UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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KEYSIGHT TECHNOLOGIES, INC.,
Petitioner,

v.

CENTRIPETAL NETWORKS, INC.,
Patent Owner.

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IPR2022-01421
Patent 10,681,009 B2

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

TURNER, *Administrative Patent Judge.*

DECISION
Granting Institution of *Inter Partes* Review After Remand
35 U.S.C. § 314

I.   INTRODUCTION

A.   Background

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.

As such, given that the only discretionary issues argued by the parties were directed to denial under 35 U.S.C. §325(d) (*see* Pet.; Prelim. Resp.), we proceed to consider the merits of the grounds of unpatentability raised in the Petition. Further, as set forth below, we determine that "there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a). Thus, we institute an *inter partes* review in this proceeding.

B. 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.

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[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.

C.   *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 Feb. 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.

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.   The Asserted Grounds of Unpatentability

Petitioner challenges the patentability of claims of the '009 Patent

based on the following grounds under 35 U.S.C. § 103, relying on the

Declaration from Dr. Doug W. Jacobson (Ex. 1003). Pet. 3–4, 9–68.

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

II.   DISCUSSION

A.   The Level of Ordinary Skill in the Art

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-

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[3] U.S. Patent Publication No. 2006/0048142 A1 (filed Sept. 2, 2004) (published Mar. 2, 2006) (Ex. 1005, "Roese").
[4] 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").
[5] U.S. Patent Publication No. 2004/0015905 A1 (filed Oct. 26, 2001) (published Jan. 22, 2004) (Ex. 1006, "Huima").
[6] U.S. Patent No. 7,320,022 B2 (filed July 25, 2002) (issued Jan. 15, 2008) (Ex. 1007, "Hayter").
[7] U.S. Patent No. 5,226,141 (filed Nov. 18, 1991) (issued July 6, 1993) (Ex. 1009, "Esbensen").

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. *See generally* Prelim. Resp.

At this stage of the proceeding, 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. Prelim. Resp. 25–31.

"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.*, 880 F.3d at 1377 (citing *Blonder-Tongue Labs., Inc. v. Univ. of Illinois Found.*, 402 U.S. 313,

91 S. Ct. 1501, 28 L.Ed. 2d 788 (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 a reasonable likelihood that at least one of the challenged claims is 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.

C.   Claim Construction

In this *inter partes* review, claims are construed using the same claim construction standard that would be used to construe the claims in a civil action under 35 U.S.C. § 282(b). *See* 37 C.F.R. § 42.100(b) (2023). The claim construction standard includes construing claims in accordance with the ordinary and customary meaning of such claims as understood by one of ordinary skill in the art at the time of the invention. *See id.*; *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (en banc). In construing claims in accordance with their ordinary and customary meaning, we take into account the specification and prosecution history. *Phillips*, 415 F.3d at 1315–17.

Petitioner asserts that "no claim term requires express construction in order for the Board to evaluate the patentability of the claims." Pet. 6 (footnote omitted). Petitioner acknowledges that we construed, in the '148 FWD, the term "preprocessing, by a network device, a first rule set and a second rule set" to mean "performing optimizing operations on a first rule set and a second rule set prior to the rule sets being applied to packets." *Id.* (citing Ex. 2001, 6–8). Petitioner asserts that the "preprocessing" limitations in the claims of the '009 Patent "address the issues resolved by this construction by incorporating both of the 'optimizing' and 'prior to' concepts." *Id.* at 6–7.

Patent Owner asserts that based on the logic and the grammar of the claims, the claims require preprocessing the first and second rule sets *before* putting those rule sets into effect on the network protection device. Prelim. Resp. 16–17. Patent Owner argues that Petitioner's arguments rely on interpreting "being implemented" to mean "initiating enforcement of the rule

set, which coincides with the rule set being applied to packets," but that such an interpretation is "contrary to the law and inconsistent with the plain language of the claims and the specification." *Id*. at 17. Rather, Patent Owner asserts that "'being implemented on the network protection device' denotes rule sets being put into effect as part of policies *on the network protection device*, whereas a rule set being *applied against packets* denotes being put into effect against network traffic." *Id*. at 18.

Although we acknowledge the differences raised by Patent Owner, we are not persuaded that those differences are detrimental to the analysis applied in the Petition, which we evaluate. It is correct that implementing a rule is different from putting that rule into effect, but in the context of network security, it is not clear how a rule could be put into effect if it is not implemented on a network device. In other words, the actions are different, but the overall function is the same, i.e., the application of rule sets to packets. Put another way, if a rule is never implemented on the network device, it cannot be applied to packets. Thus, any network device that applies rule sets against packets must have implemented the rule sets to have them be enforced. As an analogy, starting a car and driving a car are different functions, but we presume that if one is driving the car, the car was started, even if it is not explicitly mentioned. Similarly, the application of rules against packets require that the rules were implemented, even if that implementation is only tacitly acknowledged. We evaluate below, in the context of the applied references, whether rule sets, after being preprocessed, are implemented in the network device.

Additionally, Patent Owner argues that each independent claim recites "to optimize performance of the network protection device," which, it

asserts "means to increase the efficiency and speed of the network protection device, including when swapping between the first and second rule sets." Prelim. Resp. 19–20. Patent Owner argues that it is the ordered operation, i.e., prepossessing and then implementing, discussed above, that leads to this performance optimization, and the specific disclosures in the Specification make it clear that the purpose of the invention supports a narrow construction, i.e., one that is required for performance optimization. *Id*. at 20–23. Patent Owner also asserts that although Petitioner acknowledges "to optimize performance of the network protection device" is an additional limitation not recited in the claims of the '148 Patent, Petitioner does not construe this limitation, and Petitioner's assertions that merely performing optimizing operations on a rule set, prior to its enforcement against packets, also optimizes performance of the network protection device does not fully comport with the requirements of the limitation. *Id*. at 24–25 (citing Pet. 16, 18–19).

We do not agree with Patent Owner's position regarding the limitation "to optimize performance of the network protection device." The recitations of that limitation occur in the context of preprocessing rule sets in each independent claim of the '009 Patent. *See* Ex. 1001, 10:46–14:41. Contrary to Patent Owner's arguments, this optimization is not claimed to and need not occur when one rule set is swapped out for another. Given the context of the limitation, the optimization would need to occur through the preprocessing of rule sets. We are not persuaded that the optimization, as claimed, specifically requires that optimization to occur in both the prepossessing and implementing of rules. As such, to the extent that Petitioner's arguments demonstrate that performing optimizing operations

on a rule set also optimizes performance of the network protection device, we are persuaded that such disclosures in the prior art showing the same would meet the requirements of the independent claims.

D. Legal Standards – Obviousness

The U.S. Supreme Court sets forth the framework for applying the statutory language of 35 U.S.C. § 103 in *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966):

> Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.

As explained by the Supreme Court in *KSR International Co. v. Teleflex Inc.*,

> Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit.

550 U.S. 398, 418 (2007) (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) ("[R]ejections on obviousness grounds 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.")).

"Whether an ordinarily skilled artisan would have been motivated to modify the teachings of a reference is a question of fact." *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1327 (Fed. Cir. 2016) (citations omitted). "[W]here a party argues a skilled artisan would have been motivated to combine references, it must show the artisan 'would have had a reasonable expectation of success from doing so.'" *Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, 876 F.3d 1350, 1360–61 (Fed. Cir. 2017) (quoting *In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig.*, 676 F.3d 1063, 1068–69 (Fed. Cir. 2012)).

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. Prelim. Resp. 31–41. We begin with overviews of the cited references, and then discuss Petitioner's contentions regarding the claims challenged in this ground.

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, Roese 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*

Patent Owner argues that the Petition "essentially re-litigates the question of whether the art teaches the claims of the '148 Patent, while only downplaying the critical distinctions that led to allowance of the '009 Patent." Prelim. Resp. 31. Based on the differences in claims, Patent Owner raises two arguments, specifying that the combination of references in the grounds of unpatentability detailed in the Petition does not teach or suggest the claims of the '009 Patent, discussed below.

> i) *"Preprocessing" Prior to "Being Implemented"*

Patent Owner's first argument is that each independent claim requires "preprocessing" the first and second rule sets "prior to" the first and second rule sets "being implemented on the network protection device," implying that the preprocessing occurs before those rule sets go into effect on the network protection device. Prelim. Resp. 31–32. Patent Owner argues that "the Roese-Golnabi combination implements rule sets on the device *before* performing operations on a rule set." *Id*. at 32. Patent Owner argues that Petitioner's assertions that Roese's "associating mitigating policy and/or PER sets with triggers" satisfies the "preprocessing" limitations are false because the operations performed by preprocessing require either merging two or more rules, separating one or more rules, or reordering one or more rules, not simply associating a rule set with a trigger or rapid response identifier. *Id*. at 32–33 (citing Pet. 21–22). We agree with the point raised by Patent Owner, but that point does not fully address Petitioner's position. Petitioner does rely on Roese for the disclosed behavior, but also adds that "Golnabi supplements Roese" and provides for combining, splitting, and reordering of policy rules, and asserts, credibly, that it would have been obvious to combine, separate, and order rules, as Golnabi teaches, when generating rule sets of Roese. *See* Pet. 22–24 (citing Ex. 1003 ¶¶ 124–127). As such, Petitioner does not rely on Roese alone and we do not find this portion of Patent Owner's argument to be persuasive.

Next, Patent Owner argues that Petitioner relies on our prior finding that updating or adjusting rule sets can occur "at any time" and "at any period," which would have included prior to a rule set being implemented, but Patent Owner argues that the prior determination was made in the context of updating or adjusting already implemented rule sets. Prelim.

Resp. 33 (citing Pet. 20). Patent Owner continues that "[w]hether rules are optimized before or after they are respectively applied to packets has no bearing on preprocessing first and second rule sets before those rule sets are 'being implemented on the network protection device,' i.e. put into effect as part of policies on the network protection device." *Id*. at 34. Patent Owner also argues that "the '009 Patent explicitly explains that preprocessing a rule set after implementation on the device but before configuring the device to process packets in accordance with the preprocessed rule set leads to degradation rather than optimization of performance." *Id*. at 35 (citing Ex. 1001, 5:55–63).

We note, first, that the cited section of the '009 Patent (Ex. 1001, 5:55–63) does not appear to support Patent Owner's position. That portion of the '009 Patent, which concerns performing packet transformations based on policy 132's rule set, recites:

> It will be appreciated that by preprocessing both policy 130's rule set and policy 132's rule set prior to processing packet flowing between networks 104 and 106 in accordance with either of policy 130's rule set or policy 132's rule set, network protection device 100 may swap or switch between policy 130's rule set and policy 132's rule set more efficiently.

The cited section does not detail any "degradation," and is, instead, focused on efficiency of preprocessing. Second, with respect to Patent Owner's argument that optimization of a rule set before or after application to packets having no bearing on preprocessing prior to implementation, we refer to Section C, above, where we discuss that without implementation, i.e., rules being put into effect as part of policies on the network protection device, there can be no application of the rules to packets.

Patent Owner argues that Roese teaches that the rule sets are "updated" or "modified" after they are implemented on the device, not before, and that like Golnabi, "Roese requires that any updates or modifications to the rule sets occur after the rule sets have been installed, i.e. implemented on the device, not before." Prelim. Resp. 35 (citing Ex. 1005 ¶¶ 18, 23). Patent Owner also argues that Golnabi requires the rule sets to be implemented on the device (and used to process network traffic) before any optimizing operations can be performed, and that ordinarily skilled artisans would have understood that "with the Roese-Golnabi approach the performance of operations 'at any time' and 'at any period' is limited to the time after the rule sets have been implemented on Roese's system." *Id.* at 36 (citing Ex. 1008 3–4, 5, 8).

With respect to these latter arguments, we note that Patent Owner is interpreting implementation in a slightly different manner in its various arguments. Whereas Patent Owner previously asserted that being implemented on the network protection device denotes rule sets *being put into effect* as part of policies on the network protection device, Patent Owner now asserts that being implemented simply means the rule sets *have been installed*. 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. Without receipt of the rule sets by the network protection device, it is not clear what type of processes the rule sets could perform on the device.

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 further expand on that understanding, determining 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)   *"To Optimize Performance of the Network Protection Device"*

Patent Owner's second argument is that each independent claim requires preprocessing both the first and second rule set prior to the first and second rule sets being implemented on the network protection device so as "to optimize performance of the network protection device." Prelim. Resp. 36. Patent Owner argues that the cited limitation in claim 1 "means to increase efficiency and speed of the network protection device, including when swapping between the first and second rule sets." *Id*. As we have discussed in Section C, above, we are not persuaded by Patent Owner's position that the cited limitation applies to "swapping" of rule sets, where "swapping" is not specifically recited, nor is the limitation "to optimize performance of the network protection device" recited in the context of the limitation "reconfiguring the network protection device," which would presumably cover the "swapping" that Patent Owner discusses. Although

we do not adopt Patent Owner's construction, we consider Patent Owner's additional arguments on this point for the sake of completeness.

Patent Owner argues that Petitioner's proposed combination leads to degradation of device performance, not its optimization. Prelim. Resp. 37–39. Patent Owner argues that "[t]he inventors of the '009 Patent recognized that while preprocessing a rule set prior to packet processing may 'optimize its application to packets[,]' the time required for preprocessing . . . can 'adversely affect the performance of the network protection device.'" *Id*. at 38. For this proposition, Patent Owner again cites to a section of the '009 Patent (Ex. 1001, 5:55–63), which does not disclose adverse effects on performance. Patent Owner also cites to other portions of the '009 Patent (Ex. 1001, 1:38–50, 4:45–5:16), which discuss switching between rule sets and the time required for preprocessing a rule set. As discussed above, we do not find the subject limitation, namely "to optimize performance of the network protection device," as being applied to rule switching in the context of claim 1. With respect to the second citation, we agree that preprocessing of rule sets can affect device performance, but we disagree with Patent Owner's argument that Petitioner's combination would have been "unable to efficiently and quickly swap between rule the sets." Prelim. Resp. 39. This, again, goes to the requirement that swapping rule sets must be done to optimize performance of the network protection device, which we are not persuaded is recited in the challenged claims.

Patent Owner also argues that hindsight lies behind Petitioner's position that it would have been obvious to perform optimization operations on both first and second rule sets prior to either being implemented. Prelim. Resp. 39–41. Patent Owner argues that "Petitioner uses the '009 Patent as a

guide to suggest that a [person of ordinary skill in the art] would have considered the claimed technique obvious," whereas Roese's objective is to allow for automatic response, which "does not even consider the effect of preprocessing on its ability to effectively change between rule sets." *Id.* at 40–41.

We disagree with this latter portion of Patent Owner's argument. As discussed above, the Petition relies upon Roese's discussion of updating policy sets at any time, such that optimizing operations on rule sets prior to those sets being implemented would have been within the understanding of ordinarily skilled artisans, in view of Roese and the other references. It would not have been necessary to have resorted to hindsight reasoning when the options are clearly delineated in the disclosures of the prior art references. *See, e.g., In re McLaughlin*, 443 F.2d 1392, 1395 (CCPA 1971) ("Any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made and does not include knowledge gleaned only from applicant's disclosure, such a reconstruction is proper.").

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 a reasonable likelihood 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* Prelim. Resp. For the same reasons applicable to claim 1, we find that Petitioner has demonstrated a reasonable likelihood 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 the dependent claims, except to argue that they depend from the independent claims. *See* Prelim. Resp. For the same reasons applicable to the independent claims, discussed above, we find that Petitioner has shown a reasonable likelihood that dependent 2–5, 8–13, 15–17, 19–21, 23, 24, and 26–30 are unpatentable under 35 U.S.C. 103(a) as obvious over Roese, Golnabi, Huima, and Hayter.

F. Obviousness over Roese, 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 Roese, Golnabi, Huima, Hayter, and Esbensen. Pet. 64–68. Patent Owner does not explicitly address this ground of unpatentability in the Preliminary Response, relying on arguments raised with respect to the prior ground. *See* Prelim. Resp.

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* Prelim. Resp. In view of the above, we are persuaded that Petitioner has demonstrated sufficiently that Roese, Golnabi, Huima, Hayter, and Esbensen teach the limitations of claim 6, 7, and 25.

III. CONCLUSION

For the foregoing reasons, Petitioner has demonstrated a reasonable likelihood that it would prevail in showing that at least one claim of the '009 Patent is unpatentable.

IV. ORDER

Accordingly, it is:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review is hereby instituted as to claims 1–30 of the '009 Patent on the following asserted grounds:

Claims 1–5, 8–24, and 26–30 under 35 U.S.C. § 103(a) as unpatentable over Roese, Golnabi, Huima, and Hayter; and

Claims 6, 7, and 25 under 35 U.S.C. § 103(a) as unpatentable over Roese, Golnabi, Huima, Hayter, and Esbensen;

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial, the trial commencing on the entry date of this Decision.

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