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Paper 70
Entered: November 29, 2018

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INTEL CORPORATION, CAVIUM, LLC, and DELL INC.
Petitioner,

v.

ALACRITECH, INC.,
Patent Owner.

Case IPR2017-01393[1]
Patent 9,055,104 B2

Before STEPHEN C. SIU, DANIEL N. FISHMAN, and CHARLES J. BOUDREAU, *Administrative Patent Judges*.

Opinion for the Board filed by *Administrative Patent Judge* FISHMAN.

Opinion Concurring-in-part and Dissenting-in-part filed by *Administrative Patent Judge* SIU

FISHMAN, *Administrative Patent Judge*.

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[1] Cavium, Inc., which filed a Petition in Case IPR2017-01714 (later renamed Cavium, LLC (Paper 65)), and Dell Inc., which filed a Petition in Case IPR2018-00374, have been joined as petitioners in this proceeding.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.108

I. INTRODUCTION

Intel Corporation ("Petitioner" or "Intel") filed a Petition (Paper 2, "Petition" or "Pet.") requesting *inter partes* review of claims 1, 6, 9, 12, 15, and 22 (the "challenged claims") of U.S. Patent No. 9,055,104 B2 ("the '104 patent," Ex. 1001) pursuant to 35 U.S.C. §§ 311 *et seq*. Alacritech, Inc. ("Patent Owner") filed a Preliminary Response. Paper 7 ("Prelim. Resp.").

On November 30, 2017, based on the record before us at that time, we instituted an *inter partes* review of only claims 1, 6, 9, 12, and 15 (denying institution of review for claim 22). Paper 8 ("Decision" or "Dec.").

Patent Owner filed a Corrected Response (Paper 30, "PO Resp.") and Petitioner filed a Reply (Paper 39, "Reply").

Responsive to the Supreme Court's decision in *SAS Institute, Inc. v. Iancu*, 138 S. Ct. 1348 (2018), we issued an Order on May 11, 2018, modifying our Decision to institute review of all claims and all grounds and instructed the parties to confer regarding any need for further briefing and changes to the schedule for trial. Paper 38 ("*SAS* Order"). Responsive to our instructions, the parties sent an e-mail message to the Board proposing a revised schedule and, impliedly, requesting additional briefing. Responsive to the request, we ordered changes to the schedule, authorized Patent Owner to file a Supplemental Response addressing the newly instituted claim 22 (previously denied review for inability to construe means elements therein), and authorized Petitioner to file a Supplemental Reply addressing issues raised by Patent Owner's Supplemental Response. Paper 42. Patent Owner

filed its Supplemental Response (Paper 48, "Supp. Resp.") and Petitioner filed its Supplemental Reply (Paper 55, "Supp. Reply").

Petitioner filed a Motion to Exclude Patent Owner's Exhibit 2026 (Paper 50), Patent Owner filed an Opposition to that motion (Paper 51), and Petitioner replied to that opposition (Paper 53). We address this motion below.

Upon consideration of the complete record, we are persuaded by a preponderance of the evidence that claims 1, 6, 9, 12, and 15 are unpatentable. We are not persuaded that claim 22 is unpatentable for reasons discussed below. Furthermore, for the reasons discussed below, we deny Petitioner's Motion to Exclude.

II. BACKGROUND

A. Related Matters

We are informed that the '104 patent is involved in the following litigations: *Alacritech, Inc. v. CenturyLink, Inc.*, Case No. 2:16-cv-00693-JRG-RSP (E.D. Tex.); *Alacritech, Inc. v. Wistron Corp.*, Case No. 2:16-cv-00692-JRG-RSP (E.D. Tex.); and *Alacritech, Inc. v. Dell Inc.*, Case No. 2:16-cv-00695-RWS-RSP (E.D. Tex.). Pet. 4; Paper 3.

B. The '104 Patent

The '104 patent describes a system and method for accelerating data transfer from a host system to a network by sending the host an indication that data has been transmitted to the network prior to receiving an acknowledgement (ACK) from the network. Ex. 1001, Abstract. According

to the ’104 patent, prior network interface devices waited until an ACK (acknowledgement) was received from the network before indicating to the host computer that a requested transmission had completed. *See id.* at 2:10–37. The ’104 patent asserts that this prior technique causes delays in the transmission of data from a host to a network. *Id.* at 2:41–44. According to the ’104 patent, “this problem is solved by sending, from the [network interface] device to the host, a signal that the data has been sent from the device to the network, prior to receiving, by the [network interface] device from the network, an ACK that all the data has been received.” *Id.* at 2:45–49.

C. Illustrative Claims

Claims 1, 12, and 22 are the challenged independent claims of the ’104 patent. Claims 1 and 22, reproduced below, are illustrative of the claimed subject matter:

> 1. A method for communication involving a computer, a network, and a network interface device of the computer, the network interface device being coupled to the network, the method comprising:
>
> receiving, by the network interface device from the computer, a command to transmit application data from the computer to the network;
>
> sending, by the network interface device to the network, data corresponding to the command, including prepending a transport layer header to at least some of the data;
>
> sending, by the network interface device to the computer, a response to the command indicating that the data has been sent from the network interface device to the network, prior to receiving, by the network interface device from the network, an

> acknowledgement (ACK) that all the data corresponding to the command has been received; and
>
> maintaining, by the network interface device, a Transport Control Protocol (TCP) connection that the command, the data and the ACK correspond to.

Id. at 6:43–62.

> 22. A system for communication involving a computer, a network, and a network interface device of the computer, the network interface device being coupled to the network, the system comprising:
>
> means for receiving, by the network interface device from the computer, a command to transmit data from the computer to the network;
>
> means for sending, by the network interface device to the network, data corresponding to the command, including means for prepending a transport layer header to at least some of the data; and
>
> means for sending, by the network interface device to the computer, an indication that the data has been sent from the network interface device to the network, prior to receiving, by the network interface device from the network, an acknowledgement (ACK) that the data has been received.

Id. at 8:44–60.

D. Asserted Grounds of Unpatentability

Petitioner asserts that the challenged claims are unpatentable based on the following grounds (Pet. 15–16):

Reference(s)	Basis	Claims challenged
Connery[2]	§ 103	1, 6, 9, 12, 15, and 22
Connery and Boucher[3]	§ 103	1, 6, 9, 12, and 15

Petitioner relies on the testimony of Dr. Robert Horst (Exs. 1003, 1223) in support of its assertions. Patent Owner relies on the testimony of Dr. Kevin Almeroth (Ex. 2026) in support of its assertions.

III. DISCUSSION

A. Claim Construction

In an *inter partes* review, for petitions filed prior to November 13, 2018, as is the case here, a claim in an unexpired patent shall be given its broadest reasonable construction in light of the specification of the patent in which it appears. 37 C.F.R. § 42.100(b) (2016). Under the broadest reasonable construction standard, claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Only terms that are in controversy need to be construed and only to the extent necessary to resolve the controversy. *See Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011); *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

[2] U.S. Patent No. 5,937,169. ("Connery," Ex. 1043).
[3] PCT Patent Publication No. WO 00/13091. ("Boucher," Ex. 1049).

Use of the word "means" in a claim gives rise to a rebuttable presumption that 35 U.S.C. § 112(6) analysis applies to interpret the claim. *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015). Construing a means-plus-function claim term is a two-step process, wherein we first identify the claimed function and then determine what structure, if any, disclosed in the specification corresponds to the claimed function. *Id.* at 1351; *Med. Instrumentation & Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1210 (Fed. Cir. 2003); *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 296 F.3d 1106, 1119 (Fed. Cir. 2002). Our rules specifically require that a petition for *inter partes* review identify how each challenged claim is to be construed, including identification of the corresponding structure for means-plus-function limitations. In particular, "[w]here the claim to be construed contains a means-plus-function . . . limitation as permitted under 35 U.S.C. 112[(6)], the construction of the claim must identify the specific portions of the specification that describe the structure, material, or acts corresponding to each claimed function." 37 C.F.R. § 42.104(b)(3). Moreover, "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Golight, Inc. v. Wal-Mart Stores, Inc.*, 355 F.3d 1327, 1334 (Fed. Cir. 2004); *Cardiac Pacemakers*, 296 F.3d at 1113.

1. Claim 22 Means Elements

Claim 22 recites four elements in mean-plus-function style: "means for receiving," "means for sending . . . data," "means for prepending," and "means for sending . . . an indication." There is a rebuttable presumption

that § 112(6) means-plus-function analysis applies to these elements. *Williamson*, 792 F.3d at 1348.

Regarding the "means for sending . . . data" element, Petitioner argues the elements should be construed under 35 U.S.C. § 112(6) because the claim recites insufficient structure. Pet. 35. Petitioner further argues the Specification fails to provide a corresponding algorithm or structure for performing the function and, thus, the claim term is indefinite. *Id.*[4] Petitioner notes that in related litigation, Patent Owner argued this term is *not* subject to 112(6) interpretation and identified the network interface device as the structure. *Id.* at 36 (citing Ex. 1040, 30). Petitioner contends, in the alternative, if we determine § 112(6) analysis applies to this element, the corresponding structure is the network interface device. *Id.* at 37. Petitioner presents similar arguments for all other recited means elements. *Id.* at 33–34, 36–38.

Patent Owner argues Petitioner has failed to meet its burden to define the claim terms. Supp. Resp. 4. In the alternative, should we determine Petitioner has met its burden, Patent Owner argues the rebuttable presumption that § 112(6) interpretation applies to the means elements of claim 22 has been overcome because the means elements each recite sufficient structure—namely, the "network interface device." *Id.* at 5–6.

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[4] *Inter partes* review proceedings are limited to patentability challenges based on prior art patents and printed publications under 35 U.S.C. §§ 102 and 103. *See* 35 U.S.C. § 311(b); 37 C.F.R. § 42.104(b)(2). Accordingly, as Petitioner appears to recognize (*see* Pet. 31 n.2), we are not authorized in *inter partes* review proceedings to address indefiniteness issues, which arise instead under 35 U.S.C. § 112, second paragraph.

In its Supplemental Reply, Petitioner argues, as it did in its Petition, "the specification does not disclose any structure performing any of the claimed functions and accordingly it is impossible to identify any corresponding structure." Supp. Reply 2 (citing Pet. 33–39; Dec. 7). Petitioner further argues, in the alternative should the Board consider Patent Owner's assertion that the means elements already disclose sufficient structure (the network interface device), "the identification of the 'network interface device' is not sufficient." *Id.* Specifically, Petitioner argues "network interface device" is a generic term that encompasses "almost any kind of 'peripheral unit.'" *Id.* at 2–3 (citing Ex. 1001, 3:24–29). Further, Petitioner contends that in the parallel District Court litigation, the Court explained, "while the various 'means' of the claim may be part of or attached to the network interface device, they are not just the network interface device." *Id.* at 3 (quoting Ex. 2030, 42).

Considering the complete record, we discern no reason to modify our determination at institution. *See* Dec. 6–8. We agree with the District Court that, although the recited means may be components of the network interface device, the recited means elements are not themselves the device—there are some unspecified structures within the network interface device that perform the recited functions. It is possible, for example, that the disclosed network interface device is a software programmable device (i.e., an *intelligent* network interface card, Ex. 1001, 1:52–56) that controls a TCP connection between the host and a network (*see id.* at 1:34–37, 4:65–5:3). Assuming such a programmable device is part of the structure, the corresponding structure of such a means-plus-function limitation, however, must be more than simply a general-purpose computer or microprocessor, to avoid pure

functional claiming. *Aristocrat Techs. Austl. Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008). The specification must disclose the "algorithm in any understandable terms including as a mathematical formula, in prose, or as a flow chart, or in any other manner that provides sufficient structure." *Finisar Corp. v. DirectTV Group Inc.*, 523 F.3d 1323, 1340 (Fed. Cir. 2008) (internal citations omitted). The Petition does not identify any algorithms that may be implemented in the network interface device to perform the recited functions of the means elements and, thus, the Petition has failed to meet its burden under our rules to identify that structure. 37 C.F.R. § 42.104(b)(3).

Accordingly, we determine the means elements of claim 22 are subject to § 112(6) analysis because there is insufficient evidence to rebut the presumption that § 112(6) applies based on use of the phrase "means for." We further determine the Petition fails to persuasively identify corresponding structure because merely identifying the "network interface device" falls short of the burden of persuasion to "identify the specific portions of the specification that describe the structure, material, or acts corresponding to each claimed function." 37 C.F.R. § 104(b)(3); *see also Golight*, 355 F.3d at 1334. Simply stating that the network interface device is the corresponding structure, without identifying support in the Specification for the alleged correspondence, is insufficient to meet Petitioner's burden to identify where the Specification clearly links or associates the network interface device to the recited function.

Lacking a sufficient explanation of the disclosed structure providing the recited function, we are unable to construe this means element without resort to speculation. Therefore, we cannot apply claim 22 to the asserted

prior art references because doing so would require speculation as to the scope of the claimed invention. *See United Carbon Co. v. Binney & Smith Co.*, 317 U.S. 228, 236–37 (1942) (holding that "the claims must be reasonably clearcut to enable courts to determine whether novelty and invention are genuine"); *In re Steele*, 305 F.2d 859, 862–63 (CCPA 1962) (holding that where a claim's meaning is indefinite under 35 U.S.C. § 112 ¶ 2, any ground based on prior art is improperly based on speculation); *Blackberry Corp. v. MobileMedia Ideas, LLC*, Case IPR2013-00036, slip op. at 20 (PTAB Mar. 7, 2014) (Paper 65). Because we cannot determine the scope of claim 22 without speculation, we cannot compare the claim to the asserted prior art without speculation.

Accordingly, based on the complete record, we are unable to reach a determination, by a preponderance of the evidence, that claim 22 is unpatentable.

2. Other Terms

We initially determined there was no need to expressly construe any other terms to render our Decision on Institution. Dec. 8. We discern no reasons to depart from that Decision and, therefore, we determine that it is not necessary to provide an express interpretation of any other terms of the claims.

B. Obviousness Grounds

1. General Principles Of Obviousness

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are "such

that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The 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 skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

2. Level of Ordinary Skill in the Art

Petitioner argues a person of ordinary skill in the art related to the '104 patent would have a Bachelor's Degree in computer engineering, computer science, or electrical engineering, plus at least five years of experience in computer architecture, network design, network protocols, and software and hardware development. Pet. 38 (citing Ex. 1003 ¶ 19).

Patent Owner's definition of the person of ordinary skill is similar to Petitioner's definition but suggests "several" years of experience rather than a specific number of years and argues "[a]ny differences between Petitioners' proposed level of ordinary skill and that proposed by Patent Owner would not have any bearing on the analysis presented in this Response." PO Resp. 8.

We are persuaded by Petitioner's definition of the level of ordinary skill in the art and we find this definition is commensurate with the level of ordinary skill in the art as reflected in the prior art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) ("[T]he absence of specific

findings on the level of skill in the art does not give rise to reversible error where the prior art itself reflects an appropriate level and a need for testimony is not shown.") (internal quotation marks omitted); *see also In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995).

Therefore, we find the level of ordinary skill in the art, at the time of the '104 patent, includes a Bachelor's degree in computer engineering or computer science and at least five years of experience in network design or network protocols.

3. Scope And Content Of The Prior Art

a. Overview Of Connery (Ex. 1043)

Connery is directed to improving performance of transmissions from a host computer to a network by generating, at a network interface device, a plurality of smaller packets for transmission in response to receipt of a larger datagram from the host computer. Ex. 1043 Abstract. Connery discloses,

> According to the process, the network protocol defines a large datagram from the data source (buffer), including generating a packet control data template and supplying a data payload. The datagram is supplied to the network interface. At the network interface, a plurality of packets of data are generated from the datagram. The plurality of packets include respective packet control fields, such as TCP/IP headers, based on the packet control data template, and include respective segments of the data payload.

Id. at 2:52–62. By sending one large packet of data to the network interface allowing the network interface to generate multiple smaller packets with protocol headers for transmission, Connery discloses a reduction in CPU utilization at the host system, improved performance, and improved

scalability. *Id.* at 7:48–49. In addition, Connery discloses that its invention reduces the number of interrupts of the host system CPU from one per packet or one per group of packets to one interrupt per large packet. *Id.* at 7:60–64.

b. Overview Of Boucher (Ex. 1049)

Boucher describes an intelligent network interface that offloads protocol processing from a host computer using a fast-path and protocol processing logic on the network interface. *See* Ex. 1049 Abstract.

4. Differences Between Claims And The Prior Art

Petitioner contends claims 1, 6, 9, 12, 15, and 22 are unpatentable under 35 U.S.C. § 103(a) as obvious over Connery and the knowledge of the ordinarily skilled artisan or in the alternative are unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Connery and Boucher. *See* Pet. 43–87. We addressed claim 22 *supra* regarding our inability to construe the means-plus-function limitations and, thus, we do not further address claim 22.

Petitioner further contends, to the extent it may be found that Connery fails to teach or suggest the "maintaining" step of claims 1 and 12 (as discussed below), Boucher in combination with Connery discloses that feature and, thus, renders claims 1, 6, 9, 12, and 15 unpatentable as obvious over Connery and Boucher. Pet. 82–87.

a. Independent Claim 1

Regarding claim 1, the Petition identifies all elements as taught or suggested in Connery. Pet. 44–68. As discussed in detail below, the Petition relies on Connery, modified by the knowledge of the ordinarily skilled artisan, to teach or suggest all elements of claim 1.

For the reasons discussed below, we are persuaded by a preponderance of the evidence that claim 1 is unpatentable as obvious over Connery and as obvious over the combination of Connery and Boucher. We review the parties' contentions with respect to each limitation of claim 1 in turn below.

> *"A method for communication involving a computer, a network, and a network interface device of the computer, the network interface device being coupled to the network, the method comprising"*

Specifically, regarding the preamble, to whatever extent it is limiting, the Petition identifies the recited computer, network, and network interface device, at least, in Connery's Figure 1 (and related description)—elements 11–14 of Connery's Figure 1 disclosing the recited computer, element 15, the recited network interface device, and connection 17 to the network medium as the recited network. Pet. 44–48.

Assuming the preamble limits the claim, Patent Owner does not raise any counterarguments or point to any contrary evidence with respect to these limitations. Thus, we are persuaded by Petitioner's arguments and cited evidence that the limitations of the preamble, if any, are taught or suggested by Connery.

> *"receiving, by the network interface device from the computer, a command to transmit application data from the computer to the network"*

The Petition identifies the receiving step of claim 1 as Connery's network interface receiving a "transmit command" from the host. Pet. 49–50 (citing Ex. 1043, 2:46–52, 6:43–64, Fig. 3; Ex. 1003 Appendix A-6).

Patent Owner does not raise any counterarguments or point to any contrary evidence with respect to this limitation, and we are persuaded by Petitioner's arguments and cited evidence that this step is taught or suggested by Connery.

> *"sending, by the network interface device to the network, data corresponding to the command, including prepending a transport layer header to at least some of the data"*

The Petition identifies the step of sending data as Connery's network interface, responsive to the receipt of a transmit command, sending the host supplied data to the network. Pet. 50–51 (citing Ex. 1043, 3:59–60, 6:49–7:2; Ex. 1003 Appendix A-8). Petitioner argues the step of the network interface prepending a transport layer header to the transmitted data is disclosed because Connery discloses the network interface receiving a larger datagram, dividing the larger datagram into smaller segments, and adding Transmission Control Protocol ("TCP") and Internet Protocol ("IP") headers to each segment to generate packets for transmission to the network. Pet. 52–53 (citing Ex. 1043 Abstract, 3:52–55, 13:15–57, Fig. 5 (step 207); Ex. 1003 Appendix A-11). Specifically regarding "prepending" these headers to the data as claimed, Petitioner contends the ordinarily skilled artisan would have been motivated to prepend the header to the data because "it would require moving less data than if one instead appended the data to the

header." Pet. 55 (citing Ex. 1003 Appendix A-14). Petitioner further contends "it would be more efficient to move the smaller header to the front of the larger data payload, rather than moving the data to the rear of the header." Pet. 56 (citing Ex. 1003 Appendix A-14).

Patent Owner does not raise any counterarguments or point to any contrary evidence with respect to the step of *sending*, *per se*. Therefore, we are persuaded by Petitioner's arguments and cited evidence that the step of sending data is taught or suggested by Connery.

However, regarding the additional step of prepending headers as part of the step of sending, Patent Owner asserts the Petition improperly relies solely on "unasserted, non-proven prior art discussed only in an expert declaration." PO Resp. 23. Patent Owner further asserts "the Petition relies solely on unproven 'POSA' knowledge from Dr. Horst's declaration for the disclosure of a claim element, [which] is an insufficient evidentiary basis to assuage Petitioner's institution-stage burden." *Id.* at 24. Therefore, Patent Owner contends, "the Petition fails to admissibly and adequate[ly] identify where in the *proven, available* prior art" the prepending limitation of claim 1 is found. *Id.*

We are not persuaded by Patent Owner's argument. We discern no reliance in the Petition on "unasserted, non-proven" prior art. The Petition cites specific portions of Connery that recite combining a header with a segment of data to generate a packet. Although Connery does not expressly disclose that the header is ***pre***pended to the data, the Petition relies on Dr. Horst's opinion that it would have been obvious to the ordinarily skilled artisan to ***pre***pend the header to the data, rather than ***app***ending the data to the header, to reduce the movement of the larger data relative to the smaller

header. Pet. 55–56 (citing Ex. 1003 Appendix A-14). Petitioner argues, and we agree, that it is proper to rely on expert testimony regarding how an ordinarily skilled artisan, at the time of the '104 patent, would have understood the applied references. Reply 3–6. The Federal Circuit notes that expert testimony may be evidence in determining obviousness. *See, e.g., Genzyme Therapeutic Prods. LP v. Biomarin Pharm. Inc.*, 825 F.3d 1360, 1372 (Fed. Cir. 2016) (finding expert's testimony "directed to the knowledge of persons of skill in the art" was substantial evidence of obviousness in an *inter partes* review); *see also KSR*, 550 U.S. at 421 ("A person of ordinary skill is also a person of ordinary creativity, not an automaton.").

Accordingly, we are persuaded that the step of sending including prepending is taught or suggested by Connery.

In addition, we note that the header and data to be transmitted are both stored in the memory of the network interface device and would be combined to form a packet in one of two obvious manners—either the header is prepended to the data or the data is appended to the header. *See* Pet. 55–56 (citing Ex. 1003 Appendix A-14). Given the evidence of a small (finite) number of known solutions to combining the header and data, Petitioner has shown sufficiently for purposes of this Decision that it would have been obvious to try prepending the header to the data to transmit the packet. *KSR*, 550 U.S. at 421 (noting that if there are a finite number of identified, predictable solutions to solve a problem, a person of ordinary skill in the art has good reason to pursue the known options within his or her technical grasp).

Accordingly, we are further persuaded that Connery teaches or suggests the prepending step of claim 1.

> *"sending, by the network interface device to the computer, a response to the command indicating that the data has been sent from the network interface device to the network, prior to receiving, by the network interface device from the network, an acknowledgement (ACK) that all the data corresponding to the command has been received"*

This claim element, in essence, recites "sending . . . a response to the command . . . , prior to receiving . . . an acknowledgment (ACK) that all the data corresponding to the command has been received." Regarding sending a response, Petitioner contends Connery discloses interrupting the host computer only once after transmitting multiple segmented packets of the host supplied datagram (rather than one interrupt per packet) and further contends this single interrupt discloses the recited "response to the command indicating that the data has been sent from the network interface device to the network." *See* Pet. 56–60. More specifically, Petitioner argues Connery discloses an interrupt of the host system may be used to indicate to the host computer that a packet transmission is complete, acknowledgements that transmitted packets have been received, and for other events. Pet. 57–58 (citing Ex. 1043, 4:54–58; Ex. 1003 Appendix A-16). Petitioner argues the ordinarily skilled artisan would have understood that Connery's disclosed single interrupt per large packet is a transmit completion interrupt because an interrupt indicating completion of transmission is needed so that the host knows when it is free to send a next large packet. *Id.* (citing Ex. 1003 Appendix A-16–A-18). Petitioner further argues, even if Connery is silent regarding what the single interrupt represents, the ordinarily skilled artisan would have chosen the interrupt to signal the end of transmission of the large

packet to the network, prior to receipt of an ACK. Pet. 59. Petitioner contends that design choice would have been "one of a small number of choices that would have been obvious to try" given Connery's goals to improve performance and reduce the number of interrupt to the host CPU. Pet. 59 (citing Ex. 1003 Appendix A-17–A-18).

Regarding the recitation that the response is sent "prior to receiving . . . an acknowledgement (ACK)," Petitioner argues Connery discloses that an ACK is received at the network interface after packets are transmitted to the destination on the network and asserts it would have been obvious to the ordinarily skilled artisan to send Connery's response (a transmit completion interrupt) to the host computer prior to receipt of the ACK for the transmitted packets. *See* Pet. 60–65. In addition, in summarizing Connery, Petitioner asserts, "[f]inally, Connery discloses that its network interface device receives acknowledgements (ACKs) from the destination after data has been received at the destination, as in all TCP/IP communication systems." Pet. 43 (citing Ex.1043, 1:56–67, 3:59–61, 9:56, 15:24–48, 16:16–18; Ex.1003 ¶ 87).

First, Patent Owner argues the Petition is deficient regarding sending a response because it fails to cite Connery for this feature and, instead, relies solely on Dr. Horst's testimony regarding what would have been obvious to the ordinarily skilled artisan. PO Resp. 27–29.

For the same reasons as discussed *supra*, we are not persuaded by Patent Owner's argument. The Petition cites specific disclosures in Connery that one type of interrupt generated by the network interface is to signal the host computer that a packet transmission has completed. Pet. 57–58 (citing Ex. 1043, 4:54–58). Petitioner contends, in view of Connery's purpose of

reducing the number of interrupts to a single interrupt per large packet, that it would have been obvious to the ordinarily skilled artisan that a single interrupt would be generated after completing transmission of all packets that comprise a host supplied datagram—i.e., a response to the received command. Pet. 58–60 (citing Ex. 1003 Appendix A-16–A-18). Moreover, the Petition specifically alleges that Connery discloses this limitation. Pet. 43 (citing Ex. 1003 ¶ 87). Thus, Petitioner does not rely solely on Dr. Horst's allegedly unsupported opinion.

Second, Patent Owner argues that Connery's disclosure of one interrupt per large packet would have been understood by the ordinarily skilled artisan to disclose that the single interrupt (the response to the host) would be sent after receipt of the ACK rather than prior to receipt of the ACK as claimed. PO Resp. 29–30 (citing Ex. 1043, 7:60–63; Ex. 2026 ¶¶ 94, 102). Based on Dr. Almeroth's testimony, Patent Owner contends the ordinarily skilled artisan "would infer that the network interface device in Connery would rely on the ACK to ensure that the data has been delivered so interrupt the host CPU after receiving the ACK" to thereby assure the reliability required of TCP/IP transmissions. *Id.* at 30.

Petitioner replies that Dr. Almeroth's testimony that an interrupt in Connery (the response to the command) would occur after receipt of the ACK rather than prior to receipt of the ACK as claimed is unsupported. Reply 9–10. Specifically, Petitioner contends Dr. Almeroth's testimony is contrary to the ordinarily skilled artisan's understanding of Connery's disclosure that interrupts are generated for completion of packet transmission—not for the receipt of packets or acknowledgments. Reply 10 (citing Ex. 1043, 4:53–56, 7:47–48). By contrast, Dr. Horst testifies that

Connery's disclosure of an interrupt for transmit completion would have been understood by the ordinarily skilled artisan as an interrupt to the host when the network interface has completed transmission of packets before an ACK is received for the transmissions. *Id.* (citing Pet. 57–58; Ex. 1003 Appendix A-16).

We credit Dr. Horst's testimony and are persuaded by Petitioner's arguments in this regard. It is true that Connery does not expressly disclose what its single interrupt per large packet indicates. However, we consider not only the express disclosures of the reference but also what the ordinarily skilled artisan would have understood from the disclosures. *See In re Preda*, 401 F.2d 825, 826 (CCPA 1968) ("[I]t is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom.").

The fundamental difference between the parties' interpretations of Connery's single interrupt as a response to the host reduces to what the disclosed single interrupt per large packet indicates in Connery. According to Patent Owner's interpretation, Connery discloses that the single interrupt represents receipt of an ACK as an indication to the host that the single large packet has been *transmitted and correctly received by the destination*. *See* PO Resp. 29–30. Patent Owner contends TCP/IP transmissions require that the host know that the ACK has been received—confirming correct receipt of the packet at the intended destination. *Id.* According to Petitioner's interpretation, Connery discloses that the single interrupt per large packet represents *completion of the transmission of the packet regardless of whether the corresponding ACK has been received* (i.e., prior to receipt of

the ACK due to the longer latency to receive the ACK after transmission is completed). *See* Pet. 57–59; Reply 9–10.

We are persuaded by Petitioner's position that Connery's disclosure of a single interrupt per large packet (Ex. 1043, 7:60–63) would have taught or suggested to the ordinarily skilled artisan that the single interrupt indicates that the transmission of the large packet has completed, as one of a small number of obvious choices, and in furtherance of Connery's goal of reducing host CPU utilization (*see* Pet. 59 (citing Ex. 1003, Appendix A-17–A-18)). In other words, the single interrupt of Connery teaches or suggests that all generated packets from the large datagram have been sent from the network interface to the network regardless of whether any corresponding ACK[s] have been received. Connery's alleged improvements do not relate to *reception* of packets or ACKs from the network destined to the host. Considering Connery's silence regarding processing ACKs, an ordinarily skilled artisan would have presumed ACKs are processed in the normal processing of a TCP/IP protocol stack operable in the host computer. *See* Ex. 1043, 1:56–67. Nothing in Connery suggests that processing of ACKs is affected by Connery's improvements to offload the host from segmenting large datagrams. *See* Ex. 1043, 8:60–63 ("segmentation will likely only be used to send large blocks of data . . . there will be no receive traffic (*other than ACKs*) while we are sending out a large datagram") (emphasis added). Thus, the reliability requirements of the TCP protocol provided by the processing of ACKs is unaffected by Conner's alleged improvements to segmenting and transmitting data.

We are not persuaded by Dr. Almeroth's testimony that the single interrupt would necessarily be an interrupt indicating an ACK had been

received (presumably in response to correct receipt of the final packet of the larger datagram). Connery's disclosure of a single interrupt per large packet would not have suggested to the ordinarily skilled artisan that all ACKs related to the packets generated from the large datagram have been received. Again, the reliability requirement of the TCP protocol is implemented by standard host system processing of received ACK—unaffected by Connery's improved segmentation. Instead, Connery is directed to offloading the host processing from segmenting a large datagram and generating packets from the segmented datagram—not to offloading the processing of received ACKs. *See, e.g.*, Ex. 1043, 1:1 (Title), 2:40–42, 7:63–64, 10:4–6, 13:24–26.

Furthermore, Petitioner argues, and we agree, an ordinarily skilled artisan would have understood that an interrupt for transmit complete would precede an ACK because there is substantial latency in receipt of the ACK as compared to virtually instantaneous interrupting the host system after completion of transmitting the last packet of the datagram. Reply 10–11 (citing Pet. 62; Ex. 1003 Appendix A-20–A-21; Dec. 13). Dr. Horst testifies,

> As a result, and as recited by the claim language of [prior to receiving an ACK] here, the transmission completion interrupts (sent immediately from Connery's network interface device to Connery's host, as explained for [sending the response]) would thus be sent before the final ACK could arrive at the network interface device from the far-end destination (which would only occur after the destination received all of the previously transmitted data payload).

Ex. 1003 Appendix A-21.

Accordingly, we are persuaded that Connery teaches or suggests the step of sending a response to the host prior to receiving an acknowledgment from the network.

> *"maintaining, by the network interface device, a Transport Control Protocol (TCP) connection that the command, the data and the ACK correspond to"*

Petitioner asserts the step of maintaining a TCP connection by the network interface is taught or suggested because Connery discloses: (1) its system establishes a TCP connection (Ex. 1043, 3:40–42; Ex. 1003 Appendix A-22), (2) its network interface maintains TCP state variations that are shared with the host computer (Ex. 1043, 4:59–66, Fig. 3; Ex. 1003 Appendix A-22), (3) its network interface tracks ACK and Window fields/values for packets by maintaining TCP connection state information (Ex. 1043, 8:58–9:23; Ex. 1003 Appendix A23–A-24), and (4) the commands, data, and ACKs at the network interface all correspond to the TCP connection (Ex. 1003 Appendix A-24). Pet. 65–68.

Petitioner further argues that, to the extent Connery is deemed to lack sufficient disclosure of this element, Boucher discloses this element as a communication control block ("CCB") stored in a CCB cache memory within its network interface to store context information regarding a TCP/IP connection. Pet. 82–83 (citing Ex. 1049, 8:26–28 ("The context may be passed between an interface for the session layer 42 and the CPD 30, as shown by arrows 52 and 54, and stored as a communication control block (CCB) at either CPD 30 or storage 35.")).

Patent Owner does not raise any counterarguments or point to any contrary evidence with respect to this limitation, and we are persuaded by

Petitioner's arguments and cited evidence that the limitation is taught or suggested by Connery alone and by Connery in combination with Boucher.

As discussed *supra*, the Petition proposes that, to the extent Connery alone fails to teach or suggest the maintaining step of claim 1, an ordinarily skilled artisan would be motivated to combine Connery and Boucher as an alternative to teach or suggest the maintaining step of claim 1. Petitioner asserts the ordinarily skilled artisan would have been motivated to look to Boucher for express disclosure of maintaining TCP connection information "in order to gain the benefit of more efficient bidirectional data flows." Pet. 87 (citing Ex. 1003 ¶ 96).

Patent Owner argues "Connery does not disclose any motivation to modify the interrupts on the host CPU to occur before the network interface receives an ACK that all the data has been received at the destination." PO Resp. 40 (citing Ex. 2026 ¶ 107).

Patent Owner's argument is premised on its earlier argument that Connery does not send the response before an ACK is received and, thus, Connery would need to be modified. We are not persuaded by Patent Owner's argument because, as discussed *supra*, we find Connery would have taught or suggested to the ordinarily skilled artisan the step of sending a response (transmission complete interrupt) prior to receipt of an ACK. Thus, there is no modification of Connery required in Petitioner's arguments regarding sending the response. Patent Owner's Response does not present any other argument to counter Petitioner's articulated reasoning for combining Connery and Boucher to teach or suggest the maintaining step.

Accordingly, we are persuaded that Petitioner has provided a sufficiently persuasive reason the ordinarily skilled artisan would have

combined the references based on rational underpinnings ("in order to gain the benefit of more efficient bidirectional data flows"). Pet. 87 (citing Ex. 1003 ¶ 96).

For the above reasons, we are persuaded by a preponderance of the evidence that claim 1 is taught or suggested by Connery and by the combination of Connery and Boucher.

b. Independent Claim 12

Regarding independent claim 12, which recites method steps similar to claim 1, Petitioner refers to the same arguments as provided for claim 1. Pet. 76–77. Other than the arguments addressed above regarding claim 1, Patent Owner does not raise any separate counterarguments or point to any contrary evidence specifically with respect to claim 12 as distinct from claim 1. Therefore, for the same reasons as discussed above regarding claim 1, we are persuaded by a preponderance of the evidence that claim 12 is taught or suggested by Connery and by the combination of Connery and Boucher.

c. Dependent Claims 6, 9, And 15

Claim 9 depends from claim 1 and further recites "wherein receiving, by the network interface device from the computer, a command to transmit data includes receiving, by the network interface device from the computer, a pointer to the command." Petitioner argues Connery discloses that the MSS (size of segments to be extracted by the network interface from the larger datagram received from the host) may be sent "as part of a structure by passing a pointer." Pet. 75 (citing Ex. 1043, 10:7–17). Petitioner further contends, Dr. Horst opines that using a pointer to send and receive the

command would have been an obvious choice among a limited number of solutions to transmit data between the host system and the network interface. *Id.* (citing Ex. 1003 Appendix A-35).

Patent Owner argues the Petition is deficient regarding this added limitation of claim 9 because it fails to cite Connery for this feature and, instead, relies solely on Dr. Horst's testimony regarding what would have been obvious to the ordinarily skilled artisan. PO Resp. 38–40.

For the same reasons as discussed *supra*, we are not persuaded by Patent Owner's argument. The Federal Circuit notes that expert testimony may be evidence in determining obviousness. *See Genzyme*, 825 F.3d at 1372. Thus, we are persuaded by a preponderance of the evidence that claim 9 would have been taught or suggested by Connery and by the combination of Connery and Boucher.

Claim 6 depends from claim 1 and further recites that an ACK is received at the network interface and is sent to the host system. Claim 15 depends from claim 12 and recites limitations similar to claim 6. Petitioner identifies these features in disclosures of Connery with support from Dr. Horst. *See* Pet. 68–74, 77. Patent Owner does not address these arguments by Petitioner. We have reviewed Petitioners assertions regarding claims 6 and 15 and we are persuaded Petitioner has established by a preponderance of the evidence that dependent claims 6 and 15 are unpatentable as obvious over Connery and over the combination of Connery and Boucher.

5. Secondary Considerations

Patent Owner argues that "strong objective indicia of nonobviousness" weighs against obviousness of the challenged subject

matter. PO Resp. 42. In particular, Patent Owner contends that the claimed invention addresses a long-felt yet unresolved need in the art for accelerated network communications, that the claimed inventions were commercially successful, that the claimed invention received praise in the industry, that many others tried and failed to develop the claimed technology, and that experts were skeptical of the claimed invention and taught away from it. *Id.* at 42–49. Petitioner responds generally regarding each alleged secondary consideration that Patent Owner has failed to show any nexus between the alleged objective evidence and the features of the challenged claims, as neither Patent Owner nor its expert ties any of Patent Owner's products or the alleged "claimed network acceleration technologies" to any limitation of any claim. Reply 15–16. Petitioner responds further to each alleged secondary consideration. We address these arguments below in turn.

a. Long-Felt, Unsatisfied Need

Patent Owner alleges that there was significant demand, beginning at least in the early 1990s and recognized in academic papers and prior art publications, "to enhance the efficiency of network protocol processing and network traffic management" and that "[t]he nexus between the long-felt need and the claimed invention is clear and direct" insofar as the accelerated network processing technologies recited in the challenged claims solved recognized "bottlenecks" in data communications caused, for example, by the processing of protocols. PO Resp. 42–44 (citing Ex. 2026 ¶¶ 147–148; Exs. 2031–2034).

Petitioner responds that Patent Owner "provides no evidence that the 'accelerated [network] processing technologies recited in the challenged

claims' actually relate to the 'challenged claims,'" and that Patent Owner's "only support is its expert declaration, which is identical to the Response and likewise has no support." Reply 17.

We agree with Petitioner that Patent Owner's arguments are insufficient to establish a nexus between the alleged "long-felt, yet unresolved need" and the challenged claims. Although Patent Owner provides citations to four references that afford evidence of networking bottlenecks (Exs. 2031–2034), we agree with Petitioner that Patent Owner has not persuasively established any connection between resolution of those alleged, specific, bottlenecks and the claimed invention. To be accorded substantial weight, there must be a nexus between the claimed invention and the evidence of secondary considerations. *In re GPAC Inc.*, 57 F.3d 1573, 1580 (Fed. Cir. 1995). Nexus is a legally and factually sufficient connection between the objective evidence and the claimed invention, such that the objective evidence should be considered in determining nonobviousness. *Demaco Corp. v. F. von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392 (Fed. Cir. 1988). The burden of showing that there is a nexus lies with the Patent Owner. *See In re Paulsen*, 30 F.3d 1475, 1482 (Fed. Cir. 1994). In the absence of an established nexus with the claimed invention, secondary consideration factors are not entitled to much, if any, weight and generally have no bearing on the legal issue of obviousness. *See In re Vamco Mach. & Tool, Inc.*, 752 F.2d 1564, 1577 (Fed. Cir. 1985).

Moreover, here, to the extent that offloading protocol processing could be regarded as solving any long-felt need, we note that at least Connery previously disclosed offloading protocol processing solves the need to reduce overhead processing at the host. Ex. 1043, 2:40–45. The "long-

felt need" must not have been satisfied by another before the patentee. *Newell Co. v. Kenney Mfg. Co*., 864 F.2d 757, 768 (Fed. Cir. 1988).

b. Commercial Success And Licensing

Patent Owner argues that "[t]he features described in the challenged claims also enjoyed great commercial success for over a decade" and that "the offloading and other network acceleration technology described in the challenged claims became 'the *de facto* standard' in network acceleration techniques shortly after its introduction and is still the standard today." PO Resp. 44–45 (citing Ex. 2026 ¶ 112). Patent Owner further contends that its "patent portfolio covering network acceleration techniques was the subject of several successful commercial licenses to many large network and storage players in the industry" and that "[t]his remarkable commercial success was attributed to Patent Owner's network acceleration technology." *Id.* at 45 (citing Ex. 2026 ¶ 113).

Petitioner responds that Patent Owner provides no support for its assertions other than paragraphs in its expert declaration that are identical to the paragraphs in its response and are likewise entirely unsupported. Reply 17. Petitioner also argues Patent Owner does not demonstrate sufficiently that the alleged licenses were the result of the claimed invention and, therefore, fails to establish a nexus between the claimed invention and the alleged licenses. *Id.* at 17–18. Rather, Petitioner contends, Patent Owner does not attempt to tie the '104 patent to these licenses, the '104 patent is not mentioned in any of the licenses, and the licenses "resulted from a lawsuit . . . asserting that Microsoft's software and Broadcom's hardware were infringed by different patents on [TCP Offload Engine ("TOE")]

technology," as a result of which lawsuits, Microsoft and Broadcom took a license and a handful of other manufacturers also took licenses so they could utilize certain Microsoft software that supported the TOE technology. *Id.* at 19 (citing Ex. 1227; Ex. 2038).

We are not persuaded by Patent Owner's argument for at least the reasons set forth by Petitioner. *Id.* at 17–19. We agree with Petitioner that Patent Owner does not provide sufficient information or evidence to establish that the claimed invention, in fact, experienced "commercial success." In fact, as Petitioner argues, evidence of record indicates that the claimed invention "never went anywhere" and was ultimately "deprecated." Reply 17–18 (citing Exs. 1224, 1227, 1228, 1230). Further, Patent Owner fails to show that its licensing program was successful because of the merits of the challenged claims of the '104 patent, as opposed to, for example, other of the patents in Patent Owner's licensed portfolio, business decisions to avoid litigation, prior business relationships, or for other economic reasons. Although "there is a presumption of nexus for objective considerations when the patentee shows that the asserted objective evidence is tied to a specific product and that product 'is the invention disclosed and claimed in the patent'" (*WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1339 (quoting *J.T. Eaton & Co. v. Atl. Paste & Glue Co.*, 106 F.3d 1563, 1571 (Fed. Cir. 1997)), Patent Owner carries the burden of demonstrating that the "thing . . . that is commercially successful is the invention disclosed and claimed in the patent" (*Demaco*, 851 F.2d at 1392). Moreover, "[w]hen the thing that is commercially successful is not coextensive with the patented invention . . . the patentee must show prima facie a legally sufficient relationship between that which is patented and that which is sold." *Id.*

Patent Owner has not made a sufficient showing in this case. Additionally, we note that Patent Owner relies on essentially the same evidence and arguments when asserting secondary considerations for at least eight other patents. *See* Cases IPR2017-01391 (concerning U.S. Patent No. 7,237,036 B2); IPR2017-01392 (concerning U.S. Patent No. 7,337,241 B2); IPR2017-01405 (concerning U.S. Patent No. 7,124,205 B2); IPR2017-01406 (concerning U.S. Patent No. 7,673,072 B2); IPR2017-01409 and IPR2017-01410 (both concerning U.S. Patent No. 8,131,880 B2); IPR2018-00226 (concerning U.S. Patent No. 7,124,205 B2); IPR2018-00234 (concerning U.S. Patent No. 8,805,948 B2); and IPR2018-00401 (concerning U.S. Patent No. 7,945,699 B2). This casts further doubt on the existence of a legally sufficient relationship between the alleged commercial success and the claimed subject matter in *this* case.

Still further, even assuming that the claimed invention experienced "commercial success" or "successful commercial licens[ing]" as Patent Owner alleges, we find that offloading of protocol processing was previously disclosed by Connery. *See* discussion above. Thus, to the extent Patent Owner's alleged commercial success or licensing resulted from that feature, that success stems from what was known in the prior art so that there can be no nexus. *Tokai Corp. v. Easton Enters., Inc.*, 632 F.3d 1358, 1369 (Fed. Cir. 2011).

c. Industry Praise

Patent Owner alleges that "[t]he industry universally praised commercial embodiments of the features described in the challenged claims." PO Resp. 45. In particular, Patent Owner contends that HP found

that Patent Owner's NIC was "able to sustain network bandwidth comparable to that of Native NT for large messages, which is close to wire-speed" and "achiev[e] lower processor utilization than native NT's TCP/IP protocol stack for transmission of large enough messages" and that the test performance of Patent Owner's INIC was "definitely better than [HP's] offload." *Id.* at 45–46 (citing Ex. 2026 ¶ 115; Ex. 2039 ¶ 4). Patent Owner also cites a technology analyst as opining in 2011 that a particular Alacritech product was "an evolutionary advancement of Alacritech's long standing leadership in protocol acceleration" and that "Alacritech is setting the stage for a next generation of solutions that will accelerate storage from outside the storage array." *Id.* at 46 (quoting Ex. 2040). Patent Owner further contends that the analyst "call[ed] the patented technology 'game-changing.'" *Id.* (citing Ex. 2040, 3; Ex. 2026 ¶ 116). Petitioner responds that Patent Owner "has provided no evidence that its products practice the challenged claims." Reply 20.

Notwithstanding Patent Owner's arguments and reliance on Exhibits 2039 and 2040, we again agree with Petitioner (Reply 19–20, 23) that Patent Owner has not established a nexus between the challenged claims and the alleged objective evidence. Whereas Patent Owner argues, for example, that sources stated that Patent Owner's network interface card "is able to sustain network bandwidth," "achiev[es] lower processor utilization," and "is an evolutionary advancement of [Patent Owner's] . . . protocol acceleration" (PO Resp. 45 (citing Ex. 2039 ¶ 4; Ex. 2040; Ex. 2026 ¶¶ 115–116)), Patent Owner does not demonstrate sufficiently that any of these alleged statements, assuming that any of these statements would have been considered to be "praise" at all, pertain to the claimed invention and in what

way. Likewise, whereas Patent Owner contends an analyst "call[ed] the patented technology 'game changing'" (*id.* at 46), the evidence indicates only that the analyst reported that he had "talked to early-stage customers using the product"—referring in context to one specific product, to which Patent Owner has not persuasively established any connection with the challenged claims—"and they believe it's game-changing" (Ex. 2040, 3). Again, we note that Patent Owner relies on the same evidence and arguments when asserting secondary considerations for other patents in Cases IPR2017-01391, IPR2017-01392, IPR2017-01405, IPR2017-01406, IPR2017-01409, IPR2017-01410, IPR2018-00226, IPR2018-00234, and IPR2018-00401, casting further doubt on any alleged nexus between the alleged "praise" and the specific subject matter of the challenged claims in this case.

d. Failure Of Others

Patent Owner argues that "prior attempts at 'TCP offload [have] repeatedly failed'" as a "result of the 'complexities of deploying TCP offload in practice.'" PO Resp. 46–47 (alteration in original) (citing Ex. 2041, 2). Patent Owner alleges that "[t]he TCP offload described above is a form of network processing offload that is described by the challenged claims, and this failure of others therefore has a direct nexus to the claimed inventions." *Id.* at 47 (citing Ex. 2026 ¶ 117).

Petitioner responds that Patent Owner "provides no evidence of nexus between the single article it cites and the features of the ['104 Patent." Reply 20.

We again agree with Petitioner. Even if TCP offload is a form of network processing offload, the Patent Owner provides no evidence linking the failure of others to any limitations of the challenged claims.

e. Skepticism

Patent Owner argues "experts and industry were skeptical of offloading processing of complex protocols such as TCP/IP, and expressly taught away from offloading." PO Resp. 47. Patent Owner points specifically to a portion of Tanenbaum, a widely recognized resource on networking protocols, as teaching away from the claimed invention, as well as to a paper published by Dr. Horst that Patent Owner alleges "expressed a high level of skepticism that offloading would result in any beneficial results." *Id.* at 47–48 (citing Ex. 1006, 588–589; Ex. 2300, 194; Ex. 2026 ¶ 118).

Petitioner responds that, although Tanenbaum "states a preference for an alternative because of expense and complexity, it never suggests a board with a second CPU and its own program will not work with a fast-enough processor, regardless of the offload protocol," and furthermore, "Dr. Horst's article in fact confirms the 'conventional wisdom' was that special purpose NICs were used for TCP/IP acceleration." Reply 20. Accordingly, Petitioner contends, Patent Owner's reliance on Tanenbaum and Dr. Horst's article is misplaced. *Id.*

We are not persuaded by Patent Owner's argument for at least the reasons set forth by Petitioner. Further, as previously discussed, Connery, for example, discloses offloading processing of complex protocols. There can be no nexus if the feature relied upon was previously known in the prior

art. *Tokai Corp.*, 632 F.3d at 1369. Nor would one of ordinary skill in the art have been "skeptical" of procedures (e.g., offloading) that a person of ordinary skill in the art would have recognized to have already been disclosed in the prior art (e.g., Connery).

6. Conclusion Regarding Obviousness

For the above reasons, we are persuaded by a preponderance of the evidence that all features of claims 1, 6, 9, 12, and 15 would have been taught or suggested by Connery or by the combination of Connery and Boucher. Furthermore, we are not persuaded by that any alleged objective indicia of nonobviousness of record demonstrates that claims 1, 6, 9, 12, and 15 would have been nonobvious at the time of the '104 patent.

E. Real Parties In Interest

Intel Corporation identifies itself as a real party in interest in these proceedings and represents that "[n]o other parties exercised or could have exercised control over this petition; no other parties funded or directed this Petition." Pet. 4. Patent Owner argues that "[t]he Board should terminate this IPR proceeding because the Petition fails to identify all real parties-in-interest as required by 35 U.S.C. § 312(a)(2) and 37 CFR § 42.8(b)(1)." PO Resp. 49. Patent Owner contends, for example, that "Dell is . . . Intel's . . . customer and indemnitee," that "Dell, Cavium, and Intel have closely intertwined financial interests and business relationships; express indemnification agreements; shared experts; and common litigation strategy with respect to their defense" and that "the fact that Cavium, Intel, Dell, and Wistron all filed almost verbatim petitions and share the same expert is

compelling evidence that they were in privy and cooperating in the drafting of each other's petitions." *Id.* at 49–50.

We note that we previously addressed Patent Owner's arguments in this regard both in our Decision on Institution and in an Order denying Patent Owner's request for additional discovery and associated supplemental briefing with respect to real parties in interest in light of the intervening decision of the U.S. Court of Appeals for the Federal Circuit in *Applications In Internet Time, LLC v. RPX Corp.*, 897 F.3d 1336 (Fed. Cir. 2018). *See* Dec. 16–20; Paper 56, 2–3. We additionally note that Cavium (and hence its wholly owned subsidiary QLogic), Dell, and Wistron are all acknowledged real parties in interest in this proceeding by virtue of their having joined as parties to this proceeding. Accordingly, we are therefore not persuaded by Patent Owner's argument.

F. 35 U.S.C. 325(d)

Patent Owner argues that "the Board should exercise its discretion and deny the Petition" under 35 U.S.C. § 325(d) because each of Connery and Boucher was a reference of record during the prosecution of the '104 patent. PO Resp. 51. Patent Owner argues both references were previously before the Patent Office during prosecution as evidenced by their submission on an Information Disclosure Statement ("IDS") considered by the Examiner. *Id.* (citing Ex. 1002, 167, 312). In our Decision instituting *inter partes* review, we considered essentially the same argument, previously presented in Patent Owner's Preliminary Response, as well as the particular facts and circumstances in the record before us at the time of institution, and we declined to exercise our discretion to deny the Petition under 35 U.S.C.

§ 325(d). Dec. 20–21. Having reassessed the issue, we see no reason to alter our previous determination regarding § 325(d) here.

G. Petitioner's Motion To Exclude

Petitioner moves to exclude portions of Dr. Almeroth's Declaration (Exhibit 2026) because, according to Petitioner, portions thereof "are identical to the arguments in" Patent Owner's Corrected Response to the Petition and, "[when] counsel for Petitioner asked [Patent Owner's expert, Dr. Almeroth] why portions of the Patent Owner's oppositions were identical to the expert's purported declaration . . . Counsel for Patent Owner instructed Dr. Almeroth not to answer on the basis of privilege." Paper 50, 1–3.

Although we agree with Petitioner that significant portions of Dr. Almeroth's declaration indeed are identical to arguments Patent Owner's Response and lack disclosure of underlying facts or data on which they are based, we nonetheless agree with Patent Owner that "Petitioner's complaints go to the weight of Dr. Almeroth's opinions and not their admissibility." Paper 51, 4. The Board has preciously explained that "[a] motion to exclude . . . is not an appropriate mechanism for challenging the sufficiency of evidence or the proper weight that should be afforded an argument." *Laird Techs., Inc. v. GrafTech Int'l Holdings, Inc.*, Case IPR2014-00025, slip op. at 42 (PTAB Mar. 25, 2015) (Paper 45). Moreover, "[o]ur general approach for considering challenges to the admissibility of evidence was outlined in *Corning Inc. v. DSM IP Assets B.V.*, Case IPR2013-00053, slip op. at 19 (PTAB May 1, 2014)" (Paper 66), which stated that, "similar to a district court in a bench trial, the Board, sitting as a non-jury tribunal with

administrative expertise, is well-positioned to determine and assign appropriate weight to evidence presented." *Id.* (citing *Donnelly Garment Co. v. NLRB*, 123 F.2d 215, 224 (8th Cir. 1941) ("One who is capable of ruling accurately upon the admissibility of evidence is equally capable of sifting it accurately after it has been received . . . .")).

Accordingly, we deny Petitioner's motion to exclude.

H. Joint Motion To Seal

On March 15, 2018, the parties filed a Joint Motion to Enter a Stipulated Protective Order (Paper 34), which was granted on March 27, 2018 (Paper 35).

Patent Owner requests that we seal Exhibit 2038 due to the inclusion of certain licensing terms that Patent Owner regards as confidential. Paper 28. There is a strong public policy in favor of making information filed in an *inter partes* review open to the public, especially because the proceeding determines the patentability of claims in an issued patent and, therefore, affects the rights of the public. *See Garmin Int'l, Inc. v. Cuozzo Speed Techs., LLC*, Case IPR2012-00001 (PTAB Mar. 14, 2013) (Paper 34). Under 35 U.S.C. § 316(a)(1) and 37 C.F.R. § 42.14, the default rule is that all papers filed in an *inter partes* review are open and available for access by the public; a party, however, may file a concurrent motion to seal and the information at issue is sealed pending the outcome of the motion. It is, however, only "confidential information" that is protected from disclosure. 35 U.S.C. § 316(a)(7); *see* Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,760 (Aug. 14, 2012). The standard for granting a motion to seal is "for good cause." 37 C.F.R. § 42.54(a). The party moving

to seal bears the burden of proof in showing entitlement to the requested relief, and must explain why the information sought to be sealed constitutes confidential information. 37 C.F.R. § 42.20(c).

In reviewing the Exhibit 2038, we conclude that it may contain confidential information. Accordingly, we are persuaded that good cause exists to have the identified portions remain under seal, and the Motion to Seal is granted.

The Office Patent Trial Practice Guide provides:

> *Expungement of Confidential Information*: Confidential information that is subject to a protective order ordinarily would become public 45 days after denial of a petition to institute a trial or 45 days after final judgment in a trial. There is an expectation that information will be made public where the existence of the information is referred to in a decision to grant or deny a request to institute a review or is identified in a final written decision following a trial. A party seeking to maintain the confidentiality of information, however, may file a motion to expunge the information from the record prior to the information becoming public. § 42.56. The rule balances the needs of the parties to submit confidential information with the public interest in maintaining a complete and understandable file history for public notice purposes. The rule encourages parties to redact sensitive information, where possible, rather than seeking to seal entire documents.

77 Fed. Reg. at 48761.

Consequently, 45 days from entry of this Decision, all information subject to a protective order will be made public by default. In the interim, Patent Owner may file a motion to expunge any such information that is not relied upon in this Decision. *See* 37 C.F.R. § 42.56.

IV. CONCLUSION

For the foregoing reasons, we determine that the information presented establishes, by a preponderance of the evidence, that claims 1, 6, 9, 12, and 15 of the '104 patent are unpatentable. We additionally determine that claim 22 has not been shown to be unpatentable.

V. ORDERS

Accordingly, for the foregoing reasons, it is

ORDERED that claims 1, 6, 9, 12, and 15 of U.S. Patent No. 9,055,104 B2 are held unpatentable;

FURTHER ORDERED that Petitioner's Motion to Exclude Exhibit 2026 is denied;

FURTHER ORDERED that Patent Owner's Motion To Seal is granted; and

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

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INTEL CORPORATION, CAVIUM, LLC, and DELL INC.
Petitioner,

v.

ALACRITECH, INC.,
Patent Owner.

Case IPR2017-01393[5]
Patent 9,055,104 B2

SIU, Administrative Patent Judge, Dissenting-in-part

I agree with the Majority decision and reasoning for challenged claims 1, 6, 9, 12, and 15 but respectfully disagree with the Majority's position regarding claim 22. Specifically, the Majority states Petitioner "identif[ies] the 'network interface device'" as the "structure" corresponding to the claimed "means for sending . . . data," but that this identification fails to "link[] or associate[] the network interface device to the recited function." Maj. Dec 10.

[5] Cavium, Inc., which filed a Petition in Case IPR2017-01714 (later renamed Cavium, LLC (Paper 65)), and Dell Inc., which filed a Petition in Case IPR2018-00374, have been joined as petitioners in this proceeding.

In my view, there is ample disclosure throughout the Specification of "sending" (or "receiving") data by the "network interface device." *See, e.g.*, Ex. 1001, 3:32–34 ("A network interface device is coupled . . . to facilitate network communication."). Hence, in contradistinction with the Majority, I would have proceeded to determine the merits of claim 22 with respect to the proposed ground of unpatentability.