

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Palo Alto Networks, Inc.,
Fortinet, Inc. and
WatchGuard Technologies, Inc.
Petitioners,

v.

Selective Signals, LLC
Patent Owner

IPR2018-00594
PATENT 8,111,629

PATENT OWNER'S SUR-REPLY TO PETITIONERS' REPLY

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Table of Exhibits

Exhibit No.	Description
1001	U.S. Patent No. 8,111,629 (“the ’629 Patent”)
1002	Select portions of the prosecution history of the ’629 Patent
1003	Declaration of Petitioners’ Expert Dr. Samuel H. Russ
1004	U.S. Patent No. 8,085,775 (“ <i>Pappu</i> ”)
1006	U.S. Patent App. Pub. No. 2006/0262789 (“ <i>Peleg</i> ”)
1007	U.S. Patent App. Pub. No. 2007/0076606 (“ <i>Olesinki</i> ”)
1008	“Toward the Accurate Identification of Network Applications” (“ <i>Moore</i> ”)
1009	“Automated Traffic Classification and Application Identification Using Machine Learning” (“ <i>Zander</i> ”)
1010	“Evaluating Machine Learning Methods for Online Game Traffic Identification” (“ <i>Williams</i> ”)
1011	Supplemental Declaration of Petitioners’ Expert Dr. Samuel H. Russ

Exhibit No.	Description
2001	Declaration of Dr. Gabi Nakibly
2002	Excerpts from “Palo Alto Networks Firewall Session Overview,” available at https://live.paloaltonetworks.com/t5/Learning-Articles/Palo-Alto-Networks-Firewall-Session-Overview/tap/55633 (last visited May 16, 2018).
2003	Select portions of the prosecution history of the ’629 Patent
2004	Appendix to Patent Owner’s Motion to Amend
2005	Transcript of November 12, 2018 Deposition of Dr. Samuel H. Russ.

2006	Paul Krystosek et al., <i>Network Traffic Analysis with SiLK</i> (CARNEGIE MELLON UNIVERSITY 2018)
2007	Cisco, Cisco IOS Voice, Video, and Fax Configuration Guide, Release 12.2, at https://www.cisco.com/c/en/us/td/docs/ios/12_2/voice/configuration/guide/fvfax_c/vvfvoip.html (Feb. 12, 2014)
2008	Excerpts from the file history of U.S. Patent No. 8,085,775 (“Pappu”)
2009	Abstract of Hulya Seferoglu et al., <i>Intra- and Inter-Session Network Coding in Wireless Networks</i> (2010)
2010	Internet Engineering Task Force, RFC 3261, <i>SIP: Session Initiation Protocol</i> (2002)
2011	Muhammad Raza, <i>What is the OSI Model? Explore the 7 Layers of the Open System Interconnection Model</i> , The Business of IT Blog, at https://www.bmc.com/blogs/osi-model-7-layers/ (June 29, 2018)
2012	PALO ALTO NETWORKS, <i>Palo Alto Networks Firewall Session Overview</i> , Palo Alto Networks Knowledgebase, at https://knowledgebase.paloaltonetworks.com/KCSArticleDetail?id=kA10g000000CIVECA0 (Feb. 7, 2019)
2013	PTAB Trial Practice Guide Update (Aug. 2018)
2014	U.S. Patent No. 9,077,702
2015	Complete file history of U.S. Patent No. 8,111,629 (“the ’629 Patent”)
2016	SIP US, <i>How SIP Works in VoIP</i> , SIP Blog (Dec. 1, 2013), at https://www.sip.us/blog/latest-news/sip-vs-voip-whats-difference/ (last accessed March 8, 2019)
2017	CISCO, <i>Voice Over IP – Per Call Bandwidth Consumption</i> , Cisco Support Website, at https://www.cisco.com/c/en/us/support/docs/voice/voice-quality/7934-bwidth-consume.html (last accessed March 11, 2019)

I. SUMMARY OF ARGUMENT

Petitioners' Reply relies on a misunderstanding of Patent Owner's claim construction, an improper overgeneralization of Petitioners' cited art, unsupported assertions about the scope and content of the cited art, and a fundamentally flawed technical argument. Petitioners also attempt to prevent Patent Owner from responding to Petitioners' arguments made in the Reply.

First, Petitioners rely on a misunderstanding of Patent Owner's claim construction. Both Petitioners and the Board rely on the premise that "packet length" is found in the header. IPR2018-00594 Institution Decision, Paper No. 13 (Aug. 9, 2018) ("ID" or "Institution Decision") at 7–9; Petitioner's Reply to Patent Owner's Response, Paper No. 25 (Feb. 21, 2019) ("Reply") at 4–5. Contrary to this position is the text of the '629 Patent and the understanding of a person of ordinary skill in the art, as illustrated by Dr. Nakibly's unrebutted testimony. As detailed in Section II below, the "packet length" used in the '629 Patent is the total length of a packet that has been passed among various protocols, as would be the case for a packet communicated at the session layer. The total length is not found in a single header of any underlying packet.

Second, Petitioners improperly overgeneralize the cited art, *Pappu* (EX1004). Specifically, Petitioners argue that *Pappu*'s disclosure can be applied to "a set of packets that are related in some manner," citing a passage from *Pappu*. Reply at 5–

6. Petitioners take this straightforward statement, meant to generally describe packets included in a flow, and apply it to any collection of packets that might have anything in common. As detailed in Section III.A below, this definition would encompass any collection of packets that, for example, are bound for the same destination port regardless of whether they belong to the same flow. Petitioners then rely on this improper definition to make unsupported assertions about the details of what, precisely, *Pappu* discloses. See Section III.B *infra*.

Third, as detailed in Section III.C below, Petitioners rely on a fundamentally flawed technical understanding of how networks operate to argue that *Pappu*, either alone or in view of *Peleg*, discloses each and every limitation of the challenged claims. Namely, Petitioners repeatedly argue that, because the '629 Patent and Petitioners' cited art both discuss managing VOIP traffic, both must do so in precisely the same way and for the same reasons. Petitioners also argue that, contrary to multiple documented sources (including the Petitioners' own), there is "no substantive difference between a session and a flow." Both arguments illustrate a lack of understanding of VOIP in particular and networks in general. Petitioners attempt to mask fundamental technical flaws underlying their arguments through repeated arguments that Patent Owner "failed to even *attempt* to respond to the Board's reasons for rejecting Patent Owner's claim construction, all the while repeating the same arguments from its POPR *verbatim*." *E.g.*, Reply at 5 (internal

citations omitted) (emphasis in original). In its Response, Patent Owner attempted to provide additional information to assist the Board’s understanding of Patent Owner’s proposed claim construction of “traffic packet characteristics.” *E.g.*, IPR2018-00594, Patent Owner’s Response, Paper No. 20 (Nov. 20, 2018) (“Response” or “Resp.”) at 11–16.

Finally, Petitioners argue that Patent Owner has somehow “waived its ability to argue for the patentability of Claim 19.” Reply at 23. This is incorrect at least because Patent Owner may “respond to arguments made in reply briefs.” PTAB Trial Practice Guide Update (Aug. 2018) at 14, attached hereto as EX2013. Further, even if Patent Owner were not allowed to further respond to the arguments in Petitioners’ Reply, Petitioners have failed to provide the Board with any arguments that warrant reconsideration of the Board’s previous analysis at least because (1) Petitioners’ assumed claim construction would violate accepted canons of claim construction and render Claim 19 indefinite, and (2) Petitioners’ argument is contradicted by the text of the ’629 Patent.

II. PETITIONERS AND THE BOARD MISUNDERSTOOD PATENT OWNER’S CLAIM CONSTRUCTION

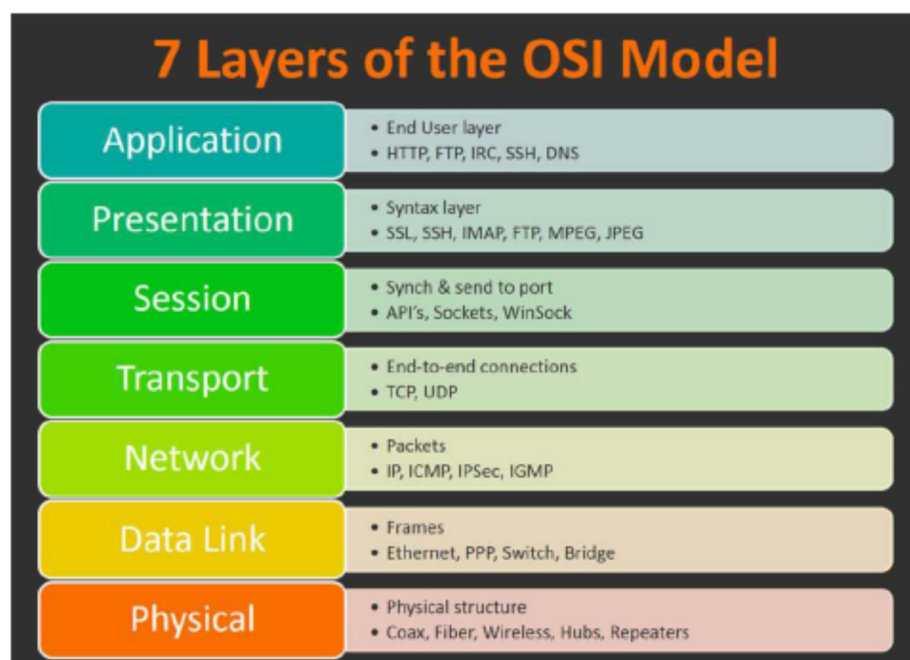
In its Response, Patent Owner argued “traffic packet characteristics” should be construed as “parameters associated with a traffic packet, the parameters including more than packet header information and excluding packet payload content whose inspection is common in deep packet inspection techniques.” Resp.

at 13. In the Institution Decision, the Board rejected Patent Owner’s proposed construction of “traffic packet characteristics,” focusing on the fact “that ‘packet length’ is not found in the header” and “therefore, [the Board was] not persuaded that the embodiments describing the use of packet length require more than header information.” ID at 8. Petitioners parrot this position, arguing “the ’629 Patent teaches the use of ‘more than packet header information,’ such as packet length.” Reply at 4.

The Board recognized the ’629 Patent deals with packet management at “‘higher layers’ of the OSI network model,” but the Board focused narrowly on Dr. Nakibly’s example of a “packet length” including “the sum of lengths of other headers and trailers of layer 2 the packet may have.” *Id.* At 8–9 (citing EX2001 ¶ 36). Dr. Nakibly’s example is just one of many situations in which the total packet length (the packet length used as a traffic packet characteristic by the ’629 Patent) exceeds the packet length information found in any one header. The additional packet length—what is added to the length of the underlying packet—is a result of protocol overhead, i.e., the addition of more information as a packet payload is passed from protocol to protocol as the packet winds its way through a network.

The “Open Systems Interconnection (OSI) Reference Model is a conceptual framework that describes functions of the networking or telecommunication system independently from the underlying technology infrastructure.” Muhammad Raza,

What is the OSI Model? Explore the 7 Layers of the Open System Interconnection Model, The Business of IT Blog, at <https://www.bmc.com/blogs/osi-model-7-layers/> (June 29, 2018), attached hereto as EX2011. The OSI Model abstracts the data communication required in a networking system into seven layers, illustrated in the figure below. The seven layers—physical, data link, network, transport, session, presentation, and application—describe different communication challenges involved with “interoperability within the communication system regardless of the technology type, vendor, and model.” *Id.*



Id.

The '629 Patent manages packets at the application layer. EX2001 ¶ 87 (“A session is a set of packets [that] belong to a layer 7 media exchange (a conversation) between two end entities.”). When a packet is being managed at the application layer, that packet has been encapsulated and re-encapsulated several times according

to the various protocols the packet follows in the underlying layers. Each specific protocol (e.g., IP, TCP, UDP, etc.) can attach a header to the packet, and that specific header may, in some cases, include information about the length of the information that a specific protocol has added to the packet. *See* EX2017. No one header, however, will include *all* of the packet length information resulting from the “overhead” of passing a packet among the various protocols and the associated layers.

As Dr. Nakibly noted in his Declaration, a “packet’s total length is the number of bytes that compose the entirety of the packet.” EX2001 ¶ 36. At higher layers of the OSI network model, a packet gains increasing amounts of traffic overhead. Each layer adds its own additional information, adding to the total length of the packet. For example, an IP packet may be transported over another protocol such as transmission control protocol (“TCP”) or user datagram protocol (“UDP”). TCP adds ~20 bytes of traffic overhead as a result of encapsulating the IP packet. EX2017. Simply looking at the IP packet header would not provide the total length of the packet, as “packet length” is used in the ’629 Patent as an example of “traffic packet characteristics.” *See id.* (describing traffic overhead assumptions in calculating VOIP bandwidth); ’629 Patent, EX1001 at 8:21–27 (describing the “packet length” in the context of the G.729A codec). Therefore, “packet length,” as that term is used in the ’629 Patent, is more than IP header information.

The Board also notes that “even if ‘packet length’ was not header information . . . the most natural interpretation of [the ’629 Patent at 6:11–17] is that ‘traffic characteristics’ includes certain header information.” ID at 9. Patent Owner agrees with this statement, but argues this statement is not inconsistent with Patent Owner’s proffered claim construction. Patent Owner proposes to construe “traffic packet characteristics” as “including “more than packet header information.” Resp. at 11–16. Patent Owner’s construction *includes* packet header information, *and requires more than packet header information*. As Patent Owner argued in its Response, this construction is consistent with the specification and prosecution history of the ’629 Patent. Resp. at 13–14.

Petitioners argue in their Reply that “Patent Owner failed to even *attempt* to respond to the Board’s reasons for rejecting the Patent Owner’s claim construction, all the while repeating the same arguments from its POPR *verbatim*.” Reply at 5 (internal citations omitted) (emphasis in original). Patent Owner respectfully submits that Patent Owner did respond. Patent Owner addressed the Board’s claim construction argument directly by more particularly making the claim construction argument.

III. PETITIONERS’ REPLY FAILS TO OVERCOME PATENT OWNER’S OPPOSITION

Petitioners argue in their Reply that *Pappu*, alone or in combination with *Peleg*, discloses “traffic packet characteristics” even under Patent Owner’s

construction. In order to make this argument, Petitioners rely on two technically flawed arguments: (1) *Pappu* defines a *flow* as a set of packets *that are related in any manner*, and (2) there is *no “substantive difference”* between a *session* and a *flow*. As detailed below, both arguments are flawed and Petitioners’ arguments fail.

A. Petitioners’ Characterization of *Pappu* Is Improper

While Petitioners note *Pappu*’s definition of a flow as “a set of packets that are related in *some* manner,” EX1004 at 6:16–17, Petitioners stretch this definition to mean “a set of packets that are related in *any* manner.” Packets can have many different attributes in common and still not constitute a flow. For example, packets sharing a destination may be from a variety of sources and represent a variety of applications (e.g., VOIP, streaming video, email, etc.). No person of ordinary skill in the art would recognize a VOIP packet, a streaming video packet, and an email packet as a “flow” simply because they are intended for the same destination. *Pappu* itself does not contemplate such a definition. Rather, *Pappu* describes certain characteristics that, if packets share those characteristics, *may* describe a flow. *Pappu* focuses entirely on the use of the “five tuple,” information found in the header of a layer 3 packet. Resp. at 17–20; *see, e.g.*, EX1004 at 6:17–22 (immediately following the definition as “a set of packets that are related in some manner,” *Pappu* states “packets are grouped into a flow if those packets share a sufficient amount of header information.”).

As detailed in the following section, Petitioners' unsupported arguments about what one of ordinary skill in the art would have understood *Pappu* to disclose are not supported by *Pappu*'s actual text.

B. Petitioners' Assertions Are Unsupported

Petitioners make three arguments to support the assertion that *Pappu* discloses the use of more than header information. First, Petitioners argue a person of ordinary skill in the art would have understood the statistics listed in *Pappu*'s Figure 4 "could also be used to group the packets." Reply at 8.¹ Petitioners offer no support for this statement. Instead, Petitioners cite to their own expert's declaration, *which only describes grouping packets based on the five tuple. Id.*; EX1003 ¶ 75. Petitioners attempt to remedy this lack of support by including, word-for-word, a paragraph from their supplemental expert declaration in which Dr. Russ recites an example of using data rate as "a direct way of grouping packets in a meaningful way." Reply at 8 (citing EX1011 ¶ 8). Dr. Russ's example *cites to nothing from the text of Pappu*.

¹ Petitioners also cite to Claim 1 of *Pappu*, which recites "said flow being incapable of being identified by header information alone." In addition to Petitioners' not tying this language from *Pappu* to any specific claim language in the '629 Patent, Patent Owner also believes that this element is not supported by the specification of *Pappu*. As detailed throughout Patent Owner's Response, *Pappu* only discloses the use of the five-tuple in flow analysis. *E.g.*, Resp. at 17–18. This element of Claim 1 was added after four years of prosecution, two Requests for Continued Examination, and with no substantive comment from the Applicant. *See Select Portions of the File History of Pappu*, attached hereto as EX2008 at 6–15. The Examiner made no note of this limitation in the Notice of Allowance. *Id.* at 1–5. [case cite]

As Petitioners argue, “[e]xpert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.” Reply at 12. Thus, Dr. Russ’s opinion should be entitled to little or no weight on the question of whether a person of ordinary skill in the art would have understood the statistics listed in *Pappu*’s Figure 4 “could also be used to group the packets.” Reply at 8.

Second, Petitioners argue a person of ordinary skill in the art “understood that it was known to gather statistical information from each packet using ‘flow level’ analysis and inferring the type of application from the traffic statistics.” Reply at 9. In order to make this argument, Petitioners rely on new art, *Duffield*, that they have never meaningfully analyzed prior to the Reply. This is improper. *See* 37 C.F.R. § 42.23(b) (“All arguments for the relief requested in a motion must be made in the motion. A reply may only respond to arguments raised in the corresponding opposition, patent owner preliminary response, or patent owner response.”). Petitioners attempt to rationalize this new argument by noting the “State of the Art section of the Petition at pages 25–26.” Reply at 9. Patent Owner respectfully submits that Petitioners make no further reference to *Duffield* in their detailed analysis of the challenged claims, Pet. at 27–57, and that Petitioners make no argument whatsoever about combining *Duffield* with any other art of record. While Petitioners are allowed to expand on *substantive* arguments made in the Petition (e.g., to expand a *previously-argued* “rationale as to why the prior art disclosures are

insubstantially distinct from the challenged claims,” *Ericsson Inc. v. Intellectual Ventures I LLC*, 901 F.3d 1374, 1380 (Fed. Cir. 2018)), Petitioners’ new arguments regarding *Duffield* violate 37 C.F.R. § 42.23(b), and therefore Petitioners’ new arguments should be given no weight.

Third, Petitioners improperly attempt to make a new argument in their Reply that *Peleg*—and not just *Pappu*—should now be considered as disclosing the “traffic packet characteristics” limitations. *Compare* Reply at 9–11 with Pet. at 38–49. Petitioners, notably, do not cite to any portion of the Petition in which Petitioners originally raised this argument. Petitioners cannot in fact do so because Petitioners relied *solely* on *Pappu* as disclosing the claimed “traffic packet characteristics.” Pet. at 38–49. Petitioners rely on *Peleg* only for its recitation of the word “session.” *Id.* at 44–45. Petitioners’ new argument, that *Pappu* in combination with *Peleg* discloses traffic packet characteristics, should therefore be discounted.

C. Petitioners’ Argument That There Is No Substantive Difference Between a Session and a Flow Is Technically Flawed

Petitioners make various unsupported attorney arguments in support of their conclusion that there is no difference between a session and a flow. Reply at 11–14. Petitioners do not provide *any* technical support for these arguments or *any* technical rebuttal of Dr. Nakibly’s opinion of how one of ordinary skill in the art would understand a “session.” Petitioners’ lone support from their expert is Dr. Russ’s opinion that the ’629 Patent “uses the term ‘flow of packets’ generically to mean IP

based media traffic over networks.” *Id.*; EX1001 ¶ 10. Instead of providing factual support, Petitioners prefer to characterize Dr. Nakibly’s characterization as “[m]ade-up.” Reply at 12.

Dr. Nakibly’s position—that one of ordinary skill in the art would recognize important, substantive differences between a session and a flow (*e.g.*, EX2001 ¶¶ 85–96)—is supported by literature from a variety of technical sources. Patent Owner respectfully points to Petitioners’ own literature, which explicitly distinguishes sessions and flows: “On a Palo Alto Networks firewall, a session is defined by two uni-directional flows each uniquely identified by a 6-tuple key,” EX2012 at 1; “[T]wo-way connections between a pair of network devices (*e.g.*, client-server) are referred to as a session where a session is composed of two flows representing data traffic in both directions,” EX2014 at 4:47–52. Other technical sources recognize this same distinction. *E.g.*, EX2009.

Petitioners have attempted to discredit Dr. Nakibly by arguing he “fails to disclose any intrinsic evidence or factual support for his opinion.” Reply at 12. Patent Owner strongly disagrees. Dr. Nakibly is providing a definition of a term (“session”) as it is understood by one of ordinary skill in the art. *E.g.*, EX2001 ¶¶ 85–92. Dr. Nakibly then specifically applies that definition to the text of the ’629 Patent. *See, e.g.*, EX2001 ¶¶ 93–94. As illustrated above, Dr. Nakibly’s testimony is well-supported by other technical sources, including Petitioners’ own documentation.

Patent Owner’s characterization of a “session” applies Dr. Nakibly’s technical understanding to the differences between the ’629 Patent and Petitioners’ cited art. In its Response, Patent Owner attempted to address the Board’s understanding of a “session” in relation to *Pappu* and *Peleg*. In its Reply, Petitioners argue: (1) Patent Owner did not address the Board’s understanding of a “session,” and (2) because the ’629 Patent and Petitioners’ cited art use the same examples (e.g., VOIP and video streaming), they must also therefore disclose the same thing. As detailed in the sections below, both of these arguments are flawed.

1. The Board’s Understanding of a “Session”

The Board stated in the Institution Decision that “a person of ordinary skill in the art would have understood how to substitute *Peleg*’s sessions in for *Pappu*’s flows in each of the ‘analyzing’ and ‘using’ steps.” ID at 15–16. Patent Owner respectfully submits Petitioners *never made this argument*. Petitioners relied ***solely on Pappu*** as disclosing the analyzing limitation of independent Claim 15. *See* Resp. at 7–10. The Board cannot make Petitioners’ argument for them. *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016). Moreover, as explained above, a person of ordinary skill in the art would understand that a “session” and a “flow” are not simply fungible. *See supra*.

2. Both Sessions and Flows Can Be Associated With VOIP

Petitioners repeatedly argue that because the ’629 Patent, *Pappu*, and *Peleg*

all “provide VOIP and video streaming over IP as an example of a session or flow,” they must all therefore “refer[] to the same concept.” Reply at 13. This reflects a fundamental misunderstanding of how networks function.

As detailed above, the OSI model of a network provides a helpful abstraction for describing the various ways in which communication protocols overlap and build on one another in moving a packet across a network in order to complete a task. *See* Section II *supra*. Those tasks may include e-mail, multimedia messaging, streaming video over Internet, and/or VOIP.

Voice Over Internet Protocol (“VOIP”) is a term for a service, a “broad term that covers any phone calls made over the internet.” EX2016 at 2. VOIP is a “group of protocol technologies, including [proprietary] ones like Skype Protocol and open standards, of which SIP technology is an example.” *Id.* There are a variety of ways to implement VOIP, and each one accounts for different underlying assumptions about the underlying network. Below is a table identifying various protocols and functions that implement VOIP across the different OSI network layers.

OSI Layer Number	OSI Layer Name	VOIP Protocols and Functions
7	Application	NetMeeting/Applications
6	Presentation	Codecs
5	Session	H.323/MGCP/SIP
4	Transport	RTP/TCP/UDP

3	Network	IP
2	Data Link	Frame Relay, ATM, Ethernet, PPP, MLP, and more

Cisco, Cisco IOS Voice, Video, and Fax Configuration Guide, Release 12.2 (Feb. 12, 2014), at https://www.cisco.com/c/en/us/td/docs/ios/12_2/voice/configuration/guide/fvvfax_c/vvfvvoip.html (last accessed March 8, 2019), attached hereto as EX2007.

As illustrated in the above table, VOIP is implemented across network layers using a variety of different protocols at multiple layers. One of those protocols, Session Initiation Protocol (“SIP”) is a layer-5 (session layer) protocol, which defines itself as an “*application-layer* control (signaling) protocol for creating, modifying, and terminating sessions with one or more participants. These sessions include Internet telephone calls, multimedia distribution, and multimedia conferences.” Internet Engineering Task Force, RFC 3261, *SIP: Session Initiation Protocol* (2002), attached hereto as EX2010 at 1.

When the ’629 patent describes managing VOIP sessions, it does so *in the context of the higher layers* of the OSI network model. See, e.g., EX1001 at 8:21–27 (“Thus, a packet length histogram may be created by the algorithm and can be used to determine whether the media is using a Constant Bit Rate (CBR) Code (e.g. G.723.1, G.729A) or a Variable bit Rate (VBR) Codec (such as the GIPS codec).”), 9:63–10:38 (“Once a session is identified and categorized, the algorithm generates

events and/or alerts for each media session, which can be passed onto higher layers or to third party devices.”).

When *Pappu* describes managing VOIP flows, it does so *only in the context of layer 4*. See, e.g., EX1004 at 9:39–47 (“In one embodiment of the invention, the VOIP policy that is applied to UDP flows, to determine whether those UDP flows represent VOIP traffic, contains the following criteria Flows that satisfy these criteria may be identified as flows that represent VOIP traffic, and actions appropriate to VOIP traffic may be applied to these flows.”). When *Peleg* describes managing VOIP “sessions,” it does so *in the context of layers 3 and 4*. See, e.g., EX1006 at [0057] (“In another particular embodiment . . . there is applying to the packets at least one of the following methods: encryption, tunneled linking, IP tunneling, or UDP tunneling. Although each of the abovementioned protocols feature different headers, the method of the present invention makes it possible to identify all of them.”).

Network traffic management requires different techniques depending on the network layer at which one wishes to manage traffic. There are tradeoffs to each and particular challenges for each. “VOIP,” a broad term encompassing many different protocols across various layers, includes management techniques particular to individual layers and implementing protocols. See EX2007, EX2016. It is therefore inaccurate to state, as Petitioners repeatedly have, that simply because the ’629

Patent, *Pappu*, and *Peleg* all include “VOIP” as a potential application in their respective disclosures, that all therefore must address the same problem.

3. *Pappu’s “Behavioral Characteristics” Are Not “Session Characteristics”*

In its Reply, Petitioners’ first argument in favor of *Pappu*’s “behavioral characteristics” again relies on the assertion that *Pappu* “and the ’629 Patent address the same goal as to session characteristics.” Reply at 16–17. The flaws in this argument are detailed in the sections above. Further, even if *Pappu* and the ’629 Patent address the same goal, Petitioners’ argument still fails since Petitioners mischaracterize both *Pappu* and the ’629 Patent.

First, Petitioners argue the ’629 Patent “describes that session characteristics expressly include aggregated packet data such as average inter-arrival period and average length.” Reply at 19. Petitioners’ argument is simply a recitation of data type descriptions from the ’629 Patent. Petitioners do not address *how* the ’629 Patent, might *make use* of such data types. Specifically, Petitioners do not address how the ’629 Patent uses the “aggregated packet data.” *Id.*; see EX1001 at 10:60–64 (“A third stage 64 involves *analyzing those packets* which have been grouped together”).

Petitioners then argue *Pappu* “describes that the behavioral characteristics are not limited to ‘aggregate packet data,’ but rather also expressly include ‘packet specific information’ such as packet size and inter-arrival gap between two packets.

Id. Despite Petitioners’ attempt, neither the “packet size” nor the “inter-arrival gap between two packets” described in *Pappu* constitutes packet-specific information, and therefore do not disclose session characteristics. *See Resp.* at 8–11.

Petitioners’ examples of “packet specific information” are “instantaneous flow rate” and “inter-arrival time gap.” Reply at 19. There is no indication in *Pappu* that these two parameters are maintained over time and/or associated in any way with a specific packet. According to the section of *Pappu* cited by Petitioner, both parameters are calculated accordingly only to the *most recent* packet. *Id.*; EX1004 at 7:42–46. That is, *Pappu* discloses calculating this value every time a new packet comes in without maintaining a record of the past values or associating any value with a particular packet. There is no association of information with any specific packet. Therefore, nothing in this example contradicts Patent Owner’s position that *Pappu* does not disclose the use of packet-specific information. *See Resp.* at 8–11.

Petitioners’ arguments regarding independent Claim 15 ignore fundamental technical distinctions between the ’629 Patent claims and Petitioners’ cited art. In an attempt to mask this fact, Petitioners resort to unsupported attacks on Patent Owner’s technical positions, referring to them as “made up,” and choosing to defend the position that there is “no substantive difference between ‘session’ and ‘flow.’” Petitioners’ unsupported attacks are not evidence and fail to address the technical issues with their cited art. Petitioners’ arguments fail.

IV. PATENT OWNER IS NOT ESTOPPED FROM ARGUING PATENTABILITY OF CLAIM 19

Petitioners argue that, because “the POR does not include any arguments for the patentability of Claim 19, the Patent Owner has waived its ability to argue for the patentability of Claim 19,” Reply at 23, citing the Board’s Scheduling Order, Paper 4. Petitioners ignore, however, the Board’s Trial Practice Guide Update, issued August 2018, which states a sur-reply should “respond to arguments made in reply briefs, comment on reply declaration testimony, or point to cross-examination testimony. As noted above, a sur-reply may address the institution decision if necessary to respond to the Petitioners’ reply.” EX2013 at 14. Petitioners have provided no authority to suggest the Board’s Scheduling Order somehow supersedes the Board’s Trial Practice Guide.

V. PETITIONERS HAVE NOT SHOWN THE BOARD’S ANALYSIS OF CLAIM 19 IS INCORRECT

Petitioners’ response to the Board’s rejection of its patentability determination of Claim 19 is to argue that *Pappu*’s “inter-packet gap” somehow equates to the recited “inter-arrival period.” Reply at 23–26. Specifically, Petitioners make three new arguments: (1) inter-packet gap “can be used to derive an instantaneous flow rate,” (2) *Pappu*’s “behavioral characteristics” include “the individual packet characteristic of an inter-packet gap,” and (3) the Board construed “said characteristics” incorrectly. The first argument is irrelevant, the second argument is

inaccurate, and the third is unconvincing.

First, Petitioners argue that “the inter-packet time gap between the two most recently arrived packets’ can be used to derive an instantaneous flow rate.” Reply at 24. It is unclear what, if any relevance, this has to whether *Pappu* discloses “inter-arrival period.” An “instantaneous flow rate,” calculated by dividing the size of the most recently processed packet by the time gap between the two most recently received packets, is not an inter-arrival period. EX1004 at 7:36–54. *Pappu* makes no mention of using anything other than the *average* inter-packet gap. Claim 19 requires one of packet length, inter-arrival period, and average bandwidth. EX1001 at 14:1–3.

Second, Petitioners argue “that the ‘session characteristic’ recited in Claim 15 corresponded to the behavioral characteristics of the flow, including the individual packet characteristic of an inter-packet gap,” citing page 47 of the Petition. Reply at 24. Even if it were true that “session characteristics” and “behavioral characteristics” could be properly equated, page 47 of the Petition does not, in fact, make any *supported* mention of “the individual packet characteristic of an inter-packet gap.” Page 47 uses the words “inter-packet gap,” but the cited portions of *Pappu* on which Petitioners rely expressly call out *average* inter-packet gap. *Id.*; EX1004 at 7:34–42 (defining “an average inter-packet gap”). This includes Petitioners’ reproduction of *Pappu*’s Figure 4, which makes no mention of a packet-specific “inter-packet gap:”

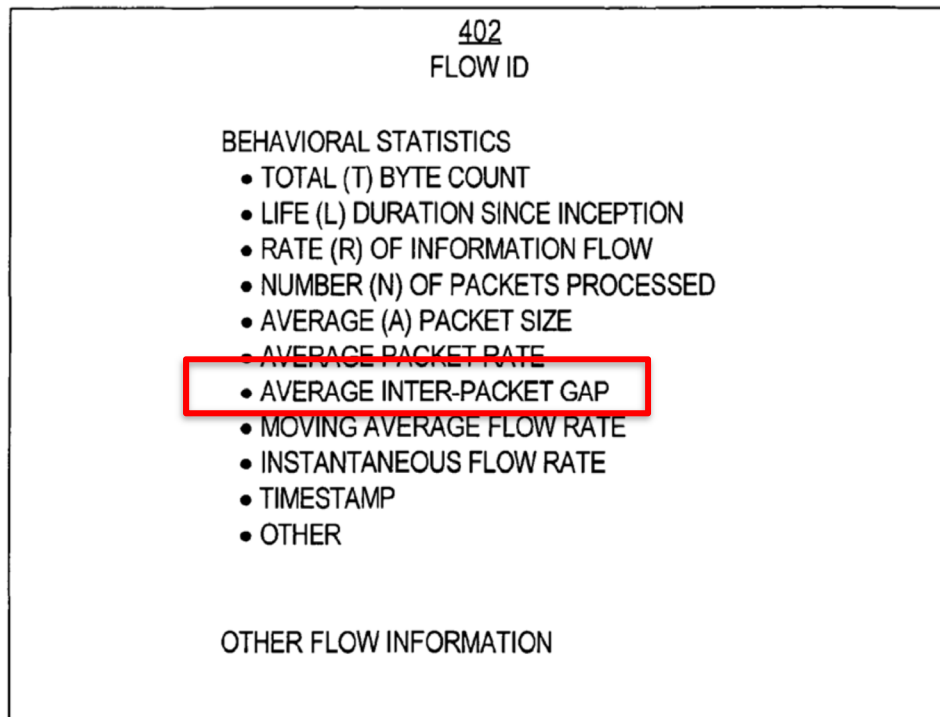


FIG. 4

EX1004 (annotated).

Finally, Petitioners argue the Board misconstrued “said characteristics,” claiming there “is no support to limit Claim 19’s ‘said characteristics’ to **only** ‘traffic packet characteristics.’” Reply at 25 (emphasis in original). Petitioners’ argument ignores standard claim construction canons and the plain language of Claim 19.

Petitioners would have the Board construe “said characteristics” to mean, essentially, “either traffic packet characteristics or session characteristics.” *See* Reply at 25–26 (“Therefore, either of ‘traffic packet characteristics’ or ‘session characteristics’ provides antecedent support for ‘said characteristics’ in Claim 19.”). This construction would render Claim 19 indefinite as one of ordinary skill in the art

would not have reasonable certainty regarding Claim 19’s scope. *See* MPEP § 2173; *Nautilus, Inc. v. Biosig Instruments, Inc.*, 527 U.S. 898, 910–11 (2014). If a claim’s scope is ambiguous, the claim should be construed so as to preserve validity. *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 911 (Fed. Cir. 2004).

Petitioners’ additional arguments do not save Petitioners’ construction. Petitioners argue that “said characteristics” can be both “traffic packet characteristics” and “session characteristics” because the ’629 Patent describes inter-arrival period as a “traffic characteristic” and a session characteristic. Reply at 25–26. Petitioners’ argument fails. Just because an item can belong to two different sets ***doesn’t mean the two sets are identical***. Particularly when, as is the case in the ’629 Patent, different terms are used in a claim, those terms are presumed to mean two *different* things. *See, e.g., Ethicon Endo-Surgery, Inc. v. U.S. Surgical Corp.*, 93 F.3d 1572, 1579 (Fed. Cir. 1996) (reversing lower court’s ruling that a “pusher assembly” and a “pusher bar” have the same meaning). Thus, “traffic packet characteristics” and “session characteristics” are presumed to mean two different data sets. Petitioners have done nothing to show otherwise.

Further, the Board stated in the Institution Decision that Petitioners’ relied “upon *Pappu*’s five-tuple for teaching ‘traffic packet characteristics,’ so its reliance, in claim 19, on *Pappu*’s teaching of average packet size and average inter-arrival period is inconsistent with its earlier reliance on *Pappu*’s five-tuple. Moreover,

Pappu's five-tuple does not include at least one of packet length, inter-arrival period, and average bandwidth." ID at 17. Petitioners have done nothing to dispute this conclusion other than attempt to misconstrue the claims in an attempt to avoid it.

VI. CONCLUSION

Petitioners' arguments in its Reply failed to address the Board's concerns and failed to overcome Patent Owner's arguments. Rather, Petitioners attacked Patent Owner, without evidence, in an attempt to deflect attention from fundamental technical flaws underlying their arguments. For at least the reasons above, Patent Owner requests that the Board issue a final written decision finding all Challenged Claims, and Claim 19 in particular, unpatentable over the grounds identified in the Petition.

To the extent Patent Owner did not address any specific argument in this sur-reply, Patent Owner does not concede such an argument is correct and reserves the right to supplement any rebuttal during oral argument.

Date: March 11, 2019

Respectfully submitted,

By: /Benjamin R. Johnson/

Benjamin R. Johnson

Reg. No. 64,483

Toler Law Group, PC

8500 Bluffstone Cove

Suite A201

Austin, Texas 78759

Timothy Devlin
Reg. No. 41,706

Devlin Law Firm LLC
1306 North Broom Street
1st Floord
Wilmington, DE 19806

Attorneys for Patent Owner

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), we certify that this Sur-Reply to Petitioners' Reply complies with the type-volume limitation of 37 C.F.R. § 42.24(c) because it contains fewer than the limit of 5,600 words, as determined by the word-processing program used to prepare the brief, excluding the parts of the brief exempted by 37 C.F.R. § 42.24(a)(1).

Date: March 11, 2019

Respectfully submitted,

By: /Benjamin R. Johnson/

Benjamin R. Johnson

Reg. No. 64,483

CERTIFICATE OF SERVICE

I certify that the foregoing SUR-REPLY TO PETITIONERS' REPLY was served on the Petitioners' counselors of record by electronic notification, as consented to by the petitioner:

Patrick D. McPherson, Reg. No. 46,255; PDMcPherson@duanemorris.com
Patrick Craig Muldoon, Reg. No. 47,343; PCMuldoon@duanemorris.com
David C. Dotson, Reg. No. 59,427, DCDotson@duanemorris.com
James H. Hall, Reg. No. 66,317, JHall@blankrome.com

Dated: March 11, 2019

Respectfully submitted,

/Angie K. Blazek/
Angie K. Blazek
TOLER LAW GROUP, PC
8500 Bluffstone Cove, Suite A201
Austin, Texas 78759
Telephone: (512) 327-5515
Facsimile: (512) 327-5575