

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CLOUDFLARE, INC. and
SPLUNK INC.
Petitioner,

v.

SABLE NETWORKS, INC.,
Patent Owner.

IPR2021-00909¹
Patent 8,243,593 B2

Before STACEY G. WHITE, GARTHD. BAER, and
JULIET MITCHELL DIRBA, *Administrative Patent Judges*.

DIRBA, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining Some Non-Disclaimed Challenged Claims Unpatentable
35 U.S.C. § 318(a)

¹ Splunk, Inc., which filed a petition in IPR2022-00228, has been joined as a petitioner in this proceeding.

On November 19, 2021, we instituted an *inter partes* review of claims 1–44 of U.S. Patent No. 8,243,593 B2 (Ex. 1001, “the ’593 patent”). Paper 16 (“Inst. Dec.”). After institution, claims 1, 2, 4–8, 14–16, 25–28, and 34–36 of the ’593 patent were statutorily disclaimed (*see* Ex. 2006), so this Decision does not address the patentability of those claims. Having considered the full record at trial, we determine that Petitioner has shown that claims 3, 9–13, 19–24, 29–33, and 39–44 of the ’593 patent are unpatentable under 35 U.S.C. § 103(a), and we determine that Petitioner has not shown that claims 17, 18, 37, and 38 of the ’593 patent are unpatentable.

I. BACKGROUND

A. History of this Proceeding

On May 7, 2021, Cloudflare, Inc. and SonicWall Inc.² filed a Petition requesting *inter partes* review of claims 1–44 of the ’593 patent. Paper 1 (“Pet.”). Petitioner submitted a declaration from Dr. Kevin Jeffay in support. *See* Ex. 1003. Sable Networks, Inc.³ (“Patent Owner”) filed a Preliminary Response. Paper 8. The parties also filed an authorized pre-institution reply and sur-reply to address discretionary denial under 35 U.S.C. § 314. Papers 9, 11. After reviewing the preliminary record, we determined that Cloudflare had demonstrated a reasonable likelihood that it would prevail in establishing the unpatentability of at least one challenged claim, and we instituted an *inter partes* review of all challenged claims on all grounds asserted in the Petition. Inst. Dec. 57.

² SonicWall Inc. was subsequently terminated from this proceeding following a settlement with Patent Owner. Paper 15 (Termination Order).

³ Patent Owner also identifies Sable IP, LLC as a real party in interest. Paper 5, 1.

After institution, Patent Owner filed a statutory disclaimer under 35 U.S.C. § 253(a) of claims 1, 2, 4–8, 14–16, 25–28, and 34–36 of the ’593 patent. Ex. 2006; *see also* Paper 29 (Updated Mandatory Notice); *accord* Paper 32, 4 (determining that the identified claims have been disclaimed). This disclaimer effectively eliminates these claims from the ’593 patent, leaving the patent as if those claims never existed. *See Sanofi-Aventis U.S., LLC v. Dr. Reddy’s Labs., Inc.*, 933 F.3d 1367, 1373 (Fed. Cir. 2019). As a result, we determine (and the parties agree) that claims 1, 2, 4–8, 14–16, 25–28, and 34–36 are no longer part of this proceeding. *See* PO Resp. 11–12; Pet. Reply 1.

Meanwhile, Splunk Inc.⁴ filed a petition for *inter partes* review and a motion for joinder in IPR2022-00228, requesting that Splunk be joined as a petitioner in this proceeding. Paper 32 (Joinder Order), 1. After considering the parties’ papers, we instituted trial in IPR2022-00228, granted Splunk’s motion, and added Splunk as a petitioner to this proceeding. *Id.* at 5–8. As a result, this Decision uses “Petitioner” to refer to Cloudflare and Splunk.

During the trial, Patent Owner filed a Response (Paper 30, “PO Resp.”), Petitioner filed a Reply (Paper 33, “Pet. Reply”), and Patent Owner filed a Sur-reply (Paper 36, “PO Sur-reply”).

An oral hearing in this proceeding was held on September 7, 2022, and a transcript of the hearing is included in the record. Paper 41 (“Tr.”). Petitioner objects to Patent Owner’s demonstratives (Paper 40), and for the reasons explained below, that objection is dismissed as moot.

⁴ Splunk also identifies Critical Start Inc. as a real party in interest. IPR2022-00228, Paper 2 (Petition), 76.

B. Related Matters

The parties indicate that the '593 patent has been asserted in several district court lawsuits, including *Sable Networks, Inc. v. Splunk Inc.*, 5:21-cv-00040 (E.D. Tex.), *Sable Networks, Inc. v. Cloudflare, Inc.*, 6:21-cv-00261 (W.D. Tex.), *Sable Networks, Inc. v. SonicWall Inc.*, 6:21-cv-00190 (W.D. Tex.). Pet. xii–xiii; Paper 5, 1–3.

C. Non-Disclaimed Challenged Claims

Claims 3, 9–13, 17–24, 29–33, and 37–44 are the claims currently challenged in this proceeding.⁵ Of these, claims 3, 9, and 29 are independent. Claim 9 is illustrative of the claimed subject matter:

9. A machine implemented method for processing a flow, the flow comprising a series of information packets, the method comprising:

maintaining a set of behavioral statistics for the flow, wherein the set of behavioral statistics is updated based on each information packet belonging to the flow, as each information packet belonging to the flow is processed, regardless of the presence or absence of congestion; and

computing, based at least partially upon the set of behavioral statistics, a badness factor for the flow, wherein the badness factor provides an indication of whether the flow is exhibiting undesirable behavior.

Ex. 1001, 11:63–12:8.

⁵ The Petition challenged all 44 claims of the '593 patent (*see* Pet.); however, during the trial, Patent Owner filed a statutory disclaimer (Ex. 2006), which eliminated claims 1, 2, 4–8, 14–16, 25–28, and 34–36 from the scope of this proceeding (*see supra* § I.A),

D. The Grounds

Petitioner asserts the following challenges to the patentability of claims 3, 9–13, 17–24, 29–33, and 37–44 (Pet. 1; *see also infra* § II.F):

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
17, 18, 37, 38	103(a) ⁶	Yung ⁷
9–13, 19–24, 29–33, 39–44	103(a)	Yung, Copeland ⁸
3	103(a)	Yung, Four-Steps Whitepaper ⁹

E. Summary of the '593 Patent

The '593 patent is titled “Mechanism for Identifying and Penalizing Misbehaving Flows in a Network,” and the application that led to this patent was filed on December 22, 2004. Ex. 1001, codes (54), (22).

The Specification begins by explaining that “peer-to-peer (P2P) traffic on the Internet has grown immensely in recent years . . . despite the fact that the number of P2P users is quite small.” Ex. 1001, 1:7–13. As a result, this traffic uses a disproportionate amount of bandwidth, so it is viewed by Internet service providers as “abusive/misbehaving traffic that should be controlled and penalized.” *Id.* at 1:14–18. Previously, P2P traffic could be

⁶ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011), revised 35 U.S.C. § 103 effective March 16, 2013. Because the challenged patent was filed before March 16, 2013, we refer to the pre-AIA version of § 103.

⁷ US 7,664,048 B1, filed Nov. 24, 2003, issued Feb. 16, 2010 (Ex. 1005).

⁸ US 7,185,368 B2, filed Nov. 30, 2001, issued Feb. 27, 2007 (Ex. 1007).

⁹ “Four Steps to Application Performance Across the Network with Packeteer’s PacketShaper®,” *retrieved from* https://web.archive.org/web/20030317051910/http://packeteer.com/PDF_files/4steps.pdf (Ex. 1006).

identified by port numbers or signatures, but the '593 patent explains that protocols evolved to evade these identification techniques. *Id.* at 1:19–45.

The '593 patent addresses this problem by identifying P2P traffic (and other “misbehaving information packet flows”¹⁰) using its “observed behavior,” which “cannot be hidden.” Ex. 1001, 1:46–67. Specifically, the Specification describes a method that: (1) maintains “behavioral statistics” for a flow, (2) determines whether the flow is “exhibiting undesirable behavior” based on the statistics, and (3) if so, enforces a penalty on the flow. *Id.* at 2:1–51; *see also id.* at Fig. 3. The “behavioral statistics” of a flow include, for example:

a total byte count (sum of all of the bytes in all of the packets of the flow that have been processed up to the current time), a life duration (how long the flow has been in existence since inception), a flow rate (derived by dividing the total byte count by the life duration of the flow), and an average packet size (derived by dividing the total byte count by the total number of packets in the flow that have been processed).

Id. at 2:6–13; *see id.* at Fig. 4, 7:20–29 (describing example flow block storing behavioral statistics). The method may involve computing a “badness factor,” which “provides an indication as to whether the flow is exhibiting undesirable behavior” and may also indicate “the degree to which the flow is misbehaving.” *Id.* at 2:20–26; *see id.* at 7:54–65 (exemplary badness factor calculation). The penalty that is enforced on the flow may be “an increased drop rate,” which may have the effect of correcting the flow’s

¹⁰ “For purposes of the present invention, a flow is a series of packets that are related in some manner.” Ex. 1001, 5:16–17. The header of a packet is used to associate it with a particular flow. *Id.* at 5:17–24; *see id.* at 7:3–13.

behavior. *Id.* at 2:27–51; *see id.* at 9:52–10:3 (explaining how dropping a packet can correct a flow’s behavior).

II. ANALYSIS OF PATENTABILITY

A. Legal Standards

In an *inter partes* review, the petitioner has the burden of proving unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e). That burden never shifts to the patentee. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are “such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The legal question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of obviousness or nonobviousness.¹¹ *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966). One seeking to establish obviousness based on more than one reference also must articulate sufficient reasoning with rational underpinnings to combine teachings. *See KSR*, 550 U.S. at 418.

¹¹ The record does not include allegations or evidence of objective indicia of obviousness or nonobviousness.

B. The Level of Ordinary Skill in the Art

Our reviewing court has explained that “the level of skill in the art is a prism or lens through which a judge, jury, or the Board views the prior art and the claimed invention.” *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (citing *Al-Site Corp. v. VSI International, Inc.*, 174 F.3d 1308, 1324, (Fed. Cir. 1999)). “This reference point prevents these factfinders from using their own insight or, worse yet, hindsight, to gauge obviousness.” *Id.*

Petitioner asserts that the level of ordinary skill in the art corresponds to “an undergraduate degree (or equivalent) in electrical engineering, computer science, or comparable subject” and “3–5 years of academic or industry experience in computer networking or comparable industry experience.” Pet. 11 (citing Ex. 1003 ¶ 27). In the Institution Decision, we adopted this articulation of the level of ordinary skill. Inst. Dec. 15. At trial, neither party disputed our preliminary finding. *See* PO Resp.; Pet. Reply.

We remain persuaded that this articulation of the level of skill in the art is supported by the ’593 patent, the asserted prior art, and Dr. Jeffay’s testimony. *See* Inst. Dec. 15 (citing Ex. 1003 ¶ 27). Accordingly, we determine that the level of ordinary skill in the art corresponds to an undergraduate degree (or equivalent) in electrical engineering, computer science, or comparable subject and 3–5 years of academic or industry experience in computer networking or comparable industry experience.

C. Claim Construction

We interpret claim terms using “the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” 37 C.F.R. § 42.100(b) (2019). Under the principles set forth by

our reviewing court, the “words of a claim ‘are generally given their ordinary and customary meaning,’” as would be understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

1. Means-plus-function limitations

Petitioner contends the challenged claims include means-plus-function limitations that should be interpreted under 35 U.S.C. § 112 ¶ 6, and for each, Petitioner identifies a construction for use in this proceeding. Pet. 11–14.¹² Petitioner submits that no other terms require construction for purposes of this proceeding. *Id.* at 12.

In the Institution Decision, we agreed with Petitioner that the identified limitations are means-plus-function limitations. Inst. Dec. 16 (citing *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015) (en banc) (holding that “use of the word ‘means’ creates a presumption that § 112, ¶ 6 applies”)). We also stated that we were persuaded that Petitioner had correctly identified the recited functions and the components in the Specification that perform those functions. *Id.* at 16–17. As a result, we preliminarily adopted the following constructions:

Limitation	Function	Structure
“means for maintaining a set of behavioral statistics for the flow...” (claim 29)	maintaining a set of behavioral statistics for the flow	MFM 210 implemented on processors

¹² The Petition also contends that claims 25 and 27 include means-plus-function limitations that should be interpreted under 35 U.S.C. § 112 ¶ 6 (Pet. 11–14); however, those claims have been disclaimed and are no longer part of this proceeding, so we do not address those limitations here.

Limitation	Function	Structure
“means for computing...a badness factor for the flow” (claim 29)	computing a badness factor for a flow	MFM 210 implemented on processors
“means for determining...a penalty to impose on the flow” (claim 31)	determining a penalty to impose on a flow	MFM 210 implemented on processors
“means for enforcing...[a/the] penalty on the flow” (claim 32)	enforcing a penalty on the flow	MFM 210 implemented on processors
“means for determining an increased drop rate to impose on one or more information packets belonging to the flow” (claim 37)	determining an increased drop rate to impose on one or more information packets belonging to a flow	MFM 210 implemented on processors
“means for imposing [an/the] increased drop rate on the flow” (claim 38)	imposing an increased drop rate on a flow	MFM 210 implemented on processors
“means for receiving a particular information packet belonging to the flow” (claims 43 and 44)	receiving a particular information packet belonging to a flow	MFM 210 implemented on processors
“means for determining whether to forward the particular information packet to a destination” (claim 43)	determining whether to forward a particular information packet to a destination	MFM 210 implemented on processors
“means for updating [...] the set of behavioral statistics to reflect processing of the particular information packet” (claims 43 and 44)	updating the set of behavioral statistics to reflect processing of the particular information packet	MFM 210 implemented on processors

Id. at 17–18.

At trial, neither party disputes any of our preliminary claim constructions. *See* PO Resp.; Pet. Reply; *see also* Inst. Dec. 18 (instructing the parties to “directly address any claim construction adopted in [the Institution Decision] if the party contends we should not adopt that construction in the final written decision”). Accordingly, for the reasons explained above and in the Institution Decision, we adopt these undisputed constructions for purposes of this Decision.

2. “*a badness factor for the flow*”

Patent Owner contends that claims 9 and 29 both “recite computing a ‘badness factor’ for *each* flow.” PO Resp. 23. According to Patent Owner, these claims should be construed to include this requirement because the Specification only describes embodiments that compute a badness factor “for each flow regardless of whether the flow is misbehaving.” PO Resp. 23 (citing Ex. 1001, 6:25–31, 7:51–52, 8:12–17); *see also* PO Sur-reply 17–18 (arguing “there is not a single embodiment hinting that the badness factor is computed for only some flows”).

However, as we previously explained, Patent Owner’s argument is not commensurate with language of the claim:

In particular, claim 9 recites a method for processing *a flow* that includes computing a badness factor for *the flow*. Ex. 1001, 11:63–8. Patent Owner identifies (and we perceive) no limitation that requires a badness factor to be computed for *each flow*.

Inst. Dec. 44 (addressing substantially similar argument presented in preliminary response); *see also* Ex. 1001, 13:32–44 (claim 29). During trial, Patent Owner neither responds to this analysis nor points to a claim limitation that allegedly includes this requirement.

Instead, Patent Owner points to the Specification, but this also fails to support Patent Owner's contention. Although claims are read in view of the Specification (*Phillips*, 415 F.3d at 1315), they are not limited to the embodiments disclosed in it (*id.* at 1323). Patent Owner identifies (and we perceive) no passage in the Specification that could be read as redefining this claim phrase or disavowing part of its scope. *See Thorner v. Sony Computer Ent. Am. LLC*, 669 F.3d 1362, 1365, 1367 (Fed. Cir. 2012). In fact, the passages cited by Patent Owner are directed to the handling of a *single flow*, and none expressly indicates that an identical method must be used for each flow processed. *See* Ex. 1001, 6:25–31, 7:51–52, 8:12–17. Thus, we determine that the Specification does not justify importing the limitation proposed by Patent Owner into the claims.

Accordingly, having reviewed the intrinsic record, we disagree with Patent Owner's contention that claims 9 and 29 require computing a badness factor for each flow or all flows; rather, this claim limitation may be satisfied by computing a badness factor for a single flow.

3. *Other constructions*

The parties do not propose constructions for any other terms or phrases. *See* Pet. 11–14; PO Resp. Based on the record before us, we do not find it necessary to provide express claim constructions for any other terms or phrases. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (noting that “we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

D. Summary of Asserted Prior Art References

1. Yung (Ex. 1005)

Yung is titled “Heuristic Behavior Pattern Matching of Data Flows in Enhanced Network Traffic Classification.” Ex. 1005.

Yung classifies data flows by comparing them to “known application behavior patterns.” Ex. 1005, Abstract. According to Yung, its technique allows for classification of encrypted, compressed, or proprietary network traffic. *Id.* at 5:43–6:1; *see id.* at 4:43–60 (noting that peer-to-peer applications employ encryption and compression to obscure identification). For each flow, Yung stores a data block object (also called a flow object) that includes “various attributes of the flow,” such as “packet count, byte count, first packet time, last packet time, etc.” *Id.* at 8:5–11, 17:42–52, 25:8–11. Yung uses the data block object to classify the data flow. *E.g., id.* at 24:13–18, 24:27–51. Yung may also enforce bandwidth utilization controls on the flow, such as a discard policy that causes packets to be dropped. *E.g., id.* at 19:53–58, 20:13–15, 24:63–25:1.

Figure 3 (reproduced below) is a block diagram of an exemplary bandwidth management device 130 that implements Yung’s techniques. Ex. 1005, 6:21–23, 16:8–10.

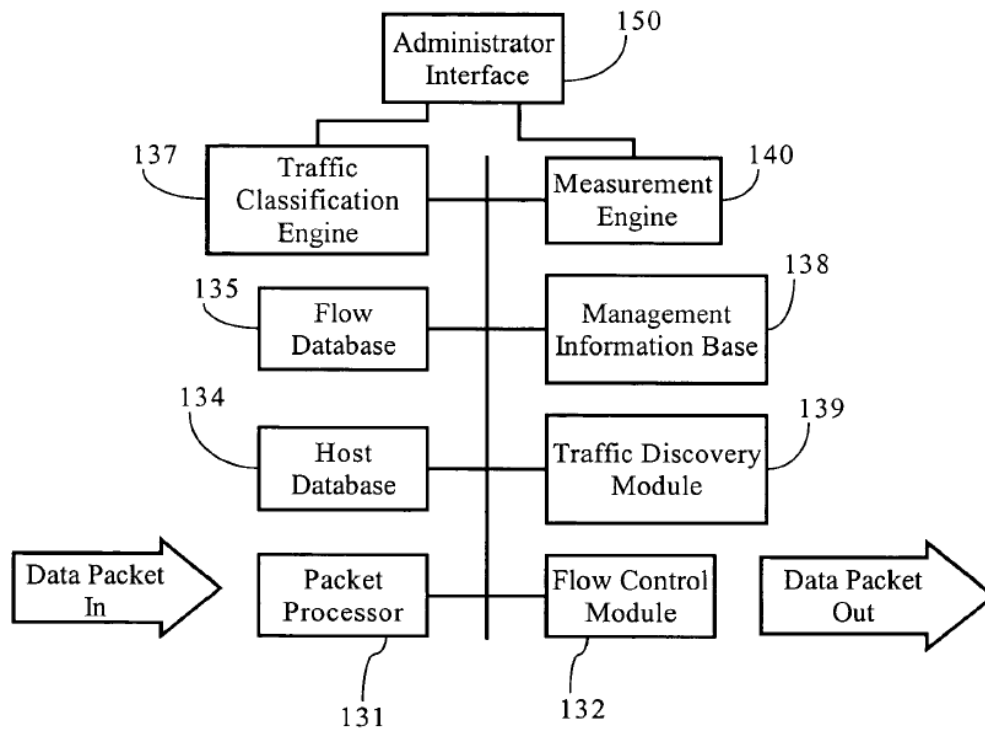


Fig. 3

Figure 3 (above) shows bandwidth management device 130 that includes packet processor 131, flow control module 132, and traffic classification engine 137. Yung explains that packet processor 131 detects new data flows and “construct[s] data structures including attributes characterizing the data flow.” *Id.* at 16:15–17, 17:42–49. Flow control module 132 “enforce[s] bandwidth utilization controls on data flows traversing bandwidth management device 130.” *Id.* at 16:17–19. Traffic classification engine 137 “analyze[s] data flow attributes and identif[ies] traffic classes corresponding to the data flows.” *Id.* at 16:20–22.

Figure 7 (reproduced below) includes a flow chart of an exemplary method of bandwidth management device 130. Ex. 1005, 23:16–20.

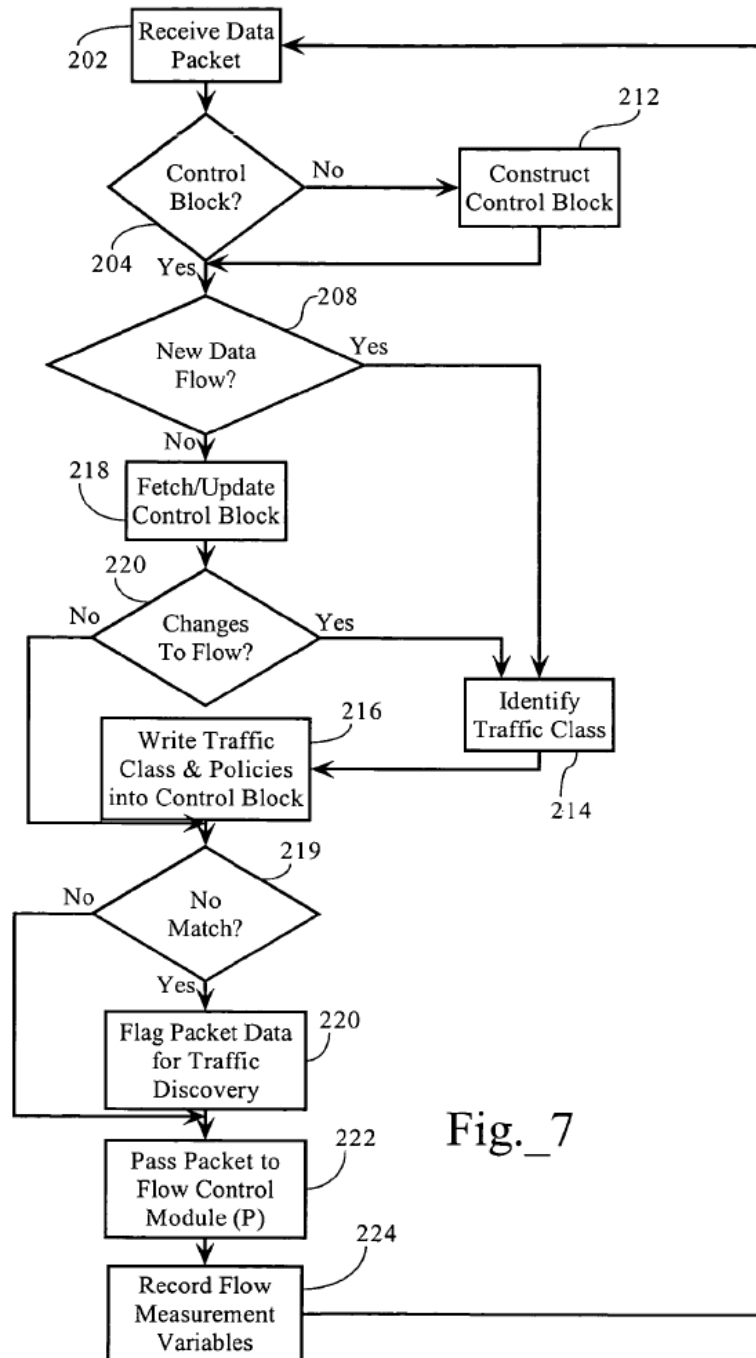


Fig. 7

As shown above, in Figure 7, packet processor 131 receives a data packet (step 202), determines whether a control block object already exists corresponding to the data flow (step 204), and if not, constructs a control block object for the flow (step 212). *Id.* at 23:23–30, Fig. 7. A traffic class may be identified (step 214), and ultimately, the packet is passed to flow

control module, which enforces appropriate bandwidth utilization controls on the data packet (step 222). *Id.* at 24:13–18, 24:63–25:1, Fig. 7. Finally, “packet processor 131 also records or updates various measurement values in the control block object that characterize the flow (e.g., last packet time, packet count, byte count, etc.)” (step 224). *Id.* at 25:8–11, Fig. 7.

2. *Copeland (Ex. 1007)*

Copeland describes a “system for detecting intrusions in computer communication networks” by collecting and analyzing statistics for flows traversing the network. Ex. 1007, Abstract, 3:18–35. If a flow appears suspicious, Copeland assigns a “concern index value” to the flow. *Id.* at Abstr., 3:32–35.

In particular, Copeland collects “information about and statistics associated with each flow” and stores this data in a flow data structure corresponding to that flow. Ex. 1007, 7:38–45, 16:12–30. The flow data structure includes, for example, the number of bytes, the number of packets, and time information (such as the time of the first packet and time of the last packet). *Id.* at 7:49–54, 16:37. Copeland analyzes the data to determine if the flow appears to be legitimate traffic or possible suspicious activity. *Id.* at 7:55–57. If a flow appears suspicious, Copeland assigns a concern index (CI) value that “[has] been derived heuristically from extensive network traffic analysis.” *Id.* at 7:57–62. In Figure 6, Copeland provides a table with an exemplary set of concern index values for various events. *Id.* at 7:64–67, 18:19–20. Petitioner annotates this table to show that Copeland describes using the number of packets as a concern index value. Pet. 51. Petitioner’s annotation is reproduced below.

TABLE I

NAME	POTENTIAL INTRUDER	RESPONSE	CI VALUE
POTENTIAL TCP PROBE	TCP PACKETS	RESET PACKETS	NUMBER OF PACKETS
POTENTIAL UDP PROBE	UDP PACKET	ICMP PORT UNAVAILABLE PACKETS	NUMBER OF ICMP PORT UNAVAILABLE PACKETS
HALF-OPEN ATTACK	HIGH NUMBER AND RATE OF SYNS	SYN-ACKS	5000+501 PER SYN-ACK
TCP STEALTH PORT SCAN	MULTIPLE PACKETS FROM SAME SOURCE PORT TO DIFFERENT DESTINATION PORTS	RESETS	8000+1010 PER PORT OVER 4
UDP STEALTH PORT SCAN	MULTIPLE PACKETS FROM SAME SOURCE PORT TO DIFFERENT DESTINATION PORTS	NOTHING OR ICMP PORT UNAVAILABLE	8000+1010 PER PORT OVER 4

FLOW-BASED CI VALUES

Copeland’s Figure 6 illustrates concern index values for client/server flows. Ex. 1007, 4:8–9. As shown above, Petitioner annotates the first row of the table in Figure 6: in the “NAME” column, Petitioner places a red box around the first entry, which states “POTENTIAL TCP PROBE,” and Petitioner places a green box in the same row of the “CI VALUE” column, where the entry states “NUMBER OF PACKETS.”

3. Four-Steps Whitepaper (Ex. 1006)

The Four-Steps Whitepaper is a technical product overview for the PacketShaper® product line from Packeteer, Inc. Ex. 1006, 1. This document describes a bandwidth-management strategy that: (1) classifies network traffic; (2) analyzes traffic; (3) controls traffic; and (4) reports results. *Id.* at 2. In the second step, PacketShaper collects measurements regarding traffic flows, including “[t]hroughput in units of bytes, packets, transactions, connections,” “[c]ounts and percentages of retransmitted, received, tossed, dropped, and good TCP packets,” and “[c]ounts and percentages of TCP connections that were denied by a policy.” *Id.* at 18.

E. Obviousness Ground Based on Yung and Copeland

Petitioner contends that the subject matter of claims 9–13, 19–24, 29–33, and 39–44 would have been obvious over the combination of Yung and Copeland. Pet. 43–61.

Patent Owner argues that Petitioner fails to show a “badness factor” for each flow, which Patent Owner contends is required by the independent claims (PO Resp. 16–24), and fails to articulate a sufficient rationale to combine Yung and Copeland (*id.* at 24–28).¹³

1. Independent claim 9

“A machine implemented method for processing a flow, the flow comprising a series of information packets, the method comprising”

Petitioner contends that Yung discloses the preamble of claim 9. Pet. 48 (citing *id.* at 19–21 (discussing preamble of claim 1)). In particular, Petitioner points to Figure 7 of Yung, which depicts a “method directed to enforcing bandwidth utilization controls on data flows.” *Id.* at 19 (quoting Ex. 1005, 6:35–36). Petitioner contends that this method processes a flow, such as TCP/IP network data traffic, which is composed of a plurality of packets. *Id.* at 19–20 (citing Ex. 1005, 2:58–61, 8:3–5, 11:60–62, 12:30–35, 24:13–18, 24:63–25:1, Fig. 7; Ex. 1003 ¶ 120). Petitioner further contends

¹³ Patent Owner has forfeited any arguments for patentability not raised in Patent Owner Response (Paper 30), even if the argument was raised in the Preliminary Response (Paper 8). Paper 17 (Scheduling Order), 8 (cautioning Patent Owner that “any arguments not raised in the response may be deemed waived”); *see also In re NuVasive, Inc.*, 842 F.3d 1376, 1379–82 (Fed. Cir. 2016) (holding patent owner waived an argument addressed in the preliminary response by not raising it in the patent owner response).

that the method is implemented by a machine (e.g., a bandwidth management device or a gateway). *Id.* at 21 (citing Ex. 1005, 6:8–11, 7:12–18, 15:44–47, Fig. 2).

Patent Owner does not dispute these contentions. *See* PO Resp.

We are persuaded that Yung discloses the preamble of this claim.¹⁴ Yung describes a method for processing a flow that includes a series of data packets. *E.g.*, Ex. 1005, Abstr., 12:30–35, 24:13–18, Fig. 7; *see also id.* at 2:58–61.

“maintaining a set of behavioral statistics for the flow, wherein the set of behavioral statistics is updated based on each information packet belonging to the flow, as each information packet belonging to the flow is processed, regardless of the presence or absence of congestion”

Petitioner contends that Yung discloses this limitation. Pet. 48 (citing *id.* at 21–30 (discussing limitations in claim 1); Ex. 1003 ¶ 207). In particular, Petitioner asserts that “Yung tracks ‘various measurement values in [a] control block object that characterize the flow (e.g., last packet time, packet count, byte count, etc.),’” and Petitioner maps these values to the claimed “behavioral statistics for the flow.” *Id.* at 25–26 (quoting Ex. 1005, 25:8–11; citing *id.* at 8:5–11, 9:5–8, 11:36–38, 12:4–6, 17:42–49, 25:8–11). Petitioner also asserts that Yung’s packet processor 131 receives a data packet, passes it to the flow control module, and then updates the control block object’s measurement values. *Id.* at 28–29 (quoting Ex. 1005, 25:8–11; citing *id.* at 25:11–15, Fig. 7 (steps 202, 222, 224)); *see id.* at 21–23

¹⁴ Because Petitioner has shown that the recitations in the preamble are satisfied by Yung, we need not determine whether the preamble is limiting. *See Nidec Motor*, 868 F.3d at 1017.

(addressing creation of the control block object). Petitioner further asserts that Yung updates statistics for “each packet” because Yung provides aggregate statistics for the flow, such as total byte count and total packet count. *Id.* at 29 (citing Ex. 1003 ¶¶ 151–152; Ex. 1005, 25:11–15).

Moreover, according to Petitioner, Yung continuously tracks these statistics, regardless of the presence or absence of congestion, and in any event, it would have been obvious to do so to allow for traffic classification in all situations. *Id.* at 27 (citing Ex. 1005, Abstr., 9:21–25, 25:11–15, Fig. 7; Ex. 1003 ¶¶ 147–148); *see also id.* at 30.

Patent Owner does not dispute these contentions. *See* PO Resp.

We are persuaded that Yung discloses this limitation. Yung’s packet processor 131 receives a data packet, identifies (or constructs) a corresponding control block object, and passes the packet to a rate control module that enforces bandwidth utilization controls on the data packet flow. Ex. 1005, 23:23–30, 24:11–13, 24:63–25:1, Fig. 7. Packet processor 131 then “records or updates various measurement values in the control block object that characterize the flow (e.g., last packet time, packet count, byte count, etc.).” *Id.* at 25:8–11, Fig. 7 (step 224). We are persuaded that an ordinary artisan would have understood Yung to update these values for “each” packet “regardless of the presence or absence of congestion,” as required by the claim. *See* Ex. 1003 ¶¶ 147–148, 151–153; *see also id.* ¶ 207. In particular, Dr. Jeffay testifies that “Yung would not be able to leverage/provide the aggregate statistics (e.g., total byte count, total packet count) if the statistics were not updated as each packet belonging to said flow is processed” or were stored “only when congestion arises.” *Id.* ¶¶ 148,

151 (emphasis omitted). We credit Dr. Jeffay’s testimony on this point because he provides a logical explanation that is supported by the reference.

“computing, based at least partially upon the set of behavioral statistics, a badness factor for the flow, wherein the badness factor provides an indication of whether the flow is exhibiting undesirable behavior”

Petitioner contends that Copeland discloses this limitation. Pet. 49–51. Specifically, Petitioner points to Copeland’s “concern index” (CI)—a value assigned to a flow that appears to be suspicious—as the claimed “badness factor.” *Id.* at 49 (citing Ex. 1007, 3:31–35, 18:15–19, 26:22–27). Petitioner asserts that “Copeland’s CI value indicates whether the flow exhibits ‘suspicious activity,’” which is undesirable behavior. *Id.* at 49–50 (quoting Ex. 1007, 7:55–61; citing *id.* at 18:4–13; Ex. 1003 ¶ 212). Petitioner further asserts that Copeland computes the CI value based on statistics associated with a flow, noting that the CI value may be set to the number of packets, for example, as shown by the first row of Table I in Figure 6. *Id.* at 50 (citing Ex. 1007, 7:40–42, 10:45–47, Figs. 1, 6; Ex. 1003 ¶ 213).

Patent Owner presents several arguments regarding this limitation. *See* PO Resp. 16–24. First, Patent Owner argues that Petitioner fails to show the claimed “badness factor.” *Id.* at 16–20. Patent Owner asserts that Petitioner’s evidence on this point is insufficient and that Dr. Jeffay’s testimony is entitled to no weight because he fails to substantiate his opinion. *Id.* at 17, 19–20 (citing Ex. 1003 ¶ 210; Ex. 2007, 35:17–36:15). In addition, Patent Owner asserts that Petitioner’s showing is deficient because, in a parallel district court proceeding, Petitioner contends that the term “badness factor” is indefinite and “Petitioner cannot maintain that a

claim is both indefinite and rendered obvious.” *Id.* at 18 (citing Ex. 2009, 28–32; *Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1332 (Fed. Cir. 2010)).

Patent Owner also argues that Copeland fails to disclose the claimed “badness factor.” PO Resp. 20–22. Patent Owner argues that “Copeland’s concern index is for ‘suspicious activity’ [indicative of an intruder] in contrast to legitimate traffic,” where the claimed “‘badness factor’ is concerned with ‘undesirable’ behavior or ‘misbehavior’ associated with P2P traffic, which . . . is **not** necessarily suspicious or non-suspicious.” *Id.* at 20–21 (citing Ex. 1001, 1:10–18, 2:18–21; Ex. 1007, Abstr., 1:45–48). Further, Patent Owner asserts that “Copeland’s ‘concern index’ is concerned with suspicious behavior of a host, not undesirable behavior of a flow,” which “is a different criterion than badness.” *Id.* at 21–22.

In addition, Patent Owner contends that Copeland only assigns a concern index to suspicious flows, but claim 9 “recite[s] computing a ‘badness factor’ for **each** flow.” PO Resp. 22–23 (citing Ex. 1007, 7:57–61, 8:1–5, 10:46–7, 14:49–55, 17:58–61, Fig. 6).

Having considered the parties’ arguments and evidence, we are persuaded that Copeland discloses this limitation. Copeland analyzes a flow’s statistics (including start time, end time, number of bytes, and number of packets) “to determine if the flow appears to be legitimate traffic or possible suspicious activity” and computes a concern index for the flow if it appears suspicious. *E.g.*, Ex. 1007, 3:31–35, 7:38–67, 16:36–17:5. We find that Copeland’s concern index qualifies as a “badness factor for the flow . . . [that] provides an indication of whether the flow is exhibiting undesirable behavior,” as required by claim 9. *E.g.*, Ex. 1007, 3:31–40, 4:30–33, Fig. 1

(identifying “‘bad’ flow(s)”). As Dr. Jeffay explains, an ordinary artisan would have understood that suspicious activity (such as a probe or network attack) is undesirable behavior. Ex. 1003 ¶¶ 211–212. We also find that Copeland teaches computing a concern index “based at least partially upon the set of behavioral statistics” because, for example, it uses the number of packets to compute the concern index. Ex. 1007, 7:64–67, Fig. 6 (setting concern index to number of packets); *see also* Ex. 1003 ¶ 213.

We disagree with Patent Owner’s arguments that Petitioner fails to make a sufficient showing for the claimed “badness factor.” *See* PO Resp. 16–20. Patent Owner challenges the sufficiency of one conclusion sentence from Dr. Jeffay’s testimony (*see* PO Resp. 17, 19–20), but we credit Dr. Jeffay’s testimony (including that conclusion) because the surrounding sentences provide a detailed and logical explanation that is consistent with the cited reference. *See* Ex. 1003 ¶¶ 208–214; *see also* Pet. Reply 2–3.¹⁵ Also, Petitioner’s indefiniteness argument from another proceeding does not undermine Petitioner’s showing here. *See* PO Resp. 18–19; Pet. Reply 4–7. In this proceeding, Petitioner contends that Copeland discloses the claimed “badness factor” (*see* Pet. 49–51), and in district court litigation, Petitioner contends that this term is indefinite because its *scope* is not sufficiently clear (Ex. 2009, 28–29 (quoting *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1350 (Fed. Cir.

¹⁵ Moreover, even without Dr. Jeffay’s testimony, we would have found that Copeland’s concern index qualifies as a “badness factor” based on Copeland’s disclosure. *See, e.g.*, Ex. 1007, 3:31–40, 4:30–38, 7:38–67, 16:36–17:5, Fig. 1 (identifying “‘bad’ flow(s)”), Fig. 6 (concern index).

2005))). These positions are not in conflict,¹⁶ and Patent Owner’s reliance on *Enzo* is misplaced. *See Samsung Elecs. Am., Inc. v. Prisia Eng’g Corp.*, 948 F.3d 1342, 1355 n.5 (Fed. Cir. 2020) (distinguishing *Enzo* from a situation involving *IPXL*-type indefiniteness); *see also* Pet. Reply 5 n.5 (explaining that *Enzo* was based on prior indefiniteness standard). Moreover, we can (and do) evaluate Petitioner’s contentions in this proceeding because, whether or not the scope of the term “badness factor” is ambiguous, Copeland discloses it. *See Intel Corp. v. Qualcomm Inc.*, 21 F.4th 801, 813 (Fed. Cir. 2021) (“[I]t is not always impossible to adjudicate a prior-art challenge, one way or the other, just because some aspect of a claim renders the claim indefinite.”).

In addition, Patent Owner’s arguments that Copeland fails to teach the claimed “badness factor” (*see* PO Resp. 20–22) are unavailing. As we explained, the salient question “is whether Copeland’s concern index discloses the claimed ‘badness factor’—in other words, whether . . . Copeland’s suspicious activity is ‘undesirable’ behavior, not whether the claimed ‘undesirable’ behavior is suspicious.” Inst. Dec. 44. Patent Owner does not address this question, focusing instead on whether the claimed “badness factor” is “necessarily suspicious” (PO Resp. 20–21), but this argument is inapposite. In particular, even though we agree that the claimed “badness factor” is not “necessarily suspicious,” this does not help Patent Owner. At most, Patent Owner shows the scope of the claim is *broader* than

¹⁶ Similarly, Dr. Jeffay’s testimony that an ordinary artisan would not “understand what the bounds of the term mean” (Ex. 2007, 35:17–36:7 (*quoted by* PO Resp. 19)) does not conflict with his testimony that Copeland discloses this limitation.

Copeland’s disclosure because the claimed “badness factor” does not need to be associated with suspicious activity. But the issue is not whether the “badness factor” qualifies as a concern index, but instead whether the concern index qualifies as a “badness factor.” We find that it does. Copeland’s concern index provides an indication of whether a flow is exhibiting undesirable behavior (*cf.* PO Resp. 20–21 (“Copeland’s concern index is thus concerned with identifying malicious activity such as an external intruder.”)), and it does not matter that this undesirable behavior is also suspicious. Moreover, Patent Owner’s argument that “Copeland’s ‘concern index’ is concerned with suspicious behavior of a host” (PO Resp. 21–22) is also unavailing. While Copeland *also* associates a concern index with a host (*e.g.*, Ex. 1007, 7:18–21), Petitioner relies upon its disclosure of a concern index assigned to a flow (*e.g.*, *id.* at Abstr. (“A concern index value is *assigned to each flow* that appears suspicious.” (emphasis added))).

Finally, Patent Owner’s argument that Copeland only assigns the concern index to suspicious flows, not “*each* flow” (*see* PO Resp. 22–23; PO Sur-reply 17–20) is unavailing. As explained above (*see supra* § II.C.2), the claim includes no requirement that the “badness factor” be computed for each and every flow, and “a prior art product that sometimes, but not always, embodies a claimed method nonetheless teaches that aspect of the invention.” *Hewlett-Packard Co. v. Mustek Sys., Inc.*, 340 F.3d 1314, 1326 (Fed. Cir. 2003).

Rationale to Combine Yung and Copeland

Petitioner contends that a person of ordinary skill in the art would have been motivated to incorporate Copeland’s flow-based CI value into

Yung’s bandwidth management device. Pet. 45–48. Petitioner notes that Yung expressly contemplates incorporating “other factors” into its process, and Petitioner argues that an ordinary artisan “would have sought to classify traffic behaving suspiciously or disruptively.” *Id.* at 45 (citing Ex. 1005, 10:43–58, 11:59–60; Ex. 1003 ¶¶ 198–200). According to Petitioner, an ordinary artisan would have recognized that incorporating Copeland’s technique would enhance Yung’s ability to identify and control unauthorized traffic such as network attacks and probes, which were known concerns, while obviating the need for an administrator to understand the intricate nature of network attacks. *Id.* at 45–47 (citing Ex. 1005, 2:31–34, 4:43–47, 19:58–61; Ex. 1007, 8:33–44; Ex. 1003 ¶¶ 199–202); *see also id.* at 49 (asserting that “Copeland tracks behavioral statistics about network flows (e.g., start time, end time, number of bytes, and packet count)” (citing Ex. 1007, 16:45–60)). Petitioner also asserts that a person of ordinary skill in the art would have had a reasonable expectation of success in combining the references. *Id.* at 47–48 (citing Ex. 1003 ¶¶ 203–204; Ex. 1005, 7:5–1, Figs. 2–3; Ex. 1007, Figs. 1–2).

Patent Owner argues that Petitioner’s rationale to combine the references is insufficient. PO Resp. 24–28. Patent Owner contends that the Petition is premised on an erroneous assumption that Yung expressly motivates the combination by saying that it “can incorporate other factors.” *Id.* at 24–26 (quoting Ex. 1005, 11:59–60; citing Pet. 45–46; Ex. 1005, 10:43–58; Ex. 1003 ¶ 196; Ex. 1007, 3:45–54, Abstr.; Ex. 2007, 38:11–18). Patent Owner further contends that Copeland’s flow data structure fields are “obtained from packet headers, not flow-based behavioral statistics.” *Id.* at 26–27 (citing Ex. 1007, 16:45–60, 15:50–55; Ex. 2007, 40:19–41:10, 42:12–

43:3). Finally, Patent Owner contends that the Petition fails to address the fact that “Copeland and Yung are directed to two very different inventions.” *Id.* at 27–28 (citing Ex. 1007, 3:38–39, 3:45–47; Ex. 1005, 2:24–27).

Having considered the parties’ arguments and evidence, we are persuaded that a person of ordinary skill in the art would have been motivated to combine Copeland’s flow-based CI value into Yung’s bandwidth management device. *See* Pet. 45–48; *KSR*, 550 U.S. at 420 (“[A]ny need or problem known in the field of endeavor at the time of invention . . . can provide a reason for combining the elements in the manner claimed.”).

Yung seeks to limit the bandwidth used by “bandwidth-intensive applications, such as peer-to-peer applications . . . and/or other unauthorized applications” (Ex. 1005, 4:43–47; *see also id.* at 2:31–34), and to that end, Yung describes particular techniques or factors for classifying a flow, while noting that other factors can also be used (*id.* at 10:43–58, 11:59–60). Copeland seeks to prevent a type of unauthorized use—specifically, intruders—and it analyzes flows to determine if they have the characteristics of probes or attacks. Ex. 1007, 4:30–33. Both Yung and Copeland analyze traffic flows and track flow statistics, such as the number of bytes and the packet count. *See* Ex. 1005, 25:8–11; Ex. 1007, 8:33–44, 16:45–60.

Dr. Jeffay testifies that “[n]etwork attacks and intrusions were a recognized problem during the relevant time frame,” and a person of ordinary skill in the art would have been concerned by these attacks, including the flooding attacks addressed by Copeland. Ex. 1003 ¶¶ 199–200; *see also* Ex. 1007, 1:64–65. He further testifies that an ordinary artisan would have recognized that incorporating Copeland’s CI value would

enhance Yung’s device’s ability to identify and control certain types of traffic (Ex. 1003 ¶ 198), he testifies that the ordinary artisan would have recognized the combination’s benefits (*id.* ¶¶ 201–202), and he testifies that the ordinary artisan would have had a reasonable expectation of success (*id.* ¶ 203). In addition, Dr. Jeffay provides additional details regarding the specific alterations that would be required to combine the references, and he explains that these changes would be within the level of skill of a person of ordinary skill in the art. *Id.* ¶¶ 203–204. We credit Dr. Jeffay’s testimony because it is logical, detailed, and supported by cited evidence. In addition, we perceive no evidence contradicting his testimony on these points.

We disagree with Patent Owner’s argument that Petitioner’s rationale to combine Yung and Copeland is premised on an erroneous assumption that Yung expressly motivates the combination. *See* PO Resp. 24–25 (arguing that the “alleged motivation to combine Yung and Copeland stems (entirely) from Yung’s statement that its ‘application behavior pattern can incorporate other factors as well’”). Petitioner contends that an ordinary artisan would have been motivated to make the combination “based on Yung’s express disclosure” (Pet. 45; *see* Ex. 1003 ¶ 196), and Petitioner *also* contends that an ordinary artisan would have been motivated to combine Copeland with Yung to solve a known problem (Pet. 45–47; *see* Ex. 1003 ¶¶ 198–202). *See also* Pet. Reply 9–10. As explained above, we find the latter rationale persuasive.¹⁷ Also, contrary to Patent Owner’s assessment (*see* PO Resp. 25

¹⁷ Patent Owner chose not to address this rationale, despite our previous explanation of and reliance upon it. *See* Inst. Dec. 41–42 (summarizing rationale), 45–46 (explaining why it shows a reasonable likelihood of success). For clarification, we do not find that: Yung expressly suggests the combination, or Yung’s reference to “other factors” alone would have

& n.6), Dr. Jeffay’s deposition testimony confirms our understanding of Petitioner’s contentions. *See* Ex. 2007, 38:11–18 (agreeing with Patent Owner’s summary of paragraph 196 and clarifying that “the full picture of the motivation to combine is developed over the following several pages” of the declaration).

Moreover, Patent Owner’s contentions that Copeland collects data from packet headers (*see* PO Resp. 25–27) are unavailing. In particular, we disagree with Patent Owner’s assumption that “behavioral statistics” cannot be based on information obtained from packet headers. *See id.* Patent Owner does not propose a construction for the term “behavioral statistics” that would prohibit using any information from a packet header, and we discern no support for such a construction. *Cf.* Ex. 1001, 5:15–21 (using packet’s header to identify corresponding flow), 6:10–24 (imposing no such requirement on the behavioral statistics), 10:33–34 (different claim requiring “payload-content-agnostic behavioral statistics”). Indeed, as we previously explained (*see* Inst. Dec. 46), Copeland’s statistics include the number of bytes and packets for a flow, and the ’593 patent states that these are behavioral statistics. Ex. 1007, 3:18–35, 16:56–57; Ex. 1001, 7:18–29, Fig. 4; *see also* Ex. 2007, 42:12–20 (testifying that an ordinary artisan “would understand that Copeland is using behavioral statistics”).¹⁸ As a

motivated an ordinary artisan. *See* Pet. 45. Instead, we find that an ordinary artisan would have been motivated to add Copeland to Yung to solve a known problem. *See id.* at 45–47.

¹⁸ We disagree with Patent Owner’s allegation that Dr. Jeffay “retreated from [his] initial position” during his deposition (PO Resp. 27); instead, Dr. Jeffay provided additional testimony regarding an ordinary artisan’s understanding of Copeland (*see* Ex. 2007, 42:21–43:8). However, we do not rely on the additional testimony because it advances a contention different

result, we find that Copeland’s statistics (such as the number of bytes and packets for a flow) qualify as “behavioral statistics.”

In addition, Patent Owner’s argument that “Copeland’s concern index (CI) value is not a behavioral attribute” (PO Resp. 25–26; PO Sur-reply 21) is misplaced because Petitioner maps Copeland’s concern index to the claimed “badness factor,” not to the “behavioral statistics” required by the claim (*see* Pet. 49–51).

Finally, Patent Owner’s argument that Copeland and Yung are directed to different inventions (*see* PO Resp. 26–28) is unavailing.¹⁹ Although Yung and Copeland identify different goals, this difference does not undercut Petitioner’s rationale to combine these references. Indeed, these references are not limited to their invention, but are prior art for all they disclose. *See KSR*, 550 U.S. at 420–21 (explaining that an ordinary artisan would not ignore a reference simply because its “primary purpose” was different); *In re Kahn*, 441 F.3d 977, 990 (Fed. Cir. 2006) (“[T]he teaching of [a reference] is not limited to the specific invention disclosed.”).

Conclusion

As explained above, Petitioner has shown that each limitation of independent claim 9 is disclosed by either Yung or Copeland. In addition,

than the Petition. *Compare* Pet. 50 (contending Copeland discloses use of behavioral statistics), *with* Ex. 2007, 42:21–43:8 (contending “there’s nothing in Copeland to prevent you from using behavioral statistics”).

¹⁹ In the Institution Decision, we responded to an identical argument by stating that “Patent Owner does not sufficiently explain why the differences it identifies are relevant to Petitioner’s proposed combination.” Inst. Dec. 47 (citing Prelim. Resp. 42); *compare* PO Resp. 27–28, *with* Prelim. Resp. 42. Patent Owner did not provide any additional explanation in its Response.

Petitioner has shown that a person of ordinary skill in the art would have been motivated to combine Yung and Copeland, as proposed.

Accordingly, we conclude that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 9 would have been obvious over Yung and Copeland.

2. Independent claim 29

Independent claim 29 includes means-plus-function limitations that recite functions commensurate with the limitations of independent claim 9. *Compare* Ex. 1001, 13:32–44 (claim 29), *with id.* at 11:63–12:8 (claim 9).

Petitioner contends that the subject matter of independent claim 29 would have been obvious over Yung and Copeland, and in support, Petitioner relies largely on its prior analysis for claim 9. *See* Pet. 51–52. Petitioner further contends that Yung’s traffic monitoring module 75 performs the recited functions. *Id.* at 52 (citing Ex. 1005, 6:58–66).

Patent Owner responds with the same arguments discussed above for claim 9 (*see supra* § II.E.1); however, these arguments are unavailing for the reasons explained above.

Having considered the record, we are persuaded by Petitioner’s undisputed arguments that Yung discloses the preamble²⁰ of claim 29 and the claimed “means for maintaining a set of behavioral statistics for the flow,” for the reasons explained above. *See supra* § II.E.1 (discussing claim 9); Ex. 1005, 6:58–66. We are also persuaded that the combination of Yung

²⁰ Because Petitioner has shown that the recitations in the preamble are satisfied by Yung, we need not determine whether the preamble is limiting. *See Nidec Motor*, 868 F.3d at 1017.

and Copeland discloses the claimed “means for computing . . . a badness factor for the flow,” and a person of ordinary skill in the art would have been motivated to combine these references as Petitioner proposes. *See supra* § II.E.1.

Accordingly, we conclude that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 29 would have been obvious over Yung and Copeland.

3. Dependent claims 10–13, 19–24, 30–33, and 39–44

Claims 10–13 and 19–24 depend from independent claim 9. Ex. 1001, 12:9–19, 12:29–13:4. Claims 30–33 and 39–44 depend from independent claim 29. *Id.* at 13:45–55, 14:9–52.

Petitioner contends that the subject matter of these claims would have been obvious over the Yung-Copeland combination. Pet. 53–61. Patent Owner does not dispute these contentions.²¹ *See* PO Resp. Having considered the record, we are persuaded that Petitioner has shown that each additionally-recited limitation of claims 10–13, 19–24, 30–33, and 39–44 is taught or suggested by the Yung-Copeland combination. Moreover, for the reasons explained above, we are persuaded that an ordinary artisan would have been motivated to combine these references as proposed. *See supra* § II.E.1.

²¹ Patent Owner has forfeited any arguments directed specifically to these claims. *See* Paper 17, 8 (“Patent Owner is cautioned that any arguments not raised in the response may be deemed waived.”); *see also In re NuVasive*, 842 F.3d at 1381.

As for claims 10 and 30, we are persuaded by Petitioner's undisputed arguments (*see* Pet. 53) that Copeland's concern index indicates a degree to which the flow is behaving undesirably. *E.g.*, Ex. 1007, 21:50–60, Fig. 6.

As for claims 11–12 and 31–32, we are persuaded by Petitioner's undisputed arguments. *See* Pet. 53–54 (citing *id.* at 33–34 (addressing claim 1)). Yung describes using bandwidth utilization controls to control a flow (and penalize it) (*e.g.*, Ex. 1005, 16:2–7, 19:52–20:18; Ex. 1003 ¶ 168), and Copeland determines whether to drop packets based on the concern index associated with a flow (and other flows associated with the same host) (*e.g.*, Ex. 1007, 19:15–30; Ex. 1003 ¶¶ 221–222).

As for claims 13 and 33, we are persuaded by Petitioner's undisputed arguments (*see* Pet. 54–55 (citing *id.* at 41 (addressing claim 6))) that dropping a flow's packets would cause the flow's concern index to drop, thereby causing the badness factor to improve (*see* Ex. 1003 ¶¶ 225–226).

As for claims 19–22 and 39–42, we are persuaded by Petitioner's undisputed arguments. *See* Pet. 55–58. Yung's control block object stores a byte count, first packet time, and last packet time for the flow (*e.g.*, Ex. 1005, 8:9–12; *see also* Ex. 1003 ¶¶ 227–228), and it would have been obvious to calculate the rate of information transfer from the flow, given Yung's description of rate policies, and average packet sizes, to reduce false identification of outliers in Yung's heuristic analysis (Ex. 1005, 7:60–65, 14:62–66, 18:56–60, 19:53–61, 19:64–66; Ex. 1003 ¶¶ 229–234).

As for claims 23–24 and 43–44, we are persuaded by Petitioner's undisputed arguments. *See* Pet. 58–61. Yung's packet processor 131 receives a data packet, passes the packet to flow control module 132 (which enforces bandwidth utilization controls, such as rate and discard policies,

allowing it to determine whether to forward or drop the packet), and then in response to that determination, updates the appropriate values in the control block object associated with the flow. Ex. 1005, 20:10–15, 23:23–26, 24:63–25:1, 25:8–11, Figs. 2, 7; *see also* Ex. 1003 ¶¶ 237–238, 241.

Accordingly, we conclude that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claims 10–13, 19–24, 30–33, and 39–44 would have been obvious over Yung and Copeland.

F. Obviousness Ground Based on Yung Alone

Petitioner contends that the subject matter of claims 17, 18, 37, and 38 would have been obvious over Yung alone. Pet. 1, 42–43. Patent Owner contends that Petitioner fails to show that these claims would have been obvious over Yung. PO Resp. 12–14.

We agree with Patent Owner. *Accord* Inst. Dec. 38–39. Claims 17 and 18 depend (indirectly) from independent claim 9, and claims 37 and 38 depend (indirectly) from independent claim 29. Ex. 1001, 12:9–16, 12:29–39, 13:45–52, 14:9–20. Thus, each of these dependent claims includes the requirements of the respective independent claim, including the limitation requiring “computing . . . a badness factor for the flow.” *Id.* at 12:5–6, 13:41–42. Petitioner fails to show that Yung teaches or suggests this limitation. *See* Pet. 42–43, 49–51. Consequently, Petitioner fails to demonstrate, by a preponderance of the evidence, that Yung alone renders obvious the subject matter recited in dependent claims 17, 18, 37, or 38.

But, given the nature of the Petition’s defect regarding these claims, the Institution Decision “question[ed] whether [the Board] should consider the Petition to include a contention that the subject matter of claims 17, 18, 37, and 38 would have been obvious over the combination of Yung and

Copeland.” Inst. Dec. 38–39. At trial, Patent Owner argues that the Board cannot and should not consider the Petition to include such a contention (PO Resp. 13–16; PO Sur-reply 3–15), and Petitioner argues the opposite (Pet. Reply 26–29).

Having considered these arguments, we decline to read the Petition to include a contention that claims 17, 18, 37, and 38 would have been obvious in light of Yung and Copeland.²²

The Petition consistently contends that claims 17, 18, 37, and 38 would have been obvious in light of Yung alone. The summary table includes these claims in the Yung-only ground (Pet. 1); the organizational structure includes these claims in that ground (*id.* at ii–iii); and the substantive discussion of the claims refers to Yung and to other claims included in the Yung-only ground (*id.* at 42–43 (citing *id.* at 41–42)). Petitioner fails to identify (and we do not perceive) *any* portion of the Petition that can be read as affirmatively stating that these claims would

²² We determine whether the Petition raised this contention because it is the Petition, not our discretion, that guides the proceeding. *E.g.*, *Sirona Dental Sys. GmbH v. Institut Straumann AG*, 892 F.3d 1349, 1356 (Fed. Cir. 2018) (“It would . . . not be proper for the Board to deviate from the grounds in the petition and raise its own obviousness theory”); *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (The “petitioner’s contentions . . . define the scope of the litigation all the way from institution through to conclusion.” (quoting *SAS Institute, Inc. v. Iancu*, 138 S.Ct. 1348, 1357 (2018))); *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016) (“[T]he Board must base its decision on arguments that were advanced by a party, and to which the opposing party was given a chance to respond.”). Although we can use “common sense and logic to understand the contentions presented in a petition despite typographical errors” (Pet. Reply 28; *see also* PO Sur-reply 13), we cannot add contentions to a petition.

have been obvious in light of Yung and Copeland. *See* Pet.; Pet. Reply 26–29. Consequently, we do not agree with Petitioner’s contention that the omission of Copeland was a “typographical error.” Pet. Reply 26–27. The problem is not an isolated typographical error (or two), but rather one that pervades the Petition.

Also, we are not persuaded by Petitioner’s argument that the Petition “includes every argument necessary to show that claims 17, 18, 37, and 38 are obvious over the combination of Yung and Copeland.” Pet. Reply 28. Although the Petition alleges all of the *facts* that would be necessary for such a contention, it does not allege the necessary conclusion. Ultimately, the Petition never expressly contends that these claims would have been obvious in light of the combination of Yung and Copeland, so we decline to interpret the Petition as including such a contention.²³

Two Federal Circuit decisions are instructive. In *Koninklijke Philips N.V. v. Google LLC*, 948 F.3d 1330 (Fed. Cir. 2020), the petition included two contentions: (1) the claims were anticipated by a reference (SMIL 1.0), and (2) the claims would have been obvious over SMIL 1.0 “in light of the *general knowledge* of the [skilled artisan].” *Id.* at 1333–34 (alteration in original). To support the second contention, the petition pointed to an expert declaration and a second reference (Hua) to show that a claimed element was well-known in the art and that a skilled artisan would have been motivated to combine that element with SMIL 1.0. *Id.* at 1334. The Board instituted review on the petition’s two grounds and, “for clarity,” also

²³ Although Petitioner notified Patent Owner of its position shortly after the Institution Decision (*see* Pet. Reply 27 (citing Ex. 1102)), that notification is not probative of the contents of the Petition (*see* PO Resp. 16 n.5).

instituted on the ground that the claims “would have been obvious over SMIL 1.0 and Hua based on the arguments and evidence presented in the [p]etition.” *Id.* The Federal Circuit held that this was error because petitioner “did not advance [a combination of SMIL 1.0 and Hua] in its petition.” *Id.* at 1336. “Although the Board is not limited by the exact language of the petition, the Board does not ‘enjoy[] a license to depart from the petition and institute a *different* inter partes review of his own design.’” *Id.* (second alteration in original) (citing *Sirona Dental Sys. GmbH v. Institut Straumann AG*, 892 F.3d 1349, 1356 (Fed. Cir. 2018); *SAS Inst. Inc. v. Iancu*, 138 S.Ct. 1348, 1356 (2018)).

Also, the Federal Circuit’s recent non-precedential decision in *Apple Inc. v. MPH Technologies Oy* is directly on point. 2022 WL 4103286 (Fed. Cir. Sept. 8, 2022) (non-prec). In that proceeding, the petition contended that claim 5 of U.S. Patent No. 7,937,581 would have been obvious over three references (Ishiyama, Murakawa, and Ahonen), but the petition contended that some of claim 5’s dependent claims (claims 6 and 7) would have been obvious over only two of those references (Ishiyama and Murakawa). *Id.* at *3. The Board agreed with petitioner that claim 5 would have been obvious over the three-reference combination, but concluded that petitioner failed to meet its burden on claims 6 and 7 because Ahonen was not included in the ground challenging those claims. *Id.* Citing *Koninklijke Philips*, the Federal Circuit held that the Board “properly declined to consider Ahonen” in its evaluation of claims 6 and 7, explaining that “[t]he Board did not err by declining to consider arguments that [the petitioner] did not make.” *Id.* at *7.

The instant proceeding includes the same factual scenario. The Petition alleges that independent claims 9 and 29 would have been obvious over two references (Yung and Copeland), but the Petition contends that some of their dependent claims (claims 17, 18, 37, and 38) would have been obvious over only one of those references (Yung). We decline to evaluate a combination of references that was not advanced in the Petition, and so we decline to consider whether claims 17, 18, 37, and 38 would have been obvious over Yung and Copeland.²⁴

Accordingly, we determine that Petitioner has not shown, by a preponderance of the evidence, that the subject matter of claims 17, 18, 37, or 38 would have been obvious over Yung.

G. Obviousness Ground Based on Yung and Four-Steps Whitepaper

Petitioner contends that the subject matter of independent claim 3 would have been obvious over Yung and the Four-Steps Whitepaper. Pet. 61–68. Patent Owner responds that Petitioner fails to show that the Four-Steps Whitepaper qualifies as prior art. PO Resp. 28–45.

1. Prior Art Status of the Four-Steps Whitepaper

The Four-Steps Whitepaper is dated September 2002. Ex. 1006, 1. Petitioner contends that the Four-Steps Whitepaper was on Packeteer’s website before the filing of the ’593 patent, and in support, Petitioner introduces testimony that the document was archived by the Wayback

²⁴ Petitioner’s request for leave to file a motion to correct the Petition (*see* Pet. Reply 29 n.16) is denied because Petitioner cannot add a contention to the Petition during a trial.

Machine on March 17, 2003. Pet. 15–16 (citing Ex. 1006, i–ii).²⁵ Patent Owner does not allege any deficiency in this aspect of Petitioner’s showing. *See* PO Resp. 28–45. Having considered the evidence, we are persuaded that the Four-Steps Whitepaper (Exhibit 1006) was available on Packeteer’s website at least as of March 17, 2003, which is more than a year before the filing of the ’593 patent. *Accord* Inst. Dec. 49 (same finding).

In the Institution Decision, we questioned whether Petitioner had shown that the Four-Steps Whitepaper was “publicly accessible,” as also required. Inst. Dec. 49–52; *see In re Lister*, 583 F.3d 1307, 1311 (Fed. Cir. 2009) (“In order to qualify as a printed publication within the meaning of § 102, a reference must have been sufficiently accessible to the public interested in the art.” (quotations omitted)); *see also Samsung Elecs. Co. v. Infobridge Pte. Ltd.*, 929 F.3d 1363, 1369 (Fed. Cir. 2019) (“A reference is considered publicly accessible if ‘persons interested and ordinarily skilled in the subject matter or art, exercising reasonable diligence, can locate it.’” (quoting *Acceleration Bay, LLC v. Activision Blizzard Inc.*, 908 F.3d 765, 772 (Fed. Cir. 2018))). We informed the parties that we would determine

²⁵ We authorized Petitioner’s to submit a replacement for Exhibit 1006 that included a declaration from Christopher Butler in place of the original declaration, which was provided by Elizabeth Rosenberg. *See* Paper 23 (Order). Although Patent Owner complains that this was procedurally improper, it identifies no basis for that position. *See* PO Resp. 36–38 & n.7. The two declarations are identical in all relevant respects. Patent Owner argues that Petitioner failed to show that Ms. Rosenberg was “unavailable” as defined by the Federal Rules of Evidence (*see* Fed. R. Evid. 804(a)), but that rule is inapplicable because Petitioner did not seek to *introduce* Ms. Rosenberg’s testimony over a hearsay objection, but rather sought to *replace* it. Moreover, we note that Patent Owner unilaterally canceled the deposition of Mr. Butler (Ex. 1103) and does not contest the substance of his testimony.

whether the Four-Steps Whitepaper qualifies as a printed publication with the benefit of the full record. Inst. Dec. 52.

At trial, Patent Owner contends that Petitioner fails to meet its burden to show public accessibility (PO Resp. 28–45), and Petitioner responds with additional explanation and evidence (Pet. Reply 14–26).²⁶ Having considered the full record at trial, we are persuaded that Petitioner has shown, by a preponderance of the evidence, that the Four-Steps Whitepaper was publicly accessible at least as of March 17, 2003.

On this record, we find that the Four-Steps Whitepaper was intended to promote Packeteer’s PacketShaper product. The Four-Steps Whitepaper is a “Technical Product Overview” for PacketShaper, it touts the advantages of the product, and it concludes by inviting the reader to order the product. Ex. 1006, 1, 3, 30. In addition, we credit Margi Spitzer’s testimony regarding the purpose and nature of this document. *See* Ex. 1098. Ms. Spitzer authored the Four-Steps Whitepaper and was involved in distributing

²⁶ In its papers, Patent Owner did not contend that this evidence was untimely (*see* PO Sur-reply), but at the oral hearing Patent Owner asserted that Petitioner’s evidence should have been submitted before the Response (Tr. 47:21–48:12). Patent Owner’s new argument was untimely and will not be considered. *See Dell Inc. v. Acceleron, LLC*, 884 F.3d 1364, 1369 (Fed. Cir. 2018) (noting that the “Board was obligated to dismiss [an] untimely argument . . . raised for the first time during oral argument”).

However, even if Patent Owner had timely made this argument, it would not have been persuasive, for the reasons explained by Petitioner. *See* Pet. Reply 24 (addressing propriety of evidence at the Reply stage); *Valve Corp. v. Ironburg Inventions Ltd.*, 8 F.4th 1364, 1370 n.6 (Fed. Cir. 2021) (responding to argument that a petitioner’s evidence was “untimely submitted on reply” by explaining that “[a] petitioner may provide evidence of public accessibility of a reference after the petition stage if the patent owner raises a challenge to public accessibility”).

this document to potential customers. *Id.* ¶¶ 3–5, 7–8. Ms. Spitzer testifies that the document “was a big part of Packeteer’s marketing of the PacketShaper product.” *Id.* ¶ 6. She also testifies that, although the first page includes a copyright notice requiring Packeteer’s “express written consent” for certain activities (Ex. 1006, 1), anyone could download the document from Packeteer’s website “without using any access credentials like a password and without getting advanced permission from Packeteer.” Ex. 1098 ¶¶ 9–10.

Moreover, we find that a person of ordinary skill in the art would have been able to locate the Four-Steps Whitepaper on Packeteer’s website with reasonable diligence. Dr. Jeffay testifies that “Packeteer was an industry leader,” and that PacketShaper would have been known to an ordinary artisan at the time of the invention. Ex. 1003 ¶¶ 41–43. We credit this testimony because: it is based in part on Dr. Jeffay’s personal knowledge²⁷ (*see* Ex. 2007, 46:4–21, 48:2–19); and it is corroborated by Yung’s reference to PacketShaper (*see* Ex. 1005, 4:47–51) and other entities’ references to Packeteer and PacketShaper (*see* Exs. 1082–1083, 1086–1090, 1092). As a result, we are persuaded that an ordinary artisan would have been familiar with Packeteer and its products. In addition, Dr. Jeffay testifies that an ordinary artisan “could have easily found Packeteer whitepapers and other materials about [the PacketShaper] on the Packeteer website including the Four-Steps Whitepaper.” Ex. 1093 ¶ 2. In support, Dr. Jeffay explains that

²⁷ Dr. Jeffay also relies on Exhibits 1031 and 1032 for his testimony (*see* Ex. 1003 ¶¶ 41–42), but for the reasons previously explained, we cannot say that these exhibits sufficiently support these conclusions (*see* Inst. Dec. 50–51). However, given the other evidence cited by Petitioner, we need not (and do not) rely on those exhibits in this Decision.

he accessed an archived version of the Packeteer website from February 2003 and navigated from the Packeteer home page to the PacketShaper product page, which includes a prominent link to the Four-Steps Whitepaper under “White Papers.” *Id.* ¶¶ 3–8 (citing Ex. 1081). We credit this testimony because it is supported by a detailed explanation and documentary evidence.

We have also considered Patent Owner’s contrary arguments and evidence (*see* PO Resp. 40–41),²⁸ but on balance, we are persuaded that the Four-Steps Whitepaper was publicly accessible via Packeteer’s website on or before March 17, 2003. Patent Owner’s declarant, Erin McCracken, testifies that the Wayback Machine states that it archived the Four-Steps Whitepaper on several dates, but she received an error message when attempting to access each version other than the March 17, 2003 version. Ex. 2008 ¶¶ 6–7. However, as Petitioner notes (*see* Pet. Reply 25), Ms. McCracken only attempted to access archives of this document made *after* March 17, 2003. Consequently, Ms. McCracken’s evidence on this point is less probative than (and does not directly contradict) Petitioner’s evidence, which relies on the March 17, 2003 archive of this document.

In addition, Ms. McCracken identifies a discrepancy between the archive date for the Packeteer homepage and the Four-Steps Whitepaper. *See* Ex. 2008 ¶ 5. Specifically, the Whitepaper was archived on March 17,

²⁸ Patent Owner also argues that Mr. Butler’s declaration does not “establish that the Four-Steps Whitepaper was publicly available.” PO Resp. 38 (referencing Ex. 1006, i–ii); *see also id.* at 28–39. Although we agree, this argument is misplaced because Petitioner primarily relies on different evidence to show that an ordinary artisan would have been able to locate the document with reasonable diligence.

2003, but the Packeteer homepage was not archived on that date. Ex. 1006, iiv; Ex. 2008 ¶ 5. Instead, Dr. Jeffay uses a February 16, 2003 archive of Packeteer’s home page to show that an ordinary artisan could have navigated to the Whitepaper.²⁹ See Ex. 1093 ¶ 3; *see also* Ex. 1097 ¶ 8 (testifying that the home page was archived on February 16, 2003). Although the evidence is not perfect, we find it far more likely than not that the Four-Steps Whitepaper was accessible on Packeteer’s website at least as of March 17, 2003. In particular, the Four-Steps Whitepaper is dated September 2002 (Ex. 1006, 1), and Ms. Spitzer testifies that this document was made available on the Packeteer website that month (Ex. 1098 ¶¶ 5, 9). Petitioner also submits a declaration listing straightforward steps for navigating to this document from the Packeteer homepage on several dates between September 2002 and February 2003. See Ex. 1097 ¶¶ 2–8. As a result, we find the one-month discrepancy between the two archive dates to be relatively insignificant in this case. Moreover, in this proceeding, we need not put a fine point on which of these dates is more credible, as the critical date is more than twenty months after both of them. See Ex. 1001, code (22) (identifying December 22, 2004 filing date).

In sum, we find that the Four-Steps Whitepaper was intended to reach the general public to promote Packeteer’s PacketShaper product, and we find that an ordinary artisan exercising reasonable diligence would have been able to access the Whitepaper from Packeteer’s website on or before March 17, 2003. Accordingly, we determine that the Four-Steps Whitepaper was

²⁹ Mr. Butler explains that the Wayback Machine traverses links by accessing the corresponding page “with the closest available date to the initial file containing the hyperlink.” Ex. 1006, i (¶ 3).

publicly accessible as of that date. *See, e.g., Valve Corp. v. Ironburg Inventions Ltd.*, 8 F.4th 1364, 1374 (Fed. Cir. 2021) (stating that document designed to promote business is “strong evidence” of public accessibility); *Voter Verified, Inc. v. Premier Election Sols., Inc.*, 698 F.3d 1374, 1380–81 (Fed. Cir. 2012) (affirming finding that an article was publicly accessible where evidence demonstrated that the website including the article was known to the relevant community and the article could be found on the website with reasonable diligence).

2. Independent Claim 3

Petitioner contends that the subject matter of claim 3 would have been obvious over Yung and the Four-Steps Whitepaper. Pet. 61–68. Patent Owner does not dispute Petitioner’s substantive contentions regarding this claim. *See* PO Resp. Having considered the record, we are persuaded that Petitioner has shown, by a preponderance of the evidence, that claim 3 would have been obvious over Yung and the Four-Steps Whitepaper.

In particular, we are persuaded by Petitioner’s undisputed arguments that Yung discloses most of the claim limitations. *See* Pet. 64–68 (citing *id.* at 25–26, 30–34).³⁰ Yung’s bandwidth monitoring device 130 includes a memory that stores a control block object that includes a flow’s behavioral attributes and identifies its traffic class and policy parameters. *E.g.*, Ex. 1005, 7:25–28, 16:42–45, 17:42–52, 23:26–30. Yung’s device classifies a flow based on a heuristic comparison of the flow’s behavioral attributes to

³⁰ Although Petitioner cites to the discussion of element 1.6 (*see* Pet. 34–35), this is a typographical error intended to reference element 1.5, which recites a limitation commensurate with the identified limitation from claim 3 (*see id.* at 33–34). We have corrected the typographical error in our citation.

known application behavior patterns (*e.g.*, Ex. 1005, 7:7–11, 10:62–67, 15:23–26, 24:27–41), and it enforces bandwidth utilization controls on the flow, such as a discard policy that drops packets (*e.g.*, *id.* at 16:2–7, 19:52–20:18, 24:63–25:1). *See also* Ex. 1003 ¶¶ 156–157, 164–168 (further explaining why an ordinary artisan would have understood claim language to be disclosed by Yung).

In addition, we are persuaded by Petitioner’s undisputed arguments that the Four-Steps Whitepaper discloses the remaining limitation. *See* Pet. 66–67. The Four-Steps Whitepaper states that the PacketShaper product maintains a count of the dropped and non-dropped packets of a flow. Ex. 1006, 18.

Finally, we are persuaded by Petitioner’s undisputed arguments that a person of ordinary skill in the art would have been motivated to combine these references. *See* Pet. 62–63. Yung identifies PacketShaper as an exemplary bandwidth management device, and Yung is assigned to Packeteer, the company responsible for that product. *See* Ex. 1005, code (73), 4:47–51. The Four-Steps Whitepaper provides additional information regarding PacketShaper’s functionality (*see* Ex. 1006), and the proposed combination of these references would have been within the skill of an ordinary artisan (Ex. 1003 ¶ 249; *see id.* ¶¶ 246–248). As a result, we find that a person of ordinary skill in the art would have been motivated to combine these references.

Accordingly, we conclude that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 3 would have been obvious over Yung and the Four-Steps Whitepaper.

III. OBJECTION TO DEMONSTRATIVES

Petitioner objects to slide 12 of Patent Owner's hearing demonstratives, arguing that it presents a new argument not found in the record. Paper 40.

We dismiss this objection as moot. Demonstratives are neither evidence nor a mechanism for making new arguments. *See* Paper 39 (Order Setting Oral Hearing), 3–4. In this Final Written Decision, we only rely on the arguments properly presented in the parties' briefs and the evidence of record, not on the demonstratives. Moreover, even considering the allegedly new arguments presented by Patent Owner on slide 12, the outcome here would not change.

IV. CONCLUSION³¹

Based on the evidence presented with the Petition, the evidence introduced during the trial, and the parties' respective arguments, Petitioner has shown by a preponderance of the evidence that claims 3, 9–13, 19–24, 29–33, and 39–44 are unpatentable, and Petitioner has not shown that claims 17, 18, 37, and 38 are unpatentable. Claims 1, 2, 4–8, 14–16, 25–28, and 34–36 were statutorily disclaimed and are not addressed in this Decision.

³¹ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*, 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

In summary:

Claim(s)	35 U.S.C. §	References/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
17, 18, 37, 38	103(a)	Yung		17, 18, 37, 38
9–13, 19–24, 29–33, 39–44	103(a)	Yung, Copeland	9–13, 19–24, 29–33, 39–44	
3	103(a)	Yung, Four- Steps Whitepaper	3	
Overall Outcome			3, 9–13, 19–24, 29–33, 39–44	17, 18, 37, 38

V. ORDER

Accordingly, it is

ORDERED that claims 3, 9–13, 19–24, 29–33, and 39–44 of U.S. Patent No. 8,243,593 B2 are determined to be unpatentable;

FURTHER ORDERED that claims 17, 18, 37, and 38 of the '593 patent are not determined to be unpatentable;

FURTHER ORDERED that Petitioner's Objection to Patent Owner's Demonstratives (Paper 40) 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.

IPR2021-00909
Patent 8,243,593 B2

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