

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AKAMAI TECHNOLOGIES, INC.,
Petitioner,

v.

LIMELIGHT NETWORKS, INC.,
Patent Owner.

Case IPR2016-01011
Patent 7,715,324 B1

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

ANDERSON, *Administrative Patent Judge*.

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

I. INTRODUCTION

Akamai Technologies, Inc. (“Petitioner”) filed a Petition (“Pet.,” Paper 2) pursuant to 35 U.S.C. §§ 311–319 to institute an *inter partes* review of claims 1, 2, 4, 5, 6, 7, 8, 10, and 11 (“the challenged claims”) of U.S. Patent No. 7,715,324 B1 (“the ’324 patent,” Ex. 1001), filed November 24, 2009.¹ The Petition is supported by the Declaration of Dr. Mark E. Crovella (“Crovella Declaration” or “Crovella Decl.,” Ex. 1002). Limelight Networks, Inc. (“Patent Owner”) filed a Preliminary Response (“Prelim. Resp.,” Paper 6). The Preliminary Response is supported by the Declaration of Dr. Kevin C. Almeroth (“Almeroth Declaration” or “Almeroth Decl.,” Ex. 2001).

On November 4, 2016, we instituted an *inter partes* review of claims 1, 2, 4, 5, 6, 7, 8, 10, and 11 of the ’324 patent (“Institution Decision,” “Inst. Dec.,” Paper 8). After institution of trial, Patent Owner filed a Patent Owner Response (“PO Resp.,” Paper 14) along with a Supplemental Declaration of Dr. Kevin C. Almeroth (“Almeroth Supplemental Declaration” or “Almeroth Supp. Decl.,” Ex. 2009). Petitioner filed a Reply (“Pet. Reply,” Paper 19) along with a Supplemental Declaration of Dr. Mark E. Crovella (“Crovella Supplemental Declaration” or “Crovella Supp. Decl.,” Ex. 1009). Petitioner

¹ The ’324 patent claims the benefit of the earlier filed United States and Australian applications. Ex. 1001, [30], [63]. However, the papers filed do not present any issue regarding priority.

deposed Dr. Almeroth (“Almeroth Dep.,” Ex. 1011) and Patent Owner deposed Dr. Crovella (“Crovella Deposition,” “Crovella Dep.,” Ex. 2011).²

Patent Owner filed a Motion to Exclude (“Motion,” “Mot.,” Paper 23) to which Petitioner filed an Opposition (“Opp.,” Paper 30) and Patent Owner filed a Reply (Paper 31).

An oral hearing was held on June 22, 2017. A transcript has been made of record. Paper 35 (“Tr.”).

The Board has jurisdiction under 35 U.S.C. § 6. In this Final Written Decision, issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73, we determine that Petitioner has met its burden of showing, by a preponderance of the evidence, that all of the claims for which trial was instituted are unpatentable. Patent Owner’s Motion to Exclude is dismissed as moot.

A. Related Proceedings

Petitioner notes the ’324 patent is involved in co-pending litigation captioned *Limelight Networks, Inc. v. XO Communications, LLC*, No. 3:15-cv-00720 (E.D. Va. Nov. 30, 2015) (“District Court Lawsuit,” Ex. 1003 (Complaint in District Court Lawsuit)). Pet. 66. Petitioner also advises us that the District Court Lawsuit also involves U.S. Patent No. 8,683,002 B2 (“the ’002 patent”) filed January 2, 2013. *Id.* Petitioner filed a petition for *inter partes* review of the ’002 patent, *Akamai Technologies, Inc. v. Limelight Networks, Inc.*, Case IPR2016-01001, in which institution was denied. *Id.*; IPR2016-01001, Paper 8 (PTAB Nov. 3, 2016); *see also*

² A second deposition (Ex. 2015) was taken on May 12, 2017, after Petitioner’s Reply and the Crovella Supplemental Declaration were filed. Patent Owner filed Observations (“Obs.,” Paper 22) regarding the second deposition and Petitioner filed a Response to Observations (“Resp. Obs.,” Paper 29).

Akamai Technologies, Inc. v. Limelight Networks, Inc., Case IPR2017-00358, Paper 9 (PTAB May 2, 2017 (also denying institution on the '002 patent)).

B. The Technology

Below we provide an overview of the technology and the '324 patent.

1. Background

The field of technology is the control of connection protocols used to deliver content from an information processing system, such as a content delivery network (“CDN”). Almeroth Decl. ¶ 31 (citing Ex. 1001, col. 1, ll. 18–21). As described in the '324 patent, a “content delivery system . . . can include any number of cache servers, application servers, content servers, service servers, and/or database servers to provide content to the clients.” Crovella Decl. ¶ 19 (quoting Ex. 1001, col. 5, ll. 39–41).

In an information processing system “two or more nodes can work together, for example exchanging information or sharing resources, using one or more protocols that enable the participating nodes to interoperate.” Ex. 1001, col. 1, ll. 23–27. “A protocol can be standardized such that a node using the standard protocol should be able to interoperate, at least at the level of the protocol, with any other node using the standard protocol.” *Id.* at col. 1, ll. 36–39. One widely used “standard protocol on the Internet is the Transmission Control Protocol (TCP), which today enables almost every device on the Internet to interoperate with almost every other device.” *Id.* at col. 1, ll. 41–43.

“Standard protocols often employ the use of attributes, such as configurable parameters and selectable algorithms, to permit the protocol to operate effectively in various situations.” Ex. 1001, col. 1, ll. 47–49. TCP

controls attributes such as “message size, the rate at which messages are exchanged, and factors related to network congestion.” *Id.* at col. 1, ll. 50–51.

2. '324 Patent (Ex. 1001)

The '324 patent discloses a system using a standard protocol to enable two or more nodes of a network to interoperate. Ex. 1001, col. 2, ll. 10–11. “The protocol attributes specified in the standard protocol are conditionally adapted to the circumstances, use, and/or operating conditions of the interoperation of the nodes.” *Id.* at col. 2, ll. 11–14. Generally, the '324 patent describes different embodiments of a system for delivery of content (described below) or conducting transactions over a network. *Id.* at col. 2, ll. 20–21, col. 2, ll. 51–52.

In one embodiment, the '324 patent modifies the performance of a transport layer protocol in response to a request for content. Ex. 1001, col. 3, ll. 13–15. A “content distribution server includes a modified TCP protocol stack which adjusts timing, pacing, and buffer allocation associated with a connection in response to requests from an application-layer data source.” *Id.* at col. 3, ll. 27–30. Figure 1 of the '324 patent is reproduced below.

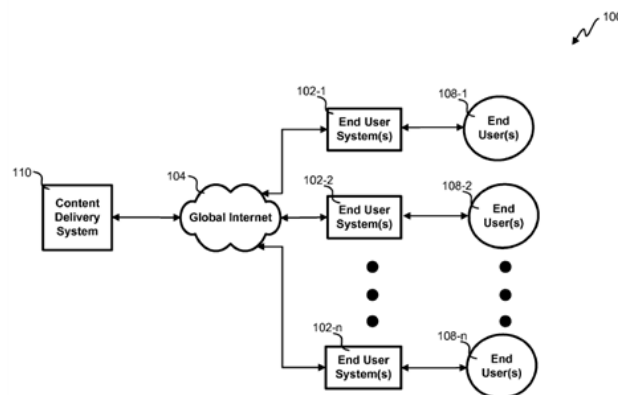


FIG. 1

Figure 1 is a block diagram of the content delivery system. *Id.* at col. 4, ll. 55–56. End users 108-1, -2, through -n use their respective clients 102 to download and view content objects from global Internet 104 from one or more servers of content delivery system 110. *Id.* at col. 5, ll. 37–44. The invention of the '324 patent is not restricted to specific communication pairs and “could communicate between any pair of nodes on a network, including between pairs of clients or between pairs of servers, and yet other embodiments could communicate among more than two nodes, such as in a broadcast or multicast implementation.” *Id.* at col. 5, ll. 44–50.

Another embodiment of the invention is illustrated in Figure 2A, which is reproduced below.

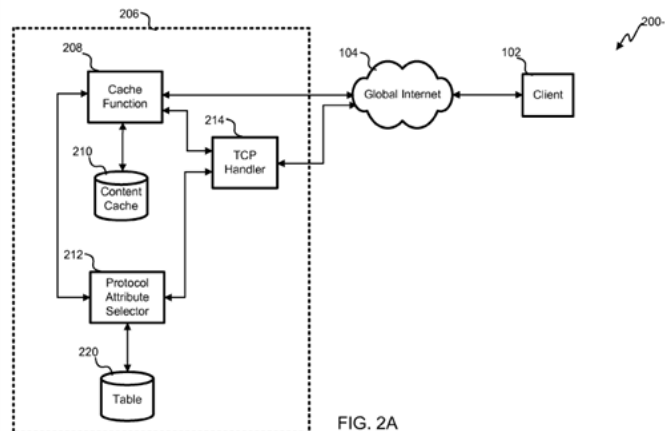


Figure 2A is a block diagram of a content download pair that sends content from server 206 to client 102. Ex. 1001, col. 4, ll. 57–59. In this embodiment, the '324 patent describes “interoperation of two nodes 102, 206 on the Internet communicating using TCP, one node being a client 102 that requests information, such as web page content, multimedia, or software downloads, and the second node being a server 206 that provides information in response to a request.” *Id.* at col. 5, ll. 54–59. “[S]erver 206

conditionally adapts the attributes of the TCP protocol for each TCP connection established by a client 102.” *Id.* at col. 6, ll. 12–14.

[T]he protocol attribute selector 212 of the server 206 compares the alphanumeric URL string provided by the client 102 in its information request to a table 220 containing partial or whole URLs and identifies the most specific match from left to right that it can find in the table 220.

Id. at col. 8, ll. 16–21. An exemplary “Table Mapping to TCP attribute sets” (*id.* at col. 15, ll. 15–25), is reproduced below.

Table Mapping to TCP attribute sets		15
Partial URL	TCP Attribute Set	
http://customer1.webserving.com/folderA/	attr1 = yes, attr3 = 25, attr4 = low	
http://customer1.webserving.com/folderB/	attr1 = no, attr2 = 1, attr4 = high	20
fastnet.com	attr3 = 50, attr6 = fast	
http://customer2.webserving.com/		
http://customer3.webserving.com/	attr1 = yes, attr3 = 25, attr4 = low	

The table depicted is “a simplified table, the sole Table shows mappings from whole and/or partial URLs into TCP attribute sets comprising specific protocols attributes (identified as ‘attr1’, ‘attr2’, ‘attr3’, etc.) to be used and the appropriate value or setting for that use of that attribute.” *Id.* at col. 15, ll. 6–11. The “simplified table example also illustrates that the scheme and host name may be sufficient for a matching entry, such as in the case of the entry ‘http://customer3.webserving.com,’ or the host name alone may be sufficient, such as in the case of the entry ‘fastnet.com.’” *Id.* at col. 15, ll. 34–38.

In general, each content request includes information about a source address of the end user computer and an identifier corresponding to the requested content. Ex. 1001, col. 18, ll. 45–48. From this starting point,

server 206 can obtain additional information to modify the transport layer parameters of the TCP connection. *Id.* at col. 18, ll. 33–35.

C. Illustrative Claims

Of the challenged claims, claim 1 is an independent method claim and claim 6 is an independent system claim. Claims 2, 4, and 5 depend from claim 1, and claims 7, 8, 10, and 11 depend from claim 6. Claims 1 and 6 are reproduced below:

1. A network connection method for delivering content, the network connection method comprising:

receiving a first request for content from a network at a server;

analyzing the first request for content to determine first attributes, wherein analyzing the first request comprises comparing a first uniform resource indicator (URI) with an alphanumeric string to correlate the first URI with the first attributes;

configuring a first connection for serving the content between the server and a first node;

configuring a protocol of the first connection according to the first attributes, wherein the protocol that is configured is a transport layer protocol;

receiving a second request for content from the network at the server;

analyzing the second request for content to determine second attributes;

configuring a second connection for serving the content between the server and a second node; and

configuring the protocol of the second connection according to the second attributes, wherein the first attributes

affect operation of the protocol differently than the second attributes affect operation of the protocol.

Ex. 1001, col. 23, ll. 14–37.

6. A system for managing delivery of content over a network, the system comprising:

protocol handler managing a first connection and a second connection over the network using a protocol, wherein:

the protocol operates at an transport layer,

the protocol handler is configured to use first attributes for the first connection, and

the protocol handler is configured to use second attributes for the second connection;

a store holding a plurality of attributes; and

a protocol attribute selector, configured to:

receive first information relating to a first request for content wherein the first information is derived from a first uniform resource indicator (URI) associated with the first request for content,

query the store for first attributes corresponding to the first information,

program the protocol handler with the first attributes for the first connection,

receive second information relating to a second request for content,

query the store for second attributes corresponding to the second information, and

program the protocol handler with the second attributes for the second connection.

Id. at col. 24, ll. 3–26.

D. Asserted Grounds of Unpatentability

Petitioner challenges claims 1, 2, 4, 5, 6, 7, 8, 10, and 11 of the '324 patent as unpatentable on the following grounds. Pet. 13–14, 22–66.

References	Basis	Claims Challenged
Devanneaux ³ and Chu ⁴	§ 103(a) ⁵	1, 2, 5, 6, 7, 8, 11
Devanneaux, Chu, and RFC 793 ⁶	§ 103(a)	4 and 10

II. ANALYSIS

A. Claim Construction

In *inter partes* review, claim terms are given their broadest reasonable interpretation in light of the specification in which they appear. *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016); 37 C.F.R. § 42.100(b). We presume that claim terms have their ordinary and customary meaning. See *TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1061–62 (Fed. Cir. 2016) (“Under a broadest reasonable interpretation, words of the claim must be given their plain meaning, unless such meaning

³ US 2007/0156845 A1, Thomas P. Devanneaux et al., published July 5, 2007 (“Devanneaux,” Ex. 1004).

⁴ US 2007/0226375 A1, Hsiao-Keng J. Chu et al., published September 27, 2007 (“Chu,” Ex. 1007).

⁵ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. § 103. Because the challenged claims of the '324 patent have an effective filing date before the effective date of the applicable AIA amendment, we refer to the pre-AIA version of 35 U.S.C. § 103.

⁶ Information Sciences Institute University of Southern California, *Transmission Control Protocol: DARPA Internet Program Protocol Specification, RFC 793* (September 1981) (“RFC 793,” Ex. 1005).

is inconsistent with the specification and prosecution history.” (internal citation omitted)); *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Any special definition for a claim term must be set forth in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). In the absence of such a special definition or other consideration, “limitations are not to be read into the claims from the specification.” *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993). “[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.” *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

Petitioner identifies one term, “Uniform Resource Indicator” or “URI,” for construction. Pet. 9–12. In the Institution Decision we construed URI as including “information in a request’s Uniform Resource Locator (‘URL’), such as, among other things, all or part of a URL.” Inst. Dec. 14. In its Response, Patent Owner does not assert a position on “Uniform Resource Indicator” and does not argue the term as being dispositive of any patentability issue. Thus, we are presented with no reason to change the construction from the Institution Decision.

In the Institution Decision we determined “protocol attribute selector” did not require express construction, but noted that “[t]he claim language itself makes clear that ‘each request’ is analyzed in reciting ‘receive first information relating to *a first request*’ and ‘receive second information relating to *a second request*.’” Inst. Dec. 16. Patent Owner disagrees and argues that “protocol attribute selector” should be expressly construed as “a software process that can analyze each request to select protocol attributes to

be used to deliver requested content.” PO Resp. 22 (citing Almeroth Decl. ¶¶ 44–48).

The parties’ papers do not identify any other terms requiring construction. Only those terms that are in controversy need to be construed and only to the extent necessary to resolve the controversy. *See Vivid Techs.*, 200 F.3d at 803. The only disputed term requiring construction is “protocol attribute selector.”

The term “protocol attribute selector” appears in challenged independent claim 6 and claims 7, 8, 10, and 11 all of which depend from claim 6. The term does not appear in claim 1 or claims dependent from claim 1. Independent claim 6 recites, in part,

a protocol attribute selector, configured to:

receive first information relating to a first request for content . . . ,

query the store for first attributes corresponding to the first information,

program the protocol handler with the first attributes for the first connection,

receive second information relating to a second request for content,

query the store for second attributes corresponding to the second information.

Ex. 1001, col. 24, ll. 14–26.

Patent Owner relies in part on an original agreement to a construction of the term in the District Court Lawsuit. PO Resp. 20 (citing District Court Joint Claim Construction and Prehearing Statement, A-2 (Ex. 2005)). The final construction of the District Court conforms the original agreement of

the parties and adopts Patent Owner’s proposed construction. *See id.* at 20 n.2 (citing District Court Claim Construction Order dated September 2, 2016 (Exs. 1014, 2012)). Patent Owner also repeats our preliminary determination, highlighting the observation that the “claim language itself makes clear that ‘**each request**’ is analyzed.” *Id.* at 20 (quoting Inst. Dec. 16, emphasis by Patent Owner).

Patent Owner argues that the construction it proposes is supported by the specification of the ’324 patent. PO Resp. 20–22. Patent Owner cites to the description of “protocol attribute selector” where it is explained that “[t]he URI is evaluated by the **protocol attribute selector 212** to find a match to something in the table **220**.” *Id.* at 21 (citing Ex. 1001, 16:9–18). Patent Owner focuses on language in the cited portion stating that “**[t]his process is performed on each URI** such that each connection or socket can be independently controlled, if desired.” *Id.* Patent Owner then argues its proposed construction is based on the “each request” claim language, arguing “that the ‘protocol attribute selector’ analyzes *each* URI (i.e. each request).” *Id.* (citing Almeroth Decl. ¶ 45). Patent Owner argues “the ’324 Patent repeatedly affirms . . . that ‘***the present process can be repeated for each new request (e.g., R2/C1)***’ – in other words, ‘Request 2 over Connection 1’ – ‘and/or each new connection (e.g., R1/C2).’” *Id.* (citing, e.g., Ex. 1001, col. 21, ll. 9–14; Almeroth Decl. ¶ 46 (other citations omitted)). Relying on the Almeroth Declaration, Patent Owner concludes that a person having ordinary skill in the art “would understand in view of the specification that modifying protocol configurations on a ‘connection-by-connection’ basis merely relates to connections that do not have multiple requests associated with them.” *Id.* at 22 (citing Almeroth Decl. ¶ 47).

Patent Owner ties these assertions to its patentability argument by contending that the Petition fails to establish that “Devanneaux analyzes ‘each request,’ as required by the claim, to select protocol attributes to be used to deliver requested content on a particular connection.” *Id.* at 23 (citing Almeroth Decl. ¶ 55). Notwithstanding the preceding, at the final hearing Patent Owner agreed that the claim language is controlling and no express construction is required.⁷

Petitioner asserts our initial determination that no express construction was required is correct. Pet. Reply 17. Petitioner’s response to the “each request” emphasis of Patent Owner points out that the District Court’s Summary Judgment Order rejected Patent Owner’s narrow construction and determined that

the ’324 Patent operates, at times, on a connection-by-connection basis only. The patent can therefore act either only on a connection-by-connection basis, only on a request-by-request basis, or both.

Id. at 22 (emphasis omitted) (quoting District Court Summary Judgment Order, 6 n.6 (“Summary Judgment Order,” Ex. 1012)). Petitioner argues generally that Patent Owner’s proposed construction is too narrow in requiring that the “‘protocol attribute selector’ must be capable of selecting protocol attributes for ‘multiple requests’ in a connection—*i.e.*, on a ‘request-by-request’ basis—and does not include systems configured to

⁷ “And we would submit, the Board, when they say the claim language itself makes clear that each request is analyzed, that the Board is, basically, not disagreeing with us. But we would actually go the next step. ***We would actually right now concede that we don’t need to construe this. We’ll just look at the elements of claim 6, Judge Anderson, just like you did.*** And let’s go through those elements and see.” Tr. 31:14–21 (emphasis added).

select protocol attributes ‘just once’ based on the first request of each connection—*i.e.*, on a ‘connection-by-connection’ basis.” *Id.* at 16–17 (citing PO Resp. 22; Prelim. Resp. 10). In sum, Petitioner alleges Patent Owner’s construction is improperly limited to a “request-by-request” basis. *Id.* at 17.

The claim language itself makes clear that “each request” is analyzed in reciting “receive first information relating to *a first request*” and “receive second information relating to *a second request*.” Indeed, the limitations recited in the claim and set forth above define what the “protocol attribute selector” is “configured to” do. Accordingly, as we determined in the Institution Decision, we are not persuaded that “protocol attribute selector” requires any express construction beyond what is recited in the claim itself. We are not persuaded by Patent Owner’s argument, based on a narrow reading of the Specification, that “protocol attribute selector” is limited to a “request-by-request” basis and excludes systems configured to select protocol attributes “just once” based on the first request of each connection—*i.e.*, on a “‘connection-by-connection’ basis.” See PO Resp. 22. Accordingly, we agree with Petitioner and the District Court that what is recited in the claim can be “either only on a connection-by-connection basis, only on a request-by-request basis, or both.” Pet. Reply 21–22; Summary Judgment Order, 6 n.6.

B. Obviousness Law

A patent claim is unpatentable as obvious 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.”
35 U.S.C. § 103(a).

The ultimate determination of obviousness is a question of law, but that determination is based on underlying factual findings. The underlying factual findings include (1) “the scope and content of the prior art,” (2) “differences between the prior art and the claims at issue,” (3) “the level of ordinary skill in the pertinent art,” and (4) the presence of secondary considerations of nonobviousness such “as commercial success, long felt but unsolved needs, failure of others,” and unexpected results.

In re Nuvasive, Inc., 842 F.3d 1376, 1381 (Fed. Cir. 2016) (internal citation omitted) (citing *inter alia* *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966)).

“To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). Furthermore, in assessing the prior art, the Board must consider whether a person of ordinary skill would have been reasons to combine the prior art to achieve the claimed invention. *Nuvasive*, 842 F.3d at 1381. As observed by our reviewing court in *Personal Web Technologies, LLC v. Apple, Inc.*, 848 F.3d 987, 991–92 (Fed. Cir. 2017):

The Supreme Court in *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 127 S.Ct. 1727, 167 L.Ed.2d 705 (2007), explained that, “because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known,” “it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.”

1. Level of Ordinary Skill

The parties' positions on the level of ordinary skill in the art are very similar. Petitioner asserts a person of ordinary skill would have been "an individual having a Bachelor's Degree in 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 connection optimization." Crovella Decl. ¶ 17. Patent Owner's expert proposes a level of ordinary skill that differs in the addition of "several years of experience" (rather than "one or two years") and "name services, or Internet content delivery" to the scope of experience. Almeroth Decl. ¶ 33.

In the Institution Decision we adopted Petitioner's proposal. Inst. Dec. 17. Patent Owner adopts that determination in its arguments. See PO Resp. 15–16. Based on the complete record now before us, we see no reason to change our determination from the Institution Decision and maintain that determination for purposes of this Decision.

*C. Obviousness of Claims 1, 2, 5, 6, 7, 8, and 11
Over Devanneaux and Chu*

Petitioner alleges claims 1, 2, 5, 6, 7, 8, and 11 would have been obvious to a person of ordinary skill in the art over Devanneaux and Chu. Pet. 14, 22–35, 38–61, 64–66. Petitioner's arguments and evidence include claim charts and the Crovella Declaration in support of its positions. See Crovella Decl. ¶¶ 24–35, 39. Patent Owner denies the challenged claims would have been obvious over the combination of references. PO Resp. 3–25. Patent Owner supports its arguments with the Almeroth Declaration. See Almeroth Decl. ¶¶ 49–57.

1. Devanneaux (Ex. 1004)

Devanneaux describes a content “content delivery network” or “CDN edge server [that is] configured to provide one or more extended content delivery features on a domain-specific, customer-specific basis, preferably using configuration files that are distributed to the edge servers using a configuration system.” Ex. 1004, Abstract, ¶ 7. Figure 3 of Devanneaux is reproduced below.

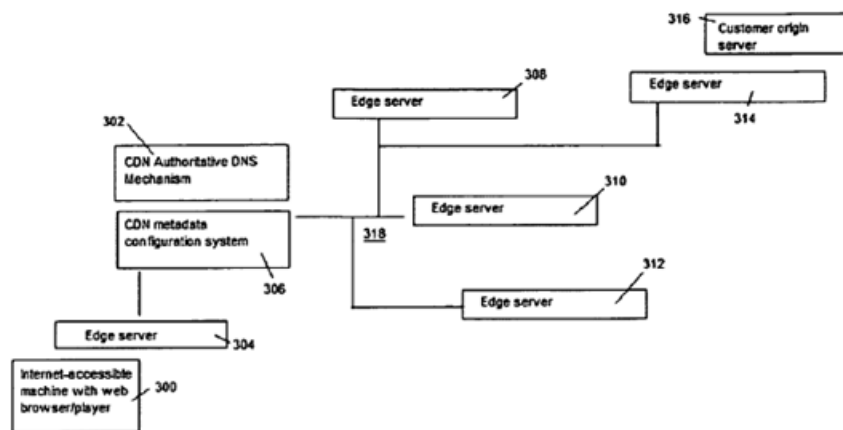


Figure 3

Figure 3 shows the CDN where a customer has off-loaded all or some of its content delivery requirements to the CDN service provider. *Id.* ¶ 19. The “CDN customer operates a site at the origin server 316.” *Id.* “An Internet-accessible client 300 (e.g., an end user client machine having a browser and media player) has been directed by CDN authoritative DNS mechanism 302 to a nearby edge server 304.” *Id.* “[T]he configuration system provides edge server content control metadata via links 318, which themselves may include other infrastructure (servers, and the like).” *Id.* ¶ 20.

The CDN edge server is configured to “provide one or more extended content delivery features.” Ex. 1004 ¶ 21. When an edge server management process receives a request for content, it searches an index file

for a match and, if there is no match, the edge server process rejects the request. *Id.* “If there is a match, the edge server process loads metadata from the configuration file to determine how it will handle the request.” *Id.* For example, the metadata for the hostname may indicate a cache in a cache hierarchy, control of the connection, and how the content is delivered. *Id.*

2. *Chu (Ex. 1007)*

Chu describes a “plug-in architecture for a network stack in an operating system” where the functions may be “dynamically changed in order to change the TCP behavior” of the network environment. Ex. 1007 ¶ 8. For example, “Per-Connection TCP Congestion Control” is described as allowing “TCP behavior to be changed at the system level, each network connection may encounter different conditions based on the destination or other factors, so a more ideal solution allows multiple techniques to be applied simultaneously on the computer system.” *Id.* ¶¶ 52–53.

3. *Claim 1*

Patent Owner does not dispute the teachings of Devanneaux or Chu in connection with claim 1, but does dispute that a person having ordinary skill in the art would combine them. PO Resp. 1–19. Petitioner’s arguments and evidence regarding claim 1 are summarized below followed by Patent Owner’s Response and Petitioner’s Reply and our Conclusion.

a. *Petitioner’s Allegations*

The preamble of method claim 1 recites, in pertinent part, “[a] network connection method for delivering content.”⁸ Devanneaux teaches a

⁸ Petitioner addresses the preamble as limiting. *See* Pet. 23 (“Devanneaux teaches the limitations of the preamble.”). We determine that the preamble

“content delivery network” (CDN) that includes an edge server configured to provide a connection between a customer origin server, and an Internet accessible client having a browser and a media player. Ex. 1004 ¶¶ 19, 21, Fig. 3. Petitioner cites to these disclosures to show the preamble of claim 1. Pet. 22–23 (claim chart), 23.⁹

The first recited step of claim 1 is “receiving a first request for content from a network at a server.” Devanneaux teaches an edge server management process that receives a request for content. Ex. 1004 ¶ 21. Petitioner relies on the preceding disclosure to show the first limitation. Pet. 23 (claim chart), 24.

Claim 1’s second step recites “analyzing the first request for content to determine first attributes, wherein analyzing the first request comprises comparing a first uniform resource indicator (URI) with an alphanumeric string to correlate the first URI with the first attributes.”

Devanneaux teaches searching

an index file for a match on a customer hostname associated with the request. If there is no match, the edge server process rejects the request. If there is a match, the edge server process loads metadata from the configuration file to determine how it will handle the request.

is not limiting because it is “merely states a purpose or intended use of the invention.” *In re Paulsen*, 30 F.3d at 1479 (internal citations omitted). Nonetheless, as discussed below, the preamble is taught by Devanneaux.

⁹ Where we cite to Petitioner’s claim chart comparing claim 1, or any other claim, to the prior art teachings, we cite to the page of the Petition followed by “(claim chart).” Petitioner’s argument based on those teachings is at the next cited page of the Petition.

Ex. 1004 ¶ 21. This disclosure is cited as part of the teaching for “analyzing the first request.” Pet. 24 (claim chart) (also citing Ex. 1004 ¶¶ 23, 86), 26. Petitioner cites to Devanneaux’s teaching of using metadata to control and maintains connections with edge servers and “how the edge server should deliver the content to the requesting end user” as teaching analysis of the request to determine “first attributes” in the form of metadata. *Id.* at 24 (claim chart), 26 (citing Ex. 1004 ¶¶ 21, 86).¹⁰

We construed “uniform resource indicator (URI)” to include information in a request’s Uniform Resource Locator (“URL”), such as, among other things, all or part of a URL. See section II.A above. Petitioner argues the term “‘Uniform Resource Indicator’ is construed to cover information in a request URL, such as all or part of a URL - including a customer hostname.” Pet. 25–26 (citing Ex. 1004 ¶ 2). Petitioner’s argument is based in part on a disclosure in the ’324 patent that describes “matching all or part of a request URL, such as a ‘host name alone’ (Ex. 1001, 15:37), to entries in a table to identify the TCP attributes that are to be applied to a TCP network connection underlying that request.” Pet. 24 (claim chart), 11–12.

As to that portion of the second step requiring “comparing a first uniform resource indicator (URI) with an alphanumeric string to correlate the first URI with the first attributes,” Devanneaux describes “[searching] an index file for a match on a customer hostname.” Ex. 1004 ¶ 21. Based on

¹⁰ Petitioner cites paragraph 2 of Devanneaux in its summary of its showing at page 25. The citation should be to paragraph 21, which is the citation used in Petitioner’s claim chart at pages 24 and 25. The error is an obvious typographical error and does not affect the analysis here.

this teaching, Petitioner argues the “comparing” limitation is met because Devanneaux searches an index file for a match, i.e., a “comparison,” on a customer hostname, i.e., an “alphanumeric string.” Pet. 26.

The third step of claim 1 is “configuring a first connection for serving the content between the server and a first node.” Devanneaux teaches client-server TCP optimizations, by setting metadata in the configuration file on a customer-specific, domain-specific basis. Ex. 1004 ¶ 86. Devanneaux describes the controls for changing the TCP settings are in a separator, in which there are “two listable nodes, one to control the settings that are based on a size (and thus can take an integer as a value) and the other to control timeout setting (which takes a ‘delta time’ as a value).” *Id.* Petitioner cites to these teachings to show the limitation in question. Pet. 27–28 (claim chart) (also citing Ex. 1004 ¶¶ 8, 52, 54, 67).

Petitioner argues “Devanneaux describes configuring protocols of existing connections to ‘enable edge server-to-edge server (or other client-server) TCP optimizations.’” Pet. 28 (citing Ex. 1004 ¶ 86). Petitioner acknowledges the preceding disclosure from Devanneaux might not “explicitly describe the action of configuring the connections.” *Id.* Therefore, Petitioner cites to Chu’s disclosure of a “plug-in framework within the network stack that allows the set of functions to be dynamically changed in order to change the TCP behavior of the network stack to suit the network environment.” *Id.* at 27 (claim chart) (citing Ex. 1007 ¶ 8) (also citing Ex. 1007 ¶¶ 52, 54, 67). Petitioner concludes that “Chu describes configuring a connection by disabling a portion of a network protocol stack, changing a function pointer to point to a TCP optimization process for a connection (implemented via a plug-in), and then re-enabling the

corresponding portion of the network protocol stack.” *Id.* at 28 (citing Ex. 1007 ¶¶ 54, 67).

The fourth step of claim 1 recites “configuring a protocol of the first connection according to the first attributes, wherein the protocol that is configured is a transport layer protocol.” Petitioner asserts the teaching of paragraph 86 of Devanneaux enabling “edge server-to-edge server (or other client-server)” teaches establishing and maintaining plural “connections,” i.e., at least the claimed first connection. Pet. 29–30 (claim chart) (also citing Ex. 1004 ¶ 87), 30 (citing Ex. 1004 ¶ 21).

Regarding the claimed “transport layer protocol,” Petitioner cites Devanneaux’s description in paragraph 87 of configuring parameters for TCP, which include “cwnd_init (initial congestion window), cwnd_ssinc (slow start increase), cwnd_cainc (congestion avoidance rate), cwr_dec (congestion reduction rate), and many others.” Pet. 29–30 (claim chart). Petitioner cites Chu to show that TCP is a transport layer protocol. *Id.* at 30 (citing Ex. 1007 ¶ 68).

The remainder of claim 1 recites, in pertinent part, “receiving a second request for content from the network at the server.” The claim continues to repeat the steps above following the recited “receiving a first request,” i.e., “analyzing the second request,” “configuring a second connection,” “configuring the protocol of the second connection according to the second attributes, wherein the first attributes affect operation of the protocol differently than the second attributes affect operation of the protocol.” Petitioner argues that repeating known steps to obtain a desired result is not inventive. Pet. 32 n.5 (citing *Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1330–31 (Fed. Cir. 2009)).

For the second receiving step, Petitioner cites to the showing it made for the first receiving step and contends that because Devanneaux discloses the “metadata may control how a given edge server establishes and maintains connections,” receipt of a second request is disclosed. Pet. 30–32. At pages 32–33 of the Petition, Petitioner repeats testimony from the Crovella Declaration:

Devanneaux is clear that “metadata may control how a given edge server establishes and maintains connections with one or more other edge servers or other machines.” [Ex. 1004] ¶ 0021 (emphasis added). Devanneaux is also clear that the separator, includes two listable nodes, one to control the settings that are based on size...and the other to control timeout setting. *Id.*, ¶ 0086. Taken together, this information teaches that a given (i.e., a single) edge server storing the separator performs (i) the following for one connection (e.g., to control the settings that are based on size): “receiving a first content request,” “analyzing the first content request,” “configuring the first connection,” and “configuring the protocol of the first connection”; and (ii) the following for another connection (e.g., to control TCP timeout settings): “receiving a second content request,” “analyzing the second content request,” “configuring the second connection,” and “configuring the protocol of the second connection.”

Crovella Decl. ¶ 39. Based on the preceding, Dr. Crovella concludes “[a] skilled person at the relevant time would interpret the Devanneaux disclosure statement regarding ‘a given edge server’ as teaching that the same server would be used to handle multiple content requests.” Pet. 33 (citing Ex. 1004 ¶ 86; Crovella Decl. ¶ 39). For example, Dr. Crovella testifies Devanneaux teaches the first node is used to “control the settings that are based on a size” and the second node is used “to control timeout setting.” *Id.* (citing Crovella Decl. ¶ 39). Dr. Crovella testifies “a single edge server would perform both operations [size and timeout] with respect to

different pieces of content also because the controls are in ‘separator,’ network:tcp:transport, which would be stored on the given edge server.” *Id.* at 34 (citing Ex. 1004 ¶ 86; Crovella Decl. ¶ 39). Lastly, Dr. Crovella concludes “it would have been obvious to one of skill in the art at the relevant time to repeat the same set of steps to implement the different controls described in Devanneaux.” *Id.* (citing Crovella Decl. ¶ 39).

Petitioner argues the person of ordinary skill in the art would combine Devanneaux and Chu because they: “are in the same technical field, because both describe transport layer protocol optimization, because both refer to computers with operating systems implementing transport layer protocol optimizations, and because both provide for customizing those optimizations” Pet. 20. Further, Petitioner argues inclusion of the Chu plug-in architecture in the Devanneaux “operating system” is either a simple substitution of one known element for another or application of a known technique to an existing device that would yield predictable results. *Id.* at 20–21. Petitioner alleges the motivation for the combination would have been to “enhance the operation of the CDN edge server irrespective of the varied network environments in which the server is configured to operate.” *Id.* at 21 (citing Ex. 1007 ¶ 25; Crovella Decl. ¶ 34).

*b. Patent Owner’s Response and Petitioner’s Reply-
Claim 1*

Patent Owner alleges generally that a person of ordinary skill in the art would not combine Chu with Devanneaux because the combination: (1) would render the edge server unsatisfactory for its intended purpose; (2) is not a routine substitution and is beyond the skill of a person of ordinary skill in the art; and (3) is supported by “conclusory statements” and

not by specific reasoning supporting an obviousness determination. PO Resp. 1–2. Patent Owner also argues Petitioner failed to identify the differences between the claimed invention and the prior art. *Id.* at 18–19.

Patent Owner first contends that Chu’s plug-in architecture is “a process of changing the TCP behavior” and would “disrupt normal edge server operations.” PO Resp. 7–8 (emphasis omitted) (citing Ex. 1007 ¶ 67, Fig. 3; Crovella Dep. 123:24–124:4). Figure 3 of Chu is “a flow chart illustrating the process of changing the TCP behavior.” Ex. 1007 ¶ 28. Patent Owner argues that upon a change in TCP behavior the system “**disables** a relevant portion of the network stack in order to put the network connection into a quiescent state (step 304)” and then, after changing the function pointer to the new behavior, “**re-enables** the corresponding portion of the network stack to return the network connection to an active state (step 308).” PO Resp. 8–9 (citing Ex. 1007 ¶ 67).

Citing to the Crovella Deposition, Patent Owner contends that, when Chu changes TCP behavior, the network connection would stop and the algorithm would be temporarily suspended. *Id.* at 9 (citing Crovella Dep. 119:8–20, 123:24–124:4; Ex. 1007 ¶ 67). Turning to the Almeroth Supplement Declaration, Patent Owner concludes “[t]his mechanism, however, is unsuitable for the edge servers of Devanneaux because it would disrupt normal edge server operations and ultimately undermine the primary reason for using a CDN: improving the performance of web sites for end users.” *Id.* (citing Almeroth Supp. Decl. ¶¶ 7–11). Patent Owner contrasts the disruption that can occur in Chu with the importance of good performance of the infrastructure to end users taught by Devanneaux “regardless of the network traffic patterns, which may include spikes in

network traffic or prolonged periods of high traffic during peak usage periods.” *Id.* at 9–10 (citing Ex. 1004 ¶¶ 6, 7; Almeroth Supp. Decl. ¶¶ 9–10; Almeroth Decl. ¶ 52; Crovella Dep. 60:4–63:23).

Patent Owner acknowledges that Chu teaches buffering packets to “typically” avoid interruption of service. PO Resp. 11 (citing Ex. 1007 ¶ 67). Relying on the Almeroth Supplemental Declaration, Patent Owner argues “an interruption *would* occur” without sufficient buffer capacity or during high traffic periods. *Id.* (citing Almeroth Supp. Decl. ¶ 11). Further relying on Dr. Almeroth, Patent Owner concludes that “[s]ince edge servers are used to *improve* web performance during high traffic periods, and since interrupting a connection would inevitably *increase* latency for requests within the connection, the proposed modification would render the prior art invention being modified (i.e. the edge server of Devanneaux) unsatisfactory for its intended purpose.” *Id.* (citing Almeroth Supp. Decl. ¶ 11). Patent Owner notes that the combination would not “enhance the operation of the CDN edge server,” a motivation stated by Petitioner for the combination. *Id.* at 11–12 (citing Almeroth Supp. Decl. ¶¶ 4–15).

Petitioner cites Chu’s teaching of a buffer that works “quickly enough [that] . . . there is ***effectively no interruption*** of network service.” Pet. Reply 8 (quoting Ex. 1007 ¶ 67). Relying on the Crovella Supplemental Declaration, Petitioner responds to Patent Owner’s argument that interruption would occur under certain circumstances is not supported by any teaching in Chu or Devanneaux. *Id.* (citing Crovella Supp. Decl. ¶¶ 10–12). Furthermore, Dr. Almeroth acknowledged that “in some situations you may not have a disruption.” *Id.* at 8–9 (citing Almeroth Dep. 138:2–15). Petitioner disputes Dr. Almeroth’s conclusion of inevitable disruption

because he did not do any testing and, based on the Crovella Supplemental Declaration, argues there is no basis to infer disruption or negative impact on Devanneaux's CDN performance. *Id.* at 9 (citing Almeroth Dep. 149:13–17; Crovella Supp. Supp. ¶¶ 10–12). In sum, Petitioner argues re-enablement of the stack after a change in TCP behavior would occur so quickly “that the speed at which an edge server delivers content” would not be affected. *Id.* at 9–10 (citing Ex. 1007 ¶ 67; Crovella Supp. Decl. ¶ 11).

Patent Owner's next argument is the “combination of Devanneaux and Chu is not merely a predictable variation or simple substitution” because the “actual application” is beyond the skill of a person of ordinary skill in the art. PO Resp. 12 (citing *KSR*, 550 U.S. at 417). Patent Owner argues Chu relates to plug-in TCP architecture for end-user computer as opposed to “content servers,” mentioning “server” “only” six times. *Id.* (citing Ex. 1007 ¶¶ 54, 69, 70; Almeroth Supp. Decl. ¶ 11; Almeroth Decl. ¶ 53).

Patent Owner also argues the combination is not predictable because of the contrast between Chu's “well-controlled” network environment and Devanneaux's Internet servers, where traffic patterns cause spikes. PO Resp. 13 (citing Almeroth Supp. Decl. ¶¶ 10, 12; Almeroth Decl. ¶¶ 52–53). Patent Owner argues Chu's “special-purpose technique” would not work in “a server with an uncontrolled or unpredictable network,” which has different techniques, “such as the edge server of Devanneaux.” *Id.* (citing Almeroth Supp. Decl. ¶ 13; J. Christner, *Overcoming Transport and Link Capacity Limitations Through WAN Optimization* (June 19, 2008) (ciscopress.com), 9 (Ex. 2010) (solutions for optimizing TCP for a server in

a network may reduce performance in a “dynamic” network environment, like the Internet)).¹¹

Patent Owner also argues “it would not be trivial to implement the Chu plug-in TCP architecture in an edge server on the Internet, a network containing devices of mixed operating systems spanning workstations and servers.” PO Resp. 14 (citing Almeroth Supp. Decl. ¶ 14; Ex. 2010, 11). Relying on the Almeroth Supplemental Declaration, Patent Owner contends the implementation of advanced TCP stack in an edge server on the Internet would take a significant amount of money and time to implement. *Id.* at 14 (citing Almeroth Supplemental Decl. ¶ 14; Ex. 2010, 11; Crovella Dep. 91:12–20 (designing a CDN system is an “immense undertaking”), *id.* at 83:11–86:25 (describing what would be required to design a CDN system)). Patent Owner concludes that the task would be beyond the level of ordinary skill of “an individual” as determined in this proceeding. *Id.* at 15–16 (citing Almeroth Supp. Decl. ¶¶ 14–15; Inst. Dec. 17; Crovella Decl. ¶ 12); *see* section II.B.1 above.

Petitioner responds that Chu is not limited to a controlled network environment. Pet. Reply 11 (citing Ex. 1007 ¶ 69; Crovella Supp. Decl. ¶ 13). In support of the assertion, Petition points out that Chu discloses at least eight embodiments. *Id.* (citing Ex. 1007 ¶¶ 69, 8–25; Crovella Supp. Decl. ¶ 13). Petitioner also notes that the claims of Chu are not limited to a “controlled network environment.” *Id.* (citing Ex. 1007, claims 1–20).

Petitioner argues that the fact there are only six mentions of “server” in Chu does not detract from the fact that Chu “***can be used in servers***,

¹¹ Although not raised as an issue by either party, the document indicates a copyright of 2017. Ex. 2010, 23.

including content servers disclosed in Devanneaux.” Pet. Reply 12 (citing Crovella Supp. Decl. ¶ 15). Chu also uses the term “from a remote server” in paragraph 66. Ex. 1007 ¶ 66; *see also* Pet. Reply 12 (paragraph 66 “explain[s] that the Chu plug-in architecture can apply TCP behavior that is optimized for ‘transferring real time video from a remote server’”).

Petitioner argues this fact was not mentioned by Patent Owner and that paragraph 66 explains that Chu’s plug-in approach deters “abusive network behavior.” Pet. Reply 12 (citing Ex. 1007 ¶ 66). Dr. Crovella is cited for his opinion that a person of ordinary skill would have understood that “‘abusive network behavior’ is **not a ‘controlled network environment.’**” *Id.* (citing Crovella Supp. Decl. ¶ 16).

Petitioner contends the fact that designing and building a CDN is an immense task is not the standard. Pet. Reply 13 (citing *Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013) (obviousness must take into account “the background knowledge possessed by a person having ordinary skill in the art”) (quoting *KSR*, 550 U.S. at 418)). Petitioner argues that it is irrelevant that “Chu’s plug-in architecture could not be incorporated into Devanneaux edge servers.” *Id.* at 15–16 (citing *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012); *In re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985) (en banc)). Petitioner also argues that a person of ordinary skill “would not need to design a new advanced TCP stack or build a new CDN.” *Id.* at 13 (citing Crovella Supp. Decl. ¶ 17). According to Petitioner, a person of ordinary skill would start with Chu’s known plug-in architecture and “a known prior art TCP software stack (such as Devanneaux’s Linux stack) in a known prior art CDN (such as Devanneaux’s CDN).” *Id.* (citing Crovella Supp. Decl. ¶ 17). Petitioner concludes that “[i]ndeed, Chu describes that

the process of using the plug-in architecture to change TCP settings requires only four basic steps,” all of which are within the level of ordinary skill in the art. *Id.* (citing Ex. 1007 ¶ 67, Fig. 3; Crovella Supp. Decl. ¶ 17).

Patent Owner’s next argument is that Petitioner’s evidence regarding combining Chu with Devanneaux is based on conclusory opinions of Dr. Crovella. PO Resp. 16–18 (citing Pet. 21–22; Crovella Decl. ¶ 34). Patent Owner notes that the Petition adds nothing to the Crovella Declaration. *Id.* Petitioner responds that motivation to combine Devanneaux and Chu is present because both “are directed to solving the same problem (optimizing network connections in response to various network environments and conditions), in the same field (computer networking), in similar ways (by customizing transport layer protocol optimizations, such as the size of the congestion window).” Pet Reply 14 (citing Pet. 9–21, 22–65; Crovella Declaration ¶¶ 34–35; Crovella Supp. Decl. ¶¶ 5–19).

Last, Patent Owner argues Dr. Crovella did not consider Devanneaux and Chu separately. PO Resp. 18–19 (citing Crovella Dep. 219:24–202:11; 221:10–19). Petitioner points out that it cited to Chu “to show the claimed ‘protocol handler’ for managing the connections.” Pet. Reply 14 (citing Inst. Dec. 26).

c. Analysis and Conclusion-Claim 1

We have reviewed Petitioner’s arguments and evidence as discussed in section II.C.3.a above, which are not contested by Patent Owner. We find that Petitioner has shown by a preponderance of the evidence that Devanneaux shows all the limitations of claim 1 except the two “configuring” limitations, which are taught by Chu. As discussed previously

above, the only issue remaining is whether or not Petitioner has shown, by a preponderance of the evidence, a rationale for combining Chu with Devanneaux.

Concerning the argument that combining Chu with Devanneaux would either disrupt the connection or negatively impact the performance of Devanneaux's CDN, as Patent Owner acknowledges, Chu's buffering of packets deals with potential disruption by buffering packets. Ex. 1007 ¶ 67. We find the testimony of both Drs. Crovella and Almeroth supports our finding that there is no basis to infer disruption or negative impact on Devanneaux's CDN performance because of Chu's changing of TCP behavior. Crovella Supp. Supp. ¶¶ 10–12¹²; Almeroth Dep. 149:13–17. Though not specifically argued as a teaching away,¹³ we find a person of ordinary skill in the art would not be discouraged from making the combination because of that portion of Chu's disclosure cited by Patent Owner. *See, e.g., In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994) (“A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.”).

One of Petitioner's conclusions regarding the rationale to combine, *see* section II.C.3.a above, is that “one of ordinary skill in the art would have

¹² We have reviewed Patent Owner's Observations 4 and 5 asserting that Dr. Crovella contradicted his testimony that there is no interruption in Chu because of buffering. Obs. 2–3. We find the testimony at the second deposition is consistent with the prior testimony. *See* Resp. Obs. 4–5.

¹³ Patent Owner did argue Chu “teaches away” in its Preliminary Response. *See* Prelim. Resp. 15.

been motivated to look to Chu to provide operating system-specific implementation details that are not otherwise explicit in Devanneaux.”

Pet. 20. Patent Owner responds that combining Devanneaux and Chu is not merely a predictable variation or simple substitution because the “actual application” is beyond the skill of a person of ordinary skill in the art.

We agree with Petitioner that Chu is not limited to a controlled network environment. See Pet. Reply 11 (citing Ex. 1007 ¶ 69; Crovella Supp. Decl. ¶ 13). We also find that the Chu plug-in architecture can be used in with “a remote server” in networks that are not controlled. Ex. 1007 ¶ 66. Thus, we are not persuaded that a person of ordinary skill would be discouraged from combining Chu and Devanneaux based on alleged differences in basic architecture because we find none of significance.

Whether any difficulties arise in the “actual application” of Chu to Devanneaux is not the standard. To the extent Patent Owner argues that Chu cannot be incorporated in Devanneaux, such arguments are irrelevant, the criterion being not whether the references could be physically combined but whether the claimed invention is rendered obvious by the teachings of the prior art as a whole. *In re Etter*, 756 F.2d at 859–60 (citations omitted). Similarly, we are not persuaded that the task would be so difficult that it would be beyond the ability of a person of ordinary skill. We credit the Crovella Supplemental Declaration that a person of ordinary skill would start with Chu’s known plug-in architecture and “a known prior art TCP software stack (such as Devanneaux’s Linux stack) in a known prior art CDN (such as Devanneaux’s CDN).” Crovella Supp. Decl. ¶ 17. We also credit the Crovella Supplemental Declaration and find that Chu “describes that the process of using the plug-in architecture to change TCP settings

requires only four basic steps,” all of which are within the level of ordinary skill in the art. *Id.* (citing Ex. 1007 ¶ 67, Fig. 3).

Patent Owner argues Petitioner’s arguments are based on insufficient conclusory opinions. We disagree. Dr. Crovella’s testimony is based on his understanding of Chu and Devanneaux. Crovella Decl. ¶¶ 34–35 (citing Ex. 1004, Fig. 2; Ex. 1007 ¶ 8, 25). Among other things, Dr. Crovella testifies “the inclusion of the Chu plug-in architecture in the Devanneaux ‘operating system’ 204 (in FIG. 2 there) is a simple substitution of one known element for another to obtain predictable results, or applying a known technique to a known device ready for improvement to yield predictable results.” *Id.* ¶ 34.

Among the qualifications of Dr. Crovella that are particularly appropriate to giving his testimony credibility are his research in the area of computer networking since 1994 and his position as Chair of the Special Interest Group in Computer Communication, the main professional organization for scientists in the field of computer networking. *Id.* ¶ 5.¹⁴ While Dr. Almeroth is also qualified, and his conclusions differ, both experts rely on the same teachings to reach their opinions. For example, both testify on disruption based on Chu. Crovella Supp. Decl. ¶¶ 10–12; Almeroth Supp. Decl. ¶¶ 9–10. Dr. Almeroth agreed with Dr. Crovella that

¹⁴ In finding Dr. Crovella’s testimony credible, we have reviewed Patent Owner’s Observations regarding Dr. Crovella’s second deposition that the Crovella Supplemental Declaration testimony is conclusory. Obs. 1–2 (Observations 2 and 3). We are not persuaded that any of the testimony pointed out in paragraphs 2 or 3 of Patent Owner’s Observations shows that Dr. Crovella’s opinions are unsupported by the references or his experience. See Resp. Obs. 2–3(pointing out the basis for the testimony).

“in some situations you may not have a disruption.” Almeroth Dep. 138:2–15. Dr. Almeroth’s testimony to the contrary is not supported by Chu or Devanneaux and is not the result of independent testing. Thus, we give more weight to Dr. Crovella’s testimony on the disruption issue. Furthermore, based on his years and depth of experience and reliance on Devanneaux and Chu for his conclusions (*see, e.g.*, Crovella Supp. Decl. ¶¶ 10–12), we find Dr. Crovella’s testimony is not conclusory.

We disagree with Patent Owner’s assertion that Petitioner did not analyze where the claims differed from the prior art. For example, Petitioner cites Chu to show “configuring the connection,” as recited in claim 1, relying on Devanneaux for the remaining limitations. Pet. 28.

Petitioner’s arguments are supported by the evidence, and Petitioner has shown by a preponderance of the evidence that the subject matter of claim 1 would have been obvious over Devanneaux and Chu.

4. Claim 6

Patent Owner disputes that either Devanneaux or Chu teaches the “protocol attribute selector” of claim 6 and the claims depending from it, claims 7, 8, 10, and 11. PO Resp. 19–25. Petitioner’s arguments and evidence regarding claim 6 are summarized below followed by Patent Owner’s Response and Petitioner’s Reply and our Conclusion.

a. Petitioner’s Allegations-Claim 6¹⁵

The preamble of independent claim 6 recites “[a] system for managing delivery of content over a network.” The preamble is similar to the

¹⁵ Petitioner includes an alternative analysis of claim 6 were it construed under 35 U.S.C. § 112 ¶ 6 (Petitioner cites to 35 U.S.C. § 112(f) but the ’324

preamble of claim 1, albeit written as a system claim as opposed to a method claim. Petitioner’s argument and evidence repeats the showing made for claim 1, concluding that “Devanneaux describes a content delivery network (CDN) for delivering content; edge servers therein manage that delivery.” Pet. 41 (citing Ex. 1004 ¶¶ 19, 21).

The first limitation of claim 6 is “protocol handler managing a first connection and a second connection over the network using a protocol, wherein the protocol operates at an [sic] transport layer.” Devanneaux teaches “metadata may control how a given edge server establishes and maintains connections with one or more other edge servers or other machines,” and Petitioner relies on Devanneaux’s description that an edge server can maintain more than one connection and the following metadata can be set in the configuration file, once again on a customer-specific, domain-specific, basis. Pet. 41–42 (claim chart), 43 (citing Ex. 1004 ¶ 21). Petitioner argues “Devanneaux teaches how to configure TCP connections on a per-request basis,” quoting from Devanneaux “[t]o enable edge server-to-edge server (or other client-server) TCP optimizations, the following metadata can be set in the configuration file, once again on a customer-specific, domain-specific, basis.” *Id.* at 41 (claim chart) (citing Ex. 1004 ¶ 86). Petitioner concludes the protocol is TCP, i.e., the “transport layer” claimed. *Id.* at 45 (citing Ex. 1004 ¶ 86).

patent predates the effective date of the America Invents Act, Pub. Law No. 112–29). Pet. 56–59. Absent use of the word “means” there is no presumption that § 112 ¶ 6 applies. *Personalized Media Communications, LLC v. Int’l Trade Comm’n*, 161 F.3d 696, 703 (Fed. Cir. 1998). We are not presented with any argument, nor do we independently determine, that the presumption has been overcome.

Devanneaux also discloses “commodity hardware” (e.g., an Intel Pentium processor) and an operating system kernel. Ex. 1004 ¶ 9. Petitioner relies on the Crovella Declaration to argue the “Devanneaux edge server includes an operating system, which includes a TCP protocol stack.” Pet. 41 (claim chart) (citing Crovella Decl. ¶ 29 (citing Ex. 1004 ¶ 9)).

Petitioner cites additionally to Chu to show the claimed “protocol handler” for managing the connections. Pet. 42 (claim chart) (citing Ex. 1007 ¶¶ 8, 50, 52), 43–45 (citing Ex. 1007 ¶¶ 9, 52, 68). Specifically, Chu “provides a plug-in architecture for a network stack in an operating system. The network stack includes a set of functions configured to modify a set of parameters that are likely to change based on the network environment.” Ex. 1007 ¶ 8. Chu further explains that it provides a “plug-in architecture for a network stack in an operating system. . . . The architecture includes a plug-in framework within the network stack that allows the set of functions to be dynamically changed in order to change the TCP behavior of the network stack to suit the network environment.” *Id.* Chu’s “plug-in architecture allows the system to switch between different congestion avoidance techniques.” *Id.* ¶ 50. Petitioner concludes the preceding teachings of Chu are the same as the claimed “protocol handler.”¹⁶ Pet. 44.

The next limitation of claim 6 recites “the protocol handler is configured to use first attributes for the first connection.” Petitioner cites to Devanneaux’s teaching of changing the TCP settings of a first node for size

¹⁶ As is the case with “protocol attribute selector” construed in section II.A above, “protocol handler” is defined by the additional claim recitations as they would be understood by a person of ordinary skill in the art. This determination was made in the Institution Decision, but neither party subsequently addressed it. See Inst. Dec. 26.

and a second node to control timeout. Pet. 45 (claim chart) (citing Ex. 1004 ¶ 86). In addition, Petitioner cites to Devanneaux's teaching that each contains a status, i.e., node on or off, the name of the parameter to be set, a direction to define which connection a setting will control, and a value to set for the parameter. *Id.* at 45–46 (claim chart) (citing Ex. 1004 ¶ 87).

Devanneaux also teaches various parameters, e.g., “cwnd_init (initial congestion window), cwnd_ssinc (slow start increase), cwnd_cainc (congestion avoidance rate), cwr_dec (congestion reduction rate), and many others.” Ex. 1004 ¶ 87. Petitioner argues “[t]hese parameters are configured ‘according to . . . attributes,’ as claimed.” Pet. 46. Thus, “as stated in Devanneaux, ‘the following metadata can be set in the configuration file . . . In particular, the controls for changing the TCP settings.’” *Id.* (citing Ex. 1004 ¶ 86).

The next limitation of claim 6 repeats the recited first connection for a “second connection.” Petitioner repeats its argument and evidence for the first connection to show the second connection. Pet. 47 (claim chart) (citing Ex. 1004 ¶¶ 86–87); *see also* Pet. 32 n.5 (citing *Perfect Web Techs.*, 587 F.3d at 1330–31 (repeating known steps to obtain a desired result is not inventive)). Petitioner again argues the disclosed “parameters are configured ‘according to . . . attributes,’” and that Devanneaux teaches “the following metadata can be set in the configuration file. . . . In particular, the controls for changing the TCP settings.” Pet. 47 (citing Ex. 1004 ¶ 86). To the extent the limitation requires a “protocol handler” Petitioner repeats its arguments made in connection with the first connection for “protocol handler.” *Id.*

Claim 6 next recites “a store holding a plurality of attributes.” Petitioner argues the limitation is met because Devanneaux describes a configuration file that is “distributed to (and, therefore on) edge servers.” Pet. 48–49 (claim chart) (citing Ex. 1004 ¶¶ 11, 21, 86); 49 (citing Ex. 1004, published claim 15 (“a data store in which is stored a customer-specific, domain-specific configuration file”)).

The next limitation of claim 6 is the “protocol attribute selector” where in section II.A above we determined no express construction was required for the term. Petitioner cites to Devanneaux’s “edge server management process” that includes attributes that alter the TCP connection as showing the “protocol attribute selector.” Pet. 49 (claim chart) (citing Ex. 1004 ¶ 21). As we determined in section II.A above, the “protocol attribute selector” limitation includes the various recited functions performed by the “protocol attribute selector.” We address the functions below.

The first function is “receiv[ing] first information relating to a first request for content wherein the first information is derived from a first uniform resource indicator (URI) associated with the first request for content.” As discussed above in connection with claim 1, Devanneaux teaches a request for content and searching an index file for a match to the customer hostname. Ex. 1004 ¶ 21. If there is a match, then metadata is loaded from the configuration file to determine how to handle the request. *Id.* Petitioner relies on the preceding and the showing for “uniform resource indicator (URI)” it made for claim 1 to show the same limitation for claim 6. Pet. 50–51 (citing Ex. 1004 ¶¶ 21, 30). Petitioner specifically points to Devanneaux’s teaching that “object references use the same hostname as the

original request” to show the “uniform resource indicator (URI)” limitation as we have construed the term. *Id.* at 51 (citing Ex. 1004 ¶ 26).

The second function of the “protocol attribute selector” is to “query the store for first attributes corresponding to the first information.” For this, Petitioner cites to Devanneaux’s edge server management process receiving a request for content and then searching an index file for a match with the customer hostname. Pet. 51–52 (claim chart) (citing Ex. 1004 ¶¶ 21, 86). Petitioner cites to Devanneaux as teaching that if there is a match, “the edge server process loads metadata from the configuration file to determine how it will handle the request.” *Id.* at 52 (citing Ex. 1004 ¶ 21). Petitioner concludes that “metadata for the attributes is obtained by querying the configuration file in cache on the edge server following a match of the hostname in the index file.” *Id.*

The third function of the “protocol attribute selector” is to “program the protocol handler with the first attributes for the first connection.” Petitioner argues “Devanneaux describes controlling the settings of listable nodes that are based on size or timeout setting.” Pet. 54 (citing Ex. 1004 ¶¶ 86–87). Petitioner cites to metadata disclosed in Devanneaux as showing “how to adjust the TCP settings used for edge server-to-edge server communication.” *Id.* at 53 (claim chart) (citing Ex. 1004 ¶ 87). For the “protocol handler,” Petitioner cites to Chu, as it did above. *Id.* at 53–54 (claim chart) (citing Ex. 1007 ¶¶ 8, 38, 52). Petitioner concludes that:

In particular, Chu describes “a plug-in architecture for a network stack in an operating system” (Chu, ¶0008), in which “a subset of the TCP transmit functionality becomes a swappable plug-in.” *Id.*, ¶0040. Thus, Devanneaux describes programming separator parameters to adjust TCP settings, and Chu describes programming a protocol handler, i.e., a protocol stack that is

modified (i.e., programmed) by the plug-in functionality. Taken together, these references disclose and suggest programming a protocol handler with first attributes for a first connection.

Pet. 54.

The remainder of claim 6 recites, in pertinent part, “receive second information,” “query the store for second attributes,” and “program the protocol handler with the second attributes.” As with claim 1, claim 6 continues to repeat the preceding limitations, namely “receive first information,” “query the store for first attributes,” and “program the protocol handler with the first attributes.” See Pet. 55 (citing Crovella Decl. ¶ 39). Petitioner points to its showing for the prior corresponding limitations for the first connection. Pet. 55 (claim chart) (citing Ex. 1004 ¶¶ 21, 86, 87; Ex. 1007 ¶¶ 8, 38, 52).

Petitioner repeats its arguments regarding the combination of Devanneaux and Chu. Pet. 54–55 (citing Crovella Decl. ¶ 34).

*b. Patent Owner’s Response and Petitioner’s Reply-
Claim 6*

Patent Owner alleges neither Devanneaux nor Chu discloses the “protocol attribute selector” recited in claim 6 and necessarily present in dependent claims 7, 8, 10, and 11. PO Resp. 23–25. As discussed above under our analysis of claim 1, Patent Owner disputes the rationale for combining Chu with Devanneaux. We refer to our prior discussion as to those issues. Patent Owner does not respond to Petitioner’s showing on the other limitations of claim 6 and we determine that Petitioner has shown by a preponderance of the evidence that the combination of Devanneaux and Chu teaches the remaining limitations.

Presumably relying on its rejected construction of “protocol attribute selector,” Patent Owner argues Petitioner has not shown that “Devanneaux analyzes ‘*each request*,’ as required by the claim, to select protocol attributes to be used to deliver requested content on a particular connection.” PO Resp. 23 (citing Almeroth Decl. ¶ 55). Patent Owner asserts Devanneaux differs because it selects metadata on a “customer-specific, customer domain-specific” for content delivery and “distribut[ion] to the edge servers using a metadata configuration system.” *Id.* at 23–24 (citing Ex. 1004 ¶ 21; *see also* ¶¶ 11, 23, 84, 86 (all disclosing “domain-specific” or “customer-specific”); Almeroth Decl. ¶ 56). Based on the preceding, Patent Owner argues Petitioner does not show how Devanneaux’s disclosure “would involve analyzing *each request* to select protocol attributes to be used to deliver requested content on a particular connection.” *Id.* at 24–25 (citing Pet. 49). Additionally, Patent Owner contends a person of ordinary skill “would have no reason to analyze each request” because Devanneaux’s index file search for a match on a customer hostname “would be sufficient to optimize the connection for a specific customer and domain at the time of the invention.” *Id.* at 25 (citing Almeroth Decl. ¶¶ 55–57; Crovella Dep. 37:19–38:22,¹⁷ 35:15–37:18 (“multiple requests” not discussed in Devanneaux)).

Petitioner responds that Patent Owner’s construction of “protocol attribute selector” as requiring “a system configured to select TCP attributes for ‘multiple requests’ in each connection would improperly exclude the ‘connection-by-connection’ only embodiments—including the patent’s

¹⁷ Patent Owner cites “37:19–8:22.” Page 38, not 8, appears to have been intended.

‘primary embodiment’ (see *id.* [Ex. 1001] 6:12-14)—from the scope of the claims.” Pet. Reply 20 (citing *Hill-Rom Servs. v. Stryker Corp.*, 755 F.3d 1367, 1379 (Fed. Cir. 2014) (“A construction that would exclude the preferred embodiment ‘is rarely, if ever, correct’”); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1320 (Fed. Cir. 2005) (en banc) (limiting a claim to an embodiment in the specification is one of the “cardinal sins” of patent law); Crovella Supp. Decl. ¶¶ 23–24). Petitioner also cites to the District Court’s summary judgment opinion holding that “***the ’324 Patent operates, at times, on a connection-by-connection basis only. The patent can therefore act either only on a connection-by-connection basis, only on a request-by-request basis, or both.***” *Id.* at 22 (citing Ex. 1012, 6 n.6).

c. Analysis and Conclusion-Claim 6

As analyzed in section II.A above, we rejected Patent Owner’s proposed construction regarding the “protocol attribute selector.” However, Patent Owner’s argument that focuses on “each request” has a basis in the claim language, which requires a first and a second request for content. Consistent with this, Patent Owner “concede[d] that we don’t need to construe this.” See section II.A above. We credit the Crovella Declaration testimony that Devanneaux’s edge server would be understood by a person of ordinary skill to “teach[] that the same server would be used to handle multiple content requests.” Crovella Decl. ¶ 39 (citing Ex. 1004 ¶ 86); see Pet. 55. Thus, even accepting Patent Owner’s argument, Petitioner’s supporting evidence shows the “protocol attribute selector” analyzes “each request.”

Claim 6 also recites a “first connection” and a “second connection” associated respectively with the “first request” and the “second request.”

See Ex. 1001, col. 24, ll. 21, 28. Thus, we agree with the District Court that “[t]he patent can therefore act either only on a connection-by-connection basis, only on a request-by-request basis, or both.” Ex. 1012, 6 n.6. We agree with Petitioner that Patent Owner’s argument would preclude certain disclosed embodiments of the ’324 patent. See Pet. Reply 18–19.

Accordingly, we are not persuaded by Patent Owner’s argument limiting the claims to “each request” on a “request-by-request” basis.

At the final hearing Patent Owner argued the claim language. For example, Patent Owner argued that Petitioner has not shown that “‘loads the metadata from the configuration file,’ which is [in] Devanneaux, is the same as ‘querying the store’ as required by protocol attribute selector” of the claim. Tr. 37:14–16. As such, Patent Owner contends Petitioner did not meet its burden. *Id.* at 38:3–8. This argument is not persuasive because it is not what is asserted in the Petition. The Petition asserts the “querying” limitation is met by Devanneaux’s searching of an index file. *Id.* at 39:20–40:13, 41:2–13; Pet. 51 (claim chart) (citing Devanneaux ¶ 21 (“an edge server management process receives a request for content it searches an index file for a match on a customer hostname associated with the request”)).

Petitioner’s arguments are supported by the evidence, and we are persuaded that Petitioner has shown by a preponderance of the evidence that claim 6 would have been obvious over Devanneaux and Chu.

5. Claims 2, 5, 7, 8, and 11–Petitioner’s Allegations

Petitioner alleges that claims 2, 5, 7, 8, and 11 would have been obvious over Devanneaux and Chu. Pet. 34–35 (claim 2), 38–40 (claim 5), 59–61 (claims 7 and 8), 64–66 (claim 11). Patent Owner does not separately

argue patentability of any of claims 2, 5, 7, 8, and 11. We have reviewed Petitioner's arguments and the underlying evidence cited in support, and are persuaded that Petitioner has shown by a preponderance of the evidence that claims 2, 5, 7, 8, and 11 would have been obvious.

a. Claim 2

Claim 2 depends from claim 1 and recites as an additional limitation "wherein the protocol is transmission control protocol (TCP)." Devanneaux teaches "TCP optimizations" for the configuration file and changing "TCP settings . . . in a separator network:tcp.transport." Ex. 1004 ¶ 86. Petitioner cites to the preceding from Devanneaux as teaching the TCP protocol. Pet. 34 (claim chart), 35 (both citing Ex. 1004 ¶ 86).

Petitioner's arguments are supported by the evidence, and we are persuaded Petitioner has shown by a preponderance of the evidence that claim 2 would have been obvious over Devanneaux and Chu.

b. Claim 5

Claim 5 depends from claim 1 and recites as an additional limitation "wherein the content in the first-listed analyzing limitation is different from the content in the second-listed analyzing limitation." Devanneaux teaches "customer-specific, domain-specific configurations" and TCP connection optimizations. Ex. 1004 ¶ 23. Devanneaux also explains that its CDN distributes different types of content. *Id.* ¶ 8. Thus, Petitioner argues that "[g]iven that Devanneaux is a generic framework within a CDN that delivers multiple types of content on behalf of multiple different content providers, the content being delivered by the Devanneaux-Chu edge server would necessarily be different content." Pet. 39. Petitioner argues that a person of ordinary skill would understand that "the content in the first-listed analyzing

limitation (for a first customer's content) is different from the content in the second-listed analyzing limitation (for a second customer's content)." *Id.*

Petitioner's arguments are supported by the evidence, and Petitioner has shown by a preponderance of the evidence that claim 5 would have been obvious over Devanneaux and Chu.

c. Claim 7

Claim 7 depends from claim 6 and recites as an additional limitation "wherein the protocol is transmission control protocol (TCP)." Claim 7 recites the same additional limitation as claim 2 and Petitioner cites to the same paragraph 86 of Devanneaux as teaching it. Pet. 59 (citing Ex. 1004 ¶ 86).

Petitioner's arguments are supported by the evidence, and Petitioner has shown by a preponderance of the evidence that claim 7 would have been obvious over Devanneaux and Chu.

d. Claim 8

Claim 8 depends from claim 6 and recites as an additional limitation "further comprising a protocol stack that sends the content to a first node using the first connection and a second node using the second connection." Devanneaux teaches an Internet accessible client connected through a CDN and DNS to an edge server. Ex. 1004 ¶ 19. Chu teaches "two computer systems communicating over a network link 110" including a sending computer system which passes data to a network stack, where the data is packetized and sent over a network link to a receiving computer system. Ex. 1007 ¶ 31, Fig. 1. Petitioner argues Devanneaux alone teaches an Internet system and TCP connections and meets the limitation, which a person of ordinary skill would have understood to "send content to nodes

over connections.” Pet. 60 (claim chart), 61 (citing Ex. 1004 ¶¶ 19, 23). Alternatively, Petitioner alleges Chu teaches the limitation by its “protocol stack managing connections between devices (Chu, ¶0070), through which content is sent.” *Id.* at 61 (citing Ex. 1007 ¶ 70).

Both of Petitioner’s arguments are supported by the evidence of record, and Petitioner has shown by a preponderance of the evidence that claim 8 would have been obvious over Devanneaux and Chu.

e. Claim 11

Claim 11 depends from claim 6 and recites as an additional limitation “wherein the content of the first connection is different from the content in the second connection.” Devanneaux teaches “customer-specific, domain-specific configurations,” TCP connection optimizations, and distribution of different content. Ex. 1004 ¶¶ 8, 23. In addition to the preceding, Petitioner points to Devanneaux’s separator as including “two listable nodes, one to control the settings that are based on a size . . . and the other to control timeout setting.” Pet. 64 (citing Ex. 1004 ¶ 86). Petitioner concludes “one of ordinary skill in the art, at the time that the application for the ’324 patent was filed, would have known that the content in the first-listed analyzing limitation could be different from the content in the second-listed analyzing limitation.” *Id.* at 64–65.

Petitioner’s arguments are supported by the evidence, and Petitioner has shown by a preponderance of the evidence that claim 11 would have been obvious over Devanneaux and Chu.

D. Obviousness of Claims 4 and 10 Over Devanneaux, Chu, and RFC 793

Petitioner alleges claims 4 and 10 would have been obvious to the person of ordinary skill in the art over Devanneaux, Chu, and RFC 793. Pet. 13, 35–38, 61–64. Patent Owner does not separately argue patentability of any of claims 4 and 10. We have reviewed Petitioner’s arguments and the underlying evidence cited in support, and are persuaded that Petitioner has shown by a preponderance of the evidence that claims 4 and 10 would have been obvious.

1. RFC 793 (Ex. 1005)

RFC 793 describes that “many processes within a single Host . . . use TCP communication facilities simultaneously,” and that “the TCP provides a set of addresses or ports within each host.” Ex. 1005, 5. RFC 793 also describes that “a socket may be simultaneously used in multiple connections.” *Id.* RFC 793 specifies “[a] local socket may participate in many connections to different foreign sockets.” *Id.* at 10.

2. Claim 4

Claim 4 depends from claim 1 and recites that “the first connection and second connection serve the content at least partially coextensive in time.” Petitioner argues the limitations of claim 1 as described above. Pet. 35–38. For the additional limitations of claim 4, Petitioner relies on RFC 793 and the Crovella Declaration in arguing that “[m]ultiple connections in use simultaneously provides that data (i.e., content) passes over those connections at least partly coextensive in time.” *Id.* at 37 (citing Crovella Decl. ¶ 38; Ex. 1005, 10).

Petitioner alleges RFC 793 would have been combined by a person of ordinary skill with Devanneaux and Chu because the combination would

enable use of the widely-known standards-compliant version of TCP, so that an edge server could interoperate with other TCP implementations. That skilled person would also have been motivated to combine RFC793 with Devanneaux-Chu to provide an edge server that can handle multiple connections and thus offload traffic from a customer's origin site, which is a basic CDN requirement stated in Devanneaux. See Devanneaux, ¶ 0006 (stating, "[t]he site must scale to handle high traffic load during peak usage periods").

Pet. 38 (citing Crovella Decl. ¶ 38).

Petitioner's arguments are supported by the evidence, and Petitioner has shown by a preponderance of the evidence that claim 4 would have been obvious over Devanneaux, Chu, and RFC 793.

3. *Claim 10*

Claim 10 depends from claim 6 and recites that "the first connection and second connection serve the content at least partially coextensive in time." Petitioner argues the limitations of claim 6 as described above. Pet. 62–64. Petitioner argues that Devanneaux teaches multiple connections it "does not state outright that 'the first connection and second connection serve the content at least partially coextensive in time.'" Pet. 63 (citing Ex. 1004 ¶ 86). Petitioner notes that Devanneaux teaches TCP is used to communicate with clients and Chu describes a computer with a TCP stack in an operation system. *Id.* (citing Ex. 1004 ¶¶ 86, 87; Ex. 1007 ¶ 6). Petitioner argues that "RFC 793 describes that 'many processes within a single host . . . use TCP communication facilities simultaneously,' and that 'the TCP provides a set of addresses or ports within each host.'" *Id.* (citing

Ex. 1005, 5). Petitioner concludes that “[g]iven that the foregoing are fundamental features of TCP, and that Devanneaux supports multiple connections and describes that those connections use TCP, it would have been obvious to use multiple connections simultaneously in Devanneaux so as to serve content from first and second connections at least partially coextensive in time.” *Id.* at 64.

Petitioner’s arguments are supported by the evidence, and Petitioner has shown by a preponderance of the evidence that claim 10 would have been obvious over Devanneaux, Chu, and RFC 793.

E. Motion to Exclude/Weight Given to Dr. Crovella’s Redirect Testimony

Patent Owner argues that the redirect testimony of Dr. Crovella at his deposition should be given no weight because allegedly, Dr. Crovella was “coached” prior to giving this testimony. PO Resp. 26. Patent Owner separately filed its Motion to Exclude (Paper 23) based on the same facts. Mot. 2–4. We treat the argument in the Response and the Motion together.

Petitioner concludes that the Motion is frivolous because neither party relied on the testimony. Opp. 3 n.1. Patent Owner agrees that neither party cites to Dr. Crovella’s redirect testimony. Mot. Reply 3–4.

There is no point in excluding evidence that was never relied on in the first instance. Thus, we need not reach the weight argument in Patent Owner’s Response. For the same reason, we dismiss the Motion as moot.

III. ORDER

Accordingly, it is

ORDERED claims 1, 2, 4, 5, 6, 7, 8, 10, and 11 of the '324 patent are held unpatentable;

FURTHER ORDERED that Petitioner's Motion to Exclude is *dismissed as moot*; and

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

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