address indicated on the United States Patent and Trademark Office's web page for the Office of the General Counsel, <<https://www.uspto.gov/about-us/organizational-offices/office-general-counsel>>.

I also hereby certify that a true and correct copy of the above-captioned **Petitioner's Notice of Appeal of Final Written Decision**, along with the filing fee, is being filed via CM/ECF with the Clerk's Office of the United States Court of Appeals for the Federal Circuit on February 4, 2025.

Dated: Feb. 4, 2025

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CERTIFICATE OF SERVICE

I hereby certify that on this 4th day of February, 2025, **Petitioner's Notice of Appeal of Final Written Decision** was served by email on the following counsel of record for Patent Owner:

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Exhibit A

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*.

JUDGMENT
Final Written Decision
Determining No Challenged Claims Unpatentable
35 U.S.C. § 318(a)

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. We instituted an *inter partes* review of the challenged claims. Paper 9 (“Institution Decision” or “Dec.”).

After institution, Patent Owner filed a Response to the Petition (Paper 19, “PO Resp.”), Petitioner filed a Reply (Paper 23, “Pet. Reply”), and Patent Owner filed a Sur-reply (Paper 25, “PO Sur-reply”). We held an oral hearing on September 4, 2024, and a transcript of the hearing is included in the record. Paper 33 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. Under the applicable evidentiary standard, Petitioner has the burden to prove unpatentability by a preponderance of the evidence. *See* 35 U.S.C. § 316(e) (2018); 37 C.F.R. § 42.1(d) (2024). “Preponderance of the evidence means the greater weight of evidence, evidence which is more convincing than the evidence which is offered in opposition to it.” *United States v. C.H. Robinson Co.*, 760 F.3d 1376, 1383 (Fed. Cir. 2014) (internal quotations omitted). This Final Written Decision as to the patentability of the claims on which we instituted trial is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

For the reasons discussed below, we determine Petitioner has not established by a preponderance of the evidence that any of claims 1–26 of the ’602 patent are unpatentable.

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 12, 2 (Patent Owner’s Updated Mandatory Notices).

B. Related Matters

Both 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.); and *Corrigent Corp. v. Arista Networks, Inc.*, No. 1:22-cv-497 (D. Del.). Pet. 64–65; Paper 12, 2. Petitioner additionally identifies *Corrigent Corp. v. Dell Technologies Inc.*, No. 1:22-cv-00496 (D. Del) as a related matter. Pet. 64.

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

¹ *Inter partes* review was instituted in the Cisco IPR on August 8, 2023. IPR2023-00447, Paper 8. On August 6, 2024, the Board entered a Final Written Decision in the Cisco IPR concluding that claims 1–26 were not proven to be unpatentable on the grounds asserted in that proceeding. IPR2023-00447, Paper 30. Cisco Systems, Inc. has appealed the Final Written Decision in the Cisco IPR to the United States Court of Appeals for the Federal Circuit. IPR2023-00447, Paper 31.

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 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. 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. Asserted Grounds of Unpatentability

Petitioner asserted, and we instituted *inter partes* review on, the following grounds of unpatentability:

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

Pet. 3–4.

In support of its contentions, Petitioner relies on a Declaration of Paul Min, Ph.D. (Ex. 1003) and a Reply Declaration of Paul Min, Ph.D. (Ex. 1034). In opposition, Patent Owner relies on a Declaration of George N. Rouskas, Ph.D. Ex. 2007.

III. 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

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).

to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)).

A patent claim is unpatentable under 35 U.S.C. § 103(a) 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.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of 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 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*, 550 U.S. at 418 (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”)). Where the claimed subject matter involves “more than the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement,” a holding of obviousness *must* be based on “an apparent reason to combine the known elements in the fashion claimed.” *Id.* at 417–18. 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).

A. Level of Ordinary Skill in the Art

The person of ordinary skill in the art is a hypothetical person who knows the relevant art. *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). 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.*

For purposes of its Response, Patent Owner relies on Petitioner’s definition of the person of ordinary skill in the art. PO Resp. 3 (citing Ex. 2007 ¶¶ 21–24).

Consistent with our Institution Decision, 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. *See* Dec. 17–18. As we previously explained, 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. *Id.* at 18. 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; PO Resp. 3. Based on the parties’ arguments, we see no need to expressly construe any terms to resolve the dispute before us. *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. Obviousness over RFC 3209 and Raz (Ground 1)

Petitioner alleges claims 1–26 of the ’602 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of RFC 3209 and Raz. *See* Pet. 9–53; Pet. Reply 1–19, 24. Patent Owner opposes. *See* PO Resp. 1–2, 5–51; PO Sur-reply 1–21. After reviewing the entire record developed at trial, we determine that Petitioner has not shown by a preponderance of the evidence that any of the challenged claims would have been obvious over the asserted combination.

We begin our analysis with an overview of RFC 3209 and Raz before addressing the parties' contentions.

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 LSP 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.

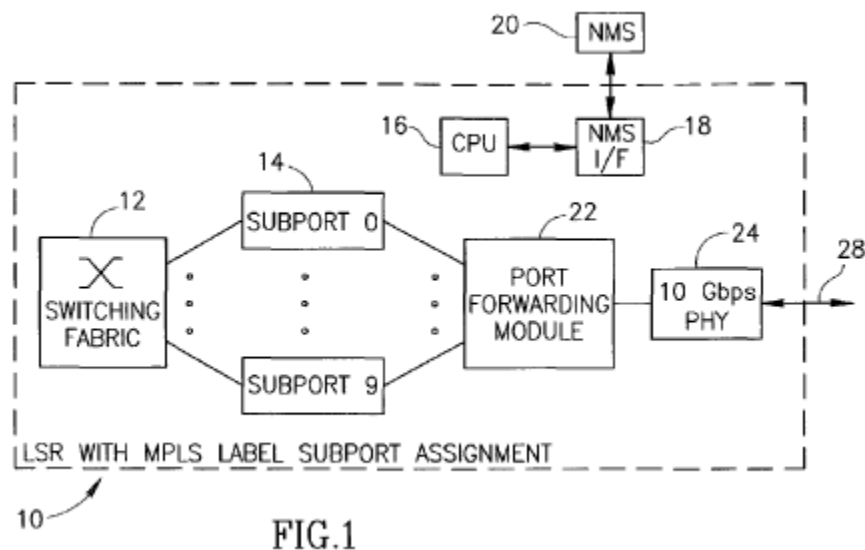


Figure 1, above, is a diagram illustrating an example LSR having a label-based subport assignment constructed in accordance with an embodiment of Raz’s invention. Ex. 1006, 4:8–10, 6:65–7:6. According to

Raz, LSR network device 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 network device 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 subports 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 subport 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.

Figure 3 of Raz is reproduced below.

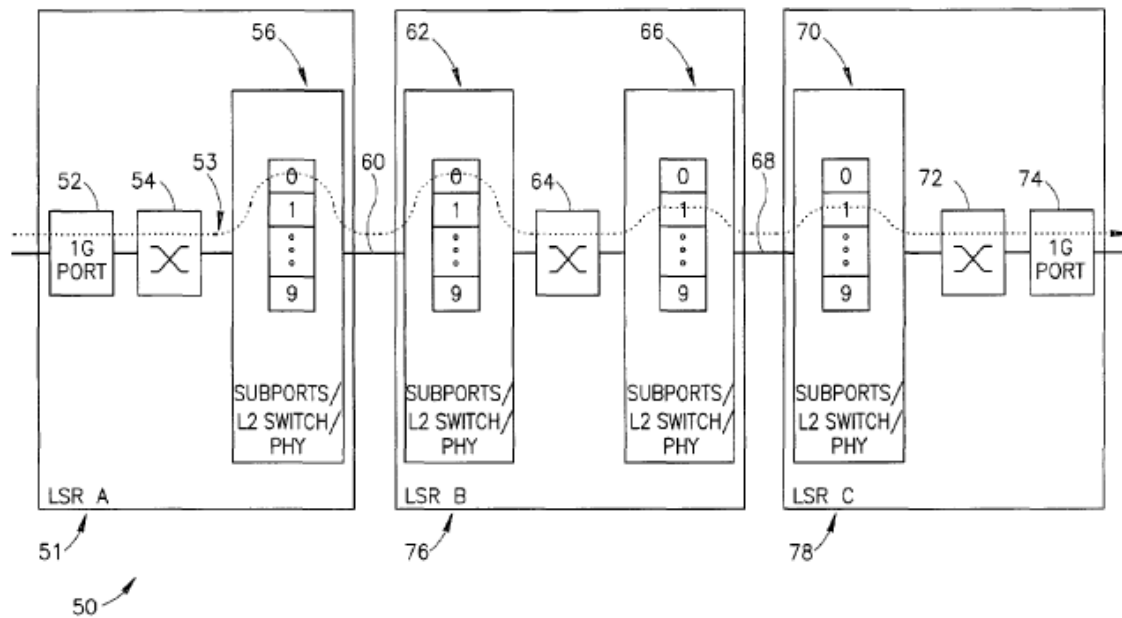


FIG.3

Figure 3, above, depicts “an example network illustrating the subport forwarding and provisioning mechanism of [Raz’s] invention.” Ex. 1006, 4:15–17, 9:29–31. As illustrated, the network includes three LSRs, LSR A, LSR B, and LSR C. *Id.* at 9:31–33. LSR A 51 includes 1G port 52, switching fabric 54, and module 56; LSR B 76 includes modules 62, 66 and switching fabric 64; and LSR C 78 includes module 70, switching fabric 72, and 1G port 74. *Id.* at 9:33–39. Each of modules 56, 62, 66, 70 includes ten subports, a layer 2 (L2) switch, and a 10 GE PHY. *Id.* LSR B 76 is connected to LSR A 51 via 10 GE link 60 (depicted in Figure 3 between module 56 to module 62) and to LSR C 78 via 10 GE link 68 (depicted between modules 66 and module 70). *Id.* at 9:39–40.

3. *Petitioner's Contentions*

- 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 the combined teachings of 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. *Id.* at 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. *Id.* at 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). Alleging that “Raz discloses that its invention could be implemented in Ethernet networks, and [that] it 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).

- 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 switch,” Petitioner argues, *inter alia*, that “RFC 3209 discloses MPLS network tunnels are set up by MPLS switches” and that routers that support both RSVP and MPLS can associate labels with RSVP flows. *Id.* (emphasis omitted) (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 “required 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) (emphasis omitted). 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. *Id.* at 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).

- 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 into 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) (emphasis omitted) (quoting Ex. 1010 § 2.2). According to Petitioner, 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, 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.* (citing Ex. 1003 ¶ 116). 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).

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).

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).

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, the combined teachings of RFC 3209 and Raz

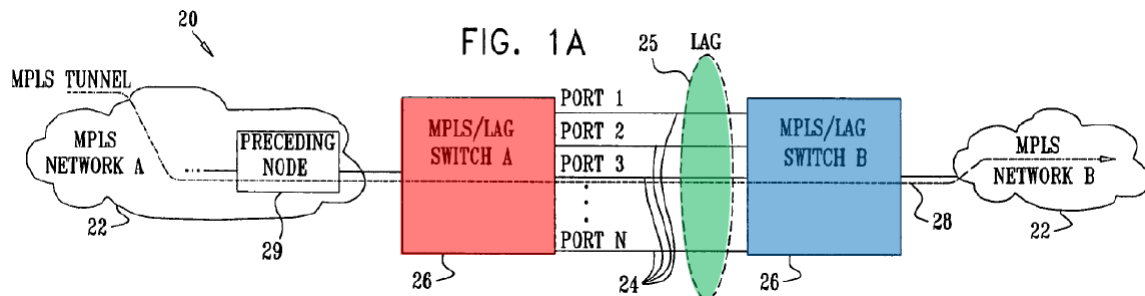
“would lead a [person of ordinary skill in the art] to implement Raz’s LAG subport assignment disclosure to the LSR’s outgoing interface which connects an LSR to another LSR, as taught or suggested by RFC 3209.” *Id.* (citing Ex. 1003 ¶¶ 92–113). Thus, according to Petitioner, it would have been obvious 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.” Pet. 36 (citing Ex. 1003 ¶¶ 84–91, 129–134; Ex. 1006, 7:17–29, 9:29–58, 14:23–26 (claim 1), Figs. 3, 4).

4. *Patent Owner’s Contentions*

In response to Petitioner’s contentions, Patent Owner argues that neither RFC 3209 nor Raz discloses or renders obvious a LAG as recited in claim 1. PO Resp. 5–11. Citing disclosure in the ’602 patent that a LAG

involves a group of “links between two endpoints in a data network” and disclosure in Ferguson that “link aggregation” involves multiple interconnects “between . . . two devices,” Patent Owner argues that “[a] LAG is a group of network connections (or *links*) that are *between* two network components.” *Id.* at 5 (quoting Ex. 1001, 2:1–5) (citing Ex. 2007 ¶ 46), 5 n.3 (quoting Ex. 1007, 1:28–42). In support of its argument, Patent Owner provides the color-coded version of Figure 1A of the ’602 patent reproduced below.



Id. at 6. The color-coded Figure 1A, above, shows MPLS/LAG Switches A and B 26 in red and blue, respectively, and LAG 25 in green. With reference to the color-coded figure, Patent Owner argues that “[t]he annotated version of ’602 patent Figure 1A [above] demonstrates how a LAG (green) is *between* a first MPLS/LAG switch (red) and second MPLS/LAG switch (blue), linking these two network devices together.” *Id.* at 5 (citing Ex. 1001, Fig. 1A, 3:58–4:34; Ex. 2007 ¶ 46). According to Patent Owner, “[u]ltimately, the ’602 patent claims recite a ‘LAG’ connecting a ‘first MPLS/LAG switch’ to a ‘second MPLS/LAG switch’ for sending data packets *between* those two switches ‘via [a] single physical tunnel port’ of the LAG.” *Id.* at 6 (citing Ex. 1001, claims 1, 15, 26; Ex. 2007 ¶¶ 38–41, 44, 46; Ex. 2008, 94:22–24). In contrast, Patent Owner argues, “[n]either

RFC 3209 nor Raz discloses or renders obvious the claimed ‘LAG.’” *Id.* at 6 (citing Ex. 2007 ¶¶ 43–51).

First, Patent Owner contends, “RFC 3209 is the RSVP-TE standard and describes the use of RSVP to establish label-switched paths (LSPs) in Multi-Protocol Label Switching (MPLS)” but “does not disclose or render obvious a LAG.” PO Resp. 6 (citing Ex. 1010, 1; Ex. 2007 ¶ 45); *see also id.* at 11 (“While RFC 3209 is directed to communicating between network devices, it does not include information regarding the links between devices or disclose or render obvious a LAG.”) (citing Ex. 2007 ¶ 53). Indeed, according to Patent Owner, “Petitioner acknowledges this by not relying on RFC 3209 for the claimed ‘LAG’ and instead relying entirely on Raz for this claim element.” *Id.* (citing Pet. 11–13, 17–19, 23–24, 26–28, 31, 34–36, 50–53; Ex. 1003 ¶¶ 92–99; Ex. 2007 ¶ 45; Ex. 2013, 11:2–7, 18:1–14, 18:18–19:5).

Second, Patent Owner continues, “Raz [also] does not disclose or render obvious the claimed ‘LAG.’” *Id.* (citing Ex. 2007 ¶¶ 45–51). Rather, Patent Owner argues, “Raz is directed to using multiple slow-speed *processors*—i.e., ‘subports’—*within* a network device such as an LSR for processing a *single* high-speed stream between LSRs.” *Id.* at 7 (citing Ex. 1006, code (57), 1:40–2:8, 6:24–33, 6:51–54, Figs. 1–3; Ex. 2007 ¶ 47). Thus, according to Patent Owner, “Raz describes its subports as internal network *processors*, not *links* between two endpoints of a network” and “discloses single links, not LAGs” “[f]or links between network devices.” *Id.* (citing Ex. 1006, code (57), 1:40–59, 2:1–2, 2:5–6, 6:25–29, 6:34–38, 6:67–7:5, 7:17–26, 7:39–45, 7:59–64, 8:33–39, 8:46–53, 9:39–40, 10:22–23,

12:66–13:5, Figs. 1–3, 6; Ex. 2007 ¶¶ 46–48). To illustrate, Patent Owner provides the following annotated version of Raz’s Figure 1:

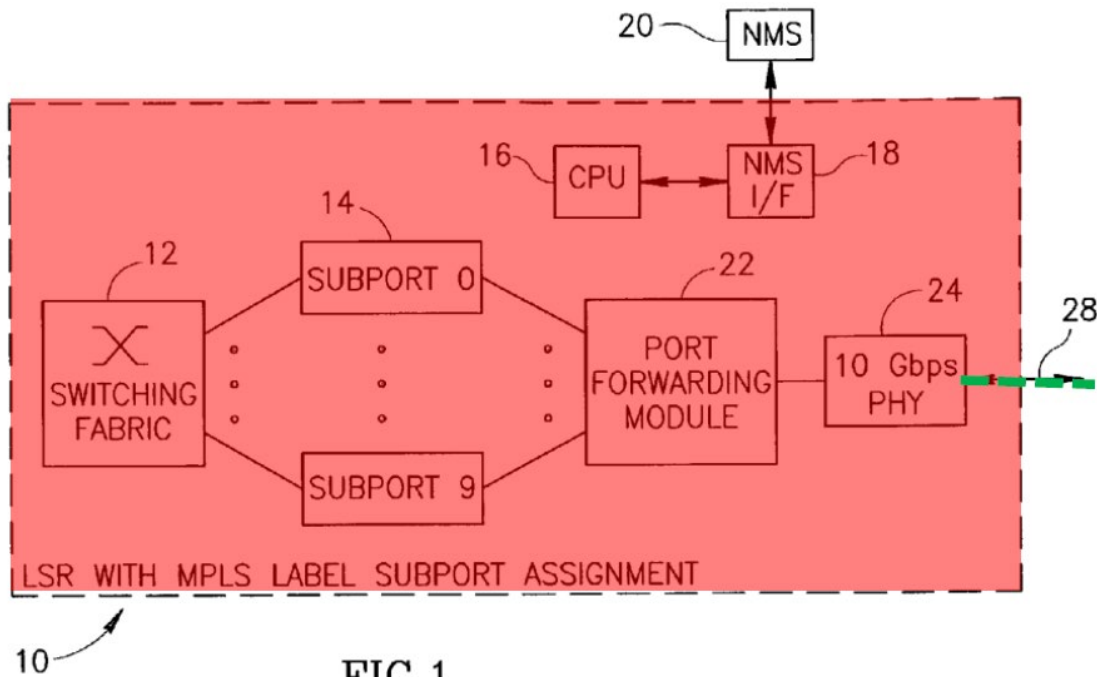


FIG.1

Id. at 8. The annotated Figure 1, above, shows LSR network device 10 in red and link 28 coupled to 10 Gbps PHY 24 of device 10 in green. With reference to the annotated figure, Patent Owner argues “Raz’s Figure 1 . . . shows LSRs connected via a **single** high-speed (10G) link 28 (green) and depicts using a plurality of slow-speed (1G) subports 14 **within** an LSR (red) for processing data received or sent via the single high-speed link 28.” *Id.* at 7–8 (citing Ex. 1006, 6:65–7:10, 7:59–64, Fig. 1; Ex. 2007 ¶ 48; Ex. 2008, 32:14–20, 55:5–23; Ex. 2013, 22:8–23:10).

Patent Owner also refers to Figure 3 of Raz, reproduced for reference below, in support of its arguments.

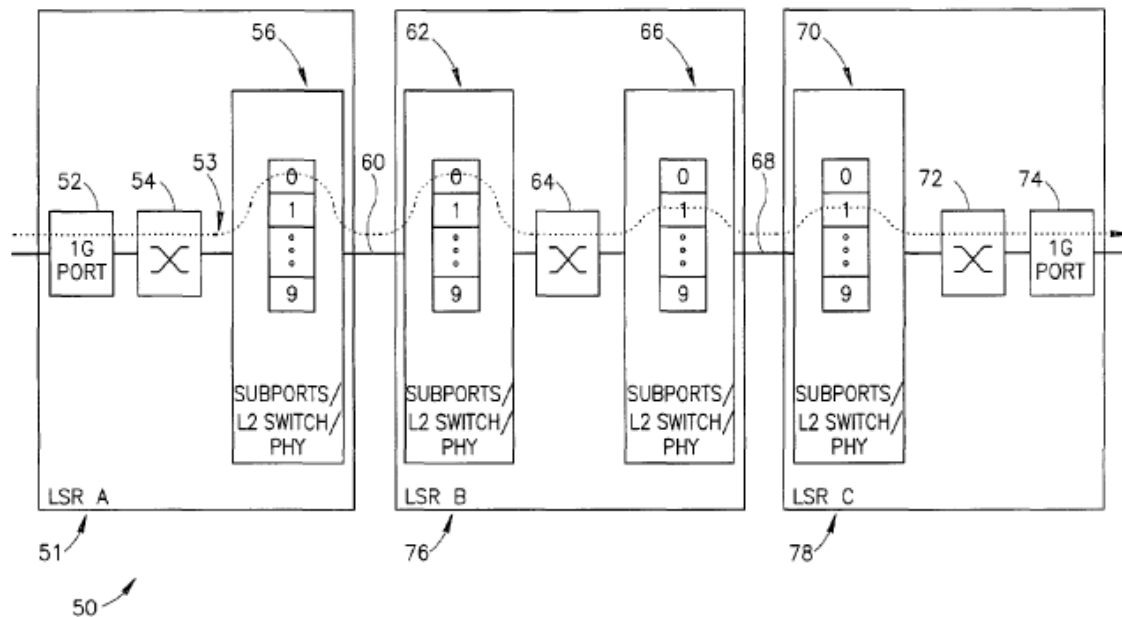


FIG.3

As previously explained in the overview of Raz (*see supra* Section III.C.2), Figure 3, above, depicts “an example network illustrating the subport forwarding and provisioning mechanism of [Raz’s] invention” and including three LSRs, where LSR B is connected to LSR A via link 60 and to LSR C via link 68. Ex. 1006, 4:15–17, 9:29–40. Patent Owner argues, “Raz’s Figure 3 similarly shows pairs of LSRs each connected via a single high-speed (10G) link (60, 68), where the LSRs on each side of the high-speed links contain within them multiple subports to process data that is received or sent via the high-speed links.” PO Resp. 8 (citing Ex. 1006, 9:29–40, Fig. 3; Ex. 2007 ¶ 48; Ex. 2008, 52:13–53:13; Ex. 2013, 34:22–35:12). Indeed, Patent Owner contends, “both Petitioner and its expert concede that Raz’s subports are ‘within’ an LSR.” *Id.* (citing Pet. 6,

17–18, 27, 54–56; Ex. 1003 ¶ 96; Ex. 2007 ¶ 47; Ex. 2013, 22:8–23:10, 28:12–29:3, 34:22–35:12, 37:9–38:3). Therefore, Patent Owner argues, “while Petitioner points to Raz’s multiple subports as disclosing the claimed LAG, Raz’s subports are *processors* strictly *within* a single LSR and thus do not constitute or suggest a group of *links between* two LSRs (i.e., a LAG).” *Id.* at 9 (citing Ex. 2007 ¶¶ 45–48).

Patent Owner further contends that “[a] LAG also requires aggregation,” pointing out that, under the IEEE 802.3ad link standard (Ex. 2012) referenced by the ’602 patent, “Link Aggregation allows one or more links to be aggregated together to form a [LAG], such that a MAC Client can treat the [LAG] as if it were a single link.” PO Resp. 9 (alterations in original) (quoting Ex. 2012, Abstract) (citing Ex. 1001, 2:1–17, 3:64–4:1; Ex. 1007, 1:28–32; Ex. 2007 ¶ 49). In other words, Patent Owner argues, “a LAG (known as inverse multiplexing) is an aggregation of multiple parallel links, so that packets from a high-speed streams can be spread across multiple low-speed links for transmission,” in contrast with Raz, which instead “says to ‘aggregate’ the *output* of its multiple subports into a single high-speed packet stream.” *Id.* at 9–10 (citing Ex. 1001, 2:1–5; Ex. 1006, code (57), 2:11–13, 2:47–48, 2:63–64, 6:24–27, 6:36–38, 14:19–22, Figs. 1, 3, 6; Ex. 1007, 1:28–42; Ex. 2007 ¶ 49; Ex. 2008, 14:1–2, 60:5–20, 99:8–23; Ex. 2009, Abstract, 473; Ex. 2010, 42–43, Fig. 2; Ex. 2011; Ex. 2013, 40:13–18). According to Patent Owner, a person of ordinary skill in the art would accordingly have understood Raz “to disclose multiplexing—i.e., an operation where multiple low-speed streams are combined for transmission over a single high-speed link—which is the opposite of inverse multiplexing, such as the claimed LAG.” *Id.* at 10 (citing Ex. 1006, code (54), code (57),

1:1–8, 1:65–66, 6:24–27, 6:36–38, 14:19–22; Ex. 2007 ¶ 49; Ex. 2009, Abstract, 473; Ex. 2010, 43, Figs. 1, 2; Ex. 2011. Indeed, Patent Owner argues, “[t]he IEEE 802.3ad LAG standard also reinforces that a LAG involves links *between* network devices and is different from, and unrelated to, internal device components like Raz’s subports.” *Id.* at 9 n.4 (citing Ex. 2007 ¶ 49 n.3).

Further according to Patent Owner, “because Raz is directed to ***multiplexing*** the output of its subports for transmission over a ***single*** link,” a person of ordinary skill in the art would have been discouraged “from using Raz in connection with a LAG—i.e., a form of ***inverse*** multiplexing that uses ***multiple*** parallel links”—in the manner recited in the challenged claims. PO Resp. 10 (citing Ex. 1006, code (54), code (57), 1:1–8, 1:65–66, 2:11–13, 2:47–48, 2:63–64, 6:24–27, 6:36–38, 14:19–22; Ex. 2007 ¶¶ 49, 51; Ex. 2009, Abstract, 473; Ex. 2010, 43, Figs. 1, 2; Ex. 2011). To the extent that Raz references a LAG at all, Patent Owner points out that Raz does so separately from its subports, which, Patent Owner argues, “shows that Raz distinguishes between the two.” *Id.* (citing Ex. 1006, 9:9–15; Ex. 2007 ¶ 50). More specifically, Patent Owner contends, “that portion of Raz teaches how to *repurpose* a commercially[] available LAG-related switch to implement Raz’s subports within an LSR, demonstrating that Raz’s subports are different from a LAG.” *Id.* at 10–11 (citing Ex. 1006, 9:9–15; Ex. 2007 ¶ 50).

According to Patent Owner, “[b]ecause the alleged combination fails to render obvious the claimed ‘LAG,’ the combination therefore fails to render obvious limitations 1.1–1.5, each of which recites the ‘LAG’ or the

claimed ‘single physical tunnel port’ thereof.” PO Resp. 29 (citing Ex. 2007 ¶ 99).

Patent Owner also argues, more specifically, that the combination of RFC 3209 and Raz fails to render obvious each of those limitations individually. PO Resp. 29–46. With respect to limitation 1.1, for example, Patent Owner argues that “[t]he relied-upon teachings in RFC 3209 and Raz are in direct conflict,” and a person of ordinary skill in the art “would not have, and could not have, combined the relied-upon teachings . . . to meet this limitation,” “because RFC 3209 teaches assigning an *external* path for *sending* packets on the next hop but Raz teaches assigning *internal* subports used for *receiving* packets from the previous hop.” *Id.* at 29–30 (citing Pet. 20–28; Ex. 2007 ¶¶ 100–111). Patent Owner points out that whereas “Petitioner relies on RFC 3209’s *explicit routing* as teaching that ‘a given node . . . assigns the “next hop,”’ which is ‘the next path segment . . . from the given node to an assigned next node,’” “Petitioner relies on Raz’s subport provisioning mechanism for teaching that a given LSR (corresponding to the claimed ‘first’ switch) assigns a subport.” *Id.* at 30–31 (citing Pet. 21–24, 27). Patent Owner contends, “Raz’s subport assignment directly contrasts with RFC 3209’s explicit routing because Raz teaches a given LSR assigning *internal* subports used for *receiving* packets by that LSR from the previous hop, not an *external* path for *sending* packets from that LSR to a next hop.” *Id.* at 31 (citing Ex. 1006, 7:26–29 (“[T]he downstream (i.e. receiving) node . . . determines the subport it wants to receive the LSP on.”), 7:30–45, 8:52–55, 9:41–10:4, Figs. 1–3, 6; Ex. 2007 ¶ 104; Ex. 2008, 32:14–20, 33:3–37:24, 49:12–52:23, 44:21–45:5; Ex. 2013, 23:11–22, 24:2–15, 25:9–26:3, 29:4–8, 31:18–22, 32:7–25, 33:13–17, 35:17–

36:11, 38:4–10 (LSR assigns a subport for receiving packets); Ex. 2013, 22:8–23:10, 28:12–29:3, 34:22–35:12, 37:9–38:3 (subport is within an LSR).

Patent Owner illustrates the contrast between RFC 3209 explicit routing and Raz's subport provisioning with the following two annotated versions of Figure 3 of Raz:

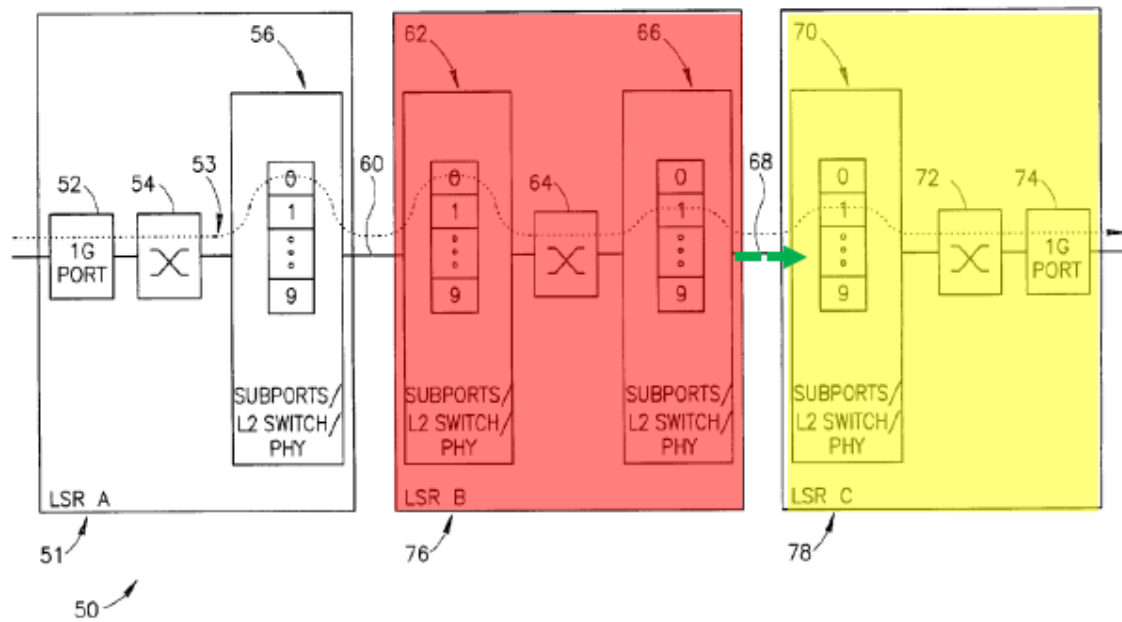


FIG.3

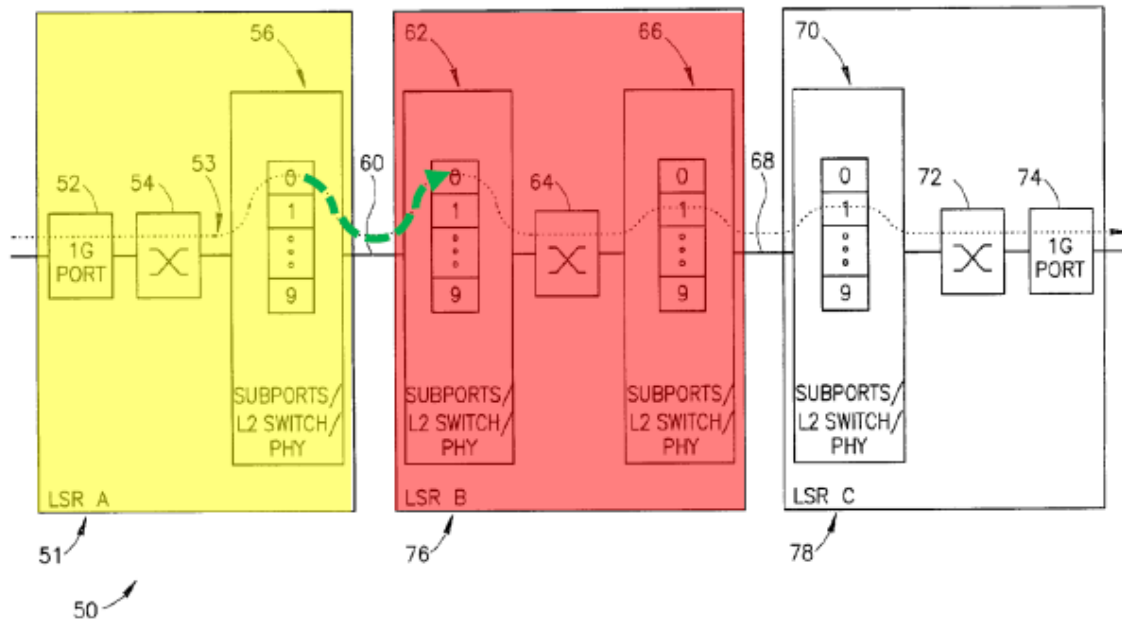


FIG.3

The first annotated Figure 3 reproduced above depicts LSR B 76 in red, LSR C 78 in yellow, and link 68 between LSR B 76 and LSR C 78 in green.

Pet. 31. The second annotated Figure 3 reproduced above depicts LSR A 51 in yellow, LSR B 76 in red, and the portion of provisioned path 53 from module 56 to module 62 in green. *Id.* at 33.

With reference to the first annotated Figure 3, Patent Owner contends that, “[a]ccording to RFC 3209’s explicit routing, LSR B (red) would assign LSR C (yellow), and external link 68 thereto, as the next hop that LSR B would use for **externally sending** packets, as shown by the dashed green line.” PO Resp. 30–31 (citing Ex. 1006, Fig. 3 (annotated); Ex. 1010, 28; Ex. 2007 ¶ 103). Patent Owner contends that the second annotated Figure 3, in contrast, “illustrates Raz’s teaching that LSR B (red) assigns subport 0 for **internally** processing data packets **received** by LSR B from LSR A (yellow) (i.e., the previous hop), as shown by the dashed green line.” *Id.* at 32 (citing Ex. 1006, 9:51–65, Fig. 3; Ex. 2007 ¶ 105). “In contrast to RFC 3209’s

explicit routing, LSR B does not use its assigned subport 0 to *externally send* data packets downstream to LSR C (i.e., the next hop), because LSR C independently selects which subport is used for data sent from LSR B to LSR C.” *Id.* at 32–33 (citing Ex.1006, 2:18–20, 6:43–45 9:29–10:4, Fig. 3 (annotated); Ex. 2007 ¶ 105; Ex. 2008, 49:12–53:13; Ex. 2013, 31:18–22, 32:7–25, 33:13–23). Therefore, Patent Owner concludes, “RFC 3209’s explicit routing and Raz’s subport provisioning work in opposite ways and are incompatible.” *Id.* at 33 (citing Ex. 2007 ¶¶ 102–107).

5. Discussion

Having considered the parties respective arguments, we agree with Patent Owner that Petitioner has not shown by a preponderance of the evidence that any of the challenged claims are unpatentable over the combination of RFC 3209 and Raz. We agree with Patent Owner that neither RFC 3209 nor Raz teaches or suggests “assigning . . . a single physical tunnel port of a LAG to a network tunnel” and “sending [a] data packet from [a] first MPLS/LAG switch to a second MSPLS/LAG switch via said single physical tunnel port,” as recited in claim 1, or corresponding limitations of independent claims 15 and 26 reciting assigning a single physical tunnel port of a LAG through which a data packet is sent to a second MPLS/LAG switch (*see* Ex. 1001, 10:41–64, 12:4–36), for which Petitioner relies on substantially the same contentions (*see* Pet. 49–53).

As Patent Owner argues, Petitioner does not rely on RFC 3209 as teaching or suggesting a LAG. *See, e.g.*, PO Resp. 6 (“RFC 3209 does not disclose or render obvious a LAG. Petitioner acknowledges this by not relying on RFC 3209 for the claimed ‘LAG’ and instead relying entirely on Raz for this claim element.” (citations omitted)), 11 (“While RFC 3209 is directed to communicating between network devices, it does not include

information regarding the links between devices or disclose or render obvious a LAG. To solve this deficiency, Petitioner asserts that Raz’s internal subports constitute a LAG and that a POSA would have taken Raz’s internal subport provisioning mechanism and used it in RFC 3209” (citations omitted)). Petitioner confirmed this at oral argument. Tr. 11:8–9 (“MR. WILLIAMS: So, RFC 3209 does not teach a LAG. We agree with that.”). And although Petitioner went on to argue that the idea of a LAG would have come from either Raz, the knowledge of a person of skill in the art, or Ferguson (*see id.* at 11:13–20), we are not persuaded by Petitioner’s showing.

First, we agree with Patent Owner that Raz does not teach or suggest use of a LAG for sending packets between MPLS switches but instead discloses only a single link between each pair of switches. *See, e.g.*, Ex. 1006, 9:39–40 (“LSR B is connected to LSR A via 10 GE link 60 and to LSR C via 10 GE link 68.”). Although Raz includes a reference to “commercially available layer 2 switches [that] can determine the destination port for a packet destined to a LAG . . . based on a CRC of the source MAC modulo the number of ports in the LAG” (Ex. 1006, 9:9–12) and states that “[t]his can be used for spreading the packets to the subports by using the layer-2 switch as the port-forwarding module and defining its ports leading to the different subports as a single LAG” (*id.* at 9:12–15), we agree with Patent Owner that “that portion of Raz teaches how to *repurpose* a commercially[] available LAG-related switch to implement Raz’s subports within an LSR, demonstrating that Raz’s subports are different from a LAG” (PO Resp. 10–11 (citing Ex. 1006, 9:9–15; Ex. 2007 ¶ 50)). Notwithstanding Petitioner’s contentions, for example, that “Raz discloses a method of

assigning a LAG subport within an LSR to the network tunnel” and that a person of ordinary skill in the art “would have understood that the same principles would also have been applied to the physical/outgoing interface of the LSR operating as the claimed ‘first’ MPLS switch, as taught by RFC 3209” (Pet. 27), we are not persuaded that Raz provides any teaching or suggestion that would have led a person of ordinary skill in the art to incorporate a LAG between LSRs in a combination of RFC 3209 with Raz.

Second, we also are not persuaded by Petitioner’s assertion at oral argument that “the idea of a LAG” might have come from the knowledge of a person of ordinary skill in the art. Tr. 11:18–20. In support of that argument, Petitioner cited U.S. Patent 8,312,145 B2 to Rabie et al. (“Rabie,” Ex. 1021),⁶ which is cited in the Petition in support of a contention that “[a]t the time of the ’602 Patent’s priority date, a [person of ordinary skill in the art] would have understood that bundled links may connect LSRs together and that an LSP path to be provisioned might involve the choice of one of the component links in the bundle.” Pet. 28 (citing Ex. 1021, code (57), 6:58–63); *see* Tr. 11:16–18, 15:11–15, 16:10–17:2, 18:3–11. In particular, the Petition quotes disclosure in Rabie that a “router” may “typical[ly] . . . include[] a processor, some memory and a number of ports for connecting the links that allow communication between . . . routers,” where “parallel links” connecting routers “may be configured as a bundled link”; and that “[t]raffic engineering and bandwidth management of bundled links may, at times, require the selection of one of a plurality of component links in a

⁶ Petitioner also cited Ferguson in support of its argument; Petitioner’s arguments with respect to Ferguson are addressed in our discussion of Ground 2 in Section III.D. below.

bundled link.” *Id.* (emphasis omitted). In response to Patent Owner’s argument that Rabie is “non-asserted art” and “highlights that neither of the asserted references actually discloses such ‘bundled links,’ or LAG, between two LSRs” (PO Resp. 36 n.12 (emphases omitted)), Petitioner further alleged

Rabie is used to support the motivation to combine, further supporting the motivation to use Raz’s ability to select a particular port of the bundled subports and apply it towards the selection of an externally facing sending port of a LAG. EX1021, Abstract, 6:58–63; EX1003, ¶¶112, 130. PO’s expert also confirms this. EX1036, 17:2–13, 17:18–20 (admitting that LAG was a well-known standard with multiple implementations).

A [person of ordinary skill in the art] at the time would have been aware, as supported by Rabie, that the aggregation or bundling of ports, or links (if PO’s restrictive reading is to be adopted), refers to a LAG and that this aggregation can be performed, according to one implementation, between two LSRs. EX1003, ¶¶112, 130; EX1034, ¶¶19–22. Based upon this additional foundation, the application of Raz’s subport selection and assignment teachings to ports and/or the links connected to those ports would have been obvious, and a [person of ordinary skill in the art] consequently would have applied Raz’s teachings to RFC3209 to improve upon the disclosed traffic engineering applications. Rabie’s explicit disclosure is further evidence, supported by PO’s expert, of the widespread knowledge of and multiple implementations for LAG. EX1003, ¶¶88–91.

Pet. Reply 10–11. Despite Petitioner’s arguments, we are not persuaded that a person of ordinary skill would have been motivated by knowledge of Rabie to combine the teachings of RFC 3209 and Raz at the time of the invention of the ’602 patent. First, the ’602 patent claims a priority date of May 6, 2005, which is not challenged by Petitioner (*see* Pet. 3), whereas Rabie was published more than two months later. Ex. 1021, code (65). Moreover, the question is not whether it may have been known at the time of

the invention that a LAG *could* be used between switches, but rather whether the combined teachings of RFC 3209 and Raz would have motivated a person of ordinary skill in the art to utilize a LAG between switches, as claimed, when neither RFC 3209 nor Raz teaches such usage or suggests the existence of a problem that such usage would solve. We are not persuaded that they would.

Third, we agree with Patent Owner that the Petition does not persuasively explain “why or how Raz’s subport provisioning mechanism would have been used *between* LSRs” or “why or how Raz’s subport provisioning . . . would purportedly be combined and work together with RFC 3209’s explicit routing.” PO Resp. 34–36. As Patent Owner points out, the Petition “concedes that Raz’s method is for ‘*within* an LSR,’ yet instead of explaining specifically how Raz’s method would be modified to apply to external communications *between* two LSRs, Petitioner merely states in conclusory and ambiguous fashion that Raz’s ‘same principles’ would have applied to such external communications” and “refers to ‘MPLS/LAG switches . . . as taught by RFC 3209,” despite the fact that “RFC 3209 does not teach a LAG or MPLS/LAG switches.” *Id.* at 34–35 (quoting Pet. 27)). Likewise, “[w]hile Petitioner recognizes that RFC 3209’s explicit routing would have to be modified to meet the limitation of ‘assigning, by a first MPLS/LAG switch, a single physical tunnel port of a LAG,’ Petitioner does not explain why or how this would be done” and “does not explain how an alleged ‘first MPLS/LAG switch’ combines RFC 3209’s explicit routing, which assigns a next hop, with Raz’s subport provisioning, which assigns a subport for a previous hop.” *Id.* at 36–37 (citing Pet. 27–28). Indeed, as Patent Owner contends, “Petitioner[’s] . . . motivation to combine the

references for limitation 1.1 on Petition pages 27–28 . . . contains: no citations to RFC 3209 or details regarding its explicit routing process; only one instance of citations to Raz and only for bandwidth-related disclosures, not its method of provisioning subports; and only a single mention of Raz’s ‘subport.’” *Id.* at 36 (citing Pet. 27–28).

6. *Conclusion Regarding Ground 1*

For the foregoing reasons, we determine that Petitioner has not shown by a preponderance of the evidence that independent claims 1, 15, and 26 are unpatentable over the combination of RFC 3209 and Raz. For the same reasons, we also determine Petitioner has not proven by a preponderance of the evidence that dependent claims 2–14 and 16–25 are unpatentable over the proffered combination.

D. *Obviousness over RFC 3209, Raz, and Ferguson (Ground 2)*

Petitioner alleges claims 1–26 of the ’602 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of RFC 3209, Raz, and Ferguson. *See* Pet. 53–60; Pet. Reply 19–24. Patent Owner opposes. *See* PO Resp. 51–68; PO Sur-reply 21–25. We begin our analysis with an overview of Ferguson before addressing the parties’ contentions.

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. *Petitioner’s Contentions*

Petitioner principally relies on its arguments with respect to the ground based on RFC 3209 and Raz, discussed in Section III.C. above, but additionally contends for independent claims 1, 15, and 26 that “Ferguson builds on the previous analysis of RFC 3209 and Raz by disclosing a system for communicating packets between switches and routers in an MPLS network that addresses the same concerns about allocating the bandwidth of physical data ports in a LAG to deal with the demands of communicating high-speed packet streams as are addressed by RFC 3209 and Raz.” Pet. 53, 56 (citing Ex. 1003 ¶¶ 249–250); *see id.* at 56–60.

According to Petitioner, “Ferguson teaches a [person of ordinary skill in the art] that the method of assigning a subport with appropriate bandwidth that is disclosed in Raz could also be implemented *between* MPLS/LAG switches in an MPLS network,” and “to the extent that it was not already obvious from the combination of RFC 3209 and Raz,” a person of ordinary skill in the art reviewing Ferguson “would have understood that it would be desirable to implement the techniques in Raz for assigning a physical tunnel subport to assign a physical tunnel port to communicate packets along ‘physical interconnects’ between ‘two switches’ in an MPLS network according to the framework provided by RFC 3209.” Pet. 56–57 (citing Ex. 1003 ¶¶ 250–251; Ex. 1007, 1:22–27, 1:57–66). Further, according to Petitioner, MPLS packets in Ferguson “are communicated along a physical interconnect that is part of an ‘aggregate interface’ (i.e., a LAG) between ports on two routers,” and “Ferguson states that ‘the physical interconnects may couple other devices, e.g., two switches’” *Id.* at 57–58 (quoting

Ex. 1007, 1:24–26) (citing Ex. 1007, 1:21–26, 1:43–53, 3:36–4:19, 6:10–31, 8:61–64, Figs. 2A–2C).

Still further, Petitioner alleges, “Ferguson would have taught a [person of ordinary skill in the art] that Raz’s method of assigning a subport with appropriate bandwidth within the LSR could also be implemented, in the framework of RFC 3209, between network devices (such as MPLS/LAG switches) in an MPLS network.” Pet. 58–59 (citing Ex. 1003 ¶¶ 251, 255, 256). Petitioner contends, “Ferguson discloses that its techniques can be implemented to communicate packets along ‘physical interconnects’ between ‘two switches’ in an MPLS network”; “that physical interconnects between network devices (such as switches or routers) can be used as part of a LAG”; and “that the techniques used to communicate highspeed data streams within a router or switch in an MPLS network can also be applied to communicating high-speed data streams between two routers or between two switches in an MPLS network.” *Id.* at 58–59 (citing Ex. 1007, 1:22–53, 1:57–66, 2:44–47, 5:61–6:6). According to Petitioner, “[t]hese disclosures in Ferguson demonstrate that the techniques used to reserve the bandwidth needed to communicate packets within a network device can also be applied to reserve the bandwidth needed to communicate packets between network devices in an MPLS network,” and “[t]hus, a [person of ordinary skill in the art] would have understood that the techniques disclosed in Raz for assigning physical LAG subports to a network tunnel in an MPLS network could also be applied when communicating packets from a physical port on one MPLS/LAG switch to a physical port on another MPLS/LAG switch and operate within the framework disclosed by RFC 3209.” *Id.* at 59–60 (citing Ex. 1003 ¶¶ 243–264, 281–302, 314–327).

3. *Patent Owner's Contentions*

Patent Owner responds that a person of ordinary skill in the art “would not have modified RFC 3209 and Raz based on Ferguson as Petitioner asserts, and regardless, the alleged combination fails to render obvious the claims.” PO Resp. 51–68 (citing Ex. 2007 ¶¶ 148–186).

As an initial matter, Patent Owner argues that the Petition’s presentation of “Ground 2 includes no discussion regarding the specific teachings of primary reference RFC 3209 or any modifications thereof to meet the claims.” PO Resp. 51. Indeed, Patent Owner points out, “the Petition’s entire Ground 2 section includes only a single citation to RFC 3209,” and Petitioner’s declarant Dr. Min’s expert declaration similarly “cites RFC 3209 only three times for Ground 2 and only for the simple assertions that in involves MPLS and bandwidth availability.” *Id.* at 51–52 (citing Pet. 53–60 (citing Ex. 1010, 54)), 52 n.13 (citing Ex. 1003 ¶¶ 243–245). Rather than focusing on combination with RFC 3209, Patent Owner argues, “Ground 2 is exclusively about modifying secondary reference Raz based on tertiary reference Ferguson—specifically modifying Raz’s mechanism for within an LSR to apply between LSRs.” *Id.* at 52 (citing Pet. 56–60; Ex. 2007 ¶ 151). In this regard, Patent Owner points out that “Petitioner’s Ground 2 analysis is copied almost word-for-word from the petition in [the Cisco IPR], where Raz is the primary reference and the asserted combination is just Raz and Ferguson, without RFC 3209.” *Id.* at 52–53 (comparing Pet. 53–60 with Ex. 2001, 52–59 (Cisco IPR Petition, IPR2023-00447, Paper 1)). Similarly, Patent Owner argues, “for Ground 2, Petitioner’s expert declaration by Dr. Min (Ex. 1003) contains statements and annotated figures copied from the declaration of [Cisco’s declarant in the Cisco IPR,] Dr. Bhattacharjee . . . (Ex. 1028), despite Dr. Min having not

seen or reviewed Dr. Bhattacharjee's declaration before submitting his own declaration." *Id.* at 52 n.14 (citing Ex. 2013, 53:8–54:13, 59:15–60:12, 61:11–18).

Further, Patent Owner contends, a person of ordinary skill in the art would not have been motivated to modify "Raz's teaching regarding subports *within* an LSR to apply to communications *between* LSRs" (or "*between* two MPLS/LAG switches, as recited in the challenged claims") "in view of Ferguson," because "Ferguson describes techniques for distributing packets of a single LSP across multiple interconnects of an aggregated link," whereas "Raz is solely directed to a provisioning mechanism for *inside* a network device and teaches away from applying its subport-related teachings to an external link between two LSRs." PO Resp. 53–54 (citing Ex. 1006, code (57), 1:40–62, 6:24–27, 6:51–54; Ex. 1007, code (57), 1:57–63, 2:4–6, 2:35–38, 2:40–47, 2:54–57, 3:16–18, 3:36–4:19, 4:45–5:24, 6:15–31, claim 1, Figs. 1–2C; Ex. 2007 ¶¶ 152–161). Patent Owner argues, for example, that, while Ferguson teaches that its techniques for communications between routers may be applied within a router, a person of ordinary skill in the art would not have understood that the opposite is true—" [t]hat is, despite Ferguson teaching that Ferguson's own techniques may apply within a router, a [person of ordinary skill in the art] would not have been motivated to take Raz's provisioning mechanism for within an LSR and attempt to apply it to communications between LSRs." *Id.* at 54–55 (citing Ex. 2007 ¶ 157). Moreover, according to Patent Owner, a person of ordinary skill in the art would not have been motivated to modify Raz based on Ferguson because Ferguson and Raz address different problems and teach different methods regarding packet labels. *Id.* at 55–58 (citing Ex. 1006,

code (57), 1:40–2:3, 6:24–27, 7:17–19, 7:26–45, 8:56–58, 9:41–10:4, 11:36–38, 14:6–8, 15:14–17, 16:27–29; Ex.1007, code (57), 1:57–66, 2:4–6, 2:27–34, 2:40–43, 2:47–57, 4:45–60, claim 1; Figs. 2A–2C; Ex. 2007 ¶¶ 158–160; Ex. 2013 at 24:17–25:8, 33:25–34:13, 39:14–40:12).

4. *Discussion*

Having considered the parties respective arguments, we agree with Patent Owner that Petitioner has not shown by a preponderance of the evidence that any of the challenged claims are unpatentable over the combination of RFC 3209, Raz, and Ferguson. Critically, Petitioner does not specifically explain how the combined teachings of RFC 3209, Raz, and Ferguson would satisfy individual claim elements. Petitioner generally advocates for the combination of RFC 3209, Raz, and Ferguson, arguing for example that “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 (citing Ex. 1003 ¶ 244; 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. 1010 §§ 1.1, 2.2). 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 communication 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); *see* Pet. 53–56; Pet. Reply 19–21. But Petitioner does not adequately explain how the proposed combination of Ferguson with RFC 3209 and Raz would cure the deficiencies addressed above in Petitioner’s analysis of RFC 3209 and Raz for Ground 1, particularly why or how Raz’s subport provisioning

mechanism would have been used between LSRs or why or how Raz's support provisioning would purportedly be combined and work together with RFC 3209's explicit routing. *See* Pet. 27–28.

5. Conclusion Regarding Ground 2

For the foregoing reasons, we determine that Petitioner has not shown by a preponderance of the evidence that independent claims 1, 15, and 26 are unpatentable over the combination of RFC 3209, Raz, and Ferguson. For the same reasons, we also determine Petitioner has not proven by a preponderance of the evidence that dependent claims 2–14 and 16–25 are unpatentable over the proffered combination.

IV. CONCLUSION

For the foregoing reasons, we conclude that Petitioner has not demonstrated by a preponderance of the evidence that any of claims 1–26 of the '602 patent are unpatentable on the grounds presented.

In summary:

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
1–26	103(a)	RFC 3209, Raz		1–26
1–26	103(a)	RFC 3209, Raz, Ferguson		1–26
Overall Outcome				1–26

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–26 of the '602 patent are not determined to be unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2023-00839
Patent 9,118,602 B2

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