Trials@uspto.gov
571-272-7822

Paper 48
Date: September 8, 2021

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JUNIPER NETWORKS, INC. and PALO ALTO NETWORKS, INC.,
Petitioner,

v.

PACKET INTELLIGENCE LLC,
Patent Owner.

IPR2020-00339
Patent 6,954,789 B2

Before CHARLES J. BOUDREAU, JOHN D. HAMANN, and KRISTI L. R. SAWERT, *Administrative Patent Judges.*

SAWERT, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

This is a Final Written Decision in an *inter partes* review challenging the patentability of claims 1, 2, 13–17, 19, 20, 42, 44, 48, and 49 ("the challenged claims") of U.S. Patent No. 6,954,789 B2 (Ex. 1005, "the '789 patent"). We have jurisdiction under 35 U.S.C. § 6 and enter this Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons set forth below, we determine that Petitioner has shown, by a preponderance of the evidence, that claims 1, 2, 13–17, 19, 20, 42, 44, 48, and 49 are unpatentable. *See* 35 U.S.C. § 316(e).

II. BACKGROUND

A. Procedural History

Juniper Networks, Inc. and Palo Alto Networks, Inc. (collectively "Petitioner") filed a Petition (Paper 3, "Pet.") requesting an *inter partes* review of claims 1, 2, 13–17, 19, 20, 42, 44, 48, and 49 of U.S. Patent No. 6,954,789 B2 (Ex. 1005, "the '789 patent") pursuant to 35 U.S.C. § 311. Petitioner supported its Petition with the Declaration of Dr. Jon B. Weissman. Ex. 1006. Packet Intelligence LLC ("Patent Owner") filed a Preliminary Response (Paper 7, "Prelim. Resp.").[1]

On September 10, 2020, pursuant to 35 U.S.C. § 314(a), we instituted trial to determine whether any challenged claim of the '789 patent is unpatentable based on the grounds raised in the Petition:

[1] On our authorization (Paper 9), Petitioner also filed a Preliminary Reply (Paper 10) and Patent Owner filed a Preliminary Sur-Reply (Paper 11) related to discretionary denial of institution under 35 U.S.C. § 314(a).

Claims Challenged	35 U.S.C. §[2]	References
1, 2, 13–17, 19, 20, 42	103(a)	Riddle,[3] Ferdinand[4]
44, 48, 49	103(a)	Riddle, Ferdinand, Hasani[5]
1, 2, 13–17, 19, 20, 42	103(a)	Riddle, Ferdinand, Yu[6]
44, 48, 49	103(a)	Riddle, Ferdinand, Hasani, Yu
1, 2, 13–17, 19, 20, 42	103(a)	Riddle, Ferdinand, RFC1945[7]
44, 48, 49	103(a)	Riddle, Ferdinand, Hasani, RFC1945

Paper 21, 9, 50 ("Institution Decision" or "Inst. Dec.").[8]

Patent Owner filed a Response. Paper 28 ("PO Resp."). Patent Owner supported its Response with the Declaration of Cathleen T. Quigley. Ex. 2061. Petitioner filed a Reply to Patent Owner's Response. Paper 31 ("Reply"). Patent Owner filed a Sur-Reply. Paper 32 ("Sur-Reply").

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[2] The Leahy-Smith America Invents Act ("AIA") included revisions to 35 U.S.C. § 103 that became effective on March 16, 2013. Because the '789 patent issued from an application filed before March 16, 2013, we apply the pre-AIA version of the statutory basis for unpatentability.

[3] U.S. Patent No. 6,412,000 B1 (issued June 25, 2002) ("Riddle") (Ex. 1008).

[4] PCT Published Application No. WO 92/19054 (published Oct. 29, 1992) ("Ferdinand") (Ex. 1009).

[5] U.S. Patent No. 5,805,808 (issued Sept. 8, 1998) ("Hasani") (Ex. 1015).

[6] U.S. Patent No. 6,625,150 B1 (issued Sept. 23, 2003) ("Yu") (Ex. 1011).

[7] T. Berners-Lee et al., *Hypertext Transfer Protocol -- HTTP/1.0*, Request for Comments 1945, Network Working Group (May 1996) ("RFC1945") (Ex. 1010).

[8] Patent Owner filed a Request for Rehearing of the Institution Decision (Paper 25), which we denied (Paper 27).

A combined oral hearing in this proceeding, IPR2020-00338 (involving a patent related to the '789 patent), and IPR2020-00486 (involving other claims of the '789 patent) was held on June 9, 2021. A transcript of the hearing is included in the record. Paper 46 ("Tr."). A transcript of an oral hearing held the same day in cases IPR2020-00336 and IPR2020-00337, also involving patents related to the '789 patent, is also included in the record of this proceeding.[9] Paper 47.

Following oral hearing, we ordered the parties to provide additional briefing on the claim-construction arguments presented in the briefs and at oral hearing. Paper 41 ("Order"). Petitioner and Patent Owner each filed respective Opening Briefs on claim construction. *See* Paper 42 ("Petitioner's Opening Brief" or "Pet. Br."); Paper 43 ("Patent Owner's Opening Brief" or "PO Br."). Petitioner filed a Responsive Brief to Patent Owner's Opening Brief, Paper 44 ("Petitioner's Responsive Brief" or "Pet. Resp. Br."), and Patent Owner filed a Responsive Brief to Petitioner's Opening Brief, Paper 45 ("Patent Owner's Responsive Brief" or "PO Resp. Br.").

B. Real Parties in Interest

Petitioner identifies Juniper Networks, Inc. and Palo Alto Networks, Inc. as its real parties in interest. Pet. 1. Patent Owner identifies Packet Intelligence LLC and Packet Intelligence Holdings LLC as its real parties in interest. Paper 5, 2.

[9] The parties had no objection to entering into this record the transcript from the oral hearing for IPR2020-00336 and IPR2020-00337. Tr. 5:22–6:10; *see also* Paper 47, 7:15–8:5.

C. Related Matters

The parties identify three district court litigations as related matters that involve the '789 patent or a related patent: *Packet Intelligence LLC v. Juniper Networks, Inc.*, 3:19-cv-04741 (N.D. Cal.); *Palo Alto Networks, Inc. v. Packet Intelligence LLC*, No. 3:19-cv-02471 (N.D. Cal); and *Packet Intelligence LLC v. NetScout Systems, Inc.*, 2:16-cv-230-JRG (E.D. Tex.). Pet. 1; Paper 5, 2. The parties also identify *Packet Intelligence LLC v. NetScout Sys., Inc.*, No. 19-2041 (Fed. Cir.) as involving patents related to the '789 patent. Pet. 1; Paper 5, 2.

In addition to the present proceeding, the '789 patent is also the subject of an *inter partes* review proceeding in IPR2020-00486, which challenges claims 31, 33, and 34 of the '789 patent. A Final Decision in that proceeding is issued concurrently with this Final Decision.

Related U.S. Patent 6,839,751 B1 is the subject of an *inter partes* review proceeding in IPR2020-00338; related U.S. Patent 6,665,725 B1 is the subject of an *inter partes* review proceeding in IPR2020-00336; and related U.S. Patent 6,771,646 B1 is the subject of an *inter partes* review proceeding in IPR2020-00337. Pet. 1–2; Paper 5, 2–3. Final Written Decisions in those proceedings are issued concurrently with this Final Decision.

Lastly, the parties identify the following related matters that are no longer pending before the Board: (i) IPR2017-00629; IPR2017-00630; and IPR2019-01293, which challenged claims of the '789 patent; and (ii) IPR2017-00450; IPR2017-00451; IPR2017-00769; IPR2017-00862; IPR2017-00863; IPR2019-01289; IPR2019-01290; IPR2019-01291; IPR2019-01292; IPR2020-00335; and IPR2020-00485, which challenged claims of patents related to the '789 patent. Pet. 1–2; Paper 5, 3–5.

D. The '789 Patent (Ex. 1005)

The '789 patent, titled "Method and Apparatus for Monitoring Traffic in a Network," relates to "[a] monitor for and a method of examining packets passing through a connection point on a computer network." Ex. 1005, codes (54), (57). The '789 patent states that "[t]here has long been a need for network activity monitors." *Id.* at 1:55. According to the '789 patent, a network activity monitor monitors interconnected networks and collects data on objective information, such as "which services (i.e., application programs) are being used, who is using them, how often they have been accessed, and for how long." *Id.* at 1:63–66. This information, the '789 patent states, "is very useful in the maintenance and continued operation of these networks." *Id.* at 1:66–67. A real-time network monitor may also "provide alarms notifying selected users of problems that may occur with the network or site." *Id.* at 2:3–5.

The '789 patent's network activity monitor receives packets passing in either direction through its connection point on the network and "elucidate[s] what application programs are associated with each packet" by extracting information from the packet, using selected parts of the extracted information to identify this packet as part of a flow, "build[ing] a unique flow signature (also called a 'key') for this flow," and "matching this flow in a database of known flows." *Id.* at 9:6–9, 13:21–28, 13:60–65.

Figure 3, reproduced below, depicts various components of the network packet monitor 300, including parser subsystem 301, analyzer subsystem 303, and database of known flows 324. *Id.* at 11:49–16:52.

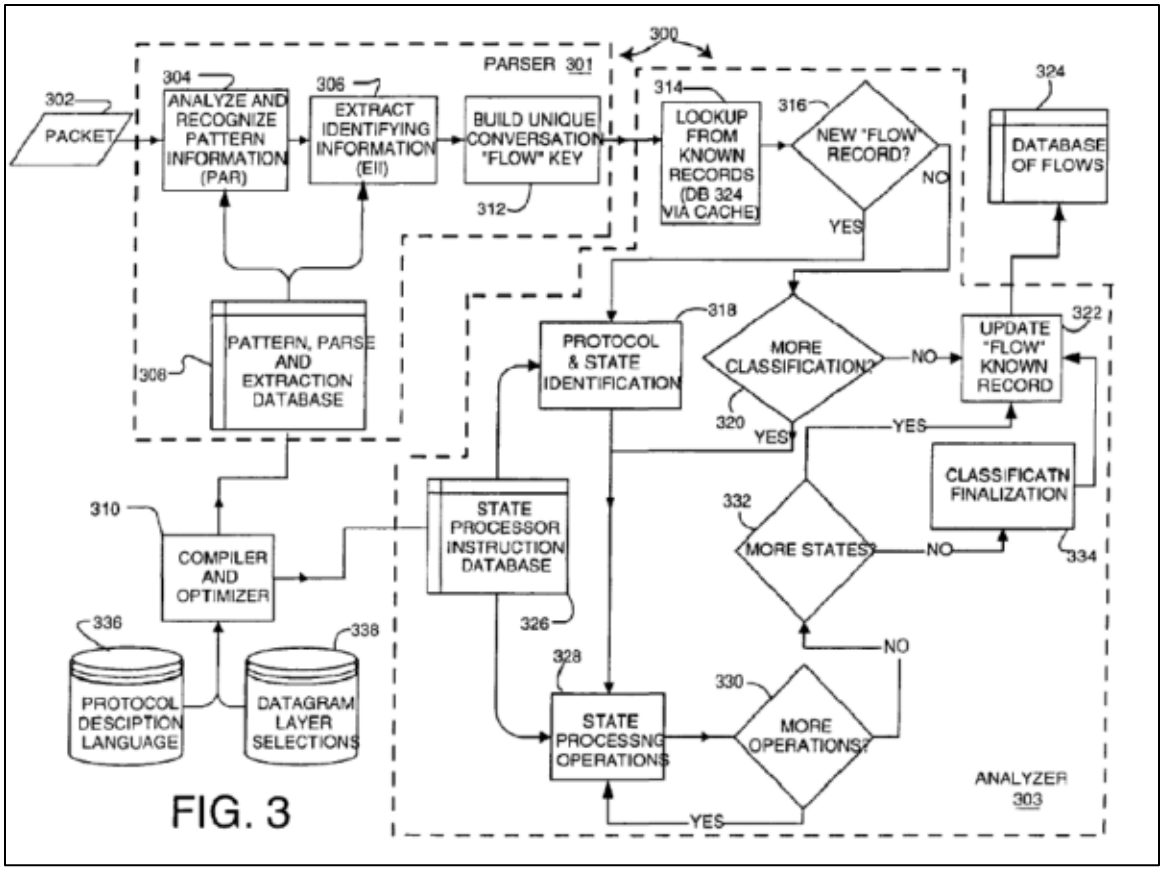

FIG. 3

Figure 3 "is a functional block diagram of a process embodiment of the present invention that can operate as the packet monitor." Ex. 1005, 7:56–59.

Parser subsystem 301 "parses the packet and determines the protocol types and associated headers for each protocol layer that exists in the packet 302," "extracts characteristic portions (signature information) from the packet 302," and "build[s] a unique flow signature (also called a 'key') for this flow." *Id.* at 12:19–24, 13:27–29; *see also id.* at 32:38–34:20 (describing an example of how the disclosed monitor builds signatures and flow states in the context of a Sun Remote Procedure Call (RPC), where, after all of the required processing, "KEY-2 may . . . be used to recognize packets that are in any way associated with the application 'a[2]'"); Fig. 2.

Analyzer system 303 then determines whether the packet has a matching flow-entry in database of flows 324, and processes the packet

accordingly, including, for example, determining whether the packet belongs to an existing conversational flow or a new (i.e., not previously encountered) flow and, in the case of the latter, performing state processing to determine whether the conversational flow has been "fully characterized" and should be finalized. *Id.* at 13:60–16:52. The '789 patent discloses that:

> Future packets that are part of the same conversational flow have their state analysis continued from a previously achieved state. When enough packets related to an application of interest have been processed, a final recognition state is ultimately reached, i.e., a set of states has been traversed by state analysis to completely characterize the conversational flow. The signature for that final state enables each new incoming packet of the same conversational flow to be individually recognized in real time.
>
> In this manner, one of the great advantages of the present invention is realized. Once a particular set of state transitions has been traversed for the first time and ends in a final state, a short-cut recognition pattern—a signature—can be generated that will key on every new incoming packet that relates to the conversational flow. Checking a signature involves a simple operation, allowing high packet rates to be successfully monitored on the network.

Id. at 16:17–34.

E. The Challenged Claims

Petitioner challenges claims 1, 2, 13–17, 19, 20, 42, 44, 48, and 49 of the '789 patent. Pet. 7. Claims 1, 19, and 44 are independent and illustrate the claimed subject matter:

> 1. A method of examining packets passing through a connection point on a computer network, each packets [*sic*] conforming to one or more protocols, the method comprising:
>
> (a) receiving a packet from a packet acquisition device;

(b) performing one or more parsing/extraction operations on the packet to create a parser record comprising a function of selected portions of the packet;

(c) looking up a flow-entry database comprising none or more flow-entries for previously encountered conversational flows, the looking up using at least some of the selected packet portions and determining if the packet is of an existing flow;

(d) if the packet is of an existing flow, classifying the packet as belonging to the found existing flow; and

(e) if the packet is of a new flow, storing a new flow-entry for the new flow in the flow-entry database, including identifying information for future packets to be identified with the new flow-entry,

wherein the parsing/extraction operations depend on one or more of the protocols to which the packet conforms.

Ex. 1005, 35:9–29.

19. A packet monitor for examining packets passing through a connection point on a computer network, each packets [*sic*] conforming to one or more protocols, the monitor comprising:

(a) a packet acquisition device coupled to the connection point and configured to receive packets passing through the connection point;

(b) an input buffer memory coupled to and configured to accept a packet from the packet acquisition device;

(c) a parser subsystem coupled to the input buffer memory and including a slicer, the parsing subsystem configured to extract selected portions of the accepted packet and to output a parser record containing the selected portions,

(d) a memory for storing a database comprising none or more flow-entries for previously encountered conversational flows, each flow-entry identified by identifying information stored in the flow-entry;

(e) a lookup engine coupled to the output of the parser subsystem and to the flow-entry memory and configured to lookup whether the particular packet whose parser record is output by the parser subsystem has a matching flow-entry, the looking up using at least some of the selected packet portions and determining if the packet is of an existing flow; and

(f) a flow insertion engine coupled to the flow-entry memory and to the lookup engine and configured to create a flow-entry in the flow-entry database, the flow-entry including identifying information for future packets to be identified with the new flow-entry, the lookup engine configured such that if the packet is of an existing flow, the monitor classifies the packet as belonging to the found existing flow; and if the packet is of a new flow, the flow insertion engine stores a new flow-entry for the new flow in the flow-entry database, including identifying information for future packets to be identified with the new flow-entry,

wherein the operation of the parser subsystem depends on one or more of the protocols to which the packet conforms.

Ex. 1005, 36:30–37:2.

44. A method of examining packets passing through a connection point on a computer network, the method comprising:

(a) receiving a packet from a packet acquisition device;

(b) performing one or more parsing/extraction operations on the packet according to a database of parsing/extraction operations to create a parser record comprising a function of selected portions of the packet, the database of parsing/extraction operations including information on how to determine a set of one or more protocol dependent extraction operations from data in the packet that indicate a protocol is used in the packet;

(c) looking up a flow-entry database comprising none or more flow-entries for previously encountered conversational flows, the looking up using at least some of the selected packet portions, and determining if the packet is of an existing flow;

(d) if the packet is of an existing flow, obtaining the last encountered state of the flow and performing any state operations

> specified for the state of the flow starting from the last encountered state of the flow; and
>
> (e) if the packet is of a new flow, performing any analysis required for the initial state of the new flow and storing a new flow-entry for the new flow in the flow-entry database, including identifying information for future packets to be identified with the new flow-entry.

Ex. 1004, 39:3–40:2.

III. ANALYSIS

We have reviewed the parties' respective briefs as well as the relevant evidence discussed in those papers. For the reasons discussed in detail below, we determine that Petitioner has shown by a preponderance of the evidence that claims 1, 2, 13–17, 19, 20, 42, 44, 48, and 49 of the '789 patent are unpatentable under 35 U.S.C. § 103 as having been obvious.

A. Legal Standards

To prevail in its challenges to the patentability of the challenged claims of the '789 patent, Petitioner must demonstrate by a preponderance of the evidence that the claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d) (2019). "In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (2012) (requiring *inter partes* review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim")). This burden of persuasion never shifts to patent owner. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015); *see also In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1375–78 (Fed. Cir. 2016) (discussing the burden of proof in *inter partes* review).

A claim is unpatentable for obviousness if, to one of ordinary skill in the pertinent art, "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made." 35 U.S.C. § 103(a) (2006); *see also KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of nonobviousness.[10] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). A petitioner cannot satisfy its burden of proving obviousness by employing "mere conclusory statements." *Magnum Oil*, 829 F.3d at 1380. Moreover, a decision on the ground of obviousness must include "articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

We analyze Petitioner's asserted grounds of unpatentability in accordance with the above-stated principles.

B. Level of Ordinary Skill in the Art

We consider the asserted grounds of unpatentability in view of the understanding of a person of ordinary skill in the art and, thus, begin with the level of ordinary skill in the art. The level of ordinary skill in the art is "a prism or lens through which . . . the Board views the prior art and the claimed invention" to prevent hindsight bias. *Okajima v. Bourdeau*, 261

[10] The parties do not direct our attention to any evidence of objective indicia of nonobviousness.

F.3d 1350, 1355 (Fed. Cir. 2001). In assessing the level of ordinary skill in the art, various factors may be considered, including the "type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field." *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). "[O]ne or more factors may predominate." *Id.*

Petitioner contends that an ordinarily skilled artisan would have "had a bachelor's degree in electrical engineering, computer engineering, computer science, or a related field (or its equivalent), and one to two years of experience working in networking environments, including at least some experience with network traffic monitors and/or analyzers." Pet. 7–8 (citing Ex. 1056, 13–14; Ex. 1006 ¶¶ 195–201). In our Institution Decision, we adopted Petitioner's articulation of the level of skill in the art, which we determined was consistent with the '789 patent and the asserted prior art. Inst. Dec. 26–27. In its Response, Patent Owner states that it "generally does not object to this finding." PO Resp. 22.

We apply Petitioner's definition of the level of ordinary skill in the art, as we did in the Institution Decision. Inst. Dec. 26–27. We also maintain our determination that the definition offered by Petitioner is consistent with the teachings of the '789 patent and the prior art of record. *Cf. Okajima*, 261 F.3d at 1355 (noting that the prior art itself may reflect an appropriate level of skill in the art).

C. Claim Construction

In interpreting the claims of the '789 patent, we "us[e] the same claim construction standard that would be used to construe the claim[s] in a civil action under 35 U.S.C. [§] 282(b)." 37 C.F.R. § 42.100(b). The claim construction standard includes construing claims in accordance with the

ordinary and customary meaning of such claims as would have been understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. *See id.*; *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (en banc). We need not explicitly interpret every claim term for which the parties propose a construction. *See* 35 U.S.C. § 314(a) (2012); *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) ("[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy."); *see also Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (applying *Vivid Techs.* in the context of an *inter partes* review).

1. Incorporation by reference of previous disclosures

The '789 patent claims the benefit of two U.S. patent applications: (1) Provisional Application No. 60/141,903, filed on June 30, 1999 (Ex. 1016, "the provisional application"), and (2) Application No. 09/608,237, filed June 30, 2000, which issued as U.S. Patent No. 6,651,099 on November 18, 2003 (Ex. 1001, "the '099 patent"). *See* Ex. 1005, code (60), (63). The '789 patent states that "the contents" of these documents "are incorporated herein by reference." *See id.* at 1:6–12 (incorporating by reference the application leading to the '099 patent), 13–17 (incorporating by reference the provisional application). Throughout their papers, the parties refer to the disclosures of the '099 patent and the provisional application, and state that the '789 patent incorporates the entire contents of those disclosures. *See, e.g.*, PO Resp. 2 n.1; Reply 2 n.1, 4.

We agree with the parties that the '789 patent incorporates the disclosures of the '099 patent and the provisional application by specific reference to those documents. Ex. 1005, code (60), (63), 1:6–17; *see also*

37 C.F.R. § 1.57. Thus, we also refer to the '099 patent and the provisional application when discussing claim construction—not only for consistency with the parties, but also for consistency throughout our final decisions involving related *inter partes* proceedings between these parties. *See Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed. Cir. 2000) (stating that material incorporated by reference is "effectively part of the host document as if it were explicitly contained therein"); *see also Trs. of Columbia Univ. v. Symantec Corp.*, 811 F.3d 1359, 1365–66 (Fed. Cir. 2016) (using statements in a provisional application to construe claim terms in a patent incorporating the provisional application by reference).

2. Overview

The only claim-construction dispute remaining in this proceeding concerns the meaning of "conversational flow[s]," as recited in independent claims 1, 19, and 44. *See, e.g.*, Ex. 1005, 35:16–18 (claim 1 reciting "looking up a flow-entry database comprising none or more flow-entries for previously encountered conversational flows"). At the heart of the parties' dispute is the following passage from the '099 patent:

> A conversational flow, on the other hand, is the sequence of packets that are exchanged in any direction as a result of an activity—*for instance, the running of an application on a server as requested by a client*. It is desirable to be able to identify and classify conversational flows rather than only connection flows. The reason for this is that *some conversational flows involve more than one connection, and some even involve more than one exchange of packets between a client and server*.

Ex. 1001, 2:37–45 (emphases added). In our Institution Decision, we preliminarily construed "conversational flow" as a "sequence of packets that are exchanged in any direction as a result of an activity." Inst. Dec. 30. We declined to include the phrases "for instance, the running of an application

on a server as requested by a client" and "some conversational flows involve more than one connection,[11] and some even involve more than one exchange of packets between a client and server" in the construction of "conversational flow," as Patent Owner had requested. *Id.* We explained that those passages, because they begin with the phrases "for instance," "where some," and "some," are "merely exemplary and non-limiting." *Id.*

Petitioner does not challenge our preliminary construction. Tr. 7:23–9:7. Patent Owner, however, argues that our construction captures only a "***part*** of the definition in the specification," and improperly "excludes some of the clarifying language that is ***also*** part of the explicit definition in the specification." PO Resp. 23. According to Patent Owner, "[t]hat clarifying language is important for understanding the nature of a conversational flow." *Id.*

Specifically, Patent Owner argues that the written description of the '789 patent provides an express definition of the term "conversational flow" and that the express definition controls even though it contains exemplary language. *Id.* at 23–24 (citing *Sinorgchem Co., Shandong v. Int'l Trade Comm'n*, 511 F.3d 1132, 1137 (Fed. Cir. 2007)). Patent Owner argues that the language following "for instance" is necessary for understanding a "conversational flow," because that language "makes apparent that 'conversational flow' must relate to a conversation" and "involves an application activity involving *the same client*." *Id.* at 26 (emphasis added); *see also* Sur-Reply 1 (arguing that an "'activity' occurs between specific

[11] The '099 patent expressly defines "connection flow": "The term 'connection flow' is commonly used to describe all the packets involved with a single connection." Ex. 1001, 2:35–37. Neither party disputes this definition of "connection flow."

entities"); PO Br. 1 (arguing that an activity "must relate to the actions of a particular client or end user"). "Ignoring that language," Patent Owner argues, "risks losing the basic and fundamental requirement of a 'conversation.'" PO Resp. 26.

Patent Owner also argues our construction is incorrect because, prior to this *inter partes* review, "every tribunal to have considered the proper construction for 'conversational flow' has accepted . . . the same construction advanced by Patent Owner" here:

> the sequence of packets that are exchanged in any direction as a result of an activity—for instance, the running of an application on a server as requested by a client—and where some conversational flows involved more than one connection, and some even involve more than one exchange of packets between a client and server.

Id. at 25. As an example, Patent Owner argues that the District Court for the Eastern District of Texas adopted this construction in *Packet Intelligence LLC v. NetScout Systems, Inc.*, and that the Court of Appeals for the Federal Circuit "addressed conversational flows and connection flows when ***affirming*** the jury's infringement verdict in *NetScout*, which necessarily hinged on applying the court's claim construction of 'conversational flow.'" *Id.* (citing Ex. 2060, 3).

3. Analysis

Independent claims 1, 19, and 44 recite a "database comprising none or more flow-entries for previously encountered conversational flows." *See* Ex. 1005, 35:17–19 (claim 1), *id.* at 36:45–47 (claim 19), *id.* at 39:16–18 (claim 44). As explained above, the parties agree that "conversational flow" includes "the sequence of packets that are exchanged in any direction as a result of an activity," but disagree whether the phrases "for instance, the

running of an application on a server as requested by a client" and "some conversational flows involve more than one connection, and some even involve more than one exchange of packets between a client and server" should limit the construction of "conversational flow." Patent Owner argues that those phrases are necessary because they make clear that a conversational flow is client-specific. Thus, the parties' basic dispute is whether a conversational flow is limited to a *specific client or user*, as Patent Owner argues, or may include *multiple clients or users*, as Petitioner contends. *Compare, e.g.*, PO Resp. 26 (arguing that "the basic and fundamental requirement" of a conversational flow is that it "involves an application activity involving the same client"), *with* Reply 3 (contending that "[t]he definitional language of 'conversational flow' doesn't contain any requirement for identifying flows based on a particular user or client").

Starting with the passage reproduced above that we identified as the heart of the parties' dispute (Ex. 1001, 2:37–45), we determine that the "for instance" phrase is exemplary and does not limit a "conversational flow" to a specific client or user. The phrase "for instance" is synonymous with "for example," and necessarily indicates that "the running of an application on a server as requested by a client" exemplifies, but does not limit, the conversational flow to a server and a specific client or user.

Our determination that the "for instance" phrase is exemplary and non-limiting is consistent with Patent Owner's argument in its Preliminary Response that the "some" phrase ("some conversational flows involve more than one connection, and some even involve more than one exchange of packets between a client and server") is non-limiting. Specifically, Patent Owner argued that the use of the word "some" necessarily means that "*some* conversational flows involve multiple connections, while, *some* involve a

single connection." Prelim. Resp. 24 (citing Ex. 1001, 2:42–43). Similarly here, while "conversational flow" certainly may involve the running of an application on a server as requested by a single client or user, "conversational flow" is not *limited* to a single client or user.

Indeed, the '099 patent and the provisional application expressly contemplate classifying connection flows from different clients into the same conversational flow when those connections involve the same activity. These documents describe, in the context of identifying packets as part of a conversational flow, a client/server protocol known as Service Advertising Protocol (SAP), which is "used to identify the services and addresses of servers attached to a network." Ex. 1016, 3:12–14; Ex. 1001, 2:49–52. The provisional application describes a packet exchange between a client and the server in which the client sends a SAP request to a server for print service, and the server sends a SAP reply that identifies the print service address:

> In a first exchange, a client sends a SAP request to a server, for example, for print service. The server sends a SAP reply that identifies a particular address, for example, SAP #5, as the print service on that server. Such may be responses used to update a table, for example in a router, known as the Server Information Table.

Ex. 1016, 3:14–18; *see also* Ex. 1001, 2:53–58. The provisional application then describes a client who has "inadvertently seen" the SAP reply, and therefore does not need to make a SAP request, but may send a print request directly to SAP #5:

> A client who has inadvertently seen this reply or who has access to the table (via the router that has the Server Information Table, for example) would know that SAP #5 for such this [*sic*] server is a print service. Therefore, in order to print data on the server, such a client does not need to make the request for a print service, but simply to send data to be printed specifying SAP #5.

Ex. 1016, 3:18–23; *see also* Ex. 1001, 2:58–64.

The provisional application explains that the packet exchange between the client who has "inadvertently seen" the print service address and SAP #5 is not connected to the initial packet exchange, "which was with a different client":

> This sending of data to be printed again involves an exchange of data between a client and a server, disjoint [*sic*] from the previous exchange which was *with a different client* setting up that SAP #5 is a print service on this server is a second connection.

Ex. 1016, 3:23–25 (emphasis added). Similarly, the '099 patent describes this packet exchange as "independent of the initial exchange." Ex. 1001, 2:64–67.

The provisional application states that "[i]t is desirable for a network packet monitor to be able to 'virtually concatenate' the first exchange that defines SAP #5 as the print service on the server with the second exchange that uses the print service." Ex. 1016, 3:25–28. In this case, the provisional application explains, the two packet exchanges (the first between a client and the server and the second between a client and SAP #5) "would then be correctly identified as being part of the same flow if the clients were the same," but also, "[t]hey would *even be recognized if the clients were not the same*." *Id.* at 3:28–30 (emphasis added). Similarly, the '099 patent states that "because one features [*sic*] of the invention is to correctly identify the second exchange as being associated with a print service on that server, such exchange would *even be recognized if the clients were not the same*." Ex. 1001, 3:44–48 (emphasis added).

We interpret the SAP description in the provisional application and '099 patent as describing two seemingly disjointed packet exchanges involving two different clients or users (the first packet exchange between a

client and the server and the second packet exchange between the client who has "inadvertently seen" the print service address and SAP #5) as belonging to the same "conversational flow." And because Patent Owner's proposed construction—that a "conversational flow" is client-specific—is inconsistent with the written description, we decline to limit a "conversational flow" to a specific client or user.

Patent Owner argues that our interpretation of the SAP example is incorrect because "[t]he second sentence" of that example—i.e., "such exchange would even be recognized if the clients were not the same"—merely "illustrates how a later print request by a different client can also be recognized as a *print request activity* because it uses the now known address of the print service." Sur-Reply 7 (emphasis added). We are not persuaded. In the provisional application, this description of the second client follows the statement that "[i]t is desirable to be able to identify and classify *conversational flows*," Ex. 1016, 3:7–8 (emphasis added), and is followed by statements describing "[o]ther protocols that are similar in that they may lead to disjointed *conversational flows*," *id.* at 4:1–5 (emphasis added). The provisional application also states that "[p]rior art network monitors do not presently have the ability to recognize such disjointed flows as belonging to the same conversational flow." *Id.* at 4:13–14. Similarly, in the '099 patent, the phrase "such exchange would even be recognized if the clients were not the same" is soon followed by the statement that "[w]hat distinguishes this invention from prior art network monitors is that it has the ability to *recognize disjointed flows as belonging to the same conversational flow*." Ex. 1001, 3:48–51 (emphasis added). We view these statements, in context, as reinforcing the notion that the disclosed invention sought to classify disjointed connection flows—even those involving more than one client or

user—into the same conversational flow based on a specific activity, such as print service.

We are not persuaded by Patent Owner's argument that *Sinorgchem* compels a different result here. *See* PO Resp. 23–24. In *Sinorgchem*, the claim language at issue was "controlled amount," of which the patent stated:

> A 'controlled amount' of protic material is an amount up to that which inhibits the reaction of aniline with nitrobenzene, e.g., up to about 4% H_2O based on the volume of the reaction mixture when aniline is utilized as the solvent.

511 F.3d at 1136. The International Trade Commission "agreed that the patentee had expressly defined the term 'controlled amount' in the specification but held that the language 'e.g., up to about 4% H_2O based on the volume of the reaction mixture when aniline is utilized as the solvent' should not be considered part of that definition," in part because the Commission considered "the 4% limit as merely an example that did not apply to all situations in which aniline was used as the solvent." *Id.* at 1137. The Federal Circuit rejected the Commission's construction, holding that "[w]hen aniline is used as the solvent, the express definition is neither ambiguous nor incomplete—the 'controlled amount' is 'up to about 4% H_2O based on the volume of the reaction mixture'—and we need look no further for its meaning." *Id.* at 1138.

Patent Owner argues that *Sinorgchem* stands for the proposition that an express definition in the specification controls even if it contains exemplary language. PO Resp. 24. According to Patent Owner, the phrase "for instance, the running of an application on a server as requested by a client" is the express definition of "conversational flow" that we must accept, even though it contains the exemplary language "for instance." *Id.* at 25. We do not agree because, in *Sinorgchem*, the patent at issue described

"at least six different solvents," of which aniline was just one example. The Federal Circuit reasoned that, *when* aniline was used as the solvent, *then* the upper limit of protic material was "up to about 4% H_2O." *Sinorgchem*, 511 F.3d at 1138. In other words, the use of aniline was a condition precedent ("when aniline is utilized") that, when satisfied, triggered the condition subsequent upper limit of protic material ("up to about 4% H_2O"). *Id.* The language in the '099 patent ("for instance, the running of an application on a server as requested by a client")—unlike that in *Sinorgchem*—is not conditional. Thus, we find *Sinorgchem* to be inapposite to the facts of this case.

Finally, Patent Owner's argument that "[b]efore the Institution Decisions in this and the related IPRs, every tribunal to have considered the proper construction for 'conversational flow' has accepted . . . the same construction advanced by Patent Owner," PO Resp. 25–27, does not persuade us that our construction here is erroneous.

Despite Patent Owner's argument, neither the District Court nor the Federal Circuit appears to have expressly analyzed "conversational flow" and determined that the claim term necessarily includes the language recited within the "for instance," "where some," and "some" phrases. In *Packet Intelligence LLC v. NetScout Systems*, for example, the District Court merely adopted Patent Owner's construction without analysis after the parties "reached agreement" at a hearing dated March 2, 2017. Ex. 1067, 6. And the Federal Circuit, if anything, appears to have relied on a definition of "conversational flow" lacking the additional phrases Patent Owner advances here. Ex. 2060, 3. Specifically, in describing "conversational flows," the court stated that:

> The specifications explain that it is more useful to identify and classify "conversational flows," *defined as* "the sequence of packets that are exchanged in any direction as a result of an activity."

Id. (citing Ex. 1001, 2:45–47) (emphasis added). Finally, we also observe that the Board's constructions of "conversational flow" in prior proceedings were made in institution decisions and, thus, were merely preliminary. *See, e.g.*, Ex. 1056, 10 (interpreting "conversational flow" "*for purposes of this Decision*" (emphasis added)).

For these reasons, we have considered the constructions of the other panels and tribunals, but are not persuaded that our construction of "conversational flow" is mistaken or inconsistent with those other constructions. *See* 37 C.F.R. § 42.100 (b) ("Any prior claim construction determination concerning a term of the claim in a civil action, or a proceeding before the International Trade Commission, that is timely made of record in the inter partes review proceeding *will be considered*." (emphasis added)).

4. Summary

In summary, having considered the totality of the arguments and evidence anew at the close of trial, we determine that "conversational flow[s]" means a "sequence of packets that are exchanged in any direction as a result of an activity," without the additional restriction that the conversational flow must be client- or user-specific.

D. The Prior Art

Before turning to Petitioner's asserted grounds of unpatentability, we provide a brief summary of the asserted references.

1. Riddle (Ex. 1008)

Riddle relates to a method for automatically classifying packet flows for use in allocating bandwidth resources by a rule of assignment of a service level. Ex. 1008, 4:6–10. The method comprises applying individual instances of traffic classification paradigms to packet network flows based on selectable information obtaining from layers of a multi-layered communication protocol in order to define a characteristic class, then mapping the flow to the defined traffic class. *Id.* at 4:10–15. Figure 3 is reproduced below.

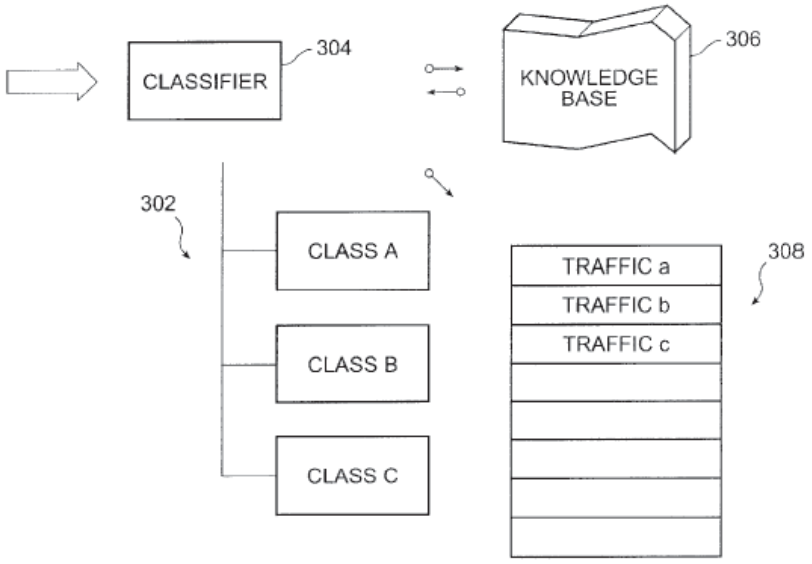

FIG. 3

> Figure 3 illustrates a system for automatically classifying traffic. Ex. 1008, 12:27–28.

With reference to Figure 3, traffic tree 302 classifies new traffic under a particular member class node. *Id.* at 12:28–30. Traffic classifier 304 detects services for incoming traffic. *Id.* at 12:30–31. Knowledge base 306 contains heuristics for determining traffic classes. *Id.* at 12:32–33. A plurality of saved lists 308 stores classified traffic pending incorporation into traffic tree 302. *Id.* at 12:37–38.

Figure 4A is reproduced below.

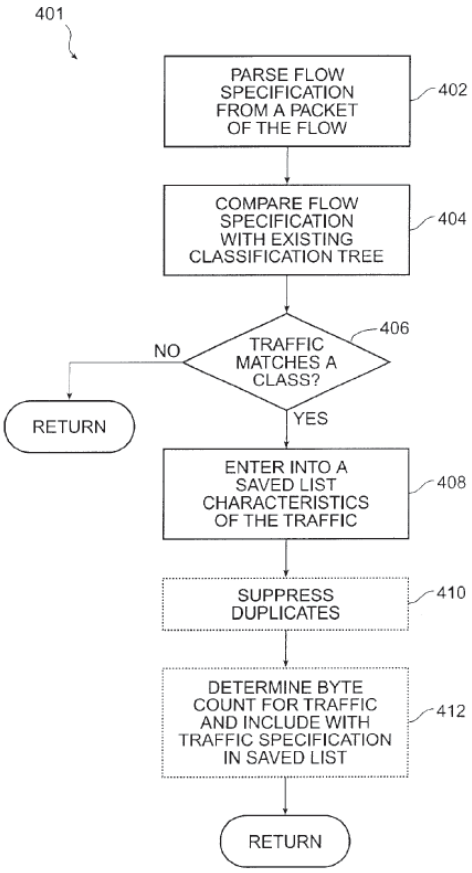

FIG. 4A

> Figure 4A illustrates a flowchart 401 of processing steps for automatically classifying traffic. Ex. 1008, 12:42–43.

In a step 402 of Figure 4A, a flow specification is parsed from the flow being classified. *Id.* at 12:43–44. Then in step 404, the flow specification parsed from the flow in step 402 is compared with the traffic specifications in each node of the classification tree. *Id.* at 12:44–47. In a decisional step 406, a determination is made of whether traffic matches one of the classes being classified. *Id.* at 12:48–50. If this is so, then in step 408, an entry is made in a list of identifying characteristics, such as protocol type, IP protocol number, server port, traffic type, MIME type, or time of occurrence of traffic. *Id.* at 12:50–53.

Figure 4B is reproduced below.

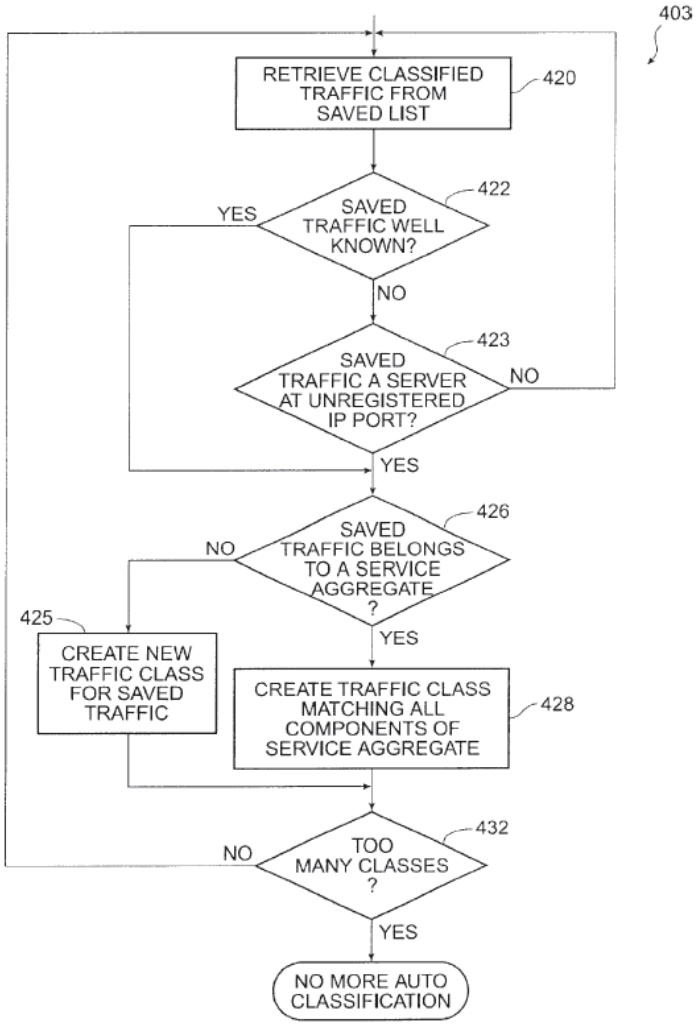

FIG. 4B

Figure 4B illustrates a flowchart 403 of the processing steps for integrating traffic classes into a classification tree. Ex. 1008, 13:36–38.

In a step 420 of Figure 4B, an instance of saved traffic is received from a saved traffic list 308. *Id.* at 13:40–42. Next, in decisional step 422, the instance of saved traffic is examined to determine whether it is well known and a name representing its type exists. *Id.* at 13:42–45. If this is so, then processing continues with a test of whether the saved traffic belongs to a service aggregate in step 426. *Id.* at 13:45–47. Otherwise, in step 423, the

instance of saved traffic is examined to determine whether it appears to be a server connection port of an unregistered IP port. *Id.* at 13:47–50. If this is not so, then processing continues with the next traffic class in the saved list in step 420. *Id.* at 13:51–52. In decisional step 426, the instance of saved traffic is examined to determine whether it belongs to a service aggregate. *Id.* at 13:52–54. If the traffic does belong to a service aggregate, then, in step 428, a traffic class is created which will match all components of the service aggregate. *Id.* at 13:57–59. In further step 425, a new traffic class is created to match the instance of saved traffic. *Id.* at 13:59–62.

2. Ferdinand (Ex. 1009)

Ferdinand relates to a system for "monitoring and managing communication networks for computers." Ex. 1009, code (54), 1:3–4. Ferdinand discloses a monitoring system with "a Network Monitor 10 and a Management Workstation 12." *Id.* at 11:32–12:1. In monitoring the network, Ferdinand indicates that a "statistical object represents a network parameter for which performance information is gathered," and that Monitor 10 keeps information about monitored statistical objects in "Statistics Module (STATS) 36." *Id.* at 22:18–22. STATS 36 is a database (*id.* at 19:5–11) and "defines the database and it contains subroutines for updating the statistics which it keeps" (*id.* at 28:14–15). Examples of data the database stores include records "per ip address," "per ip pair," "per udp pair," "per ftp control connection," and "per ftp data connection." *Id.* at 29:3–30:7.

3. Hasani (Ex. 1015)

Hasani relates to a real-time parser for data packets in a communications network. Ex. 1015, code (57). Hasani teaches that the parser comprises a set of logic circuits implemented in a computer chip and

a memory interacting with the computer chip. *Id.* The "parser 180 utilizes information obtained by snooping on RMC bus 172 in conjunction with data contained in a parser data base 182 to produce forwarding vector 184." *Id.* at 5:4–7. Hasani provides, as an example, the parsing and extraction of information from an IEEE 802.2 standard medium access control (MAC) packet. *Id.* at 5:9–24, 6:27–57. Hasani teaches, however, that "the invention applies to any standard packet format." *Id.* at 5:18–20.

4. Yu (Ex. 1011)

Yu relates to "an architecture 100 for applying policies to network data traffic." Ex. 1011, 2:46–50. The architecture includes three components: (i) an application "such as a firewall, virtual private network (VPN), or traffic management," (ii) a "policy engine," and (iii) an API between these two components. *Id.* at 2:51–62.

Yu describes a "flow classification specification 203a provides the screening criteria for the flow classifier logic 204 to sort network traffic into flows," that "[a]ll packets that match the same flow classification specification 203a form a flow," that "a flow is a stream of correlated packets to which policy decisions apply," and that "a flow classifier 204 classifies the packet according to one or more classification specifications 203a and finds one or more corresponding action specifications 203b." Ex. 1011, 3:32–59. Yu further describes that a "stream is an 'instantiation' of a flow-packets that have the same source and destination address, source and destination port, and protocol type," and "[p]ackets may be sorted into streams, and a flow may include one or more streams," where "[a]ll packets belonging to the same stream are to be regulated by the same policy." *Id.* at 4:2–9.

In Yu, "the stream classifier 207 matches the packets to a particular stream specification 208 and then, using the corresponding action specifications 210, activates the proper action processors 206." Ex. 1011, 5:8–11.

5. RFC1945 (Ex. 1010)

RFC1945 is an informational specification, published by the Network Working Group, and concerns Hypertext Transfer Protocol 1.0. Ex. 1010, 1. The publication "reflects common usage of the protocol referred to as 'HTTP/1.0'." *Id.* The RFC defines several message headers, such as "Referer," which "allows the client to specify, for the server's benefit, the address (URI) of the resource from which the Request-URI was obtained," and "Server," which "contains information about the software used by the origin server to handle the request." *Id.* at 44–45.

E. Obviousness Over Riddle in View of Ferdinand

Petitioner contends that claims 1, 2, 13–17, 19, 20, and 42 would have been obvious over Riddle in view of Ferdinand. Pet. 19–73. Patent Owner opposes. PO Resp. 35–50; Sur-Reply 13–16, 19–22. Having considered the totality of the arguments and evidence, we find that Petitioner has shown by a preponderance of the evidence that claims 1, 2, 13–17, 19, 20, and 42 are unpatentable as having been obvious over Riddle in view of Ferdinand.

1. Independent Claims 1 and 19

a) Preambles

The preamble of claim 1 recites "[a] method of examining packets passing through a connection point on a computer network, each packets [*sic*] conforming to one or more protocols." Ex. 1005, 35:9–11. The preamble of claim 19 similarly recites "[a] packet monitor for examining packets passing through a connection point on a computer network, each

packets [*sic*] conforming to one or more protocols." *Id.* at 36:30–32. To the extent that the preamble recitations are limiting, Petitioner persuasively shows that they are taught by Riddle. *See* Pet. 26–31 (citing Ex. 1006 ¶¶ 263–269, 618–623, 736, 866, 891).

Specifically, Petitioner persuasively shows that Riddle's classifier operates in a network-connected computer system (e.g., in a server acting as a packet monitor and a network interface acting as a packet acquisition device) and parses and examines traffic flow packets passing through a network. *Id.* at 26–27 (citing Ex. 1008, code (57), 1:57–61, 4:6–17, 5:53–67, 12:27–41, 14:22–40, Fig. 3; Ex. 1006 ¶¶ 262–264). Thus, we agree with Petitioner that Riddle teaches a "method of examining packets . . . on a computer network" and a "packet monitor" for doing the same.

As to the claimed "connection point," Petitioner contends, and we agree, that "the '789 [p]atent acknowledges these points are where the packet monitor connects to the network." *Id.* at 28 (citing Ex. 1005, 8:69–9:19, Fig. 1 (showing connection points 121–125). Petitioner persuasively shows that Riddle's packet monitor "connects to [a] network connection . . . via a system gateway" and thus teaches a "connection point" as claimed and described in the '789 patent. *Id.* (citing Ex. 1008, 5:53–67, 6:9–15, 7:21–24, Figs. 1A, 1B; Ex. 1006 ¶ 265). Further, for networks connecting multiple clients and servers, Riddle teaches examining packets via "'network routing means' and/or routers," which we agree with Petitioner also serve as "connection point[s]" as claimed. Ex. 1008, 7:10–34, Figs. 1C, 3; Pet. 28–29; Ex. 1006 ¶ 266).

Finally, as to the packets "conforming to one or more protocols," we agree with Petitioner that Riddle teaches this feature. Pet. 30. Riddle's system "relates to digital packet telecommunications, and particularly to

management of network bandwidth based on information ascertainable from multiple layers of OSI network model." Ex. 1008, 1:54–57. Riddle's Figure 1D shows the ISO network model diagramming the relationship between layers of the TCP/IP protocol suite (e.g., the application, transport, network, data link, and physical layers (80–88)). Ex. 1008, 7:35–8:46, Fig. 1D; Ex. 1006 ¶¶ 621–622; Pet. 30. Thus, we agree with Petitioner that an ordinarily skilled artisan would have understood that the packets disclosed in Riddle conform to the OSI-described protocols. Pet. 30–31 (citing Ex. 1003 ¶ 623).

Patent Owner does not substantively address Petitioner's contentions or otherwise argue that Riddle fails to disclose the subject matter recited in the preambles of 1 and 19. For the reasons detailed above, we are persuaded that Petitioner has shown by a preponderance of the evidence that Riddle teaches this subject matter and adopt the contentions set forth in the Petition and in Dr. Weissman's Declaration as mapped to the preambles of claims 1 and 19 as our own findings. *See In re NuVasive, Inc.*, 841 F.3d 966, 974 (Fed. Cir. 2016) (explaining that the Board need not make specific findings about claim limitations that a patent owner does not dispute are disclosed in the prior art).

b) Packet Acquisition Device Limitations

Next, claims 1 and 19 recite "a packet acquisition device" limitation. Specifically, claim 1 recites "receiving a packet from a packet acquisition device," Ex. 1005, 35:13, and claim 19 recites "a packet acquisition device coupled to the connection point and configured to receive packets passing through the connection point," *id.* at 36:34–36. Petitioner persuasively shows that Riddle teaches this subject matter of claims 1 and 19. *See* Pet. 31–32 (citing Ex. 1006 ¶¶ 263–269, 273, 624–626, 737, 867, 892).

Specifically, Petitioner identifies various "packet acquisition devices coupled to a connection point" in Riddle, including network interface 40, which is connected to the system gateway depicted in Riddle's Figures 1A and 1B, and "network routing means" and router 75 depicted in Riddle's Figure 1C. *Id.* (citing Ex. 1008, 6:5–15, 7:21–24, 16:54–17:15 (claim 8), Figs. 1A–1C; Ex. 1006 ¶¶ 624–625).

As to "receiving packets," Petitioner persuasively shows that Riddle describes automatically classifying packet flows to help allocate bandwidth resources. *Id.* at 32. We agree with Petitioner and Dr. Weissman that, for this reason, an ordinarily skilled artisan "would have understood . . . [that] Riddle's packet acquisition device is configured to receive packets." *Id.* at 32 (citing Ex. 1008, code (57), 4:7–17; Ex. 1006 ¶ 626).

Patent Owner does not substantively address Petitioner's contentions or otherwise argue that Riddle fails to disclose the subject matter recited in the packet acquisition device limitations of 1 and 19. For the reasons detailed above, we are persuaded that Petitioner has shown by a preponderance of the evidence that Riddle teaches this subject matter and adopt the contentions set forth in the Petition and in Dr. Weissman's Declaration as mapped to these undisputed limitations of claims 1 and 19 as our own findings. *NuVasive*, 841 F.3d at 974.

c) Input Buffer Memory Limitation (Claim 19)

Next, claim 19 recites "an input buffer memory coupled to and configured to accept a packet from the packet acquisition device." Ex. 1005, 36:37–38. Petitioner persuasively shows that Riddle teaches this subject matter, or that an input buffer memory would have been obvious over the combination of Riddle and Ferdinand. Pet. 33–34 (citing Ex. 1006 ¶¶ 270–276, 689–691, 893).

Specifically, Petitioner contends, and we agree, that Riddle's memory subsystem 35a "acts as an input buffer memory by holding data in preparation for parsing and examination." *Id.* at 33 (citing Ex. 1008, 6:5–15, Figs. 1A–1B; Ex. 1006 ¶¶ 271–273). In addition, Riddle's Figure 1A illustrates the memory subsystem 35a coupled to the network interface 40 (i.e., a packet acquisition device) via the system gateway, and is thus "coupled to and configured to accept a packet from the packet acquisition device." Ex. 1008, 6:1–23, 16:54–17:15 (claim 8), Fig. 1A; Ex. 1006 ¶ 272. We further agree with Dr. Weissman that an ordinarily skilled artisan would have understood that Riddle's memory subsystem 35a acts as "an input buffer memory" as claimed because the TCP/IP protocol allows for temporary storage in packet-buffer memory. Ex. 1006 ¶ 274 (citing Ex. 1027, 71–72). Petitioner also contends, and we agree, that an ordinarily skilled artisan would have understood Riddle's router queues packets, and that a queue functions as a buffer memory within the router. Pet. 33 (citing Ex. 1008, 2:51–54, 7:21–24, 16:54–17:15 (claim 8); Ex. 1006 ¶¶ 273–274).

Alternatively, relying on the testimony of Dr. Weissman, Petitioner contends that an ordinarily skilled artisan "would have been motivated and found it obvious to include an input buffer memory in Riddle's memory storage based either upon [an artisan's] own knowledge of network devices or Ferdinand's teachings." *Id.* at 33–34 (citing Ex. 1006 ¶ 275). We agree. Specifically, Petitioner provides persuasive evidence in Riddle and in Dr. Weissman's testimony that an ordinarily skilled artisan "would have known that input buffer memories, such as queues, were found in every routing device." *Id.* at 34 (citing Ex. 1008, 2:51–55; Ex. 1006 ¶ 275). Petitioner also provides persuasive evidence that an ordinarily skilled artisan "would have understood that an input buffer memory temporarily stores

incoming packets until the device is ready to process the packets" so as to avoid the loss of packets. *Id.* (citing Ex. 1009, 49:2–12; Ex. 1006 ¶ 275). For example, Ferdinand teaches a frame buffer (i.e., input buffer memory) that is used to accept packets in network monitors. Ex. 1009, 26:2–7, 41:17–31, 49:11–12; Ex. 1006 ¶ 275.

We agree with Petitioner that an ordinarily skilled artisan would have been motivated, based on Ferdinand's teachings, to "modify Riddle's monitor with an input buffer memory to temporarily store received packets and improve performance by limiting packet drops," and that including such input buffer memory in a packet acquisition device in accordance with Riddle's and Ferdinand's teachings "amounts to nothing more than combining known prior-art technologies used in their ordinary and predictable manner to queue packet traffic." Pet. 34 (citing Ex. 1006 ¶ 276). Moreover, we agree with Petitioner that "Riddle and Ferdinand are in the same field of endeavor and contain overlapping disclosures with similar purposes," and "illustrate it was well-known and ubiquitous in the art for networking devices to include database storage structures" such as buffers. *Id.* at 24 (citing Ex. 1009, 19:8–12, 20:22–22:12, 26:2–7, 28:14–17, Figs. 5, 7A–7C; Ex. 1006 ¶ 258).

Patent Owner does not substantively address Petitioner's contentions or otherwise argue that Riddle, either alone or in combination with Ferdinand, fails to disclose or suggest the input buffer memory limitation recited in claim 19. Accordingly, for the reasons detailed above, we are persuaded that Petitioner has shown by a preponderance of the evidence that Riddle and/or the combination of Riddle and Ferdinand teaches or suggests this subject matter, and that an ordinarily skilled artisan would have been motivated to combine the teachings of the prior art as Petitioner proposes.

We therefore adopt the contentions set forth in the Petition and in Dr. Weissman's Declaration as mapped to this undisputed limitation of claim 19 as our own findings. *NuVasive*, 841 F.3d at 974.

d) Parser Record Limitations

Claim 1 recites "performing one or more parsing/extraction operations on the packet to create a parser record comprising a function of selected portions of the packet." Ex. 1005, 35:14–16. Claim 19 similarly recites "a parser subsystem coupled to the input buffer memory and including a slicer, the parsing subsystem configured to extract selected portions of the accepted packet and to output a parser record containing the selected portions." *Id.* at 36:39–44. Relying on disclosure in Riddle of a processor programmed to perform parsing/extraction operations and coupled to memory, Petitioner persuasively shows that Riddle discloses a parser subsystem (including a slicer) as recited in claim 19, as well as the corresponding parsing/extraction step of claim 1. Pet. 35–39 (citing Ex. 1006 ¶¶ 279–280, 692–700, 868, 894–896).

Specifically, Riddle teaches "a processor means operative to: parse a packet into a first flow specification" and illustrates in Figure 1A that the processor 30 is coupled to memory subsystem 35. Ex. 1008, 6:1–15, Fig. 1A. Riddle teaches that the parser applies "individual instances of traffic classification paradigms to packet network flows based on selectable information obtained from a plurality of layers of a multi-layered communication protocol in order to define a characteristic class, then mapping the flow to the defined traffic class." *Id.* at 4:10–15. And Riddle teaches that the parser extracts identifying characteristics (i.e., a signature for the flow) such as patterns and/or reference strings from headers. *Id.* at 8:67–27; 12:42–59. Thus, we agree with Petitioner that Riddle teaches a

parser subsystem (including a slicer) coupled to memory that parses and extracts packet portions. Pet. 36–37 (citing Ex. 1008, 4:10–15, 9:28–42, 9:48–49, 12:26–41, 12:42–53, 15:55–16:14 (claim 1), 16:54–17:15 (claim 8), 17:21–18:16 (claim 11), Fig. 4A; Ex. 1006 ¶¶ 693–694, 279–280). Further, Petitioner persuasively shows that Riddle teaches outputting the parser records containing the selected identifying characteristics in the same way as disclosed by the '789 patent. *Id.* at 37 (citing Ex. 1005, 13:44–54; Ex. 1008, 8:67–9:27; 12:42–59, Fig. 4A; Ex. 1006 ¶¶ 697–698).

Patent Owner does not substantively address Petitioner's contentions or otherwise argue that Riddle fails to disclose the subject matter recited in the parser record limitations of 1 and 19. For the reasons detailed above, we are persuaded that Petitioner has shown by a preponderance of the evidence that Riddle teaches this subject matter.

e) Flow-Entry Database Limitations

Claim 1 recites "looking up a flow-entry database comprising none or more flow-entries for previously encountered conversational flows." Ex. 1005, 35:17–19. Claim 19 recites "a memory for storing a database comprising none or more flow-entries for previously encountered conversational flows, each flow-entry identified by identifying information stored in the flow-entry." *Id.* at 36:45–48.

(1) The Parties' Arguments

Petitioner contends that Riddle alone or in view of Ferdinand renders the flow-entry database limitations obvious. Pet. 39–56 (citing Ex. 1006 ¶¶ 301–339, 342, 371–372, 628–636). As to the recited "memory for storing . . . flow-entries" feature, Petitioner contends that Riddle's packet monitor includes a storage subsystem 35 that stores flow-entry lists of previously encountered flows in a series of lists that include a plurality of

flow-entries encountered by the monitor. Pet. 40–41 (citing Ex. 1008, 6:1–23, 6:43–50, 12:37–59, Figs. 1A, 1B, 3; Ex. 1006 ¶¶ 328–339, 628). According to Petitioner, Riddle incorporates the saved lists into a classification tree, where each node of the tree represents a traffic class. *Id.* at 40 (citing Ex. 1008, 8:47–50, 9:28–33, 2:37–41, Fig. 3: Ex. 1006 ¶ 329). Relying on the testimony of Dr. Weissman, Petitioner contends that an ordinarily skilled artisan would have understood that Riddle's saved lists 308 "store flow-entries in memory." *Id.* at 41 (citing Ex. 1006 ¶ 334).

Further, Petitioner contends that "Riddle identifies a 'service aggregate' which is one type of traffic." *Id.* at 42 (citing Ex. 1008, 11:10–22, 13:53–59; Ex. 1006 ¶ 632). Petitioner contends that Riddle's "service aggregate links together into a 'conversation' multiple connection flows based on specific software program activity (e.g., PointCast traffic)," and therefore, "Riddle teaches storing separate entries for encountered conversational flows." *Id.* (citing Ex. 1006 ¶ 636; Ex. 1008, 11:60–63). Additionally, Petitioner contends that Riddle, in Figure 4B, "illustrates processing of the flow-entries of Figure 4A to determine whether a traffic class, such as a service aggregate, needs to be created for the flow," and that Riddle's monitor retrieves previously stored data from the saved lists, tests whether the retrieved traffic belongs to a service aggregate (i.e., "conversational flow"), and if so, creates a traffic class that "will match all components of the service aggregate." *Id.* at 42–43 (citing Ex. 1008, 4:49–51, 13:35–14:6, Fig. 4B; Ex. 1006 ¶¶ 332–334).

According to Petitioner, an ordinarily skilled artisan would have been motivated and would have found it obvious to store Riddle's lists and related tree in a flow-entry database, based either on the artisan's own knowledge of network devices or on Ferdinand's teachings, in order, for example, to

increase functionalities in furtherance of Riddle's desired goal of determining whether the packet monitor has received duplicate flow-entries. *Id.* at 44–46 (citing, *e.g.*, Ex. 1006 ¶¶ 335, 338–339, 629–631; Ex. 1008, 6:1–15, 10:1–18 (Table 2); 12:32–35, 12:37–38, 12:53–57, 12:61–13:9, 14:1–5, 15:1–15, Fig. 4A; Ex. 1009, 23:19–23, 27:16–19, 28:14–24, 29:4–30:10, 39:23–40:16, 54:13–17, 60:10–15, Figs. 7A–7C, 22).

Petitioner further contends that Riddle discloses flow-entries of "previously encountered conversational flows" in at least two ways: "(a) classifying based on service aggregates and (b) classifying based on PointCast." Pet. 46 (citing Ex. 1006 ¶¶ 301–327, 632–636). As to the former, Petitioner contends that "Riddle teaches identifying whether packets are part of 'service aggregates,' i.e., traffic classes linking separate connection flows based on the associated application," and that "these 'service aggregates' meet the claimed 'conversational flows.'" *Id.* at 46–47 (citing Ex. 1006 ¶¶ 302–303). Indeed, Petitioner contends, Riddle's claims 1 and 2 teach that the service aggregates are conversational flows. *Id.* at 50 (citing Ex. 1008, 15:56–16:14 (claim 1) (reciting "said network having any number of flows" and "parsing a packet into a first flow specification"), 16:15–26 (claim 2) (reciting "for at least a second flow having a second flow specification, recognizing said second flow specification and said first flow specification to comprise together a service aggregate" and "associating said first flow specification and said second flow specification with a newly-created classification tree node, said newly-created classification tree type node having a first traffic specification corresponding to said first flow specification and a second traffic specification corresponding to said second flow specification"); Ex. 1006 ¶ 313).

Regarding "PointCast Traffic," Petitioner contends that the provisional application, from which the '789 patent claims priority and which is incorporated by reference, "specifies that PointCast traffic flows include an identification signature, and that identifying PointCast traffic is an example of identifying a 'conversational flow.'" Pet. 51 (citing Ex. 1016, 7:16–25; Ex. 1006 ¶¶ 320–321). Because Riddle "creates a single traffic class for disjointed PointCast connection flows by searching headers for URLs that begin with '/FIDO-1/,'" Petitioner contends, "Riddle thus teaches identifying a conversational flow." *Id.* at 51–52 (citing Ex. 1006 ¶¶ 322–324; Ex. 1008, 11:57–12:9). Petitioner contends that an inventor of the '789 patent previously testified that creating a single flow to describe such disjointed flows is a type of conversational flow. *Id.* at 52 (citing Ex. 1068, 55:11–57:15; Ex. 1071 ¶ 4; Ex. 1072, 3). Petitioner contends that "Riddle teaches that one of its autoclassification processes identifies PointCast traffic using the outside service field of the class," specifying that "certain traffic may be distinguished by a signature," and "[a]ccordingly, based on Riddle's teachings, [an ordinarily skilled artisan] would have understood that Riddle stores flow-entries for 'previously encountered conversational flows" such as PointCast traffic.'" *Id.* at 52–53 (citing Ex. 1008, 11:50–53, 14:54–63, 15:28–31; Ex. 1006 ¶¶ 325, 326–327).

Finally, Petitioner contends that Riddle teaches "each flow-entry identified by identifying information stored in the flow-entry" as claimed, because Riddle enters characteristics of the traffic flow into the saved list (step 408), which identifying information includes "a flow specification and indicators." *Id*. at 53 (citing, *e.g.*, Ex. 1008, 12:42–59, Figs. 4A–4B; Ex. 1006 ¶¶ 342, 628).

In response to Petitioner's contentions, Patent Owner argues, first, that Riddle fails to teach "conversational flows," *see* PO Resp. 35–46, and second, that the combination of Riddle and Ferdinand does not teach the claimed flow-entry database, *see id.* at 46–47. As to "conversational flows," Patent Owner argues that Riddle classifies traffic into generic traffic classes, but does not perform any more granular analysis. *Id.* at 41. According to Patent Owner, Riddle has no need or ability to recognize whether a particular group of packets in one direction relate to another flow or may form part of a conversational flow implicating an activity, unlike the claims of the '789 patent "which require specific operations involving conversational flows." *Id.* Further, according to Patent Owner, "just because Riddle discloses a traffic classification activity does not mean that it discloses or suggests the specific activity required in the '789 [p]atent, which is narrowly focused on conversational flows." *Id.* at 42–43. Patent Owner argues that "Riddle combines flows based on the type of activity," but "the '789 [p]atent inventions recognize separate conversational flows even when these different flows are based on the same type of activity." *Id.* at 43. Still further, Patent Owner argues that "'conversational flows' include ***bidirectional*** exchanges of packets," but Riddle "expressly teaches that its traffic classes are limited to unidirectional traffic." *Id.* at 45 (citing Ex. 1008, 8:50–53, 11:28–29, 13:57–59; Ex. 2061 ¶¶ 64–65, 83). According to Patent Owner, "[b]ecause Riddle's traffic classes are unidirectional, they cannot satisfy the 'conversational flow' element required in every challenged claim." *Id.* at 46.

Regarding the claimed flow-entry database limitations, Patent Owner argues that Riddle does not use conversational flows, and accordingly, "fails to disclose multiple limitations present in the claims of the '789 [p]atent,"

such as the recited flow-entry database "comprising none or more flow-entries for previously encountered conversational flows." PO Resp. 46 (citing Ex. 2061 ¶ 87). Further, Patent Owner argues, although the Petition relies on the combination of Riddle and Ferdinand as teaching this limitation, "Ferdinand gathers statistics on network traffic" and "never discloses or suggests storing 'flow-entries for previously encountered conversational flows.'" *Id.* (citing Ex. 1009, 7:17–18, 8:3–5). "Nor would Ferdinand have reason to implement such a solution," according to Patent Owner, "because its goal is merely to keep count," and "[i]t can do so by the standard statistical measures described in the specification." *Id.* at 46–47.

In its Reply, Petitioner contends that Patent Owner's arguments do not analyze Riddle under the Board's construction of "conversational flows," but instead under Patent Owner's own incorrect construction. Reply 10–11. Regardless, Petitioner contends, Riddle discloses "conversational flows" even under Patent Owner's construction. *Id.* at 11. First, according to Petitioner, "Riddle specifies that its service aggregate 'is provided for certain applications that use more than one connection in a *particular* conversation between *a client and a server*.'" *Id.* (citing Ex. 1008, 11:10–19). For example, Petitioner contends, "Riddle describes listing service aggregates based on their source and/or destination, e.g., 'host1,' where host1 can represent a client or a server involved in an FTP flow." *Id.* at 11–12 (citing Ex. 1008, 2:13–21, 7:12–21, 13:8–26, Fig. 1C; Ex. 1006 ¶¶ 311–312, 823). Further, Petitioner contends that "Riddle teaches defining a traffic class by URI-pattern (e.g., '/sales/*') and by the specific client/server pair involved (e.g., from 'client Z' to 'server Y')." *Id.* at 12 (citing Ex. 1008, 8:58–9:11; Pet. 62–63).

In response to Patent Owner's argument that Riddle classifies inbound and outbound flows only separately, rather than bidirectionally, Petitioner contends that Riddle, in fact, discloses that all traffic in a particular conversation between a client and a service is classified into a single service aggregate. Reply 13 (citing Ex. 1008, 11:12–15; Pet. 46–47). Petitioner cites, for example, disclosure in Riddle that the service aggregate for an FTP session contains "each conversation" between the client and server for the session, which Petitioner contends refers to all packets exchanged in either direction. *Id.* at 13–14 (citing Ex. 1008, 11:13–19, 12:1–12, 13:54–59; Pet. 48). Still further, Petitioner argues that "Riddle isn't limited to flow classification based on port or server identity," but discloses, for example, that "flow classification can use port numbers and can further 'extend to examination of the data contained in a flow's packets' via signature-based analysis." *Id.* at 14 (citing Ex. 1008, 11:50–53; Pet. 71). Petitioner contends that "Telnet traffic's multi-packet 'option negotiations' 'may indicate an appropriate class,' an example of classification from exchanged data, not port number." *Id.* (citing Ex. 1008, 11:66–67).

Lastly, in response to Patent Owner's arguments that Riddle . . . has no disclosure of a flow-entry database" and that "Ferdinand never discloses or suggests storing 'flow-entries for previously encountered conversational flows'" (PO Resp. 46–47), Petitioner contends that Patent Owner does not address the Petition's contention that, "based upon [an ordinarily skilled artisan's] knowledge of network devices, [that artisan] would have been motivated and found it obvious to store Riddle's classification information, such as flow-entry lists 308, in a database." Reply 21 (citing Pet. 39–46). Petitioner further contends that the Petition alleges that the "flow-entry database" limitations would have been obvious over "Riddle alone or in

combination with Ferdinand," not based on Ferdinand alone, and that Patent Owner's arguments with respect to Ferdinand individually are irrelevant to Petitioner's asserted ground of unpatentability. *Id.* at 21–22 (citing Pet. 22–23). Citing arguments presented in the Petition, Petitioner contends that "[t]he 'flow-entry database limitations' would have been obvious in view of Riddle's teachings regarding flow-entries and relational databases based on Ferdinand's teachings regarding statistics databases for storing flow classification information." *Id.* at 22 (citing Pet. 39–46).

In the Sur-Reply, Patent Owner argues that Riddle fails to disclose "conversational flows," because Riddle does not classify activities based on a particular client, Riddle categorizes inbound and outbound traffic separately, and Riddle fails to distinguish between different activities of the same type. Sur-Reply 13–16. First, according to Patent Owner, Petitioner's contention that a service aggregate can distinguish between the same type of activity between different clients (Reply 11–12) "hinges on an extrapolation of how a single connection example is classified that is not supported by the rest of the specification." Sur-Reply 14. According to Patent Owner:

> In Riddle, service aggregates are a "common traffic class" that are "created with a plurality of traffic specifications." EX1008 at 11:15–23. Riddle notes "[a] traffic class is broadly defined as traffic between ***one or more clients*** and ***one or more servers***." *Id.* at 8:48–49, 14:18–20 ("[A]nother method of identifying an individual traffic class is to detect simultaneous connections to the same host port from different clients."). Thus, Riddle does not classify traffic per user, but by the type of traffic based on properties such as the ports being used. This understanding reflects Riddle's stated purpose—bandwidth management.
>
> Petitioner also suggests that, because a traffic class can be defined in terms of a specific source or destination IP address, . . . Riddle discloses "classifying traffic into client-specific

> conversational flows." Reply at 12 (citing Riddle at 8:58–9:11, 10:1–17). That is incorrect. A rule written specifically for a client's IP address would not distinguish one client activity from another; it would simply aggregate all traffic for that client. Defining a traffic class in terms of a specific source or destination address is an implementation of the conventional technique of matching one or more parts of a 5-tuple—but not a conversational flow. PO [Resp.] 6, 19–20; EX2061 ¶¶ 62–65, 81–83.

Id. at 14. Further, Patent Owner argues, "Riddle expressly teaches that its traffic classes are limited to unidirectional traffic, and that service aggregates are traffic classes." *Id.* at 15. Finally, with regard to the recited "flow-entry database," Patent Owner responds that, notwithstanding Petitioner's arguments that implementing these limitations would have been obvious, "Petitioner provided no evidence or argument to show it would have been 'unusually simple' to add the claimed limitations, nor that the technology is 'particularly straightforward.'" *Id.* at 21. According to Patent Owner, "[t]he challenged claims do not recite a database generally, but recite a flow-entry database specifically adapted for use in a packet monitor," and an ordinarily skilled artisan "would have understood the statistics database of Ferdinand to serve a very different purpose than the claimed flow-entry database." *Id.* at 22.

(2) Analysis

Having considered the full trial record, we are persuaded that Petitioner has shown by a preponderance of the evidence that the combination of Riddle and Ferdinand renders obvious the recited flow-entry database limitations in view of the proper construction of "conversational flow." *See supra* § III.C. Petitioner's contentions, which we adopt, are supported by the cited evidence and are persuasive. Moreover, we are

persuaded that an ordinarily skilled artisan would have been motivated to combine the teachings of Riddle and Ferdinand as proposed by Petitioner and supported by the testimony of Dr. Weissman. *See* Pet. 24–25 (citing Ex. 1006 ¶¶ 256–257, 259).

As an initial matter, for the reasons set forth in Section III.C above, we conclude that the term "conversational flow" is not client- or user-specific. Further, notwithstanding Patent Owner's arguments that Riddle is concerned with bandwidth management rather than network monitoring, PO Resp. 41–44; Sur-Reply 13–14, obviousness does not require that the prior art address the same problem identified by the patent. *See KSR*, 550 U.S. at 419 ("[N]either the particular motivation nor the avowed purpose of the patentee controls . . . . What matters is the objective reach of the claim. If the claim extends to what is obvious, it is invalid."); *Outdry Techs. Corp. v. Geox S.p.A.*, 859 F.3d 1364, 1371 (Fed. Cir. 2017) ("The motivation supported by the record . . . need not be the same motivation articulated in the patent.").

Further, contrary to Patent Owner's contentions (PO Resp. 45; Sur-Reply 15–16), neither the Board's construction of "conversational flow" nor Patent Owner's proposed construction *requires* "bidirectional" exchanges of packets (*see supra* § III.C; PO Resp. 23–27). Indeed, both the Board's adopted construction and Patent Owner's proposed construction recite, *inter alia*, "the sequence of packets that are exchanged *in any direction* as a result of an activity." *Supra* § III.C (emphasis added); PO Resp. 23–26. The phrase "in any direction" is not limited to bidirectional packet flows but also encompasses unidirectional flows. As Petitioner points out, this interpretation is consistent with the testimony of Ms. Quigley, who states that conversational flows "can," rather than "must,"

include bidirectional exchanges. Ex. 2061 ¶ 83; Reply 13 n.41. Regardless, we further agree with Petitioner that Riddle's disclosure—that all traffic in a particular conversation between a client and a server is classified into a single service aggregate—teaches bidirectional exchange. Reply 13 (citing Ex. 1008, 11:12–19, 12:1–12, 13:54–59); *see also* Pet. 48 (mapping Riddle's service aggregates to the claimed conversational flows and stating that Riddle's "Table 3 specifies detecting services in 'both directions'").

Having concluded that Riddle teaches the claimed "conversational flows," we are further persuaded by Petitioner's contentions that an ordinarily skilled artisan would have found it obvious in view of the combined teachings of Riddle and Ferdinand to store flow-entries for previously encountered conversational flows in a database. *See* Pet. 45–46. Riddle discloses storing flow entries in its series of lists 308 that include a plurality of flow-entries encountered by the monitor, and Petitioner persuasively shows, with the support of Dr. Weissman's testimony, that an ordinarily skilled artisan would have been motivated, based either on Riddle's own disclosure of relational database 306 or on the teachings of Ferdinand, to implement Riddle's saved flow-entries in a database, in order, for example, to increase functionalities in furtherance of Riddle's desired goal of determining whether the packet monitor has received duplicate flow-entries. *Id.* at 44–46 (citing, *e.g.*, Ex. 1006 ¶¶ 335, 338–339, 629–631; Ex. 1008, 6:1–15, 10:1–18 (Table 2); 12:32–35, 12:37–38, 12:53–57, 12:61–13:9, 14:1–5, 15:1–15, Fig. 4A; Ex. 1009, 23:19–23, 27:16–19, 28:14–24, 29:4–30:10, 39:23–40:16, 54:13–17, 60:10–15, Figs. 7A–7C, 22).

Finally, because the asserted ground is based on the combination of Riddle and Ferdinand, Patent Owner's arguments that Ferdinand does not individually teach storing flow-entries in a database are unpersuasive. *See*

Bradium Techs. LLC v. Iancu, 923 F.3d 1032, 1050 (Fed. Cir. 2019) (holding that arguments that "attack the disclosures of the two references individually" cannot overcome a ground premised on the combination of those references (citing *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) ("Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references."))).

Accordingly, for these reasons, we are persuaded that Petitioner has shown by a preponderance of the evidence that the recited flow-entry database limitations are taught by the combination of Riddle and Ferdinand.

f) Lookup Engine Limitations

Claim 19 recites "a lookup engine coupled to the output of the parser subsystem and to the flow-entry memory and configured to lookup whether the particular packet whose parser record is output by the parser subsystem has a matching flow-entry, the looking up using at least some of the selected packet portions and determining if the packet is of an existing flow." Ex. 1005, 36:49–55. Claim 1 similarly recites "the looking up using at least some of the selected packet portions and determining if the packet is of an existing flow." *Id.* at 35:19–21. Petitioner persuasively shows that Riddle and/or Riddle in view of Ferdinand renders these limitations obvious. Pet. 54–56 (citing Ex. 1006 ¶¶ 328–339, 342, 627–636, 652, 705–706, 739–741, 868, 899).

Specifically, while referring back to its contentions with respect to the flow-entry database limitations of claims 1 and 19, *see supra* § III.E.1.e.1., Petitioner contends that "Riddle looks up whether a received packet belongs to a flow-entry using its processor and memory subsystem, which is the claimed 'lookup engine.'" Specifically, Petitioner contends that "Riddle's

operations run on a processor having programming code performing lookup functions to match parsed flow specifications to a traffic class." *Id.* at 55–56 (citing Ex. 1008, 5:53–57, 11:10–23, 12:42–49, 13:36–62. 16:54–17:15 (claim 8); Fig. 4A; Ex. 1006 ¶¶ 333, 342, 706). We agree with Petitioner and Dr. Weismann that an ordinarily skilled artisan "would have understood Riddle's processor and memory include a lookup engine," because Riddle's lookup engine is configured to determine whether a received packet belongs to a flow-entry in the flow-entry lists. *Id.* at 56 (citing Ex. 1006 ¶ 706).

Patent Owner does not substantively address Petitioner's contentions or otherwise argue that Riddle, either alone or in combination with Ferdinand, fails to disclose or suggest the lookup engine limitations recited in claims 1 and 19. Accordingly, for the reasons detailed above, we are persuaded that Petitioner has shown by a preponderance of the evidence that Riddle and/or the combination of Riddle and Ferdinand teaches or suggests this subject matter, and that an ordinarily skilled artisan would have been motivated to combine the teachings of the prior art as Petitioner proposes. We therefore adopt the contentions set forth in the Petition and in Dr. Weissman's Declaration as mapped to these undisputed limitations of claims 1 and 19 as our own findings. *NuVasive*, 841 F.3d at 974.

g) Flow Insertion Engine Limitation (Claim 19)

Claim 19 recites, in part, "a flow insertion engine coupled to the flow-entry memory and to the lookup engine and configured to create a flow-entry in the flow-entry database, the flow-entry including identifying information for future packets to be identified with the new flow-entry." Ex. 1005, 36:56–60. Petitioner persuasively shows that Riddle teaches this subject matter of claim 19. Pet. 56–58 (citing Ex. 1006 ¶¶ 715–720, 900–903).

Specifically, while referring back to its contentions with respect to the flow-entry database limitations of claims 1 and 19, *see supra* § III.E.1.e.1., Petitioner contends that, as shown in Figure 4B, "Riddle describes looking up whether a particular packet has a matching entry for a stored service aggregate flow (i.e., 'conversational flow') at step 426, and if not, creates a new flow-entry at step 425 for further packets to be identified with the new flow-entry." *Id.* at 57 (citing Ex. 1008, 11:10–23, 13:36–62, Fig. 4B; Ex. 1006 ¶ 716). We agree with Petitioner and Dr. Weissman that an ordinarily skilled artisan "would have understood that Riddle's processor and the corresponding code performing the functions above constitute the claimed 'flow insertion engine,'" given Riddle's teachings that a new flow-entry is created if the packet does not have a matching entry in a service aggregate. *Id.* at 56 (citing Ex. 1006 ¶ 706).

Patent Owner does not substantively address Petitioner's contentions or otherwise argue that Riddle fails to disclose or suggest the flow insertion engine limitation recited in claim 19. Accordingly, for the reasons detailed above, we are persuaded that Petitioner has shown by a preponderance of the evidence that Riddle teaches this subject matter and adopt the contentions set forth in the Petition and in Dr. Weissman's Declaration as mapped to this undisputed limitation of claim 19 as our own findings. *NuVasive*, 841 F.3d at 974.

h) Classifying Flows Limitations

Next, claims 1 and 19 recite limitations relating to the classification of packets as belonging to an existing flow or a new flow, depending on whether the packet "is of an existing flow," or "is of a new flow." *See* Ex. 1005, 35:22–27 (claim 1), 36:60–67 (claim 19). Relying on the testimony of Dr. Weissman, and reiterating its contentions with respect to

the flow-entry database limitations (*supra* § III.E.1.e.1), Petitioner persuasively shows that Riddle teaches each of these remaining limitations. Pet. 58–61 (citing, *e.g.*, Ex. 1008, 5:53–57, 9:28–41, 10:19–56, 12:42–60, 13:36–62, 15:16–27, Figs. 2A–2B, 3, 4A–4B; Ex. 1006, 650–652, 655, 705-706, 721-728, 742, 870–871, 904–905).

Specifically, as explained above (*supra* §§ III.E.1.f–g), Riddle's lookup engine looks up whether a flow is a new flow or an existing flow, and if the packet is of a new flow, Riddle's flow insertion engine creates a new flow-entry and identifying information to associate future packets with the new flow-entries. Ex. 1008, 12:42–60, 13: 36–62, Fig. 4A (step 408), Fig. 4B (step 425).

Patent Owner does not substantively address Petitioner's contentions or otherwise argue that Riddle fails to disclose or suggest the classifying flows limitations recited in claims 1 and 19. Accordingly, for the reasons detailed above, we are persuaded that Petitioner has shown by a preponderance of the evidence that Riddle teaches this subject matter and adopt the contentions set forth in the Petition and in Dr. Weissman's Declaration as mapped to these undisputed limitations of claims 1 and 19 as our own findings. *NuVasive*, 841 F.3d at 974.

i) Protocol Limitations

The final limitations of claim 1 and 19 specify that the "parsing/extraction operations" or the "operation of the parser subsystem" "depend on one or more of the protocols to which the packet conforms." *See* Ex. 1005, 35:28–29 (claim 1), 37:1–2 (claim 19). We agree with Petitioner that Riddle teaches these limitations. Pet. 61–63 (citing Ex. 1006 ¶¶ 729–733, 872, 906; Ex. 1008, 4:10–15, 9:28–42, 9:48–49, 9:64–65, 11:48–67, 12:3–12, 12:26–41).

Specifically, Riddle teaches that its packet applies "individual instances of traffic classification paradigms to packet network flows based on selectable information obtained from a plurality of layers of a *multi-layered communication protocol* in order to define a characteristic class, then mapping the flow to the defined traffic class." Ex. 1008, 4:10–15 (emphasis added). Thus, we agree with Petitioner that an ordinarily skilled artisan "would have understood that the operation of Riddle's parsing subsystem depends on the one or more protocols of the received packets." Pet. 63 (citing Ex. 1003 ¶ 733).

Patent Owner does not substantively address Petitioner's contentions or otherwise argue that Riddle fails to disclose or suggest the protocol limitations recited in claims 1 and 19. Accordingly, we are persuaded that Petitioner has shown by a preponderance of the evidence that Riddle teaches this subject matter and adopt the contentions set forth in the Petition and in Dr. Weissman's Declaration as mapped to these undisputed limitations of claims 1 and 19 as our own findings. *NuVasive*, 841 F.3d at 974.

2. Dependent Claims 2, 13–17, 20, and 42

Having decided that either Riddle or the combination of Riddle and Ferdinand teaches or renders obvious each and every limitation of independent claims 1 and 19, we turn to the remaining challenged claims in this ground of unpatentability—i.e., claims 2, 13–17, 20, and 42. Claims 2 and 13–17 depend, directly or indirectly, from claim 1. Claims 20 and 24 depend directly from claim 19. As such, the dependent claims also include the above-discussed limitations of their respective independent claims. Patent Owner presents a separate argument only with respect to the "state-based" limitations found in dependent claims 13–18. *See* PO Resp. 48–50. We address those limitations individually below.

a) Dependent claims 2, 20, and 42

As to claims 2, 20, and 42, we find that Petitioner persuasively maps the limitations of these dependent claims to the cited art (and to the testimony of Dr. Weissman in support of the combination of references). *See* Pet. 63–65, 72–73 (citing, for **claim 2**: Ex. 1008, code (57), 1:38–44, 1:54–61, 2:4–13, 2:66–67, 3:32–39, 3:67–4:2, 4:6–9, 4:16–17, 6:5–15, 7:10–34, 10:52–59, 12:3–12, 12:50–13:31, 13:59–60, Figs. 1A–1C, 3; Ex. 1006 ¶¶ 263–267, 874–878; for **claim 20**: Ex. 1006 ¶¶ 908–909; for **claim 42**: Ex. 1008, 1:54–61, 2:4–13, 2:66–67, 3:32–39, 3:67–4:2, 4:6–9, 10:57–59, 12:3–12; Ex. 1006 ¶¶ 874–879, 910–914). Patent Owner does not present separate and specific arguments for any of these dependent claims. *See generally* PO Resp. We adopt the contentions set forth in the Petition and in Dr. Weissman's Declaration as mapped to the limitations of the challenged claims as our own findings. *NuVasive*, 841 F.3d at 974.

b) Dependent Claims 13–17: The State-Based Limitations

Claim 13 depends directly from claim 1, and claims 14–17 depend, directly or indirectly, from claim 13. Ex. 1005, 36:7–25. Where the packet of claim 1 is of an existing flow as in step (d), claim 13 adds the limitation of "obtaining the last encountered state of the flow and performing any state operations specified for the state of the flow starting from the last encountered state of the flow." *Id.* at 36:7–11. And, where the packet is of a new flow as in step (e), claim 13 adds the limitation of "performing any state operations required for the initial state of the new flow." *Id.* at 36:11–13. Claims 14 and 16 specify that the "state processing of each received packet of a flow furthers the identifying of the application program of the flow," while claims 15 and 17 add specificity to the "state operations," including: updating the flow-entry, storing identifying information with the flow-entry,

and searching the parser record for the existence of reference strings. *Id.* at 36:14–25. Petitioner persuasively shows that Riddle teaches the subject matter of claims 13–17. Pet. 65–71 (citing Ex. 1006 ¶¶ 345–372, 386–392, 724–728, 743, 767, 778–788, 820–824, 826–839, 881, 883–885, 888–890).

(1) The Parties' Arguments

Petitioner contends that Riddle discloses a state processor coupled to memory where the processor performs "state operations" for existing and new flows. *Id.* at 65–68. Specifically, Petitioner contends, and we agree, that Riddle performs the state operations of determining statistical metrics for traffic, such as (i) duplicate count, (ii) the most recent encounter time, and (iii) byte count. *Id.* at 65–66 (citing Ex. 1008, 12:42–13:8, 14:1–5, Fig. 4A; Ex. 1006 ¶ 821). For existing flows, Petitioner contends that Riddle teaches storing "a count of the duplicates and a most recent time traffic with these identifying characteristics was encountered," and updating the flow-entry of the existing flow, including storing one or more statistical measures kept in the flow-entry by determining and updating traffic metrics." *Id.* at 66–67 (citing Ex. 1008, 12:53–13:8, 13:36–62, 14:1–5, Figs. 4A–4B; Ex. 1006 ¶ 821). For new flows, Petitioner contends that Riddle teaches creating a new flow-entry in Figure 4A's step 408 and a new class in Figure 4B's step 425. *Id.* at 67–68. Relying on the testimony of Dr. Weissman, Petitioner contends that an ordinarily skilled artisan "would have understood that Riddle's creation of a new flow entry and a new class are examples of state operations for the initial state of the new flow." *Id.* at 68 (citing Ex. 1006 ¶ 786).

In response, Patent Owner argues that the prior art fails to teach state-based analysis. PO Resp. 47–50. According to Patent Owner, "Riddle relates to classifying traffic based on an *individual packet* in the flow, rather

than on a state of the flow (*i.e.*, evaluation across multiple packets)." *Id.* at 47. More particularly, Patent Owner argues that "Riddle views each packet as an independent and unique occurrence and focuses on evaluating that packet—in isolation—to determine whether a given category of traffic has encountered a 'hit.'" *Id.* (citing Ex. 2061 ¶¶ 62–65, 80–83). Patent Owner argues that "[t]he teachings of Riddle relied on by Petitioner[] show Riddle stepping through a hierarchical traffic class tree to classify a packet," but that "this analysis turns solely on an *individual packet's* information and 'multiple orthogonal classification attributes.'" *Id.* (citing Ex. 1008, Fig. 2A, 9:16–18, 9:20–25, 10:20–39). In contrast with claim 13, Patent Owner argues, "Riddle does not analyze a packet based on the context provided by previously encountered packets." *Id.* Because "Riddle's evaluation turns based on the 'information' and 'attributes' in an *individual packet*, as opposed to relying on the context and relationship of various packets with one another," Patent Owner argues, "Riddle has no concept of 'state of the flow.'" *Id.* at 49. Patent Owner also argues that the Board already rejected arguments mirroring those raised by Petitioner with respect to the state-based limitations in a related proceeding by finding that "although Riddle teaches classifying multiple packets in a flow, this classification occurs **serially on an individual packet by packet basis**, rather than relying on state transitions across multiple packets." *Id.* at 49–50 (citing IPR2020-00335, Paper 19 at 19–20 (PTAB Aug. 27, 2020)).

In its Reply, Petitioner points out that, in contrast to the limitations at issue in the related proceedings cited by Patent Owner, claim 13 of the '789 patent recites "(a) receiving a packet . . . (d) if *the packet* is of an existing flow, obtaining the last encountered state of the flow . . . (e) if *the packet* is of a new flow, performing any [operations/analysis] required for the initial

state of the new flow." Reply 15. Petitioner contends that the limitations of claim 13 thus "refer to the ['789] patent's embodiments whereby information from an individual packet is sufficient for the state-based analysis of a conversational flow" and "[n]one of these limitations requires state transitions across a sequence of packets." *Id.* Furthermore, Petitioner contends, even if the state-related limitations required analyzing more than one packet, Riddle teaches classifying service aggregates based on a plurality of indicators across multiple packets. *Id.* at 16–19 (citing, *e.g.*, Ex. 1008, 11:11–20, 11:66–67, 12:42–63, 13:40–59, Fig. 4B, claim 5; Ex. 1006 ¶¶ 351, 353, 355–357, 366–369, 556, 568, 835–837, 883).

Patent Owner argues in its Sur-Reply that Petitioner has omitted critical claim language by using ellipses to present an abbreviated version of the recited claim limitation. Sur-Reply 19. According to Patent Owner, Petitioner thereby provides an improper invalidity analysis by dropping several requirements of the claim language. *Id.* For example, Patent Owner argues that claim 13 requires "performing any state operations specified for the state of the flow starting from the last encountered state of the flow," which Riddle does not contemplate. *Id.* According to Patent Owner, "Riddle's evaluation turns based on the 'information' and 'attributes' in an individual packet, as opposed to relying on the context and relationship of various packets with one another." *Id.* at 20.

(2) Analysis

Having considered the parties' respective contentions, we find that Petitioner's assertions, which we adopt, are supported by the cited evidence and are persuasive. *See* Pet. 65–71. We agree with Petitioner that the state-based limitations here differ substantially from the limitations that were at issue in the related proceedings cited by Patent Owner, and that the

differences are significant with respect to our analysis. Notably, the Board did not find in either of those related proceedings that Riddle fails to disclose "performing any state operations specified for the state of the flow starting from the last encountered state of the flow," and "performing any state operations required for the initial state of the new flow," as recited in claim 13 of the '789 patent. Instead, the Board found that Petitioner had not sufficiently shown that the asserted prior art teaches or suggests "state *transition* patterns" across multiple packets (IPR2020-00335, Paper 19 at 14–22 (emphasis added)). That limitation does not appear in claim 13 of the '789 patent. Moreover, we agree with Petitioner that information only from an individual packet is required for the state-based analysis recited in claim 13 and that the claims do not require state transitions to occur across a sequence of packets. *See* Reply 15. In particular, claim 13 recites "if *the packet* is of an existing flow" and "if *the packet* is of a new flow." Ex. 1005, 36:7–8, 11–12 (emphases added). And thus information only from an individual packet is required (i.e., "one" packet is covered) for claims 13–17 of the '789 patent. In contrast, the corresponding limitation that was at issue in the related proceedings recited "a sequence of *packets*" (i.e., in plural form). *See* Ex. 1001, 35:34–35 (reciting limitation in claim 1 of the '099 patent).

Accordingly, we are persuaded that Petitioner has shown by a preponderance of the evidence that the combination of Riddle and Ferdinand teaches or suggests the state-based limitations of claims 13–17.

3. Summary

After having analyzed the entirety of the trial record, we determine that Petitioner has shown by a preponderance of the evidence that claims 1, 2, 13–17, 19, 20, and 42 are unpatentable over the combination of Riddle

and Ferdinand. In particular, we find that Petitioner has demonstrated sufficiently that the teachings of the prior art account for all limitations of the claims, have been properly combined, and that an ordinarily skilled artisan would have found it obvious to combine these teachings in the manner proposed by Petitioner.

F. Obviousness Over Riddle in View of Ferdinand and Hasani

Petitioner contends that claims 44, 48, and 49 would have been obvious over Riddle in view of Ferdinand and further in view of Hasani. Pet. 74–85. Patent Owner opposes. PO Resp. 35–50; Sur-Reply 13–16, 19–22. Having considered the totality of the arguments and evidence, we find that Petitioner has shown by a preponderance of the evidence that claims 44, 48, and 49 are unpatentable as having been obvious over Riddle in view of Ferdinand and Hasani.

1. Independent Claim 44

Several limitations of independent claim 44 are identical or substantially identical to those recited in claim 1, including: the preamble (reciting "[a] method of examining packets passing through a connection point on a computer network"), *see* Ex. 1005, 39:3–5; the packet acquisition device limitations (reciting "receiving a packet from a packet acquisition device"), *id.* at 39:6; the flow-entry database limitations (reciting "looking up a flow-entry database comprising none or more flow-entries for previously encountered conversational flows, the looking up using at least some of the selected packet portions, and determining if the packet is of an existing flow"), *id.* at 39:16–20; and the state-based limitations (reciting "if the packet is of an existing flow, obtaining the last encountered state of the flow and performing any state operations specified for the state of the flow starting from the last encountered state of the flow" and "if the packet is of a

new flow, performing any analysis required for the initial state of the new flow and storing a new flow-entry for the new flow in the flow-entry database, including identifying information for future packets to be identified with the new flow-entry"), *id.* at 39:21–40:2. We agree with Petitioner that Riddle and/or the combination of Riddle and Ferdinand teach or render obvious each of these limitations, for the same reasons discussed above with respect to the preambles (*supra* § III.E.1.a), packet acquisition device limitations (*supra* §III.E.1.b), the flow-entry database limitations (*supra* § III.E.1.e), and state-based limitations (*supra* § III.E.2.b). *See also* Pet. 76, 82–83.

Claim 44 also recites "performing one or more parsing/extraction operations on the packet according to a database of parsing/extraction operations to create a parser record comprising a function of selected portions of the packet, the database of parsing/extraction operations including information on how to determine a set of one or more protocol dependent extraction operations from data in the packet that indicate a protocol is used in the packet." Ex. 1005, 39:7–16. Petitioner persuasively shows that Riddle teaches this subject matter, or that the parsing/extraction operations limitation of claim 44 would have been obvious over Riddle in combination with Hasani. Pet. 76–84 (citing Ex. 1006 ¶¶ 618–626, 930–934, 936–945).

Specifically, referring to Figure 3, Petitioner provides persuasive evidence that Riddle teaches a "database of parsing/extraction operations" by storing knowledge base 306 in a relational database. Pet. 77 (citing Ex. 1008, 12:26–41, Fig. 3; Ex. 1006 ¶¶ 932–933). Riddle teaches that the knowledge base 306 is used to determine a packet's classification information. Ex. 1008, 12:26–41, Fig. 3. Petitioner provides persuasive

evidence that Riddle's knowledge base 306 "includes information describing how to determine at least one of the protocols used by a packet in a flow from data in the packet." Pet. 77–78 (citing Ex. 1008, 3:36–39). For example, Riddle's Figure 1D illustrates the OSI network model, which diagrams the relationship between TCP/IP protocol suite layers. Ex. 1008, 7:35–8:46, Fig. 1D. During parsing/extraction operations, Riddle's monitor determines the protocols used in the packet from the packet's data. *Id.* at 4:10–17, 4:55–60. Petitioner also presents persuasive evidence that "Riddle's Table 2 provides examples of information used to build traffic classes (such as an FTP application), and shows that Riddle's monitor uses packet data to determine the protocols used." Pet. 79 (citing Ex. 1008, 10:1–19 (Table 2)).

Petitioner further contends that, "[t]o the extent Riddle does not disclose determining [a] set of protocol-dependent extraction operations," an ordinarily skilled artisan would have found it obvious to include that information based on Riddle, [the skilled artisan's] own knowledge, or Hasani. Pet. 80. We agree. Specifically, Petitioner provides persuasive evidence in Riddle and in Dr. Weissman's testimony that an ordinarily skilled artisan "would have understood that the state operations that Riddle performs are stored in database 306 because they relate to how Riddle classifies traffic based upon protocols." *Id.* at 80 (citing Ex. 1008, 8:46–9:27, 10:1–19 (Table 2), 10:27–11:23, 12:32–35, Figs. 2A–2B; Ex. 1006 ¶¶ 938–941). Petitioner also provides persuasive evidence that Hasani stores parsing/extraction operations for packets in a database. *Id.* (citing Ex. 1015, 6:27–57, Figs. 3–5). For example, Hasani "creates a forwarding vector based on stored protocol-dependent information" and "teaches protocol-

dependent packet filtering." *Id.* at 80–81 (citing Ex. 1015, 6:12–26, 11:28–46; Ex. 1006 ¶¶ 942–943).

We agree with Petitioner that an ordinarily skilled artisan would have known that a relational database could store protocol-dependent state operations, based on the teachings of Riddle and Hasani, and "would have been motivated to do so in Riddle's database because it would make access and maintenance of these operations more efficient," and "accomplish Riddle's objective of examining packets in real-time." *Id.* at 81–82 (citing, *e.g.*, Ex. 1008, 1:54–2:13, 2:66–67, 3:67–4:2, 12:3–12; Ex. 1006 ¶ 945). Moreover, we agree with Petitioner that Riddle and Hasani "are in the same field of endeavor and contain overlapping disclosures with similar purposes"—specifically, packet parsers that carry out parsing/extraction operations. *Id.* at 74–75 (citing, *e.g.*, Ex. 1008, 8:47–9:27, 12:26–53, 16:54–17:15 (claim 8), Figs. 4A–4B; Ex. 1015, 6:12–57, Figs. 3, 4, 5B; Ex. 1006 ¶ 926).

Patent Owner does not substantively address Petitioner's contentions or otherwise argue that Riddle, either alone or in combination with Hasani, fails to disclose or suggest the parsing/extraction operations limitation recited in claim 44. Accordingly, for the reasons detailed above, we are persuaded that Petitioner has shown by a preponderance of the evidence that Riddle and/or the combination of Riddle and Hasani teaches or suggests this subject matter, and that an ordinarily skilled artisan would have been motivated to combine the teachings of the prior art as Petitioner proposes. We therefore adopt the contentions set forth in the Petition and in Dr. Weissman's Declaration as mapped to this undisputed limitation of claim 44 as our own findings. *NuVasive*, 841 F.3d at 974.

2. Dependent Claims 48 and 49

Claims 48 and 49 depend directly from claim 44. As such, these dependent claims also include the above-discussed limitations of claim 44. We find that Petitioner persuasively maps the limitations of these dependent claims to the cited art (and to the testimony of Dr. Weissman in support of the combination of references). *See* Pet. 83–85 (citing, for **claim 48**: Ex. 1008, 10:60–63, 12:42–59, 13:36–43; Ex. 1006 ¶¶ 951–952; for **claim 49**: Ex. 1008, 1:54–2:13, 2:66–67, 3:67–4:2, 8:46–9:27, 10:27–11:23, 12:3–12, 12:32–35, 12:42–13:8, 14:1–5, Figs. 2A–2B, 4A; Ex. 1015, 2:1–3, 5:9–34, 6:12–57, 11:28–59, Figs. 3–5; Ex. 1006 ¶¶ 353, 954–957). We adopt the contentions set forth in the Petition and in Dr. Weissman's Declaration as mapped to the limitations of the challenged claims as our own findings.

Patent Owner presents a separate argument only with respect to the state-based limitations found in dependent claims 48 and 49, as it did with the state-based limitations found in claims 13–17. *See* PO Resp. 48–50. We are not persuaded by these arguments for the reasons detailed above with respect to claims 13–17. *Supra* § III.E.2.b.

3. Summary

After having analyzed the entirety of the trial record, we determine that Petitioner has shown by a preponderance of the evidence that claims 44, 48, and 49 are unpatentable over the combination of Riddle, Ferdinand, and Hasani. In particular, we find that Petitioner has demonstrated sufficiently that the teachings of the prior art account for all limitations of the claims, have been properly combined, and that an ordinarily skilled artisan would have found it obvious to combine these teachings in the manner proposed by Petitioner.

G. Obviousness Over Riddle in View of Ferdinand and Yu, or Over Riddle in View of Ferdinand and RFC1945

Petitioner contends that claims 1, 2, 13–17, 19, 20, and 42 also would have been obvious over Riddle in view of Ferdinand and Yu, or over Riddle in view of Ferdinand and RFC1945. *See* Pet. 85–88 (Riddle in view of Ferdinand and Yu); *id.* at 88–94 (Riddle in view of Ferdinand and RFC1945). Having determined that Petitioner establishes by a preponderance of the evidence that the subject matter of claims 1, 2, 13–17, 19, 20, and 42 would have been obvious over Riddle in view of Ferdinand, we need not address Petitioner's additional grounds challenging these claims. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359 (2018) (holding that a petitioner "is entitled to a final written decision addressing all of the claims it has challenged"); *Boston Sci. Scimed, Inc. v. Cook Grp. Inc.*, 809 F. App'x 984, 990 (Fed. Cir. 2020) (nonprecedential) ("We agree that the Board need not address [alternative grounds] that are not necessary to the resolution of the proceeding.").

H. Obviousness Over Riddle in View of Ferdinand, Hasani, and Yu, or Over Riddle in View of Ferdinand, Hasani, and RFC1945

Petitioner contends that claims 44, 48, and 49 also would have been obvious over Riddle in view of Ferdinand and further in view of Hasani and Yu, or Riddle in view of Ferdinand and further in view of Hasani and RFC1945. Pet. 85–94. Having determined that Petitioner establishes by a preponderance of the evidence that the subject matter of claims 44, 48, and 49 would have been obvious over Riddle in view of Ferdinand and Hasani, we need not address Petitioner's additional grounds challenging these claims. *SAS*, 138 S. Ct. at 1359; *Boston Sci.*, 809 F. App'x at 990.

IV. CONCLUSION[12]

Petitioner establishes by a preponderance of the evidence that claims 1, 2, 13–17, 19, 20, 42, 44, 48, and 49 of the '789 patent are unpatentable.

V. ORDER

Accordingly, it is

ORDERED that claims 1, 2, 13–17, 19, 20, 42, 44, 48, and 49 of U.S. Patent No. 6,954,789 B2 are held unpatentable under 35 U.S.C. § 103 as obvious; and

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

[12] 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:

Claims	35 U.S.C. §	References	Claims Shown Unpatentable	Claims Not shown Unpatentable
1, 2, 13–17, 19, 20, 42	103(a)	Riddle, Ferdinand	1, 2, 13–17, 19, 20, 42	
44, 48, 49	103(a)	Riddle, Ferdinand, Hasani	44, 48, 49	
1, 2, 13–17, 19, 20, 42	103(a)	Riddle, Ferdinand, Yu[13]		
44, 48, 49	103(a)	Riddle, Ferdinand, Hasani, Yu[14]		
1, 2, 13–17, 19, 20, 42	103(a)	Riddle, Ferdinand, RFC1945[15]		
44, 48, 49	103(a)	Riddle, Ferdinand, Hasani, RFC1945[16]		
Overall Outcome			1, 2, 13–17, 19, 20, 42, 44, 48, 49	

[13] As explained above, we do not reach this ground. *See supra* § III.G.

[14] As explained above, we do not reach this ground. *See supra* § III.G.

[15] As explained above, we do not reach this ground. *See supra* § III.H.

[16] As explained above, we do not reach this ground. *See supra* § III.H.

FOR PETITIONER:

Joseph F. Edell
Adam A. Allgood
FISCH SIGLER LLP
joe.edell.ipr@fischllp.com
adam.allgood@fischllp.com

Scott A. McKeown
James R. Batchelder
Mark D. Rowland
Andrew Radsch
ROPES & GRAY LLP
scott.mckeown@ropesgray.com
james.batchelder@ropesgray.com
mark.rowland@ropesgray.com
andrew.radsch@ropesgray.com

FOR PATENT OWNER:

R. Allan Bullwinkel
Michael Heim
HEIM PAYNE & CHORUSH, LLP
abullwinkel@hpcllp.com
mheim@hpcllp.com