

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NETAPP, INC.,
Petitioner,

v.

PROVEN NETWORKS, LLC,
Patent Owner.

IPR2020-01436
Patent 7,450,507 B2

Before TREVOR M. JEFFERSON, JOHN A. HUDALLA, and
STEPHEN E. BELISLE, *Administrative Patent Judges*.

JEFFERSON, *Administrative Patent Judge*.

DECISION
Final Written Decision
Determining No Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

NetApp, Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) for *inter partes* review of claims 1–20 (the “challenged claims”) of U.S. Patent No. 7,450,507 B2 (Ex. 1001, “the ’507 patent”). Proven Networks, LLC (“Patent Owner”) filed a Preliminary Response. Paper 7 (“Prelim. Resp.”). We instituted *inter partes* review as to all challenged claims and grounds. Paper 11 (“Dec. on Inst.”).

During the course of trial, Patent Owner filed a Patent Owner Response (Paper 18, “PO Resp.”), and Petitioner filed a Reply to the Patent Owner Response (Paper 23, “Reply”). Patent Owner also filed a Sur-reply. Paper 26 (“Sur-reply”).

An oral hearing was held on January 11, 2022, and a transcript of the hearing is included in the record. Paper 32 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of claims 1–20 of the ’507 patent. For the reasons that follow, we determine that the Petitioner has not shown by a preponderance of the evidence that claims 1–20 of the ’507 patent are unpatentable.

II. BACKGROUND

A. *Related Proceedings*

The parties identify various matters that would affect or be affected by a decision in this proceeding. Pet. 76; Paper 3, 2 (Patent Owner’s Mandatory Notices). The ’507 patent was asserted in *Proven Networks, LLC v. NetApp, Inc.*, No. 6:20-cv-00369-ADA (W.D. Tex.). The ’507 patent has also been asserted in or is involved in *Proven Networks, LLC v. Cisco*

Systems, Inc., No. 2:20-cv-00074-JRG (E.D. Tex.); *Proven Networks, LLC v. Dell Techs., Inc.*, No. 1:20-cv-00710-ADA (W.D. Tex.); *Proven Networks, LLC v. F5 Networks, Inc.*, No. 5:20-cv-02521-LHK (N.D. Cal.); *Proven Networks, LLC v. F5 Networks, Inc.*, No. 5:20-cv-05571-SVK (N.D. Cal). Pet. 76; Paper 3, 2. On October 1, 2020, the United States Judicial Panel on Multidistrict Ligation, issued a transfer order consolidating the Proven Network cases against NetApp, Dell, and six other cases in the Western District of Texas in *In Re Proven Networks, LLC, Patent Litigation*, MDL No. 2959, Dkt. No. 52. Pet. 21–22; Paper 3, 2.

B. The '507 Patent

The '507 patent, titled “Hierarchal Rate-limiting at a Network Node that Utilizes an Infinity Rate-limit Check,” “relates to hierarchal rate-limiting at a network node, and more particularly to hierarchal rate-limiting at a network node that utilizes an infinity rate-limit check” allowing Ex. 1001, code (54), 1:13–15. The '507 patent discloses that “[n]etwork traffic streams are subject to more than one rate check, where the number of rate-limit checks . . . typically depends on the number of classifications to which the traffic stream belongs.” *Id.* at 1:19–24. For example, the '507 patent states that Hypertext Transport Protocol (HTTP) traffic stream between WEB browsers and servers can also be classified as both Transmission Control Protocol (TCP) traffic and as Internet Protocol (IP) type traffic. *Id.* at 1:24–35. The '507 patent teaches that in “[i]n software, it is possible to provide for oversubscription of certain classifications of traffic such that when a classification exceeds its own rate limit, the classification is permitted to borrow available bandwidth from the allocated rate limit of their parent classification.” *Id.* at 1:51–55. Furthermore, the '507 patent

explains that “[a] parent classification is the next higher level traffic classification in a rate-limiting hierarchy,” describing the next lower level traffic classification as a child classification. *Id.* at 1:55–57, 2:9–12.

The ’507 patent discloses “[a] technique for rate-limiting a traffic stream using a rate-limit hierarchy [by] utilizing infinity rate limiting rules at child classification levels to allow borrowing of available bandwidth from a rate-limit rule in a parent classification.” *Id.* at 2:32–35. “The infinity rate-limit rules at the child classification levels grant an automatic ‘pass’ at each child classification level regardless of the outcome of the actual rate-limit check of the child classification level.” *Id.* at 2:35–39. Thus, “[a]s a result of the automatic passes at each child classification, a packet is granted an overall pass if the packet passes the rate-limit check at the parent classification level.” *Id.* at 2:39–42.

Figure 2 below depicts “an example of a traffic classification hierarchy suitable to be used for hierarchal rate-limiting.” *Id.* at 4:10–12.

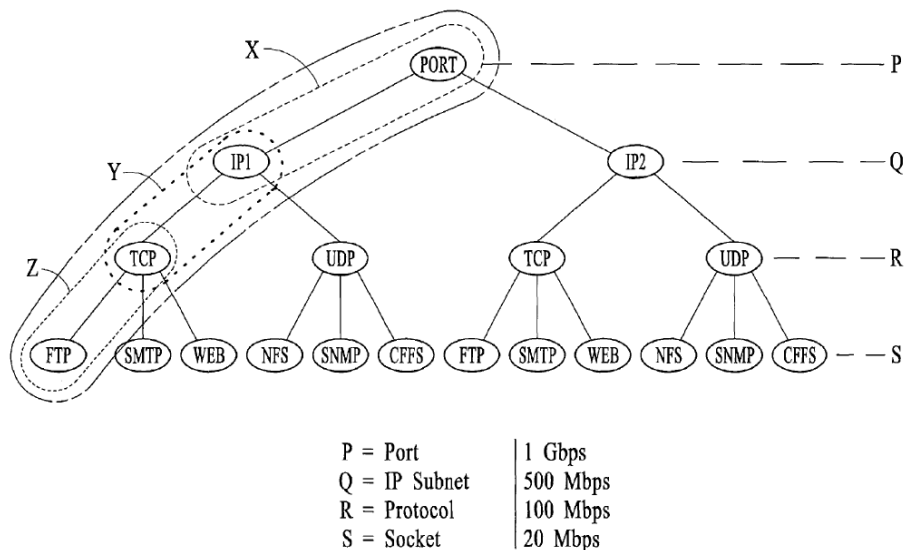


FIG. 2

Figure 2 shows “four traffic classification levels[:] P, Q, R, and S. The ‘P’ level is the highest (i.e. most broad) level in the traffic classification hierarchy and corresponds to the port level.” *Id.* at 4:13–16. Figure 2 also shows “[t]he ‘Q’ level is the second highest level . . . in the traffic classification hierarchy and corresponds to the Internet Protocol (IP) subnet level.” *Id.* at 4:16–19. Finally, “[t]he ‘R’ level is the third highest level . . . and corresponds to the protocol level,” while “[t]he ‘S’ level is the fourth highest level in the traffic classification hierarchy and corresponds to the socket level.” *Id.* at 4:19–24. The key at the bottom of Figure 2 includes “rate limits . . . for each of the four traffic classification levels.” *Id.* at 4:52–54. The ’507 patent explains that traffic classification hierarchies are related, thus “[t]he term ‘parent classification level’ [is] used [] to describe a traffic classification level that is one level higher in the traffic classification hierarchy than a ‘child classification level.’” *Id.* at 4:29–33. Accordingly, “P is a parent classification level with respect to traffic classification level Q, and traffic classification level Q is a parent classification level with respect to traffic classification level R.” *Id.* at 4:34–37.

The ’507 patent expressly states:

The terms “overall rate-limit check” and “overall check” will be used herein to mean the summation of all of the rate-limit checks in a given rate-limiting hierarchy. The terms “overall pass” and “overall fail” refer to passing and failing an overall check, respectively. A rate-limit check is the application of a rate-limit rule to a packet. In an embodiment, in a hierarchal rate-limiting scheme, an incoming packet must satisfy all of the rate-limit checks that apply to the packet in order for the packet to pass the overall check. That is, if one of the rate-limit checks fails, then the packet receives an overall fail.

Id. at 4:53–64.

Figure 4, below, depicts a two-level rate-limiting hierarchy that uses an infinity rate-limit rule to allow the borrowing of bandwidth. *Id.* at 5:17–21.

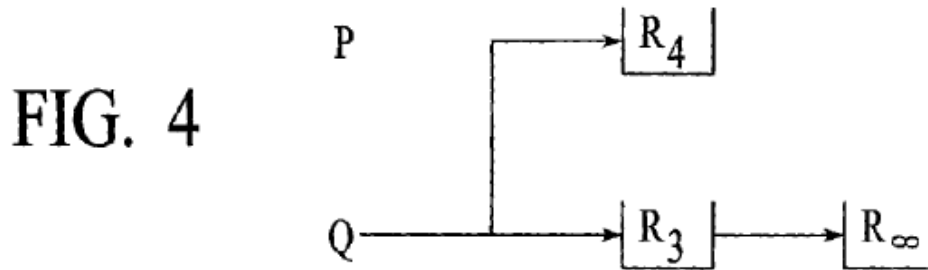


Figure 4 shows “ R_3 and R_∞ at the Q level and R_4 at the P level.” *Id.* at 5:21–22. The ’507 patent states that “ R_∞ is used herein to represent infinity rate-limit checks.” *Id.* at 5:22–23. For a packet “to receive an overall pass” it must not fail a rate check at any traffic classification level. *Id.* at 5:23–26. The ’507 patent discloses an “infinity rate-limit rule extends the life of the packet so that the ultimate determination of whether or not to grant an *overall pass* to the packet is made in a higher classification level than the traffic classification level in which the packet did not receive a pass.” *Id.* at 5:26–31 (emphasis added). A packet at the child classification level under the infinity rate-limit rule, such as R_3 in Figure 4, grants an automatic pass to the packet at the child classification level regardless of the outcome of the rate-limit check of the child classification level. *Id.* at 5:31–35. This automatic pass “enables available bandwidth to be borrowed from the parent classification level so that the packet receives an overall pass, regardless of whether the packet passed the rate-limiting rule of the child classification level. *Id.* at 5:34–39.

C. Illustrative Claims

Petitioner challenges all claims, claims 1–20, of the '507 patent. Independent claims 1 (a method claim) and 13 (a system claim) are illustrative.

1. [a] A method for rate-limiting a traffic stream using a rate-limit hierarchy at a network node comprising:

[b] subjecting a packet to a first rate-limit check, said first rate-limit check corresponding to a first-level traffic classification;

[c] subjecting said packet to a second rate-limit check and an infinity rate-limit check, said second rate-limit check and said infinity rate-limit check corresponding to a second-level traffic classification;

[d] granting an automatic pass to said packet from said infinity rate-limit check regardless of whether or not said packet passes said second rate-limit check; and

[e] granting an overall pass of said rate-limit hierarchy if said packet passes said first rate-limit check, even if said packet fails said second rate-limit check.

13. [a] A system for rate-limiting a traffic stream using a rate-limit hierarchy at a network node comprising:

[b] a classification engine configured to identify a traffic classification of a packet;

[c] a rule selection engine configured to identify rules that apply to said traffic classification identified by said classification engine;

[d][i] first level-specific rule logic configured to subject said packet to a first rate-limit rule, said first rate-limit rule selected by said rule selection engine, said first rate-limit rule corresponding to a first-level traffic classification, and [d][ii] wherein said first level-specific rule logic determines an intermediate result for said packet at said first-level traffic classification in response to results of said first rate-limit;

[e][i] second level-specific rule logic configured to subject said packet to a second rate-limit rule, said second rate limit rule selected by said rule selection engine, said second rate-limit rule corresponding to a second-level traffic classification, [e][ii] wherein said second level-specific rule logic further comprises an infinity rate-limit rule logic, said infinity rate-limit rule logic granting an automatic pass to said packet in said second-level traffic classification regardless of whether or not said packet passes said second rate-limit rule, and wherein said second level-specific rule logic determines an intermediate result for said packet at said second-level traffic classification in response to results of said second rate-limit rule and results of said infinity rate-limit rule logic; and

[f] hierarchal rule logic configured to determine an overall result of said rate-limit hierarchy in response to intermediate results determined by said first and second level-specific rule logic.

Ex. 1001, 10:61–11:8, 11:46–12:24 (bracketed lettering added).

D. Instituted Grounds of Unpatentability

The information presented in the Petition sets forth the following instituted grounds of unpatentability for the challenged claims of the '507 Patent (Pet. 15–16):

Claims Challenged	35 U.S.C. §¹	References/Basis
1–9, 13–19	103	Berger, ² Kiremidjian ³

¹ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (September 16, 2011) (“AIA”), included revisions to 35 U.S.C. § 103 that became effective on March 16, 2013. Because the '507 patent issued from an application filed before March 16, 2013, we apply the pre-AIA version of the statutory basis for unpatentability.

² U.S. Patent No. 5,274,644 to Berger et al., issued Dec. 28, 1993 (Ex. 1005, “Berger”).

³ U.S. Patent App. Publication No. 2003/0081623 A1, published May 1, 2003 (Ex. 1006, “Kiremidjian”).

Claims Challenged	35 U.S.C. § ¹	References/Basis
1–20	103	Berger, Kiremidjian, Chow ⁴

Petitioner relies on the Declaration of Kevin Jeffay, Ph.D. to support its unpatentability contentions (Ex. 1003, “Jeffay Dec.”) and the Deposition of Dr. Edwin Hernandez-Mondragon (Ex. 1034). Patent Owner relies on the Declaration of Dr. Edwin Hernandez-Mondragon (Ex. 2008, “Hernandez Dec.”) and the Deposition of Dr. Jeffay (Ex. 2007).⁵

III. ANALYSIS

A. Legal Standard

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)); *see also* 37 C.F.R. § 42.104(b) (requiring a petition for *inter partes* review to identify how the challenged claim is to be construed and where each element of the claim is found in the prior art patents or printed publications relied upon).

A patent claim is unpatentable under 35 U.S.C. § 103 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

⁴ U.S. Patent No. 6,438,134 to Chow et al., issued Aug. 20, 2002 (Ex. 1007, “Chow”).

⁵ We refer herein to Dr. Hernandez-Mondragon as Dr. Hernandez in accordance with Patent Owner’s Response. *See generally* PO Resp.

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 based on underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when presented, objective evidence of nonobviousness, i.e., secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Additionally, the obviousness inquiry typically requires an analysis of “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”)). Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements,” but “must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

B. Level of Ordinary Skill in the Art

In determining whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham*, 383 U.S. at 17. “The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry.” *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991).

Petitioner asserts that:

A person of ordinary skill in the art (“POSA”) at the time of the purported invention would have had a bachelor’s degree in computer science or computer engineering (or equivalent), and at least three years of work experience in the field of computer networking including networking protocols and switch and router design and architectures. With more education, for example, postgraduate degrees and/or study, less experience is needed to attain an ordinary level of skill in the art. Similarly, more experience can substitute for formal education.

Pet. 15 (citing Ex. 1003 ¶¶ 37–38). Patent Owner does not contest Petitioner’s assertions. *See* PO Resp. 6; Ex. 2004 ¶ 39. We agree with and adopt Petitioner’s statement of the level of ordinary skill in the art.

C. Claim Construction

For petitions filed after November 13, 2018, as here, the Board uses “the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b) (2019); *see Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). The specification may reveal a special definition given to a claim term by the patentee. *Phillips*, 415 F.3d at 1316. If an inventor acts as his or her own lexicographer, the definition must be set forth in the specification with reasonable clarity, deliberateness, and precision. *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1249 (Fed. Cir. 1998). Only claim terms “in controversy” need be construed “and only to the extent necessary to resolve the controversy.” *Nidec Motor Corp. v. Zhongshan Broad Ocean*

Motor Co., 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citation omitted), *cert. denied*, 138 S. Ct. 1695 (2018).

Petitioner asserts that no terms need be construed. Pet. 15 (citing Ex. 1003 ¶ 46). Patent Owner proposes a construction of “rate-limit hierarchy,” as discussed below. PO Resp. 6–11.

1. “Rate Limit Hierarchy”

Claim 1 recites “[a] method for rate-limiting a traffic stream using a rate-limit hierarchy at a network node comprising” in the preamble (claim 1[a]) and recites “granting an overall pass of said rate-limit hierarchy if said packet passes said first rate-limit check, even if said packet fails said second rate-limit check” in limitation 1[e]. Ex. 1001, 10:61–11:8. The parties’ dispute centers on whether the Specification expressly defines “rate-limit hierarchy” or whether the language of the claim requires no construction.

“Patent Owner proposes ‘rate-limit hierarchy,’ as used in the claims of the ‘507 Patent, should be construed as ‘a system where the packet in question *must satisfy rate-limit checks for all the classifications* that the packet falls under in order for the packet to be deemed as having passed the overall rate check.’” PO Resp. 6 (emphasis added) (citing Ex. 2008 ¶¶ 40–48). Patent Owner argues that the ‘507 patent Specification expressly supports this construction, stating:

In a hierarchal rate-limiting scheme, ***the traffic stream in question must satisfy rate-limit checks for all the classifications*** that the traffic stream falls under in order for the traffic to be deemed as having passed the overall rate check.

PO Resp. 7 (quoting Ex. 1001, 1:39–48) (citing Ex. 2008 ¶ 41). Patent Owner emphasizes that “the traffic stream in question must satisfy rate-limit checks for all the classifications,” and in the ‘507 patent, “if a packet falls

under multiple classifications having rate-limit checks, that packet must satisfy rate-limit checks applicable to *each* of those classifications in order to pass an overall rate-limit check.” PO Resp. 7 (citing Ex. 2008 ¶ 42). Patent Owner argues that all embodiments of the ’507 patent are consistent with the definition in the Specification. *Id.* at 7–10 (citing Ex. 1001, 1:39–48, Figs. 4, 5; Ex. 2008 ¶¶ 43–45).

Petitioner argues that the ’507 patent does not expressly define “rate-limit hierarchy” and instead simply describes problems with prior art “hierarchal rate-limiting schemes.” Reply 4; Ex. 1001, 1:36–2:3. Further, Petitioner asserts that Patent Owner’s construction contradicts the plain language of claim 1, which requires “granting an overall pass of *said rate-limit hierarchy* if said packet passes said first rate-limit check, *even if said packet fails said second rate-limit check*” corresponding to one of the claimed classifications” Reply 5 (quoting Ex. 1001, 11:6–8 (emphases added)). Petitioner argues that Patent Owner’s construction allows an overall pass only if rate-limit checks for *all* classifications are met, which clearly contradicts the express language of claim 1.

Petitioner also asserts that Patent Owner’s proposed construction improperly reads limitations into the claim, importing intermediate results and logic conditions disclosed in Figure 5 of the ’507 patent embodiments into claim 1. Reply 6–7. Petitioner argues that Patent Owner’s construction would require logic results that claim 1 does not address, and which imports limitations from dependent claim 2 into claim 1. *Id.* at 7–9.

We agree with Petitioner that Patent Owner’s proposed construction is not consistent with the plain language of the claims. Reply 5–7. First, Patent Owner’s construction imposes limitations on the “overall pass”

condition that are not present in claim 1, namely that packets “*must satisfy rate-limit checks for all the classifications* that the packet falls under.” PO Resp. 6 (emphasis added). Patent Owner’s proposed construction broadly states that “all” rate limit checks must be satisfied, while in contrast, claim 1 encompasses an overall pass “*even if* said packet fails said second rate-limit check.”

We also find that Patent Owner presents arguments and evidence that are based on the total results at each classification *level* to support that Patent Owner’s construction is consistent with the claims. *See* Sur-reply 5–9. Patent Owner’s arguments and evidence limit the proposed “rate-limit hierarchy” to overall results at each *classification level*. Sur-reply 6, 9 (Tables 1 and 2 showing overall first and second level results). Patent Owner’s proposed construction does not state that overall classification *levels* must be satisfied, but instead broadly states that packets “must satisfy rate-limit checks for *all the classifications* that the packet falls under” without references to particular levels. *See* PO Resp. 6; Sur-reply 6, 9. Thus, Patent Owner’s arguments are addressed to an overall classification level result. Indeed, Patent Owner acknowledges that its proposed construction “demands . . . that a packet must receive a pass at every ***traffic classification level*** in order to receive an overall pass.” Sur-reply 10; *see* PO Resp. 12 (noting all classification *levels* must be passed to receive an overall pass). We note, however, that claim 1 recites limitations on rate checks required for overall pass results, not aggregate results by classification level.

We are also not persuaded by Dr. Hernandez’s testimony that Patent Owner’s construction is consistent with the specification. PO Resp. 7–11;

Sur-Reply 10–11; Ex. 2008 ¶¶ 41–48. Dr. Hernandez’s testimony does not address the scope of the dependent claims in view of the proposed construction. Ex. 2008 ¶¶ 41–48; Ex. 1034, 39:17–40:7, 41:14–43:16. We also find that Patent Owner’s evidence and Dr. Hernandez’s testimony rely on the same overall classification level analysis that is not consistent with the proposed construction. *Compare* Ex. 1001, Fig. 5, with Sur-reply 7 (Table 1); *see* PO Resp. 7–11; Ex. 2008 ¶¶ 41–48. We agree with Petitioner that the ’507 patent embodiments allow for overall passes even when one of the checks fails, despite Patent Owner’s proposed construction demanding failure in this circumstance. *See* Ex. 1001, Fig. 5; Reply 8.

In view of the Specification and the plain meaning of the claim language, we do not find that the general description of “rate-limit hierarchy” limits the recited “rate-limit hierarchy as suggested by Patent Owner. *Toshiba Corp. v. Imation Corp.*, 681 F.3d 1358, 1369 (Fed. Cir. 2012); *see Chef Am., Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1373–74 (Fed. Cir. 2004) (determining that plain language of claim applies, even when yielding a nonsensical result, because “courts may not redraft claims”).

In sum, we are not persuaded that “rate-limit hierarchy” as recited in claim 1 requires “a system where the packet in question *must satisfy rate-limit checks for all the classifications* that the packet falls under in order for the packet to be deemed as having passed the overall rate check.” PO Resp. 6. Thus, we reject Patent Owner’s proposed construction of “rate-limit hierarchy.”

Because no express construction is needed for our decision, we do not expressly construe “rate-limit hierarchy” or any of the claim limitations.

See Nidec Motor, 868 F.3d at 1017 (holding that “we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

*D. Ground 1: Obviousness based on Berger (Ex. 1005)
and Kiremidjian (Ex. 1006)*

Petitioner argues that the combination of Berger and Kiremidjian would have rendered obvious the subject matter of claims 1–9 and 13–19 (Pet. 16–58; Ex. 1003 ¶¶ 57–163). We provide an overview of the prior art references and address Petitioner’s and Patent Owner’s contentions with respect to the challenged claims below.

1. Overview of Berger (Ex. 1005) and Kiremidjian (Ex. 1006)

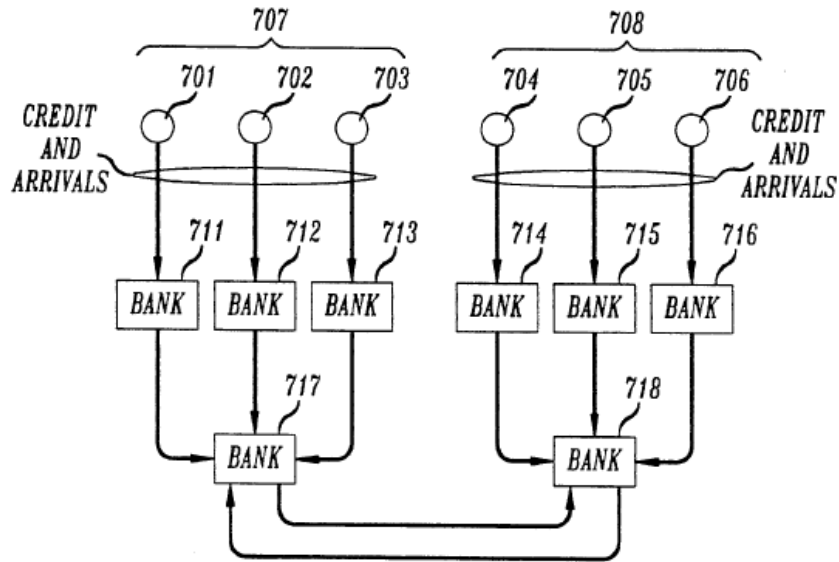
a. Berger (Ex. 1005)

Berger describes a system for processing packet network traffic where a common resource, such as bandwidth, is shared among multiple traffic classes. Ex. 1005, code (57), 1:39–51, 3:9–48. Specifically, Berger discloses “a fair and efficient admission scheme [that] enables sharing of a common resource [such as bandwidth] among multiple traffic classes.” *Id.* at 3:9–11.

Berger states that “[b]oth the network provider and the customers would like to use any excess network capacity for traffic demands made by users that exceed the contracted minimum.” *Id.* at 1:24–35. Berger discloses a shared “common bank” for a group of traffic classes, which makes unused bandwidth available to the entire group. *Id.* at 3:30–48, 10:2–24. Berger teaches the use of token banks, where tokens accumulate at a

rate corresponding to a rate limit, and traffic consumes tokens to be processed. *Id.* at 3:21–48, 11:35–68. Figure 7, depicted below, shows an example of classes of users and their shared resources. *Id.* at 10:1–8.

FIG. 7



Berger’s system organizes individual classes of traffic into groups. *Id.* at 3:30–48. Figure 7 shows classes of users 701–706 partitioned into two groups 707, 708. *Id.* at 10:2–8. Each group shares capacity within the group before seeking credit or capacity from other groups. *Id.* Thus, Figure 7 shows that “banks 711–718 are established, such that credit for classes 701–706 is initially directed to banks 711–716 respectively, and such that credit for group 707 (classes 701–703) overflows to first to bank 717 and then to bank 718, while credit for group 708 (classes 704–706) overflows to first to bank 718 and then to bank 717.” *Id.* at 9–14. Berger teaches that

[t]he same sequence is used for arrivals from each class 701–706 as is used for the associated flow of credit: credit for arrivals in classes 701–706 is initially sought from banks 711–716 respectively. If banks for arrivals from members is group 707

(classes 701–703) do not have sufficient credit available, credit is then sought first from bank 717 and then from bank 718.

Id. at 10:14–21. Correspondingly, Berger teaches that “[c]redit for arrivals from members of group 708 (classes 704–706) that is not available after an initial attempt is sought then from bank 718 and lastly from bank 717.” *Id.* at 10:21–24.

b. Kiremidjian (Ex. 1006)

Kiremidjian describes a system with class-based queues that shapes traffic, “distinguish[ing] amongst voice-over-IP (voIP), streaming video, and datapackets,” to limit the maximum throughput of each connection.

Ex. 1006, code (57), ¶¶ 15–18, 46. Kiremidjian teaches that multiple rate limits may apply to a packet. *Id.* ¶ 47. Kiremidjian further teaches a system that identifies and checks all rate limits that apply to a packet before it is processed. *Id.* ¶ 49. Thus, Kiremidjian “checks the bandwidth limit at relevant hierarchical nodes simultaneously in a parallel [hardware-based] architecture,” evaluating every bandwidth limit for a given packet “in one clock cycle.” *Id.* ¶¶ 39–40.

2. Claim 1

We address Petitioner’s and Patent Owner’s contentions regarding the pertinent limitations of claim 1 below. Pet. 23–31; Reply 14–25; PO Resp. 16–40.

a. Limitations 1[b], 1[c], and 1[d]

Limitation 1[b] recites “subjecting a packet to a first rate-limit check, said first rate-limit check corresponding to a first-level traffic classification.” Ex. 1001, 10:61–65. Limitation 1[c] of claim 1 recites “subjecting said packet to a second rate-limit check and an infinity rate-limit check, said

second rate-limit check and said infinity rate-limit check corresponding to a second-level traffic classification.” *Id.* at 10:66–11:2. Both limitations 1[b] and 1[c] state that the limit checks correspond to distinct traffic classification levels, i.e., first-level and second-level, respectively.

With respect to limitation 1[b], Petitioner argues that “Figure 7 [shows that] Berger teaches that a group (first-level traffic classification) of classes can access a common bank of tokens (first rate-limit check).” Pet. 24 (citing Ex. 1005, 9:20–31, 10:2–24; Ex. 1003 ¶ 76). Noting that Berger’s algorithm in Figure 6 teaches “an iterative process that sequentially checks higher order banks” (Pet. 25 (citing Ex. 1005, 9:32–41)), Petitioner asserts that “[t]he common bank (e.g., bank 717) teaches subjecting a packet to the first rate-limit check for a first-level traffic classification because the common bank represents the rate that applies to packet traffic in a group—the parent category—of more granular classes.” Pet. 25 (citing Ex. 1003 ¶ 77). Petitioner cites the common bank 717, which is the parent to banks 711–713, as teaching the first rate-limit check “corresponding to a first-level traffic classification.”

For limitation 1[c], Petitioner avers that “[t]he individual class bank (e.g., bank 711) teaches subjecting the packet to the second rate-limit check for a second-level traffic classification because it represents the rate that applies to packet traffic in a category with different—and in this case, more granular—criteria than Berger’s ‘groups.’” Pet. 26–27 (citing Ex. 1003 ¶ 80). Petitioner argues that because the recited “infinity rate-limit check” “extends the life of the packet so that an ultimate determination is made at a higher level, the rate limit check at the child level banks 711–713 in Berger teach the “second rate-limit check and said infinity rate-limit check

corresponding to a second-level traffic classification” of limitation 1[c]. Pet. 26–27 (citing Ex. 1012, 8:8–17; Ex. 1001, 5:26–34; Ex. 1003 ¶ 81). Petitioner describes this combination as Kiremidjian’s architecture implementing Berger’s rate-limit scheme in Figure D of the Petition. Pet. 21–22; Ex. 1003 ¶ 68. Petitioner asserts that Figure D, reproduced below, depicts the combination of Berger and Kiremidjian.

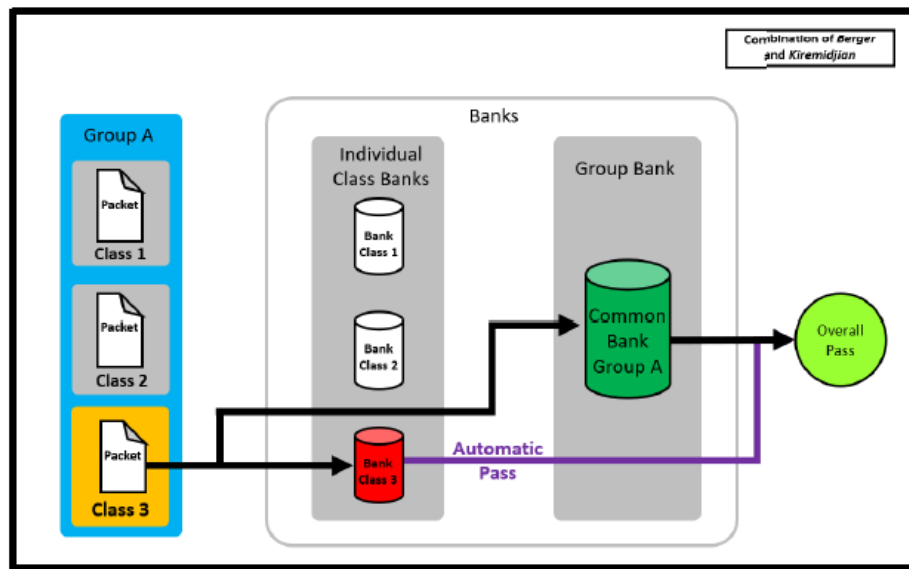


Figure D

Figure D shows Packet classes, individual banks, and group banks, which are checked in parallel. Pet. 22 (citing Ex. 1003 ¶ 69). Petitioner asserts that “[t]he system employs logic that, even when the class bank lacks sufficient tokens, allows packets to have [an automatic pass] from their class bank when the system determines that the group bank exists. Therefore, the combined system would give the packet an overall pass if the group bank has sufficient tokens, regardless of the outcome of the class bank check.” *Id.*

Citing the ’507 patent and Patent Owner’s filing in related litigation (Ex. 1012), Petitioner argues

(i) that the infinity rate limit rule “extends the life of the packet so that the ultimate determination of whether or not to grant an overall pass to the packet is made in a higher classification level,” and (ii) that it “grants an automatic pass to the packet at the child classification level regardless of the outcome of the rate-limit check of the child classification level.”

Pet. 27 (citing Ex. 1012, 8:8–17; Ex. 1001, 5:26–34). Petitioner relies on common bank 717 (shared parent) as the first rate-limit check and bank 711 (the child) as the second rate-limit check, which includes the infinity rate-limit check (overall pass) described in the ’507 patent. Petitioner asserts that Figure 6 of Berger describes the iterative process showing that there is an automatic pass at the individual class bank level (711), such that the higher order banks (group bank 717) controls the determination of whether a packet passes. *See* Pet. 27; Ex. 1003 ¶ 81; Ex. 1005, 9:19–41, Figs. 6 (steps 603, 609, 611), 7 (banks 711–713, 717).

Petitioner asserts that Berger and Kiremidjian render obvious limitation 1[d], which recites “granting an automatic pass to said packet from said infinity rate-limit check regardless of whether or not said packet passes said second rate-limit check.” Pet. 28–30; Ex. 1003 ¶¶ 82–87. Petitioner asserts that Berger’s higher order bank checking scheme alone, or Berger in combination with Kiremidjian, teaches simultaneously tracking all rate limits applicable to a packet. Pet. 28–29 (citing Ex. 1005, 9:20–41, 10:2–24; Ex. 1003 ¶ 84), 29–30 (citing Ex. 1006 ¶¶ 36, 41–43, 53; Ex. 1003 ¶ 86).

b. The Parties’ Arguments Based on Berger

Patent Owner contends that Berger alone fails to teach the infinity rate-limit check that grants an automatic pass “regardless of whether or not

said packet passes said second rate-limit check” as recited in claim 1[d]. PO Resp. 22–23. Patent Owner argues that the Petition acknowledges that Berger’s logic “provides a pass to a packet *only when* the packet fails the alleged second level rate-check.” *Id.* (citing, *inter alia*, Pet. 4 (“Berger extends the life of a packet after finding insufficient tokens in the class bank”), 27 (“when the individual class bank fails, its system should look to see if a higher-order bank in the sequence of banks exists”)).

Petitioner replies that the passive interpretation of “infinity rate-limit check,” which merely requires that the packet be kept alive, is sufficient to teach the “automatic pass” limitation. Reply 15–16. Petitioner argues that “the ‘infinity rate-limit check’ requires no more than the functional result of the claims—keeping the packet alive so that an overall pass can be granted when the packet passes the first rate-limit check, even if the packet fails the second rate-limit check.” *Id.* Indeed, the Petition expressly relies on the Berger logic to teach this limitation, stating that “because Berger passes on the packet to check the group bank when the class-level bank check (i.e., said second rate-limit check) *fails*, Berger teaches granting an automatic pass from an infinity rate-limit check.” *Id.* at 29 (emphasis added); *see also* Ex. 2007, 14:17–22.

Based on the full record, Petitioner does not demonstrate persuasively that Berger’s functions alone teach granting an automatic pass “regardless of whether or not said packet passes said second rate-limit check” as recited in the limitation 1[d]. We agree with Patent Owner that claim 1[d] (and related language in claim 13[e][ii]) requires “‘granting an automatic pass’ to a packet from an infinity rate-limit check ‘regardless of whether or not said packet passes said second rate-limit check’” meaning that “a pass [is

granted] to the packet irrespective of whether the packet fails *or* passes the second-level rate check.” PO Resp. 16–17 (citing Ex. 2008 ¶¶ 55–56).

We are also not persuaded by Petitioner’s argument that Berger teaches the passive interpretation of infinity rate-limit check by keeping packets alive (Reply 15–16), as that interpretation fails to address the “regardless of whether or not said packet passes said second rate-limit check” limitation of the claim. The Petition relies on Berger’s check to see if a higher-order bank in the sequence of banks exists, expressly stating that “Berger teaches that, when the individual class bank fails, its system should look to see if a higher-order bank exists” in order to “extend the life of the packet.” Pet. 27 (citing Ex. 1005, 9:32–41). Petitioner does not demonstrate persuasively that Berger’s functional result of keeping failing packets alive teaches that a pass is granted to the packet irrespective of whether the packet fails or passes the second-level rate check, as is required in limitation 1[d]. See PO Resp. 16.

Accordingly, we are not persuaded that the grounds based on Berger’s logic alone teach the limitations of claim 1[d].

c. The Parties’ Arguments Based on Berger and Kiremidjian

To teach the automatic pass “regardless of whether or not said packet passes said second rate-limit check,” Petitioner relies in the alternative on the combination of Berger and Kiremidjian, arguing that an ordinarily skilled artisan “would have found it obvious to implement Berger’s individual class banks and group bank using Kiremidjian’s parallel processing architecture.” Pet. 29. Petitioner relies on the use of Kiremidjian’s parallel processing architecture with Berger’s rate-limit scheme, arguing that it provides the predictable result of implementing

Berger's rate-limiting scheme in Kiremidjian's application-specific hardware. Pet. 21, 29. Petitioner characterizes the combination of Berger and Kiremidjian as "(1) implementing Berger's processing without any modification in Kiremidjian's parallel hardware, and (2) utilizing Kiremidjian's teachings to improve Berger's logic to address a particular situation presented when Berger is implemented in parallel." Reply 16–17. Thus, Petitioner proposes two combinations of Berger and Kiremidjian that we address below.

Patent Owner argues that the first combination—implementing Berger's pass logic scheme in parallel using Kiremidjian's hardware — results in the same scheme discussed above for Berger alone that grants an overall pass *only when* the second rate-limit check fails and does not grant an overall pass when the second rate-limit check passes. Sur-reply 21; *see* Ex. 2007, 25:15–21. We agree with Patent Owner. The Petition is clear that the combination asserted for claim 1 applies Berger's logic using Kiremidjian's parallel architecture. Pet. 21 ("[A] POSA would have readily been able to use Kiremidjian's architecture to implement Berger's rate-limit scheme with no experimentation."); *see* Ex. 2007, 12:17–19 ("So nothing fundamentally is being changed about Berger. It's really an issue of coming up with a higher performance implementation."). For the reasons discussed above for Berger alone, we are not persuaded that Berger's scheme implemented in parallel without modification teaches the automatic pass "regardless of whether or not said packet passes said second rate-limit check" limitation, as the infinity check does not occur when the second rate-limit check passes.

With respect to the second combination—using Kiremidjian’s teachings *to modify and improve* Berger’s logic—Patent Owner argues that the combination of Berger and Kiremidjian is not straightforward and impermissibly alters Berger’s rate-limit scheme. PO Resp. 25–29. Specifically, Patent Owner argues that the Petition fails to provide sufficient motivation to modify Berger’s pass logic with Kiremidjian’s parallel architecture or address a reasonable expectation of success for such a modification. *Id.* Patent Owner further contends that Petitioner’s general allegations of obviousness and motivations to modify Berger in view of Kiremidjian are insufficient to establish obviousness. Sur-reply 24–25.

On the full record, we do not find persuasive Petitioner’s contentions regarding the combination utilizing Kiremidjian’s teachings to “improve Berger’s logic to address a particular situation presented when Berger is implemented in parallel.” Pet. 31–32; Reply 16–17. First, we note that Petitioner’s modification of Berger’s logic scheme using Kiremidjian is only discussed for dependent claim 2 and not in the combination asserted in claim 1 (or independent claim 13), which expressly cites that Berger’s unmodified logic is implemented using Kiremidjian’s parallel architecture. *See* Pet. 29–32. Under the particular facts of this case, Petitioner’s failure to put forth an obviousness rationale for claim 1 (or independent claim 13) based on this modification amounts to a fatal flaw in its analysis.

Even assuming the modification to Berger’s logic scheme using aspects of Kiremidjian’s logic in claim 2 (*id.* at 31–32) is applicable to the combination asserted for claim limitation 1[d] (*id.* at 29–30) (and related limitation in claim 13[e]), we find that the Petition sets out an insufficient motivation to modify Berger’s logic to address the particular situation

Petitioner presents in its Reply when Berger is implemented in parallel. *See* Pet. 31–32; Reply 16–17. Specifically, Petitioner does not adequately explain how or why Kiremidjian’s logic is employed to “improve” Berger. *Id.* at 31–32 (citing Ex. 1003 ¶ 93). Petitioner’s evidence and argument reference “Berger’s spare bank override of a class bank fail” as being added to Kiremidjian’s parallel architecture to teach the limitations of claim 2 (*id.*), but this does not support Petitioner’s argument that the Petition uses Kiremidjian’s teachings to “improve Berger’s logic to address a particular situation presented when Berger is implemented in parallel.” *See* Reply 16, 19–21 (citing Pet. 31–32; Ex. 1003 ¶ 93).

Petitioner’s complete argument for claim 2 in which it proposes modifying Berger’s logic based on Kiremidjian’s architecture and logic is reproduced below:

To the extent that the overall fail must occur regardless of the outcome of the class-level or “second-level” rate-limit check, *Kiremidjian*’s parallel processing hardware architecture simultaneously tracks the outcomes of the child and parent rate-limit checks and requires all checks to be satisfied to process a packet. *Kiremidjian*, ¶¶[0041]–[0043], [0053]. A POSA would have found it obvious to concurrently track the common bank check with the class bank check using the table of *Kiremidjian* to address instances where the parent rate-limit amount was less than the sum of the child member rate-limits. Jeffay, ¶93. The combination would provide the common bank result regardless of whether the class bank passes and not release the packet if the common bank check fails. *Id.* As previously discussed, a POSA would have found it obvious to implement *Berger*’s system in a parallel processing architecture because of developments since *Berger*’s publication, such as gigabit Ethernet and VoIP. *Id.* The combination would combine *Kiremidjian*’s parallel architecture determining all rate checks and logic of processing packets once all rate checks are passed with *Berger*’s spare bank override of a

class bank fail. *Id.* This combination would grant an overall fail based only on the first (e.g., group) rate-limit check regardless of whether the second (e.g., class) rate-limit check is a pass or not, rendering claim 2 obvious. *Id.*

Pet. 32.

Based on this argument and evidence presented for claim 2, Petitioner asserts “that a skilled artisan would understand further ways to improve the Berger/Kiremidjian combination beyond implementing Berger’s base algorithm in parallel.” Reply 19 (citing Pet. 31–32; Ex. 1003 ¶ 93).

Petitioner bases this modification on a Kiremidjian scenario, that is allegedly not addressed in Berger, where a packet fails a higher-order rate check while still passing lower-order rate checks. Reply 19; Pet. 32; Ex. 1003 ¶ 93 (citing Ex. 1006 ¶ 29). Yet the Petition lacks persuasive argument or evidence in support of this position.

We agree with Patent Owner that Petitioner’s motivation to modify Berger’s pass logic is not sufficient or persuasive on the full record. *See* PO Resp. 33–37; Ex. 2008 ¶¶ 77–84. An assertion of obviousness “cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR*, 550 U.S. at 418 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)); *accord In re NuVasive, Inc.*, 842 F.3d 1376, 1383 (Fed. Cir. 2016) (stating that “‘conclusory statements’ alone are insufficient” and provide “insufficient articulations of motivation to combine”; “instead, the finding must be supported by a ‘reasoned explanation’” (citation omitted)).

With respect to modifying Berger’s logic with Kiremidjian’s parallel logic, the Petition identifies Kiremidjian’s parallel architecture that

“determine[s] all rate checks and logic of processing packets once all rate checks are passed,” but fails to articulate persuasively a motivation to modify the logic of Berger with Kiremidjian’s logic requirement or how Berger would be modified. *See* Pet. 32; Ex. 1003 ¶ 93. Although Petitioner’s Reply also identifies specific benefits of using a portion of Kiremidjian’s logic to solve problems with Berger’s existing logic (Reply 19–20, 22), the Petition fails to adequately address the benefits of Kiremidjian’s logic to solve potential deficiencies in Berger (Pet. 31–32; Ex. 1003 ¶ 93).

We also find unavailing Petitioner’s argument regarding problems with Berger’s existing logic based on bandwidth. *See* Reply 22 (citing Ex. 1005, 10:46–65; Ex. 1003 ¶ 93). First, we find no adequate discussion of Berger’s problems in the Petition. Second, the declaration testimony Petitioner cites does not adequately support the identified potential problems with Berger’s logic and is instead directed to Kiremidjian’s teachings. Reply 22–23; Ex. 1003 ¶ 93. In addition, Petitioner’s Reply only alleges that Berger *could* suffer from the bandwidth issues, which does not persuasively support a motivation to modify Berger’s logic using Kiremidjian’s logic to resolve this alleged issue. Reply 22–23; Ex. 1003 ¶ 93. In sum, the Petition fails to persuasively identify and address the issues presented when Berger is implemented in parallel that warrant the modified combination with Kiremidjian. *See* Pet. 31–32; Reply 22–23; Ex. 1003 ¶ 93.

Patent Owner also argues that a person ordinary skill in the art would have avoided modifying Berger’s pass logic with Kiremidjian’s teachings because it would result in unnecessary packet loss when sufficient resources

exist to process the packets. PO Resp. 37–39; Sur-reply 25; Ex. 2008 ¶¶ 85–90. Patent Owner provides argument and declarant testimony that Petitioner’s proposed changes to Berger’s overall pass logic is inconsistent with Petitioner’s reasoning that Berger’s unmodified logic offers “the most efficient and quickest means possible to allocate bandwidth and avoid unused capacity.” Pet 18; *see* Ex. 1005, 1:18–35; PO Resp. 36–39; Ex. 2008 ¶¶ 85–89. Specifically, Petitioner’s declarant, Dr. Hernandez, provides evidence that Petitioner’s proposed changes to Berger’s overall pass logic would be “nonsensical” and undermine Berger’s bandwidth allocation to avoid unused capacity in the most efficient and quickest manner possible. Ex. 2008 ¶ 89; PO Resp. 38–39.

Petitioner’s reply to Patent Owner’s argument regarding the inefficient allocation of bandwidth relies on the same testimony and argument cited for the dependent claim 2 combination of Berger and Kiremidjian discussed above. *See* Reply 22–23; Ex. 1003 ¶ 93. Petitioner’s argument and evidence relies on the general increases in speed and efficiency based on parallel processing, but does not persuasively address Patent Owner’s evidence and argument regarding changes to efficiency in the specific combination where Kiremidjian’s logic is used to change Berger’s overall pass logic. Reply 22–23; Ex. 1003 ¶¶ 58–70, 93; Ex. 1034, 35:18–36:2, 36:15–37:5.

Based on the full record, we credit Patent Owner’s declarant testimony (Ex. 2008 ¶¶ 85–90) over Petitioner’s reliance on the evidence and argument presented for claim 2. *See* Pet. 32; Ex. 1003 ¶ 93; Reply 22–22; PO Resp. 37–39; Sur-reply 25; Ex. 2008 ¶¶ 85–90. In particular, Petitioner’s evidence does not address the specific combination of Berger

modified by Kiremidjian. Reply 22–23; Ex. 1003 ¶¶ 58–70, 93. As such, Petitioner fails to rebut persuasively Dr. Hernandez’s testimony regarding the decreased efficiency of Berger’s overall pass logic as modified by Kiremidjian. *See* Sur-reply 25–26; Ex. 2008 ¶¶ 85–90; Reply 22–28; Ex. 1003 ¶ 58–70, 93. In sum, we find that Petitioner’s arguments are not persuasively supported by the evidence provided in the Petition. *Id.*

Finally, we agree with Patent Owner that Petitioner fails to articulate why an ordinarily skilled artisan would have had a reasonable expectation of success in modifying Berger’s logic scheme with Kiremidjian’s logic. PO Resp. 39–40; Sur-reply 27. Petitioner recognizes that the motivation to modify Berger with the logic of Kiremidjian is a “second position on the [Berger/Kiremidjian] combination” that is distinct from the first position of implementing Berger’s logic in Kiremidjian’s parallel architecture. Reply 24 (citing Pet. 16–23, 31–32; Ex. 1003 ¶¶ 58–70, 83).

Petitioner presents distinct arguments with respect to each motivation. *Id.*; *see* Reply 16 (describing “multiple positions on the resulting combination[s] . . . each with its own motivation”). For the first position, where Berger’s logic is realized in Kiremidjian parallel architecture, the Petition provides argument that a person of ordinary skill in the art “would have readily been able to use Kiremidjian’s architecture to implement Berger’s rate-limit scheme with no experimentation. [Ex. 1003, ¶ 68.] The combination would have provided the *predictable result* of implementing Berger’s rate-limiting scheme in application-specific hardware. *Id.*” Pet. 21 (emphasis added). Petitioner’s predictable results argument focuses on Berger’s logic alone using Kiremidjian’s architecture, but does not address the predictability of combining Kiremidjian’s logic with Berger’s logic

scheme. *Id.*; Ex. 1003 ¶¶ 64–69; *see* Reply 19 (arguing that a skilled artisan would have recognized using aspects of Kiremidjian’s logic to improve the operation of the combined system) (citing Pet. 32; Ex. 1003 ¶ 93).

With respect to the second position modifying Berger’s logic, the Petition’s argument and evidence state nothing about predictability or reasonable expectation of success. *See* Pet. 31–32; Ex. 1003 ¶ 93. The Petition simply states “a [skilled artisan] would have found it obvious to concurrently track the common bank check with the class bank check using the table of *Kiremidjian* to address instances where the parent rate-limit amount was less than the sum of the child member rate-limits.” Pet. 32 (citing Ex. 1003 ¶ 93). The Petition, however, fails to directly or persuasively address the alleged problems with Berger, or the predictability and expectation of success of combining the logic schemes of Berger and Kiremidjian using the table of *Kiremidjian* to address issues with Berger. *Id.*

Petitioner argues that it explains in the Petition how a skilled artisan would have expected a resulting Berger/Kiremidjian system to successfully operate, so “nothing more is required in this predictable art.” Reply 24 (citing, *inter alia*, *In re Fisher*, 427 F.2d 833, 839 (C.C.P.A. 1970) (identifying electrical elements as being predictable); *KSR*, 550 U.S. at 417 (“[W]hen a patent ‘simply arranges old elements with each performing the same function it had been known to perform’ and yields no more than one would expect from such an arrangement, the combination is obvious.” (citation omitted)). We disagree that merely explaining how an unmodified Berger/Kiremidjian system would operate is sufficient. *See* Reply 24.

In the present case, the Petition fails to address persuasively how or why an ordinarily skilled artisan would have modified Berger by

incorporating part of Kiremidjian's parallel processing logic requiring all checks to be satisfied to process a packet into Berger's logic with a reasonable expectation of success. Pet. 32; Ex. 1003 ¶ 93; Reply 24. The Petition does not explain persuasively how "to improve the Berger/Kiremidjian combination beyond implementing Berger's base algorithm in parallel." Reply 19 (citing Pet. 31–32; Ex. 1003 ¶ 93). On the full record, we find Petitioner's general statements regarding the predictability of Berger and Kiremidjian to be insufficient. Accordingly, we find that Petitioner's evidence and argument fails to persuasively establish the predictability of the combination that modifies the logic of Kiremidjian and Berger to establish a reasonable expectation of success.

d. Conclusion Claim 1

Based on the forgoing, Petitioner does not demonstrate persuasively that Berger's logic alone teaches granting an automatic pass "regardless of whether or not said packet passes said second rate-limit check" as recited in the limitation 1[d]. In addition, Petitioner fails to provide a sufficient motivation to modify Berger's logic with Kiremidjian's logic, to establish a reasonable expectation of success pertinent to the combination, or to apply the modified Berger/Kiremidjian combination to independent claims 1 and 13. For the reasons discussed above, we determine that Petitioner has failed to show by a preponderance of the evidence that claim 1 would have been obvious over Berger and Kiremidjian.

Because independent claim 13 recites similar limitations to claim 1 (limitations 1[d] and 13[e][ii]) (*see* Pet. 28–30, 48–49) and dependent claims 2–9 and 14–19 depend from claims 1 and 13, we determine that Petitioner

has also failed to show by a preponderance of the evidence that claims 2–9 and 13–19 would have been obvious over Berger and Kiremidjian.

E. Ground 2: Obviousness based on Berger (Ex. 1005), Kiremidjian (Ex. 1006), and Chow (Ex. 1007)

Petitioner contends that the combination of Berger, Kiremidjian, and Chow would have rendered obvious the subject matter of claims 1–20. Pet. 59–73; Ex. 1003 ¶¶ 163–192.

Chow discloses a scheduler that uses queues to efficiently allocate bandwidth of a communications link across different queues with different service classes. Ex. 1007, 1:8–17. Chow seeks to address the problem of utilizing unallocated or unused bandwidth. *Id.* at 2:11–18. Chow also teaches that weights may be assigned to traffic processed by the scheduler to reflect the priority of that traffic. *Id.* at 2:3–6, 6:51–7:52.

With respect to claims 1–9 and 13–19, Petitioner relies on the arguments presented in Ground 1, asserting that Berger and Kiremidjian teach the limitations of claims 1–9 and 13–19. Pet. 66–67; Ex. 1003 ¶ 176. With respect to dependent claims 10, 11, 12, and 20, Petitioner provides detailed analysis and evidence that the combination of Berger, Kiremidjian, and Chow renders obvious the subject matter of dependent claim 10 (Pet. 67–70; Ex. 1003 ¶¶ 177–183); dependent claim 11 (Pet. 70–71; Ex. 1003 ¶¶ 184–187); dependent claim 12 (Pet. 72; Ex. 1003 ¶¶ 188–190); and dependent claim 20 (Pet. 72–73; Ex. 1003 ¶¶ 191–192).

For the same reasons discussed above with respect to Ground 1, we determine that Petitioner has failed to show by a preponderance of the evidence that claims 1–20 would have been obvious over Berger, Kiremidjian, and Chow.

IV. CONCLUSION

For the foregoing reasons, we conclude that Petitioner has not demonstrated by a preponderance of the evidence the unpatentability of claims 1–20 of the '507 patent. Specifically, Petitioner has not demonstrated by a preponderance of the evidence that (1) claims 1–9 and 13–20 would have been obvious under 35 U.S.C. § 103(a) in view of Berger, Kiremidjian; and (2) claims 1–20 would have been obvious under 35 U.S.C. § 103(a) in view of Berger, Kiremidjian, and Chow.

V. ORDER

For the reasons given, it is

ORDERED that Petitioner has not shown by a preponderance of the evidence that claims 1–20 of the '507 patent are unpatentable; 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.

In summary:

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1–9, 13–20	103	Berger, Kiremidjian		1–9, 13–20
1–20	103	Berger, Kiremidjian, Chow		1–20
Overall Outcome				1–20

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