

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC.,
Petitioner,

v.

CORRIGENT CORPORATION,
Patent Owner.

Case IPR2023-00447

Patent 9,118,602

PATENT OWNER RESPONSE

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Pursuant to 37 C.F.R. § 42.120, Patent Owner Corrigent Corporation (“Patent Owner”) respectfully submits this Response to the Petition filed by Petitioner Cisco Systems, Inc. (“Petitioner”) regarding U.S. Patent No. 9,118,602 (Ex.1001, “’602 patent”).

I. Introduction

The ’602 patent recites sending a data packet via an assigned single physical tunnel port of a “LAG” between two MPLS/LAG switches, among other limitations. The Petition raises two Grounds: Ground 1 asserting obviousness based on Raz (Ex.1006), and Ground 2 asserting obviousness based on Raz in view of Ferguson (Ex. 1007). Both, however, fail to establish that the challenged claims are unpatentable.

For Ground 1, Petitioner’s primary reference, Raz, does not disclose a LAG between two network devices such as MPLS/LAG switches and is also directed to a mechanism specifically for *inside* a network device. Petitioner does not explain why or how Raz’s mechanism would have been modified to apply to a LAG *between* two devices, much less meet the other claim limitations. Such modification would render Raz inoperable and, regardless, would not meet the claims.

Ground 2 relies on Raz in the same manner as Ground 1 and fails for the same reasons. Also, Petitioner fails to explain why or how Raz would have been modified based on Ferguson, much less tie any such explanation to the claims.

Moreover, Petitioner fails to provide a “reasonable expectation of success” for both Grounds.

For at least the reasons set forth herein, Petitioner has failed to meet its burden to prove that claims 1-26 of the ’602 patent are unpatentable.

A. Grounds and Challenged Claims

The Board instituted review on the following obviousness grounds. Paper 8 at 4, 14.

Ground	Claims Challenged	§ 103(a) References
1	1-13, 15-24, 26	Raz
2	1-26	Raz, Ferguson

The challenged claims include three independent claims: 1, 15, and 26. Independent claim 1 is directed to a method for assigning and utilizing a physical tunnel port in a Link Aggregation Group (LAG) in a Multi-Protocol Label Switching (MPLS) network, including, in part: (limitation 1.1)¹ a “first MPLS/LAG switch” assigning a “single physical tunnel port of a LAG” to a “network tunnel”; (1.2 & 1.3) said “first MPLS/LAG switch” preparing and sending a “data packet label” to a “preceding node” with the port serial number of the assigned “single physical tunnel

¹ For purposes of this Response, Patent Owner uses the same claim limitation numbering as the Petition.

port” encoded in the “data packet label”; (1.4) said “first MPLS/LAG switch” receiving from the “preceding node” a “data packet” comprising said “data packet label”; and (1.5) said “first MPLS/LAG switch” sending said “data packet” “from said first MPLS/LAG switch to a second M[PLS/LAG² switch via said single physical tunnel port.” Ex.2007 ¶¶38-39.

Independent claim 26 is a method claim that includes limitations similar to claim 1 and additionally limitation 26.1, which recites an initial step of the “first MPLS/LAG switch” receiving from the “preceding node” a “request message” that requests configuration of the “network tunnel,” requests the “data packet label” associated with said “network tunnel,” and specifies a “bandwidth requirement.” Ex.2007 ¶40.

Independent claim 15 is an apparatus claim similar to method claim 1 and recites an apparatus for assigning and utilizing a physical tunnel port in a Link Aggregation Group (LAG) in a Multi-Protocol Label Switching (MPLS) network, with the LAG connected to a second MPLS/LAG switch. Claim 15 first recites a “processor” configured to, in part: (15.2) assign a “single physical tunnel port of a

² The claim term “second M[PLS/LAG switch” in claims 1 and 26 is written corrected as “second MPLS/LAG switch” with alteration omitted throughout this Response.

LAG” to a “network tunnel”; and (15.2 & 15.3) publish a “[data] packet label” “upstream” with the port serial number of the assigned “single physical tunnel port” encoded in the “data packet label.” Claim 15 further recites a “mapper” configured to, in part: (15.6) receive a “data packet” from an “upstream node”; and (15.8) if said “data packet” contains said “data packet label,” then send said “data packet” “to the second MPLS/LAG switch via said single physical tunnel port.” Ex.2007 ¶41.

B. Claim Construction

For purposes of this Response, Patent Owner adopts Petitioner’s claim construction position. Pet. 6-7; Ex.2007 ¶¶35-36. Patent Owner notes that in co-pending district court litigation, the preamble of claim 15 was construed as not limiting and the term “RSVP-TE” in claims 3 and 15 was construed as “RSVP-TE protocol described in IETF RFC 3209,” and Patent Owner’s positions herein apply equally under those constructions. Ex.2001 at 3-4; Ex.2007 ¶37.

C. Person of Ordinary Skill in the Art

Petitioner proposes a definition of a person of ordinary skill in the art (“POSA”) as of the priority date of the ’602 patent (May 6, 2005). Pet. 6. For purposes of this Response, Patent Owner uses the same definition of a POSA. Ex.2007 ¶¶21-24.

D. Legal Framework

Petitioner must prove that the ’602 patent’s claims are obvious by a preponderance of the evidence. 35 U.S.C. § 316(e). Obviousness requires a showing

that (1) all of the claimed limitations are found in the prior art reference(s) and (2) a POSA would have been motivated to modify or combine the prior art reference(s) to achieve the claimed invention. *Univ. of Strathclyde v. Clear-Vu Lighting LLC*, 17 F.4th 155, 160 (Fed. Cir. 2021); 35 U.S.C. § 103(a) (pre-AIA). Single-reference obviousness nonetheless requires a showing of motivation to modify the reference. *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361 (Fed. Cir. 2016); *SIBIA Neurosciences, Inc. v. Cadus Pharm. Corp.*, 225 F.3d 1349, 1356 (Fed. Cir. 2000). Also, a prior art reference must be considered in its entirety, including portions that would lead away from the claimed invention. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1568 (Fed. Cir. 1987).

An IPR petition must state “[h]ow the construed claim is unpatentable under [35 U.S.C. § 103],” and “must specify where each element of the claim is found in the prior art.” 37 C.F.R. § 42.304(b)(4). Conclusory statements alleging a motivation to modify or combine the references are insufficient to demonstrate obviousness. *E.g.*, *SAS Inst., Inc. v. ComplementSoft, LLC*, IPR2013-00581, 2013 WL 8595535, at *6 (PTAB Dec. 30, 2013) (rejecting alleged motivation that “[the combination] would increase the functionality of the [primary reference]”); *Exacq Techs., Inc. v. JDS Techs., Inc.*, IPR2016-00568, 2016 WL 4987613 (PTAB June 14, 2016) (“Simply stating that the combination ‘would merely be the use of known validation techniques to improve a similar network camera system in the same way,’

... without evidence, is not sufficient.”). “[H]indsight bias” cannot be “the thread that stitches together prior art patches into something that is the claimed invention.” *Metalcraft of Mayville, Inc. v. Toro Co.*, 848 F.3d 1358, 1367 (Fed. Cir. 2017).

E. Institution Decision

The Institution Decision “preliminarily determine[d]” that Petitioner’s showing was adequate based on the “[then-current] record” and “for the purposes of institution.” Paper 8 at 11, 13. This Response explains why Petitioner’s grounds fail to render the challenged claims unpatentable.

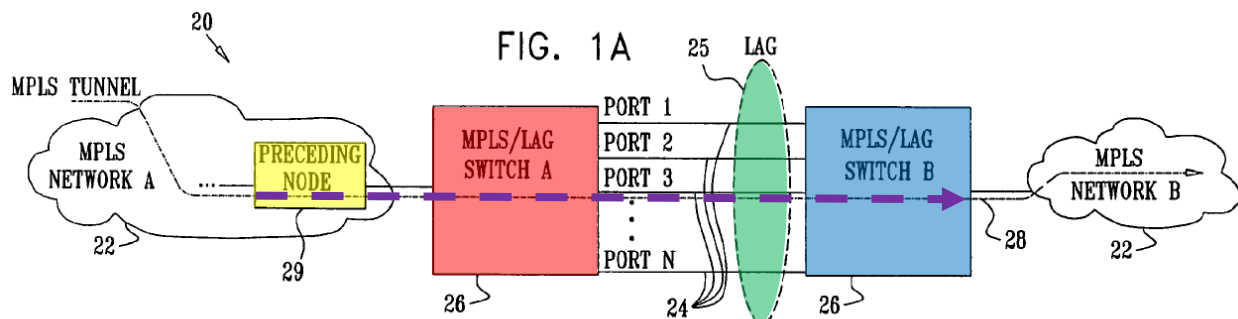
II. Ground 1: Raz Does Not Render Obvious Claims 1-13, 15-24, 26

Petitioner has failed to show that claims 1-13, 15-24, and 26 of the ’602 patent are obvious over Raz. Raz is fundamentally different from the ’602 patent claims and does not teach or render obvious multiple elements and limitations of the claims, as a POSA would not have modified Raz to arrive at the inventions claimed. Ex.2007 ¶¶42-133.

A. Raz and the Claimed Inventions of the ’602 Patent Are Fundamentally Different

The ’602 patent claims are directed to methods and apparatuses for assigning and utilizing a “single physical tunnel port” of a Link Aggregation Group (“LAG”) connecting a “first MPLS/LAG switch” to a “second MPLS/LAG switch” in a Multi-Protocol Label Switching (“MPLS”) network. Ex.1001 at claims 1, 15, 26; Ex.2007 ¶¶43-47. The claims comprise sending to a “preceding node” (or publishing

“upstream”) a data packet label identifying an assigned “single physical tunnel port”; receiving from the “preceding node” or “upstream node” a data packet containing the data packet label; and sending the data packet from the “first MPLS/LAG switch” to the “second MPLS/LAG switch” “via said single physical tunnel port.” Ex.1001 at claims 1, 15, 26; Ex.2007 ¶47. The annotated version of ’602 patent Figure 1A below shows how the claimed LAG (green) is between and links MPLS/LAG switches A and B (red and blue, respectively), with data packets containing a certain data packet label being transmitted along an MPLS tunnel (dashed purple line) from the preceding node (yellow) to the first MPLS/LAG switch A (red) and then via an assigned Port 3 of the LAG (green) to the second MPLS/LAG switch B (blue).



Ex.1001 at Fig. 1A (annotated), 3:58-4:34; Ex.2007 ¶48; Ex.2008 at 94:22-24.

Raz, however, does not teach or suggest a LAG of physical tunnel ports to begin with, much less sending data packets from a first MPLS/LAG switch to a second MPLS/LAG switch via an assigned physical tunnel port of a LAG. Instead, Raz is directed to using multiple slow-speed processors (i.e., “subports”) *within* a

network device such as an LSR (label switching router) for processing a *single* high-speed stream between LSRs. Ex.1006 at Abstract, 1:40-2:8, 6:24-33 (“The present invention provides a ... mechanism whereby a plurality of subports comprising slower speed processors are used to perform the packet processing for a higher speed packet stream”); Ex.2007 ¶49.

Raz’s Figures 1 and 3, which the Petition repeatedly relies on, demonstrate this. See Pet. 7-8, 13-14, 16-18, 20-22, 24-25. As shown in Raz’s annotated Figure 1 below, Raz is directed to LSRs connected via a *single* high-speed (10G) link 28, not a LAG, and Raz uses a plurality of slow-speed (1G) subports 14 *within* an LSR for processing data that is received or sent via that single high-speed link 28.

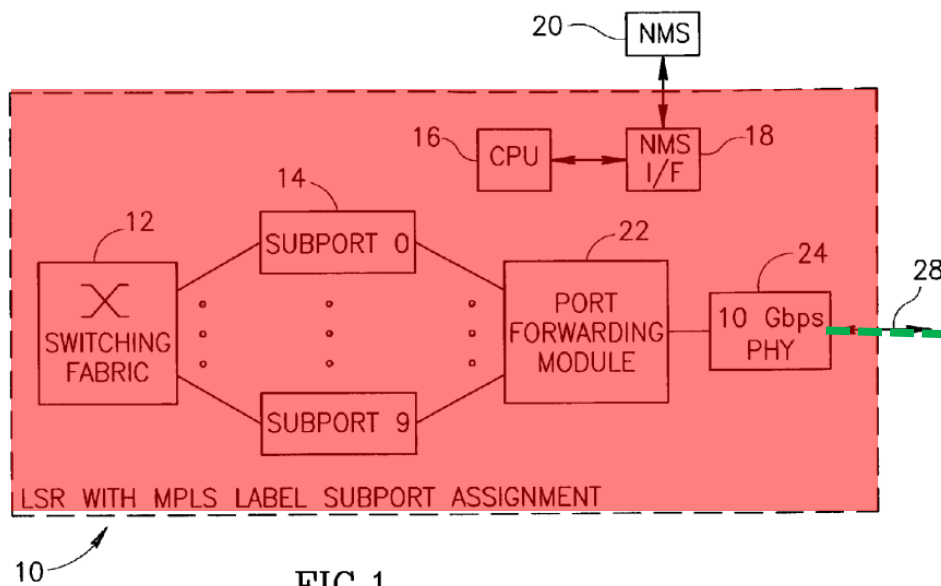
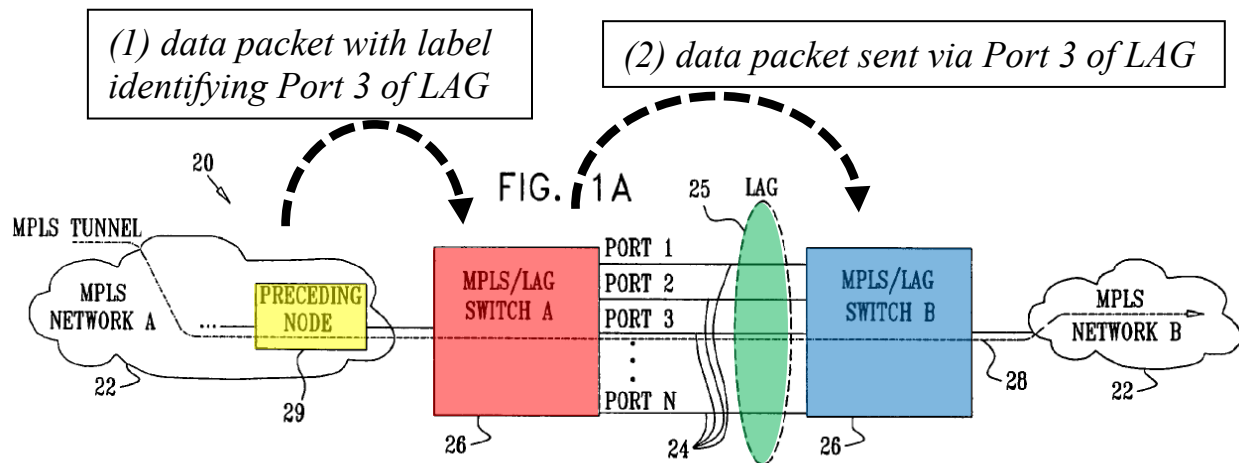


FIG.1

Ex.1006 at Fig. 1 (annotated), 6:65-7:10, 7:59-64; Ex.2007 ¶50; Ex.2008 at 32:14-20. This is similarly demonstrated by Raz’s Figure 3, which shows pairs of LSRs

each connected via a *single* high-speed (10G) link (60 or 68), not a LAG, and with multiple subports contained *within* the LSRs on each side of those high-speed links for purposes of processing data that is received or sent via those high-speed links. Ex.1006 at Fig. 3, 9:29-40; Ex.2007 ¶50; Ex.2008 at 52:13–53:13.

Moreover, even disregarding the fact that Raz does not teach or suggest a LAG of physical tunnel ports or MPLS/LAG switches, Raz is also fundamentally different than the '602 patent claims when considering packet labeling and how packets are processed by Raz's subports. Ex.2007 ¶51. As explained above and shown in '602 patent Figure 1A, annotated below, the '602 patent recites (1) sending from a preceding node to a first MPLS/LAG switch a data packet with a label identifying a particular physical tunnel port of a LAG between the first MPLS/LAG switch and a second MPLS/LAG switch, and then (2) sending the data packet from the first MPLS/LAG switch to the second MPLS/LAG switch via the physical tunnel port that is assigned by the first MPLS/LAG switch and identified in the data packet label.



Ex.1001 at Fig. 1A (annotated), 3:58-4:34, claims 1, 15, 26; Ex.2007 ¶51; Ex.2008 at 97:9-19.

Raz, however, teaches (1) sending from a preceding LSR to a first LSR a data packet with a label that identifies the subport for internally processing data sent/received between the preceding LSR and first LSR, not between the first LSR and some second LSR, and then (2) if the data packet is sent from that first LSR to some second LSR, it is processed by another subport that is chosen by the second LSR, not the subport assigned by the first LSR and identified in the label sent from the preceding LSR. Ex.1006 at 9:29-10:4, 7:17-45, 8:47-55, 2:18-20; Ex.2007 ¶52. This is shown in Raz Figure 3, annotated below. As shown by the provisioned path represented by dotted line 53 and the annotations, a data packet sent from LSR A to LSR B has a label identifying subport 0—i.e., the subport for internally processing data sent/received between LSR A and LSR B, not between LSR B and LSR C—

and when the data packet is then sent from LSR B to LSR C, it is processed not by subport 0 but instead by subport 1, which is chosen by LSR C.

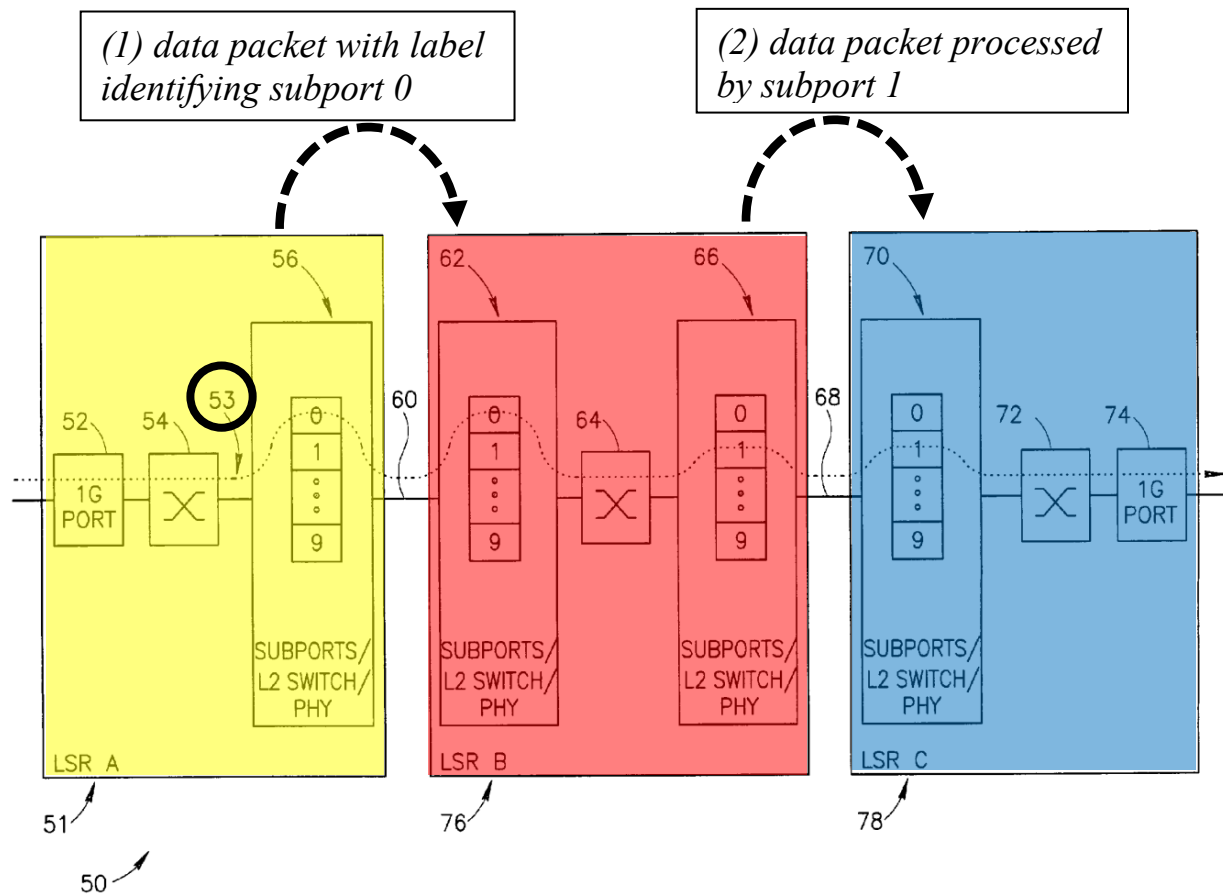


FIG.3

Ex.1006 at Fig. 3 (annotated), 9:29-10:4; Ex.2007 ¶52; Ex.2008 at 49:12-52:3.

Indeed, Raz teaches that a given LSR selects only the subport used for *receiving* data packets at the given LSR from a preceding node, and the next LSR independently chooses the subport used for transmitting data packets from the given LSR to that next LSR. Ex.1006 at 7:17-45, 8:44-55, 9:29-10:4, 2:18-20, 6:43-45; Ex.2007 ¶52; Ex.2008 at 33:3-13, 35:5-25, 37:25-40:8, 49:12-52:3, 44:21-45:5.

Therefore, Raz fundamentally differs from the '602 patent's claimed inventions, as Raz does not teach or suggest a LAG with physical tunnel ports connecting two MPLS/LAG switches or sending from a preceding node to a first MPLS/LAG switch a data packet with a label identifying an assigned physical tunnel port through which the data packet is then sent to a second MPLS/LAG switch. Ex.2007 ¶53.

B. A POSA Would Not Have Modified Raz to Arrive at the Claimed Inventions of the '602 Patent

A POSA would not have been motivated to modify Raz's teachings to apply to communication between two MPLS/LAG switches via a LAG in an MPLS network, as recited in the independent challenged claims of the '602 patent. Ex.2007 ¶¶54-64.

A POSA would have understood that Raz's provisioning mechanism is specifically for *inside* a network device such as an LSR, and Raz teaches away from applying its subport-related teachings to an external LAG link between two LSRs. Ex.2007 ¶55; *Panduit Corp.*, 810 F.2d at 1568 (noting that a reference must be considered in its entirety, including portions that teach away from the claimed invention). Raz's premise is that multiple "internal" circuits/processors are needed to keep up with a "high speed packet stream," and so Raz provides a "forwarding and provisioning mechanism that enables a high speed packet stream to be processed by multiple processors that operate at a slower rate tha[n] the inbound packet

stream.” Ex.1006 at 1:40-2:3, Abstract, 6:24-27 (“The present invention provides a subport forwarding and provisioning mechanism whereby a plurality of subports comprising slower speed processors are used to perform the packet processing for a higher speed packet stream.”); Ex.2007 ¶55. Thus, a POSA would have understood that Raz uses multiple subports (i.e., processors) to increase the *internal* processing capacity of an LSR to match an external high-speed link between LSRs. Ex.2007 ¶55.

Based on Raz, however, a POSA would not have been motivated to use multiple *external* links to increase the bandwidth *between* LSRs (e.g., a LAG) because Raz describes that the capacity of such external links or streams between LSRs already exceeds the capacity of internal processors. Ex.2007 ¶56; Ex.1006 at 1:40-51. Indeed, Raz states that “it is intended that the mechanism of the present invention be implemented *in* network devices such as ... LSRs ... making up the nodes in a network” (Ex.1006 at 6:51-54)—i.e., Raz is intended to be implemented *within* an LSR, not *between* two LSRs. Thus, a POSA would not have used Raz for implementing a LAG *between* LSRs. Ex.2007 ¶56.

Also, a POSA would not have been motivated to modify Raz as Petitioner asserts because a POSA would have understood that Raz addresses a different problem than the ’602 patent, as shown by how Raz and the ’602 patent treat link speed and processor speed. Ex.2007 ¶57. The ’602 patent deals with relatively low

link speeds and aggregates them to form a higher speed link, i.e., a LAG. *Id.* The '602 patent and the LAG recited therein assume that the LSR or switch on each end of the LAG link has sufficient processing capacity to handle the traffic transmitted on the LAG link. *Id.* In contrast, Raz deals with the opposite problem: how to handle a high-speed link using slow-speed processors, which is not an issue in the '602 patent's LAG. *Id.*; Ex.1006 at Abstract, 1:40-2:3, 6:24-27, 14:6-8, 15:14-17, 16:27-29. Thus, a POSA would not have looked to Raz for solutions regarding a LAG in an MPLS network, as recited in the '602 patent's claims. Ex.2007 ¶57.

Additionally, the '602 patent's claims are specifically directed to improving an MPLS network, but Raz's invention is indifferent to, and outside the purview of, MPLS network engineering. Ex.2007 ¶¶58-59. The '602 patent is concerned with transmission of MPLS packets via a LAG that connects two MPLS/LAG switches. Ex.2007 ¶58; Ex.2008 at 92:25–94:9. This transmission of packets *between* two such switches is strictly **within the purview of the MPLS protocol**, as the MPLS protocol is concerned with making sure that packets are correctly routed between a source and destination, and therefore it must ensure that packets are correctly transmitted on a LAG between two switches or LSRs. Ex.2007 ¶58. A POSA would have understood the claimed inventions of the '602 patent to improve the utilization and efficiency of a LAG link in an MPLS network. *Id.*

Raz, however, is concerned with packet processing within a switch and more specifically, processing data transmitted on a high-speed link when the LSR does not have a high-speed processor to handle it. Ex.1006 at Abstract, 1:40-2:3, 6:24-27; Ex.2007 ¶59. This operation *within* a switch is **outside the purview of MPLS** and does not improve utilization or efficiency of how an MPLS network handles a LAG link, and a POSA would not have considered Raz when assessing MPLS network engineering.³ *Id.*; Ex.2008 at 27:5–28:24.

Moreover, based on the fundamental differences described in section II.A above, applying Raz’s teachings regarding its subports to communications between two MPLS/LAG switches would have rendered Raz “inoperable for its intended purpose.” *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984); Ex.2007 ¶¶60-64. For example, Raz includes “Multiplexing” in its title and states that the “present invention” relates to a “link multiplexing mechanism” because Raz involves multiplexing (which Raz refers to as “aggregating”) the outputs of its slow-speed subports into a single high-speed stream. Ex.1006 at 1:1-8, 1:65-66, Abstract, 2:11-13, 2:47-48, 2:63-64, 6:24-27, 6:36-38, 14:19-22; *see* Ex.2009 at 473; Ex.2010 at

³ To the extent Raz’s disclosures involve MPLS, it is not to *improve* MPLS network engineering, just to *accommodate* an MPLS network. Ex.1006 at 1:52-55, 2:3-5, 6:27-29, 2:27-32; Ex.2007 ¶59; Ex.2008 at 29:1–30:9.

43, Fig. 1; Ex.2011; Ex.2007 ¶61. But a POSA would not have done this—i.e., used Raz’s multiplexing—with data transmitted over the various physical tunnel ports of a LAG and could not have done this with data transmitted over a “single physical tunnel port” as recited in the challenged claims. Ex.2007 ¶62. In fact, Raz’s multiplexing of subport outputs into a single stream is the *opposite* of a LAG, which is a form of *inverse* multiplexing. *Id.*; Ex.2011; Ex.2009 at Abstract, 473; Ex.2010 at 43, Figs. 1-2. Also, Raz’s forwarding and provisioning mechanism involves using the same subport for processing a data packet on both sides of a link between LSRs. Ex.1006 at Fig. 3, 2:15-16, 6:38-41, 7:20, 8:46-47; Ex.2007 ¶63. But this cannot be done if Raz’s subports constitute the link itself between LSRs, as Petitioner asserts. Ex.2007 ¶63. Because Petitioner cannot reconcile these issues, Petitioner instead ignores and avoids them by just stating that transmission between LSRs is done in the “same way” as within an LSR. Pet. 15, 19. As described above, however, this is not possible with Raz’s teachings. Ex.2007 ¶¶60-64.

C. Petitioner Fails to Establish a Motivation to Modify Raz to Arrive at the Claimed Inventions of the ’602 Patent

The Petition fails to establish a motivation to modify Raz to meet the independent claims of the ’602 patent. Ex.2007 ¶¶65-82. Although Petitioner’s Ground 1 asserts single-reference obviousness based on Raz, Petitioner must still establish a motivation to modify Raz to meet the limitations of the claims. *Arendi*, 832 F.3d at 1361; *SIBIA*, 225 F.3d at 1356.

The Petition does not mention “modify” at all and only mentions “motivat[ion]” three times for independent claims under Ground 1—once for limitation 1.1 to assert a POSA would have been motivated to assign a physical tunnel port of the alleged MPLS/LAG switch to a network tunnel (Pet. 19-20), once for limitation 1.2 to assert a POSA would have been motivated to take Raz’s disclosure of dedicating bits for a subport and extend that to dedicating bits for a physical port of a MPLS/LAG switch (Pet. 22), and once for limitation 15.8 to assert a POSA would have been motivated to communicate packets between first and second MPLS/LAG switches the same way packets are communicated between LSRs in Raz (Pet. 48). But these three assertions assume that Raz already includes a LAG between two MPLS/LAG switches, which is not true, as discussed in sections II.A and II.E.1. Ex.2007 ¶68.

Below is an analysis of the various obviousness assertions in the Petition for independent claim 1.⁴ Pet. 12-25.

⁴ This focuses on Petitioner’s obviousness analysis for independent claim 1 because independent claims 15 and 26 are substantially similar to claim 1 and Petitioner relies on its obviousness analysis of claim 1 for purposes of claims 15 and 26. *See* Pet. 40-52 (incorporating, relying on, and parroting Petitioner’s analysis of claim 1 for claims 15 and 26).

Preamble (Limitation 1.0) — The Petition asserts:

While Raz discusses the utilization of subports in a LAG within a LSR to communicate high-speed packet streams ... , a POSA similarly would have known to use Ethernet physical data ports of a router or switch in an Ethernet LAG to communicate high-speed packet streams in a MPLS network. ... The concept of using aggregation to communicate ... through subports *within* a LSR also applies to communicating ... through Ethernet physical data ports *used to connect different* routers or switches in a MPLS network.

Pet. 15 (emphasis in original). First, Raz does not use subports to “communicate high-speed packet streams” as Petitioner alleges but rather for ***internal processing*** of a high-speed packet stream within an LSR. Ex.1006 at 1:40-59, 2:1-2, 2:5-6, 6:25-29, 7:42-45, 7:59-64, 10:22-23, 12:66-13:5; Ex.2007 ¶¶69-70. Specifically, Raz uses subports to increase the internal processing capacity within an LSR to accommodate a high-speed packet stream between LSRs. Ex.1006 at 1:40-59; Ex.2007 ¶70. Second, even if “a POSA ... would have known to use ... an Ethernet LAG ... in a MPLS network” and even if “[t]he concept of using ... subports *within* a LSR also applies to ... Ethernet physical data ports *used to connect different* routers or switches,” as Petitioner alleges (Pet. 15), that still does not explain *why* or *how* a POSA would have been motivated to modify Raz’s specific teachings to include a LAG between LSRs. Ex.2007 ¶70.

Petitioner next asserts that “packet streams are communicated within a LSR in ***the same way*** as they are communicated between routers and switches” and “[t]he teachings of Raz ... would have been directly applicable to communications between

routers or switches in an Ethernet LAG in a MPLS network.” Pet. 15 (emphasis added) (citing Ex.1004 ¶82). But, first, neither Petitioner nor its expert explain how Raz’s particular techniques for using subports *within* an LSR would be applied “***the same way***” to communications *between* LSRs. Ex.2007 ¶71. Second, as noted above, Raz’s subports are not for “communicat[ing]” but rather for internal processing. *Id.*; Ex.1006 at 1:40-59. Third, Petitioner’s assertion regarding “the same way” is not true. A POSA would have known that how packets are processed and move within a switch is different from how packet streams are communicated between switches. Ex.2007 ¶72.

Even Raz distinguishes between operations within and between LSRs, and makes clear that its invention is specifically directed to internal processing within an LSR. *Id.*; Ex.1006 at Abstract, Fig. 3, 1:40-2:3. Raz also teaches, as discussed in section II.B, that (i) the outputs of its subports are aggregated/multiplexed into a single stream for transmitting between LSRs and (ii) ***the same subport is used within both LSRs*** on respective sides of the link. Ex.1006 at Abstract, Figs. 1-3, 2:11-16, 2:47-48, 2:63-64, 6:24-27, 6:36-41, 7:20, 8:46-47, 14:19-22; Ex.2007 ¶72. The Petition does not and cannot explain how these teachings of Raz are “the same as” communications between two LSRs, much less between two MPLS/LAG switches via a single physical tunnel port of the LAG. Ex.2007 ¶¶72. Indeed, based on just those teachings alone, a POSA would have understood that Raz’s operations within

an LSR are different from, and noncompatible with, communications between LSRs.

Id.

Petitioner also asserts that “[i]n either case, there is a desire to identify and assign a path that will have sufficient bandwidth to accommodate packets within a high-speed stream.” Pet. 15 (citing Ex.1004 ¶82). But this assertion is conclusory and unsupported by the Petition or expert declaration. Moreover, this does not explain why a POSA would have sought to modify Raz’s teachings to include a LAG between LSRs. Ex.2007 ¶73. In fact, Raz is based on the premise that links between LSRs already exceed the capacity of internal processors. *Id.*; Ex.1006 at 1:40-51. Raz does not indicate any need for more bandwidth between LSRs. Ex.2007 ¶73.

None of Petitioner’s arguments for limitation 1.0 establish *why* or *how* a POSA would have modified Raz so that it could be applied to communications between MPLS/LAG switches. Ex.2007 ¶74. Instead, Petitioner points to a single conclusory paragraph of Dr. Bhattacharjee’s declaration to assert generically that link aggregation might be used to “connect different routers or switches” over Ethernet. Pet. 15 (citing Ex.1004 ¶82). In that paragraph, Dr. Bhattacharjee (like Petitioner itself) concedes that “Raz discusses the utilization of subports ... *within a LSR*” and does not explain *why* or *how* Raz would have been modified, other than to assert that Ethernet was well-known and that Raz discusses high-speed data transfer. Ex.1004 ¶82 (emphasis added); Ex.2007 ¶75.

Also, Petitioner’s analysis in the limitation 1.0 section does not specifically address the remaining claim limitations 1.1–1.5 and thus cannot establish a motivation to modify Raz with respect to those other limitations. *See ActiveVideo Networks, Inc. v. Verizon Commc’ns, Inc.*, 694 F.3d 1312, 1327-28 (Fed. Cir. 2012); Ex.2007 ¶76.

Limitation 1.1 — The Petition asserts that “a POSA would have understood that the method of Raz also *could have* been used for communicating packets from one MPLS/LAG switch to another.” Pet. 19 (emphasis added). But a mere possibility does not establish a motivation to modify Raz. *PersonalWeb Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 993-94 (Fed. Cir. 2017) (“[O]bviusness concerns whether a [POSA] not only *could have made* but *would have been motivated to make* the ... modifications” (emphasis in original) (citation omitted)). Regardless, this assertion fails to establish the requisite motivation. Ex.2007 ¶77.

As with limitation 1.0 (Pet. 15), Petitioner again asserts that “packet streams are communicated between routers and switches in *the same way* as they are communicated within a LSR.” Pet. 19 (emphasis added). But as explained above, this assertion is not true. Ex.2007 ¶78.

Petitioner also asserts that “[a] POSA would have known that the technique of [Raz] ... would also be effective to communicate the packet stream between MPLS/LAG switches” and that “Raz would have motivated a POSA to assign a

physical tunnel port of the MPLS/LAG switch to a network tunnel.” Pet. 19-20. These assertions, however, do not establish why a POSA would have been motivated to use a LAG between Raz’s LSRs to begin with. Ex.2007 ¶79. Also, this assertion that Raz’s technique would be effective for communicating via a LAG between two MPLS/LAG switches is conclusory and does not explain how the specifics of Raz’s mechanism would be modified to apply to such a LAG between MPLS/LAG switches. *Id.* As explained above, Raz’s teachings regarding operations within an LSR are not compatible with communications between LSRs, particularly via a LAG between LSRs, including because Raz teaches, for example, that the outputs of its subports are aggregated into a single stream for transmitting between LSRs and that the same subport is used within both LSRs on respective sides of the link. *Id.*; Ex.1006 at Abstract, Figs. 1-3, 2:11-16, 2:47-48, 2:63-64, 6:24-27, 6:36-41, 7:20, 8:46-47, 14:19-22.

Limitations 1.2–1.5 — For limitation 1.2, Petitioner asserts that a POSA would have taken Raz’s disclosure of dedicating bits for a subport and extended that to dedicating bits for a physical port of a MPLS/LAG switch (Pet. 22), but this does not establish why a POSA would have been motivated to modify Raz to use a LAG between LSRs. Ex.2007 ¶80.

For limitations 1.3–1.5, Petitioner asserts that “it would have been within the knowledge of a POSA” to (1.3) extend Raz’s teachings to sending a label indicating

a physical port of a LAG between MPLS/LAG switches to a preceding node, (1.4) treat packets received at a first MPLS/LAG switch the same way as packets received at Raz's LSR, and (1.5) "communicate packets from a first MPLS/LAG switch to a second MPLS/LAG switch ... in the same way as packets communicated from one LSR to another in Raz." Pet. 23-25. First, none of these assertions discusses any motivation to modify Raz. Ex.2007 ¶81. Second, these assertions are premised on the assumption that Raz includes two MPLS/LAG switches connected by a LAG, with no analysis or reasoning for so modifying Raz. *Id.* Additionally, for limitation 1.5 in particular, there is no discussion as to specifically why or how a POSA would have modified the existing teachings of Raz to meet all aspects of that limitation, including that a data packet received by a first MPLS/LAG switch is sent from that switch to a second MPLS/LAG switch via a single physical tunnel of the LAG that is assigned by the first MPLS/LAG switch and indicated in a data packet label prepared by the first MPLS/LAG switch and included in the data packet received by the first MPLS/LAG switch. *Id.* The Petition's deficiency regarding limitation 1.5 is discussed further in section II.E.2 below.

In sum, the Petition fails to establish a motivation to modify Raz, as Petitioner does not explain specifically why or how a POSA would have modified the

particular teachings of Raz to meet all limitations of the independent claims. Ex.2007 ¶82.

D. Petitioner Fails to Establish a Reasonable Expectation of Success

Regardless of whether Petitioner has established a motivation to modify Raz, Petitioner has failed to establish a reasonable expectation of success in doing so. Ex.2007 ¶¶83-86.

Obviousness requires Petitioner to establish that a POSA would have had a reasonable expectation of success in modifying the prior art to arrive at the claimed invention. *Eli Lilly & Co. v. Teva Pharm. Int'l GmbH*, 8 F.4th 1331, 1344 (Fed. Cir. 2021); *see also In re Stepan Co.*, 868 F.3d 1342, 1346 n.1 (Fed. Cir. 2017) (holding single-reference obviousness requires a reasonable expectation of success); *Stryker Corp. v. OsteoMed LLC*, IPR2022-00191, Paper 35 at 41-44 (PTAB May 30, 2023) (holding that reasonable expectation of success is required “[e]ven when only one reference is involved”). This requirement is separate and distinct from establishing a motivation to modify the prior art to begin with. *Eli Lilly*, 8 F.4th at 1344.

Petitioner presents no argument that a POSA would have had a reasonable expectation of success in modifying Raz to meet the claims. Ex.2007 ¶85. Neither the Petition nor Dr. Bhattacharjee’s declaration includes any arguments even mentioning “reasonable expectation of success,” despite Dr. Bhattacharjee’s declaration recognizing in the “Governing Law” section that “where there is a reason

to modify or combine the prior art to achieve the claimed invention, *there must also be a reasonable expectation of success in so doing to render the claimed invention obvious.*” Ex.1004 ¶14 (emphasis added). Moreover, there is no reasonable expectation of success. Ex.2007 ¶86.

Ground 1 fails for this reason alone.

E. Independent Claim 1

As explained in sections II.A–C, Raz fails to render obvious the challenged claims because Raz is fundamentally different from the claimed inventions of the ’602 patent, and a POSA would not have modified Raz to arrive at the ’602 patent’s claimed inventions. Further discussed below are several particular reasons why Raz fails to render obvious claim 1. Ex.2007 ¶¶87-114.

1. Raz Does Not Teach or Render Obvious a “LAG” Connecting a “first MPLS/LAG switch” to a “second MPLS/LAG switch”

Claim 1 recites a “LAG” (Link Aggregation Group) for communicating between a “first MPLS/LAG switch” and a “second MPLS/LAG switch,” and this is implicated in every limitation of claim 1 (i.e., limitations 1.1–1.5). The Petition relies on Raz’s multiple subparts as allegedly constituting the claimed “LAG.” Pet. 15-17, 20-21, 23, 25. But Raz’s subparts do not teach or render obvious the claimed “LAG” connecting a “first MPLS/LAG switch” to a “second MPLS/LAG switch.” Ex.2007 ¶¶88-89.

Raz discloses that its subports are *within* a single LSR, not connecting two separate MPLS/LAG switches as claimed. *See* sections II.A–B *supra*; Ex.2007 ¶¶90. Indeed, Petitioner and its expert both concede that Raz’s subports are “within” an LSR. Pet. 14-16; Ex.1004 ¶¶81-82.

Despite Raz’s subports being within an LSR, Petitioner nonetheless refers to Raz’s subports as a “LAG.” Pet. 15-17, 20-21, 23 (referring to, for example, “subports in a LAG within a LSR”; “one subport of a LAG ... within a LSR”; “subport 3 of a LAG”; “[the] subport of [a] LAG”). But this is wrong, as there are several reasons why a POSA would not have understood Raz’s subports to constitute or suggest a LAG. Ex.2007 ¶¶90-94.

First, a POSA would have understood a LAG to be a group of network connections, or *links*, that are *between* network components. Ex.2007 ¶¶91; *see* Ex.1001 at 2:1-5 (explaining that a LAG involves a group of “links between two endpoints in a data network”); Ex.1007 at 1:28-42 (explaining that “link aggregation” involves multiple interconnects “between ... two devices”); Ex.2008 at 9:22-24. For example, Raz itself refers to the connections *between* LSRs as “links,” such as links 28, 48, 60, and 68 depicted in Figures 1-3. *See* Ex.1006 at Figs. 1-3, 6:67-7:5, 8:33-39, 9:39-40, Abstract, 6:34-38, 7:17-26, 7:39-42, 8:46-53; Ex.2007 ¶¶91. But, as explained above, Raz’s subports are *within* a single LSR, not links *between* LSRs. *See* sections II.A–B *supra*; Ex.2007 ¶¶91. Indeed, Raz describes

its subports as internal network processors, not links between two endpoints of a network. Ex.1006 at 1:40-59, 2:1-2, 2:5-6 (“a network processor or FPGA is used to implement the subport”), 6:25-29, 7:42-45, 7:59-64 (describing implementing the subports as “network processors” or “an FPGA” that can “perform the [required] packet processing”), 10:22-23, Fig. 6 and 12:66-13:5 (referencing subports 128 and 130 as “network processors”); Ex.2007 ¶91. Thus, a POSA would not have understood Raz’s subports to constitute or suggest a LAG. Ex.2007 ¶91.

Second, Raz’s multiple subports are not “aggregated” in the sense of a LAG, such as according to the IEEE 802.3ad link aggregation standard referenced in the ’602 patent. Ex.1001 at 2:1-17, 3:64-4:1; *see also* Ex.1007 at 1:28-32 (referencing IEEE 802.3ad for “link aggregation”); Ex.2007 ¶92.⁵ Specifically, the IEEE 802.3ad link aggregation standard states:

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. To this end, it specifies the establishment of DTE to DTE logical links, consisting of N parallel instances of full duplex point-to-point links operating at the same data rate.

⁵ The IEEE 802.3ad LAG standard also supports the first point above because this standard reinforces that a LAG involves links *between* network devices and is different from, and unrelated to, internal device components such as Raz’s subports. *See* Ex.2007 ¶92 n.5.

Ex.2012 at Abstract; *see also* Ex.2008 at 14:1-2, 99:8–100:3, 60:5-20, 65:17–66:1. This differs from Raz because Raz says to “aggregate” the *output* of its multiple subports into a single high-speed packet stream, which a POSA would have understood to merely disclose multiplexing, an operation that is common when multiple low-speed streams are combined for transmission over a single high-speed link. Ex.1006 at Abstract, 6:36-38, 14:19-22, 1:1-8, 1:65-66; *see* Ex.2009 at 473; Ex.2010 at 43, Fig. 1; Ex.2011; Ex.2007 ¶92. A POSA would have understood that Raz’s combining or multiplexing of subport streams into a single stream is the *opposite* of aggregating multiple parallel links into a group to form a LAG (*inverse* multiplexing) because with multiplexing, a single high-speed link is used to transmit packets from multiple low-speed tributary streams, whereas with link aggregation (inverse multiplexing), packets from a high-speed stream are spread across multiple low-speed links for transmission. *See* Ex.1006 at 1:1-8, 1:65-66, Abstract, 2:11-13, 2:47-48, 2:63-64, 6:36-38, 14:19-22; Ex.1001 at 2:1-5; Ex.1007 at 1:28-42; Ex.2011; Ex.2009 at Abstract, 473; Ex.2010 at 43, Figs. 1-2; Ex.2007 ¶92.

Third, Raz references a “LAG (Link Aggregation Group),” which shows that Raz distinguishes between a LAG and its own subports. Ex.1006 at 9:9-15. In fact, that portion of Raz teaches how to *repurpose* a commercially-available LAG-related switch to implement Raz’s subports within an LSR, demonstrating that a POSA

would have understood Raz's subports to be different from a LAG. *See id.*; Ex.2007 ¶93.

Moreover, Raz teaches to combine (i.e., multiplex) the output of its subports into a *single* high-speed packet stream before transmitting that data to another LSR, thus teaching away from using a LAG—i.e., a form of *inverse* multiplexing that uses *multiple* streams—between Raz's LSRs. Ex.1006 at 1:1-8, 1:65-66, Abstract, 2:11-13, 2:47-48, 2:63-64, 6:24-27, 6:36-38, 14:19-22; *see* Ex.2011; Ex.2009 at Abstract, 473; Ex.2010 at 43, Figs. 1-2; Ex.2007 ¶94.

**2. Raz Does Not Teach or Render Obvious Limitation 1.5:
“sending said data packet from said first MPLS/LAG
switch to a second MPLS/LAG switch via said single
physical tunnel port”**

Claim limitation 1.5 recites “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.” Raz does not teach or render obvious this limitation. Ex.2007 ¶95.

a. Raz Does Not Teach Limitation 1.5

Raz does not teach limitation 1.5. Ex.2007 ¶¶96-103. The Petition points to a single example in Raz as allegedly disclosing this limitation, arguing:

Raz discloses [limitation 1.5]. ... For example, LSR B in the example described in Column 7 of Raz is the LSR that generates the data packet label in which the port serial number (e.g., subport 3) is encoded, and it corresponds to the claimed first MPLS/LAG switch. ... A POSA would have understood that the data packet in LSR B could be sent to

another LSR (which would correspond to the claimed second MPLS/LAG switch) via a physical tunnel subport (subport 3) having the port serial number encoded in the data packet label.

Pet. 25 (discussing Ex.1006 at 7:30-45). This relied-upon example from Raz discloses that an LSR B decides to accept data over subport 3 and sends to LSR A a label indicating subport 3 such that a data packet sent from LSR A to LSR B is processed by LSR A's output subport 3 and LSR B's input subport 3. Ex.1006 at 7:30-45; Ex.2007 ¶97.

First, however, as explained in section II.E.1, Raz's subport, such as subport 3 in the relied-upon example, is not a "single physical tunnel port [*of a LAG*]," as recited in limitation 1.5. Ex.2007 ¶98.

Second, limitation 1.5 recites "sending said data packet from said first MPLS/LAG switch to a second MSPLS/LAG switch via said single physical tunnel port"—i.e., sending the data packet via the assigned physical tunnel port of the LAG *between* the first and second MPLS/LAG switches. Ex.2007 ¶99; Ex.2008 at 9:22-24, 95:2-8. As explained in sections II.A–B, however, Raz makes clear that its subports are *within* the LSR. Ex.2007 ¶99. Indeed, Petitioner and its expert both concede that Raz's subports are "within" an LSR. Pet. 14-16; Ex.1004 ¶¶81-82. Therefore, for the example in Raz that Petitioner relies upon, subport 3 is *within* LSR B and thus cannot be the conduit "via" which data is sent "from said first

MPLS/LAG switch to a second MSPLS/LAG switch,” as recited in limitation 1.5. Ex.2007 ¶99; Ex.2008 at 37:11-24.

Third, in the relied-upon example, LSR B does not use subport 3 to *send* data but rather to *receive* data. Raz teaches that “LSR B decides to *accept* the LSP on subport 3,” and “[w]hen a packet for the provisioned LSP is *received over a link connected to LSR A*, it is forwarded ... out over the 10G link *to LSR B* with the previously assigned label indicating subport 3,” such that “[t]he port forwarding module in LSR B ... forwards the packet to subport 3 *for packet processing*.” Ex.1006 at 7:30-45; *see also id.* at 7:26-29 (“Note that it is the downstream (i.e. receiving) node that determines the subport it wants to receive the LSP on.”); Ex.2007 ¶100; Ex.2008 at 37:11-18. Thus, Petitioner’s assertion is wrong that the data packet in the relied-upon example would be sent from LSR B “to another LSR (which would correspond to the claimed second MPLS/LAG switch) via [subport 3].” Pet. 25; Ex.2007 ¶100.

To note, for limitation 1.5, Petitioner’s expert, Dr. Bhattacharjee, appears to rely on Raz’s disclosure that a receiving LSR “forwards” the received data packet to a subport. *See* Ex.1004 ¶107. First, Dr. Bhattacharjee quotes the following portion of the relied-upon example in Raz: “The port forwarding module in LSR B examines the label in the received packet and in response thereto **forwards** the packet to Subport 3 for packet processing.” Ex.1004 ¶107 (emphasis added) (quoting Ex.1006

at 7:42-45). Dr. Bhattacharjee then quotes the following clause from Raz’s claim 1: “**forwarding** inbound packets ... received over said communications link by said downstream node to a subport in accordance with the label associated with said inbound packet.” Ex.1004 ¶107 (emphasis added) (quoting Ex.1006 at 14:23-26). But crucially, in both quoted passages, Raz refers to a receiving LSR forwarding the received data packet to a subport *within* the receiving LSR for input packet processing, not forwarding the data packet *via* the subport to some *subsequent* LSR. Ex.2008 at 37:11-24, 46:14–47:25; Ex.2007 ¶101. For example, Raz similarly uses the term “forward” in regard to Raz’s Figure 3 below, saying that “[a]t LSR B, the layer 2 switch **forwards** the packet to subport 0,” but this does not mean that the LSR B sends the packet to LSR C via that subport 0. Ex.1006 at Fig. 3, 9:59-10:4. Rather, it means that LSR B sends the packet to subport 0 *within* LSR B, and in fact, LSR B uses a different subport (subport 1) when sending the packet to LSR C. Ex.1006 at Fig. 3, 9:59-10:4; Ex.2007 ¶101; Ex.2008 at 52:13-23.

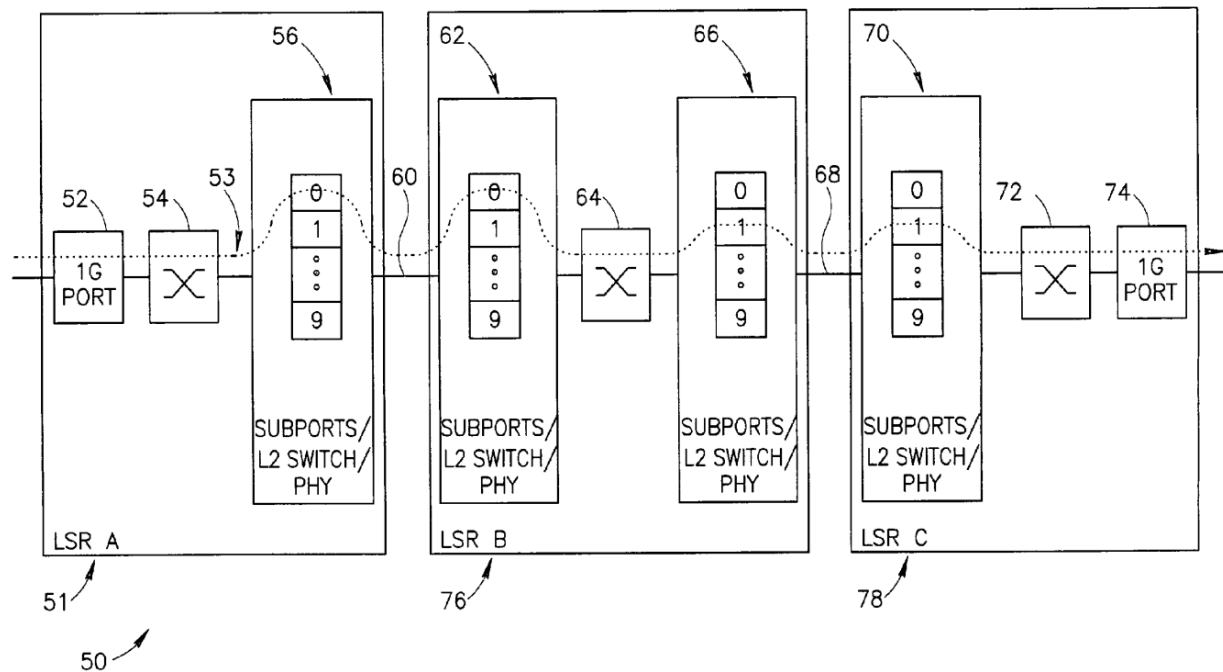
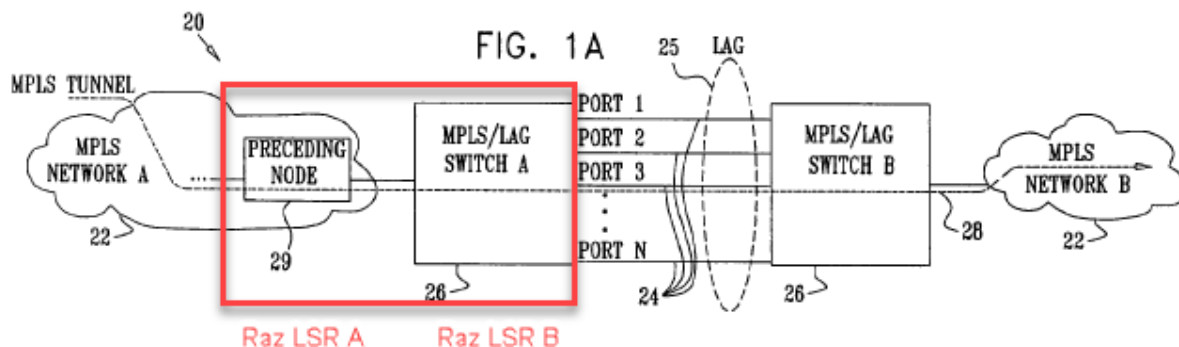


FIG.3

Ex.1006 at Fig. 3. Indeed, Raz teaches that a receiving LSR selects only the subport used for *receiving* data packets at the given LSR, and whatever subport is used for transmitting data packets to the next LSR is independently chosen by that next LSR. Ex.1006 at 7:17-45, 8:44-55, 9:29-10:4, 2:18-20, 6:43-45; Ex.2007 ¶101; Ex.2008 at 33:3-13, 35:5-25, 37:25-40:8, 49:12-52:3, 44:21-45:5. Thus, the two passages quoted by Dr. Bhattacharjee about a receiving LSR “forwarding” data packets to a subport are unrelated to sending data packets from a first MPLS/LAG switch to a second MPLS/LAG switch as recited in limitation 1.5. Ex.2007 ¶101. Moreover, the two passages reinforce that Raz relates to provisioning subports *within* an LSR. *Id.*

Fourth, despite arguing that Raz “discloses” limitation 1.5, Petitioner’s argument relies on what “could” happen, not on what Raz actually discloses. Pet. 25 (asserting that “the data packet in LSR B *could be* sent to another LSR ... via [subport 3]” (emphasis added)); Ex.2007 ¶102. Petitioner thereby admits that Raz does not actually *disclose* limitation 1.5.

Indeed, the relied-upon example in Raz does not include any discussion about what happens to a data packet downstream of LSR B. Ex.2007 ¶103. For demonstration purposes, below is an annotated version of Figure 1 of the ’602 patent that associates LSR A and LSR B from the relied-upon example in Raz with the depicted preceding node and first MPLS/LAG switch, respectively, in accordance with Petitioner’s argument for limitation 1.5. *See* Pet. 25 (“LSR B in the example described in Column 7 of Raz ... corresponds to the claimed first MPLS/LAG switch.”).



Ex.1001 at Fig. 1 (annotated). As this demonstrates, the relied-upon example in Raz is completely unrelated to communicating a data packet between the claimed first

and second MPLS/LAG switches as recited in limitation 1.5. Ex.2007 ¶103. The relied-upon example says nothing about how Raz (or even a modified version of Raz) would handle data packets *after* they leave LSR B, which Petitioner associates with the claimed “first MPLS/LAG switch.” *Id.*

b. Petitioner Fails to Establish that Raz Renders Obvious Limitation 1.5

As discussed above, Raz does not disclose limitation 1.5. While Petitioner asserts that Raz renders obvious this limitation, its obviousness argument is based on conclusory attorney argument and testimony. Ex.2007 ¶¶104-08.

The Petition first asserts, without analysis, that “[a] POSA would have understood that the data packet in LSR B could be sent to another LSR (which would correspond to the second MPLS/LAG switch) via a physical tunnel subport (subport 3) having the port serial number encoded in the data packet label.” Pet. 25 (citing Ex.1006 at 7:17-29, 7:39-45, 9:29-58, 14:23-26, Figs. 3-4; Ex.1004 ¶107). But none of the cited passages from Raz say anything about what would happen to a data packet *after* it leaves the subject LSR (i.e., LSR B in the relied-upon example in column 7 of Raz), let alone which port the data would travel on in a subsequent hop. Ex.2007 ¶105. Certainly, none of the cited passages suggest that the packet would be sent to a “second MPLS/LAG switch” on subport 3, as Petitioner argues. *Id.* Further, Petitioner’s assertion is wrong for the reasons explained in section II.A, including that subport 3 is *within* LSR B and that LSR B uses subport 3 for *receiving*,

not *sending*, data packets. *Id.*; Ex.2008 at 37:6-24. In fact, Raz teaches that if, as Petitioner alleges, the data packet is sent from LSR B “to another LSR (which would correspond to the claimed second MPLS/LAG switch)” (Pet. 25), then whatever subport is used by LSR B for processing the data packet for transmission to that next downstream LSR would be independently chosen by that next LSR. Ex.1006 at 7:17-29, 8:44-55, 9:29-10:4, 2:18-20, 6:43-45; Ex.2007 ¶105 Ex.2008 at 37:25–40:8; *see also* Ex.2008 at 33:3-13, 49:12–52:3, 44:21–45:5. Moreover, the expert testimony that Petitioner relies on for the above assertion (i.e., Ex.1004 ¶107) quotes portions of Raz (i.e., Ex.1006 at 7:42-45, 14:23-26) that are unrelated to transmitting data between LSRs and instead simply reinforce Raz’s teachings of provisioning subports *within* an LSR for processing packets transmitted between LSRs, as explained in sections II.A–B. Ex.2007 ¶105.

The Petition next and lastly asserts that “it would have been within the knowledge of a POSA to communicate packets from a first MPLS/LAG switch to a second MPLS/LAG switch in a MPLS network *in the same way as packets communicated from one LSR to another in Raz.*” Pet. 25. But as explained in sections II.A–B and II.E.1, the way that Raz teaches transmitting packets between LSRs is via a single high-speed link and not, as recited in limitation 1.5, “via [a] single physical tunnel port [of a LAG].” *See* Ex.1006 at Abstract, Figs. 1-3; Ex.2007 ¶106. Additionally, the only mention of a “second MPLS/LAG switch” in the

corresponding portion of Dr. Bhattacharjee’s declaration is for that same assertion, i.e., regarding communicating packets between MPLS/LAG switches “in the same way as packets [are] communicated from one LSR to another in Raz.” Ex.1004 ¶108. Again, the way that Raz communicates packets between LSRs, via a single link, does not meet limitation 1.5. Ex.2007 ¶106. Also, that assertion in paragraph 108 of Dr. Bhattacharjee’s declaration is unsupported and conclusory. *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

Moreover, even if the conclusory arguments and testimony were considered, the Petition presents no analysis of *how* or *why* Raz would be modified to transmit packets between a first and second MPLS/LAG switch in any way, let alone in the claimed manner of limitation 1.5 and its related limitations, which more specifically comprises sending a data packet from a first MPLS/LAG switch to a second MPLS/LAG switch via a single physical tunnel port of a LAG that is assigned by the first MPLS/LAG switch and is identified in a data packet label that is generated by the first MPLS/LAG switch, sent to a preceding node, and included in a data packet received by the first MPLS/LAG switch from the preceding node. Ex.2007 ¶107; *ActiveVideo Networks*, 694 F.3d at 1327-28 (finding obviousness analysis insufficient because it did not explain specifically how the prior art would be modified and also was not specific to the claim limitations); *In re NuVasive, Inc.*, 842 F.3d 1376, 1381-82 (Fed. Cir. 2016) (recognizing the “need for specificity” in

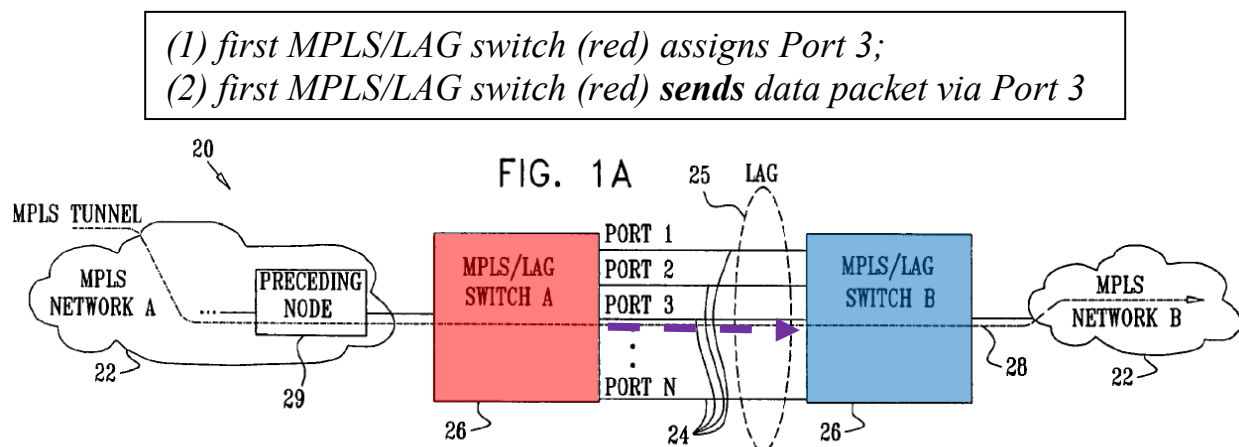
“findings on motivation”); *PersonalWeb*, 848 F.3d at 993-94 (finding no motivation due to failure to explain “*how* the [modified prior art] was supposed to work” (emphasis in original)).

The Petition never uses the word “modify,” and neither the Petition nor expert declaration discuss how Raz would be modified to overcome its deficiency regarding limitation 1.5. Pet. 24-25; Ex.1004 ¶¶106-109. The Petition and declaration also fail to establish that a POSA would have had a “reasonable expectation of success” to attain any alleged modification. Pet. 24-25; Ex.1004 ¶¶106-109. At most, the Petition articulates generic motivations of the POSA that are untethered from a clearly articulated modification of Raz or the specifics of limitation 1.5. Ex.2007 ¶108; *see* Pet. 19-20, 22, 24-25.

c. Even if Modified as Petitioner Asserts, Raz Does Not Render Obvious Limitation 1.5

Even if a POSA were motivated to, and had the capability to, apply Raz’s forwarding and provisioning mechanism to communications between LSRs as the Petition asserts (*e.g.*, Pet. 15, 19-20, 25), such modification would nonetheless fail to meet claim 1, including limitation 1.5. Ex.2007 ¶¶109-14; *Univ. of Strathclyde*, 17 F.4th at 160; *In re Miller*, No. 2021-1599, 2022 U.S. App. LEXIS 5207, at *10-11 (Fed. Cir. Feb. 28, 2022) (recognizing that “all claim limitations must be taught or suggested ... to establish obviousness”).

Limitation 1.5 recites that the “first MPLS/LAG switch”—which assigns the “single physical tunnel port” per limitation 1.1 and prepares the “data packet label” per limitation 1.2—then *sends* the data packet “to a second MSPLS/LAG switch via said single physical tunnel port.” Ex.2008 at 97:1-19, 98:18–99:7. This claim language is demonstrated by the annotated version of the ’602 patent’s Figure 1A below, which shows how the claimed “first MPLS/LAG switch” (red) assigns a “single physical tunnel port” (here, exemplary Port 3) per limitation 1.1 and then *sends* a data packet via that assigned Port 3 (dashed purple line) to the “second MPLS/LAG switch” (blue).



Ex.1001 at Fig. 1A (annotated); Ex.2007 ¶110.

Raz, however, teaches that the LSR that assigns a subport and generates the label (i.e., the alleged “first MPLS/LAG switch”) does not then *send* a data packet via that assigned subport to a downstream LSR but instead *receives* the data packet

using the assigned subport. Ex.1006 at 7:26-29 (“Note that it is the downstream (i.e. receiving) node that determines the subport it wants to receive the LSP on.”), 8:52-55, 7:30-45, 9:41-10:4; Ex.2007 ¶111; Ex.2008 at 33:3–36:7, 49:12–52:3, 44:21–45:5. That is, Raz teaches that after a packet is received by a given LSR, the subport used for the next hop is not chosen by that given LSR but instead by the next downstream LSR. Ex.1006 at 2:18-20 (“The subports used on both sides of the next hop, however, are independent.”), 6:43-45, 7:17-29, 8:44-55, 9:41-10:4; Ex.2007 ¶111; Ex.2008 at 49:22–52:3, 37:25–40:8.

This is demonstrated by the annotated version of Raz’s Figure 3 below. Ex.2007 ¶112. This annotated figure depicts what Petitioner refers to as the “second example” discussed in the block quote that Petitioner relies on for limitation 1.2, in which Petitioner asserts that “LSR B ... corresponds to the [claimed] first MPLS/LAG switch.” Pet. 20-22. It illustrates Raz’s teaching that LSR B (red) selects subport 0 and then *receives* a data packet using that assigned subport 0 (dashed purple line). Ex.1006 at 9:51-65. But LSR B does not *send* the data packet downstream to LSR C via subport 0, as LSR C independently selects which subport is used for data sent from LSR B to LSR C. Ex.1006 at 9:41-51, 9:65-10:4.

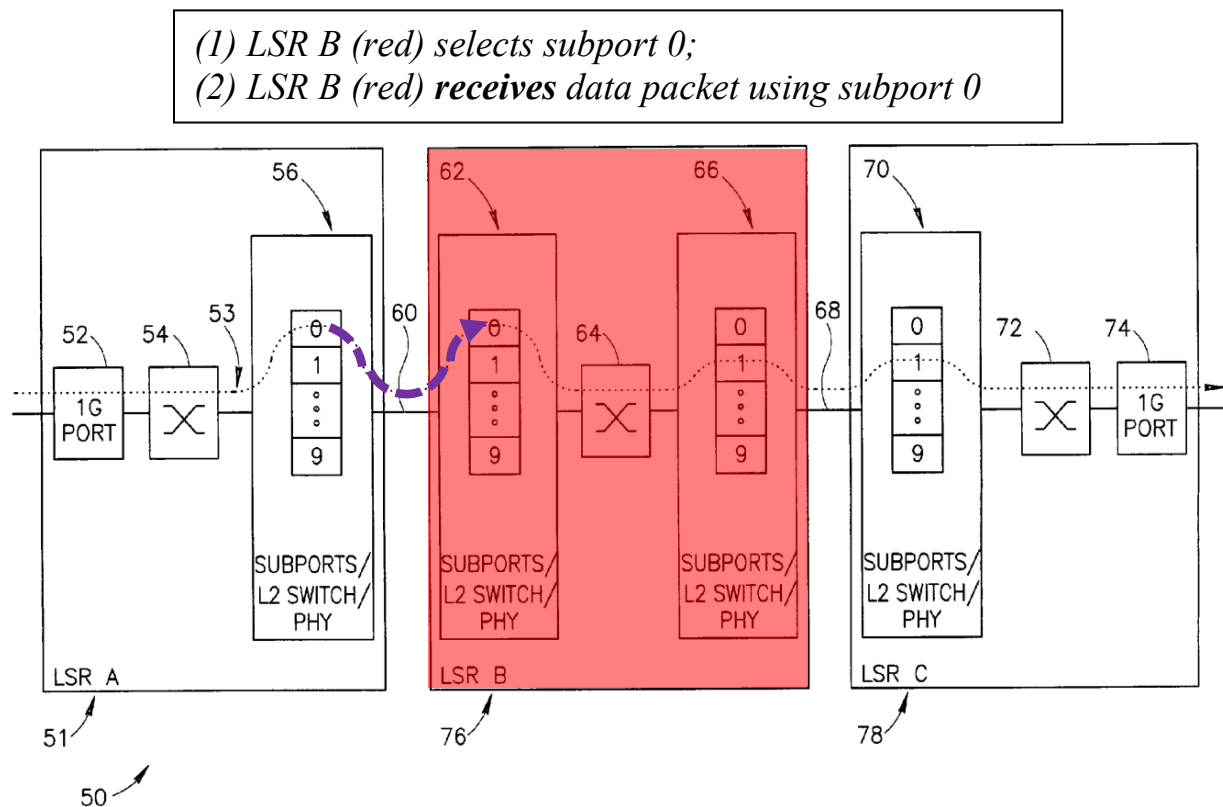


FIG.3

Ex.1006 at Fig. 3 (annotated), 9:29-10:4; Ex.2007 ¶112; Ex.2008 at 49:12–53:13.

This is further demonstrated by the example in column 7 of Raz that Petitioner relies upon for limitations 1.1 and 1.3-1.5. Pet. 17, 23-25. There, Raz considers an example with LSR A and LSR B—in which Petitioner asserts that “LSR B ... corresponds to the claimed first MPLS/LAG switch” (Pet. 25)—and Raz discloses that LSR B selects subport 3, generates a label indicating subport 3, and then *receives* a packet from LSR A that is processed by LSR A’s output subport 3 and LSR B’s subport 3. Ex.1006 at 7:30-45; Ex.2007 ¶113; Ex.2008 at 34:22–37:24. Raz does

not disclose that LSR B uses the assigned subport 3 to *send* the data packet to a downstream node. Ex.2007 ¶113.

Therefore, even if a POSA were motivated and capable of modifying Raz to apply to communications between two MPLS/LAG switches—despite Petitioner’s failure to explain why and how a POSA would have made such modification—such modification would fail to meet claim limitation 1.5. That is, even if Raz’s forwarding and provisioning mechanism were somehow implemented with respect to a LAG between two MPLS/LAG switches such that a first MPLS/LAG switch assigns a “single physical tunnel port” of the LAG and prepares a corresponding “data packet label” per limitations 1.1-1.2, then under Raz’s mechanism, that first MPLS/LAG switch would *receive* a data packet via that assigned “single physical tunnel port,” not *send* the data packet as recited in limitation 1.5. Ex.2007 ¶114.

F. Independent Claim 15

As explained in sections II.A–C, Raz fails to render obvious the challenged claims. Further discussed below are several particular reasons why Raz fails to render obvious claim 15. Ex.2007 ¶¶115-132.

1. Raz Does Not Teach or Render Obvious a “LAG” Connected to a “second MPLS/LAG switch”

Similar to claim 1, claim 15 recites a “LAG” (Link Aggregation Group) for communicating to a “second MPLS/LAG switch,” and this is implicated in multiple limitations of claim 15. Also, as Petitioner did for claim 1, Petitioner again relies on

Raz’s multiple subparts as allegedly constituting the “LAG” in claim 15. Pet. 43-44. Thus, Petitioner’s obviousness argument regarding claim 15 fails for the same reasons discussed in section II.E.1. Ex.2007 ¶¶116-19.

2. Raz Does Not Teach or Render Obvious Limitations 15.5–15.8 Regarding a “mapper”

The combination of limitations 15.5–15.8 recites: “[15.5] a mapper, which is configured to: [15.6] receive a data packet from an upstream node; [15.7] detect said data packet label in said data packet; and [15.8] if said data packet contains said data packet label, send said data packet to the second MPLS/LAG switch via said single physical tunnel port.” The Petition asserts that Raz’s forwarding module constitutes the claimed “mapper.” Pet. 46 (“Raz teaches a forwarding module that performs [the functions of limitations 15.6–15.8] and thus corresponds to the mapper recited in [limitation 15.5].”) (citing Ex.1006 at 7:30-58 regarding a “port forwarding module”).

The Petition fails to establish that Raz teaches or renders obvious limitations 15.5–15.8 for several reasons. Ex.2007 ¶¶120-32.

First — While Petitioner relies upon Raz’s subpart forwarding module as constituting the claimed “mapper” (Pet. 46), Petitioner fails to explain if or how Raz’s subpart forwarding module is purportedly configured to perform the functions recited in limitations 15.6–15.8. Ex.2007 ¶123. Indeed, Petitioner never mentions Raz’s subpart forwarding module in its analyses of limitations 15.6–15.8, nor in its

analyses of limitations 1.3 and 1.4 relied upon therein. Pet. 46-48, 22-24. In fact, the entire Petition mentions Raz’s subport forwarding module twice: once for limitation 15.5 and once in the overview section of Raz. Pet. 9, 46. Thus, Petitioner’s analyses of limitations 15.6–15.8 fail to sufficiently explain how Raz’s subport forwarding module meets those limitations. Ex.2007 ¶123.

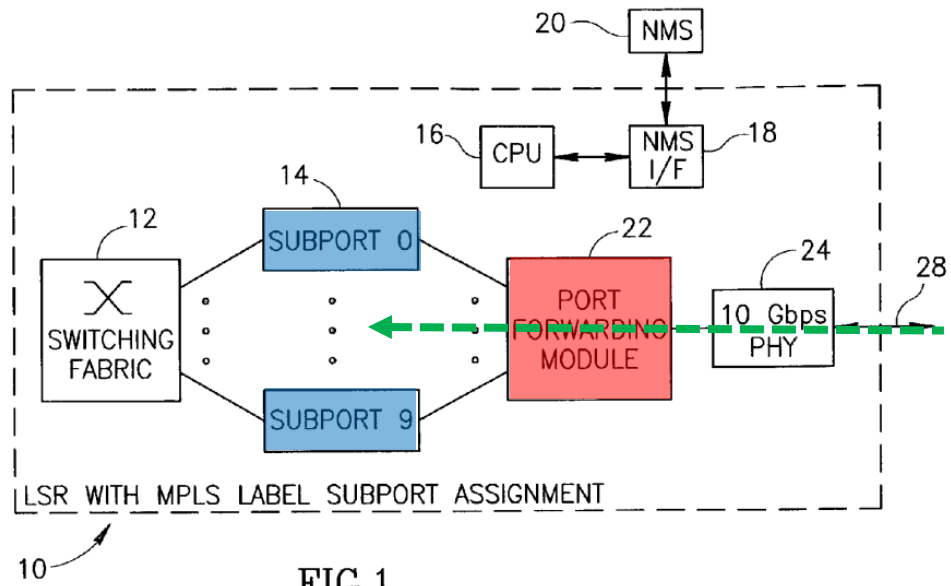
Second — Regardless of the sufficiency of Petitioner’s analyses, Raz’s subport forwarding module fails to meet the combination of limitations 15.5–15.8 and cannot constitute the claimed “mapper” as Petitioner asserts. Ex.2007 ¶124.

Raz’s subport forwarding module is taught as: (i) port forwarding module 22 shown in Figure 1, which is also discussed in the example disclosed in column 7, and (ii) subport forwarding modules 132 and 126 shown in Figure 6. Ex.1006 at Fig. 1, 6:65-7:5, 7:30-52, Fig. 6, 12:61-13:5; Ex.2007 ¶¶125.⁶

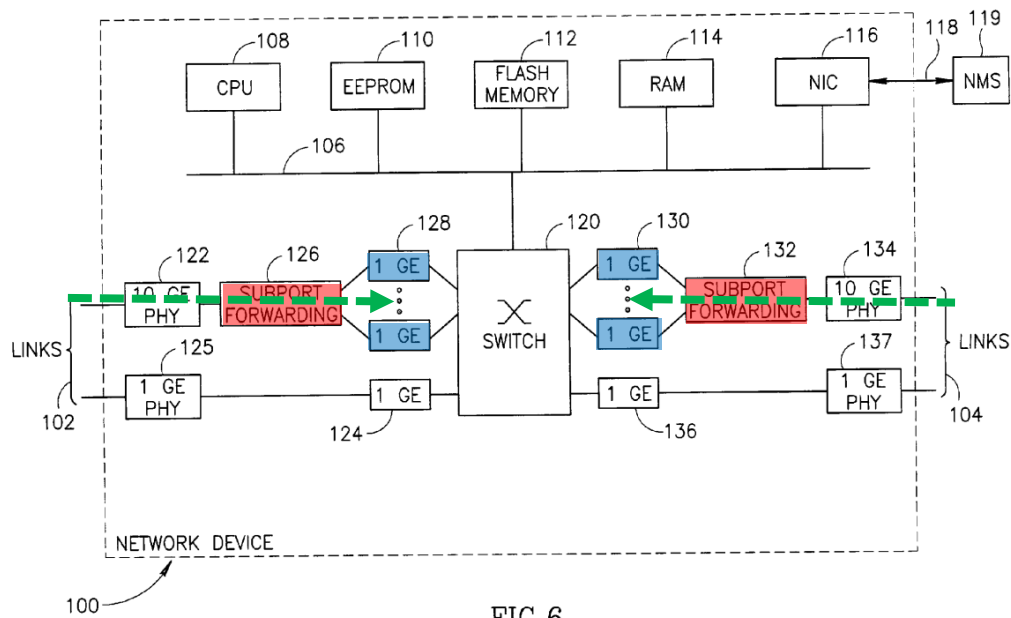
⁶ Petitioner also cites Raz’s Figure 3 and corresponding disclosure at 9:29-58 as purportedly relating to Raz’s subport forwarding module (Pet. 46), but that embodiment does not disclose a subport forwarding module. Petitioner appears to rely on that embodiment’s use of “modules” 56, 62, 66, and 70, but those “modules” each comprise subports, a layer 2 switch, and a PHY and are thus different from the “subport forwarding module” in the embodiments of Raz’s Figures 1 and 6. Ex.1006 at Fig. 3, 9:29-40; Ex.2007 ¶126; Ex.2008 at 48:9-20.

On one hand, Raz teaches that if its subport forwarding module “receive[s] a data packet from an upstream node” as recited in limitation 15.6, then the subport forwarding module does not send the packet to a subsequent different LSR as required by limitation 15.8. Instead, the subport forwarding module just directs the received data packet to a subport within the LSR for processing. *See* Ex.1006 at Fig. 1, Fig. 6, 3:28-32, 7:42-45, 7:49-52, 12:66-12:1, 13:22-24, 16:43-53; Ex.2007 ¶127; Ex.2008 at 54:5–56:25, 32:3-13. This is demonstrated by the following annotated versions of Raz’s Figures 1 and 6, which show how an inbound packet (green dashed line) received in a given LSR by the subport forwarding module (red) is directed to a subport (blue), not sent to a different LSR as required by limitation 15.8. Ex.2007 ¶127.

Regardless, however, the embodiment of Raz’s Figure 3 described at 9:29-58 and the “modules” thereof do not and cannot rectify Raz’s failure to render obvious limitations 15.5–15.8 regarding the claimed “mapper.” Ex.2007 ¶126.



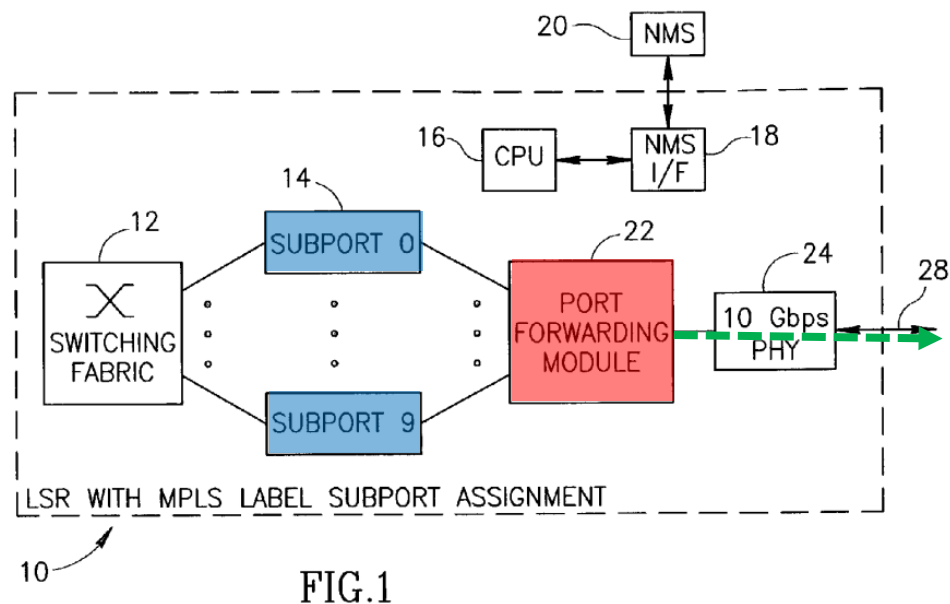
Ex.1006 at Fig. 1 (annotated).



Ex.1006 at Fig. 1 (annotated).

On the other hand, Raz teaches that if its subport forwarding module handles an outbound packet being sent to a subsequent different LSR, as recited in limitation

15.8, then the subport forwarding module does not send the outbound packet to the subsequent LSR *via a subport* (i.e., the alleged “single physical tunnel port”), as also required by limitation 15.8. Pet. 45, 16-20 (relying on Raz’s subport as the claimed “single physical tunnel port” for claim 15); Ex.1006 at Fig 1, Fig. 6, 3:28-30, 7:39-42, 16:43-50; Ex.2007 ¶128. This is demonstrated by the following annotated versions of Raz’s Figures 1 and 6, which show how an outbound packet (green dashed line) sent from a given LSR to a different LSR by the subport forwarding module (red) is not sent “via” a subport (blue) as required by limitation 15.8 (based on Petitioner’s argument that Raz’s subport constitutes the claimed “single physical tunnel port”). Ex.2007 ¶128; Ex.2008 at 57:1–58:12.



Ex.1006 at Fig. 1 (annotated).

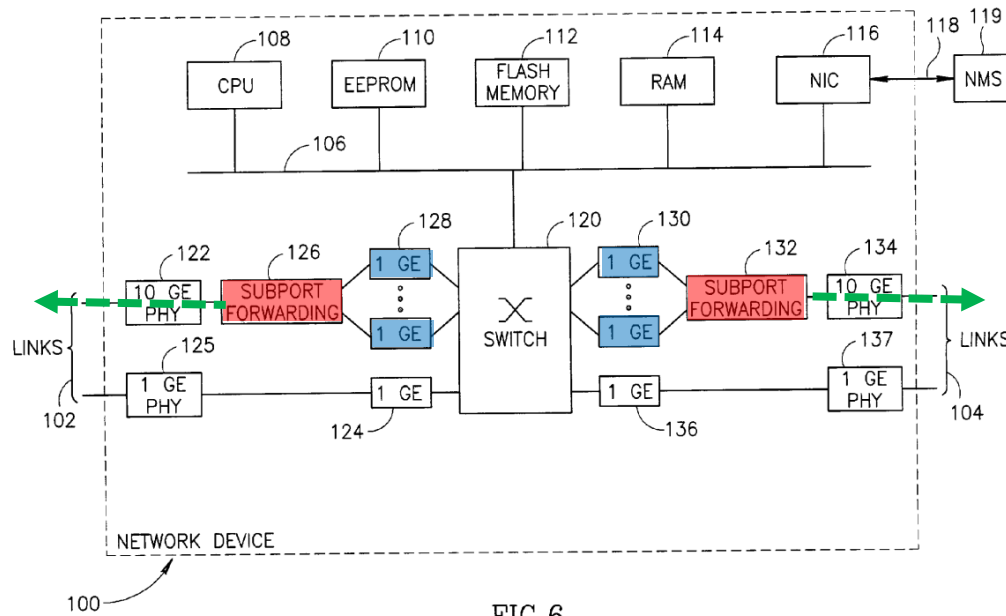


FIG.6

Ex.1006 at Fig. 1 (annotated).

Third— The deficiency described above—i.e., that Raz’s subport forwarding module fails to meet limitations 15.5–15.8—is not remedied by Petitioner’s obviousness arguments. Ex.2007 ¶129. Petitioner’s claim 15 obviousness arguments do not even mention Raz’s subport forwarding module, much less explain why or how a POSA would have modified Raz’s subport forwarding module to meet the limitations of claim 15. *Id.*; see Pet. 40-48.

Indeed, for limitation 15.8, Petitioner and its expert merely assert, in conclusory fashion, that “a POSA would have been motivated to communicate packets from a first MPLS/LAG switch to a second MPLS/LAG switch ... in the same way as packets communicated from one LSR to another in Raz.” Pet. 48 (citing Ex.1004 ¶181, which cites no evidence and provides no explanation for this

assertion). If anything, this assertion acknowledges that even if a LAG were added between two LSRs in Raz as Petitioner asserts, then Raz’s port forwarding module would just communicate a packet via that LAG in “the same way” as Raz’s port forwarding module already communicates a packet between LSRs, which does not meet limitation 15.8, as explained above. Ex.2007 ¶130.

Also, for limitation 15.8, Petitioner asserts that for the example in Raz column 7, “[a] POSA would have understood that a data packet in LSR B could be sent to another LSR ... via a physical tunnel subport (subport 3).” Pet. 48 (citing Ex.1006 at 7:39-45). First, it is unclear whether this assertion is an obviousness argument, as Petitioner asserts in a preceding sentence that “Raz *explains* that a packet received at a first LSR is forwarded to a second LSR.” Pet. 47-48. Second, this assertion is wrong and cannot overcome the fact that, as explained above, Raz’s subport forwarding module (i.e., the alleged “mapper”) does not send outbound packets to other LSRs *via Raz’s subport* (i.e., the alleged “physical tunnel port”) as recited in limitation 15.8. Ex.1006 at Figs 1, 6; Ex.2007 ¶131; Ex.2008 at 57:1–58:12. Moreover, this assertion mischaracterizes the cited portion of Raz, which actually refers to an inbound packet received by LSR B, not an outbound packet transmitted from LSR B to some other LSR. Ex.1006 at 7:39-45 (“When a packet ... is *received* over a link connected to LSR A, it is forwarded ... out over the 10G link *to* LSR B” (emphases added)); Ex.2007 ¶¶131; Ex.2008 at 37:11-24.

Fourth — Petitioner fails to establish that Raz teaches or renders obvious limitation 15.8 for the same reasons as limitation 1.5. Limitations 1.5 and 15.8 are substantially similar, as both recite, for example, that a data packet is sent “to [the] second MPLS/LAG switch via said single physical tunnel port,” wherein the “single physical tunnel port of a LAG” is assigned and is indicated in a “data packet label” that is published upstream (or sent to a preceding node) and then included in the data packet that is received from an upstream node (or the preceding node) and sent to the second MPLS/LAG switch. Also, Petitioner’s analysis for limitation 15.8 is substantially similar to its analysis for limitation 1.5, as are the paragraphs of Dr. Bhattacharjee’s declaration relied upon for each. *Compare* Pet. 47-48 and Ex.1004 ¶¶107-108 *with* Pet. 24 and Ex.1004 ¶¶180-181. Thus, Petitioner’s analysis of limitation 15.8 fails for the same reasons discussed in sections II.E.1.a–b. Ex.2007 ¶132.

G. Independent Claim 26

As explained in sections II.A–C, Raz fails to render obvious the challenged claims. Ex.2007 ¶133.

Additionally, Raz fails to render obvious claim 26, and Petitioner’s analysis for claim 26 fails, for the same reasons discussed in section II.E regarding claim 1, as claim 26 is substantially similar to claim 1 except that claim 26 includes an additional limitation, i.e., limitation 26.1. That is, limitations 26.2–26.6 are

substantially similar to limitations 1.1–1.5, and Petitioner expressly relies on its analysis of limitations 1.1–1.5 for purposes of limitations 26.2–26.6. Pet. 49-52; Ex.2007 ¶¶134. Thus, claim 26 is non-obvious for the same reasons as claim 1.

III. Ground 2: The Combination of Raz and Ferguson Does Not Render Obvious Claims 1-26

Petitioner has failed to show that claims 1-26 of the '602 patent are obvious over Raz and Ferguson. A POSA would not have modified Raz based on Ferguson as Petitioner asserts, and regardless, the alleged combination fails to render obvious the claims. Ex.2007 ¶¶135-71.

Petitioner's Ground 2 purports to "incorporate[] by reference" its Ground 1 obviousness analysis. Pet. 52. This Response similarly incorporates by reference the Ground 1 analysis in section II. Ex.2007 ¶¶136.

A. A POSA Would Not Have Modified Raz Based on Ferguson to Arrive at the Claimed Inventions of the '602 Patent

A POSA would not have been motivated to modify Raz based on Ferguson to apply Raz's teachings to communication via a LAG in an MPLS network between two MPLS/LAG switches, as recited in the challenged claims of the '602 patent. Ex.2007 ¶¶137-46.

First, section II.B explains why a POSA would not have modified Raz to arrive at the claimed inventions of the '602 patent. Ex.2007 ¶138.

Second, a POSA would not have been motivated to modify Raz’s teachings regarding subports *within* an LSR to apply to communications *between* LSRs in view of Ferguson. Ex.2007 ¶139. Ferguson describes techniques for distributing label switched packets of a single LSP across multiple physical interconnects of an aggregated link. Ex.1007 at Abstract, Figs. 1-2C, 1:57-63, 2:4-6, 2:40-47, 3:36-4:8, 6:15-31, claim 1. Ferguson teaches that packets may be distributed across multiple interconnects of an aggregated link based on, for example, the type of payloads in the packets. Ex.1007 at Abstract, 2:35-38, 3:16-18, 4:9-19, 4:45-5:24. Ferguson states its techniques may be used to “load balance” packets of a single LSP across the multiple physical interconnects of an aggregated link. Ex.1007 at Abstract, 1:57-63, 2:54-57, 4:45-49. Ferguson further discloses that its distribution techniques may be applied to distribute packets of a common LSP across multiple paths within a network device, such as a router. Ex.1007 at 1:63-66, 5:61-6:9 (stating that “[a]though [Ferguson’s] techniques have been described in reference to” an external aggregated link, “[Ferguson’s] techniques may be readily applied to internal parallel data paths within a device”). See Ex.2007 ¶140.

But, as explained in section II.B, a POSA would have understood that Raz is specifically and solely directed to a provisioning mechanism for *inside* a network device such as an LSR and teaches away from applying its subport-related teachings

to an external link between two LSRs. Ex.1006 at Abstract, 1:40-62, 6:24-27, 6:51-54; Ex.2007 ¶141; *Panduit Corp.*, 810 F.2d at 1568.

Also, while Ferguson teaches that its own techniques for communications between routers may be applied within a router (Ex.1007 at 5:61-6:9), a POSA would not have understood, based on Ferguson, that the opposite is true for any teachings outside of Ferguson, such as the teachings of Raz. Ex.2007 ¶142. That is, despite Ferguson teaching that Ferguson's own techniques may apply within a router, a POSA 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.*

Additionally, a POSA would not have been motivated to modify Raz based on Ferguson because Ferguson and Raz address different problems. Ex.2007 ¶143. As explained in section II.B, Raz is concerned with processing capacity within an LSR and addresses the problem of how an LSR can handle a high-speed link using multiple slow-speed processors. *Id.*; Ex.1006 at Abstract, 1:40-2:3, 6:24-27, 14:6-8, 15:14-17, 16:27-29. Ferguson, however, is directed to distributing packets across multiple paths or interconnects, for example, to achieve load balancing and decreased packet latency. Ex.2007 ¶143; Ex.1007 at Abstract, 1:57-63, 2:54-57, 4:45-60. Unlike Raz, Ferguson assumes that the routers have sufficient processing capacity to handle the data communications that Ferguson describes distributing.

Ex.2007 ¶143. In fact, Ferguson references network devices, such as routers, having “high-speed” components, not low-speed processors like Raz’s subports. *E.g.*, Ex.1007 at 2:47-53 (“internal high-speed switching components”), 6:2-6 (“internal, high-speed switch fabrics”). A POSA would thus not have looked to Ferguson when considering Raz. Ex.2007 ¶143.

Even assuming that Raz and Ferguson address some common problem, these two references use fundamentally different methods. Ex.2007 ¶144. Ferguson teaches distributing packets of a single common LSP across multiple paths or interconnects of an aggregated link. *Id.*; Ex.1007 at Abstract, Figs. 2A-2C, 1:57-66, 2:4-6, 2:27-34, 2:40-43, claim 1. In contrast, Raz’s provisioning mechanism teaches assigning all packets of a given LSP to the same particular subport in a group of subports, and different LSPs can be provisioned for different subports in the group. Ex.2007 ¶144; Ex.1006 at 7:17-19, 7:26-45, 8:56-58, 9:41-10:4, 11:36-38. This distinction is shown by the annotated versions of Ferguson’s Figure 2A and Raz’s Figure 1 below, which demonstrate how Ferguson distributes packets of a common LSP (dashed green lines) among multiple paths of an aggregate interface whereas Raz sends all packets of a given LSP (dashed green line) to a single subport (subport 0) of a group of subports and sends all packets of a different LSP (dashed red line) to another single subport (subport 9). Ex.2007 ¶144. Petitioner fails to address this fundamental difference between Ferguson and Raz. Based on this difference

between Ferguson and Raz, and others, a POSA would not have modified Raz's provisioning mechanism based on Ferguson. *Id.*

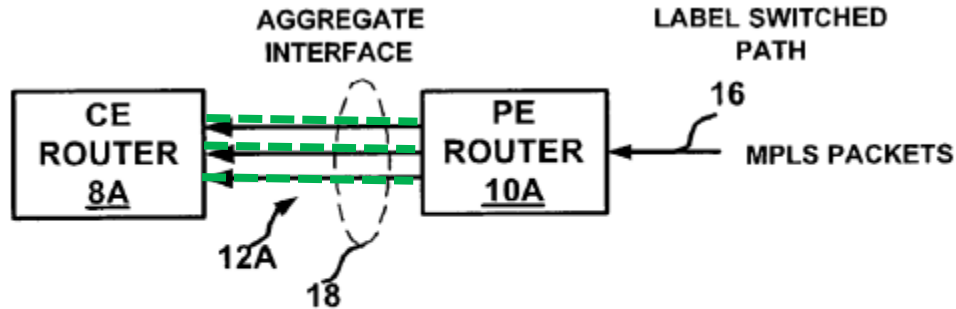


FIG. 2A

Ex.1007 at Fig. 2A (annotated).

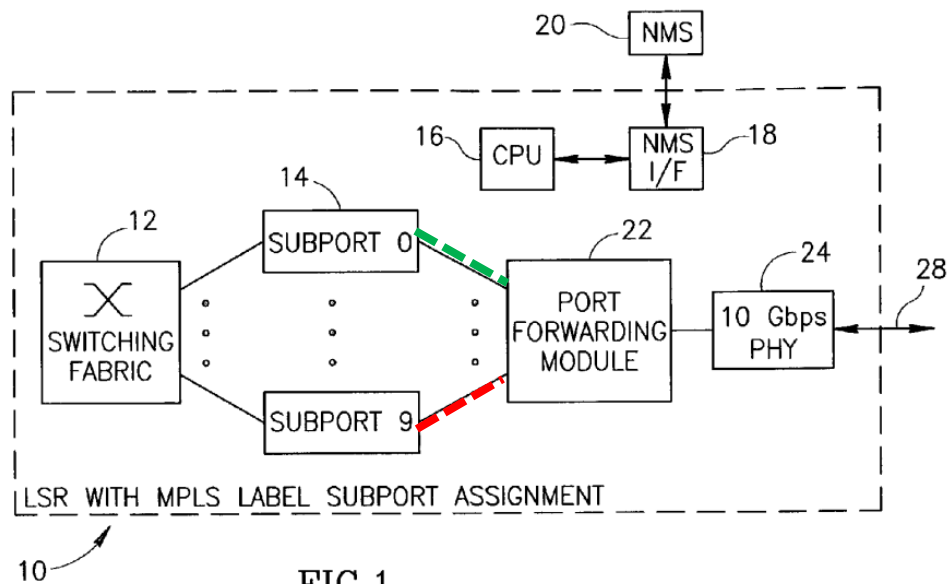


FIG.1

Ex.1006 at Fig. 1 (annotated).

Additionally, Ferguson and Raz teach different methods regarding packet labels, which Petitioner does not address. Ex.2007 ¶145. As explained for Ground 1, Raz emphasizes that its subport assignment and label generation comes from

downstream, teaching that a receiving LSR selects a subport, generates a label indicating that subport, and sends that label to an upstream device. *Id.*; Ex.1006 at 7:26-38, 8:52-55, 9:41-58; Ex.2008 at 33:3–34:21, 35:5–36:7, 49:12–50:1, 51:1–52:3, 44:21–45:5. Ferguson, however, does not include any such teachings. Ex.2007 ¶145; *see, e.g.*, Ex.2008 at 78:23–81:3. Ferguson instead teaches that a given router transmits a packet based on the existing label(s) of that packet or selects and pre-pends its own label to the packet. *See* Ex.1007 at 2:4-26, 3:53-4:8, 8:29-57 (describing how CE router 8A of Fig. 1 “selects an appropriate MPLS label ... and pre-pends the label to the packet to form an MPLS packet,” and “[o]ther [downstream] devices, such as PE routers 10, may make use of the labels to distribute the MPLS packets”); Ex.2007 ¶145; Ex.2008 at 75:6-9, 76:16-20, 77:18–78:4. This demonstrates a fundamental difference between Raz and Ferguson and why a POSA would not have modified Raz’s provisioning mechanism based on Ferguson. Ex.2007 ¶145.

Moreover, as explained in section II.B, a POSA would not have applied Raz’s teachings regarding its subports to communications between two MPLS/LAG switches because such modification would have rendered Raz inoperable for its intended purpose, regardless of whether such modification was based on Ferguson. Ex.2007 ¶146.

B. Petitioner Fails to Establish a Motivation to Modify Raz with Ferguson to Arrive at the Claimed Inventions of the '602 Patent

The Petition fails to establish a motivation to modify Raz with Ferguson to meet the claims of the '602 patent. A purported motivation must be tied to the claim limitations and must explain how the references purportedly work together to meet the limitations. *ActiveVideo Networks*, 694 F.3d at 1327-28; *NuVasive*, 842 F.3d at 1381-82; *PersonalWeb*, 848 F.3d at 993-94 (finding no motivation due to failure to explain “*how* the combination of the two references was supposed to work” (emphasis in original)); *Braintree Labs., Inc. v. Novel Labs., Inc.*, 749 F.3d 1349, 1359 (Fed. Cir. 2014) (“[Party] failed to prove ... why the prior art references would have worked together” (cleaned up)); *Activision Blizzard, Inc. v. Acceleration Bay, LLC*, IPR2016-00747, Paper 50 at 22 (PTAB Sept. 6, 2017). Petitioner fails to explain specifically *why* or *how* Raz would be modified based on Ferguson to meet the claim limitations. Ex.2007 ¶¶147-63.

Petitioner’s analysis for Ground 2 is not tied to the claim limitations to begin with, as it does not even perform a limitation-by-limitation analysis of the alleged Raz and Ferguson combination. Pet. 52-60; Ex.2007 ¶148. Petitioner’s Ground 2 analysis states that it “incorporates by reference the analysis of the obviousness ... set forth ... in Ground 1,” but Ground 1 does not include Ferguson. Pet. 52.

Petitioner’s analysis also fails to explain why or how Raz would be modified based on Ferguson. As with Ground 1, the Petition does not mention “modify” and

does not explain precisely *how* a POSA would modify Raz’s forwarding and provisioning mechanism for subports *within* an LSR to apply to communications *between* two MPLS/LAG switches. Pet. 52-60; Ex.2007 ¶149. Instead, Petitioner’s Ground 2 merely argues that a POSA would have taken Raz’s techniques for using subports within a router and applied those techniques to communications between routers, without discussing how to do this. Pet. 52-59; Ex.2007 ¶149. This oversimplification demonstrates the deficiency in Petitioner’s showing.

Below is an analysis of the various obviousness assertions in the Petition.

Petitioner asserts that Ferguson “addresses the same concerns” as Raz (Pet. 52), but as explained in section III.A, Raz and Ferguson address different problems and use different contrasting solutions. Ex.2007 ¶¶150-51.

Petitioner next asserts that “Ferguson teaches a POSA that the method of assigning a subport ... *within* the LSR that is disclosed in Raz could also be implemented *between* MPLS/LAG switches” Pet. 53 (citing Ex.1004 ¶245). But a proper motivation is not established by what “could” be done. *PersonalWeb*, 848 F.3d at 993-94. Regardless, neither Ferguson nor this assertion address the specific teachings of Raz, much less how Raz would purportedly be applied to communications between switches. Ex.2007 ¶152. Indeed, the cited paragraph of Petitioner’s expert declaration (Ex.1004 ¶245) contains no cites or discussion regarding the specific teachings of Raz.

Petitioner next asserts that “a POSA reviewing Ferguson would have understood that it would be desirable to implement the techniques in Raz for assigning a ... subport within an LSR to assign a ... port to communicate packets along ‘physical interconnects’ between ‘two switches’” Pet. 53 (citing Ferguson and Ex.1004 ¶245). But, as with the previous assertion above, this again fails to address the specific teachings of Raz and again relies on the same deficient paragraph of Petitioner’s expert report (Ex.1004 ¶245) that likewise fails to address the teachings of Raz. Ex.2007 ¶153. Indeed, Petitioner does not explain why the generic alleged modification “would be desirable” in connection with Raz, which actually teaches against the modification because it is directed to a provisioning mechanism specifically for inside a network device. *Id.*; Ex.1006 at Abstract, 1:40-62, 6:24-27, 6:51-54.

Petitioner next asserts that “[t]he teachings of Ferguson are compatible with and readily implementable in the Raz system.” Pet. 53. But this assertion is wholly unsupported, as the assertion is simply followed by the word “CITE” without any citation. *Id.* Also, this assertion is conclusory, as it fails to identify or discuss in detail the referenced “teachings of Ferguson” or “Raz system.” *Id.* It is also false because, as explained in section III.A, there are fundamental differences between the methods of Ferguson and Raz. Ex.2007 ¶154.

Petitioner next briefly mentions Ferguson’s “aggregate interface” of physical interconnects but without any discussion of Raz, much less any motivation to combine or modify. Pet. 53-54; Ex.2007 ¶155.

Petitioner next asserts that “Ferguson would have taught a POSA that the method of assigning a subport ... within the LSR of Raz could also be implemented between network devices” Pet. 55 (Ex.1004 ¶245). This assertion is essentially the same as one discussed above from page 53 of the Petition, and it is likewise deficient because (i) what “could” be done does not establish a proper motivation and (ii) neither this assertion nor the relied-upon paragraph of Petitioner’s expert report (Ex.1004 ¶245) cites or addresses the specific teachings of Raz. *PersonalWeb*, 848 F.3d at 993-94; Ex.2007 ¶156.

Petitioner’s next paragraph asserts that “Ferguson states that the techniques used to communicate ... *within* a router ... can also be applied to communicating ... *between* two routers” Pet. 55-56. First, Ferguson actually teaches the opposite, as Ferguson describes techniques in reference to communication *between* routers and then says that those inter-router techniques also “may be ... applied” to within a router. Ex.1007 at 5:61-6:6; Ex.2007 ¶157; Ex.2008 at 71:14–72:11. The remainder of Petitioner’s paragraph acknowledges this. Pet. 55 (citing Ex.1007 at 5:61-6:6). Second, as Petitioner notes, Ferguson teaches this about “its” techniques, not Raz’s techniques. Pet. 55; Ex.2007 ¶157. Ferguson does not cite or discuss

Raz's techniques. *See* Ex.2008 at 59:21–60:4. Also, as explained in section III.A, there are fundamental differences between the techniques of Ferguson and Raz. Ex.2007 ¶157. Third, neither this paragraph of the Petition nor the expert declaration paragraph cited therein (Ex.1004 ¶245) contains any citation or discussion of Raz. *See* Pet. 55-56. Ultimately, the fact that Ferguson's teachings regarding communications between routers can also apply within a single router does not mean that the opposite is true for Raz. Ex.2007 ¶157.

Petitioner's next paragraph asserts that based on the "disclosures of Ferguson," "a POSA would have understood that the techniques disclosed in Raz for ... within a LSR ... could also be applied" between LSRs. Pet. 56 (citing Ex.1004 ¶245). However, neither this paragraph of the Petition nor the expert declaration paragraph cited therein (Ex.1004 ¶245) contains any citation or discussion of Raz's actual specific teachings, much less explains how Raz would purportedly be modified to apply to communications between LSRs. *See* Pet. 56; Ex.2007 ¶158. Moreover, a mere possibility of how Raz "could" be applied does not establish the requisite motivation for obviousness. *PersonalWeb*, 848 F.3d at 993-94.

Petitioner also asserts in that same paragraph that "packets are communicated the same way within a device as between devices" (Pet. 56) and later that the "same techniques" could be used for both inside and between LSRs (Pet. 59). But neither of these assertions includes an explanation as to *how* Raz's techniques would

allegedly be applied the “same” for both within and between LSRs. Pet. 56, 59; Ex.2007 ¶159. As explained for Ground 1, Raz could not be applied the “same way” for both within and between LSRs. *See* sections II.B–C *supra*.

Petitioner next asserts that “both 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. 57-59. This mischaracterizes Raz, however, which is not concerned with “bandwidth ... to communicate high-speed packet streams through an MPLS network” but is instead concerned with the problem of processing capacity/bandwidth *within* a network device for handling a high-speed packet stream communicated through the network. Ex.1006 at Abstract, 1:40-2:3, 6:24-27, 14:6-8, 15:14-17, 16:27-29; Ex.2007 ¶160; section II.B *supra*. Indeed, to the extent Raz discloses bandwidth allocation, it is with respect to allocating bandwidth of subports, which are *within* an LSR. Abstract (“allocating subport bandwidth”), Fig. 5 (“subport bandwidth allocation method”), 2:23-25, 8:1-4, 11:60-12:9; Ex.2007 ¶160. Petitioner even admits that “Raz discusses allocating the bandwidth of subports *within an LSR*.” Pet. 57 (emphasis added).

Petitioner next asserts that “[a] POSA would have understood from ... Ferguson that techniques ... to communicate data packets between routers ... are also applicable to the use of subports ... within the routers ..., and vice versa,” such that “a POSA would have known that the techniques disclosed in Raz ... would also

have been applicable to ... between routers” Pet. 59. First, however, Ferguson does not teach the “vice versa”—i.e., that a technique described for within a router is also applicable between routers. Ex.2007 ¶161. Indeed, Petitioner cites no support for this “vice versa.” Instead, Petitioner cites only Ex.1007 at 5:61-6:6 (and Ex.1004 ¶250, which also cites only Ex.1007 at 5:61-6:6), and that disclosure shows that Ferguson teaches the opposite, as Ferguson says its techniques “described in reference to” an external link between routers “may be ... applied” to within a router. Ex.2007 ¶161; Ex.2008 at 71:14–72:11. At most, this disclosure teaches that Ferguson’s techniques can apply to both between and within routers. Ex.2007 ¶161. But Ferguson does not describe techniques for within a router and further state that those techniques can be extended to apply between routers. *Id.*

Second, regardless of whether Ferguson teaches the alleged “vice versa,” the relied-upon teaching in Ferguson (5:61-6:6) is about only Ferguson’s own techniques, not Raz or its subparts. Ex.2007 ¶162. A POSA would not have understood this teaching in Ferguson to apply to Raz and would not have been motivated by this teaching in Ferguson to extend Raz’s mechanism for within a router to apply to between routers. *Id.* Indeed, Petitioner fails to discuss any particulars of either Ferguson or Raz’s techniques, much less compare their particular techniques to explain why or how Ferguson’s disclosures would also apply

to Raz’s techniques. *Id.* In fact, neither this paragraph of the Petition nor the expert declaration paragraph cited therein (Ex.1004 ¶250) contains a single cite to Raz.

In sum, the Petition fails to establish a motivation to modify Raz with Ferguson, as Petitioner does not explain specifically why or how a POSA would have modified or combined the particular teachings of Raz and Ferguson to meet all of the claim limitations. Ex.2007 ¶163.

C. Petitioner Fails to Establish a Reasonable Expectation of Success

Regardless of whether Petitioner has established a motivation to modify Raz with Ferguson, Petitioner has failed to establish a reasonable expectation of success in doing so. Ex.2007 ¶¶164-67.

Obviousness requires a reasonable expectation of success, separate and distinct from a motivation to modify. *Eli Lilly*, 8 F.4th at 1344.

Petitioner presents no argument that a POSA would have had a reasonable expectation of success in modifying Raz with Ferguson to meet the claims. Ex.2007 ¶166. Neither the Petition nor Dr. Bhattacharjee’s declaration includes any arguments even mentioning the requisite “reasonable expectation of success,” despite Dr. Bhattacharjee’s declaration recognizing in the “Governing Law” section that “where there is a reason to modify or combine the prior art to achieve the claimed invention, *there must also be a reasonable expectation of success in so*

doing to render the claimed invention obvious.” Ex.1004 ¶14 (emphasis added).

Moreover, there is no reasonable expectation of success. Ex.2007 ¶167.

Ground 2 fails for this reason alone.

D. Even if Raz is Modified Based on Ferguson as Petitioner Asserts, the Claims Are Not Rendered Obvious

Petitioner asserts for Ground 2 that Raz would have been modified in view of Ferguson to apply to communications between two MPLS/LAG switches via a LAG. Pet. 52-59. As explained in section II.E.2.c, however, even if a POSA were motivated and capable of somehow modifying Raz to apply to communications between two MPLS/LAG switches, as Petitioner asserts for Ground 2, such modification would nonetheless fail to meet claim 1, including limitation 1.5 in particular. Also, as explained in section II.G, claim 26 includes substantially similar limitations as claim 1 and is thus non-obvious for the same reasons as claim 1. Thus, the arguments in section II.E.2.c are also applicable for claims 1 and 26 under Ground 2. Ex.2007 ¶¶168-70.

Additionally, as explained in section II.F.2, Raz’s subport forwarding module fails to meet limitations 15.5–15.8, and Petitioner’s obviousness analysis of claim 15 for Ground 1 does not remedy Raz’s deficiency. Petitioner’s obviousness analysis for Ground 2 does not specifically address Raz’s subport forwarding module or limitations 15.5–15.8 (*see* Pet. 52-59) and therefore likewise does not remedy this deficiency for purposes of Ground 2. Ex.2007 ¶171.

Thus, even if Raz is modified based on Ferguson as Petitioner asserts for Ground 2, this nonetheless fails to meet independent claims 1, 15, and 26.

IV. Dependent Claims

Dependent claims 2-14 and 16-25 are non-obvious based on Petitioner's failure to establish obviousness of the underlying independent claims from which they depend, as explained in sections II and III.

V. Conclusion

For the foregoing reasons, Petitioner has not established that any challenged claims of the '602 patent are obvious, and the Board should thus reject all grounds in the Petition and affirm the patentability of the challenged claims.

Date: November 20, 2023

Respectfully submitted,

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CERTIFICATION UNDER 37 C.F.R. § 42.24

Under the provisions of 37 C.F.R. § 42.24, the undersigned hereby certifies that the foregoing document contains 13,998 words, and thus complies with the word-count limits of 37 C.F.R. § 42.24.

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing PATENT OWNER RESPONSE was served on November 20, 2023 by filing this document through the P-TACTS platform as well as by delivering a copy via the delivery method indicated to the attorneys of record for the Petitioner as follows:

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