

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LIMELIGHT NETWORKS, INC.,
Petitioner,

v.

AKAMAI TECHNOLOGIES, INC.,
Patent Owner.

Case IPR2016-01711
Patent 6,820,133 B1

Before GREGG I. ANDERSON, JENNIFER MEYER CHAGNON, and
JASON W. MELVIN, *Administrative Patent Judges*.

MELVIN, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

In this *inter partes* review, instituted pursuant to 35 U.S.C. § 314, Petitioner, Limelight Networks, Inc., challenges claims 16, 19, 20, 23–25, 58, 62, and 63 of U.S. Patent No. 6,820,133 B1 (Ex. 1001, “the ’133 patent”). See Petition (Paper 1, “Pet.”). We instituted review of the challenged claims. Paper 10 (“Institution Decision” or “Inst.”). Patent Owner, Akamai Technologies, Inc., filed a Patent Owner Response

(Paper 15, “PO Resp.”) and Petitioner filed a Reply (Paper 21). Patent Owner filed a Motion to Exclude Evidence (Paper 32), which we address below. We held a hearing on December 5, 2017, and a transcript of the hearing is included in the record. Paper 43 (“Tr.”).

This is a final written decision as to the patentability of claims for which we instituted *inter partes* review. For the reasons discussed below, we determine that Petitioner has proven by a preponderance of the evidence that claims 16, 19, 20, 23–25, 58, 62, and 63 are unpatentable.

A. RELATED MATTERS

The parties indicate the ’133 patent is involved in *Limelight Networks, Inc. v. XO Communications, LLC and Akamai Technologies, Inc.*, No. 3:15-cv-00720 (E.D. Va. filed Nov. 30, 2015). Pet. 2; Paper 4, 4.

B. THE ’133 PATENT

The ’133 patent relates to communicating content over the Internet using a distributed network of nodes that use standard and high-performance communications protocols. Ex. 1001, Abstract. Figure 1 of the ’133 patent is reproduced below.

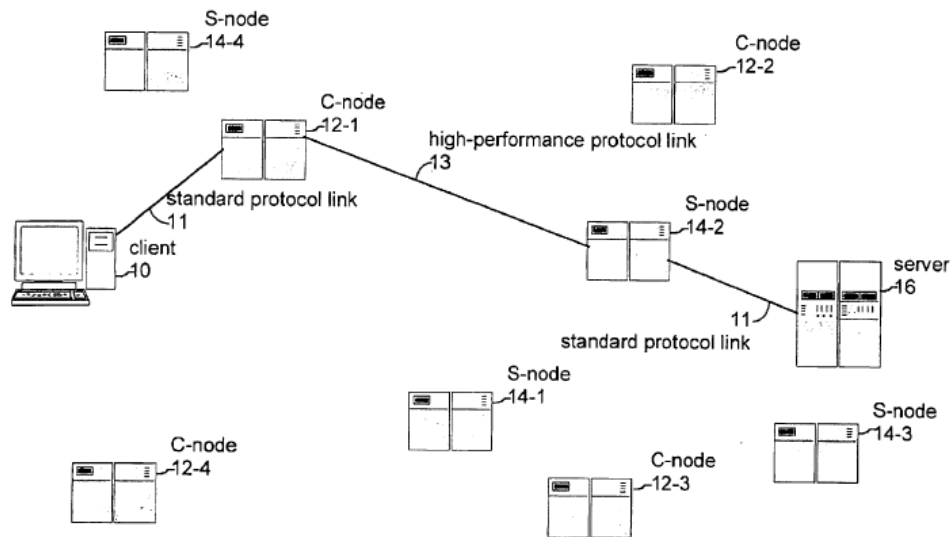


Figure 1

Figure 1 is a block diagram of the '133 patent's system for providing improved communications performance in a network, in which a distributed network of specialized nodes is located at various points in the Internet. *Id.* at 5:19–21, 8:28–30. When a client issues a request for content, a client node (C-node) is selected (e.g., C-node 12-1) that is close to the client. Closeness, according to the '133 patent, may be measured in terms of any standard network cost or distance metrics. *Id.* at 8:42–46. The client's request is directed to the selected C-node using a standard communication protocol. *Id.* at 9:14–19. The C-node, in turn, communicates the request to a selected server node (e.g., S-node 14-2) “using a specialized protocol designed to be of higher performance than the prevailing standard protocol used by the client.” *Id.* at 9:53–56. The selected S-node then forwards the request to a server using a standard protocol and, after the S-node retrieves a response, the S-node sends the response back to the originating C-node using a high-performance protocol. *Id.* at 10:32–44. Finally, the C-node

communicates the response back to the requesting client using the client's chosen standard protocol. *Id.* at 10:44–46. As the '133 patent explains:

significant benefits are realized by dividing the client-to-server end-to-end transaction into three parts: a first part comprising a client-to-C-node portion, a second part comprising a C-node-to-S-node portion, and a third part comprising an S-node-to-server portion. The C-node is generally a relatively short network distance from the client and uses a widely deployed conventional protocol (preferably HTTP over TCP) to communicate with the client. The S-node is generally a relatively short network distance from the server and uses a widely deployed conventional protocol (preferably HTTP over TCP) to communicate with the server. The C-node and the S-node use a high performance protocol . . . to communicate with each other.

Id. at 10:53–67.

C. CHALLENGED CLAIMS

Petitioner challenges claims 16, 19, 20, 23–25, 58, 62, and 63. Of the challenged claims, claims 16, 58, 62, and 63 are independent. Claims 16 and 58, reproduced below, are illustrative:

16. A method for communicating an Internet message between a source and a destination over the Internet, comprising:
 - selecting a node of a first type, wherein each node of a first type comprises software to receive Internet messages using a first communication protocol and software to transmit Internet messages using a second communication protocol wherein the second communication protocol is not supported by the source or the destination;
 - communicating an Internet message from the source to the selected node of a first type using the first communication protocol;

communicating the Internet message from the selected node of a first type to a node of a second type using the second communication protocol, wherein the node of a second type comprises software to receive Internet messages using the second communication protocol and software to transmit Internet messages using a third communication protocol; and

communicating the Internet message from the node of second type to the destination using the third communication protocol,

wherein the second communication protocol is designed to be a high performance protocol, and

wherein the step of selecting a node of a first type includes optimizing one or more criteria including a measure of network closeness between the source and the node of a first type.

Ex. 1001, 36:8–36.

58. A method comprising:

deploying a plurality of first specialized nodes, each of the plurality of first specialized nodes including software to receive and transmit messages conforming to a first communication protocol, the first communication protocol being a standardized web communication protocol, and software to receive and transmit messages conforming to a high-performance communication protocol;

deploying a plurality of second specialized nodes, each of the plurality of second specialized nodes including software to receive and transmit messages conforming to the high-performance communication protocol, and software to receive and transmit messages conforming to a third communication protocol, the third protocol being a standardized web communication protocol;

operating a selector for selecting one of the plurality of first specialized nodes;

providing for communicating messages between a source and the selected first specialized node using the first communication protocol;

providing for communicating messages between the selected first specialized node and one of the second specialized nodes using the high-performance communication protocol; and

providing for communicating messages between one of the selected second specialized nodes and a destination using the third communication protocol.

Ex. 1001, 45:33–61.

D. REVIEWED GROUNDS OF UNPATENTABILITY

We instituted review on the following grounds of unpatentability:

Reference(s)	Basis	Claims
Gelman ¹	§ 103(a) ²	16, 19, 20, 23–25, 58, 62, and 63
Gelman and the '264 patent ³	§ 103(a)	16, 19, 20, 23–25, 58, 62, and 63

E. LEGAL PRINCIPLES

1. *Burden of proof*

In *inter partes* reviews, petitioners bear the burden of proving unpatentability of the challenged claims, and the burden of persuasion never shifts to the patent owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*,

¹ U.S. Patent No. 6,415,329 B1 (issued July 2, 2002) (Ex. 1004, “Gelman”).

² The America Invents Act included revisions to, inter alia, 35 U.S.C. § 103 effective on March 16, 2013. Because the '133 patent issued from an application filed before March 16, 2013, the pre-AIA version of 35 U.S.C. § 103 applies.

³ U.S. Patent No. 6,006,264 (issued Dec. 21, 1999) (Ex. 1005, “the '264 patent”).

800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail, Petitioner must support its challenge by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). Accordingly, all of our findings and conclusions are based on a preponderance of the evidence.

2. Claim construction

The Board interprets unexpired claims using the “broadest reasonable construction in light of the specification of the patent in which [they] appear[.]” 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016). Under that standard, we generally give a claim term its “ordinary and customary meaning,” which is “the meaning that the term would have to a person of ordinary skill in the art in question” at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). The specification may impose a specialized meaning, departing from the ordinary and customary meaning, by defining a term with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). Further, a party in an *inter partes* review may prove “the existence of a ‘clear and unmistakable’ disclaimer” that narrowed a term’s definition in the prosecution history of a challenged patent. *TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1063–64 (Fed. Cir. 2016) (quoting *Elbex Video, Ltd. v. Sensormatic Elecs. Corp.*, 508 F.3d 1366, 1371 (Fed. Cir. 2007)).

3. Obviousness

An invention is not patentable “if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a

person having ordinary skill in the art to which said subject matter pertains.” 35 U.S.C. § 103(a). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and, (4) where in evidence, so-called secondary considerations, including commercial success, long-felt but unsolved needs, and failure of others. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

When evaluating a combination of teachings, we must also “determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (citing *In re Kahn*, 441, F.3d 977, 988 (Fed. Cir. 2006)). Whether a combination of elements produced a predictable result weighs in the ultimate determination of obviousness. *KSR*, 550 U.S. at 416–17. We analyze the grounds based on obviousness in accordance with the above-stated principles.

II. DISCUSSION

A. THE LEVEL OF ORDINARY SKILL IN THE ART

Petitioner asserts a person of ordinary skill in the art would have had “at least a Bachelor’s degree in Computer Science, Computer Engineering, or the equivalent, and several years’ experience in the field of distributed systems, name services, or Internet content delivery.” Pet. 15. Patent Owner offers a slightly different definition, “at least a Bachelor’s Degree in Electrical Engineering, Computer Science, or Computer Engineering, or equivalent experience, and one to two years of experience in the field of computer networking and/or distributed systems, particularly as those

systems relate to content delivery technology.” PO Resp. 2. Neither party explains how the level of skill it asserts affects the resolution of issues before us. Both definitions appear consistent with the art at issue in this proceeding (see *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001)), and we adopt Patent Owner’s definition as it relates more specifically to the claimed subject matter.⁴

B. CLAIM CONSTRUCTION

We determine that only the following terms require express construction to resolve the issues in this proceeding. See *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

1. “node”

Petitioner asserts that “node” should be construed as “an addressable location on a network.” Pet. 18–20. Patent Owner challenges this construction and asserts that a “node,” as described in the Specification, must “see all web traffic from the client.” PO Resp. 27–28 (emphasis omitted) (citing Ex. 1001, 3:24–32). The district court in related litigation construed “node” as “a collection of one or more hardware or software used as an intermediary in transmitting or receiving information between a source and a destination.” See PO Resp. 26 n.3.

The claim language recites “selecting a node of a first type” to receive a message from the source/client. The claim language does not comport

⁴ Our findings and conclusions, however, would be the same under either party’s proposed level of ordinary skill in the art.

with Patent Owner’s proposed construction, because there would be no need to select a node that already sees all web traffic from a client. The Specification is consistent with selecting a node based on certain criteria, as it describes the claimed invention as selecting “one node, e.g. a C-node, which may be near the client or chosen to optimize some other characteristic or measure relevant to communications performance.” Ex. 1001, 6:49–55. By characterizing the node for selection as one that “may be near the client or chosen to optimize some other characteristic,” the Specification discloses that the node need not be one that sees all web traffic from a client.

Other statements in the Specification are consistent with such an understanding. For example, it states that “[a] redirection system is preferably used to direct certain traffic from the client to the selected specialized node (the C-node).” Ex. 1001, 7:66–8:1; *accord id.* at 12:33–37 (“In a preferred embodiment, . . . certain web traffic, including requests for web content, is communicated to a selected C-node.”). Thus, the Specification is clear that a “node” in a preferred system only sees “certain traffic from the client.” In fact, the Specification describes this relationship in a way that makes Patent Owner’s proposed construction antithetical to the claim language:

The invention preferably employs a *selection means* to identify some C-node 12 that is close to the client, in terms of any standard network cost or distance metrics, and means of ensuring that the client’s request is directed to the chosen C-node 12-1. *Alternatively*, the invention may use means to ensure that all traffic from the client 10 passes through some close C-node 12 and is subject to possible interception by that node.

Ex. 1001, 8:42–49 (emphasis added).

The Specification uses the word “node” to describe many types of network locations, not just those that see all web traffic from a client. For example, it describes “server-side caching (also known as ‘reverse proxying’) in which a cache node is located near the server rather than near clients.” Ex. 1001, 4:46–48; *accord id.* at 3:2–5 (“A Content Distribution (CD) network is a collection of specialized nodes or devices, placed in a larger network such the Internet at chosen locations such as in the offices of Internet Service Providers (ISPs).”). It also makes clear that not all “nodes” within the scope of the invention are located in a particular manner. *Id.* at 5:57–59 (“In a preferred embodiment, such specialized nodes are located close to web servers and clients.”). It also explains that the invention applies to sub-links, not only to entire links between a source and destination. *Id.* at 6:8–10 (“Alternatively, it may be desirable to optimize communications performance only for one or more sub-links within that link . . .”).

Accordingly, we do not adopt Patent Owner’s proposed construction. As to whether a node must be “addressable” as sought by Petitioner (see Pet. 18–19), the parties do not explain how our determination of that issue would affect any of the disputed issues. Accordingly, we decline to further construe “node.” See *Nidec*, 868 F.3d at 1017.

2. “closeness,” “close,” and “minimize the distance between”

Petitioner argues that the terms “closeness” (claim 16), “close” (claim 62), and “minimize the distance between” (claim 63) each have the same meaning and should be construed according to the Specification as a “measure of communications performance that includes but is not limited to such metrics as bandwidth capacity, bandwidth cost, latency, security, administrative boundaries, administrative convenience, and current

congestion on various network paths, or a combination of such metrics.” Pet. 16–18 (citing Ex. 1001, 3:14–18, 5:59–67). Patent Owner does not contest Petitioner’s proposed construction.

Because we agree with Petitioner that the Specification appears to adopt a construction for the “closeness” terms that is different from the ordinary meaning of that term, and because that construction is consistent with the broadest-reasonable construction, we adopt Petitioner’s proposed construction. See Inst. 6–7.

C. OBVIOUSNESS OVER GELMAN ALONE

1. *Gelman (Ex. 1004)*

Gelman describes a method of communicating incoming packets directed to a destination address over a satellite or other high delay-bandwidth link. Ex. 1004, Abstract. According to Gelman, wireless links “provide[] a very flexible way to extend networks where a wired infrastructure is not available or is not cost effective.” *Id.* at 1:33–36. Gelman’s Figure 1 is reproduced below:

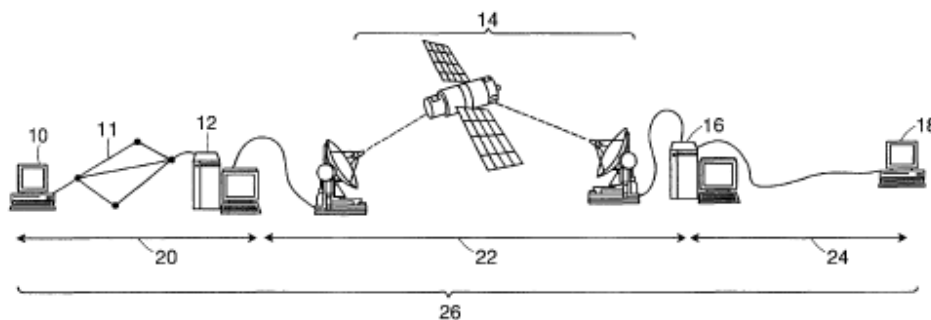


FIG. 1

Figure 1 is a “diagram of a communications system having a satellite link,” in which the invention of Gelman is used. *Id.* at 6:32–34. Gelman explains:

FIG. 1 illustrates how a preferred embodiment of the present invention splits a TCP [Transmission Control Protocol] connection 26 into three segments. A source node 10 originates the TCP connection by transmitting a TCP SYN [synchronize] packet to the destination node 18. The TCP packet travels over the source segment 20 to a source gateway 12 which intercepts the packet and converts it to a second, non-TCP protocol. The packet is then transmitted across the wireless link 22 in this second protocol, and is received by a destination gateway 16. The destination gateway converts the packet back to TCP and forwards the packet to the destination node 18 over the destination segment 24. Once the connection is established, packets travel back and forth from source to destination or from destination to source, and are translated by the gateways 12, 16 for transmission over the wireless link 22.

Id. at 7:11–26. Gelman explains further that source and destination segments 20 and 24 typically use terrestrial connections with unmodified TCP/IP protocols, but “the gateway to wireless link 22 uses a special wireless link protocol (WLP)” that “enhance[s] TCP performance and efficiency.” *Id.* at 7:39–43, 20:25–26.

Gelman discloses a “gateway application” that accepts a TCP connection from a source, makes a link to a gateway application at the other end of the wireless link, and then forms a TCP connection from that gateway application to the destination of the packet. *Id.* at 8:42–50. Thus, a gateway application resides at each end of the wireless link shown in Figures 1 and 2. When the gateway transfers packets across the wireless link, it must “perform the protocol translation from TCP to WLP for incoming packets and WLP to TCP for outgoing packets.” *Id.* at 8:11–13. Gelman refers to this process as occurring in a “WLP layer 60A” or “WLP module.” *See id.* at Fig. 2, 8:36–39, 9:22–25 (“The source gateway application 62A receives the packets from the TCP layer 63A and forwards them to the WLP layer

60A, which transmits them over the satellite link 44.”), 9:38–43 (“The GT [Generic/Transparent] embodiment uses three distinct modules to operate as a generic transparent protocol converter—the gateway application module 76, the SNAT module 78, and the Wireless Link Protocol module (WLP) 80, corresponding respectively to 62A, 64A and 60A of FIG. 2.”). Gelman explains that, when translating packets from TCP to WLP, “[b]ecause TCP/IP headers are not sent over the wireless link with each packet, the amount of non-data oriented traffic sent on the wireless link is reduced.” *Id.* at 10:34–37.

Another component of Gelman is the “Self Network Address Translator” or “SNAT.” *Id.* at 8:59–60. “The SNAT is responsible for performing address mapping on incoming and outgoing packets so that they are processed by the respective gateway applications 62A, 62B or properly routed to their destinations (which may be the source or destination node).” *Id.* at 8:60–64.

Because of the SNAT’s address translation and the WLP module’s protocol translation, the wireless link accommodates all types of data packets and is transparent to the source and destination; thus, Gelman refers to such an embodiment as a “generic transparent (GT) embodiment.” *Id.* at 7:61–63, 9:31–33 (“In this manner, the existence of the gateways 12, 16 and the wireless link 22 are completely hidden from both the source and destination nodes 10, 18.”). As Gelman points out, its “Generic/Transparent (GT) embodiment has the property that all TCP applications, i.e., HTTP,

FTP, etc. may be supported without modifying procedures and/or protocols.”⁵ *Id.* at 9:34–37.

Gelman further discloses “[a]dditional features” that may be used with its basic embodiment. *Id.* at 13:37. Of relevance here, Gelman discloses a feature to allow for scalability “on wireless links with extremely high bandwidths.” *Id.* at 13:38–39. The feature is described with respect to “a preferred GT gateway embodiment,” illustrated in Figure 8, reproduced below:

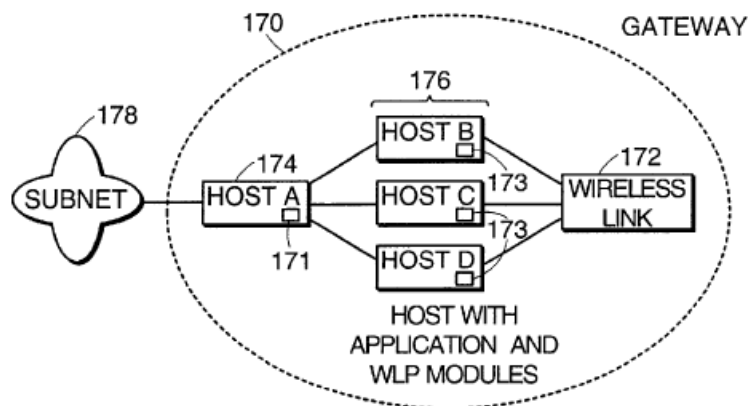


FIG. 8

Figure 8 illustrates a gateway embodiment 170 “for an extremely high bandwidth link 172 in which the SNAT module 171 is placed on one host 174 while the gateway applications 173 are placed on other hosts 176.” *Id.* at 13:41–44. In this fashion, the high-bandwidth embodiment uses the SNAT module to take advantage of multiple hosts running multiple gateway applications and WLP modules. *Id.* at 13:47–50 (“The actual gateway is split up into four hosts, one of which (Host A 174) has a SNAT module 171

⁵ HTTP refers to HyperText Transport Protocol. Ex. 1001, 1:49.

and three 176 of which (Hosts B, C, and D) have gateway application and WLP modules 173.”). In such a gateway using replicated gateway applications and WLP modules, “any processing performed in a gateway application (such as compression and encryption) can be split among more than one host, for example, by having different sessions processed by different hosts.” *Id.* at 13:53–57.

2. Claim 16

a. *Evidence of obviousness*

Petitioner asserts that Gelman discloses communicating an Internet message as recited in the preamble (“A method for communicating an Internet message between a source and a destination over the Internet”). Pet. 26–27 (citing Ex. 1004, Fig. 1). Petitioner further asserts that Patent Owner admitted during prosecution that Gelman “relates to communicating Internet messages.” *Id.* at 27 (citing Ex. 1002, 404). Patent Owner does not contest that Gelman satisfies the preamble. We agree with Petitioner and find that Gelman teaches the preamble of claim 16.

Regarding “selecting a node of a first type, wherein each node of a first type comprises software to receive Internet messages using a first communication protocol and software to transmit Internet messages using a second communication protocol wherein the second communication protocol is not supported by the source or the destination,” Petitioner relies on Gelman’s disclosure of the high-bandwidth embodiment described above, in which the SNAT module on one host “modifies the destination IP address of packets coming from the subnet 178 to one of the IP addresses of the machines 176 on which a gateway application 173 is running.” Pet. 30–31 (emphasis omitted) (quoting Ex. 1004, 13:50–53). Thus, in Gelman’s Figure

8, Petitioner identifies Host A as the device that performs the selecting, and each of Hosts B, C, and D as being “a node of a first type, selected by a SNAT located on Host A.” Pet. 32 (citing Ex. 1003 ¶¶ 70–71).

Patent Owner contests Petitioner’s mapping for the claimed selecting, arguing first that “hosts B, C, D 176 are not nodes, but rather subentities of a gateway that can see only part but not all traffic.” PO Resp. 31. As discussed above, we do not agree with Patent Owner’s proposed construction of “nodes,” which requires a node must “see all web traffic from the client.” *See supra* at 9–11. Patent Owner’s argument is based on a construction we rejected, and we do not agree that Gelman’s Hosts B, C, and D cannot act as the claimed “node of a first type.” Those hosts, by running Gelman’s gateway application and WLP module, satisfy the limitations regarding software on the “node of a first type.” *See supra* at 13–15 (discussing the operation of Gelman’s gateway application and WLP module); *see infra* at 19 (discussing the “communicating” limitations). Further, we find that Gelman teaches selecting one of Hosts B, C, and D by the SNAT on Host A, as explained above.

Claim 16 further requires that “the step of selecting a node of a first type includes optimizing one or more criteria including a measure of network closeness between the source and the node of a first type.” Petitioner submits that, although Gelman does not expressly teach selection based on closeness, “a POSITA would know, or would find it obvious, to select the appropriate one of Host B-D in order to optimize communications efficiency.” Pet. 49 (citing Ex. 1003 ¶¶ 66–74); *accord id.* at 32. According to Petitioner, the ’133 patent admits that “techniques for selecting nearby servers via mapping, DNS configuration, and ‘pinging’ available servers

were well-known to those of ordinary skill at the time.” Pet. 50 (citing Ex. 1001, 13:65–14:2, 15:16–24, 15:28–37). The ’133 patent states that those skilled in the art knew techniques for using the DNS system to identify a node “likely to be close to the requesting client.” Ex. 1001, 13:65–14:2. It also states that systems for monitoring web traffic and mapping available network distances were known. *Id.* at 15:16–24. Finally, the ’133 patent gives an example of such known monitoring software in which network pinging⁶ is used to measure latency between two computers. *Id.* at 15:28–37. We find that those statements in the patent disclose that it was well known to measure network closeness. *See also supra* at 11 (construing “closeness”). In light of known techniques for measuring closeness and identifying nodes likely to be close, we agree that Petitioner provides articulated reasoning with rational underpinning justifying why a skilled artisan would configure Gelman’s system such that its selection was performed to optimize closeness between the source and the node of a first type. *See In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006).

Patent Owner argues that even if Gelman is considered to “select” a node, performing the selection based on “network closeness” as claimed “would change the principle of operation of Gelman.” PO Resp. 32 (citing Ex. 2003 ¶ 86). Patent Owner submits that the Office “confirmed Gelman’s explicit teachings of a fixed path and only one gateway contradict a motivation to modify Gelman to encompass selectability based on closeness of a node.” *Id.* (citing Ex. 1002, 405, 414, 435).

⁶ The ’133 patent explains that “pinging” is “sending a short IP packet of a special form and measuring how long it takes for a response to return to the first computer.” Ex. 1001, 15:30–34.

Patent Owner's argument is premised on the notion that Gelman has a single gateway and therefore cannot include selecting a node. *Id.* at 32–33; *accord id.* at 37 (“[C]ommunications in Gelman follow a fixed path between gateways—there is no selection of a gateway node as claimed in the ’133 patent.”). But focusing on Gelman's gateway as a whole would ignore that Gelman's selection occurs within its high-bandwidth embodiment for a single gateway, in which the gateway contains multiple hosts. *See supra* at 15. Petitioner need not rely on multiple gateways, because Gelman discloses a gateway with multiple nodes—multiple hosts running the gateway application and WLP module. Ex. 1004, 13:47–50. As explained above, the host running a SNAT selects from one of several hosts running the gateway application and WLP module. *See supra* at 15. Thus, we are not persuaded that the Examiner resolved the question before us now (*see* PO Resp. 38), because the Patent Owner has not identified where the Examiner considered Gelman's high-bandwidth embodiment.

Claim 16 also requires “communicating an Internet message from the source to the selected node of a first type using the first communication protocol,” “communicating the Internet message from the selected node of a first type to a node of a second type using the second communication protocol, wherein the node of a second type comprises software to receive Internet messages using the second communication protocol and software to transmit Internet messages using a third communication protocol; and communicating the Internet message from the node of second type to the destination using the third communication protocol.” Petitioner asserts that Gelman teaches these limitations. Pet. 39–46 (citing Ex. 1004, 2:33–41, 2:47–57, 3:49–67, 4:1–9, 7:9–29, 7:19–48, 9:53–65, Figs. 1, 3). Patent

Owner does not contest Petitioner’s assertions in this regard. We note that our Scheduling Order cautions Patent Owner “that any arguments for patentability not raised in the [Patent Owner’s Response] will be deemed waived.” See Paper 11, 6; *see also In re NuVasive, Inc.*, 842 F.3d 1376, 1380–81 (Fed. Cir. 2016).

Based on the full record, we agree with the analysis in the Petition regarding the “communicating” limitations. We have reviewed Petitioner’s assertions and find that Gelman teaches the “communicating” limitations through the process of receiving TCP packets, translating those messages to WLP and sending them to a gateway on the other end of the wireless link, then converting them back to TCP and delivering them to the destination. *See supra* at 13.

Claim 16 further requires “the second communication protocol is designed to be a high performance protocol.” Petitioner asserts that Gelman’s disclosure of using WLP shows it teaches this limitation. Pet. 46–47.

Gelman discloses that wireless links provide a flexible way to extend networks when wired infrastructure is not available or cost effective, but that wireless communications systems suffer reliability and performance issues when using TCP/IP. Ex. 1004, 1:21–46; Pet. 47. According to Gelman, WLP “compensates for the physical characteristics of the satellite path,” thus, “enhanc[ing] TCP performance and efficiency.” Ex. 1004, 7:47–48, 20:25–26, 8:21–23 (explaining that “WLP allows for packet fragmentation and reassembly, reducing the amount of data that must be retransmitted when a link error occurs”), 20:25–28 (noting that “WLP enhances TCP performance even when used outside the scope of the present invention”);

Ex. 1003 ¶ 63 (explaining that WLP addresses shortcomings of TCP in certain environments with optimizations including “forward-error correction, reduced-sized headers, link-layer retransmission, link-layer packet fragmentation and reassembly, and compression”). As Petitioner notes, Gelman includes an analysis of test results showing that WLP performed significantly better than TCP when transferring files of all sizes over Gelman’s wireless link system. Pet. 47 (citing Ex. 1004, 30:49–31:39).

Patent Owner does not contest that WLP enhances performance over wireless networks. Instead, Patent Owner asserts that because the wireless network in Gelman involves a high delay and high error rates, Gelman seeks a solution catered to that specific environment. PO Resp. 41–42, 9–11. Although WLP addresses the environment of satellite links, Patent Owner argues that “WLP’s improvement in the satellite context does not elevate WLP to a high performance protocol.” *Id.* at 43.

The ’133 patent broadly characterizes the required protocol as one that outperforms another protocol. Ex. 1001, 9:53–56 (“The C-node 12 communicates the client’s request to the chosen S-node 14 over link 13, using a specialized protocol designed to be of higher performance than the prevailing standard protocol used by the client.”). The Specification explains further that “the invention is not specific to any particular C-node to S-node protocols,” “[o]ne skilled in the art will appreciate that many such optimized or high-performance protocols are known,” and “there are always likely to be better protocol innovations in the research pipeline that the invention could be using.” *Id.* at 10:5–14; *see* Pet. 46. Neither the claim language nor the written description requires a certain network environment; stated otherwise, the claims do not exclude application to Gelman’s wireless

link. And in that context, Patent Owner does not dispute that WLP offers improved performance compared to TCP. *See* PO Resp. 43 (agreeing that Petitioner demonstrates WLP “performs better on a satellite link than does TCP”).

Indeed, Gelman discloses aspects of WLP similar to those used in the ’133 patent. In one regard, both reduce the amount of header information sent with each packet. *Compare* Ex. 1004, 10:34–37 (“Because TCP/IP headers are not sent over the wireless link with each packet, the amount of non-data oriented traffic sent on the wireless link is reduced.”), *with* Ex. 1001, 28:12–43 (discussing performance benefits through HTTP header compression). Additionally, Gelman discloses that WLP achieves its benefit in part by quickly maximizing the transfer speed. Ex. 1004, 20:35–37 (“First, when a new connection is created, get data flowing as quickly as possible.”); *accord id.* at 2:7–18 (criticizing TCP’s slow-start algorithm). That strategy parallels the approach used in Patent Owner’s commercial implementation, discussed below as evidence of nonobviousness. Ex. 2005, 5 (“Netli Protocol also eliminates the slow-start feature of TCP that builds up the rate at which data is transferred gradually before reaching top speed.”). In light of Gelman’s express disclosures, including that its WLP module “enhances TCP performance and efficiency” and that “WLP enhances TCP performance even when used outside the scope of the present invention” (Ex. 1004, 20:25–28), we agree with Petitioner and find that WLP is a high-performance protocol. Thus, we further find that Gelman teaches “the second communication protocol is designed to be a high performance protocol” as claimed.

The flaw with Patent Owner’s position is highlighted by its focus on the absolute performance of Gelman’s wireless link, rather than the relative performance of the protocol used on that link. *See* PO Resp. 44 (“A person of ordinary skill in the art would not consider a satellite link transfer rate of 100 kilobits per second . . . compared to the connected local area network speeds of 100 megabits per second to be high performance—a difference by a factor of 1000.”) (citing Ex. 2003 ¶ 50); *accord id.* at 44–46. Because Patent Owner distinguishes Gelman on the overall link speed rather than whether the protocol offered an advantage over another protocol, it does not overcome Petitioner’s showing that Gelman teaches a high-performance protocol as claimed.

As discussed in the foregoing, we find that Petitioner has shown persuasively that Gelman teaches or suggests each limitation in claim 16 and has articulated reasons why a skilled artisan would configure Gelman as claimed.

b. Evidence of nonobviousness

Notwithstanding what the teachings of the prior art would have suggested to one with ordinary skill in the art at the time of the invention, objective evidence of nonobviousness, may lead to a conclusion that the claimed invention would not have been obvious to one with ordinary skill in the art. *In re Piasecki*, 745 F.2d 1468, 1471–1472 (Fed. Cir. 1984). Patent Owner argues that several objective indicia of nonobviousness support a conclusion that the claims are not unpatentable. PO Resp. 46–52. In particular, Patent Owner relies on industry praise, commercial success, and long-felt need. *Id.* at 47.

Patent Owner asserts that Netli (the assignee on the face of the '133 patent) marketed a product called NetLightning that embodied the claims of the '133 patent. PO Resp. 47 (citing Ex. 1002, 430–34; Ex. 2003 ¶ 114). Patent Owner relies on a declaration under 37 C.F.R. § 1.132 by an inventor filed during prosecution of the '133 patent, discussing development of Netli and its services. Ex. 1002, 430–34. Patent Owner relies also on statements from its expert, Dr. Houh. Ex. 2003 ¶¶ 114–124. Finally, Patent Owner presents an article from NetworkWorld that explains the functionality used by Netli's system and reports on a successful customer experience. PO Resp. 28–49 (citing Ex. 2005, 4).

For evidence of nonobviousness to overcome evidence of obviousness, there must be a nexus to establish that the evidence relied upon has a connection to the claimed invention. *J.T. Eaton & Co. v. Atl. Paste & Glue Co.*, 106 F.3d 1563, 1571 (Fed. Cir. 1997) (“[Patentee] cannot demonstrate commercial success, for purposes of countering the challenge of obviousness, unless it can show that the commercial success of the product results from the claimed invention.”). “[T]here 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*, 106 F.3d at 1571).

Petitioner argues that Patent Owner's evidence is inadequate to show nexus or to support a conclusion of nonobviousness. Reply 23–26. Petitioner asserts that the NetworkWorld article focuses on unclaimed limitations and therefore lacks nexus. *Id.* at 24. Because the article states

that the system “pushes Internet delay below 1 second,” but that is not a claim limitation, Petitioner asserts that any praise in the article is irrelevant. *Id.* (quoting Ex. 2005, 4). We do not agree. Although Netli’s system may have offered any number of performance benefits, those do not control whether it practiced the limitations of the challenged claims. To the extent Petitioner asserts that the unclaimed benefits shown by the NetworkWorld article undermine any nexus to the claim, we do not find the argument persuasive. We conclude that Patent Owner demonstrates adequately that the NetworkWorld article refers to a system that practiced the limitations of the challenged claims, thus establishing the required nexus.

Petitioner further asserts that the NetworkWorld article does not disclose any sales data or show a long-felt need because it merely indicates that “Netli promises to improve the Internet speeds of corporate Web applications.” Ex. 2005, 4; *see* Reply 24. We agree with Petitioner and find that the NetworkWorld article does not provide significant evidence of commercial success or long-felt need (*see* Reply 24); by reporting a single exemplary customer, the article lacks sufficient support to establish market success or the solution to a longstanding problem. *See* Ex. 2005.

Patent Owner relies on the NetworkWorld article as demonstrating industry praise. PO Resp. 47–48 (citing Ex. 2005). The article states that a medical-equipment vendor, Millipore, “says using Netli’s service reduced download times for its customers in Japan by more than 50% on average.” Ex. 2005, 4–5. We agree that the article shows some degree of praise, but it also includes comparisons pointing out that the system applies to only a narrow part of the market and does not help overcome all network conditions. *See* Ex. 2005, 5. Thus, in our view, the NetworkWorld article

demonstrates only a minimal degree of industry praise, and we give this evidence correspondingly minimal weight.

Patent Owner also relies on a declaration from Dr. Houh.

PO Resp. 47–52. According to Petitioner, the declaration from Dr. Houh relies on the same evidence as Patent Owner and offers no further support or analysis. Reply 25–26. We view Dr. Houh’s testimony as supporting Patent Owner’s contentions that the disclosures of the NetworkWorld article show that Netli’s system practiced the limitations of the challenged claims. *See* Ex. 2003 ¶¶ 118–120. We agree with Petitioner, however, to the extent that Patent Owner relies on Dr. Houh’s testimony for anything beyond connecting the NetworkWorld article to the challenged claims. Dr. Houh presents neither personal knowledge nor analysis to bolster the inventor’s statements in the inventor’s § 1.132 declaration, and offers no independent evidence of nonobviousness; as a result we give his testimony little weight.

Patent Owner relies on the § 1.132 declaration to show that the claimed invention “was commercially successful, received industry praise, and fulfilled a long-felt need for faster download times.” PO Resp. 47 (citing Ex. 1002, 431). Petitioner argues that the declaration uses the term “proprietary protocol” whereas the claims require a “high performance protocol,” and that the declaration therefore cannot have a nexus to the claims. Reply 25. But Petitioner provides no support that those two terms are different in the context of the evidence. Indeed, the NetworkWorld article explains that Netli’s “proprietary protocol” provided performance benefits—that it was a “high performance protocol” as claimed. *See* Ex. 2005, 4–5. Thus, we do not agree that using the term “proprietary protocol” undermines the nexus showing in the § 1.132 declaration.

Petitioner argues also that the § 1.132 declaration lacks the required nexus to the challenged claims because it does not tie a specific product to the claim limitations. Reply 25. The declaration states that “Netli is a company created to implement substantially the system claimed in the above-referenced application.” Ex. 1002, 431. The declaration states that Netli received venture-capital investment, that Netli had generated “\$1 million of booked revenue,” and that “several organizations within HP have turned to the Netli technology to address performance needs.” *Id.* at 431–43. The declaration provides little detail about the various services that Netli may have provided, or whether substantially all activity at Netli related to the claimed invention. It also lacks any information about whether the investment or revenue sums indicate true commercial success. *See In re Huang*, 100 F.3d 135, 140 (Fed. Cir. 1996) (“Although [the patent applicant’s] affidavit certainly indicates that many units have been sold, it provides no indication of whether this represents a substantial quantity in this market.”); *In re Applied Materials, Inc.*, 692 F.3d 1289, 1300 (Fed. Cir. 2012) (“[T]he number of units sold without evidence of the market share is only weak evidence of commercial success.”). Thus, we find that the declaration’s showing that the claimed invention was a commercial success, at best, is weak.

We find that Patent Owner’s evidence indicates only a limited degree of industry praise and, to a lesser extent, commercial success. It does not support that the invention satisfied a long-felt need and does not overcome the other factors considered in our obviousness determination.

c. Conclusion

We have considered the strength of Patent Owner’s objective evidence of nonobviousness and weighed it alongside the strength of the other *Graham* factors in the present record. Based on the record, we conclude that, on balance, the strong evidence of obviousness outweighs the relatively weak evidence of nonobviousness. *See Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007) (holding that objective considerations of nonobviousness presented, including substantial evidence of commercial success, praise, and long-felt need, were inadequate to overcome the evidence of obviousness). Thus, we conclude Petitioner has demonstrated by a preponderance of the evidence that the subject matter of claim 16 would have been obvious over Gelman.

3. Claims 19, 20, and 23–25

Claims 19, 20, and 23–25 each depends, directly or indirectly, from claim 16. Claim 19 depends from claim 16 and further requires that “the first communication protocol is a standard communication protocol, the second communication protocol is a high-performance communication protocol, and the third communication protocol is a standard communication protocol.” Petitioner asserts that because Gelman discloses accepting a message using TCP (a standard communication protocol), converting it to WLP (a high-performance protocol), and then converting it back to TCP, Gelman teaches the limitations of claim 19. Pet. 52–53 (citing Ex. 1001, 1:46–49; Ex. 1004, 3:49–62, 7:12–48, 9:53–65, Fig. 1). Patent Owner does not contest Petitioner’s assertions in this regard.

Based on the full record, we agree with the analysis in the Petition. We have reviewed Petitioner’s arguments and supporting evidence and find

that Petitioner has shown persuasively that Gelman teaches the limitations of claim 19.

Claim 20 depends from claim 19 and further requires “the Internet message is a World-Wide Web message.” Petitioner asserts that Gelman discloses “messages transmitted via HTTP” and therefore teaches “World-Wide Web messages in the form of requests from client nodes and responses from destination nodes.” Pet. 54 (citing Ex. 1004, 9:34–37, 14:61–67, 30:60–31:11). Patent Owner does not contest Petitioner’s assertions in this regard.

Based on the full record, we agree with the analysis in the Petition. *See infra* at 34. We have reviewed Petitioner’s arguments and supporting evidence and find that Petitioner has shown persuasively that Gelman teaches the limitations of claim 20.

Claim 23 depends from claim 16 and further requires “the node of a first type is software that may be co-located with the source or remotely located from the source.” Claim 24 depends from claim 16 and further requires that “the node of a second type is software that may be co-located with the destination or remotely located from the destination.” Petitioner asserts that Gelman discloses that both its “source gateway application” and “destination gateway application” are software and located remotely from the source node and destination node, respectively. Pet. 54–56 (citing Ex. 1004, 5:35–37, Figs. 1, 2). Patent Owner does not contest Petitioner’s assertions in this regard.

Based on the full record, we agree with the analysis in the Petition. We have reviewed Petitioner’s arguments and supporting evidence and find

that Petitioner has shown persuasively that Gelman teaches the limitations of claims 23 and 24.

Claim 25 depends from claim 16 and further requires the steps of “communicating a second Internet message from the destination to the node of a second type using a fourth communication protocol; communicating the second Internet message from the node of a second type to the node of a first type using a fifth communication protocol; and communicating the second Internet message from the node of a first type to the source using a sixth communication protocol.” Thus, claim 25 requires sending a message back from the destination to the source, also translating the protocol of the message as required for the source-to-destination message required by claim 16. Petitioner asserts that Gelman teaches the required return message by disclosing that, “[o]nce the connection is established, packets travel back and forth from source to destination or from destination to source, and are translated by the gateways 12, 16 for transmission over the wireless link 22.” Pet. 56–58 (quoting Ex. 1004, 7:23–26). Patent Owner does not contest Petitioner’s assertions in this regard.

Based on the full record, we agree with the analysis in the Petition. We have reviewed Petitioner’s arguments and supporting evidence and find that Petitioner has shown persuasively that Gelman teaches the limitations of claim 25.

In light of our findings regarding claims 19, 20, and 23–25, and the discussion above regarding claim 16, we conclude that the subject matter of claims 19, 20, and 23–25 would have been obvious over Gelman. In our view, the evidence of obviousness satisfies the legal thresholds and outweighs the evidence of nonobviousness.

4. Claim 58

Independent claim 58 recites limitations similar to those of claim 16, and, for claim 58, Petitioner relies on the assertions made for claims 16 and 19. *See* Pet. 58–61.

Patent Owner argues that claim 58 recites certain unique limitations not present in claim 16 and that Petitioner fails to adequately address those limitations. PO Resp. 13–24. Patent Owner focuses on two characteristics: bidirectional communication (*id.* at 13–22) and use of a standardized web communication protocol (*id.* at 22–24).

a. *Bidirectional communication*

Regarding bidirectional communication, claim 58 requires that each node must include software to “both ‘receive and transmit’ messages in both a ‘standardized web communication’ protocol and a ‘high performance protocol.’” PO Resp. 16. Petitioner relies on the assertions made for claims 16 and 19 to show this aspect of Gelman. *See* Pet. 59.

According to Patent Owner, by relying on the assertions made for claims 16 and 19, the Petition fails to address that requirement. *Id.* Patent Owner asserts that, in Gelman’s Figure 8 “hosts B, C, and D are used for transmission only.” *Id.* at 17–18; *accord id.* at 21 (“[T]here is nothing in the Petition to express or suggest that [hosts B, C, and D] are involved in the reception path of messages from wireless link 172.”), 22 (“Gelman provides no disclosure that (or, even if they did, how) messages received from the wireless link 172 would be directed back to Hosts B, C, or D.”). Patent Owner further asserts that “claim 16 (along with its dependent claim 19) concerns a communication from a source (*e.g.*, a client) to a destination (*e.g.*, a server) only.” PO Resp. 19.

Petitioner responds that claim 16 also requires bidirectional communication, and thus the showing in the Petition regarding claim 58 is sufficient. Reply 15. According to Petitioner, claim 16 recites a “method for communicating an Internet message between a source and a destination” and an “Internet message” is defined by the ’133 patent as including *both* requests and responses. *Id.*; *see also* Ex. 1001, 7:6–9 (“The response from the server, as well as the request for web content, may be termed a ‘world wide web message,’ or, more broadly, an Internet message.”); Pet. 26. We agree with Petitioner that an Internet message includes content requests from the client node and responses from the server node, but do not understand that determination alone to resolve the issue. The Petition also identified that Gelman describes “sending content requests and responses by transferring packets between a source and destination.” Pet. 28 (citing Ex. 1004, 3:49–62, 7:23–26); Reply 16. The Petition further noted that Gelman uses the terms “source” and “destination” interchangeably. Pet. 28 n.6 (citing Ex. 1004, 7:31–38); Reply 16.

We find that Gelman discloses that its gateway transfers packets in both directions. In particular, we are persuaded by Gelman’s disclosure that, “[o]nce the connection is established, packets travel back and forth from source to destination or from destination to source, and are translated by the gateways 12, 16 for transmission over the wireless link 22.” Ex. 1004, 7:23–26; *see* Pet. 28. That passage indicates that, once a connection is established, data packets are transferred in both directions on that connection. In light of Gelman using “source” and “destination” interchangeably (Ex. 1004, 7:31–38), showing the segments in Figure 1 with bidirectional arrows (*id.* at Fig. 1), disclosing that “packets travel back and

forth” (*id.* at 7:23–26), and translating between protocols as packets move across a gateway (*id.* at 3:49–4:9), we find that Gelman teaches gateways capable of both transmitting and receiving messages, each direction including two protocols. *See also id.* at 8:11–13 (“The modified gateways 12, 16 perform the protocol translation from TCP to WLP for incoming packets and WLP to TCP for outgoing packets.”).

We further conclude that the Petition adequately identified Gelman’s disclosures that gateways could transfer packets in both directions. Our finding regarding Gelman’s teachings relies sufficiently on passages identified in the Petition for the assertions against claim 16, and relied on by reference for the assertions against claim 58.⁷

Patent Owner relies on the lack of detail regarding bidirectional communication for the embodiment in Gelman’s Figure 8. *See* PO Resp. 16–22. But that approach ignores that Figure 8 shows “a possible gateway setup for an extremely high bandwidth link” (Ex. 1004, 6:52–53) and therefore does not abandon the characteristics that Gelman describes for the gateways generally. Rather, the Figure 8, high-bandwidth, gateway shows additional features for a gateway that includes the same “gateway application,” “SNAT module,” and WLP module” disclosed for the basic gateway. *Id.* at 7:63–10:37; 13:41–57.

Patent Owner also relies on its expert to argue that Gelman does not teach how a response packet moving from right to left through Gelman’s Figure 8 “could or would go to one of hosts B, C, or D . . . nor why a packet

⁷ We note further that the Petition identified Gelman’s disclosures of a return message in connection with claim 25, which depends from claim 16 and expressly requires a second, return message. *See supra* at 30.

would do so.” PO Resp. 18 (citing Ex. 2003 ¶¶ 59–60 (“Because the destination SNAT processing occurs *after* the destination gateway application processing, Gelman cannot teach that a similar process involving the destination SNAT processing can be used to split any processing among multiple hosts for further gateway processing at the destination side of the link.”)). Dr. Houh’s statement and Patent Owner’s argument impose requirements beyond the claims. Claim 58 requires only that a “specialized node” include “software to receive and transmit messages conforming to a first communication protocol” and “software to receive and transmit messages conforming to a high-performance communication protocol.” The “selecting” required by claim 58 does not require selecting a first node in each direction. Thus, whether or not Gelman teaches selection of a particular node for the response packet is immaterial. Gelman’s disclosures are completely consistent with claim 58, because Gelman teaches selecting a first node (host B, C, or D within a high-bandwidth gateway) to form a connection (Ex. 1004, 13:40–57) and exchanging packets “back and forth” through the gateway (*id.* at 7:23–26).

We have reviewed Petitioner’s arguments and supporting evidence and find that Petitioner has shown persuasively that Gelman teaches nodes including software to receive messages in two different protocols and software to transmit messages in those protocols. We do not agree with Patent Owner that the Petition failed to adequately identify Gelman’s relevant disclosures.

b. Standardized web communication protocol

Claim 58 requires that “first communication protocol” and “third communication protocol” must be a “standardized web communication

protocol.” Patent Owner argues that Petitioner does not make an adequate showing that Gelman teaches use of a standardized web communication protocol. PO Resp. 22–24.

As noted above, the Petition refers to the assertions made against claims 16 and 19. Pet. 59–60 (referring to Pet. 41–45, 46–47; also citing Ex. 1003 ¶¶ 66–74). Patent Owner argues that is inadequate because neither claim 16 nor claim 19 require a standardized web protocol. PO Resp. 23. Patent Owner argues that Petitioner’s assertions against claims 16 and 19 cite passages from Gelman that refer to TCP. *Id.* Patent Owner asserts that TCP alone is not a “standardized web communication protocol,” a term that requires a protocol such as HTTP—known as an application-layer or application-level protocol—which may be transported by using TCP. PO Resp. 22–23; see Ex. 1001, 1:46–65. Patent Owner also relies on an answer by Petitioner’s expert, Dr. Freedman, during his deposition, where he agreed that “TCP just by itself, not looking also at an application level protocol” would not be characterized as a web communication protocol. PO Resp. 23 (quoting Ex. 2004, 157:6–10).

Petitioner responds that the question to Dr. Freedman in fact included the proviso that “maybe this is meaningless” and that his response further includes that “TCP is always used to transmit application level data, so it’s somewhat meaningless to talk about it by itself.” Reply 21 (emphasis omitted) (quoting Ex. 2004, 157:5–13). We need not resolve the dispute regarding Dr. Freedman’s testimony because it is not necessary to our determination of whether Gelman discloses the use of HTTP (or another standardized web communication protocol) over its links and whether the Petition adequately identifies those disclosures.

Patent Owner asserts that “[n]either the Petition nor Petitioner’s expert provide evidence of Gelman’s gateways receiving HTTP messages.” PO Resp. 24. Petitioner challenges that assertion, pointing to the contentions for claim 19 and claim 20, which depends from claim 19. Reply 22–23 (citing Pet. 54). We agree with Petitioner that Gelman discloses the use of HTTP messages—messages conforming to a standardized web communication protocol. Gelman states that its “Generic/Transparent (GT) embodiment has the property that all TCP applications, i.e., HTTP, FTP, etc. may be supported without modifying procedures and/or protocols.” Ex. 1004, 9:34–37; *accord id.* at 30:60–31:11 (describing tests with HTTP messages). We have reviewed Petitioner’s arguments and supporting evidence and find that Petitioner has shown persuasively that Gelman teaches gateways with the claimed software for sending and receiving messages conforming to a standardized web communication protocol.

The Petition identified the passages of Gelman relevant to HTTP in connection with claim 20; it did not refer to those assertions for claim 20 in the assertions against claim 58. *See* Pet. 54, 59–60. While claim 20 requires “a World-Wide Web message” whereas claim 58 requires “messages conforming to . . . a standardized web communication protocol,” we find those two terms to be synonymous. *See* Ex. 1001, 1:49–52 (“HyperText Transport Protocol (HTTP) is the application-level network protocol used when a client requests web content from a web server, and used by the web server when it responds to such requests.”), 7:6–8 (“The response from the server, as well as the request for web content, may be termed a ‘world wide web message,’ or, more broadly, an Internet message.”). Thus, Patent

Owner could not reasonably argue that it did not have notice and an opportunity to respond to Petitioner's assertion that Gelman teaches a system capable of using HTTP messages. *See SAS Inst., Inc. v. ComplementSoft, LLC*, 825 F.3d 1341, 1351 (Fed. Cir. 2016) (holding that the Administrative Procedure Act provision in 5 U.S.C. § 554(b)(3) requires parties in an IPR receive notice of "the matters of fact and law asserted" and an opportunity to present argument accordingly). Because Patent Owner had adequate notice of the passages in Gelman that Petitioner asserted to teach a standardized web protocol and had opportunity to respond to those assertions, we conclude that Patent Owner has not identified a defect in the Petition.

c. Additional limitations

For the additional limitations of claim 58, Petitioner relies on the same assertions discussed above for claims 16 and 19, and asserts that Gelman teaches the unique limitations of claim 58. Pet. 58–61. Other than as discussed above, Patent Owner does not contest Petitioner's assertions regarding claim 58.

We have reviewed Petitioner's assertions regarding Gelman's teachings and agree with them. We find that Gelman teaches the limitations of claim 58 as set forth by Petitioner, and that a person of ordinary skill had reason to configure Gelman to select a first node based on network closeness. We conclude that the strong evidence of obviousness outweighs the relatively weak evidence of nonobviousness (discussed *supra* at 23–27). Thus, based on the record, we conclude Petitioner has demonstrated by a preponderance of the evidence that the subject matter of claim 58 would have been obvious over Gelman.

5. Claim 62

Independent claim 62 recites limitations largely similar to those required by claim 16. Petitioner asserts that Gelman renders obvious the subject matter of claim 62 for the same reasons provided for claims 16 and 58. Pet. 62–67. As to the requirement in claim 62 of “selecting a node of a second type from one or more nodes of a second type to increase the performance of communicating the Internet message between the source and the destination wherein the selected node of a second type is close to the destination,” Petitioner points to an example in Gelman disclosing that the source-side SNAT provides the source-side gateway application with “destination addressing information.” *Id.* at 63–64 (citing Ex. 1004, 29:33–46, Fig. 14). Petitioner asserts that “selecting a particular second gateway application that is on the appropriate side of a wireless link would improve the overall communication of the system by ensuring that the appropriate first and second gateways were in communication.” *Id.* at 64 (citing Ex. 1003 ¶¶ 92–95). Petitioner further relies on Gelman’s disclosure that “priority access” may be provided to certain customers, reasoning that a skilled artisan “would find it obvious to use the SNAT to select the appropriate destination gateway (node) from a plurality of destination gateways in order to provide priority access to priority customers, and provide different access to nonpriority customers.” *Id.* at 64–65 (citing Ex. 1004, 14:24–34; Ex. 1003 ¶¶ 66–74). Other than as discussed above regarding “selection” in claim 16, Patent Owner does not contest Petitioner’s assertions in this regard. *See* PO Resp. 30–33, 37–39.

We have reviewed Petitioner’s assertions regarding Gelman’s teachings and the reasons a skilled artisan would configure Gelman as

claimed, and we agree with Petitioner. We find that Gelman teaches the limitations of claim 62 as set forth by Petitioner, and that a person of ordinary skill had reason to configure Gelman to select a first node and second node to increase communication performance. We conclude that the strong evidence of obviousness outweighs the relatively weak evidence of nonobviousness (discussed *supra* at 23–27). Thus, based on the record, we conclude Petitioner has demonstrated by a preponderance of the evidence that the subject matter of claim 62 would have been obvious over Gelman.

6. Claim 63

Independent claim 63 recites limitations largely similar to those required by claim 62. Petitioner asserts that Gelman renders obvious the subject matter of claim 63 for the same reasons provided for claims 16, 58, and 62. Pet. 68–70. Patent Owner does not contest Petitioner’s assertions in this regard.

We have reviewed Petitioner’s assertions regarding Gelman’s teachings and the reasons a skilled artisan would configure Gelman as claimed, and we agree with Petitioner. We find that Gelman teaches the limitations of claim 63 as set forth by Petitioner, and that a person of ordinary skill had reason to configure Gelman to select a first node and second node to minimize the distance between the source and selected first node and between the selected second node and destination, respectively. *See supra* at 11 (construing “minimize distance between”), 38 (discussing claim 62). We conclude that the strong evidence of obviousness outweighs the relatively weak evidence of nonobviousness (discussed *supra* at 23–27). Thus, based on the record, we conclude Petitioner has demonstrated by a

preponderance of the evidence that the subject matter of claim 63 would have been obvious over Gelman.

D. OBVIOUSNESS OVER GELMAN AND THE '264 PATENT

In addition to the ground of obviousness discussed above, based on Gelman alone, Petitioner asserts that a skilled artisan had reason to look to teachings from the '264 patent in combination with Gelman, which would lead the artisan to select nodes as claimed in the '133 patent. Pet. 23–26 (reason to combine), 35–36 (claim 16), 51–52 (claim 16), 60–61 (claim 58), 65–66 (claim 62), 68–69 (claim 63).

1. *The '264 Patent (Ex. 1005)*

The '264 patent describes “[a] content-aware flow switch [that] intercepts a client content request in an IP network, and transparently directs the content request to a best-fit server.” Ex. 1005, [57]. Relevant to this case, the '264 patent describes “forward[ing] the content request to a server that is well-suited to serve the content request,” based on “the type of content requested, the QoS [Quality of Service] requirements implied by the content request, the degree of load on available servers, network congestion information, and the proximity of the client to available servers.” *Id.* at 2:50–58.

2. *Claims 16, 19, 20, 23–25, and 58*

To assert obviousness over Gelman combined with the '264 patent, Petitioner relies largely on the same assertions described above for Gelman alone. See Pet. 26–70. As to those assertions and Patent Owner’s challenges to them, we make the same findings and reach the same conclusions described above in connection with Gelman alone. Petitioner

relies on teachings from the '264 patent in two ways, which we address below.

Petitioner asserts that it would have been obvious “to include the content-aware flow switch of the '264 patent in the wireless communications system of Gelman [] in order to facilitate efficient exchange of information between the client (10) and destination (18) over the selected gateways/servers (12, 16) of Gelman.” Pet. 35. Petitioner submits additionally that a skilled artisan would use the '264 patent’s switch “in order to ensure that the ‘best-fit’ gateways/servers of Gelman [] were chosen for the respective source and destination nodes.” *Id.* at 25 (citing Ex. 1003 ¶ 90); *see id.* at 25–26 (citing Ex. 1003 ¶¶ 90–96). Petitioner identifies that the '264 patent describes a selection method based on the locations of the client and server, without reference to the content requested. *Id.* at 24–25 (citing Ex. 1005, 3:10–12). As Petitioner points out, the “method utilized the location of the requesting client, the location of each server, and a method of assigning a proximity preference so that the best-fit server could be selected based on its ‘proximity’ to the client.” *Id.* at 25 (citing Ex. 1005, 3:12–28).

To the extent Patent Owner challenges the '264 patent’s teaching of selection, it argues that the '264 patent chooses a destination server rather than an intermediary server, and therefore does not teach selection as required in the challenged claims. PO Resp. 34–35. We agree with Petitioner, however, and find that the '264 patent discloses selecting a server and that, when combined with Gelman’s system as described, the '264 patent’s switch would select one of Gelman’s gateways for a client to interact with. *See* Reply 12. The '264 patent teaches a method of selecting

an appropriate server to process a request from a client. Ex. 1005, 2:49–53 (“[W]hen a client in an IP network makes a content request, the request is intercepted by a content-aware flow switch, which seamlessly forwards the content request to a server that is well-suited to serve the content request.”). In the context of Gelman’s system, if configured as asserted by Petitioner, the ’264 patent’s switch would select Gelman’s gateway and would do so based on closeness, as claimed in the ’133 patent. Thus, the relevant question—and Patent Owner’s focus—is whether a skilled artisan had reason to use the ’264 patent’s switch to select Gelman’s gateway. See PO Resp. 33–37.

Petitioner asserts that using the ’264 patent’s switch to select a gateway would “ensure that the ‘best-fit’ gateways/servers of Gelman [] were chosen for the respective source and destination nodes.” Pet. 25; *accord id.* at 26 (“to select efficient gateways/servers . . . thereby facilitating efficient exchange of information”), 35 (“to facilitate efficient exchange of information”). We agree with Petitioner’s assertions and credit the testimony of its expert, Dr. Freedman. Ex. 1003 ¶¶ 90–96.

Patent Owner asserts that, because the ’264 patent does not describe selecting an intermediary server, “satellite links, wireless links, or any other high-delay links,” its teachings cannot apply to Gelman’s system. PO Resp. 35. We do not agree with Patent Owner that, because the ’264 patent describes a context different from that of Gelman, its teachings cannot apply to Gelman. See *In re Mouttet*, 686 F.3d 1322, 1331 (Fed. Cir. 2012) (“A reference may be read for all that it teaches, including uses beyond its primary purpose.”) (citing *KSR*, 550 U.S. at 418–21).

Patent Owner argues that, because Gelman teaches that “the only path off the network is through the gateway, and not via a set of gateways,” there would have been no reason to place the ’264 patent’s content-aware flow switch as asserted by Petitioner. PO Resp. 35. We do not agree with Patent Owner that Gelman teaches only a single gateway rather than a “set of gateways.” *See id.* While Gelman’s examples focus on the path through a single gateway, that makes sense because a given communication need only pass through a single gateway. As Petitioner points out, however, Gelman discloses that “gateways 12, 16 are small in number” (and may be practically configured as a group), and thus that multiple gateways exists in Gelman’s system to transmit messages over multiple wireless links. *See* Pet. 39 (quoting Ex. 1004, 8:5–6); *accord id.* at 59 (quoting same and discussing how Gelman discloses a plurality of gateways). Accordingly, we find that Gelman teaches a system where there are a plurality of gateways and wireless links.

Patent Owner asserts further that, because the ’264 patent’s switch makes determinations based on the requested content, it “is antithetical to Gelman’s explicit teachings.” PO Resp. 36 (citing Ex. 1004, 9:63–65 (“GT gateway application modules do not depend on the information within a TCP packet”) (emphasis omitted)). We do not agree. While the ’264 patent teaches a “content-aware” switch in some aspects, that does not undermine its other teachings. In particular, the ’264 patent teaches a “method for selecting a best-fit server, from among a plurality of servers, to service a client request for content in an IP network.” Ex. 1005, 3:10–35; *see* Ex. 1003 ¶ 77. The description of that method does not include selection based on content. We therefore find the ’264 patent teaches multiple aspects

of selecting servers to process requests, and in some aspects that selection is not based on the content requested. *See Mouttet*, 686 F.3d at 1331. With that understanding, Patent Owner’s argument is not persuasive because the ’264 patent does not require all selection be based on the content requested.

Accordingly, based on the record and the above discussion, we find that a person of ordinary skill in the art had reason to use the ’264 patent’s switch to select Gelman’s gateway based on closeness.

Petitioner also asserts that the ’264 patent’s teachings would lead a skilled artisan to configure the selection *within* Gelman’s gateway. Pet. 51 (“selecting the ‘best-fit’ gateway applications in Gelman”). As explained above in connection with Gelman alone, we find that Gelman teaches selecting one of several hosts running the gateway application within the high-bandwidth gateway. *See supra* at 16–17. As we explain, Gelman does not expressly teach selecting one of its Hosts B, C, or D, based on closeness. *See supra* at 17–18. Although we conclude above that configuring Gelman as claimed would have been obvious to a skilled artisan in light of known techniques for measuring closeness, Gelman’s disclosures, and the desire to optimize communication efficiency (*id.*), we further consider Petitioner’s assertion that the ’264 patent renders obvious such an approach.

As we noted in the Institution Decision, the ’264 patent “teaches the claimed optimization by disclosing server selection based on ‘the degree of load on available servers, network congestion information, and the proximity of the client to available servers.’” Inst. 20 (quoting Ex. 1005, 2:55–57; citing Pet. 51). We agree with Petitioner and find that the ’264 patent teaches the consideration of “closeness” factors for selecting a network resource. *See* Ex. 1005, 2:55–57, 3:10–28.

We further agree with Petitioner that a skilled artisan had reason to use the '264 patent's teachings in this manner—to determine how to configure Gelman's selection. In this context, Petitioner's reasoning has a rational basis to assert that the combination would “facilitate efficient exchange of information between the client (10) and destination (18).” *See* Pet. 51. As Petitioner points out, the '264 patent's “method utilized the location of the requesting client, the location of each server, and a method of assigning a proximity preference so that the best-fit server could be selected based on its ‘proximity’ to the client.” *Id.* (citing Ex. 1005, 3:12–28). Thus, using aspects of that method appropriate to Gelman's selection mechanism “would result in selecting the ‘best-fit’ gateway applications in [Gelman] based on ‘closeness’/communications performance.” *Id.* at 51–52 (citing Ex. 1003 ¶¶ 75–77, 90–96).

Patent Owner argues that using the '264 patent's method to “select[] among various of the subentities of the gateway 12 such as the gateway applications on Hosts B, C, or D” would render the combined system inoperable. PO Resp. 36 (citing Ex. 2003 ¶ 93). To reach such a conclusion, Patent Owner's expert assumes that an incoming packet would bypass the SNAT module such that “the content aware switch is used to directly route packets to Hosts B, C, or D” and reasons that, without the addressing information from the SNAT module, the system would fail. Ex. 2003 ¶ 95. But Petitioner did not propose a combination eliminating the SNAT module, which Gelman discloses is important to its system's operation. *See* Ex. 1004, 8:59–64 (“The key to operation is a Self Network Address Translator (SNAT) 64A, 64B.”).

Thus, we find that using the '264 patent's methods to configure the selection of Host B, C, or D within Gelman's high-bandwidth embodiment would optimize network closeness as required by claim 16, and that a skilled artisan had reason to apply the '264 patent's teaching to Gelman in that manner.

In all other regards, for claims 16, 19, 20, 23–25, and 58, as mentioned above, Petitioner relies on the same assertions regarding obviousness over Gelman alone, and Patent Owner relies on the same arguments against those assertions. Pet. 26–61. We conclude that the strong evidence of obviousness outweighs the relatively weak evidence of nonobviousness (discussed *supra* at 23–27). Accordingly, based on the record, we conclude Petitioner has demonstrated by a preponderance of the evidence that the subject matter of claims 16, 19, 20, 23–25, and 58 would have been obvious over Gelman and the '264 patent.

3. Claims 62 and 63

Claim 62 requires “selecting a node of a second type from one or more nodes of a second type to increase the performance of communicating the Internet message between the source and the destination wherein the selected node of a second type is close to the destination.” Claim 63 includes a similar “selecting a second specialized node” limitation.

For claims 62 and 63, Petitioner asserts that a skilled artisan “would find it obvious to use a second content-aware flow switch after gateway/server (12) and prior to gateway/server (16), such as when the first content-aware flow switch was configured to only select a first gateway/server (12).” Pet. 66, 69 (referring to the assertions made for claim 62). Although Patent Owner does not specifically challenge

Petitioner's assertions in this regard, we conclude that Petitioner has not demonstrated adequately why a person of ordinary skill in the art would have used the '264 patent's switch in this manner.

Petitioner identifies no disclosure in Gelman that a gateway on one end of a wireless link may select from multiple gateways on the other end of the link or from multiple wireless links. Nor does Petitioner explain adequately how the '264 patent's switch would operate to select the node of a second type. Petitioner's expert does not address using the '264 patent's switch to select a node of the second type, other than plainly grouping those nodes with nodes of the first type. *See* Ex. 1003 ¶ 96. He states that "selection of the first node (12) by the content-aware flow switch also inherently selects the second node (16)" but provides no analysis that this is necessarily the case. *See id.*; *PAR Pharm., Inc. v. TWI Pharm., Inc.*, 773 F.3d 1186, 1195 (Fed. Cir. 2014) (inherency is present when the limitation at issue is the "natural result" of the combination of prior art elements). *See also Southwire Co. v. Cerro Wire LLC*, 870 F.3d 1306, 1310 (Fed. Cir. 2017) ("[W]e agree with Southwire that the Board erred in relying on inherency in making its obviousness determination. We have held that 'the use of inherency in the context of obviousness must be carefully circumscribed because "[t]hat which may be inherent is not necessarily known" and that which is unknown cannot be obvious.'"). Stating only that the node on one side of the link "could be configured to use a specific second node" does not show adequately "selecting a second specialized node."

Accordingly, we conclude that Petitioner has not proven by a preponderance of the evidence that a person of ordinary skill in the art would

have combined Gelman and the '264 patent in the manner asserted by Petitioner to arrive at the subject matter of claims 62 and 63.

E. PATENT OWNER'S MOTION TO EXCLUDE

Patent Owner seeks to exclude a claim chart submitted by Petitioner as Exhibit 1020, purportedly as part of the declaration of Dr. Freedman, Petitioner's expert (*see, e.g.*, Ex. 1003 ¶ 87). Paper 32 ("Motion"). Patent Owner argues that the claim chart is an improper attempt to incorporate by reference and should be viewed as causing the Petition to exceed the word limit. Motion 1–2. Petitioner opposes the motion. Paper 37.

Because we do not rely on any part of the claim chart to reach our final decision in this case, we determine that Patent Owner's Motion is moot. Accordingly, we dismiss the motion as moot. *See Illumina, Inc., v. Trs. of Columbia Univ.*, Case IPR2012-00007, Paper 140, 48, 2014 WL 1252946, at *26–27 (Mar. 6, 2014).

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has demonstrated by a preponderance of the evidence that:

- a) claims 16, 19, 20, 23–25, 58, 62, and 63 of the '133 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over Gelman; and
- b) claims 16, 19, 20, 23–25, and 58 of the '133 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over a combination of Gelman and the '264 patent.

We determine, however, that Petitioner has not demonstrated by a preponderance of the evidence that claim 62 or 63 of the '133 patent is

unpatentable under 35 U.S.C. § 103(a) as obvious over a combination of Gelman and the '264 patent.

IV. ORDER

Accordingly, it is:

ORDERED that claims 16, 19, 20, 23–25, 58, 62, and 63 of U.S. Patent No. 6,820,133 are unpatentable; and

FURTHER ORDERED that Patent Owner's Motion to Exclude Evidence is dismissed.

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

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