NOTE: This disposition is nonprecedential.

# United States Court of Appeals for the Federal Circuit

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**INTEL CORPORATION, CAVIUM, LLC, DELL, INC.,**
*Appellants*

**v.**

**ALACRITECH, INC.,**
*Cross-Appellant*

**UNITED STATES,**
*Intervenor*

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2019-1443, 2019-1447, 2019-1449, 2019-1450

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Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Nos. IPR2017-01405, IPR2017-01735, IPR2018-00336.

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Decided: July 17, 2020

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Before MOORE, CHEN, and STOLL, *Circuit Judges*.

MOORE, *Circuit Judge*.

Alacritech, Inc. sued Intel Corporation, Cavium, LLC and Dell, Inc. (collectively, Appellants), alleging infringement of claims of U.S. Patent No. 7,124,205. Intel filed a petition seeking *inter partes* review of claims 3, 9, 10, 16, 22, 24–33, 35 and 36 of the '205 patent. The Board instituted review and subsequently joined Cavium and Dell as petitioners. The Board issued a final written decision holding that Appellants had proven claims 3, 9, 10, 16, 22, 24–30, 35 and 36 would have been unpatentable as obvious, but had not proven the unpatentability of claims 31–33. Appellants appeal the Board's holding with respect to claims 31–33. Alacritech cross-appeals the Board's decision holding the remaining challenged claims unpatentable as obvious. We have jurisdiction under 28 U.S.C.

§ 1295(a)(4)(A). Because the Board's decision was not erroneous and substantial evidence supports its findings, we *affirm*.

## DISCUSSION

The '205 patent is directed to a system and method for accelerating data transfer between a network and storage unit. '205 patent at 3:42–43. The claimed invention recites an interface device that is connected to a host computer and performs portions of network communications, including network layer and transport layer processing. *Id.* at 3:40–51. Claim 3 and claim 1 from which it depends are illustrative and recite:

> 1. An apparatus comprising:
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> a host computer having a protocol stack and a destination memory, the protocol stack including a session layer portion, the session layer portion being for processing a session layer protocol; and
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> a network interface device coupled to the host computer, the network interface device receiving from outside the apparatus a response to a solicited read command, the solicited read command being of the session layer protocol, performing fast-path processing on the response such that a data portion of the response is placed into the destination memory without the protocol stack of the host computer performing any network layer processing or any transport layer processing on the response.
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> 3. The apparatus of claim 1, wherein the session layer protocol is ISCSI.

The Board held claims 3, 9, 10, 16, 22, 24–30, 35 and 36 unpatentable as obvious in view of the combination of

Thia,[1] Satran I,[2] and Satran II.[3] We review the Board's legal determinations de novo and its factual findings for substantial evidence. *In re Van Os*, 844 F.3d 1359, 1360 (Fed. Cir. 2017). "Obviousness is a question of law based on underlying facts," including the scope and content of the prior art. *Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, 876 F.3d 1350, 1358 (Fed. Cir. 2017).

## I. Alacritech's Cross-Appeal

Alacritech challenges the Board's findings that Thia discloses offloading network layer and transport layer processing from the host computer and the Board's motivation to combine and reasonable expectation of success analyses.[4] Substantial evidence supports the Board's findings.

### A. Network Layer Offloading

The Board found that Thia discloses offloading network layer functionality from the host computer as claimed.

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[1] Thia, Y.H. and Woodside, C.M., *A Reduced Operation Protocol Engine (ROPE) for a Multiple-Layer Bypass Architecture*, *in* PROTOCOLS FOR HIGH SPEED NETWORKS IV 224 (G. Neufeld & M. Ito eds., 1995) (Thia).

[2] J. Satran et al., *SCSI/TCP (SCSI over TCP)*, Feb. 2000 (Satran I).

[3] J. Satran et al., *iSCSI (Internet SCSI)*, July 2000 (Satran II). The Board further relied on U.S. Patent No. 5,894,560 (Carmichael) to support its holding that dependent claims 24–26 would have been obvious. Because Alacritech only challenges the Board's decision as it relates to Thia, Satran I, and Satran II, we do not separately consider Carmichael.

[4] Alacritech's appeal briefing also included a challenge to the appointment of the Administrative Patent Judges on the Board under the Appointments Clause of the Constitution, but this challenge has since been withdrawn and waived. *See* Dkt. 82.

J.A. 6. It found that a person of ordinary skill in the art would understand Thia's disclosure of bypassing "multiple layers" to include offloading network layer processing. J.A. 7. Alacritech contends that Thia's disclosure of offloading network layer functionality is merely conceptual and therefore does not provide a skilled artisan with a reasonable expectation of success. We do not agree.

Thia discloses a bypass stack for offloading multiple layers from a standard protocol stack on the host computer. J.A. 3294–25, 3297. It depicts the architecture of the bypass stack, which is "practical in terms of chip complexity and area, using current gate array technology." J.A. 3294–27, J.A. 3300. Although Thia describes the design of the bypass stack with particular reference to offloading session and transport layer processing, its teachings are not so limited. *See EWP Corp. v. Reliance Universal Inc.*, 755 F.2d 898, 907 (Fed. Cir. 1985) ("A reference must be considered for everything it teaches by way of technology and is not limited to the particular invention it is describing and attempting to protect."). For example, Thia suggests that the increased processing speed and efficiency achieved using multi-layer offloading are "increased further in cases where some layers, like the *network and application layers*, have been further subdivided into sublayers." J.A. 3297 (emphasis added). Moreover, Thia expressly contemplates "implementing an entire service through all layers for certain cases," thereby "simplif[ying] the interface between the host and the adaptor chip." J.A. 3295. Accordingly, substantial evidence supports the Board's finding that Thia discloses offloading network layer functionality with a reasonable expectation of success. *See Soft Gel Techs., Inc. v. Jarrow Formulas, Inc.*, 864 F.3d 1334, 1342 (Fed. Cir. 2017) (holding that obviousness requires only a reasonable expectation of success, not "absolute predictability").

### B. Transport Layer Offloading

The Board further found that Thia discloses offloading transport layer processing from the host computer. J.A. 8. It found that "one of skill in the art would have understood that when the bypass stack of Thia is implemented for the transport layer, as Thia discloses, the entire transport layer would have been bypassed." J.A. 8–9. Alacritech contends that substantial evidence does not support the Board's finding because two embodiments in Thia offload only a portion of the transport layer processing. We do not agree.

Thia expressly discloses bypassing the entire transport layer using a bypass stack. It describes the design of its bypass stack "for the OSI Session and Transport layer" and concludes that it is "feasible to implement the bypass stack (at least for the transport and session layers)." J.A. 3294, 3306. Aside from Thia's disclosure that "there is no segmentation/reassembly within the bypass path," Alacritech has not identified any transport layer functionality that would not be offloaded from the host computer in any of Thia's embodiments. And as Dr. Lin testified, a person of ordinary skill in the art would have understood Thia's disclosure of "no segmentation/reassembly within the bypass path" to address lower-layer reassembly, not transport layer reassembly. J.A. 5657–58 ¶ 14. Dr. Lin therefore concluded "Thia discloses reassembly at the transport layer." J.A. 5658–59 ¶ 15. Moreover, as discussed above, Thia discloses bypassing the entire protocol stack, including the transport layer, in certain cases. J.A. 3295. Accordingly, substantial evidence supports the Board's finding that Thia discloses offloading the entire transport layer from the host computer.

### C. Motivation to Combine and Reasonable Expectation of Success

Alacritech contends that the Board's decision must be vacated for failure to expressly find that a person of

ordinary skill in the art would have been motivated to combine the asserted references with a reasonable expectation of success. We do not agree. When considering whether a claim would have been obvious in light of a combination of multiple references, the Board "consider[s] whether a [person of ordinary skill in the art] would have been motivated to combine the prior art to achieve the claimed invention and whether there would have been a reasonable expectation of success in doing so." *In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1333 (Fed. Cir. 2016). We have explained that the Board must "articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made." *In re Nuvasive*, 842 F.3d 1376, 1382 (Fed. Cir. 2016) (quoting *Motor Vehicle Mfrs. Assoc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983)).

The Board found that Appellants provided "sufficient reasons, based on evidence of record, to support the conclusion that the [asserted] combination would have been obvious." J.A. 9. The Board further stated that it was "not persuaded by [Alacritech's] argument for at least the reasons set forth by [Appellants]" and cited to pages of Appellants' reply brief that discuss the "Motivation to Combine" sections of Appellants' petition. *Id.* While "[u]ndoubtedly, it would be preferable for the [Board] to provide its own reasoned explanation," we can discern that the Board found the cited passages from Appellant's petition persuasive. *Icon Health & Fitness, Inc. v. Strava, Inc.*, 849 F.3d 1034, 1045 (Fed. Cir. 2017). "This is sufficient, if minimally, to explain the connection between the [Board]'s factual findings and legal conclusion" of obviousness. *Id.* We understand the Board as having expressly adopted as persuasive petitioner's arguments regarding motivation to

combine and reasonable expectation of success.[5] The Board set forth the specific pages of Appellants' briefing with which it agreed. We therefore decline to overturn the Board's decision.

## II. Appellants' Appeal

Claims 31–33 of the '205 patent recite a "means coupled to the host computer" for (1) "receiving from outside the apparatus a response to an iSCSI read request command," (2) "fast-path processing a portion of the response," (3) "receiving a subsequent portion of the response," and (4) "slow-path processing the subsequent portion." '205 patent at claim 31. Appellants argued before the Board that claims 31–33 are invalid as indefinite under 35 U.S.C. § 112(6) because the '205 patent "fails to disclose any structure, coupled to the host computer, that performs all four functions." J.A. 137. A majority of the Board panel agreed that the specification fails to disclose sufficient structure but declined to invalidate claims 31–33 as indefinite, because the Board in an *inter partes* review "do[es] not consider issues of validity under 35 U.S.C. § 112." J.A. 17–18.[6] Instead, the Board held that Appellants failed to propose a construction identifying the structure for the claimed function as required under 37 C.F.R. §§ 42.104(b)(3)–(4) and therefore failed to prove that claims 31–33 are

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[5] In view of the Board's characterization of the asserted combination as "the use of a particular known protocol [] in a known system that uses such known protocols . . . in a known way to achieve a known result," J.A. 10, we decline Alacritech's invitation to find that the Board disclaimed its obligation to find a motivation to combine. *See Warsaw*, 832 F.3d at 1333.

[6] The dissent concluded that the '205 patent discloses sufficient structure for performing the recited functionality. J.A. 28–33. It further concluded that claims 31–33 are unpatentable as obvious. J.A. 33–34.

unpatentable as obvious. J.A. 18. We review the Board's interpretation of its statutory authority de novo. *See Forest Grp., Inc. v. Bon Tool Co.*, 590 F.3d 1295, 1301 (Fed. Cir. 2009). We review decisions related to compliance with the Board's regulations for an abuse of discretion. *Ericsson Inc. v. Intellectual Ventures I LLC*, 901 F.3d 1374, 1379 (Fed. Cir. 2018).

Appellants contend that the Board had sufficient information to determine the patentability of claims 31–33. They argue that the petition identified the structures corresponding to the recited functions and mapped each structure to disclosures in the prior art. They further argue that because Alacritech made no argument to distinguish claims 31–33 from other challenged claims of similar scope, these claims should similarly be held unpatentable as obvious. Appellants' contentions are unavailing.

In an *inter partes* review, where a challenged claim contains a means-plus-function limitation, the petition "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); *see also id.* § 42.104(b)(4) (requiring that the petition identify where equivalent structure is found in the asserted references). Appellants' petition failed to do so. In fact, Appellants acknowledged before the Board that they "did not advance a specific construction[] identifying a concrete corresponding structure[] for the 'means' term" recited in claims 31–33. J.A. 940. Instead, Appellants asserted that "at best, the '205 patent discloses a network adaptor that performs" three of the four recited functions. That Alacritech did not distinguish claims 31–33 from other challenged claims does not relieve Appellants of their affirmative duty to identify specific structure corresponding to the claimed functions both in the patent and the asserted references. Therefore, we conclude the Board did not abuse its discretion in determining that Intel failed to comply with the requirements of 37 C.F.R. §§ 42.104(b)(3)–(4).

Appellants alternatively argue that the Board should have held the claims unpatentable as indefinite. They argue that 35 U.S.C. § 318(a) requires the Board to issue a final written decision addressing the patentability of all claims in an instituted *inter partes* review, even if for reasons outside the statutory grounds of institution. We do not agree. The Board cannot invalidate a patent as indefinite in an *inter partes* review proceeding. *See, e.g.,* 35 U.S.C. § 311(b) (limiting the scope of *inter partes* review to "ground[s] that could be raised under section 102 or 103."). Section 318(a) requires that the Board issue a final written decision with respect to the patentability of all challenged claims. *See* 35 U.S.C. § 318(a). It does not grant the Board authority to act outside its statutory limits by holding a patent claim unpatentable as indefinite under § 112. *See Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2132, 2141–42 (2016). Nor does the Supreme Court's decision in *SAS* grant the Board such authority. *See SAS Ins., Inc. v. Iancu*, 138 S. Ct. 1348, 1354 (2018) ("Nothing suggests the Director enjoys a license to depart from the petition and institute a different *inter partes* review of his own design."). Accordingly, we hold the Board properly determined that it lacked legal authority to hold the claims unpatentable as indefinite. As the Board itself recognizes, it does not have legal authority to decide indefiniteness in the context of an *inter partes* review. Thus, the Board's agreement that the specification does not disclose sufficient structure is outside the scope of its statutory authority and is therefore not binding and will not be reviewed by this court.

## CONCLUSION

We have considered the parties' remaining arguments and find them unpersuasive. For the foregoing reasons, we affirm the Board's decision.

**AFFIRMED**

## COSTS

No costs.