

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

KEYSIGHT TECHNOLOGIES, INC.,
Petitioner,

v.

CENTRIPETAL NETWORKS, LLC,
Patent Owner.

IPR2022-01421
Patent 10,681,009 B2

Before KEVIN F. TURNER, BRIAN J. McNAMARA, and
STACEY G. WHITE, *Administrative Patent Judges*.

TURNER, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. *Background and Summary*

Keysight Technologies, Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) to institute an *inter partes* review of claims 1–30 (the “challenged claims”) of U.S. Patent No. 10,681,009 B2 (Ex. 1001, “the ’009 Patent”). Centripetal Networks, Inc. (“Patent Owner”) timely filed a Preliminary Response (Paper 7, “Prelim. Resp.”) contending that the Petition should be denied as to all challenged claims. After considering the Petition and the Preliminary Response, on March 22, 2023, we issued a decision declining to institute an *inter partes* review in this proceeding. Paper 9 (“Original Institution Decision,” “Orig. Inst. Dec.”). Therein, we determined it appropriate to exercise our discretion under 35 U.S.C. § 325(d) to deny institution of *inter partes* review of the ’009 Patent. Orig. Inst. Dec. 10.

On August 24, 2023, the Director vacated and remanded our Original Institution Decision and directed us to revisit our analysis regarding *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020) (precedential) (“*Advanced Bionics*”). Paper 14 (“Remand Decision,” “Remand Dec.”), 4–8. The Director agreed that our determination that the first part of the *Advanced Bionics* framework was met (*id.* at 5 (citing Orig. Inst. Dec. 9–10)), but with respect to the second part of the *Advanced Bionics* framework, the Director stated:

I find that Petitioner’s arguments and cited evidence establish that the Office erred in a manner material to patentability under the particular circumstances of this case. Specifically, Petitioner’s arguments and cited evidence establish there is substantial overlap in the subject matter described in the ’009

patent and the '148 patent^[1] (subject to the '148 FWD)^[2], generally, and the claimed subject matter recited by the challenged claims of the '009 patent and of the '148 patent, specifically.

Remand Dec. 6 (citing Pet. 15–68; Ex. 1010; Ex. 2001). The Director further found that “the Office erred by overlooking the significance of the '148 FWD as it pertains to the patentability of the claims of the '009 patent.” *Id.* at 7. Lastly, the Director determined that, “under the specific circumstances of this proceeding, I find the second part of the *Advanced Bionics* framework is satisfied,” such that “the facts here do not warrant exercising discretion to deny institution under 35 U.S.C. §325(d).” *Id.* at 8.

On that basis, we instituted an *inter partes* review of the challenged claims. Paper 16 (“Dec. to Inst.”). Patent Owner subsequently filed a Patent Owner Response (Paper 21, “PO Resp.”), Petitioner filed a Petitioner Reply (Paper 23, “Pet. Reply”), Patent Owner filed a Patent Owner Sur-reply (Paper 25, “PO Sur-reply”), and a transcript of an oral hearing held on August 7, 2024 (Paper 31, “Hr’g Tr.”) has been entered into the record.

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a). We base our decision on the preponderance of the evidence. 35 U.S.C. § 316(e) (2018); 37 C.F.R. § 42.1(d) (2024). Having reviewed the arguments of the parties and the supporting evidence, we conclude that Petitioner has demonstrated by a preponderance of the evidence that claims 1–30 of the challenged claims are unpatentable.

¹ U.S. Patent 9,674,148, which is related to the '009 patent.

² The Final Written Decision (Ex. 2001) in IPR2018-01454, the *inter partes* review of the '148 Patent.

B. Related Proceedings

The Petition states that the '009 Patent is asserted in the following litigation: *Centripetal Networks, Inc. v. Keysight Technologies, Inc.*, 2:22-cv-00002 (E.D. Va.) (filed Jan. 1, 2022). Pet. 2.

The '009 Patent is related to the '148 Patent, as discussed above, where Patent Owner acknowledges the latter patent to be “the great-grandparent of the '009 Patent.” Prelim. Resp. 1 n.2. Given that the chain of applications includes only continuation applications, the '009 and '148 Patents have a common disclosure. Ex. 1001, code (63). We determined claims 1–20 of the '148 Patent to be unpatentable in an *inter partes* review proceeding, IPR2018-01454 (“the '148 Patent IPR”), in the '148 FWD (Ex. 2001), where that decision was affirmed by the Court of Appeals for the Federal Circuit. *See* Ex. 1018.

C. Real Party-in-Interest

Petitioner identifies itself as the sole real party-in-interest. Pet. 2. Patent Owner identifies itself as the sole real party-in-interest. Paper 3, 1.

D. The '009 Patent

The '009 Patent discloses methods and systems for protecting a secured network. Ex. 1001, code (57). The '009 Patent discloses that “[n]etwork protection devices (e.g., firewalls) implement rules with respect to packet-switched network traffic entering or leaving the networks they protect.” Ex. 1001, 1:24–26. The '009 Patent details that multiple, consecutive rule sets may be implemented on those network protection devices, and conventionally, “[n]etwork protection devices may require time to switch between rule sets” and that “[a]s rule sets increase in complexity, the time required for switching between them presents obstacles for effective

implementation.” *Id.* at 1:38–41. The time required for switching between rulesets may introduce a problem because “while implementing a new rule set, a network protection device may continue processing packets in accordance with an outdated rule set” which “may exacerbate . . . the effect of the network attack.” *Id.* at 1:45–50.

The ’009 Patent seeks to remedy this problem by having processors within a network protection device configured to “cease processing packets and may cache any unprocessed packets,” while the network protection device is being reconfigured. *Id.* at code (57), 2:14–17, Fig. 3A. The ’009 Patent details that “the faster [the] network protection device 100 can switch” to processing packets in accordance with the desired rule set during an attack, “the greater the likelihood that the effects of the attack may be mitigated.” *Id.* at 9:16–20. The ’009 Patent also details that “preprocess[ing of] multiple rule sets prior to their implementation [can] thereby enable network protection device 100 to perform fast rule swapping between rule sets.” *Id.* at 5:17–21.

E. Illustrative Claim

As noted above, Petitioner challenges claims 1–30, with claims 1, 14, 18, and 22 being independent claims. Claim 1 is illustrative of the challenged claims and is reproduced below:

1. A method comprising:

preprocessing, by a network protection device, a first rule set by performing operations on the first rule set, prior to the first rule set being implemented on the network protection device, to optimize performance of the network protection device;

configuring the network protection device to process packets in accordance with the preprocessed first rule set after preprocessing the first rule set;

receiving, a plurality of packets after configuring the network protection device to process packets in accordance with the preprocessed first rule set;

processing, by the network protection device, a first portion of the plurality of packets in accordance with the preprocessed first rule set;

preprocessing, by the network protection device, a second rule set by performing operations on the second rule set, prior to the second rule set being implemented on the network protection device, to optimize performance of the network protection device;

signaling the network protection device to process packets in accordance with the second rule set; and

responsive to the signaling:

- ceasing processing of one or more packets by the network protection device;
- caching the one or more packets;
- reconfiguring the network protection device to process packets in accordance with the preprocessed second rule set;
- signaling completion of reconfiguration to process packets in accordance with the preprocessed second rule set; and
- responsive to signaling the completion of the reconfiguration,

processing the one or more cached packets by the network protection device in accordance with the preprocessed second rule set,

wherein the operations performed on the first rule set and the second rule set include at least one of:

- merging two or more rules within the first rule set or the second rule set into one rule;
- separating one or more rules within the first rule set or the second rule set into two or more rules; or
- reordering one or more rules within the first rule set or the second rule set.

Ex. 1001, 10:46–11:23.

F. Grounds of Institution

Trial was instituted on the following grounds:

References	35 U.S.C. § ³	Claims Challenged
Roese ⁴ , Golnabi ⁵ , Huima ⁶ , Hayter ⁷	§ 103(a)	1–5, 8–24, 26–30
Roese, Golnabi, Huima, Hayter, Esbensen ⁸	§ 103(a)	6, 7, 25

Dec. to Inst. 30. Petitioner relies on the declarations of Dr. Doug W. Jacobson (Exs. 1003, 1026), and Patent Owner relies on the declaration of Dr. Michael T. Goodrich (Ex. 2009), with depositions of Dr. Jacobson (Exs. 2010, 2020) and a deposition of Dr. Goodrich (Ex. 1027) entered into the record.

³ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011), amended 35 U.S.C. § 103 effective March 16, 2013. Because the '343 Patent has an effective filing date prior to the effective date of the applicable AIA amendment, we refer to the pre-AIA version of § 103.

⁴ U.S. Patent Publication No. 2006/0048142 A1 (filed Sept. 2, 2004) (published Mar. 2, 2006) (Ex. 1005, “Roese”).

⁵ K. Golnabi et al., *Analysis of Firewall Policy Rules Using Data Mining Techniques*, 2006 IEEE/IFIP Network Operations and Management Symposium, NOMS 2006, 10th IEEE/IFIP, 305–315 (2006) (Ex. 1008, “Golnabi”).

⁶ U.S. Patent Publication No. 2004/0015905 A1 (filed Oct. 26, 2001) (published Jan. 22, 2004) (Ex. 1006, “Huima”).

⁷ U.S. Patent No. 7,320,022 B2 (filed July 25, 2002) (issued Jan. 15, 2008) (Ex. 1007, “Hayter”).

⁸ U.S. Patent No. 5,226,141 (filed Nov. 18, 1991) (issued July 6, 1993) (Ex. 1009, “Esbensen”).

II. ANALYSIS

A. *Level of Ordinary Skill in the Art*

The level of ordinary skill in the pertinent art at the relevant time is a factor in how we construe patent claims. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). It is also one of the factors we consider when determining whether a patent claim is obvious over the prior art. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

To assess the level of ordinary skill, we construct a hypothetical “person of ordinary skill in the art,” from whose vantage point we assess obviousness and claim interpretation. *See In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998). This legal construct “presumes that all prior art references in the field of the invention are available to this hypothetical skilled artisan.” *Id.* (citing *In re Carlson*, 983 F.2d 1032, 1038 (Fed. Cir. 1993)).

Petitioner, supported by Dr. Jacobson’s testimony, proposes that a person of ordinary skill in the art at the time of the invention “would have had a bachelor’s degree in computer science, computer engineering, or an equivalent, four years of industry experience, and a working knowledge of packet-switched networking, firewalls, security policies, communication protocols and layers, and the use of customized rules to address cyber-attacks.” Pet. 5 (citing Ex. 1003 ¶ 37). Patent Owner does not challenge the qualifications proposed by Petitioner for a person of ordinary skill in the art, and points to an equivalent level adopted in the ’148 FWD. *See* PO Resp. 6.

We find Petitioner’s proposal consistent with the level of ordinary skill in the art reflected by the prior art of record, *see Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995); *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978), and,

therefore, we adopt Petitioner's unopposed position as to the level of ordinary skill in the art for purposes of this Decision.

B. Collateral Estoppel Based on Prior Proceedings

Petitioner makes numerous assertions with respect to collateral estoppel with respect to the prior proceeding discussed above. *See* Pet. 9–12. Patent Owner argues that collateral estoppel does not apply because the challenged claims recite limitations not found in the claims of the '148 Patent, which present issues not litigated in the '148 FWD, and the claim terms in this proceeding are interpreted under the *Phillips* standard rather than the broadest reasonable interpretation standard used to interpret the claims in the '148 FWD. PO Resp. 46–52.

Issue preclusion [(i.e., collateral estoppel)] is appropriate only if: (1) the issue is identical to one decided in the first action; (2) the issue was actually litigated in the first action; (3) resolution of the issue was essential to a final judgment in the first action; and (4) plaintiff had a full and fair opportunity to litigate the issue in the first action.

In re Freeman, 30 F.3d 1459, 1465 (Fed. Cir. 1994); *see also MaxLinear, Inc. v. CF Crespe LLC*, 880 F.3d 1373, 1377 (Fed. Cir. 2018) (citing *Blonder-Tongue Labs., Inc. v. Univ. of Illinois Found.*, 402 U.S. 313, 91 S. Ct. 1501 (1971) (finding collateral estoppel applies to a patentee who had a full and fair opportunity to litigate the validity of a patent in a prior federal case.)).

With respect to the language of the instant challenged claims, we agree with Patent Owner on the issues of collateral estoppel. As Patent Owner points out, the prior determinations were made with respect to a different claim construction standard. Additionally, although the claims of the '148 Patent and '009 Patent are similar in scope, the recitations are not

identical. Therefore, we evaluate the arguments and evidence presented in the Petition to determine whether Petitioner has demonstrated by a preponderance of the evidence that the challenged claims are unpatentable, rather than assuming that Patent Owner is generally estopped from asserting patentability of the challenged claims over previously presented art.

Nonetheless, where appropriate, we consider the Petition's citations to the '148 FWD, which is part of the evidence of record in this proceeding. More particularly, we agree with Petitioner that certain issues were decided by the '148 FWD, having been resolved against Patent Owner and affirmed by the Federal Circuit, and are binding in this proceeding. Pet. 11. Given that the '009 Patent is a continuation of the '148 Patent, sharing an identical Specification, we agree that Roese, Golnabi, Huima, Hayter, and Esbensen are acknowledged as prior art, that there would have been motivation to combine the references, and that combinations of those references demonstrate the obviousness of all claims of the '148 Patent. *See id.* at 11–12. Nonetheless, with respect to the specific limitations of the challenged claims argued below, we agree with Patent Owner that collateral estoppel does not apply to those specific limitations. PO Resp. 46–52.

C. Claim Construction

In an *inter partes* review, we construe a patent claim “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” 37 C.F.R. § 42.100(b). In applying such standard, claim terms are generally given their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art, at the time of the effective filing date of the patent application and in the context of the entire patent disclosure. *Phillips*, 415 F.3d at 1312–13. “In determining the meaning of the disputed claim limitation, we look

principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.”

DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc., 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

In the Institution Decision, we discussed constructions of the claim term “preprocessing,” in regards to which Patent Owner argues that the claims require preprocessing the first and second rule sets *before* putting those rule sets into effect on the network protection device (Dec. to Inst. 10–11), and the recitations of “to optimize performance of the network protection device,” (*id.* at 11–13). We preliminarily determined that any rule put into effect on the network device would need to have been previously implemented, and that the limitation of optimizing performance would occur through the preprocessing of rule sets, based on the language of the claims. *Id.* at 10–13.

Patent Owner maintains its argument and, in light of the full record, asserts that the phrase “preprocessing” first and second rule sets “prior to” the rule sets “being implemented on the network protection device” requires preprocessing the first and second rule sets before putting those rule sets into effect on the network protection device. PO Resp. 6. Patent Owner continues that “[t]his construction distinguishes the implementation of a rule set from its subsequent application [to] network traffic, consistent with the panel’s understanding in its Institution Decision.” *Id.* (citing Dec. to Inst. 10–11). Patent Owner also argues that Figure 2 of the ’009 Patent illustrates that implementation occurs at step 206, after the preprocessing step 204, with the application of the rule set against packets occurs separately at step 210. *Id.* at 8–9 (citing Ex. 1001, Fig. 2; Ex. 2009 48). Patent Owner also argues that preprocessing rule sets before they are implemented on the

network protection device aligns with the Specification's description of the claimed invention. *Id.* at 11–14.

Petitioner agrees with Patent Owner that being implemented on the network protection device means that the rule set has been put into effect as part of the policy being enforced on the network protection device, that this corresponds to step 206 of Figure 2 of the '009 Patent, and that both declarants are of the same opinion. Pet. Reply 3–5 (citing Ex. 1001, 5:32–37, Fig. 2; PO Resp. 8; Ex. 1027, 9:15–10:25, 122–15; Ex. 1026 ¶ 9).

As we discussed previously in the cited section of the Institution Decision (Dec. to Inst. 10–11), we there found and still agree that having a rule set be implemented on the network protection device conveys that network protection device is setup to utilize that rule set to evaluate network traffic. Such implementation is separate from the actual process of having the network protection device evaluate packets in the network traffic; a network protection device that never receives any packets would still have the subject rule set implemented therein. We also acknowledge that the preprocessing of the rule sets, per the language of the claims, is required to occur prior to the rule sets “being implemented on the network device.” To most extents, this is not claim construction, as the understanding of all parties does not alter what the claims recite or how the claim should be interpreted. We note, however, that the above discussion and agreement does not include “installation” of rule sets, although that is argued as a point of distinction in the arguments below. As such, any discussion of “installation” is made with respect to the what the cited references teach or suggest and is not affected by any construction of any claim term.

Patent Owner also argues that the claim limitation “cach[/ing] the one or more packets,” requires caching entire packets while the rules sets are

being swapped. PO Resp. 14. One portion of that construction requires that caching occur “*while the rule sets are being swapped.*” *Id.* at 14–15. Patent Owner recites the surrounding steps or processes to the “caching the one or more packets” limitation, and asserts that the limitation requires “the packets are cached while the rule sets are being swapped.” *Id.* Although Patent Owner has provided the context of the claim limitation, we are not persuaded that such a stricture needs to be imported into the claim limitation itself. The “caching the one or more packets” limitation itself does not require that such caching can *only* occur while the rule sets are being swapped. The plain meaning of caching packets alone does not require such a restriction. The independent claims employ “comprising” language and could allow, for example, for the caching of packets, after the signal to process packets in accordance with the second rule set has been received, *even if* the swapping of rule sets has not yet occurred. Patent Owner’s construction attempts to incorporate other aspects of the claims into a single limitation that is not so limited under its plain and ordinary meaning. We are not persuaded that specifying when the caching occurs, i.e., while the rule sets are being swapped, is integral to the plain and ordinary meaning of “caching the one or more packets.”

Patent Owner also argues that the challenged claims require “the caching of *entire* packets, not just a portion of every incoming packet.” PO Resp. 15 (citing Ex. 2009 ¶ 60). Patent Owner’s declarant states that “[b]ecause the term packet is used to describe both the unit of data received at the network device and the unit of data that is cached, a POSITA would understand that the Challenged Claims require caching the entirety of the packet received at the network device.” Ex. 2009 ¶ 60 (citing Ex. 2011, 385). We generally agree with Patent Owner’s position, that one of ordinary

skill in the art would consider that caching of a packet would include caching the entire packet. We also presume that the caching of only relevant portions of a packet could be construed as caching a packet in the context of monitoring packets passing through a network device, for example, but we are persuaded that the intent of the independent claims is to cache the packets that have yet to be processed when a swapping of rule sets has been instigated, such that those packets, i.e., entire packets, can be processed under the new rule set. As such, we agree with Patent Owner that persons of ordinary skill in the art would have understood “caching the one or more packets” to mean “caching the one or more entire packets.”

Based on the arguments presented by the parties, we determine that the claim limitation of “caching the one or more packets” to mean “caching one or more entire packets,” in the context of the ’009 Patent.

We determine that no additional claim terms need to be construed expressly for purposes of this Decision.

D. Legal Standards

The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness. *See Graham*, 383 U.S. at 17. 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 Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (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”)); *see In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1333

(Fed. Cir. 2016) (citing *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1360 (Fed. Cir. 2006)).

An obviousness analysis “need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR*, 550 U.S. at 418; accord *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1259 (Fed. Cir. 2007). Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). Instead, Petitioner must articulate a reason why a person of ordinary skill in the art would have combined or modified the prior art. *In re NuVasive, Inc.*, 842 F.3d 1376, 1382 (Fed. Cir. 2016).

A reason to combine or modify the prior art may be found explicitly or implicitly in market forces; design incentives; the “interrelated teachings of multiple patents”; “any need or problem known in the field of endeavor at the time of invention and addressed by the patent”; and the background knowledge, creativity, and common sense of the person of ordinary skill. *Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1328–29 (Fed. Cir. 2009) (quoting *KSR*, 550 U.S. at 418–21).

In determining whether a claim is obvious in light of the prior art, when in evidence, we consider any relevant objective evidence of non-obviousness. See *Graham*, 383 U.S. at 17–18. Notwithstanding what the teachings of the prior art would have suggested to one of ordinary skill in the art at the time of the invention, the totality of the evidence submitted, including objective evidence of non-obviousness, may lead to a conclusion that the challenged claims would not have been obvious to one of ordinary skill. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984).

We analyze the asserted grounds of unpatentability in accordance with these principles to determine whether Petitioner has met its burden to establish unpatentability of the challenged claims by a preponderance of the evidence.

*E. Obviousness over Roese, Golnabi, Huima, and Hayter
Claims 1–5, 8–24, and 26–30*

Petitioner contends claims 1–5, 8–24, and 26–30 of the '009 Patent are unpatentable under 35 U.S.C. § 103 over Roese, Golnabi, Huima, and Hayter. Pet. 9–64. Patent Owner argues there are multiple deficiencies with this ground. PO Resp.; PO Sur-reply. We begin with overviews of the cited references, discuss Petitioner's contentions regarding the claims challenged in this ground, and then Patent Owner's arguments and Petitioner's responses.

1. Overview of Roese

Roese is a U.S. patent publication directed to a system and method for rapid response network policy implementation through the pre-installing of responsive policy and/or rule sets. Ex. 1005, Abstract. Thereafter, unique rapid response identifiers are generated and transmitted, corresponding to one or more selected policy and/or rule sets, so that the network device is already configured with a response. *Id.* As illustrated in Figure 1, network system 100 includes network infrastructure 101 having multiple switching devices, routing devices, firewalls, and access points. *Id.* ¶ 32; Fig. 1. A response system includes policy enforcement function ("PEF") 250 and policy manager function 200, with the latter having analysis and implementation functions, that "analyzes monitored information to determine whether that information includes one or more conditions, events, occurrences, etc. ('triggers') for the purpose of implementing one or more

policy enforcement changes.” *Id.* ¶ 33. The analysis function further determines whether the triggers require the implementation of responses through the PEF. *Id.* The response system “includes storage means 251, such as a database or a caching function, having one or more installed policy and/or PER sets, and corresponding related rapid response identifier(s).” *Id.* ¶ 38.

Through a specific example, Roesse discusses its processes:

In a first example, a virus is detected at an ingress port of a network edge device. The virus detection information is stored in the database 202. The analysis function 201 matches the detected trigger information with one or more policies and/or PERs deemed suitable to respond to the detected trigger information. It then initiates enforcement of the matched and identified policy(ies) and/or rule(s) responsive to the detected trigger by signaling the processor 253 with one or more rapid response identifiers of one or more policy and/or PER sets to be implemented. For example, the policy change may be a complete blocking of the virus on all access ports in the entire network system.

Id. ¶ 53.

2. *Overview of Golnabi*

Golnabi is a publication directed to the generation of policy rules for firewalls and creating a minimum number of rules for efficiency. Ex. 1008, 305, 308. To achieve this minimization, Golnabi discloses merging rules that have similar characteristics, to split filtering rules with multivalued fields into several rules, and reordering and prioritizing of rules based on use. *Id.* at 308, 310, 312–314, Fig. 14. Golnabi discloses a Filtering-Rule Generalization (FRG) as an aggregation algorithm to generate a minimum number of firewall policy rules, which is characterized as a “practical, effective and critical approach in firewall policy rules analysis and

optimization in real time.” *Id.* at 308, 314. Golnabi also provides that “[b]y reordering or prioritizing ... firewall policy rules, one may expect a tremendous performance gain.” *Id.* at 314.

3. *Overview of Huima*

Huima is a U.S. patent publication directed to network protection systems that process packets in a firewall. Ex. 1006, Abstract, ¶¶ 85, 91. Huima provides for pausing of packet processing “at a suitable instant in time,” to avoid the processing of packets with outdated rules. *Id.* ¶ 31. After the rules are updated, a signal is sent to the packet processor that processing may continue. *Id.* ¶ 36.

4. *Overview of Hayter*

Hayter is an issued U.S. patent directed to network devices that process packets. Ex. 1007, Abstract, 1:10–36. Hayter discloses that the network devices may each include a plurality of processors and a cache. *Id.* at 3:8–13, Fig. 1. Hayter discloses that “it may be desirable for the header of a packet to be stored in L2 cache 14,” as well as a portion of the data payload of the packet. *Id.* at 6:3–23.

5. *Petitioner’s Assertions Regarding Combining of References*

Petitioner asserts that Patent Owner is precluded from relitigating whether persons of ordinary skill in the art would have been motivated to combine the teachings of the references. Pet. 13–14 (citing ’148 FWD at 12–14, 17, 18, 21, 29).

With respect to the combination of Roese and Golnabi, Petitioner asserts that one of ordinary skill in the art would have been motivated to implement Roese’s rules by merging, separating, and ordering them such that the rule sets installed provide optimized packet processing. Pet. 13 (citing Ex. 1003 ¶¶ 69–86). Petitioner asserts that Roese and Golnabi are

analogous prior art and both pertain to the same field of endeavor, and the use of Golnabi's optimization as applied to the rules of Roese would have provided predictable and beneficial results. *Id.* (citing Ex. 1005, Abstract, ¶ 50; Ex. 1008, 305; Ex. 1003 ¶ 70). Petitioner asserts that a person of ordinary skill in the art "would have been motivated to implement those processes in Roese to achieve optimized performance and would have had success doing so." *Id.* Petitioner points to specific portions of Golnabi that contemplate the combining, separating, and ordering of rules, and that it would have been obvious to implement those processes in Roese to achieve optimized performance. *Id.* (citing Ex. 1003 ¶¶ 71–84).

With respect to the combination of Roese and Huima, Petitioner asserts that one of ordinary skill in the art would have been motivated to pause the processing of rule sets to avoid processing packets with outdated rules. Pet. 13–14 (citing Ex. 1003 ¶¶ 88–94). Petitioner asserts that Roese and Huima are analogous and their combination would have been made to obtain predictable and beneficial results. *Id.* at 14 (citing Ex. 1003 ¶ 89). Petitioner also asserts that a person of ordinary skill in the art "would have recognized that packets may continue to be received before the rule set is changed," and the processing of packets with outdated rules "would be contrary to Roese's goal of rapidly changing rule sets to respond to detected attack." *Id.* (citing Ex. 1005 ¶¶ 18, 42, 47, 52–56; Ex. 1006 ¶¶ 31, 91; Ex. 1003 ¶¶ 91–94). Petitioner also asserts that it would have been obvious to utilize a signal, per Huima, in the system of Roese to indicate that the processing of packets may resume. *Id.* (citing Ex. 1003 ¶¶ 90–94).

With respect to the combination of Roese and Hayter, Petitioner asserts that one of ordinary skill in the art would have been motivated to implement Roese's system with multiple processors and a cache for

receiving packet data to facilitate efficient packet processing. Pet. 14 (citing Ex. 1003 ¶¶ 98–106). Petitioner asserts that Roese and Hayter are analogous and their combination would have been made to obtain predictable and beneficial results. *Id.* at 15 (citing Ex. 1003 ¶¶ 100–104). Petitioner also asserts that one of ordinary skill in the art would have known that the speed at which the device can process packets can be increased by employing multiple processors operating in parallel, and that utilizing a cache to store packets would make the packet data rapidly available to the processors, thereby increasing the speed of processing. *Id.* (citing Ex. 1005 ¶ 18; Ex. 1007, 1:34–36; Ex. 1003 ¶¶ 100–104; Ex. 1017, 1; Ex. 1011, 1–4; Ex. 1012, 9:15–21).

6. *Claim 1 as Obvious Over Roese, Golnabi, Huima, and Hayter*

a) *Petitioner's Assertions Regarding Claim 1*

Petitioner asserts that all of the elements of claim 1 are taught or suggested by the combination of Roese, Golnabi, Huima, and Hayter. Pet. 15–47. Petitioner asserts that Roese discloses a method for rapidly responding to triggering events or activities in a network system, and that Roese and Golnabi render obvious the preprocessing of first and second rule sets. *Id.* at 15–24 (citing Ex. 1005, Abstract, ¶¶ 16, 18, 23, 24, 33, 38, 46, 52, 56, Figs. 2–4; Ex. 1008, 3, 8, 10, 305, 308, 312–314, Fig. 4; Ex. 1003 ¶¶ 113–127). Petitioner points out that the '148 FWD determined that “‘Golnabi discloses’ optimizing operations such as ‘the ‘combining, separating and reordering’ of rule sets (Ex. 1008, 3, 8, 10),’ and ‘a person of ordinary skill would have considered optimizing operations prior to packet processing.’” *Id.* at 18–19 (quoting '148 FWD, 17). Petitioner also asserts that persons of ordinary skill in the art would have understood that performing such optimizing operations on a first rule set and a second rule

set would have resulted in “optimize[d] performance of the network protection device.” *Id.* at 19 (citing Ex. 1003 ¶ 115).

Additionally, Petitioner asserts that both Roese and the ’009 Patent make clear that the timing of a rule set being implemented on a network protection device coincides with the timing of the rule set being applied to packets. Pet. 19 (citing Ex. 1003 ¶ 116). Petitioner points out that the ’009 Patent explains that the network protection device may preprocess the rule set and then implement the preprocessed rule set with respect to network traffic flowing between networks. *Id.* (citing Ex. 1001, 4:63–5:2, 5:13–16). Petitioner also points out that Roese refers to a rule set being implemented to refer to initiating enforcement of the rule set, which coincides with the rule set being applied to packets. *Id.* 19–20 (citing Ex. 1005 ¶¶ 24, 41; Ex. 1003 ¶ 116).

Petitioner further asserts that Roese discloses the “configuring” and “receiving” steps of claim 1. *Id.* at 24–31 (citing Ex. 1005 ¶¶ 20, 24, 35, 41, 45–49, 56, Fig. 4; Ex. 1003 ¶¶ 133–151). Petitioner also asserts that Roese discloses processing a first portion of the plurality of packets in accordance with the preprocessed first rule set, and signaling to process packets in accordance with the second rule set. Pet. 31–37 (citing Ex. 1005 ¶¶ 9, 24, 41, 42, 46, 47, 49, 54, 56, Figs. 2, 4; Ex. 1003 ¶¶ 153–165; Ex. 1008, 3007). Claim 1 further recites that responsive to signaling, ceasing processing of one or more packets, and Petitioner asserts that Roese and Huima render this element obvious. *Id.* at 37–38 (citing Ex. 1005 ¶¶ 18, 31, 47, 52; Ex. 1006 ¶ 31; Ex. 1003 ¶¶ 167–172).

Claim 1 further recites that one or more packets are cached and Petitioner asserts that Roese, Huima, and Hayter render this element obvious. *Id.* at 39–48 (citing Ex. 1007, 1:34–36, 40–48, 3:53–59, 6:3–26;

24:34–36; Ex. 1003 ¶¶ 174–179). Lastly, Petitioner asserts that Roese, Huima, and Hayter disclose reconfiguring to process packets in accordance with the second rule set, signaling the completion of the reconfiguration, and thereafter processing the one or more cached packets. *Id.* at 40–52 (citing Ex. 1005 ¶¶ 24, 41, 42, 48, Fig. 4; Ex. 1006 ¶ 36; Ex. 1007, 6:7–19; Ex. 1008, 308, 310, 312–314; Ex. 1010, 3; Ex. 1003 ¶¶ 183–217).

b) Patent Owner’s Arguments Regarding Claim 1

i) “Preprocessing” Prior to “Being Implemented”

Patent Owner argues that Roese in view of Golnabi does not render obvious “preprocessing” rule sets “prior to” the rule sets “being implemented on the network protection device.” PO Resp. 22–30. Patent Owner argues that Roese uses the term “installation” as a synonym for “implementation” and contends that Roese’s preinstallation step corresponds to implementing its rule sets. *Id.* at 23–24. Patent Owner also takes issue with the panel’s determination that “installing” rule sets is synonymous with “receiving” the rule sets, because persons of ordinary skill in the art would have understood that rule sets are received and thereafter installed on a network device. *Id.* at 24–25 (citing Dec. to Inst. 23; Ex. 2009 ¶ 67).

Petitioner responds that “implementing” a rule set on a network protection device refers to configuring the device to process packet with the rule set, and that installation is not synonymous with implementation. Pet. Reply 3–6. Petitioner argues that multiple rule sets can be installed on a network protection device at any given time, but not all would necessarily be put into effect at a particular time. *Id.* at 6 (citing Ex. 1026 ¶ 12; Ex. 1027, 14:15–15:2). Additionally, Petitioner asserts that Roese’s description of pre-installation does not suggest that pre-installing rule sets on its system would

immediately configure that system to process packets with one (or more) of the pre-installed rule sets. *Id.* at 8 (citing Ex. 1005 ¶¶ 36, 41; Ex. 1026 ¶ 14).

Patent Owner responds that Roese’s rule set implementation occurs when the rule sets are installed, and argues that each of the installed rule sets in Roese’s policy table has been put into effect as part of the policy being enforced, such that “[e]ach of those installed rule sets is, therefore, implemented on the network device, whether or not it is currently being enforced against network traffic.” PO Sur-reply 9–11 (quoting *id.* at 11; citing Ex. 1005 ¶ 56; Ex. 2020, 12:21–13:7).

We do not agree with Patent Owner’s arguments. Roese discloses that its network protection device may include “one or more policy and/or PER sets each associated with a unique rapid response identifier, pre-installed.” Ex. 1005 ¶ 36. Once triggers requiring a response are identified, the network protection device is “to implement the policy and/or PER set by signaling the processor 253 to initiate the enforcement of the selected policy and/or PER set(s).” *Id.* ¶ 41. Thus, the rule sets in Roese are initially installed or implemented on the network device, but are not implemented to affect traffic until later. As we have determined above, having a rule set be implemented on the network protection device conveys that network protection device is setup to utilize that rule set to evaluate network traffic. When, in Roese, the policy and/or PER sets are “pre-installed,” they are not installed to evaluate network traffic, but can subsequently be put into action to accomplish the same. We read the disclosure of Roese as requiring the pre-installation of many policy and/or PER sets, but that not all of those same sets would be utilized by the network device to evaluate network traffic.

We are also not persuaded by Patent Owner’s arguments and evidence that persons of ordinary skill in the art would have necessarily used the terms installation and implementation as synonyms. *See* PO Resp. 23–24; PO Sur-reply 11–15. The most general definition of implementation: “[t]he carrying out or physical realization of something” is correct, but it is not clear that the latter statement that “[a] computer system implementation would be the installation of new hardware and system software,” is contingent with use of the term in handling network traffic. Ex. 2015, 1. Similarly, Patent Owner’s other definition includes:

In IT, the word *implementation* usually refers to installing a new hardware or software system or application. It can also mean the inclusion of a specific technical specification, software component or software standard. For example, software development tools contain implementations of a programming language.

Ex. 2016, 2 (text coloration omitted). The independent claims recite, in part, “being *implemented* on the network protection device,” which is different than merely installing software on a personal computer. *See* Hr’g Tr. 30:17–33:5 (illustrating the limited utility of the more expansive definitions of “installation”). We continue to be persuaded that it is not clear how a network protection device could preprocess rule sets that have not been installed, i.e., act on sets that they have not received, nor how rule sets could be manipulated in absentia. *See* Dec. to Inst. 23. In other words, when Roese pre-installs multiple rule sets, each is capable of causing enforcement of its policies, but none is necessarily acting to evaluate the network traffic flowing through the network protection device.

Patent Owner also argues that a POSITA would have combined Roese with Golnabi’s technique to process rule sets after their implementation on

the network device, not before. PO Resp. 27–30; PO Sur-reply 15–19.

Patent Owner cites to Dr. Jacobson’s testimony that Golnabi’s technique would have applied in Roese to process pre-installed rule sets on the network device, Roese’s “at any time” disclosure pertains to this time period. PO Resp. 27–28 (citing Ex. 1003 ¶¶ 69, 137; Ex. 2009 ¶¶ 72–73). Lastly, Patent Owner argues that a conclusion that Golnabi suggests the preprocessing of Roese’s rule sets prior to being implemented would be based on improper hindsight reasoning. *Id.* at 30–32 (citing *TQ Delta, LLC v. Cisco Sys., Inc.*, 942 F.3d 1352, 1362 (Fed. Cir. 2019); *Plantronics, Inc. v. Aliph, Inc.*, 724 F.3d 1343, 1354 (Fed. Cir. 2013)).

Petitioner responds that Patent Owner’s arguments rely on its “installation-based construction of ‘implement,’” and that Roese’s disclosure with respect to updating rule sets “when and as desired” and “at any time” is not limited to any particular rule sets, such as pre-installed rule sets, or any particular time period, such as following the pre-installation step. Pet. Reply 8–9 (citing Ex. 1005 ¶¶ 17, 23; Ex. 1026 ¶¶ 16–17). Petitioner also replies that the motivation to update Roese’s rule sets “at any time,” including prior to implementation, is found directly in Roese, without the use of hindsight. *Id.* at 10.

We do not agree with Patent Owner’s arguments. We agree with Petitioner that Patent Owner’s arguments rest upon the theory that pre-installed rule sets in Roese are implemented rule sets, which we do not find to be persuasive above. Further, we continue to determine that “a person of ordinary skill would have understood that Roese’s discussion of updating policy sets at any time (Ex. 1005 ¶ 23) would have suggested the performance of optimizing operations on rule sets prior to those sets being applied to packets.” Ex. 2001 (“148 FWD”), 16. We continue to be

persuaded that a person of ordinary skill would have understood that updating policy sets at any time would include updating the rule sets after they have been received, but before they have been adopted, such that the modified rule sets had not yet been installed or put into effect. This understanding is asserted by Petitioner (Pet. 23–24 (citing Ex. 1003 ¶ 126)), and demonstrates a likelihood that the combination of references, namely Roese, Golnabi, Huima, and Hayter, would have suggested preprocessing of rule sets, prior to the rule sets being implemented on the network protection device, per independent claim 1.

ii) “Caching the one or more packets”

Patent Owner’s second argument is that 1) it would not have been obvious over Roese in combination with Huima and Hayter to cache packets while rule sets are being swapped (PO Resp. 34, 38–40); 2) it would not have been obvious over Roese in combination with Huima and Hayter to cache entire packets (*id.* at 34–39); and 3) a POSITA would not have been motivated to combine Roese with Huima and Hayter to arrive at the claims (*id.* at 39–42). Petitioner traverses these arguments (Pet. Reply 16–24), and Patent Owner counters (PO Sur-reply 20–24).

As a preface, we address Patent Owner’s arguments that are directed to its temporal aspect of when caching of packets occurs, i.e., its claim construction that such caching occurs during a swapping of rule sets. As discussed above in Section II.B, we are not persuaded that the limitation “caching the one or more packets” requires that the caching must occur only while the rule sets are swapped. We are persuaded, however, that Roese, Huima and Hayter teach, as proposed by Petitioner, the caching of at least some portion of a packet while rule sets are being swapped.

As discussed above, we are persuaded that Roesse teaches that when the rapid response identifier signal is received, the response system initiates the process of configuring the forwarding engine with the one or more policies and/or PERs, and Huima teaches that in response to receiving a signal to change the rule set, packet processing pauses. Ex. 1005 ¶¶ 47, 52; Ex. 1006 ¶ 31. We agree with Petitioner’s assertion that persons of ordinary skill in the art would have understood that a network device should pause the processing of any pending packets and any incoming packets that arrive after the instruction to change the rule set but before the change is completed, in view of Roesse and Huima. Pet. 38 (citing Ex. 1003 ¶ 171). Further, we continue to be persuaded that Hayter teaches using a packet processor with an integrated cache to store at least portions of packets in the L2 cache, and we are persuaded that such storage would occur while awaiting processing to begin again. Pet. 39–40 (citing Ex. 1007, 1:40–48, 3:53–59, 6:3–26, 24:34–36; Ex. 1003 ¶¶ 178–179). We are persuaded that this teaches or suggests that any caching of packets, or portions thereof, would occur in the period between when a signal is received to change rule sets and when processing of packets reoccurs under the new rule set. As such, we consider Patent Owner’s arguments in the context of whether the combination of Roesse, Golnabi, Huima, and Hayter would have taught or suggested to one of ordinary skill in the art that *entire* packets should be cached in the combined system.

Patent Owner continues to argue that Hayter’s system caches only a portion of a packet during processing. PO Resp. 35. Patent Owner continues that for Hayter’s objective to be achieved, i.e., high-performance packet processing, persons of ordinary skill in the art would have been

guided to cache only portions of packets, instead of entire packets. *Id.* at 36–37. Further, Patent Owner argues that

[A] desire for increased packet processing speed would not have prompted a POSITA to rearchitect the system to cache entire additional data and only when swapping rule sets. [Ex. 2009] ¶ 95. Hayter does not describe caching packets while swapping between rule sets, and Petitioner fails to explain what would have motivated a POSITA to modify Hayter’s technique so that it would cache entire packets when rule set swapping, rather than portions of packets. *Id.*

Id. at 40–41. Patent Owner argues that repurposing Hayter’s cache would run counter to Hayter’s stated purpose, that Hayter’s system only stores a portion of a packet in cache memory for processing, and that skilled artisans would have leveraged Hayter’s cache technique for the purpose of increasing processing speed, which is unrelated to caching entire packets while rule swapping. *Id.* at 35–42.

Petitioner asserts that Patent Owner’s arguments fail to consider the combined teachings of Roese, Huima, and Hayter and instead focus on reading Hayter in isolation. Pet. Reply 17–18. Petitioner reiterates that Hayter also teaches that some, and potentially the entirety, of a packet’s payload may also be stored in the cache, with Hayter placing no upper limit on the portion of the data payload that may be stored in the cache. *Id.* at 19 (citing Pet. 40; Ex. 1003 ¶ 177; Ex. 1007, 24:35–36; Ex. 1026 ¶ 45).

Petitioner also argues that both parties’ declarants agree that persons of ordinary skill in the art would have understood that some packets, such as TCP acknowledgement packets, may consist entirely of the header and lack any data payload or any other data, such that the entirety of a packet may consist of only its header. *Id.* at 22–23 (citing Ex. 1026 ¶ 53; Ex. 1007, 24:34–36).

Patent Owner counters Petitioner’s arguments, arguing that “Hayter discusses placing an upper limit on the portion of data payload that is stored in cache,,” that “Hayter does not teach, nor desire, storing entire packets (header and payload data) in cache,” and that “such storage would defeat Hayter’s high speed packet processing, which Petitioner’s motivation to combine rationale rests upon.” PO Sur-reply 21 (citing Pet. Reply 20; PO Resp. 34–35, 39–42; Ex. 1007, 24:24–36). Patent Owner also asserts that “the fact that Roese forwards or drops entire packets has no bearing on what information a POSITA would store in a cache given the teachings of Hayter” because Roese’s forwarding engine only evaluates packet header data, such that any combination would “cache only a portion of a packet so that the forwarding engine can quickly and efficiently compare that information to a rule set.” *Id.* at 22 (citing Ex. 2103, 203, 204; Ex. 2018, 147; Ex. 2019, 1257).

We continue to find Patent Owner’s argument to be unavailing. As discussed above, Petitioner argues, citing the testimony of Dr. Jacobson, that Hayter teaches caching the “entirety of the header” and potentially the entirety of a packet’s payload data and that it would have been obvious to a person of ordinary skill in the art “to store in cache *entire headers* and at least one byte of data payload (and *up to the entire payload*) of pending and incoming packets.” Pet. 40 (emphasis added) (citing Ex. 1007, 1:34–36, 3:53–59, 6:11–13, 24:34–36 (“the entirety of the header and at least one byte of data payload of the data packet is stored in the cache”); Ex. 1003 ¶¶ 178–179). *See also* Ex. 1026 ¶¶ 45–47 (reiterating Dr. Jacobson’s testimony).

In addition, we note that Hayter discloses that all of the header (or the entirety of the header) is cached (Ex. 1007, 11:14–22; 24:34–36) and that “[i]n some packets, the data payload . . . may not be included” (*id.* at 11:2–

3). In those circumstances where a packet includes no payload data, the header would comprise the entirety of the packet, and when all of the header is cached in Hayter, the entire packet would be stored in the cache. It is well established that “combinations of prior art that sometimes meet the claim elements are sufficient to show obviousness.” *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1002 (Fed. Cir. 2016); *see also Hewlett–Packard Co. v. Mustek Sys., Inc.*, 340 F.3d 1314, 1326 (Fed. Cir. 2003) (“Just as ‘an accused product that sometimes, but not always, embodies a claimed method nonetheless infringes,’ a prior art product that sometimes, but not always, embodies a claimed method nonetheless teaches that aspect of the invention.” (quoting *Bell Commc’ns Rsch., Inc. v. Vitalink Commc’ns Corp.*, 55 F.3d 615, 622–23 (Fed. Cir. 1995))). Because Hayter discloses caching the entire packet in the circumstances where the entirety of the header is cached and the packet includes no payload data, we find that Hayter’s disclosures are sufficient to meet “caching the one or more packets” for purposes of obviousness analysis.

With respect to this finding, Patent Owner argues that because Hayter’s technique caches only the portion of the packet necessary for analysis, application of its algorithm would not result in caching entire packets for any of the packets because there is no disclosure that certain types of packets are treated differently than others. PO Sur-reply 23–24. We disagree, and we find Petitioner’s following assertions to be persuasive:

To the extent Patent Owner is arguing that the claim limitation “caching the one or more packets” only includes within its scope packets that have payload data, and excludes packets such as TCP acknowledgement packets that lack payload data, such an interpretation of “packet[]” should be rejected as contrary to the plain and ordinary meaning of packet, which includes TCP acknowledgement packets. Ex. 1026 ¶ 55[]. Moreover, nothing

in the claim language or the specification of the '009 Patent evidences an intent to exclude packets that lack payload data from the meaning of “packet[]”. *Id.*

Pet. Reply 23–24. For such packets that comprise only or mostly a header, i.e., without a payload or minimal payload, Hayter clearly indicates that such packets would be completely contained within its L2 cache. This comports with Petitioner’s assertion that

[i]t would have been obvious to a POSITA to store in cache entire headers and at least one byte of data payload (and up to the entire payload) of pending and incoming packets, as Hayter teaches, when pausing the processing of the packets (per Roese and Huima) so that the packets can be efficiently processed once packet processing resumes with the second rule set.

Pet. 40 (citing Ex. 1007, 1:34–36, 3:53–59, 6:11–13; Ex. 1003 ¶¶ 178–179).

We agree with Petitioner and are persuaded that one of ordinary skill in the art, in view of Roese, Golnabi, Huima, and Hayter, would have been motivated to utilize Hayter’s cache to store entire packets before resumption of processing of packets by the network device.

7. *Conclusion as to Claim 1*

In consideration of the above, we are persuaded Petitioner has demonstrated sufficiently that the person of ordinary skill would have had reason to combine the teachings of Roese, Golnabi, Huima, and Hayter as asserted in the Petition. We find that Petitioner has demonstrated by a preponderance of the evidence that claim 1 is unpatentable under 35 U.S.C. § 103(a) as obvious over the combined teachings of Roese, Golnabi, Huima, and Hayter.

8. *Independent Claims 14, 18, and 22 as Obvious Over Roese, Golnabi, Huima, and Hayter*

With respect to independent claim 14, Petitioner asserts that Roese discloses a system, and that Roese and Hayter disclose a plurality of processors used to process packets. Pet. 47–48. Petitioner also asserts that Roese uses executable computer instructions to program the processors to perform the steps according to the combination of Roese, Golnabi, Huima, and Hayter. *Id.* at 48–49. With respect to the remaining limitations of claim 9, Petitioner asserts that they are identical to the method steps of claim 1 and are rendered obvious for the reasons asserted, as discussed above. *Id.* at 49. With respect to independent claim 18, Petitioner asserts that all of the elements of claim 18 are obvious for the same reasons supplied with respect to independent claims 1 and 14. *Id.* at 49–50. Similarly, Petitioner asserts that all of the elements of claim 22 are obvious for the same reasons supplied with respect to independent claim 1. *Id.* at 50–52.

Patent Owner does not provide separate arguments with respect to the elements of independent claims 14, 18, and 22, except with respect to similar elements argued with respect to claim 1. *See* PO Resp. For the same reasons applicable to claim 1, we find that Petitioner has demonstrated by a preponderance of the evidence that independent claims 14, 18, and 22 are unpatentable under 35 U.S.C. § 103(a) as obvious over Roese, Golnabi, Huima, and Hayter.

9. *Dependent Claims 2–5, 8–13, 15–17, 19–21, 23, 24, and 26–30 as Obvious Over Roese, Golnabi, Huima, and Hayter*

We have reviewed Petitioner’s explanations and supporting evidence regarding dependent claims 2–5, 8–13, 15–17, 19–21, 23, 24, and 26–30, and, on the current record, find them persuasive. *See* Pet. 52–64. We note

that much of the analysis relies expressly on the discussion of the cited references and Petitioner's proffered motion to combine their teachings as applied to the independent claims. *Id.*

Patent Owner does not provide separate arguments with respect to most of the dependent claims, except to argue that they depend from the independent claims. *See* PO Resp. 43; PO Sur-reply. For the same reasons applicable to the independent claims, discussed above, we find that Petitioner has demonstrated by a preponderance of the evidence that dependent 3–5, 8–13, 16, 17, 20, 21, 23, 24, and 26–30 are unpatentable under 35 U.S.C. § 103(a) as obvious over Roese, Golnabi, Huima, and Hayter.

With respect to dependent claims 2, 15, and 19, Patent Owner provides separate arguments as to whether the combination renders the subject matter of those claims to be obvious. PO Resp. 43–46. Petitioner responds to those arguments in its Reply. Pet. Reply 12–16. During the Oral Hearing, Petitioner asserted that “[t]his argument appears to have been dropped in Patent Owner’s sur-reply” (Hr’g Tr. 18), but we do not agree with Petitioner’s assertion. Given that Petitioner has the burden of persuasion, it is not determinative that Patent Owner did not provide responsive arguments in its Sur-reply; we address the substance of arguments with respect to dependent claims 2, 15, and 19 below.

Patent Owner argues that dependent claims 2, 15, and 19, recite that the network protection device receives a second rule set, and that Petitioner has taken on inconsistent positions with respect to arguments made regarding the dependent claims and arguments made with respect to the independent claims, from which those dependent claims depend. PO Resp. 43. Patent Owner argues that Petitioner contends that already pre-installed

rule sets are the “first” and “second” rule sets, with respect to the independent claims, but relies on Roese’s policy server distributing a newly created rule set after analyzing network information. *Id.* at 43–45 (citing Pet. 21, 23, 52; Ex. 2009 ¶¶ 99–101). Patent Owner alleges that “Petitioner switches to relying on a policy server that distributes the ‘second rule set’ *after* operation, which departs from its earlier theory that the ‘second rule set’ is pre-installed on the network device and preprocessed *before* operation.” *Id.* at 46 (Ex. 2009 ¶ 102)(emphases in original).

Petitioner responds that the Petition provides that Roese discloses that its rule sets may be “updated or adjusted ... at any time,” and Roese further discloses receiving distributed rule sets during a network session. Pet. Reply 12 (citing Pet. 52–53; Ex. 1003 ¶¶ 260–261; Ex. 1005 ¶ 9). Based on this, Petitioner asserts that the Petition provides that it would have been obvious to persons of ordinary skill in the art that Roese’s response system can be configured to receive a second rule set at any time, including after Roese’s response system has processed packets in accordance with a preprocessed first rule set. *Id.* at 13 (citing Pet. 53; Ex. 1003 ¶ 262). Petitioner further argues that the Petition discusses an example when the “first rule set” corresponds to Roese’s “normal operation” or the “default policy” rule set, and the “second rule set” corresponds to Roese’s “lockdown” rule set, although the Petition makes clear multiple exemplary rule set disclosed in in Roese could correspond to the “second rule set,” with such correspondences also being made with respect to the analyses of the dependent claims. *Id.* at 14 (emphasis omitted) (citing Pet. 26–27, 36–37; Ex. 1005 ¶ 56; Ex. 1003 ¶¶ 137–140, 162–164). Lastly, Petitioner argues that Roese does not require, nor does the Petition’s analysis of the independent claims require,

that Roesse's second rule set have been preinstalled at the same time as Roesse's first rule set was preinstalled. *Id.* at 15 (citing Ex. 1026 ¶ 32).

We agree with Petitioner. Independent claim 1, for example, requires both the first and second rule sets to be preprocessed by the network protection device, but does not require the sets to be preprocessed at the same time. Independent claim 1 does, however, read upon situations where the first and second rule sets are received together and preprocessed together, where the second set is "held in reserve" until needed, for example. Dependent claim 2 makes explicit that the second rule set is received after processing the first portion of the plurality of packets, thus requiring that preprocessing of the sets is not contemporaneous. We agree with Petitioner that one of ordinary skill in the art, in view of Roesse and the other cited references, would have contemplated both operational setups, given Roesse's disclosure that the rule sets may be "updated or adjusted ... at any time." As such, we are not persuaded that Petitioner's Petition takes inconsistent positions between the analyses of independent claims 1, 14, and 18, and dependent claims 2, 15, and 19. Further, we concur with the Petition's view that dependent 2, 15, and 19 are unpatentable under 35 U.S.C. § 103(a) as obvious over Roesse, Golnabi, Huima, and Hayter, and that Petitioner has demonstrated that by a preponderance of the evidence.

*C. Obviousness over Roesse, Golnabi, Huima, Hayter, and Esbensen
Claims 6, 7, and 25*

Petitioner contends claims 6, 7, and 25 of the '009 Patent are unpatentable under 35 U.S.C. § 103 over Roesse, Golnabi, Huima, Hayter, and Esbensen. Pet. 64–68. Patent Owner does not explicitly address this ground of unpatentability in its Response, relying on arguments raised with respect to the prior ground. *See* PO Resp.; PO Sur-reply.

1. Overview of Esbensen

Esbensen is an issued U.S. patent directed to a variable capacity cache memory. Ex. 1009, Abstract. Esbensen describes “a method and an apparatus ... for dynamically changing the storage capacity, or size, of a cache memory.” *Id.* at 2:44–48. Esbensen also discloses “calculating the amount of output medium necessary to store the current contents of the cache memory” and that “the size of the cache memory can be increased by the size of the block or file of data which is to be next written into the cache memory.” *Id.* at 3:16–29.

2. Analysis with respect to Dependent Claims 6, 7, and 25

Petitioner asserts that a person of ordinary skill in the art would have been motivated to combine the teachings of Roese and Esbensen to allow Roese’s cache to be dynamically adjusted in size in order to maintain cache optimization and efficiency. Pet. 64–65 (citing Ex. 1003 ¶ 339). Petitioner asserts that Roese and Esbensen are analogous prior art and both pertain to the same field of endeavor, and Roese specifically discloses that it utilizes a storage means with a caching function, but Roese does not provide implementation details of how the cache is allocated. *Id.* at 65 (citing Ex. 1005 ¶ 38; Ex. 1009, 6:37–39, 6:44–49; Ex. 1003 ¶¶ 341–346). Petitioner asserts that a person of ordinary skill in the art implementing the system of Roese would have looked to other relevant references to determine how to efficiently allocate its cache memory and Esbensen is one such reference. *Id.* Petitioner also asserts that this may particularly be the case where the combination of Roese with Golnabi allows for rule sets to be combined or split apart, resulting in changes to the size of memory needed for a rule set. *Id.*

With respect to claims 6, 7, and 25, Petitioner asserts that all of the elements of those claims are obvious for the same reasons discussed above with respect to dependent claim 3 and independent claim 1, considering the disclosure of Esbensen. Pet. 65–68. Patent Owner does not separately address this ground, except through its arguments regarding the prior ground. *See* PO Resp.; PO Sur-reply. In view of the above, we are persuaded that Petitioner has demonstrated by a preponderance of the evidence that Roese, Golnabi, Huima, Hayter, and Esbensen teach the limitations of claim 6, 7, and 25.

III. CONCLUSION⁹

Having reviewed all the evidence and arguments of record, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 1–30 of the '009 Patent are unpatentable. In summary:

Claims	35 U.S.C. §	Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–5, 8–24, 26–30	103(a)	Roese, Golnabi, Huima, Hayter	1–5, 8–24, 26–30	
6, 7, 25	103(a)	Roese, Golnabi, Huima, Hayter, Esbensen	6, 7, 25	
Overall Outcome			1–30	

⁹ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this Decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

IV. ORDER

In consideration of the above it is:

ORDERED that claims 1–30 of the '009 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.

IPR2022-01421
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