

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JUNIPER NETWORKS, INC.,
Petitioner,

v.

MONARCH NETWORKING SOLUTIONS LLC,
Patent Owner.

IPR2024-00175
Patent 8,693,369 B2

Before THU A. DANG, CHARLES J. BOUDREAU, and
NORMAN H. BEAMER, *Administrative Patent Judges*.

BEAMER, *Administrative Patent Judge*.

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

I. INTRODUCTION

On November 10, 2023, Juniper Networks, Inc. (“Petitioner”) filed a Petition (“Pet.”) pursuant to 35 U.S.C. §§ 311–319 to institute an *inter partes* review of claims 1–17 of U.S. Patent No. 8,693,369 B2 (“the ’369 patent”). Paper 1. On February 26, 2024, Monarch Networking Solutions LLC (“Patent Owner”) filed a Preliminary Response (“Prelim. Resp.”). Paper 6.

The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted unless the information presented in the Petition and any preliminary response shows that “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

For the reasons explained below, we determine that Petitioner has established a reasonable likelihood that it would prevail with respect to at least one challenged claim. Accordingly, we institute an *inter partes* review as to the challenged claims and grounds raised in the Petition.

II. BACKGROUND

A. The ’369 Patent

The ’369 patent, titled “Method Of Routing A Data Packet In A Network and An Associated Device,” was filed on March 31, 2009, and issued on April 8, 2014. Ex. 1001, codes (54), (22), (45). The ’369 patent is directed to routing a data packet in a telecommunications network. *Id.* at code (57). In the context of the Internet networks, packets of data are

transported from source equipment to destination equipment identified by a destination address. *Id.* at 1:15–18. The Internet Protocol (IP) defines the syntax of packet addresses, and in particular IP version 4 (IPv4) provides for 32-bit addresses, which can accommodate over four billion unique addresses. Bhattacharjee Decl. ¶¶ 27–29.¹ As of the filing date of the '369 patent, it was commonly accepted in the IP service provider community that, despite the availability of over four billion public IPv4 addresses, exhaustion of this supply of addresses was inevitable. Ex. 1001, 1:53–54.

One approach to ameliorating this problem was to store a Network Address Translation (NAT) table in a home gateway between terminal equipment of a private home network and the public telecommunications network, in which the table associated private IP addresses and the ports of the terminals inside the private network with the IPv4-type public IP address and a port of the gateway. *Id.* at 1:45–53.² Using the NAT approach, when a terminal in the private network sent a packet through the gateway to the public network, the gateway, using the NAT table, translated the private IP address and a port number of the terminal to the public IP address and a port number of the gateway, thus allowing a single public IP address to stand in for numerous terminal IP addresses inside the private network. Ex. 1001, Fig. 1, 1:66–2:18; Bhattacharjee Decl. ¶¶ 32–34. The process was reversed

¹ “Bhattacharjee Decl.” refers to the Declaration of Dr. Samrat Bhattacharjee, filed by Petitioner in support of the Petition. Ex. 1003.

² Ports associated with devices on a network typically were assigned 16-bit port numbers, thus potentially accommodating approximately 65,000 ports for each device, although only a small portion were used for a given device. Bhattacharjee Decl. ¶ 31.

for incoming packets sent from the public network to an internal terminal via the gateway. *Id.*

The '369 patent modifies the NAT approach by taking advantage of the fact that pieces of terminal equipment do not make use simultaneously of all the 2^{16} (*i.e.*, 65,536) port number values available, and therefore each terminal equipment in the private network can be assigned a lesser range of port numbers that is uniquely associated with that terminal. Ex. 1001, 7:12–28. The port number range is provided to the terminal in the form of a mask, which uses bit values to define the range. *Id.* at Figs. 2A, 2B, 7:29–67. As a simplified example, using 10-bit binary numbers, a mask for the range 0–15 could be 1111110000, and performing a bit-wise AND operation between the mask and a particular number would yield a non-zero result if a bit value in the number equaled one in any of the six most significant bits of the number, which would indicate that the number fell outside the range. Bhattacharjee Decl. ¶¶ 41–43. If the AND operation yielded all zeros, then the port number would fall within the range. *Id.*

With this arrangement, when a terminal in the private network sends a packet through the gateway to the public network, the gateway translates the private IP address of the terminal to the public IP address of the gateway but transmits the port number of the terminal (a number within the terminal's assigned range) unchanged. Ex.1001, 13:42–50. The gateway stores the association of the port mask of the terminal with its private IP address. *Id.* at 8:44–48. For incoming packets sent from the public network to an internal terminal via the gateway, the gateway determines which port mask

the incoming port number belongs to, which in turn identifies the private IP address of the destination terminal. *Id.* at 8:21–36.

The '369 patent asserts:

Thus the invention is based on an entirely novel and inventive approach to routing a data packet that relies on a unique combination consisting of the destination address of the packet, the port mask defining a range of port numbers that includes the destination port number of the received packet and a routing identifier of the destination terminal equipment. The invention thus makes it possible to assign the same routable primary address in the telecommunications network to a plurality of pieces of terminal equipment connected to that network and thus to economize on the use of public IP addresses without having recourse to the Operator NAT solution. The invention thus constitutes a solution to the exhaustion of IPv4 addresses that is simple, effective, and continuous with standard practices in the field.

Ex. 1001, 3:11–29.

B. Illustrative Claim

Claims 1–6 and 15 generally relate to routing IP packets, and claims 7–14, 16, and 17 generally relate to configuring terminal equipment for such routing. Prelim. Resp. 7. Independent claims 1 and 7 are, respectively, representative of the former and latter groups, and are reproduced below.³

1. A method of routing an IP data packet in a telecommunications network to a destination equipment, said packet comprising a primary destination address and a destination port number, said method comprising, on reception of said packet, the following steps:

³ The bracketed letters and paragraph arrangement are taken from the Petition but do not impact our analysis. Pet. viii, ix.

- [a] determining a port mask assigned to the destination equipment, the port mask defining a range of port numbers to which the destination port number belongs;
- [b] selecting at least one identifier of the destination equipment of the packet from a plurality of equipment identifiers associated with said primary destination address based on the port mask; and
- [c] routing the packet to the destination equipment based on said identifier.

7. A method of configuring a piece of terminal equipment connected to a telecommunications network, comprising, on reception of a configuration request sent by said equipment, the following steps:

- [a] assigning to said piece of terminal equipment a primary address shared with a plurality of pieces of terminal equipment;
- [b] assigning to said piece of terminal equipment a port mask defining a range of numbers dedicated to it and a routing identifier; and
- [c] sending to said piece of terminal equipment a configuration message comprising said primary address, said port mask, and said routing identifier.

Ex. 1001, 14:15–28, 15:3–15.

C. Evidence of Record

Petitioner relies on the following references (Pet. 4):

- Biswas et al., US 8,019,889 B1, filed May 31, 2002, issued September 13, 2011 (“Biswas”). Ex. 1022.
- Kumar et al., US 7,394,809 B2, filed March 31, 2003, issued July 1, 2008 (“Kumar”). Ex. 1023.

- Fangman et al., US 7,068,647 B2, filed July 11, 2001, issued June 27, 2006 (“Fangman”). Ex. 1024.
- King et al., US 8,032,639 B2, filed May 23, 2006, issued October 4, 2011 (“King”). Ex. 1025.
- RFC 791, “DARPA Internet Program Protocol Specification” (September 1981) (“RFC 791”). Ex. 1026.

D. Asserted Challenges to Patentability

Petitioner challenges the patentability of claims 1–17 of the ’369 patent on the following bases (Pet. 4):

Claims Challenged	35 U.S.C. § ⁴	References
7–14, 16, 17	103	Biswas, Kumar
1–3, 5, 6, 15	103	Fangman, Kumar
1–3, 5, 6, 15	103	King, Kumar
4	103	Fangman, Kumar, RFC 791
4	103	King, Kumar, RFC 791

E. Real Parties in Interest

The parties identify themselves as the real parties in interest. Pet. 1; Paper 10, 2.

F. Related Proceedings

The parties identify the following as related proceedings: *Monarch Networking Solutions LLC v. Juniper Networks, Inc.*, Case No. 1:23-cv-

⁴ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), included amendments to 35 U.S.C. §§ 102 and 103 that became effective after the filing of the application for the ’369 patent. Therefore, we apply the pre-AIA versions of these sections.

00670-TSE-LRV (E.D. Va.), transferred; *Monarch Networking Solutions LLC v. Juniper Networks, Inc.*, Case No. 4:23-cv-05076-JST (N.D. Cal.), pending; *Ex Parte* Reexamination No. 90/015,315, pending. Pet. 2; Paper 10, 2.

III. ANALYSIS OF PETITIONER’S CHALLENGE

A. *Legal Standards*

To prevail in its challenge, Petitioner must demonstrate by a preponderance of the evidence that the claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). “In an IPR, the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (2012) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to the patent owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

A patent claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *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 ordinary skill in the art; and (4) when in evidence, objective indicia of non-obviousness (also called secondary considerations), such as commercial success, long-felt but unsolved needs, and failure of others.⁵ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). We analyze grounds based on obviousness in accordance with the above-stated principles.

B. Level of Skill in the Art

In determining whether an invention would have been obvious at the time it was made, 35 U.S.C. § 103(a) requires us to resolve the level of ordinary skill in the pertinent art at the time of the invention. *Graham*, 383 U.S. at 17. The person of ordinary skill in the art is a hypothetical person who is presumed to have known the relevant art at the time of the invention. *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). Factors that may be considered in determining the level of ordinary skill in the art include, but are not limited to, the types of problems encountered in the art, the sophistication of the technology, and educational level of active workers in the field. *Id.* In a given case, one or more factors may predominate. *Id.*

Petitioner asserts that a person of ordinary skill in the art at the time of the alleged invention of the '369 patent:

[W]ould have had a B.S. degree in electrical engineering, computer engineering, computer science, or a related subject, and three years of work experience in computer networking, including experience with the IPv4 protocol, or a related field

⁵ No evidence of objective indicia of non-obviousness is of record.

. . . . Lack of professional experience can be remedied by additional education, and vice versa

Pet. 14 (citing Bhattacharjee Decl. ¶¶ 62–64). Patent Owner does not dispute Petitioner’s proposal at this stage of the proceeding. Prelim. Resp. 9.

Petitioner’s proposal is consistent with the level of ordinary skill in the art as reflected by the asserted prior art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *GPAC*, 57 F.3d at 1579. On this record, the level of ordinary skill is neither in dispute nor dispositive of any challenge. For purposes of this Decision, we apply Petitioner’s articulation.

C. Claim Construction

The Petition was accorded a filing date of November 10, 2023. Paper 3, 1. In an *inter partes* review for a petition filed on or after November 13, 2018, a claim “shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” 37 C.F.R. § 42.100(b). We apply the claim construction standard from *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (*en banc*).

Claim terms need only be construed to the extent necessary to resolve the controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017). The parties submit that no claim construction is necessary. Pet. 14; Prelim. Resp. 16. We have not been presented with the need to construe any claim terms for purposes of this Decision.

D. Alleged Obviousness of Claims 7–14, 16, and 17 over Biswas and Kumar

Petitioner challenges claims 7–14, 16, and 17 as obvious over the combination of Biswas and Kumar. Pet. 14–38.

1. Biswas

Biswas, titled “Method And Apparatus For Making End-Host Network Address Translation (NAT) Global Address And Port Ranges Aware,” issued September 13, 2011, from an application filed May 31, 2002. Ex. 1022, codes (54), (45), (22). Biswas describes performing network address translation on data transmitted within a computer network. *Id.* at 1:9–12. Biswas recognizes that the IPv4 address protocol provided for an insufficient number of unique addresses given the “explosion of the Internet.” *Id.* at 1:13–24. Biswas notes use of NAT tables (described above) as one then-existing solution to the limited address problem. *Id.* at 1:25–27. As an alternative, Biswas provides for a host in a private network to obtain from an edge router a local address, a global address and a global port range. *Id.* at Fig. 8, 2:25–56, 6:41–67, 11:25–39. When the host sends data to a destination in a public network, it uses the global address and a port number within its assigned port range. *Id.* at Fig. 8, 2:34–52, 11:50–57, 12:11–16. The edge routers keep track of the port ranges assigned to their associated hosts, so that the destination port number of incoming data is sent to the correct host. *Id.* at 7:1–8.

2. *Kumar*

Kumar, titled “Method And Apparatus For Packet Classification Using A Forest Of Hash Tables Data Structure,” issued July 1, 2008, from an application filed March 31, 2003. Ex. 1023, codes (54), (45), (22). Biswas describes a packet classifier that uses rules that specify sets of criteria applied to a packet to determine whether to perform a specified action on the packet, such as accepting or blocking the packet. *Id.* at code (57), 7:14–38. A rule can be in the form of a mask to specify, for example, a range of values that a packet address of port number can have to satisfy the rule. *Id.* at 7:31–34, 7:39–48. For example, the bit mask

1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
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 may specify a rule that a packet is blocked if the destination port number is less than or equal to 1023. *Id.* at Figs. 7A, 7B, 7:58–63, 8:5, 8:14–19, 8:34–35.

3. *The Combination of Biswas and Kumar*

Petitioner argues that one of ordinary skill would have been motivated to apply the use of masks to define port number ranges, as disclosed in Kumar, in order to implement the disclosed operation in Biswas of edge routers providing port ranges to hosts. Pet. 17–18 (citing Bhattacharjee Decl. ¶ 77). Petitioner argues that both references are in the same field of computer networking and routing data packets, that one of ordinary skill would have been motivated to look beyond Biswas for implementation details on how the edge router would provide port ranges to hosts, and that the use of masks as discussed in Kumar was a well-known technique for accomplishing that operation. *Id.* at 24–25 (citing Ex. 1023, 2:57–65; Bhattacharjee Decl. ¶¶ 97–98). Petitioner contends that it was well known

that the use of masks to define ranges was computationally efficient and that persons of ordinary skill would have had a reasonable expectation of success in making the combination given that it involved straightforward use of masking techniques. *Id.* at 25–26 (citing Bhattacharjee Decl. ¶¶ 99–101).

Patent Owner argues that one of ordinary skill would not have been motivated to turn to Kumar for additional implementation details because Biswas and Kumar are directed to separate aspects of networking — Kumar being directed exclusively with packet classification, not packet addressing. Prelim. Resp. 19–20 (citing Minoli Decl. ¶¶ 77–78).⁶ Patent Owner argues that Kumar fails to disclose the complexities and processes involved with routing packets that would arise in attempting the combination, and that Kumar’s complex search system using hash tables and rule hierarchies would add significant processing demands to any combination. *Id.* at 20–21 (citing Minoli Decl. ¶¶ 78–79). Patent Owner further argues that neither Biswas nor Kumar discloses transmitting a port mask to a terminal device. *Id.* at 21 (citing Minoli Decl. ¶ 80).

For purposes of this Decision, we determine that Petitioner has provided sufficiently articulated reasoning with rational underpinnings for the proffered combined teachings of Biswas and Kumar. Patent Owner focuses on specific details of the packet classification system of Kumar, whereas Petitioner relies on the combination of Biswas and Kumar. *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986); *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). “The test for obviousness is not whether the

⁶ “Minoli Decl.” refers to the Declaration of Daniel Minoli, filed by Patent Owner in support of its Preliminary Response. Ex. 2001.

features of a secondary reference may be bodily incorporated into the structure of the primary reference. . . . Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art.” *In re Keller*, 642 F.2d at 425; *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012). “Combining the *teachings* of references does not involve an ability to combine their specific structures.” *In re Nievelt*, 482 F.2d 965, 968 (CCPA 1973). At this stage, we are persuaded by Petitioner’s declarant’s testimony that one of ordinary skill would have known to use the masking techniques exemplified by Kumar to implement the disclosed operation in Biswas of edge routers providing hosts with port number ranges. Bhattacharjee Decl. ¶¶ 77, 97–101. Accordingly, for purposes of this Decision, we accept Partitioner’s proffered combination of Biswas and Kumar.

4. *Independent Claims 7, 10, 11, and 14*

For the “method of configuring” preamble of independent claim 7, Petitioner generally relies on the disclosures in Biswas of hosts connected to networks which are configured in response to DHCP (Dynamic Host Configuration Protocol) requests. Pet. 18–20 (citing Ex. 1022, Fig. 1, 2:23–33, 2:47–3:57, 6:50–60, 7:9–12:19, 12:54–58; Bhattacharjee Decl. ¶¶ 79–82).⁷

⁷ Based on the present record, we make no determination at this stage of the proceeding that the preamble of claim 7 (or of claims 10, 11, or 14) is limiting.

For claim requirement 7[a] of assigning a primary address,⁸ Petitioner relies on the disclosure in Biswas of edge routers providing multiple requesting hosts with the edge router's primary address in response to DHCP requests. Pet. 20–21 (citing Ex. 1022, Fig. 3A, 1:42–45, 2:25–28, 6:50–7:7, 7:62–8:15, 11:50–54; Bhattacharjee Decl. ¶¶ 83–86).

For claim requirement 7[b] of assigning a port mask and routing identifier, Petitioner relies on the disclosure in Biswas of edge routers providing requesting hosts with a local address and a global port range in response to DHCP requests, and on the disclosure in Kumar of the use of masks to identify port ranges. Pet. 21–24 (citing Ex. 1022, Figs. 3A–3E, 1:32–33, 6:37–7:7, 7:49–61; Ex. 1023, Fig. 7B, 7:31–8:64; Bhattacharjee Decl. ¶¶ 87–95). As discussed above, Petitioner persuasively demonstrates that one of ordinary skill would have combined Biswas and Kumar in this manner.

For claim requirement 7[c] of sending a configuration message, Petitioner relies on the disclosure in Biswas of sending a DHCP reply to a requesting host. Pet. 26–27 (citing Ex. 1022, Fig. 5, 10:22–58; Bhattacharjee Decl. ¶¶ 102–104).

Independent claim 10 is an apparatus claim directed to a configuration server that has similar requirements to method claim 7 and additionally requires a processor and communications unit performing the method steps

⁸ For economy of presentation, we refer to the portions of claim 7 identified by bracketed letters at Section II.B above, and paraphrase the referenced claim requirement, although the complete language of each claim requirement is the subject of our analysis.

of claim 7. Ex. 1001, 15:27–38. Petitioner’s challenge to claim 10 tracks that of claim 7 and further relies on disclosures in Biswas of edge routers that include processors and communication units. Pet. 30 (citing Bhattacharjee Decl. ¶¶ 110–113).

Independent claim 11 is a method claim that includes a preamble establishing that a piece of terminal equipment receives a configuration message as specified in claim 7, additionally requires storage of the configuration data of the message, and further requires “before sending a data packet into the telecommunications network, selecting a port number in the range of port numbers defined by the port mask, said data packet comprising as source address the primary address of said piece of terminal equipment and as source port number the selected port number.” Ex. 1001, 15:39–16:6. Independent claim 14 is an apparatus claim counterpart to method claim 11. *Id.* at 16:21–35. Petitioner’s challenge to claims 11 and 14 refers to its analysis of claim 7 for the preambles of those claims, relies on the disclosure in Biswas of memory in hosts for storing data, and further relies on the disclosure in Biswas of hosts sending data by selecting a global address and a port number within the assigned port number range for inclusion in the data packet header. Pet. 30–33, 37–38 (citing Ex. 1022, Fig. 8, 11:25–12:28, 12:40–13:17, 13:45–57; Bhattacharjee Decl. ¶¶ 114–119, 132–134).

Other than arguing that the combination of Biswas with Kumar is not motivated, which we discuss above, Patent Owner does not specifically respond to Petitioner’s arguments regarding the requirements of independent claims 7, 10, 11, and 14. *See generally* Prelim. Resp. Nonetheless, the

burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). We determine, on the current record and for purposes of this Decision, that the information presented in the Petition demonstrates a reasonable likelihood that Petitioner will prevail in establishing that claims 7, 10, 11, and 14 are unpatentable under 35 U.S.C. § 103(a) over the combination of Biswas with Kumar.

5. Dependent Claims 8, 9, 12, 13, 16, and 17

Claim 8 adds to claim 7 the step of:

assigning to said piece of terminal equipment an identifier of a routing device adapted to route a data packet comprising said primary address as the destination address to said piece of terminal equipment, and the configuration message further comprising said routing device identifier.

Ex. 1001, 15:16–22. For the claim 8 requirements, Petitioner relies on the disclosure in Biswas of gateway master 110 as the claimed routing device and attributes the global address of that component as the referenced “routing device identifier.” Pet. 27–28 (citing Bhattacharjee Decl.

¶¶ 105–107). Petitioner cites the statement in Biswas:

Gateway Master 110 translates local addresses of data received from a private network 108 into global addresses of data being output from the Gateway Master 110 to public network 112, and vice versa. The Gateway Master 110 also translates global addresses of data received from public network 112 into local addresses of data being output from the Gateway Master 110 to private network 108, and vice versa.

Ex. 1022, 6:12–19. Petitioner asserts that the global address of gateway master 110 is assigned to terminal equipment as part of the DHCP configuration process. Pet. 28 (citing Bhattacharjee Decl. ¶ 106).

Claim 9 adds to claim 7 the requirement that “said configuration message is further sent to a routing device that routes to said piece of terminal equipment a data packet containing said primary address as the destination address.” Ex. 1001, 15:23–26. For the claim 9 requirement, Petitioner relies on the disclosure in Biswas of embodiments that employ a DHCP server that is separate from the edge router, in which the edge router operates a customer premises equipment that is operable as a DHCP relay. Pet. 28–29 (citing Ex. 1022, Fig. 3B, 7:9–10, 8:16–27; Bhattacharjee Decl. ¶¶ 108–109).

Claim 12 adds to claim 11 the requirement that “once an identifier of a routing device adapted to route a data packet comprising said primary address as the destination address to said piece of terminal equipment has been received, said method further comprises a step of sending the configuration data to said routing device.” Ex. 1001, 16:7–13. For the claim 12 requirement, Petitioner relies on the disclosure in Biswas of gateway master 110 as the claimed routing device, and attributes the global address of that component as the referenced “identifier of a routing device.” Pet. 33–34 (citing Ex. 1022, 6:12–24, 6:61–7:8; Bhattacharjee Decl. ¶¶ 120–123). Petitioner asserts that the gateway master is adapted to route data packets to terminal equipment. *Id.* Petitioner argues that a person of ordinary skill in the art would have understood that the configuration data

used to send packets to the terminal equipment would have to have been sent to the gateway master. *Id.*

Claim 13 adds to claim 11 the requirement that “on reception of a data packet comprising a destination address, a port number, and a routing identifier, said method further comprises a step of verifying that the port number belongs to the range of port numbers defined by the port mask, and a step of rejecting said packet if result of the verification is negative.”

Ex. 1001, 16:14–19. For the claim 13 requirement, Petitioner relies, *inter alia*, on the hosts in Biswas being assigned a port range, and that therefore one of ordinary skill would have understood that a host would not have used port numbers outside its assigned range. Pet. 37 (citing Ex. 1022, 2:23–33, 2:46–65, 3:6–14; Bhattacharjee Decl. ¶ 130). Petitioner further relies on the disclosure in Kumar of the use of rules to block incoming packets, and argues that it would have been obvious to adopt Biswas to use the rule approach of Kumar to reject data packets with port numbers outside the assigned range. *Id.* at 35–36 (citing Ex. 1023, 7:14–38, 8:1–19, 9:1–2; Bhattacharjee Decl. ¶¶ 126, 130). Petitioner’s argument in support of the combination tracks that summarized in Section III.D.3 above, that Biswas does not explain specific implementation details regarding the handling of incoming packets that have non-complying port numbers, and therefore a person of ordinary skill would have been motivated to adopt the rule approach of Kumar. *Id.* at 36–37 (citing Bhattacharjee Decl. ¶¶ 127–131).

Claim 16 requires a “non-transitory computer readable medium encoded with program code instructions executable by a microprocessor to perform the method according to claim 7,” and claim 17 correspondingly

sets forth the same requirement for claim 11. Ex. 1001, 16:39–44. For these requirements, Petitioner relies on the disclosure in Biswas of computer implementation details supporting the disclosed embodiments. Pet. 38 (citing Ex. 1022, 3:59–4:4, 13:58–14:16, 17:63–18:21; Bhattacharjee Decl. ¶¶ 135–136).

Other than arguing that the combination of Biswas with Kumar is not motivated, which we discuss above, Patent Owner does not specifically respond to Petitioner’s arguments regarding dependent claims 8, 9, 12, 13, 16, and 17. *See generally* Prelim. Resp. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

With that in mind, at this stage we cannot accept Petitioner’s analysis regarding dependent claims 8 and 12. Petitioner assumes that the global address that is used by gateway master 110 corresponds to both the “primary address” and the “routing device identifier” referenced in claims 8 and 12, and that this global address of the gateway master is provided via the DHCP configuration. Pet. 28, 33–34. However, the only global address disclosed in Biswas that is provided to hosts is the global address of the edge routers. Ex. 1022, 6:50–60. Likewise, Petitioner assumes, for claim 12, that the gateway master routes data packets to terminal equipment, and therefore it would be apparent that the gateway master had to have the configuration data. Pet. 34. However, it is the edge routers that route data to the terminals, and therefore only those components need the configuration data. Biswas actually suggests that the disclosed embodiment on which Petitioner

relies bypasses the address translation process that otherwise would be performed by the gateway master. Ex. 1022, 12:22–27.

Other than for claims 8 and 12, we determine, on the current record and for purposes of this Decision, that the information presented in the Petition demonstrates a reasonable likelihood that Petitioner will prevail in establishing that claims 9, 13, 16, and 17 are unpatentable under 35 U.S.C. § 103(a) over the combination of Biswas and Kumar.

E. Alleged Obviousness of Claims 1–3, 5, 6, and 15 over Fangman and Kumar, and over King and Kumar

Petitioner challenges claims 1–3, 5, 6, and 15 as obvious over the combination of Fangman and Kumar. Pet. 38–53. Petitioner also challenges those claims over the combination of King and Kumar. Pet. 53–66.

1. Fangman

Fangman, titled “System And Method For Routing IP Packets,” issued June 27, 2006, from an application filed July 11, 2001. Ex. 1024, codes (54), (45), (22). Fangman describes routing packets for IP telephony, including IP telephones and service gateways coupled via a network. *Id.* at code (57). When the telephone sends data packets to an external IP device, the service gateway receives the data packet from the telephone, including a private source IP address, source port number, and destination information for an IP device, performs network address persistent port translation (NAPPT) on the data packet, and sends it to the IP device. *Id.* NAPPT changes the private source IP address to a public source IP address, leaving the source port number unchanged. *Id.* When the telephone receives data

packets from an external IP device, the service gateway receives a data packet from the IP device, including a public destination IP address, a destination port number, and source information; NAPPTs the data packet, using the public destination IP address and the destination port number to identify the telephone, changing the public destination IP address to the private IP address of the destination telephone, leaving the destination port number unchanged; and sends the data packet to the telephone. *Id.*

Fangman discloses that the service gateway allocates a range of port numbers for each IP telephone connected to it, and maintains a table of mappings of the external IP address and ports of each telephone to their internal hosts and ports. Ex. 1024, 8:45–52. The network address persistent port translation (NAPPT) process involves using the public destination IP address and the destination port number to uniquely identify the IP telephone, and changing the public destination IP address to a private destination IP address while leaving the destination port number unchanged. *Id.* at 18:39–44. The particular port number used in any given data transmission is limited to the port number range assigned to the telephone. *Id.* at 18:48–56.

2. *King*

King, titled “Apparatus And Method For Providing Data Session Source Device Information,” issued October 4, 2011, from an application filed May 23, 2006. Ex. 1025, codes (54), (45), (22). King discloses a network in which source devices send data packets to remote devices via customer premises equipment and aggregations devices. *Id.* at Fig. 1, 1:34–49, 2:49–51. Each device is assigned a range of port numbers, and a

given port number in the header of a transmitted data packet is used by the aggregations device to identify the source device for purposes of determining policy information such as authorization, authentication and accounting information. *Id.* at Figs. 2, 7, 8, 1:49–66, 5:23–57, 5:60–6:20.

3. *The Combination of Fangman and Kumar, and of King and Kumar*

Using arguments similar to the above-discussed arguments regarding the combination of Biswas with Kumar, Petitioner argues that one of ordinary skill would have been motivated to apply the use of masks to define port number ranges, as disclosed in Kumar, in order to implement the disclosed operation in Fangman and King of assigning port ranges to hosts. Pet. 41, 45–47, 55–56, 59–60 (citing Bhattacharjee Decl. ¶¶ 144, 156–162, 186, 195–201).

However, each of claims 1–3, 5, 6, and 15, directly or via dependency, requires, as part of the process of routing an IP data packet that includes a destination port number, “determining [or a processor that determines] a port mask assigned to the destination equipment, the port mask defining a range of port numbers to which the destination port number belongs,” and then using that port mask to select the identifier of the equipment. Ex. 1001, 14:14–15:2. The premise of Petitioner’s challenges for the Fangman/Kumar and the King/Kumar combinations is that Fangman and King disclose determining and using a port number range in the manner claimed, and Petitioner applies Kumar to fill in the implementation detail of using a port mask to define the range. Pet. 45, 58–59.

But, as Patent Owner argues, Petitioner’s premise is insufficiently persuasive at this stage because neither Fangman nor King appears to route

data packets sent by a terminal equipment by determining a port range assigned to that equipment. Prelim. Resp. 22–37. In Fangman, although service gateways assign unique port ranges to IP telephones, the service gateways maintain tables mapping external IP addresses and ports to the internal hosts and ports. Ex. 1024, 8:46–58. When the service gateway receives a data packet destined for the IP telephone, it uses the table to look up the private IP address of the telephone based on the port number, not the port range. *Id.* at 18:31–56. It does not determine the port range originally assigned to the telephone, and does not use that for routing. Prelim Resp. 24–25 (citing Minoli Decl. ¶¶ 85–89). We understand Fangman only to discuss port ranges in the context of assigning source ports for outgoing transmissions. *Id.* at 25–27 (citing Minoli Decl. ¶¶ 88–91).

In King, for a given data transmission session, a user device is assigned a port number from a pool of port numbers stored in a database and associated with the device. Ex. 1025, Fig. 7, 5:23–28. At the start of the session, a service aggregation device uses the port number to determine information about the device, such as authorization, authentication and accounting policies. *Id.* at 1:49–55. In doing so, it determines the user device identity based on the port range that the port number belongs to, using the database of assigned ports. *Id.* at 5:36–57. However, we find no disclosure in King of using port ranges for routing of data packets to user devices. Prelim Resp. 32–36 (citing Minoli Decl. ¶¶ 102–108).

Therefore, we are not persuaded at this stage that there is any basis for asserting that a person of ordinary skill would have turned to Kumar to use masks to implement using a port number range to route data packets,

because neither Fangman nor King appears to use port number ranges to route data packets in the first place. Prelim Resp. 27–29, 36–37 (citing Minoli Decl. ¶¶ 94, 112). Accordingly, we determine, on the current record and for purposes of this Decision, that the information presented in the Petition does not demonstrate a reasonable likelihood that Petitioner will prevail in establishing that claims 1–3, 5, 6, and 15 are unpatentable under 35 U.S.C. § 103 over the combination of Fangman and Kumar, or of King and Kumar.

F. Alleged Obviousness of Claim 4 over Fangman, Kumar, and RFC 791, and of Claim 4 over King, Kumar, and RFC 791

Petitioner challenges claim 4 over the combination of Fangman, Kumar, and RFC 791, and alternatively over the combination of King, Kumar, and RFC 791. Pet. 66–70. Claim 4 adds to claim 1 the requirement that “the at least one identifier is a route identifier specific to said destination equipment and the packet is routed based on said specific route identifier.” Ex. 1001, 14:37–40. For this requirement, Petitioner relies on the disclosure in RFC 791 of a “strict source routing” option. Pet. 67–70. However, given our determination set forth above regarding claim 1, we determine, on the current record and for purposes of this Decision, that the information presented in the Petition does not demonstrate a reasonable likelihood that Petitioner will prevail in establishing that claim 4 is unpatentable under 35 U.S.C. § 103 over the combination of Fangman, Kumar, and RFC 791, or over the combination of King, Kumar, and RFC 791.

G. Discretionary Denial Pursuant To 35 U.S.C. § 325(d)

Patent Owner argues that institution should be denied pursuant to 35 U.S.C. 325(d) because “similar art and arguments were previously presented to the Office in a granted re-exam.” Prelim. Resp. 2. Patent Owner relies on a January 18, 2024 Order Granting Request For *Ex Parte* Reexamination of the ’369 patent, which cited Fangman as well as a patent that includes the named inventors of the Biswas reference, is also assigned to Cisco Technology, Inc., and which Patent Owner argues is very similar to Biswas. *Id.* at 41–42 (citing Ex. 1015; Ex. 2008, 5, 18). Patent Owner also relies on the fact that Fangman was identified as a “document of particular relevance” in the International Search Report filed with the original application that led to the ’369 patent. *Id.* at 45 (citing Ex. 1002, 289).

Under 35 U.S.C. § 325(d), the Board may exercise discretion to deny a petition that presents the same or substantially the same art or arguments as were previously presented to the Office. *See* 35 U.S.C. § 325(d); 37 C.F.R. § 42.4(a) (providing that the Board institutes on behalf of the Director). The Board has outlined factors it considers in determining whether to exercise discretion to deny institution under § 325(d). *See Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017) (precedential as to § III.C.5, first paragraph) (“*Becton Dickinson*”). The *Becton Dickinson* factors apply when a petition relies on art or arguments previously presented to the Office during any proceeding pertaining to the challenged patent, including reexamination, reissue, and AIA post-grant proceedings. *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6, 8–10 (PTAB Feb. 13, 2020)

(precedential). *Advanced Bionics* explains how the *Becton Dickinson* factors fit into a two-part framework that examines:

(1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and (2) if either condition of first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims. If a condition in the first part of the framework is satisfied and the petitioner fails to make a showing of material error, the Director generally will exercise discretion not to *institute inter partes* review.

Id. at 8.

In regard to the reexamination proceedings that Patent Owner relies on, however, the current record presents circumstances not well suited for the *Becton Dickinson* factors. Here, the reexamination is in its early stages, and no office action has issued. It is premature to characterize the reexamination grounds as “previously presented,” or to evaluate whether the Office erred in a manner material to the patentability of challenged claims. *See, e.g., Mueller Sys., LLC v. Rein Tech, Inc.*, IPR2020-00099, Paper 9, 10–14 (PTAB May 12, 2020) (holding that §325(d) did not apply to prior art submitted in pending reexamination that had not yet resulted in an office action).

Moreover, the Examiner’s determination in the January 18, 2024 grant of the reexamination request is consistent with Petitioner’s arguments here, in that it found substantial new questions of patentability with respect to both a Biswas patent asserted to be similar to the Biswas patent asserted here, and Fangman, also asserted here. Ex. 2008, 20. Therefore, there is

little basis to predict that, in the further course of the reexamination proceedings, the Office will have erred in a manner material to the patentability of challenged claims. Also, the finding of substantial new questions of patentability supports a determination that the Office was not “previously” presented with the same art or arguments as in the Petition because the Examiner determined that arguably similar (the reexamination Biswas patent) and identical (the Fangman patent) references presented new questions of patentability. *See Mueller*, IPR2020-00100, Paper 9, 10.

We note that the Office has advised that “[t]he Board . . . may deny institution under 35 U.S.C. [§] 325(d) of a requested AIA trial proceeding if a parallel Office proceeding, for example, is in a more advanced stage and involves overlapping issues with the proposed AIA trial proceeding.” *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*, 84 Fed. Reg. 16,654, 16,657 (Apr. 22, 2019). The Examiner in the reexamination proceeding at issue here has found that the art presented there is “substantially the same prior art” as Petitioner asserted in this IPR. Ex. 2008, 20. As stated above, both proceedings rely on Fangman, and the two Biswas references are similar. The early stage of the reexamination proceeding, however, weighs against denying institution. *See Mueller*, IPR2020-00100, Paper 9, 13. In addition, unlike this proceeding, the reexamination does not involve consideration of the teachings of Kumar, which as discussed above is critical to the question of obviousness of using a mask to define a range of port numbers.

After weighing all the considerations discussed above, we determine that the co-pending Reexamination Proceeding is not an adequate reason to justify discretionary denial of the Petition.⁹

Patent Owner also argues that the fact that Unified Patents submitted the reexamination request presents a real party in interest issue that is an additional reason to deny institution. Prelim. Resp. 46–48. However, the present record does not present facts that would support this argument.

IV. CONCLUSION

After considering the evidence and arguments presented in the Petition and the Preliminary Response, Petitioner has established a reasonable likelihood of prevailing on its assertion that at least one claim of the '369 patent is unpatentable. Accordingly, we institute an *inter partes* review on all the challenged claims and all of the grounds presented in the Petition. See 37 C.F.R. § 42.108(a); *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018); *AC Techs. S.A. v. Amazon.com, Inc.*, 912 F.3d 1358, 1364

⁹ In regard to the International Search Report citation of Fangman during the original prosecution, as shown above, the fact that the Examiner in the reexamination proceeding found that Fangman presents a substantial new question of patentability undercuts exercising discretion under § 325(d) on that basis. Also, “[t]he Board frequently holds that a reference that was neither applied against the claims nor discussed by the Examiner does not weigh in favor of exercising the Board’s discretion under §325(d) to deny a petition.” *Amazon.com, Inc. v. M2M Sols. LLC*, IPR2019-01205, Paper 14, 15 (PTAB. Jan. 27, 2020) (quotation omitted); *Adv. Energy Indus. Inc. v. Reno Tech. Inc.*, IPR2021-01397, Paper 7, 7 (PTAB Feb. 16, 2022); *Fasteners for Retail, Inc. v. RTC Indus., Inc.*, IPR2019-00994, Paper 9, 7–11 (PTAB Nov. 5, 2019).

(Fed. Cir. 2019) (“[I]f the Board institutes an IPR, it must . . . address all grounds of unpatentability raised by the petitioner.”). At this stage of the proceeding, we have not made a final determination as to the patentability of these challenged claims.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that pursuant to 35 U.S.C. § 314, *inter partes* review is instituted as to the challenged claims of the ’369 patent with respect to all grounds of unpatentability presented in the Petition; and

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

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