

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

F5 NETWORKS, INC.,
Petitioner,

v.

RADWARE, LTD.,
Patent Owner.

Case IPR2017-00124
Patent 9,231,853 B2

Before KRISTEN L. DROESCH, DAVID C. McKONE, and
JOHN F. HORVATH, *Administrative Patent Judges*.

McKONE, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73
ORDER ON MOTION TO AMEND
35 U.S.C. § 316(d) and 37 C.F.R. § 42.121

I. INTRODUCTION

A. Background

F5 Networks, Inc. (“Petitioner”) filed a Petition to institute an *inter partes* review of claims 1–24 (“challenged claims”) of U.S. Patent No. 9,231,853 B2 (Ex. 1001, “the ’853 patent”) pursuant to 35 U.S.C. §§ 311–319. Paper 1 (“Pet.”). Radware, Ltd. (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”).

Pursuant to 35 U.S.C. § 314, in our Institution Decision (Paper 8, “Dec.”), we instituted this proceeding as to claims 1, 2, 4–15, and 17–24, but not as to claims 3 and 16. Dec. 38–39.

Patent Owner filed a Patent Owner’s Response (Paper 19, “PO Resp.”), and Petitioner filed a Reply to the Patent Owner’s Response (Paper 35, “Reply”).

Patent Owner also filed a Motion to Amend, seeking to replace claims 7, 8, 13, 19, and 20 with substitute claims 25–29. (Paper 25, “Mot. to Amend,” 1). Petitioner filed an Opposition to the Motion to Amend (Paper 29, “Opp. to Mot. to Amend”), Patent Owner filed a Reply supporting its Motion to Amend (Paper 32, “Mot. to Amend Reply”), and Petitioner filed a Sur-Reply opposing the Motion to Amend (Paper 42, Mot. to Amend Sur-Reply).

Patent Owner also filed a Motion to Exclude Evidence submitted with Petitioner’s Reply (Paper 37, “Mot. to Exclude”), Petitioner filed an Opposition to the Motion to Exclude (Paper 40, “Opp. to Mot. to Exclude”), and Patent Owner filed a Reply supporting its Motion to Exclude (Paper 43, “Reply Mot. to Exclude”).

Petitioner relies on the Declarations of Aviel D. Rubin, Ph.D. (Ex. 1012, “A. Rubin Decl.”; Ex. 1024, “A. Rubin Mot. to Amend Decl.”; Ex. 1025, “A. Rubin Reply Decl.”). Patent Owner relies on the Declarations of Roch Guerin, Ph.D. (Ex. 2010, “Guerin Decl.”) and Izhak Rubin, Ph.D. (Ex. 2033, “I. Rubin Decl.”; Ex. 2036, “I. Rubin Mot. to Amend Reply Decl.”).

An oral argument was held on March 5, 2018 (Paper 47, “Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Decision is a final written decision under 35 U.S.C. § 318(a) as to the patentability of claims 1, 2, 4–15, and 17–24. Based on the record before us, Petitioner has proved, by a preponderance of the evidence, that claims 1, 2, 4, 6–15, 17, and 19–24 are unpatentable, but not claims 5 and 18. We grant Patent Owner’s Motion to Amend as to substitute claim 29, but deny the Motion as to substitute claims 25–28.

B. Related Matters

Petitioner and Patent Owner inform us that there are no pending matters concerning the ’853 patent, but that Patent Owner asserted three patents related to the ’853 patent—U.S. Patent Nos. 6,665,702; 8,266,319; and 8,484,374—against Petitioner in *Radware, Ltd. v. F5 Networks, Inc.*, Case No. 5:13-cv-02024, in the Northern District of California. Pet. 1; Paper 4, 1.

C. The Instituted Grounds

We instituted on the following grounds of unpatentability (Dec. 38–39) and Petitioner challenges Patent Owner’s proposed substitute claims on the following grounds of unpatentability (Opp. to Mot. to Amend 7):

Reference(s)	Basis	Claim(s) Challenged
Veerina ¹	§ 102	1, 2, 4–9, 13–15, and 17–21
Veerina	§ 103	13–15 and 17–21
Veerina and Joshi ²	§ 103	10–12 and 22–24
Veerina and Shah ³	§ 103	Substitute 29
Veerina, Shah, and Ota ⁴	§ 103	Substitute 29
Veerina, Shah, and Mann ⁵	§ 103	Substitute 25–28

D. The '853 Patent

The '853 patent describes managing and load balancing a network architecture whereby a client is connected to the Internet through multiple Internet Service Providers (ISPs). Ex. 1001, 6:20–24. Figure 3A of the '853 patent illustrates such a network architecture, and is reproduced below:

¹ US Patent No. 6,243,379 B1 (Ex. 1002) (“Veerina”).

² US Patent No. 5,317,566 (Ex. 1004) (“Joshi”).

³ US Patent No. 6,446,121 B1 (Ex. 1019) (“Shah”).

⁴ US Patent No. 5,347,272 (Ex. 1020) (“Ota”).

⁵ US Patent No. 6,314,093 B1 (Ex. 1021) (“Mann”).

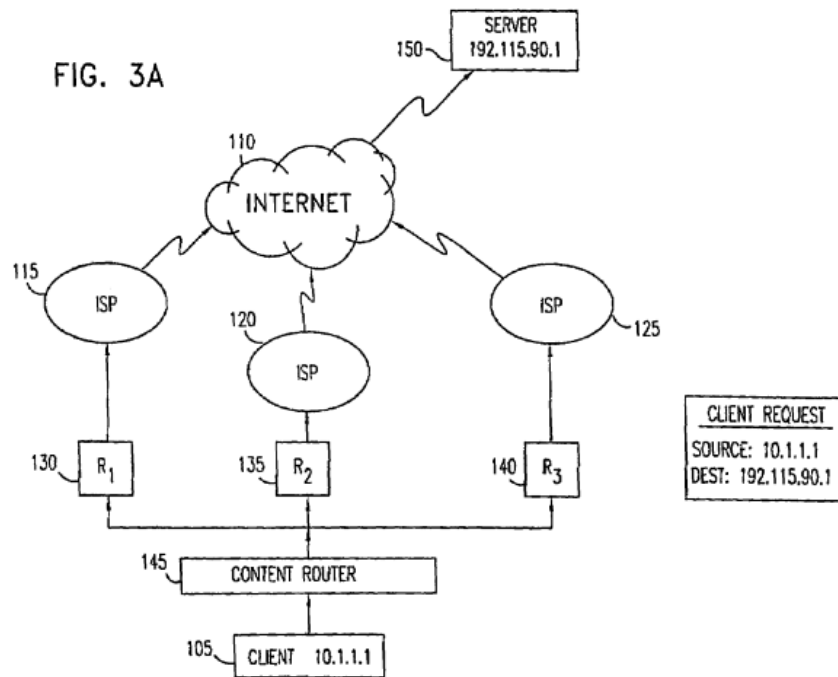


Figure 3A is a portion (along with Figs. 3B–3F) of a simplified pictorial flow of managing and load balancing a multi-homed network architecture in which a client is connected to the Internet through multiple ISPs. *Id.* at 3:9–13.

As shown above in Figure 3A, client 105 is connected to Internet 110 through multiple ISPs 115, 120, 125, each having a respective router 130, 135, 140 to control the flow of data packets. *Id.* at 6:24–27. Content router 145 provides efficient connectivity between client 105 and Internet server 150. *Id.* at 6:27–30. The first time client 105 connects to server 150, content router 145 selects one of routers 130, 135, 140 for connecting client 105 with server 150. *Id.* at 6:52–54. A source IP address of client 105 is translated to an IP address corresponding to the selected route, and client 105 is connected to server 150 over the selected route. *Id.* at 2:58–61; 6:63–7:7. The content router can select one of the available paths based on a “Decision Function,” and the “Decision Function for a particular path is

determined by an administrative manager (not shown) and may depend, for example, on the minimum number of hops or on the relevant response time, or on the packet loss, or on the path quality, or any combination of the above parameters, according to the administrative preferences.” *Id.* at 8:62–9:3.

To determine a best path for sending different types of content, the content router builds a “Decision Parameter Table” for each content type. *Id.* at 8:21–23. Typical values of parameters are shown in Table 1, reproduced below:

TABLE 1				
Content Type	Packet Loss, %	Hops, %	Response Time, %	Path Quality, %
HTTP	0	20	60	20
FTP	30	0	50	20
URL1	0	30	50	20
URL2	0	30	50	20
File Type 1	20	20	40	20
File Type 2	20	10	30	40
Telnet	0	0	20	80

Id. at 8:28–41. Table 1 is an example Decision Parameter Table. Table 1 illustrates “[t]ypical path quality weighting factors . . . for the listed data content.” *Id.* at 8:10–12.

The content router also builds a Destination Table, illustrated in Figure 7, which is reproduced below:

FIG. 7

DESTINATION TABLE		
	ROUTER R ₁	ROUTER R ₂
DESTINATION SUBNET ₁	HOPS = $h(1,1)$ RESPONSE TIME = $t(1,1)$ PACKET LOSS = $p(1,1)$	$h(2,1)$ $t(2,1)$ $p(2,1)$
DESTINATION SUBNET ₂	HOPS = $h(1,2)$ RESPONSE TIME = $t(1,2)$ PACKET LOSS = $p(1,2)$	$h(2,2)$ $t(2,2)$ $p(2,2)$
• • •	• • •	• • •

Figure 7 illustrates a typical Destination Table compiled by the content router for each ISP router and a respective path from that ISP router to a given destination. *Id.* at 3:25–28. The Destination Table is built to summarize factors such as content type, the number of hops to a destination, the response time of the destination, and the average packet loss in the link, based on proximity calculations. *Id.* at 8:46–50.

Using the weightings given in the Decision Parameter Table (Table 1) and the factors gathered in the Destination Table (Figure 7), the content router determines a Decision Function for each path, for example:

$$F_{content} = F(\text{Hops weighting factor} * \text{Hops count factor}; \\ \text{Response weighting factor} * \text{Response time factor}, \\ \text{Path quality weighting factor} * \text{Path quality factor}; \\ \text{Packet loss weighting factor} * \text{Packet loss factor}).$$

Id. at 8:51–58. Based on the Decision Function, the content router selects one of the available paths. *Id.* at 8:62–64.

In operation, when a client attempts to send a data packet to a destination, it sends the packet to the content router, which checks the Destination Table to determine if the destination is familiar from a previous check. *Id.* at 9:4–11. If so, the content router selects a link to the destination using the Decision Function, taking into account parameters that were gathered earlier. *Id.* at 9:11–15. If the destination is not known, the content router performs a destination check by generating actual web traffic towards the destination and builds a Destination Table for each available router and its respective path to the destination. *Id.* at 9:20–27.

Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A method for managing a multi-homed network using a content router connected to a client computer network, comprising:
 - receiving a request from a client within the client computer network directed to a remote server computer within a remote computer network, wherein the client and the remote server computer are connected through a plurality of data routes, each of the plurality of data routes is connected to a router;
 - selecting a data route from the plurality of data routes to route the received request to the remote server computer, wherein the selection of the data route is based on a decision function;
 - translating a source IP address of the client to an IP address corresponding to the selected data route;
 - and

routing the received request to the remote server
computer over the selected data route.

II. ANALYSIS

A. Claim Construction

We interpret claims of an unexpired patent using the broadest reasonable construction in light of the specification of the patent in which they appear. *See* 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–45 (2016). In applying a broadest reasonable construction, claim terms generally are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

In the Institution Decision, we construed “decision function” (claims 1, 14) to mean a “function used to decide which data route is selected based on its parameters” and “data route” (claims 1, 14) to mean “a data pathway for connecting one node to another node.” Dec. 6–10. Neither party opposes these constructions. PO Resp. 8; Reply 1. We maintain these constructions on the complete record.

Petitioner proposed constructions of “proximity” (claims 10, 22) and “multi-homed network” (claims 1, 14) in the Petition (at 8–9), but now agrees with Patent Owner (PO Resp. 8), that we need not construe these terms to resolve the disputes in this proceeding (Reply 1). We agree that construing these terms is not necessary to resolve the parties’ disputes. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”).

Patent Owner contends that “weighted function of at least one of,” recited in claims 6, 9, and 21, means a “function in which one or more attributes is given a weight.” PO Resp. 9–10. Patent Owner argues that this is the construction given by a district court to “weighed function of at least one of,” a similar term appearing in a claim of a related patent. *Id.* at 9 (quoting Ex. 1011, 14–15). Petitioner contends that this term need not be construed, but does not oppose the district court construction or offer an alternative. Reply 2. For purposes of this decision, we adopt the district court construction.

B. Anticipation by Veerina

Petitioner argues that claims 1, 2, 4–9, 13–15, and 17–21 are anticipated by Veerina. Pet. 16–28, 30–40. A claim is unpatentable under 35 U.S.C. § 102 if a single prior art reference either expressly or inherently discloses every limitation of the claim. *See Orion IP, LLC v. Hyundai Motor Am.*, 605 F.3d 967, 975 (Fed. Cir. 2010).

Although we address each of the challenged claims below, we note that Patent Owner does not contest Petitioner’s allegations as to claims 1, 2, 4, 7, 8, 13–15, 17, 19, or 20. Instead, Patent Owner states that the ’853 patent is “focused on intelligent routing across the internet through address management and route selecting informed by metrics” and that “in light of the Board’s constructions, it appears that some of the Broader claims of the ’853 patent may read on both of these distinct inventions.” PO Resp. 1; *accord* Mot. to Amend 1 (“Patent Owner explained in its Response that—although the ’853 Patent and Veerina (Ex. 1002) are directed to solving two different problems through two distinct inventions—in light of the Board’s

claim construction, some of the broader claims of the '853 Patent may be read on both inventions. Paper 19 at 1. *Patent Owner therefore did not challenge the institution grounds for claims 1, 2, 4, 7, 8, 13–17, 19, and 20.*” (emphasis added)). As noted above, Patent Owner does not oppose our claim constructions. *Id.* at 8. Moreover, Patent Owner was “cautioned that any arguments for patentability not raised in the response will be deemed waived.” Paper 9 (Scheduling Order), 3. Nevertheless, as to Petitioner’s anticipation allegations, Patent Owner presented substantive arguments only for claims 5, 6, 9, 18, and 21. PO Resp. 10–25, 40–55.

1. Overview of Veerina

Veerina describes connection and multiplex techniques for connecting multiple links between networked computers for digital packet transfer. Ex. 1002, Abstr., 1:1–10. In particular, users are connected to the Internet through multiple single-user ISP accounts via an Internet Protocol (“IP”) routing facility that couples processors in one network to processors in another network over multiple links corresponding to the multiple single-user ISP accounts. *Id.* at 1:39–51, 1:59–61. Figure 1 of Veerina is reproduced below:

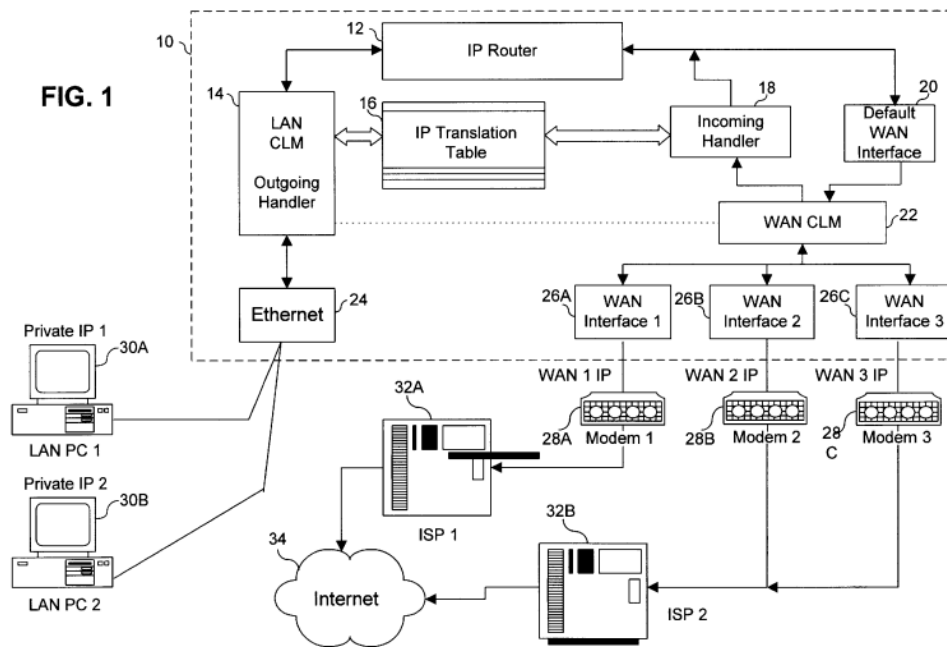


Figure 1 is a top-level block diagram of a system for bidirectional routing between Local Area Network (“LAN”) and Wide Area Network (“WAN”) addresses. *Id.* at 2:30–32, 3:15–19.

As shown above in Figure 1, network connection facility 10 selectively routes digital packets between LAN computers 30A–B and Internet 34 through multiple WAN links (at WAN interfaces 26A–C and modems 28A–C) and ISP host servers or processors 32A–B. *Id.* at 2:67–3:11, 6:23–24. Network connection facility 10 includes IP router 12, which receives incoming and outgoing packets for bidirectional routing between LAN and WAN addresses. *Id.* at 3:15–19. Bidirectional, inbound-outbound translations and assignments of IP addresses are performed to transfer the digital packets selectively over available links. *Id.* at 1:55–58. “The link-selection algorithm may be [a] simple ‘round robin’ scheme . . . or more complex load-balancing or dynamically-adaptive resource or performance optimization scheme” *Id.* at 3:54–58.

For outgoing packets, Connection-Level Multiplexing (“CLM”) outgoing handler 14 receives outgoing packets from Ethernet interface 24 and checks IP translation table 16 to determine whether the packets are included in the table or whether the connection is new. If the connection is new, CLM outgoing handler 14 adds an entry to IP translation table 16 based on a CLM WAN link assignment algorithm. *Id.* at 3:26–38, 6:33–38. An example IP translation table 16 is shown in Figure 2 reproduced below:

36 Source IP Address and port No.		38 Valid IP address and port No.		40 Destination IP address and port No.	
39A LAN PC 1 IP	PC Port 1025	WAN 1 IP	WAN 1 Port 4000	Dest IP 1	HTTP Server
39B LAN PC 2 IP	PC Port 1025	WAN 2 IP	WAN 1 Port 4000	Dest IP 2	HTTP Server
39C LAN PC 1 IP	PC Port 1026	WAN 1 IP	WAN 1 Port 4001	Dest IP 3	FTP Server
39D LAN PC 2 IP	PC Port 1026	WAN 3 IP	WAN 1 Port 4003	Dest IP 2	HTTP Server

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FIG. 2

Figure 2 is a look-up chart showing representative table entries for IP address and port translation. *Id.* at 2:33–35. The CLM outgoing handler performs a table look-up to modify the outgoing packet source IP address to an external IP address and replace an outgoing packet source port with an external port number. *Id.* at 6:39–43. The modified outbound packet is then sent out through an appropriate WAN link based on the packet’s new source IP address. *Id.* at 6:43–46.

2. Claims 1, 2, 4, 7, 8, 13–15, 17, 19, and 20

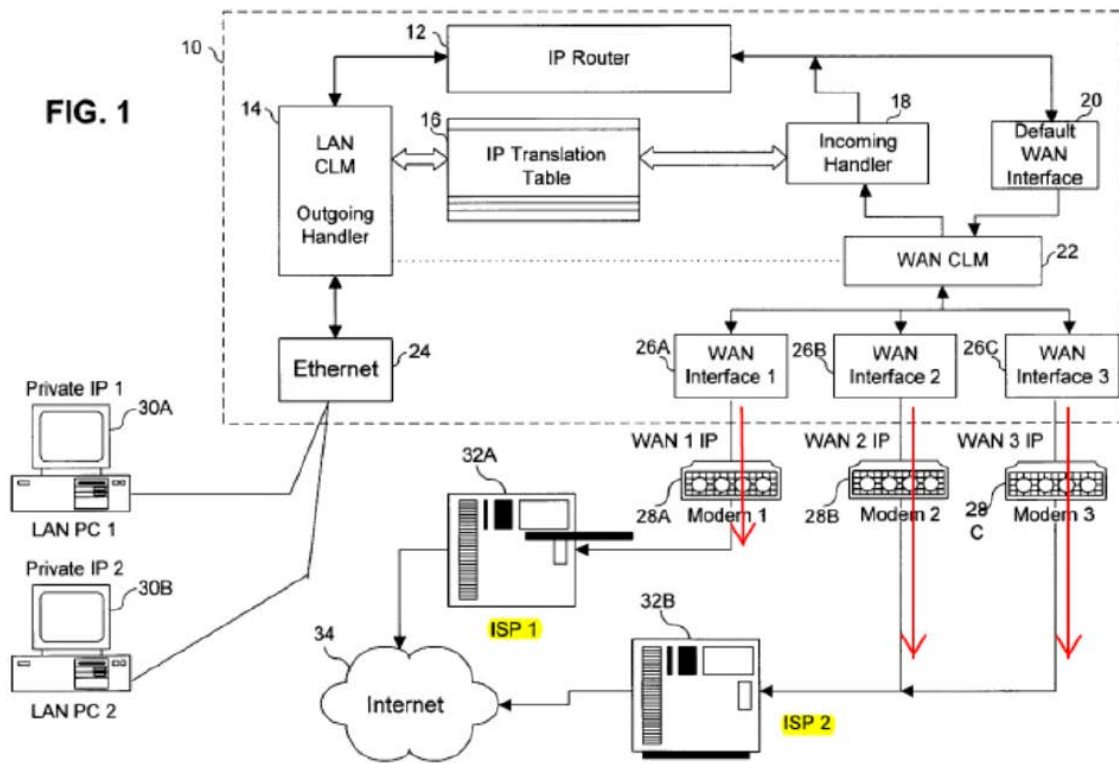
Petitioner contends that Veerina discloses all of limitations of claim 1 of the '853 patent. Pet. 17–26. Generally Petitioner argues that, similar to the '853 patent, Veerina describes a router circuit that provides IP address translation to enable connections over multiple single-user IP address account links. Pet. 10 (citing Ex. 1002, Abstract).

With respect to a “method for managing a multi-homed network using a content router connected to a client computer network,” as recited in claim 1, Petitioner argues that Figure 1 of Veerina discloses PCs 30A and 30B in a LAN having multiple connections to the Internet through ISP 1 and ISP 2. Pet. 17 (citing Ex. 1002, Fig. 1, 3:2–8). Petitioner (Pet. 18) further argues that Veerina’s circuit 10 is used to manage the multi-homed network for “selectably routing digital packets transferred between . . . computers 30A, 30B coupled via Ethernet interface 24 . . . and generally wide area network (WAN) to conventional Internet 34 through host servers or processors 32A, 32B for Internet Service Providers (ISP).” Ex. 1002, 2:66–3:9. Based on this disclosure, Petitioner argues that circuit 10 is the claimed “content router” as it is connected to the client LAN and manages the multi-homed network. Pet. 18. In view of Figure 1 of Veerina and the disclosures cited by Petitioner, we find that circuit 10 is a “content router” and that Veerina discloses the claimed “multi-homed network using a content router connected to a client computer network.”

Claim 1 additionally recites “receiving a request from a client within the client computer network directed to a remote server computer within a remote computer network.” With respect to this claim limitation, Petitioner cites Veerina’s disclosure that circuit 10 “rout[es] digital packets transferred

between [the LAN] including one or more processors or computers 30A, 30B . . . to conventional Internet 34.” Pet. 19 (quoting Ex. 1002, 3:1–6). Petitioner argues that Figure 2 (reproduced above) shows that each packet is directed to a destination address of a “remote server computer” (e.g., HTTP Server or FTP server) on a WAN remote from the client LAN. *Id.* at 19–20 (citing Ex. 1002, 5:5–8, 6:11–13). Based on this evidence, we find that Veerina discloses the “receiving” step of claim 1.

Claim 1 further recites that “the client and the remote server computer are connected through a plurality of data routes.” As noted in Section II.A above, a “data route” is “a data pathway for connecting one node to another node.” Petitioner argues that this limitation is met by Veerina’s disclosure that “[m]ultiple WAN links 26, 28 for ISP single-user account couplings are provided.” Pet. 20 (citing Ex. 1002, 6:23–24). Petitioner provides an annotated version of Veerina’s Figure 1 identifying the plurality of data routes, reproduced below:



The above figure is Figure 1 of Veerina with annotations provided by Petitioner. The red arrows identify the plurality of data routes. Pet. 20. As shown in Figure 1, PCs 30A and 30B are connected to multiple WAN links, 26A, 26B, and 26C, which send and receive packets to “Internet 34 through host servers or processors 32A, 32B for Internet Service Providers (ISP).” Ex. 1002, 3:2–8. Veerina further discloses that its system provides “packet transfer through multiple single-user IP address accounts between multiple users in a Local-Area Network (LAN) and multiple destinations or host processors in a Wide-Area Network (WAN).” Ex. 1002, 1:66–2:3. Based on this evidence, we find that Veerina discloses “the client and the remote server computer are connected through a plurality of data routes,” as recited in claim 1.

Claim 1 also requires that “each of the plurality of data routes is connected to a router.” Petitioner alleges that “a person of ordinary skill as

of the priority date of the '853 patent would have understood each WAN link to necessarily be connected to a router for the corresponding ISP.” Pet. 22 (citing Ex. 1012 ¶ 134). Petitioner’s Declarant, Dr. A. Rubin, states that Internet traffic passing through an ISP route necessarily would be connected to a router; otherwise, data packets could not be routed from the source to its ultimate destination on the Internet. Ex. 1012 ¶ 134. Accordingly, Dr. A. Rubin states that Veerina “inherently discloses that ‘each of the plurality of data routes is connected to a router,’ based on the nature of the ISPs.” *Id.*

In order to demonstrate that a reference inherently discloses a claim element, Petitioner must show that the reference “‘*necessarily* functions in accordance with, or includes, the claimed limitations.’” *In re Cruciferous Sprout Litig.*, 301 F.3d 1343, 1349 (Fed. Cir. 2002) (emphasis added) (citing *MEHL/Biophile Int’l Corp. v. Milgraum*, 192 F.3d 1362, 1365 (Fed. Cir. 1999)). Petitioner correctly notes that “a prior art reference must be ‘considered together with the knowledge of one of ordinary skill in the pertinent art.’” *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994) (citation omitted). On the complete record, we credit Dr. A. Rubin’s uncontroverted testimony that Internet traffic passing through an ISP, such as ISP 1 or ISP 2 disclosed in Veerina, necessarily would be connected to a router, as such a router would be required to transmit and receive data. Ex. 1012 ¶ 134. Accordingly, we find that Veerina inherently discloses that “each of the plurality of data routes is connected to a router.”

Claim 1 further recites “selecting a data route from the plurality of data routes to route the received request to the remote server computer, wherein the selection of the data route is based on a decision function.” As

noted in Section II.A above, a “decision function” is a “function used to decide which data route is selected based on its parameters.” For this limitation, Petitioner relies upon Veerina’s disclosure that outgoing handler 14 of circuit 10 makes a “selection decision” to “map outgoing packet[s] through [a] particular external WAN link.” Pet. 22 (quoting Ex. 1002, 4:7–8). Veerina discloses the use of a “link-selection algorithm” to “decide on which link the outgoing packet shall go out” and this link-selection algorithm can be a simple round robin scheme, or “more complex load-balancing or dynamically-adaptive resource or performance optimization scheme.” Ex. 1002, 3:52–58. Veerina discloses that the algorithm may “take[] into account information such as the speed of available links, number of connections already existing on the links, historical performance, behavior pattern or anticipated capacity of particular channels or users, or type of actual connections being serviced currently by various links.” *Id.* at 3:58–65. Veerina discloses that its link-selection algorithm can be based on similar parameters to those set forth in the ’853 patent for the decision function, such as capacity, availability, and load. *Compare* Ex. 1002, 3:58–65 *with*, Ex. 1001, 10:31–59. Based on this evidence, we find that Veerina discloses the “selecting” step of claim 1.

Claim 1 also requires “translating a source IP address of the client to an IP address corresponding to the selected data route.” For this claim limitation, Petitioner cites to Veerina’s disclosure that outbound packets are processed by replacing a source IP address with a valid IP address that corresponds to a particular WAN link. Pet. 23 (citing Ex. 1002, 5:51–53). Petitioner also cites to the IP translation table disclosed in Veerina’s Figure 2, which is used to modify the outgoing source IP address. *Id.* at 23–

24 (citing Ex. 1002, 6:39–42, Fig. 2). In view of the disclosure cited by Petitioner, we find that Veerina discloses the claimed “translating” step.

Finally, claim 1 recites “routing the received request to the remote server computer over the selected data route.” For this claim limitation, Petitioner alleges that Veerina discloses that circuit 10 routes packets between LAN clients and multiple destinations or host processors in a WAN. Pet. 26. Specifically, Petitioner cites to Veerina’s disclosure of routing the outgoing packet to the remote destination specified by the packet’s destination IP address over the selected WAN link. Pet. 25–26 (citing Ex. 1002, 6:42–46). We find that this discloses the claimed “routing” step.

In sum, Veerina discloses each limitation of claim 1, arranged as in claim 1. Therefore, Petitioner has shown, by a preponderance of the evidence, that Veerina anticipates claim 1.

Claim 13 recites “[a] non-transitory computer readable medium having stored thereon instructions which, when executed, causes a computer to execute the method of claim 1.” Petitioner argues that claim 13 is met by Veerina’s disclosure that its routing and NAT (network address translation) techniques can be implemented by a software or firmware look-up table or another associative data structure implemented in computer storage. Pet. 37 (citing Ex. 1002, 1:51–58). Petitioner also cites to Veerina’s disclosure that the network routing facilities could be implemented in an alternative server processor architecture. *Id.* (citing Ex. 1002, 5:27–30). Based on Petitioner’s evidence, we find that Veerina discloses executing the method of claim 1 using a non-transitory computer readable medium with stored instructions.

Therefore, Petitioner has shown, by a preponderance of the evidence, that Veerina anticipates claim 13.

Independent claim 14 is similar to claim 1 except that it recites “[a] network device configured to manage a multi-homed network,” rather than a “method for managing a multi-homed network using a content router.” The majority of the limitations in claim 14 are substantively the same as those in claim 1; thus, Petitioner’s arguments of anticipation of claim 14 based on Veerina merely incorporate by reference Petitioner’s citations and arguments regarding claim 1. *See* Pet. 38–39. Likewise, we incorporate our findings as to the corresponding limitations of claim 1, discussed above.

Additionally, claim 14 recites a “processor” and a “memory communicatively connected to the processor.” Petitioner argues that Veerina discloses “the present invention may be implemented in alternative server processor . . . architectures.” *Id.* at 38 (quoting Ex. 1002, 5:27–30). With respect to the memory limitation, Petitioner argues that a person of ordinary skill as of the priority date of the ’853 patent would have understood Veerina’s circuit 10 to include a memory containing instructions executable by the processor. Pet. 39 (citing Ex. 1012 ¶¶ 207–209). Dr. A. Rubin explains that to perform the “‘complex load-balancing or dynamically adaptive resource or performance optimization scheme’ disclosed in Veerina (*see* Ex. 1002, 3:54–65), the processor would need to access from memory instructions specifying the steps of the load-balancing algorithm and data providing inputs to the algorithm.” Ex. 1012 ¶ 207. Dr. A. Rubin further testifies that these instructions would necessarily be stored in memory and accessible by the processor. *Id.* We credit Dr. A. Rubin’s uncontroverted testimony and find that the processor

disclosed in Veerina would necessarily require accessible memory. *See id.* Accordingly, Petitioner has shown, by a preponderance of the evidence, that Veerina anticipates claim 14.

Claim 2 depends from claim 1 and recites “receiving a response to the request designating a destination IP address sent from the remote server computer” and “performing a network address translation (NAT) of the destination IP address to the IP address of the client on the client computer network.” Claim 15 depends from claim 14 and adds substantially similar limitations. Petitioner argues that Veerina discloses that when an inbound packet is received from one of the WAN interfaces, circuit 10 determines whether the inbound packet belongs to an existing connection in translation table 16. Pet. 26–27. Petitioner adds that because Veerina discloses that ““inbound packets [that] do[] not belong [to an existing connection] are dropped,”” a person of ordinary skill in the art would have understood the incoming packet to be a response to an outgoing packet in an existing connection. *Id.* at 27 (quoting Ex. 1002, 6:53–54 (bracketing by Petitioner)). Veerina further discloses that “[i]ncoming handler 18 checks IP translation table 16 to look-up or determine whether incoming packets are already indicated to be included therein,” and “if it is determined that incoming packet exists in table 16, then address and port designations for such incoming packet are translated and sent to IP router 12.” Ex. 1002, 4:29–36.

Based on Petitioner’s evidence, we find that Veerina’s description that an incoming packet is dropped unless handler 18 determines “that [the] incoming packet exists in table 16, then address and port designations for such incoming packet are translated and sent to IP router 12” (Ex. 1002, 4:29–36) discloses the receiving and performing steps of claim 2 and the

corresponding limitations of claim 15. Therefore, Petitioner has shown, by a preponderance of the evidence, that Veerina anticipates claims 2 and 15.

Claim 4 depends from claim 1 and recites “wherein each of the plurality of routes is connected to an ISP and each of the plurality of data routes is an ISP link.” Claim 17 depends from claim 14 and adds substantially the same limitation. As shown in Petitioner’s annotated Figure 1 of Veerina, reproduced above, the route corresponding to WAN 1 IP is connected to ISP 1 (32A) and the routes corresponding to WAN 2 IP and WAN 3 IP are connected to ISP 2 (32B). Pet. 30–31 (citing Ex. 1003, 5:36–43). As indicated by the red arrows in Petitioner’s annotated Figure 1, Petitioner identifies the ISP links as from a WAN Interface, through a Modem, to an ISP (e.g., from WAN Interface 1 (26A), through Modem 1 (28A), to ISP 1 (32A)). Based on this evidence, we find that Veerina discloses the additional limitations of claims 4 and 17. Accordingly, Petitioner has shown, by a preponderance of the evidence, that Veerina anticipates claims 4 and 17.

Claim 7 depends from claim 1 and recites “wherein the decision function is based on availability of each of the data routes among the plurality of data routes.” Claim 19 depends from claim 14 and adds the same limitation. Veerina explains that its “link-selection algorithm” “takes into account information such as the speed of available links, number of connections already existing on the links, historical performance, behavior pattern or anticipated capacity of particular channels or users” Ex. 1002, 3:54–65. According to Dr. A. Rubin’s uncontroverted testimony, each of these link criteria determines the overall availability of a link. Based on this evidence, we find that Veerina discloses the additional limitations of

claims 7 and 19. Accordingly, Petitioner has shown, by a preponderance of the evidence, that Veerina anticipates claims 7 and 19.

Claim 8 depends from claim 1 and recites “wherein the decision function is based on any one of: a round-robin selection parameter, and a random selection parameter.” Claim 20 depends from claim 14 and adds the same limitation. This is disclosed by Veerina’s description that its “link-selection algorithm may be [a] simple ‘round robin’ scheme, wherein [the] next available resource is allocated in sequence.” Ex. 1002, 3:54–56. *See also* Pet. 36. Accordingly, Petitioner has shown, by a preponderance of the evidence, that Veerina anticipates claims 8 and 20.

In sum, Petitioner has shown, by a preponderance of the evidence, that Veerina anticipates claims 1, 2, 4, 7, 8, 13–15, 17, 19, and 20. As noted above, Patent Owner does not present arguments or evidence contesting Petitioner’s allegations as to these claims.

3. Claims 5 and 18

Claim 5 depends from claim 4 and recites “wherein the IP address corresponding to the selected data route is selected from a range of IP addresses associated with the selected data route and its respective ISP link.” Claim 18 depends from claim 17 and adds the same limitation. Veerina describes:

Essentially, a routing facility is provided wherein LAN processors selectively couple to multiple single-user Internet access accounts provided by various ISPs. The look-up table 16 implemented in software or firmware essentially provides programmable capability for multiplexing or defining bi-directional network connection assignments between individual LAN users and multiple single-user WAN ISP accounts.

Ex. 1002, 5:36–43. Citing to this disclosure, Petitioner argues that “[t]he IP address associated with an ISP account corresponds to a particular WAN link, defining a data route.” Petitioner further argues that “[t]he multiple single-user accounts provided by an ISP, each account having its own IP address, comprise a ‘range of IP addresses’ that may be used for connections.” Pet. 32 (quoting Ex. 1002, 1:21–34 (“ISP servers are configured currently to provide single-user accounts, each having a single Internet Protocol (IP) address.”)). Thus, Petitioner argues that the three IP addresses associated with the three WAN links of Veerina’s Figure 1, collectively, are the range of IP addresses and that each of the three IP addresses is associated with a data route/ISP link.

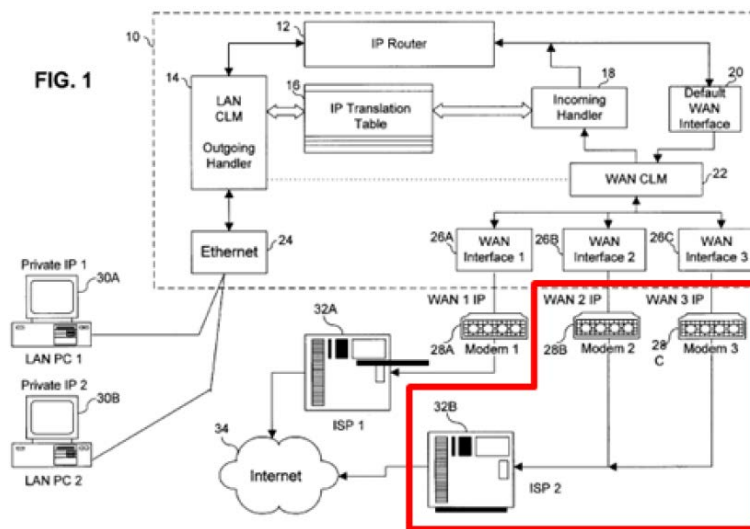
Patent Owner argues that Petitioner is misapplying claims 5 and 18. According to Patent Owner, in claims 5 and 8, each route has a range of IP addresses associated with it. PO Resp. 23. We agree with Patent Owner. Claim 5, for example, recites “a range of IP addresses associated with the selected data route and its respective ISP link.” Thus, contrary to Petitioner’s application of Veerina’s example, claim 5 recites a range of IP addresses associated with an individual data route/ISP link. As Patent Owner argues, the claimed range of IP addresses “is not a collection of discrete IP addresses associated with *all* data routes and *all* ISP links, just the selected data route and its respective ISP link.” PO Resp. 22.

Patent Owner argues that Veerina does not disclose a range of IP addresses associated with a selected data route or its respective ISP link. PO Resp. 15. According to Patent Owner, “[t]his is because Veerina teaches a solution in which *each* WAN link has a *single* IP address associated with it, not a range of IP addresses. As a result, *each* WAN link has a *single* IP

address to use, not a range of IP addresses to select from.” *Id.* (citing Ex. 2033 (I. Rubin Decl.) ¶ 95). Patent Owner cites to several examples in Veerina describing single-user IP address schemes, accounts, and links. *Id.* at 15–19 (citing Ex. 1002, Abstract, 1:35–51, 1:67, 5:9–15).

We agree with Patent Owner that Veerina describes its invention in terms of single-user ISP accounts and single-user IP address selections. *See, e.g.*, Ex. 1002, 5:12–16 (“In particular, such connection entries [in the address translation table] each represent selected multiple single-user IP address links which are accessible simultaneously for high-performance data traffic through actual physical modem lines available between WAN-LAN or LAN-LAN computers.”), 5:47–51 (“Connection-level multiplexing is achieved essentially by setting desired IP address and port number assignments during incoming or outgoing packet processing between individual LAN users and multiple single-user Internet accounts via available WAN modem linkages.”), 6:5–10 (“For ISP servers, such access is manifested through the use of multiple single-user ISP accounts. Networking flexibility and capacity are significantly improved, especially for users desiring to access multiple locations on the Internet via multiple TCP/IP connections.”). As explained above, Petitioner contends that a data route and an ISP link are the path between a WAN Interface and an ISP. Pet. 20, 31. We find that the evidence in the Petition does not show that an individual data route or an ISP link is associated with a range of IP addresses. Rather, the examples to which Petitioner points (Ex. 1002, 1:21–34, 5:36–43) describe ISP servers providing single-user accounts that each have a single IP address.

In reply, Petitioner changes its application of Veerina. Rather than contending that a data path/ISP link corresponds to the red arrows supplied on its annotated Figure 1 (reproduced above), as it did in the Petition, Petitioner argues in the Reply that two of its previously identified paths now constitute a single path with two IP addresses (a range). Reply 7. Petitioner's new argument is shown in a second annotation of Veerina's Figure 1, reproduced below:



The figure above is a second annotation of Veerina's Figure 1 by Petitioner, with a red box drawn around WAN 2 IP, WAN 3 IP, and ISP 2. Petitioner argues that this “shows that the same ISP may provide *multiple* IP addresses” and that, “when Veerina's circuit 10 performs a link assignment (Veerina 3:48–51) and selects one of the two links with IP addresses from the same ISP, it is selecting an IP address from the range of IP addresses.” Reply 7–8. Petitioner supports this theory with a new expert declaration. *Id.* (citing Ex. 1025 (A. Rubin Reply Decl.) ¶ 18).

According to our rules, “[a] reply may only respond to arguments raised in the corresponding . . . patent owner response.” 37 C.F.R.

§ 42.23(b). The Board has provided the following guidance on the proper scope of a reply:

A reply may only respond to arguments raised in the corresponding opposition. § 42.23. While replies can help crystalize issues for decision, a reply that raises a new issue or belatedly presents evidence will not be considered and may be returned. The Board will not attempt to sort proper from improper portions of the reply. Examples of indications that a new issue has been raised in a reply include new evidence necessary to make out a *prima facie* case for the patentability or unpatentability of an original or proposed substitute claim, and new evidence that could have been presented in a prior filing.

Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,767 (Aug. 14, 2012). Section IV.B of Petitioner's Reply is not a proper response to the PO Response. Rather, it raises new arguments and introduces new evidence to support a new and different case of unpatentability. Accordingly, we will not consider it. In sum, Petitioner has not shown that Veerina expressly discloses the additional limitation of claims 5 and 18.

Petitioner also argues that a person of ordinary skill would have understood that ISPs were associated with a range of IP addresses. Pet. 33. According to Petitioner, "[o]ne of ordinary skill would have understood that modifying the source IP address of an outgoing packet to match an external IP address corresponding to the selected ISP WAN link *necessarily* entailed selecting an IP address from a range of IP addresses associated with that ISP." *Id.* (emphasis added). Thus, Petitioner argues that Veerina inherently discloses that an ISP selects a source IP address from a range of IP addresses and assigns it to a data route. In support, Petitioner cites to Dr. A. Rubin, who testifies "[o]ne of ordinary skill in the art at the time of the invention

would have understood that ISPs were *typically* associated with a range of IP addresses.” Ex. 1012 ¶ 172 (emphasis added).

In response, Patent Owner argues that claim 5 requires the selecting be performed by the content router of claim 1, not an ISP, and that claim 18, similarly, requires its selecting to be performed by the network device of claim 14. PO Resp. 24. Patent Owner argues that the ’853 patent describes each ISP assigning a range of IP addresses from which a content router selects an IP address. *Id.* at 12–14 (citing Ex. 1001, 6:34–42, 6:63–67). In particular, the ’853 patent states that “ISPs 115, 120 and 125 assign respective IP address ranges to the client network” and “content router 145 assigns respective network addresses . . . to client 105.” Ex. 1001, 6:34–35, 6:40–42. Petitioner is correct, however, that neither claim 5 nor claim 18 specifies which entity performs the recited selection of an IP address from a range of IP addresses. Reply 4–5. We are not persuaded by Petitioner’s argument (*id.* at 5) that the ’853 patent uses “assign” to mean something other than “select,” and, thus, that the specification does not describe the content router selecting an IP address from a range. We agree with Petitioner, however, that nothing in the ’853 patent indicates that claims 5 and 18 should be limited to that example. Reply 5–6.

Nevertheless, Petitioner has not made an adequate showing of inherency.

To serve as an anticipation when the reference is silent about the asserted inherent characteristic, such gap in the reference may be filled with recourse to extrinsic evidence. Such evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.

Continental Can Co. USA, Inc. v. Monsanto Co., 948 F.2d 1264, 1268 (Fed. Cir. 1991). “Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *Bettcher Indus., Inc. v. Bunzl USA, Inc.*, 661 F.3d 629, 639–40 (Fed. Cir. 2011) (quoting *In re Oelrich*, 666 F.2d 578, 581 (CCPA 1981)).

Petitioner cites only to Dr. A. Rubin to establish that ISPs necessarily were associated with ranges of IP addresses and, thus, “[o]ne of ordinary skill would have understood that modifying the source IP address of an outgoing packet to match an external IP address corresponding to the selected ISP WAN link necessarily entailed selecting an IP address from a range of IP addresses associated with that ISP.” Pet. 33 (citing Ex. 1012 ¶¶ 167–173). Dr. A. Rubin, however, only testified that “[o]ne of ordinary skill in the art at the time of the invention would have understood that ISPs were *typically* associated with a range of IP addresses.” Ex. 1012 ¶ 172 (emphasis added). Although this might be sufficient to establish that an ISP in Veerina probably would have been associated with a range of IP addresses, it is not sufficient to show that such an ISP *necessarily* would have been associated with a range of IP addresses. Additional testimony of Dr. A. Rubin makes clear that he is speculating as to how Veerina’s system *could* have operated rather than how it necessarily *must* have operated:

one of ordinary skill in the art at the time of the invention would have understood that modifying the source IP address of an outgoing packet to reflect an external IP address corresponding to the selected WAN Link for an ISP *could involve selecting* from a range of IP addresses associated with that ISP.

Id. (emphasis added). On the complete record, we find that Veerina does not inherently disclose “wherein the IP address corresponding to the selected data route is selected from a range of IP addresses associated with the selected data route and its respective ISP link,” as recited in claim 5 and similarly recited in claim 18.

In sum, Petitioner has not shown that Veerina expressly or inherently discloses the additional limitation of claims 5 and 18. Accordingly, Petitioner has not shown on the record before us, by a preponderance of the evidence, that Veerina anticipates claims 5 and 18.

4. Claims 6, 9, and 21

Claim 6 depends from claim 4 and recites:

wherein the decision function is a weighted function of at least one of: a current load on each data route of the plurality of data routes, packet losses on each data route of the plurality of data routes, a cost of each data route of the plurality of data routes, a capacity of each of the plurality of data routes, a capacity of an ISP link, and a price of an ISP link.

Claim 9 depends from claim 1 and recites a substantially similar limitation.

Claim 21 depends from claim 14 and recites a substantially similar limitation.

As Petitioner points out (Pet. 34), Veerina describes a “link-selection algorithm” that may be:

[a] more complex load-balancing or dynamically-adaptive resource or performance optimization scheme that takes into account information such as the speed of available links, number of connections already existing on the links, historical performance, behavior pattern or anticipated capacity of particular channels or users, or type of actual connections being serviced currently by various links in order to prioritize or map

allocation of available network channel resources to computer users.

Ex. 1002, 3:54–65; *see also id.* at 5:65–67 (“WAN links are assigned according to predictable criteria, including loading or access fairness, available capacity or bandwi[d]th, or other congestion-avoidance scheme.”).

Petitioner argues that Veerina’s complex load-balancing scheme would “necessarily involve some weight being applied to the criteria considered (including a weight of 100%, as appropriate).” Pet. 34–35 (citing Ex. 1012 ¶¶ 174–178). Dr. A. Rubin explained this position in deposition:

Q. You – you’re saying you can’t have a link selection algorithm without weights?

...

THE WITNESS: Every algorithm is going to take inputs and those inputs are going to be weighted. Even if they’re weighted at one or zero, if they’re there, they’re one, if they’re not there, they’re a zero. And that would be a weighted.

...

Q. So if I have a link selection algorithm that considers a single metric and all it’s considering is that metric across separate links, you’re saying that function necessarily must be weighted?

...

THE WITNESS: Well, the weight on that metric will be one and the weight on every other metric would be zero. So it necessarily can be represented as a weighted function.

Q. Is it your view that any function is necessarily a weighted function?

...

THE WITNESS: Every function can be represented as a weighted function. Which -- and so it’s equivalent to a weighted function.

...

Q. . . . In your view, every function can be viewed as a weighted function because it is inherent that the variables are multiplied by a one?

. . .

THE WITNESS: Well, in a -- if you took a function for example where you had four different criteria and you applied some fraction to each criteria where all the fractions added up to one, that's an example of a weighted function.

If you removed all the coefficients and you just ran that function, that function could be represented by the same function with a one multiplied by every criteria and that would be a weighted function. It would be a trivially weighted function, but it would still be a weighted function.

Ex. 2029, 42:24–43:6, 45:7–23, 49:19–50:8 (objections omitted). In the Reply, Petitioner argues that all link-selection and complex load-balancing algorithms “are necessarily weighted, because each criteria that is chosen for consideration has a weight of one (i.e., 100%), and each criteria that is not considered has a weight of zero.” Reply 14.

Patent Owner argues that Veerina does not disclose a weighted function because “nowhere in Veerina does it teach the concept of giving some selection metric more ‘weight’ or influence on a result than another metric in the set.” PO Resp. 44–45; *see also id.* at 45–46 (“It does not demonstrate that one selection metric is weighted or given more influence over another metric.”). Patent Owner contends that “[a] weighted function is where distinct factors are assigned distinct weights, and often at least one element in the set is set at an **unequal** weight vis-à-vis the remaining factors, as well demonstrated in Table 1 of ’853.” *Id.* at 49–50. According to Patent Owner, “Dr. A. Rubin’s opinion essentially equates ‘decision function’ with ‘weighted function.’” This renders the language in dependent claims 6, 9,

and 21 completely superfluous in violation of claim construction doctrine.” *Id.* at 51. Patent Owner argues that “Petitioner’s rationale turns ‘decision function’ and ‘weighted function’ into distinctions without a difference in violation of the doctrine of claim differentiation.” *Id.* at 52.

Patent Owner’s arguments are not commensurate in scope with the claims. Claim 6, for example, recites “wherein the decision function is a weighted function of *at least one of*” several parameters. As Petitioner observes, “claims 6, 9, and 21 do not require the presences of more than one metric” because “the phrase ‘at least one of’ means that only one of the listed metrics must be present.” Reply 16–17. The claim language itself does not require a function with more than one factor, let alone a set of factors with unequal weights, as Patent Owner argues. Indeed, as explained in Section II.A above, Patent Owner proposes construing “weighted function of at least one of” to mean “function in which one or more attributes is given a weight.” PO Resp. 9–10. Patent Owner’s own construction only requires one attribute, not multiple attributes that are unequally weighted. This limitation is satisfied by a function with a single parameter, which implicitly would be weighted as 100 percent. We credit Dr. A. Rubin’s testimony that

a person of ordinary skill would have understood Veerina’s reference to a “link-selection algorithm” and “complex load-balancing or dynamically adaptive resource or performance optimization scheme” that takes various information into account to necessarily involve some weight being applied to the criteria considered (including a singular weight of 100%, as appropriate or desired).

Ex. 1012 ¶ 177.

Patent Owner further contends that Veerina is not enabled because it does not expressly disclose (1) a weighting algorithm or how to determine weights; (2) applying weights to combine the

metrics; (3) how weights would be applied; (4) the steps for a complex load balancing algorithm; (5) the steps for a dynamically adaptive resource algorithm; (6) the steps for performing an optimization scheme; or (7) the steps for performing a bandwidth algorithm.

PO Resp. 55. Essentially, Patent Owner argues that Veerina does not disclose how unequal weights would be applied to multiple factors in Veerina's link-selection algorithm, which, as explained above, is not a requirement of this claim limitation. Moreover, "there is no requirement that an anticipating reference must provide specific examples; rather, the reference need only 'be enabling and describe the applicant's claimed invention sufficiently to have placed it in possession of a person of ordinary skill in the field of the invention.'" *Arthrocare Corp. v. Smith & Nephew, Inc.*, 406 F.3d 1365, 1371–72 (Fed. Cir. 2005) (quoting *Paulsen*, 30 F.3d at 1479). To anticipate, "the reference need not satisfy an *ipsissimis verbis* test," but "must 'enable one of ordinary skill in the art to make the invention without undue experimentation.'" *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009) (quoting *Impax Labs., Inc. v. Aventis Pharms. Inc.*, 545 F.3d 1312, 1314 (Fed. Cir. 2008)). Patent Owner does not argue that a skilled artisan would have required undue experimentation to implement Veerina's link-selection algorithm. Thus, we are not persuaded by Patent Owner's argument.

On the complete record, we find that Veerina inherently discloses the additional limitations of claims 6, 9, and 21. Accordingly, Petitioner has shown, by a preponderance of the evidence, that Veerina anticipates claims 6, 9, and 21.

C. Obviousness of Claims 13–15 and 17–21 in View of Veerina

Petitioner raises this ground of unpatentability as follows:

[t]o the extent the Patent Owner contends that Veerina does not sufficiently teach a device that includes a “processor” and “a memory communicatively connected to the processor . . . [that] contains instructions that, when executed by the processor, configure the network device” (claim limitations 14[B] and 14[C]) or a “non-transitory computer readable medium having stored thereon instructions which, when executed, causes a computer to execute the method of claim 1” (claim 13).

Pet. 40. As explained above, Patent Owner does not raise any arguments contesting Petitioner’s allegations of anticipation of claims 13 and 14. PO Resp. 1–2. Specifically, Patent Owner does not argue that Veerina fails to teach the processor, memory, or non-transitory computer readable medium of claims 13 and 14. Moreover, we find that claims 13 and 14 are anticipated by Veerina, and thus, do not find that Veerina lacks such disclosure. Accordingly, Petitioner’s ground of obviousness over Veerina is moot and we do not reach it. We note that, in this ground, Petitioner does not make any arguments specific to claim 18, which we find not anticipated by Veerina.

D. Obviousness of Claims 10–12 and 22–24 over Veerina and Joshi

Petitioner argues that claims 10–12 and 22–24 would have been obvious over Veerina and Joshi. Pet. 65–69. Patent Owner opposes Petitioner’s allegations. PO Resp. 26–40.

A claim is unpatentable under 35 U.S.C. § 103(a) 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.” We resolve the question of obviousness on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

In an obviousness analysis, some reason must be shown as to why a person of ordinary skill would have combined or modified the prior art to achieve the patented invention. *See Innogenetics, N.V. v. Abbott Labs.*, 512 F.3d 1363, 1374 (Fed. Cir. 2008). A reason to combine or modify the prior art may be found explicitly or implicitly in market forces; design incentives; the “interrelated teachings of multiple patents”; “any need or problem known in the field of endeavor at the time of invention and addressed by the patent”; and the background knowledge, creativity, and common sense of the person of ordinary skill. *Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1328–29 (Fed. Cir. 2009) (quoting *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418–21 (2007)).

1. Level of Ordinary Skill in the Art

Relying on Dr. A. Rubin’s testimony, Petitioner contends that

[a] person of ordinary skill in the field of the ’853 patent, as of December 1999, would have had at least a Bachelor’s degree in computer science or computer engineering and about two years of experience in design and deployment of Internet networking technology, or a Master’s degree in computer science or computer engineering

Pet. 6–7 (citing Ex. 1012 ¶ 24).

Patent Owner's Declarant, Dr. Guerin, defines a person of ordinary skill in the art to have "at least a Bachelor of Science degree in computer science or computer engineer[ing] (or equivalent experience) with several years of experience in design and deployment of Internet networking technology," and "several years of experience with the operation and management of Internet networking technology and systems as well."

Ex. 2010 ¶ 16.

In the Institution Decision, we adopted Patent Owner's definition of a skilled artisan. Dec. 12–13. Neither party challenges that determination, and we maintain it on the complete record.

2. Scope and Content of the Prior Art; Overview of Joshi

The scope and content of Veerina, is summarized in Section II.B.1 above.

Joshi describes a distributed digital communications network with an originating node and several destination nodes accessible over multiple links. Ex. 1004, Abstract. Figure 1, reproduced below, illustrates an example:

FIG. 1

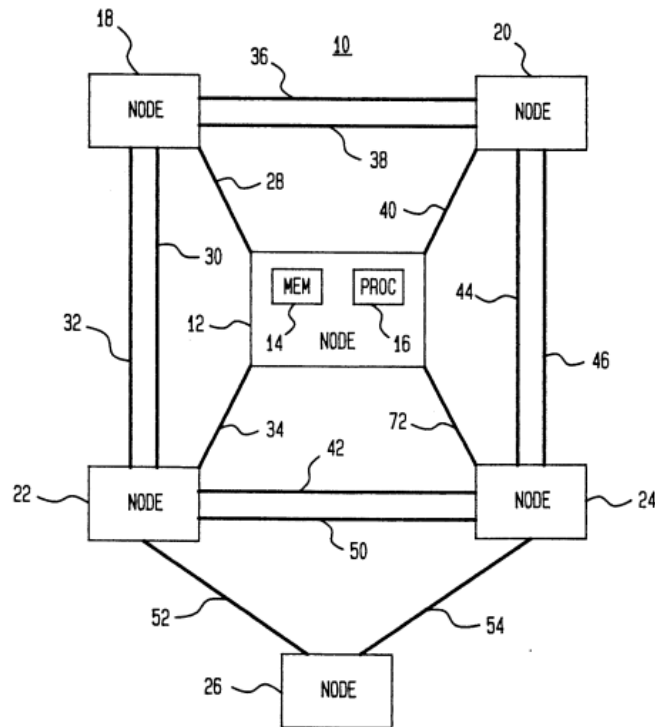


Figure 1 is a block diagram of a multiple node, multiple link distributed digital communication system. *Id.* at 3:34–36. As shown above in Figure 1, various nodes 12, 18–26 are interconnected by links 28–54 and some of the nodes are accessible to other nodes by multiple links. *Id.* at Abstr., 2:54–4:11. Joshi discloses calculating a least cost path from an originating node to a destination node. *Id.* at Abstr. Cost may be determined in terms of hop count or transit delay. *Id.* at 4:33–34, 4:43–44.

3. *Claims 10–12 and 22–24; Differences Between the Claimed Subject Matter and the Prior Art, and Reasons to Modify or Combine*

Claims 10–12 and 22–24 provide recitations regarding measured proximity. For example, claim 10 recites “wherein the decision function is a function of a measured proximity.” Claim 11, which depends from claim

10, requires that the measured proximity include at least one of “latency, a number of hops, and time to live (TTL).” Claim 12, which depends from claim 11, further requires that each of the latency, the number of hops, and the TTL is measured “for at least one of: a roundtrip between the remote server computer and the client computer network, a one-way from the remote server computer to the client computer network, and a one-way from the client computer network to the remote server computer.” Claims 22–24 provide duplicative recitations to those of claims 10–12.

Petitioner relies upon Joshi for its teachings regarding selecting a least cost route from an originating node to a designated destination node. Pet. 67 (citing Ex. 1004, 1:64–66). Specifically, Joshi discloses that “cost may be determined simply in terms of hop count” or “cost may be defined in terms of transit delay . . . experienced by a user data packet.” Ex. 1004, 4:33–34, 43–45. Dr. A. Rubin testifies:

A person of ordinary skill would have seen the benefit to incorporating Joshi’s teachings of using hop count or latency to select a route into . . . Veerina . . . , because, as noted, this would allow the respective link-selection techniques to take packet delay metrics into account when selecting one of multiple links or service providers to choose and would have provided developers with an alternative (and simpler) route selection technique that is distinct and noncumulative of the techniques disclosed in Veerina

Ex. 1012 ¶ 339. Additionally, Petitioner argues that Joshi describes examples of well-known network metrics that would have been applicable to Veerina, which relates to the same general technological field of distributed network communications processing, and addresses the same technical issues. Pet. 66–67 (citing Ex. 1012 ¶¶ 335–339).

Patent Owner argues that neither Joshi nor Veerina teaches measuring proximity between the remote server computer and the client computer network. PO Resp. 27–28. According to Patent Owner, a skilled artisan would not have combined Veerina and Joshi because “Joshi is concerned with [] nodes within a single enterprise network, such as a LAN, and Veerina is concerned with the connection between a LAN and the ISP, but neither teaches measuring proximity from the client network to the server, which is required by the claims.” *Id.* at 39. Patent Owner suggests that the invention of the ’853 patent is limited to “a specific technique of polling” to measure proximity across multiple separate networks to determine hop count or latency between a client network and a remote server, which may be unfamiliar. *Id.* at 29–30. As Petitioner points out (Reply 9), however, nothing in the claims or specification of the ’853 patent requires polling to measure proximity.

Patent Owner distinguishes Joshi by arguing that it describes a method for measuring hop count “only within the same network.” PO Resp. 30–31. According to Patent Owner,

Joshi discloses a method for determining the number of hops between an originating node and destination node within *the same network*, wherein *every node is known*, and the cost (i.e., hops or latency) to reach every node is calculated to determine the least cost route. Conversely, the claims of the ’853 patent require that proximity be measured from a client network to a remote server computer that is in a network other than the client network.

Id. at 33. Patent Owner, relying on Dr. I. Rubin, argues that Joshi’s hop count measurement would not have been usable for a decision function to select a route to a remote server in a separate network, such as in Veerina. *Id.* (citing Ex. 2033 ¶¶ 123, 125, 129). Dr. I. Rubin testifies that “the hop

count metric disclosed in Joshi is of a very different nature and cannot be used as a decision function (e.g., as powered by the type of polling I described above) as disclosed in the '853 Patent to select a data route to a remote server—where the destination may be ‘unfamiliar.’” Ex. 2033 ¶ 123.

Dr. I. Rubin continues:

It is my opinion that a technique that **only** works in a single closed network where all connection profiles are known and the originating node has all the pertinent link and route attributes for routes that connect to each and every potential destination node (across the same single network) does **not** disclose selection of least cost routes for completion of a connection across a complex set of networks—such as the Internet—where the originating node does **not** have the attributes of each network link, connectivity graph and of each route that leads to each and every potential destination node.

Id. ¶ 128. Patent Owner similarly argues that “a person of ordinary skill in the art would understand that the transit delay cost metric disclosed in Joshi is of a very different nature and cannot be used as a decision function to select a route for an unfamiliar remote server in a separate network.” PO Resp. 35 (citing Ex. 2033 ¶¶ 125–126).

As Petitioner argues (Reply 12), a proposed combination of references is not limited to a bodily incorporation of the features of one reference into another. *In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (“The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference”). Petitioner does not cite Joshi for a description of measuring proximity from a client computer network to a remote server within a remote computer network. Rather, as explained above for claim 1, Petitioner cites Veerina as disclosing selecting a data route from a client computer network to a remote server

computer based on a decision function and Patent Owner does not contest this allegation. Pet. 22–23. Petitioner reiterates in the Reply its position that “Joshi teaches using proximity measurements such as hops and latency to select a route between a network source and destination, and Veerina teaches (along with all the other limitations of the parent claims) that the source and destination are a client and remote server.” Reply 10.

We agree with Petitioner. Patent Owner’s contentions and testimony amount to an argument that a skilled artisan would not physically substitute Joshi’s algorithm for Veerina’s link-selection algorithm. However, “[i]t is well-established that a determination of obviousness based on teachings from multiple references does not require an actual, physical substitution of elements. . . . Rather, the test for obviousness is what the combined teachings of the references would have suggested to those having ordinary skill in the art.” *In re Mouttet*, 686 F.3d 1322, 1332–33 (Fed. Cir. 2012).

Veerina teaches a link-selection algorithm that uses a “complex load-balancing or dynamically-adaptive resource or performance optimization scheme that takes into account information such as the speed of available links, number of connections already existing on the links, historical performance, behavior pattern or anticipated capacity of particular channels or users.” Ex. 1002, 3:54–63. Thus, Veerina teaches selecting routes across networks from a client computer network to a remote server computer network using resource or performance optimization schemes. We credit Dr. A. Rubin’s testimony that Joshi describes hop count and latency metrics as examples of resource or performance optimizing schemes that would have been straightforward to apply to Veerina. Ex. 1012 ¶ 337. As the Supreme Court has explained, “if a technique has been used to improve one device,

and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.” *KSR*, 550 U.S. at 417. We find that a skilled artisan would have recognized that Veerina’s link-selection algorithm could be improved using hop count and latency metrics, as taught by Joshi. Thus, Veerina and Joshi teach the additional limitations of claims 10 and 22.

Regarding claims 11 and 23, as Petitioner argues (Pet. 68), Joshi teaches that cost may be determined in terms of hop count or transit delay (latency). Ex. 1004, 4:33–34, 4:43–47. Thus, we find that Veerina and Joshi teach “wherein the measured proximity includes at least one of: latency, a number of hops, and time to live (TTL),” as recited in claims 11 and 23.

As to claims 12 and 24, as Petitioner argues (Pet. 68–69), Joshi teaches calculating route cost from an originating node to a destination node. Ex. 1004, 1:64–2:7. Thus, we find that Veerina and Joshi teach

wherein each of the latency, the number of hops, and the TTL is measured for at least one of: a roundtrip between the remote server computer and the client computer network, a one-way from the remote server computer to the client computer network, and a one-way from the client computer network to the remote server computer,

as recited in claims 12 and 24.

Accordingly, we find that Veerina and Joshi teach the additional limitations of claims 11, 12, 23, and 24. We note that Patent Owner does not present separate arguments challenging Petitioner’s allegations as to claims 11, 12, 23, and 24.

4. *Objective Indicia of Non-Obviousness*

Patent Owner contends that objective indicia related to its LinkProof product, including “universal industry praise,” “long felt need in the market,” “failure of others to invent and fulfill this need,” copying, and commercial success, evidence nonobviousness. PO Resp. 58–63. For the reasons given below, we find that Patent Owner has not shown a nexus between its objective indicia and claims 10–12 and 22–24, the claims subject to Petitioner’s obviousness challenge. As Petitioner notes (Reply 20–21), Patent Owner does not contest the unpatentability of many of the claims of the ’853 patent, including the claims from which claims 10–12 and 22–24 depend, and we affirmatively find that the underlying independent claims are anticipated.

“Evidence of secondary considerations must be reasonably commensurate with the scope of the claims.” *In re Huai-Hung Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011). “For objective evidence of secondary considerations to be accorded substantial weight, its proponent must establish a nexus between the evidence and the merits of the *claimed invention*.” *Id.* (quoting *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1246 (Fed. Cir. 2010)). “In evaluating whether the requisite nexus exists, the identified objective indicia must be directed to what was not known in the prior art—including patents and publications—which may well be the novel combination or arrangement of known individual elements.” *Novartis AG v. Torrent Pharm. Ltd.*, 853 F.3d 1316, 1331 (Fed. Cir. 2017). On the other hand, “[w]here objective indicia ‘result[] from something other than what is both claimed and *novel* in the claim, there is no nexus to the merits of the

claimed invention.’” *Merck & Cie v. Gnosis S.P.A.*, 808 F.3d 829, 837 (Fed. Cir. 2015) (quoting *Huai–Hung Kao*, 639 F.3d at 1068).

We recognize that “there is a presumption of nexus for objective considerations when the patentee shows that the asserted objective evidence is tied to a specific product and that product ‘is the invention disclosed and claimed in the patent.’” *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1329 (Fed. Cir. 2016) (quoting *J.T. Eaton & Co. v. Atl. Paste & Glue Co.*, 106 F.3d 1563, 1571 (Fed. Cir. 1997)). To that end, Patent Owner contends that “the first version of the LinkProof product (which shipped in December 1999) embodied the inventions disclosed on the ’853 Patent, including selecting an IP address from a range of IP addresses assigned by an ISP,⁶ and measuring proximity between a remote server and a client through a plurality of routes.” PO Resp. 58–59. Patent Owner supports this statement with the Declaration of Amir Peles, a named inventor on the ’853 patent, who repeats Patent Owner’s argument nearly verbatim, without further explanation, analysis, or citation to evidence. Ex. 2032 ¶ 3. Mr. Peles’s testimony is conclusory, unsupported, and entitled to little weight.

Patent Owner also argues that “contemporaneous design documents created on or around October 1999 regarding the development and introduction of the LinkProof,” in particular Exhibit 2028, establish that LinkProof practices the inventions claimed in the ’853 patent. PO Resp. 59. Patent Owner does not provide any argument or testimony (including expert

⁶ Patent Owner’s language “selecting an IP address from a range of IP addresses assigned by an ISP” corresponds to claims 5 and 18. Claims 10–12 and 22–24 do not depend from claims 5 and 18, respectively, and do not require selecting an IP address from a range of IP addresses assigned by an ISP.

testimony) showing the correspondence of Exhibit 2028 to any claim of the '853 patent, let alone claims 10–12 and 22–24. Patent Owner's conclusory evidence does not support a finding that LinkProof is the invention disclosed and claimed in the '853 patent. Accordingly, there is no presumption of nexus between the LinkProof product and claims 10–12 and 22–24.

As evidence of “universal industry praise,” “long felt need in the market,” and “failure of others to invent and fulfill that need,” Patent Owner cites to several magazine and news articles, including Internet Week (Ex. 2013), South China Morning Post (Ex. 2016), Internet Traffic Management Center (Ex. 2012), PRNewswire (Ex. 2017), and a Radware press release (Ex. 2018). PO Resp. 59–61. As Petitioner argues (Reply 21), only two of those articles arguably mention features related to a decision function that is “a function of a measured proximity between the remote server computer and the client computer network through each of the plurality of data routes,” the additional limitation of claims 10 and 22. Exhibit 2013, in a description of LinkProof's features, notes that “LinkProof determines the optimum link based on latency and packet loss and then responds with the appropriate destination IP address.” Exhibit 2016 states “[t]o make things easier, Radware designed a dedicated product that determined the closest, fastest and healthiest route for incoming and out-bound IP traffic between different ISPs.” However, neither exhibit discusses this feature in sufficient detail to ascertain whether it corresponds to claims 10 and 22. Also, neither article identifies this feature as something the prior art lacked.

As to copying, Patent Owner alleges that Petitioner, faced with competitive pressure from Patent Owner's LinkProof product, and noting the

commercial success of that product, studied, tested, and ultimately copied that product. PO Resp. 61–63. As evidence that Petitioner’s product is substantially the same as the LinkProof product, Patent Owner asserts that Petitioner stipulated to infringement of Patent Owner’s patents, and that a jury found that infringement to be willful. *Id.* at 61. In support, Patent Owner cites a declaration of its attorney, Fabio Marino, stating that “[b]efore the start of the jury trial, Petitioner F5 Networks, Inc. stipulated that its accused products infringed certain claims of Radware’s patents on link load balancing,” and that “[f]ollowing the jury trial, [the] jury found F5’s infringement to be willful, and the Court issued a permanent injunction against Petitioner F5 Networks.” Ex. 2035 ¶¶ 23, 24. Mr. Marino cites to Docket items 381 and 556 from Case No. 5:13-cv-2024-RMW, *id.*, but those items are not in the record in this proceeding.

Mr. Marino’s Declaration is misleading. It gives the impression that Petitioner has admitted to infringement of claims of the ’853 patent, which Petitioner has not. As Patent Owner admits, “[t]here are no pending matters concerning the ’853 patent.” Paper 4, 1.⁷ We have confirmed that the ’853 patent has not been asserted in the case attested to by Mr. Marino. For

⁷ We note that Mr. Marino also signed the PO Response, which includes the similarly misleading representation: “F5 acknowledged Radware’s unique LLB solution and the technological innovations embedded in LinkProof by praising it, copying it, and infringing it—as discovered and demonstrated at a jury trial against F5 where F5 stipulated to infringement and a jury found F5’s infringement to be willful.” PO Resp. 61; *see also id.* at 63 (“Radware sued F5 for infringement in May 2013, and right before the jury trial began, F5 stipulated to infringement.”). We caution Mr. Marino that “Parties and individuals involved in the proceeding have a duty of candor and good faith to the Office during the course of a proceeding.” 37 C.F.R. § 42.11(a); *see also* 37 C.F.R. § 11.18.

example, the docket items Mr. Marino cites, 381 and 556, show that Petitioner stipulated to infringement of certain claims of other patents owned by Patent Owner and that a jury found infringement of one of those patents (not the '853 patent) to be willful. The remaining evidence Patent Owner cites to as evidencing copying also look to be gleaned from discovery in that case. Patent Owner does not persuasively explain the relevance of this evidence to claims (including claims 10–12 and 22–24) of the '853 patent, which was not at issue in the District Court case.

We have fully considered Patent Owner's objective evidence of nonobviousness and, for the reasons given above, find that they are weak, lack nexus to the claims at issue, and are entitled to little weight.

5. Conclusion of Obviousness

As explained above, Veerina and Joshi teach each limitation of claims 10–12 and 22–24. Petitioner has introduced persuasive evidence that a skilled artisan would have had reasons to combine the teachings of Veerina and Joshi. We have fully considered Patent Owner's objective indicia of nonobviousness and find the evidence unpersuasive and entitled to little weight. In sum, upon consideration of all the evidence, we conclude that Petitioner has proved by a preponderance of the evidence that the subject matter of claims 10–12 and 22–24 would have been obvious over Veerina and Joshi.

III. PATENT OWNER'S MOTION TO AMEND

"During an inter partes review instituted under this chapter, the patent owner may file 1 motion to amend the patent," to, "[f]or each challenged

claim, propose a reasonable number of substitute claims.” 35 U.S.C. § 316(d)(1); *see also* 37 C.F.R. § 42.121(a)(3). “An amendment under this subsection may not enlarge the scope of the claims of the patent or introduce new matter.” 35 U.S.C. § 316(d)(3); *see also* 37 C.F.R. § 42.121(a)(2)(ii). The amendment also must “respond to a ground of unpatentability involved in the trial.” 37 C.F.R. § 42.121(a)(2)(i).

Patent Owner proposes substituting claims 25 and 27 for claims 7 and 19 (underlining indicating additions and strikethroughs indicating deletions):

Claim 25. (Proposed substitute for claim 7) The method of claim 1, wherein the decision function is based on a decision parameter table that stores gathered parameters about ~~availability of~~ each of the data routes among the plurality of data routes.

Claim 27. (Proposed substitute for claim 19) The network device of claim 14, wherein the decision function is based on a decision parameter table that stores gathered parameters about ~~availability of~~ each of the data routes among the plurality of data routes.

Mot. to Amend 2. Patent Owner also proposes substituting claims 26 and 28 for claims 8 and 20:

Claim 26. (Proposed substitute for claim 8) The method of claim ~~1~~25, wherein the decision parameter table is checked periodically by the content router ~~function is based on any one of: a round-robin selection parameter, and a random selection parameter.~~

Claim 28. (Proposed substitute for claim 20) The network device of claim ~~14~~27, wherein the decision parameter table is checked periodically by the network device ~~function is based on any one of: a round-robin selection parameter, and a random selection parameter.~~

Id. at 2–3. Finally, Petitioner proposes substituting claim 29 for claim 13. Claim 29 is independent and modeled after claim 14, but adding the following limitations (underlining indicating additions relative to claim 14):

determine if the remote server is known from a destination table, and if the destination is unknown, perform a destination check;

gather parameters on the plurality of data routes connecting the client and the remote server computer;

select a data route from the plurality of data routes to route the received request, wherein the selection of the data route is based on a decision function applying the gathered parameters

Id. at 4. Claim 29 also recites a “content router” where claim 14 recites a “network device.”

Patent Owner’s Motion to Amend, at 2, states that “Claims 7, 8, 13, 19 and 20 are to be replaced by” the substitute claims. We construe this statement as a request to cancel claims 7, 8, 13, 19, and 20, and grant that request. In any case, as explained above, we find these claims anticipated.

Petitioner does not challenge whether the number of substitute claims is reasonable. Nor does Petitioner challenge whether the amendments are responsive to a ground of unpatentability in the trial. We do not independently find that the number of substitute claims is unreasonable or that those claims are not responsive to grounds of unpatentability in this trial. See Mot. to Amend 7–8 (explaining that the substitute claims respond to grounds of unpatentability).

The parties dispute the following issues: 1) whether substitute claims 25–28 introduce new matter; 2) whether the subject matter of substitute claim 29 would have been obvious over Veerina and Shah or Veerina, Shah,

and Ota; and 3) whether the subject matter of claims 25–28 would have been obvious over Veerina, Shah, and Mann. We address these issues in turn.

A. New Matter

1. Claims 25–28

“[T]he test for sufficiency [of written description] is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.” *Ariad Pharms., Inc. v. Eli Lilly and Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc).

Patent Owner contends that the ’853 patent’s “Table 1 gives an example of a decision parameter table.” Mot. to Amend 4–5 (citing Ex. 1001, 8:21–25, 8:31–41). Patent Owner contends that Table 1 stores parameters that were gathered earlier. *Id.* at 5 (citing Ex. 1001, 9:14–15). Patent Owner also contends that “data from the decision parameter table is ‘typically checked periodically, by the content router 508, for each Internet path.’” *Id.* (quoting Ex. 1001, 8:13–14).

In response, Petitioner argues that the Decision Parameter Table described in the ’853 patent merely stores weights to be applied to different routing factors, in contrast to a Destination Table, which stores measured parameters. Opp. to Mot. to Amend 2–5. According to Petitioner, the described Decision Parameter Table “does not store *gathered parameters* about a route. Indeed, nothing in the patent suggests that the Decision Parameter Table stores data or information about a particular route at all.” *Id.* at 4.

In reply, Patent Owner contends that Petitioner's positions are based on an overly narrow construction of the term "decision parameter table," and that the meaning of this term should not be limited to the Table 1 example in the specification. Mot. to Amend Reply 2. Patent Owner argues that a decision parameter table is "a table that stores parameters used by a Decision Function." *Id.* at 2–3. Patent Owner argues that Petitioner seeks to "read[] in a limitation that the [Decision Parameter Table] stores *only* weights and nothing else." *Id.* at 2. Patent Owner misunderstands Petitioner's argument. Petitioner does not argue that the construction of the term "decision parameter table" should be limited to a table that stores only weights. Rather, Petitioner's argument is that the data structure in the specification Patent Owner identifies as providing written description support for the claimed decision parameter table, does not provide such support because it does not store gathered parameters and is not checked periodically as required by amended claims 25–28.

Patent Owner asserts that Table 1 is "an example embodiment of a Decision Parameter Table," and that the parameters shown in Table 1 are described as preferable and are not intended to be limiting. Mot. to Amend Reply 2–3. The '853 patent describes: "The Decision Parameter Table is preferably dependent on the parameters: Data packet content; Hops weighting factor; Packet loss factor and Response time factor. Typical values of these parameters are also given in Table 1." Ex. 1001, 8:25–29. The specification continues: "In addition to the parameters listed in Table 1, the following additional parameters may also be taken into consideration[:]
Hops count factor; Response time factor, Path quality factor; and Packet loss factor." *Id.* at 8:42–45. As noted above, Table 1 stores "[t]ypical path

quality weighting factors.” *Id.* at 8:10–11. We read the specification to describe Table 1, the only Decision Parameter Table described in the specification, as storing weights for exemplary parameters, and capable of storing additional weights for additional parameters. Contrary to Patent Owner’s position, we do not read the specification’s references to additional parameters to mean that Table 1 stores the additional gathered or measured parameters themselves. Rather, the specification describes building a Destination Table for summarizing and storing the measured and gathered parameters. *Id.* at 8:46–50, 9:7–29, Figs. 6, 7. For example, as shown in Figure 6, the Destination Table is updated whenever a destination check is made. *Id.*, Fig. 6. Similarly, as shown in Figure 7, the Destination Table stores parameters that characterize a route between a given router and destination, such as the number of hops, response time, and packet loss between the router and destination. *Id.*, Figs. 6, 7.

Patent Owner argues that “the patent specification plainly distinguishes between parameters that are weights (e.g., ‘Path quality *weighting* factor’), and those that are not (e.g., ‘Path quality *factor*’).” Mot. to Amend Reply 4 (quoting Ex. 1001, 8:55–58). However, this simply shows that the decision function includes a corresponding weighting for each parameter. It does not support Patent Owner’s contention that Table 1 stores gathered parameters in addition to weights. In any case, Patent Owner conceded at the oral argument that Table 1 does not store gathered parameters. Tr. 29:23–30:1 (“JUDGE MCKONE: . . . it’s your position that table 1 does not show storing gathered parameters, is that correct? MR. MARINO: It does not.”).

Petitioner argues that the specification describes storing gathered parameters in a Destination Table, rather than in the Decision Parameter Table. Opp. to Mot. to Amend 4–5. We agree. The '853 patent explains that “[a] Destination Table is built to summarize” various factors “based on *proximity calculations*.” Ex. 1001, 8:46–50 (emphasis added). When a client sends a packet to the content router, the content router checks the Destination Table to determine if the destination of the packet is known. *Id.* at 9:5–9. If it is known, the content router selects a link using the decision function, “taking into account the parameters that were gathered earlier.” *Id.* at 9:9–15, Fig. 6 (steps 604, 606). We read this to mean that the decision function uses gathered parameters stored in the Destination Table. This is consistent with later description for the case in which the destination is not familiar to the content router. In that case, a destination check is performed by using *proximity methods* and generating actual web traffic toward the destination. *Id.* at 9:19–23. The specification discloses that this function, i.e., using proximity methods and generating web traffic toward the unknown destination, comprises or includes “building a Destination Table (FIG. 7), for each available router and its respective path.” *Id.* at 9:19–26, Fig. 6 (step 610). Thus, the only table described by the '853 patent as storing measured or gathered parameters is the Destination Table.

In this context, when the specification describes the content router determining a decision function for each path “[u]sing the relevant data, as typically listed in Table 1,” *id.* at 8:51–58, the specification describes using the weightings provided by the Decision Parameter Table (Table 1) and the gathered parameters stored in the Destination Table. Patent Owner’s expert, Dr. I. Rubin has testified consistently with our understanding: “[t]he content

router of the '853 Patent 508 forms a weighted decision function (F_{content}) for each path using information from Table 1 and the Destination Table.”

Ex. 2033 ¶ 156.

Patent Owner argues that “[a]s taught in the Specification, the Destination Table stores information used for a destination check (step 604 [of Fig. 6]) but the [decision parameter] table also stores parameters for use by the Decision Function (step 606 [of Fig. 6]).” Mot. to Amend Reply 5 (citing Ex. 1001, 9:7–15). As explained above, step 606 describes the Destination Table, not the Decision Parameter Table, storing measured or gathered parameters. According to Patent Owner, “at step 606, the parameters that were gathered and stored in the [decision parameter table] are applied to the Decision Function to select a data route.” Patent Owner cites to Dr. I. Rubin, who testifies that “[t]he parameters used by the Decision Function come from the Decision Parameter Table. For this reason, it is referred to as the ‘Decision *Parameter* Table,’ not the ‘Decision *Weight* Table.’” Ex. 2036 ¶ 45. This is inconsistent with Dr. I. Rubin’s earlier testimony in which he stated that the content router formed the decision function using information from both the Decision Parameter Table (Table 1) and the Destination Table. Ex. 2033 ¶ 156; *see also id.* ¶ 155 (identifying Table 1 as the Decision Parameter Table). Dr. I. Rubin’s inconsistent testimony undermines his credibility, and we find that it is entitled to little weight on this issue.

At the oral argument, Patent Owner argued that Table 1 was not, in fact, a decision parameter table. Instead, Patent Owner argued, a decision parameter table would be a different table that includes both the weights of

Table 1 and additional gathered parameters. Specifically, Patent Owner argued:

So, table 1 is a table in the sense of a patent. The decision parameters table, it's actually a software concept in that program. It'll have both weights and it will have other parameters and it tells explicitly in the spec what. Does it tell us that it has data packet content, packet loss factor and response time factor, at a minimum which are not weights. So, it's very clear from that language in the specification that the decision parameter table as opposed to table 1 will actually contain both factors used by the decision function which are gathered parameters as well as weights to be applied to those gathered parameters.

Tr. 31:26–32:9. Similarly, Patent Owner argued that “[t]here is no teaching that—there’s no actual language that says the decision parameter table is table 1. Table 1 is a portion of the decision parameter table.” *Id.* at 32:22–24.

This argument is a departure from the position that Patent Owner articulated both in the Motion to Amend, and the corresponding Reply. Mot. to Amend 5 (“Table 1 gives an example of a decision parameter table.”); Mot. to Amend Reply 2 (“F5 points to Table 1, an example embodiment of a Decision Parameter Table, and reads in a limitation that the [decision parameter table] store *only* weights and nothing else.”). *See also* Ex. 2033 (I. Rubin Decl.) ¶ 155 (“Consequently, often at least one element in the set is set at an unequal weight vis-à-vis the remaining factors, as well demonstrated in Table 1, the Decision Parameter Table, of ’853 Patent.”). Thus, Patent Owner and its expert clearly have taken the position that Table 1 is the described decision parameter table. We decline to consider Patent Owner’s new argument, raised for the first time at the oral argument, that the ’853 patent describes a decision parameter table as a software

construct, of which the information in Table 1 is only a piece. *See Dell Inc. v. Acceleron, LLC*, 818 F.3d 1293, 1301 (Fed. Cir. 2016) (“In this case, the Board denied Acceleron its procedural rights by relying in its decision on a factual assertion introduced into the proceeding only at oral argument, after Acceleron could meaningfully respond.”).

In sum, we find that the ’853 patent does not describe a Decision Parameter Table “that stores gathered parameters about each of the data routes among the plurality of data routes,” as recited in substitute claims 25 and 27. We confirmed at the oral argument that Patent Owner does not contend that the Destination Table is a decision parameter table. Tr. 30:9–12 (“JUDGE MCKONE: Are you saying that the destination table is the example of a decision parameter table, is that essentially your position? MR. MARINO: No, not at all. A destination table is a separate table that’s a subject of Claim 29.”). On the complete record, we find that the ’853 patent does not provide written description support for “wherein the decision function is based on a decision parameter table that stores gathered parameters about each of the data routes among the plurality of data routes,” as recited in substitute claims 25 and 27. Accordingly, those claims constitute new matter and Patent Owner is not entitled to add them by amendment. Because claims 26 and 28 depend from claims 25 and 27, claims 26 and 28 similarly constitute new matter.

2. Claim 29

Patent Owner contends that the ’853 patent’s Destination Table provides written description support for the limitations “determine if the remote server is known from a destination table, and if the destination is

unknown, perform a destination check” and “gather parameters on the plurality of data routes connecting the client and the remote server computer.” Mot. to Amend 6 (citing Ex. 1001, Fig. 6, 8:51–53, 9:7–15, 9:20–24). As explained above, the ’853 patent describes measuring or gathering parameters for routes to a destination and storing them in a Destination Table. Ex. 1001, 9:20–33. When the content router is requested to send a packet to a destination, the content router checks the Destination Table to determine whether a previous check for the destination was already performed and, if so, uses those parameters in a decision function. *Id.* at 9:7–18. This is sufficient written description to show that Patent Owner was in possession of the invention of the subject matter of claim 29 as of the filing date of the ’853 patent. Petitioner does not allege that claim 29 is new matter.

B. Obviousness—Claim 29

Petitioner contends that substitute claim 29 would have been obvious over Veerina and Shah or Veerina, Shah, and Ota. Opp. to Mot. to Amend 8–19. For the reasons given below, we disagree.

1. Scope and Content of the Prior Art

a. Overview of Shah

Shah describes a system and method for measuring round trip times in a network, such as the Internet, by using a transmission control packet (“TCP”). Ex. 1019, Abstract, 2:55–58. The TCP can be a packet that typically is used during establishment of a reliable connection, such as a SYN or a SYN ACK packet. *Id.* at Abstract, 2:58–60. Shah’s system

measures round trip times of TCP packets sent from a client to multiple mirrored services, compares the round trip times, and selects the mirrored service with the shortest round trip time. *Id.* at 3:1–5, 5:60–6:34.

b. Overview of Ota

Ota describes a network system that selects an intermediate system that can provide a shortest route of data communication among various intermediate systems, even if routing information is not stored on the end system side. Ex. 1020, Abstract. Figure 1, reproduced below, illustrates an example:

FIG. 1

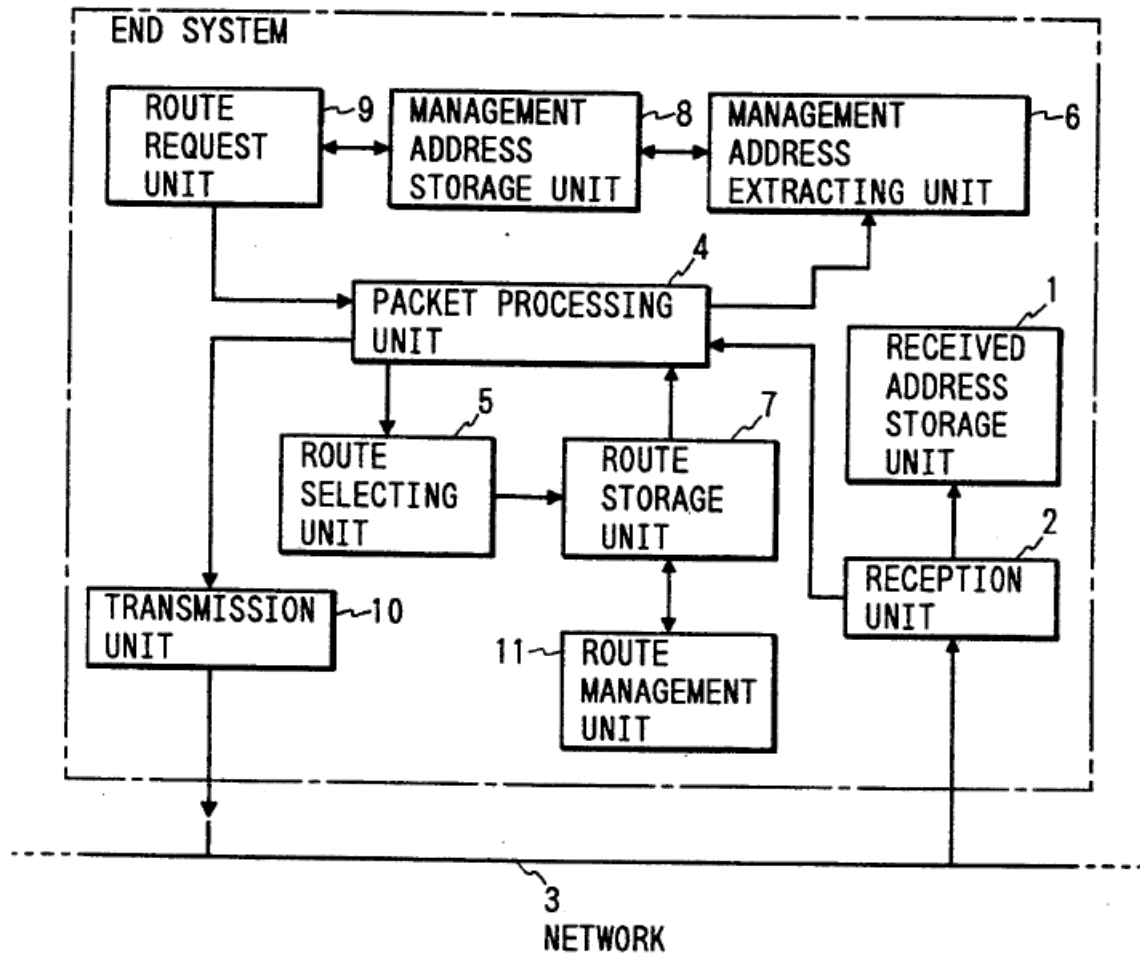


Figure 1 is block diagram of a basic configuration of an end system used in a network system. *Id.* at 4:10–12. When the end system receives a packet destined for that end system, and that packet contains routing information, route selecting unit 5 selects one route from that information and stores it in route storage unit 7, for example, as shown in Figure 3. *Id.* at 5:5–35.

Figure 3 is reproduced below:

FIG. 3

NET	NO. OF NETWORK SUBJECT TO TRANSMISSION
AGE	AGE OF THIS INFORMATION (INITIAL VALUE:0)
DELAY	DISTANCE TO A NETWORK SUBJECT TO TRANSMISSION
LAST ACCESS	TIME WHEN THIS INFORMATION WAS ACCESSED LAST
ROUTE	ADDRESS OF THE INTERMEDIATE SYSTEM WHICH PROVIDED THIS INFORMATION

Figure 3 is a diagram of a routing table used in an end system. *Id.* at 4:16–17.

When the end system on network A receives a request for sending a packet to another end system on network B, packet processing unit 4 determines whether the address of the intermediate system providing a shortest route to the destination end system has been stored in route storage unit 7. *Id.* at 7:29–35. If so, packet processing unit 4 reads the address of the intermediate system from route storage unit 7 and forms a packet containing the address of the intermediate system and addressed to the destination end system on network B, and transmission unit 10 transmits the packet to the intermediate system. *Id.* at 8:47–60.

2. Claim 29; Differences Between the Claimed Subject Matter and the Prior Art, and Reasons to Modify or Combine

As explained above, substitute claim 29 overlaps significantly with claim 14 and adds certain limitations. Also as explained above, we find that Veerina anticipates claim 14, a finding that Patent Owner does not contest. Accordingly, we focus our analysis here on the additional limitations of claim 29.

Claim 29 recites, *inter alia*, instructions that configure a content router to “determine if the remote server is known from a destination table, and if the destination is unknown, perform a destination check.” Petitioner cites

Shah for a teaching of performing a destination check by measuring round trip times in a network using TCP packets. Opp. to Mot. to Amend 10–11.

Petitioner has two theories as to how the prior art teaches a “destination table.” First, Petitioner argues that “Veerina teaches using a table to determine if a destination is known or unknown,” and contends that Veerina’s IP translation table 16 is a “destination table.” Opp. to Mot. To Amend 10. For this theory, Petitioner does not provide a construction of “destination table.” Petitioner simply states that “Circuit 10 in veering uses an ‘IP translation’ lookup table (‘destination table’)” and quotes veering as to the behavior of its system relative to the IP translation table 16. *Id.* (citing Ex. 1002, 3:32–34, 3:39–42, 4:7–9).

As Patent Owner points out (Mot. to Amend Reply 9–10), Petitioner’s expert Dr. A. Rubin conceded on cross-examination that Veerina does not teach a “destination table”:

Q. Now, Figure 2 of Veerina is an example of the IP translation lookup table of Veerina, correct?

A. Yes.

Q. So in your opinion, does this IP translation lookup table of Veerina disclose a destination table?

A. Are you asking if it discloses a destination table in the context of the ’853 patent?

Q. Yeah, let me restate the question. In your opinion, does the IP translation lookup table of Veerina disclose a destination table as defined by the ’853 patent?

A. I would say no.

Ex. 2037, 40:7–18. Based on Petitioner’s expert’s unqualified admission, we find that Veerina does not teach a “destination table,” as recited in claim 29.

As to the second theory, Petitioner argues that a skilled artisan “would have understood that a ‘destination table’ must include a table that stores a proximity measurement for a route.” Opp. to Mot. to Amend 15–16 (citing Ex. 1001, 8:46–50; Ex. 1024 ¶ 73).⁸ Petitioner contends that Veerina teaches using a lookup table to determine if a destination is already known, and Ota teaches a destination table (shown in Ota’s Figure 3, reproduced above) that stores proximity measurements (“DELAY” field). Opp. to Mot. to Amend 16. Petitioner contends that a skilled artisan “would have found it obvious to combine the teachings of Veerina, Shah, and Ota, in the manner discussed above,” and specifically “would have been motivated to incorporate Ota’s teaching of a routing table into the combination of Veerina and Shah discussed above.” *Id.* at 16–17.

Petitioner contends that a skilled artisan would have made this combination because Veerina and Ota are “directed to the same general problem as the ’853 Patent,” because Veerina and Ota “are within the same technological field of distributed network communication and describe systems with similar structure and operations,” and because “[b]oth Veerina and Ota disclose selecting network routes and using a table to store

⁸ Petitioner advances its second theory “[t]o the extent that Veerina does not expressly teach storing proximity measurements for a route in a table.” Opp. to Mot. to Amend 16. This implies that Petitioner’s first theory advanced a contention that Veerina described an IP translation table that stored proximity measurements for a route. Petitioner’s expert, however, admitted on cross-examination that it does not. Ex. 2037, 41:6–8 (“Q. So would you agree that the IP translation lookup table does not store any proximity information? A. Yes.”). Thus, under Petitioner’s own construction of “destination table,” Petitioner cannot show that Veerina alone teaches a destination table as recited in claim 29.

information regarding the selected route.” Opp. to Mot. to Amend 17–18. Dr. A. Rubin repeats these arguments, nearly verbatim, in his testimony. Ex. 1024 ¶¶ 76–78.

Veerina describes a technique in which, when a client requests sending a packet, IP translation table 16 is checked to see if a route to the destination had been previously added to the table. Ex. 1002, 3:32–34 (“Outgoing handler 14 checks IP translation table 16 to look-up and determine whether outgoing packets are included therein.”). If not, Veerina’s system determines a route and adds it to the table. *Id.* at 3:34–38 (“If outgoing packets are not found in IP translation table 16 (i.e., outgoing packet connection is new), then a new entry is created and added to table 16 or other similar associative data structure by LAN CLM functional module.”), 3:48–65 (describing LAN CLM functional module 14 mapping packets to external WAN links using a link-selection algorithm.). Veerina does not describe adding to the table multiple routes to the same destination, and later choosing between those routes. Ota describes a routing table with routes to different mirrored versions of a destination (separate destinations providing the same content) along with at least some information on proximity to the various destinations. Ex. 1020, 5:22–34. Because Ota’s routing table is used to make a decision on which mirrored destination is most appropriate for a packet (*id.* at 10:11–15), it is logical that its routing table would have proximity information for each mirrored destination.

The same logical conclusion does not apply to Veerina’s IP translation table. As Patent Owner observes, Veerina describes creating or activating an entry in the IP translation table after a link selection has been determined, in contrast to the ’853 patent’s Destination Table, which is used to determine a

link selection from multiple possible routes. Mot. to Amend Reply 10. In other words, Veerina's link-selection algorithm is used to choose a route, and that route is then added to the IP translation table. Veerina does not teach using information in the IP translation table as part of its link-selection algorithm. This is in contrast to Ota, which uses information in the routing table to select a route. Petitioner does not provide a reason, with rational underpinning, to add proximity information from Ota into Veerina's IP translation table, as that information would serve no purpose under Petitioner's proposed combination. Petitioner's proposed reasons to combine, that Veerina and Ota are in the same technological field addressing the same general problem (Opp. to Mot. to Amend 17–18), at most show that a skilled artisan would have considered Veerina and Ota together. Petitioner, however, fails to provide sufficient reasons that a skilled artisan considering the two references together, would choose the particular combination Petitioner advances. Specifically, Petitioner provides no persuasive reasons to modify Veerina's IP translation table to include the proximity information of Ota's routing table.

In sum, Petitioner's evidence and argument does not show that either a combination of Veerina and Shah or a combination of Veerina, Shah, and Ota teaches "determine if the remote server is known from a destination table," as recited in substitute claim 29.

3. Conclusion of Obviousness

On the complete record, a preponderance of the evidence does not show that the subject matter of substitute claim 29 would have been obvious over Veerina, Shah, and Ota.

C. Obviousness—Claims 25–28

Petitioner contends that substitute claims 25–28 would have been obvious over Veerina, Shah, and Mann. Opp. to Mot. to Amend 19–23. For the reasons given below, we disagree.

1. Scope and Content of the Prior Art—Overview of Mann

Mann describes a route finder for finding routes to satisfy a plurality of connection requests in a communications network comprising a plurality of nodes connected by a plurality of links. Ex. 1021, Abstract. Mann describes storing, in a “SAP format file,” weightings for parameters that can be considered by a route finder engine’s genetic algorithms. *Id.* at 22:53–23:4.

2. Claims 25–28; Differences Between the Claimed Subject Matter and the Prior Art, and Reasons to Modify or Combine

Petitioner contends that Veerina teaches gathering parameters about each of a plurality of data routes and that Shah teaches calculating a latency measurement for a complete route. Opp. to Mot. to Amend 19–20.

Petitioner cites Mann’s SAP file as an example of a “decision parameter table,” as recited in substitute claims 25 and 27. *Id.* at 20–21. In particular, Petitioner argues that “Mann discloses storing weights that are used for route selection purposes.” *Id.* (citing Ex. 1021, 22:62–67).

Claims 25 and 27 each recite “a decision parameter table that stores *gathered parameters* about each of the data routes among the plurality of data routes.” In the portion of Mann Petitioner cites to, Mann only describes storing weights, not gathered parameters. Petitioner does not explain how Mann’s description of storing weights teaches storing gathered parameters.

Thus, Petitioner's evidence does not show that Veerina, Shah, and Mann teach this limitation.

In its Sur-Reply, Petitioner argues that Mann discloses storing gathered parameters in a table, citing to pages 20–21 of its Opposition to the Motion to Amend. Mot. to Amend Sur-Reply 11–12. As explained above, Petitioner made no such argument in its Opposition. Thus, raising the argument in its Sur-Reply is improper and we do not consider the argument.

Claims 26 and 28 depend from claims 25 and 27, respectively. Petitioner's argument and evidence for claims 26 and 28 do not overcome the deficiency noted above for claims 25 and 27.

3. Conclusion of Obviousness

On the complete record, a preponderance of the evidence does not show that the subject matter of substitute claims 25–28 would have been obvious over Veerina, Shah, and Mann.

D. Conclusions on Motion to Amend

As explained above, claims 25–28 introduce new matter. Accordingly, we deny Patent Owner's Motion to Amend as to claims 25–28.

As to claim 29, it is responsive to a ground of unpatentability in the trial, does not constitute new matter, and a preponderance of the evidence relied on by Petitioner does not show that the subject matter of claim 29 would have been obvious. Accordingly, we grant Patent Owner's Motion to Amend as to claim 29.

We construe Patent Owner's motion to "replace[]" claims 7, 8, 13, 19, and 20 as a motion to cancel those claims and, accordingly grant that the Motion to Amend as to claims 7, 8, 13, 19, and 20.

IV. PATENT OWNER'S MOTION TO EXCLUDE

Patent Owner moves to exclude Paragraphs 18–22 of Dr. A. Rubin's Reply Declaration (Ex. 1025) and pages 3–8 of Petitioner's Reply (Paper 35). Patent Owner argues that Petitioner's reply arguments (and the testimony that supports them) are outside the scope of a proper reply and instead are evidence in support of Petitioner's *prima facie* case that should have been submitted with the Petition. Mot. to Exclude 1–2. These reply arguments and evidence relate to Petitioner's challenge to claims 5 and 18, discussed in Section II.B.3 above.

As Petitioner points out, however, the Board has repeatedly stated that a motion to exclude is not the proper vehicle to challenge the scope of a reply. Opp. to Mot. to Exclude 1–2. Rather, a motion to exclude should be directed to the admissibility of evidence. Office Patent Trial Practice Guide, 77 Fed. Reg. at 48,767. Petitioner further points out that none of Patent Owner's objections (Paper 36) is an evidentiary objection related to the admissibility of evidence. Opp. to Mot. to Exclude 1–2. Patent Owner's Motion to Exclude is denied.

Nevertheless, we evaluate the scope of Petitioner's Reply and the supporting evidence in Section II.B.3 above, and decline to consider argument and evidence (e.g., Ex. 1025 ¶ 18) that exceed the proper scope.

V.CONCLUSION

Petitioner has proved by a preponderance of the evidence that claims 1, 2, 4, 6–15, 17, and 19–24 are unpatentable, but not claims 5 and 18.

We grant Patent Owner’s Motion to Amend to replace claim 13 with substitute claim 29, and deny the motion to replace claims 7, 8, 19, and 20 with substitute claims 25–28.

Patent Owner’s Motion to Exclude is denied.

VI. ORDER

For the reasons given, it is:

ORDERED, based on a preponderance of the evidence, that claims 1, 2, 4, 6–15, 17, and 19–24 are unpatentable;

FURTHER ORDERED, based on a preponderance of the evidence, that claims 5 and 18 are not unpatentable;

FURTHER ORDERED, Patent Owner’s Motion to Amend is granted as to claim 29; claim 13 is substituted with claim 29 and claim 13 is cancelled;

FURTHER ORDERED, Patent Owner’s Motion to Amend is granted as to claims 7, 8, 19, and 20; claims 7, 8, 19, and 20 are cancelled;

FURTHER ORDERED, Patent Owner’s Motion to Amend is denied as to substitute claims 25–28;

FURTHER ORDERED, Patent Owner’s Motion to Exclude is denied; and

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

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