

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

HEADWATER RESEARCH LLC,
Patent Owner.

IPR2023-01250
Patent 9,277,433 B2

Before GARTH D. BAER, SCOTT B. HOWARD, and
STEPHEN E. BELISLE, *Administrative Patent Judges*.

HOWARD, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. Background and Summary

Samsung Electronics Co., Ltd. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting *inter partes* review of claims 1–20 (“challenged claims”) of U.S. Patent No 9,277,433 B2 (Ex. 1001, “the ’433 patent”). Headwater Research LLC (“Patent Owner”) filed a Preliminary Response (Paper 6, “Prelim. Resp.”). With our authorization, Petitioner filed a Reply to Patent Owner’s Preliminary Response (Paper 7, “Pet. Prelim. Reply”) and Patent Owner filed a Preliminary Sur-reply (Paper 8, “Prelim. Sur-reply”).

We have authority, acting on the designation of the Director, to determine whether to institute an *inter partes* review under 35 U.S.C. § 314 and 37 C.F.R. § 42.4(a). *Inter partes* review may not be instituted unless “the information presented in the petition filed under section 311 and any response filed under section 313 shows 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) (2018). “When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.” 37 C.F.R. § 42.108(a) (2022).

For the reasons set forth below, upon considering the briefing and the evidence of record, we determine that the information presented in the Petition establishes a reasonable likelihood that Petitioner will prevail with respect to at least one of the challenged claims. Accordingly, we institute *inter partes* review on all of the challenged claims based on all of the grounds identified in the Petition.

B. Real Parties in Interest

Petitioner identifies Samsung Electronics Co., Ltd., and Samsung Electronics America, Inc. as real parties in interest. Pet. 77.

Patent Owner identifies Headwater Research LLC as the real party in interest. Paper 4, 1 (Patent Owner’s Mandatory Notices).

C. Related Matters

The parties identify the following district court proceedings in which the ’433 patent has been asserted:

Headwater Research LLC v. Samsung Electronics Co., Ltd., No. 2:22-cv-00467 (E.D. Tex.) and

Headwater Research LLC v. Samsung Electronics Co., Ltd., No. 2:22-cv-00422 (E.D. Tex.).

Pet. 78; Paper 4, 1–2.

D. The ’433 Patent

The ’433 patent relates to servicing Internet access requests from wireless end-user devices through the use of a network service activity control policy set. *See* Ex. 1001, code (57). The ’433 patent states that “network capacity gains are less than what is required to meet growing digital networking demand,” and so “a network capacity crunch is developing due to increasing network congestion on various wireless networks, such as mobile networks.” *Id.* at 3:28–32. Accordingly, “managing the wireless access connection capacity and network access connection resources is important to maintain network performance as network resources/capacity demand increases.” *Id.* at 3:44–47. To this end, the ’433 patent proposes certain device assisted services (DAS), which include “apply[ing] a service usage control policy for the network service

usage activities to protect network capacity (e.g., reduce network capacity demand).” *Id.* at 11:16–17, 11:46–49.

The ’433 patent describes, with respect to Figure 3, reproduced below, an exemplary architecture for providing DAS. Ex. 1001, 1:49–54.

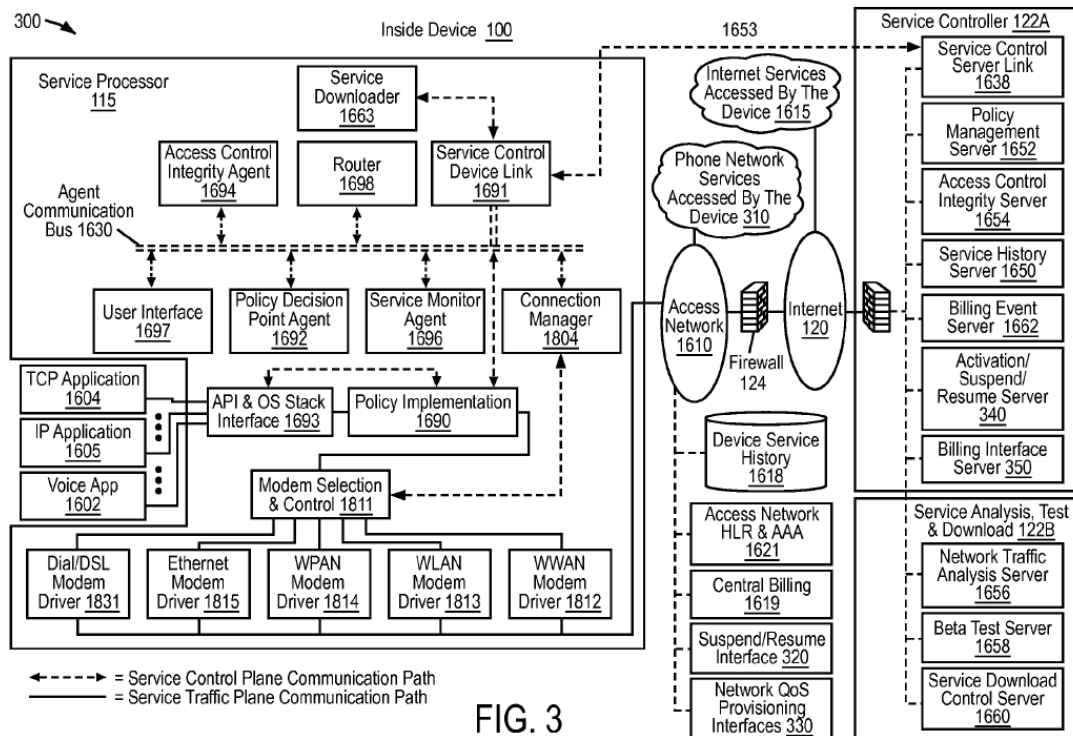


FIG. 3

Figure 3 shows that architecture 300 includes a device-based service processor 115 and a service controller 122 connected through access network 1610 and the Internet 120. *Id.* at 39:40–42, 39:51–56, Fig. 3. Service processor 115 includes modem selection and control 1811, which selects access network connections and communicates with various modem drivers for converting data traffic for different modems. *Id.* at 44:65–45:5, Fig. 3. “[D]ifferent profiles are selected based on the selected network connection (e.g., different service profiles/policies for WWAN, WLAN, WPAN, Ethernet and/or DSL network connections).” *Id.* at 45:5–8. Service controller 122 includes policy management server 1652 “for managing service usage policies, such as QoS policies and/or a network capacity

controlled services policies.” *Id.* at 42:44–48. Policy management server 1652 may set policies on policy implementation agent 1690, located in service processor 115, which includes “issu[ing] policy settings, monitor[ing] service usage and, if necessary, modify[ing] policy settings.” *Id.* at 42:54–59, Fig. 3.

In an embodiment, service processor 115 can implement various DAS techniques “to facilitate differential network services access control (e.g., for network capacity controlled services) to assist in protecting network capacity.” Ex. 1001, 76:49–55. For example, service processor 115 may assist in “monitoring the network service usage activity, classifying one or more service activities into one or more network capacity controlled service classes, associating the one or more network capacity controlled service classes with one or more differential service activity policies, and/or determining a network busy state.” *Id.* at 76:55–64.

Further, in an embodiment in which modem power state changes can cause excess network capacity demand, service usage activity is not permitted to awaken or change the power state of a modem “until multiple network service usage activities require such changes in modem state, or until network service usage activity is aggregated to increase network capacity and/or network resource utilization efficiency.” Ex. 1001, 93:35–37, 93:62–94:1.

E. Illustrative Claim

The ’433 patent includes 20 claims, all of which are challenged. Claim 1 is the only independent claim, and is reproduced below.

1. [1.1] A wireless end-user device, comprising:
 - [1.2.a] a wireless wide area network (WWAN) modem to communicate data for Internet service activities between

the device and at least one WWAN, when configured for and connected to the at least one WWAN, [1.2.b] the at least one WWAN having a corresponding network type of a plurality of wireless network types supported by the device for data communication;

[1.3] a non-transitory memory to store a network service activity control policy set, the policy set including at least a first differential traffic control policy element associating one or more Internet activity access controls with at least a first end-user application; and

[1.4] one or more processors configured to

[1.5] access the network service activity control policy set,

[1.6] determine whether to apply the one or more Internet activity access controls with respect to a first Internet access request by or on behalf of the first end-user application, based at least on which of the plurality of wireless network types is to provide data communication for Internet access requests, and

[1.7] when the one or more Internet activity access controls are to be applied, apply the one or more Internet activity access controls to aggregate network activity for the first Internet access request with network activity for one or more other data communication requests, which are otherwise not associated with the first end-user application, before allowing network activity in association with the first Internet access request.

Id. at 105:45–106:6.

F. Prior Art and Asserted Grounds

Petitioner asserts that claims 1–20 would have been unpatentable on the following grounds:

Claims Challenged	35 U.S.C. § ¹	References/Basis
1–3, 6, 10, 11, 13, 14, 17	103(a)	Rao, ² Cole ³
2, 3, 5, 7–9, 16	103(a)	Rao, Cole, Freund ⁴
2, 4	103(a)	Rao, Cole, Singh ⁵
12, 20	103(a)	Rao, Cole, Montemurro ⁶
15, 18, 19	103(a)	Rao, Cole, Gandhi ⁷

Petitioner also relies on the testimony of Patrick McDaniel, Ph.D.
(Ex. 1003).

II. ANALYSIS

A. Legal Standards

In *Graham v. John Deere Co. of Kan. City*, 383 U.S. 1 (1966), the Supreme Court set out a framework for assessing obviousness under 35 U.S.C. § 103 that requires consideration of four factors: (1) the “level of ordinary skill in the pertinent art,” (2) the “scope and content of the prior art,” (3) the “differences between the prior art and the claims at issue,” and (4) if in evidence, “secondary considerations” of non-obviousness such as “commercial success, long-felt but unsolved needs, failure of others, etc.”

¹ The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. § 103 that became effective on March 16, 2013. Because the ’433 patent claims the benefit of the filing date from an application filed before March 16, 2013, we apply the pre-AIA version of the statutory basis for unpatentability. *See* Ex. 1001, code (60).

² US 2006/0039354 A1, published February 23, 2006 (Ex. 1005).

³ US 2008/0080458 A1, published April 3, 2008 (Ex. 1006).

⁴ US 5,987,611, issued November 16, 1999 (Ex. 1007).

⁵ US 8,381,127 B2, issued February 19, 2013 (Ex. 1008).

⁶ US 2009/0207817 A1, published August 20, 2009 (Ex. 1009).

⁷ US 2008/0146268 A1, published June 19, 2008 (Ex. 1010).

Id. at 17–18. “While the sequence of these questions might be reordered in any particular case,” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 407 (2007), the U.S. Court of Appeals for the Federal Circuit has repeatedly emphasized that “it is error to reach a conclusion of obviousness until all those factors are considered,” *WBIP, LLC v. Kohler*, 829 F.3d 1317, 1328 (Fed. Cir. 2016). Because Patent Owner does not address objective evidence of non-obviousness, we focus solely on the first three *Graham* factors.

B. Level of Ordinary Skill in the Art

In determining whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham*, 383 U.S. at 17. “The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry.” *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991). The “person having ordinary skill in the art” is a hypothetical construct, from whose vantage point obviousness is assessed. *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998).

Factors pertinent to a determination of the level of ordinary skill in the art include “(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field.” *Envtl. Designs, Ltd. v. Union Oil Co. of Cal.*, 713 F.2d 693, 696–697 (Fed. Cir. 1983) (citing *Orthopedic Equip. Co. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376, 1381–82 (Fed. Cir. 1983)). “Not all such factors may be present in every case, and one or more of these or other factors may predominate in a particular case.” *Id.*

Dr. McDaniel testifies that a person of ordinary skill in the art would have had “(1) at least a bachelor’s degree in computer science, electrical engineering, or a related field, and (2) three to five years of experience with networking, power consumption of networked computing devices, and/or wireless digital communications systems,” and that “[m]ore education, e.g., a doctorate in an academic area emphasizing electrical engineering, computer engineering, computer science, or a related technical field, would compensate for fewer years of work experience.” Ex. 1003 ¶ 18.

At this stage of the proceeding, Patent Owner does not challenge the level of ordinary skill in the art proposed by Petitioner’s expert. Prelim. Resp. 6.

For purposes of this Decision, we adopt Dr. McDaniel’s formulation of a person having ordinary skill in the art, which is consistent with the ’433 patent and the prior art.⁸

C. Claim Construction

We apply the same claim construction standard used in the federal courts, in other words, the claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b), which is articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). See 37 C.F.R. § 42.100(b). Under the *Phillips* standard, the “words of a claim ‘are generally given their ordinary and customary meaning,’ which is the meaning that the term would have to a person of ordinary skill

⁸ If Patent Owner disagrees with Petitioner’s formulation of the level of skill in the art, it must do so in its Response. If a different level of skill would affect the outcome in this case, the parties must brief that issue as well. The parties are also encouraged to submit evidence, other than conclusory expert testimony, that supports their position.

in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Phillips*, 415 F.3d at 1312–13.

Petitioner asserts that “no formal claim constructions are necessary because ‘claim terms need only be construed to the extent necessary to resolve the controversy.’” Pet. 2.

Patent Owner agrees with Petitioner’s assertion that “no formal claim construction is necessary” at this stage in the proceeding. Prelim. Resp. 6.

For the purposes of this Decision, we need not expressly construe any claim terms. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (noting that “we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

D. Discretionary Denial – 325(d)

1. Legal Standard

Patent Owner urges us to exercise our discretion to deny institution of trial under 35 U.S.C. § 325(d). Prelim. Resp. 19–20; Prelim. Sur-reply 1–5. Under § 325(d), we have discretion to deny a petition that presents the same or substantially the same prior art or arguments as previously presented to the Office. In evaluating whether the factual predicate under § 325(d) is met, we consider a number of non-exclusive factors, as set forth in *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 17–18 (PTAB Dec. 15, 2017) (Institution Decision) (precedential as to Section III.C.5, first paragraph) (“the *Becton Dickinson* factors”):

- (a) the similarities and material differences between the asserted art and the prior art involved during examination;

(b) the cumulative nature of the asserted art and the prior art evaluated during examination;

(c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection;

(d) the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art;

(e) whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art; and

(f) the extent to which additional evidence and facts presented in the Petition warrant reconsideration of the prior art or arguments.

Becton, Dickinson, IPR2017-01586, Paper 8 at 17–18.

In performing an analysis under § 325(d), the Board uses the following two-part framework:

(1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and (2) if either condition of first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims. . . . If, after review of [*Becton, Dickinson*] factors (a), (b), and (d), it is determined that the same or substantially the same art or arguments previously were presented to the Office, then factors (c), (e), and (f) relate to whether the petitioner has demonstrated a material error by the Office.

Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH, IPR2019-01469, Paper 6 at 8, 10 (PTAB Feb. 13, 2020) (Institution Decision) (precedential) (footnote omitted). Consequently, we first turn to an analysis of *Becton-Dickinson* factors (a), (b), and (d) to determine whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments

previously were presented to the Office. Only if we determine that the same or substantially the same prior art or arguments were previously presented to the Office do we turn to *Becton Dickinson* factors (c), (e), and (f) to see whether the Office overlooked material or committed material error.

2. *Part One of the Advanced Bionics Analysis*

Becton Dickinson factors (a), (b), and (d) require us to determine, respectively: (a) “the similarities and material differences between the asserted art and the prior art involved during examination;” (b) “the cumulative nature of the asserted art and the prior art evaluated during examination,” and (d) “the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art.” *Becton, Dickinson*, IPR2017-01586, Paper 8 at 17.

The parties agree that Rao-2⁹ and Cole-2¹⁰ are cited on the face of the ’433 patent. Pet. 75; Prelim. Resp. 31–32.

Rao and Rao-2 both claim priority from the same United States provisional patent applications. *Compare* Ex. 1005, code (60), *with* Ex. 2003, code (30). A redline version comparing Rao and Rao-2 shows that besides formatting differences and some additional introductory material in Rao-2, there is no substantial difference between Rao and Rao-2. *See* Ex. 2004. Accordingly, the Office previously considered prior art that is substantially the same as Rao.

Similarly, Cole and Cole-2 are two patent applications filed by the same inventor on the same day. *Compare* Ex. 1006, codes (22, 76), *with*

⁹ PCT application WO 2006/012610A2 (Ex. 2003).

¹⁰ US 2008/0080457 (Ex. 2001).

Ex. 2001, codes (22, 76). Although the abstract, background of the invention, and brief summary of the invention differ, the detailed description of the invention in Cole and Cole-2 are identical. *See* Ex. 2004.

Accordingly, the Office previously considered prior art that is substantially the same as Cole.

Petitioner argues that because Rao and Cole are not “among the references listed on the first 11 pages of the ’433 Patent,” there is no evidence that the Examiner considered Rao or Cole. Pet. 75. In this regard, we note that the applicant submitted a large number of references. *See* Ex. 1001, pages 1–11. Although the evidence shows that the Office previously considered Rao-2 and Cole-2 individually, given the large number of references and the astronomical number of potential combinations, there is nothing in the record to suggest that the Examiner ever considered the specific combination of Rao-2 and Cole-2.

Nevertheless, because the Examiner indicated that he considered references that are substantially the same as Rao and Cole, specifically Rao-2 and Cole-2 (*see* Ex. 1001), we determine that part one of the *Advanced Bionics* framework is satisfied.

3. *Part Two of the Advanced Bionics Analysis*

Having determined that the first step of the *Advanced Bionics* is met, we consider whether Petitioner has shown that the Office materially erred. *Becton, Dickinson* factor (c) focuses on the record previously developed by the Office. *Advanced Bionics*, Paper 6 at 10. If the record, “is not well developed or silent, then a petitioner may show the Office erred by overlooking something.” *Id.* However, “if the alleged error is a disagreement with a specific finding of record by the Office, then ordinarily

the petitioner's required showing of material error must overcome persuasively that specific finding of record." *Id.* at 10–11.

The record here falls squarely in the first category. Although the Examiner signed an Information Disclosure Statement citing Rao-2 and Cole-2, the Examiner did not rely on those references to reject any of the claims of the '433 patent. *See* Ex. 1002 (excerpts of the prosecution history of the '433 patent). In fact, during prosecution of the '433 patent the Examiner never rejected the pending claims based on a prior art rejection. *See* Ex. 1002. Instead, the only rejection was for obviousness-type double patenting. Ex. 1002 at 227–250 (Office Action dated August 20, 2015).

As discussed below in the analysis of the prior art, Petitioner has sufficiently shown a reasonable likelihood that claim 1 of the '443 patent is obvious in light of Rao and Cole. *See* Section II.E.3.(a). By doing so, Petitioner demonstrates that the Office overlooked that claim 1 is obvious over the combination of Rao-2 and Cole-2 and, in doing so, erred in a manner material to the patentability of the challenged claims. *See Tokyo Ohka Kogyo Co. v. Fujifilm Elec. Materials U.S.A., Inc.*, PGR2022-00010, Paper 9 at 8–9 (PTAB June 6, 2022); *Samsung Elecs. Co. v. Evolved Wireless LLC.*, IPR2021-00943, Paper 9, 11 (PTAB Dec. 1, 2021).

Patent Owner directs our attention to a number of cases which, Patent Owner contends, support denying institution. *See* Prelim. Resp. 38–39; Prelim. Sur-reply 4–5; *Eyenovia, Inc. v. Sydnexis*, IPR2022-00963, Paper 7, 19 (PTAB Nov. 8, 2022); *Gator Bio, Inc. v. Sartorius Bioanalytical Instruments, Inc.*, IPR2023-00215, Paper No. 19 at 21 (PTAB June 20, 2023); *Microsoft Corp. v. Almondnet, Inc.*, 2022-01319, Paper 9, 10–11 (Jan. 30, 2023), *reh'g denied*, Paper 14 (PTAB Apr. 23, 2023). However, those cases are inapplicable to the facts of this proceeding.

For example, in *Eyenovia* the Examiner initially rejected the claims over similar references making findings similar to the arguments set forth in the petition. IPR2022-00963, Paper 7, 13. In this proceeding, however, Patent Owner has not identified any prior art rejections in which the Examiner made arguments similar to those in the Petition.

Similarly, in *Gator* the Examiner relied on the asserted references in rejecting pending claims in a parent application. IPR2023-00215, Paper 19, 11–12. In contrast, in this proceeding, the Examiner did not rely on either Rao-2 or Cole-2, let alone their combination, during the prosecution of any parent applications.

Finally, in *Microsoft* the petitioner never addressed Examiner error until the motion for rehearing. IPR2022-01319, Paper 14, 5 (“Petitioner does not deny that its Petition does not discuss Examiner error.”). In this proceeding, however, Petitioner addresses Examiner error in both the Petition and the Petitioner’s Preliminary Reply. *See* Pet. 75–76; Pet. Prelim. Reply 2–4.

For the reasons set forth above, we find that that second part of the *Advanced Bionics* framework is not satisfied.

4. Conclusion

Based on our analysis within the *Advanced Bionics* framework, we find that the Petition does not implicate § 325(d) in a sufficient manner as to warrant discretionary denial, and we decline to exercise our discretion to deny institution under § 325(d).

E. Rao and Cole

Petitioner argues that claims 1–3, 6, 10, 11, 13, 14, and 17 would have been obvious over Rao and Cole. Pet. 1, 20–46. Based on the current record, we are sufficiently persuaded that Petitioner has established a

reasonable likelihood of prevailing on this asserted obviousness ground with respect to at least one of the challenged claims.

1. Overview of Rao

Rao is titled “Systems and Method for Client-Side Application-Aware Prioritization of Network Communications” and “is generally directed towards a remote access architecture for providing peer-to-peer communications and remote access connectivity.” Ex. 1005, codes (54), (57).

Rao’s Figure 1A, reproduced below, illustrates a system for deploying an exemplary remote access architecture. Ex. 1005 ¶ 86.

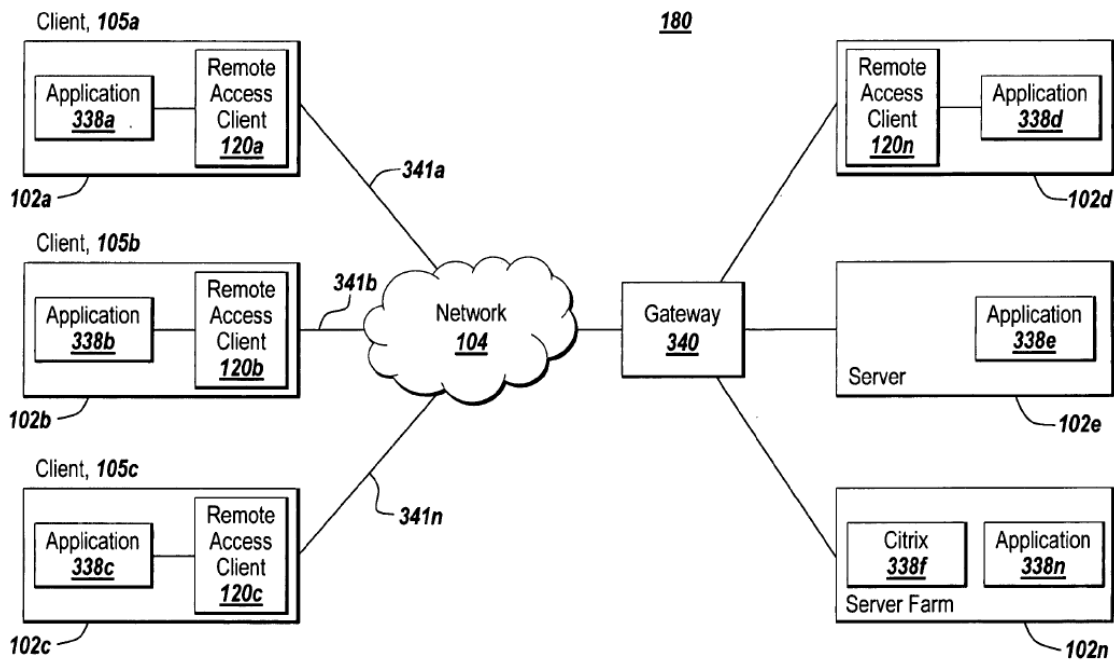


Fig. 1A

Figure 1A shows that environment 180 includes a number of computing devices 102a–102c, also referred to as clients 105a–105c, connected to network 104. *Id.* ¶ 86, Fig. 1A. Clients 105a–105c may communicate with server 102a, server farm 102e, or peer computing devices 102d via network 104 and gateway 340. *Id.*

Clients 105a–105c include respective remote access clients 120a–120c (Ex. 1005 ¶ 87, Fig. 1A), an example of which is shown in more detail in Figure 1C, reproduced below.

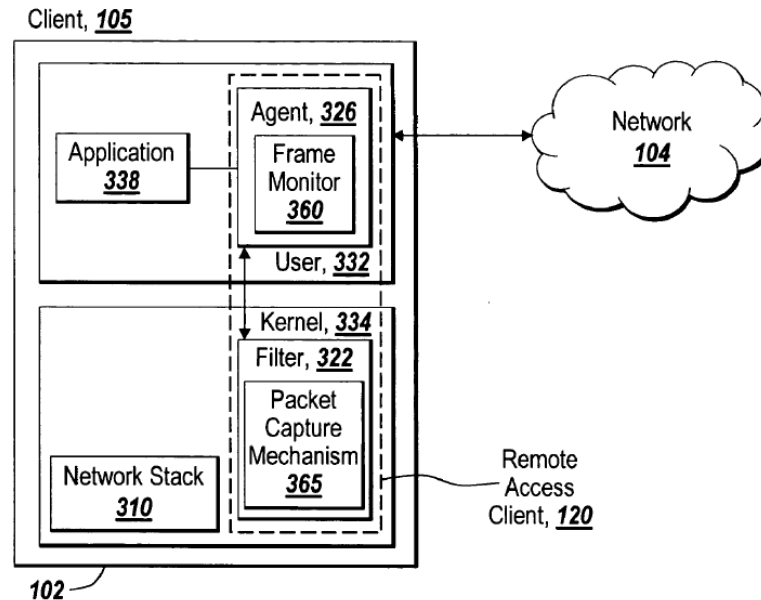


Fig. 1C

Figure 1C shows computing device 102, also referred to as client 105, as including remote access client 120 for routing network packets to network 104. *Id.* ¶ 99, Fig. 1C. Computing device 102 may also include network interface 118 (not shown in Figure 1C) for interfacing with “a Local Area Network (LAN), Wide Area Network (WAN) or the Internet through a variety of connections including . . . LAN or WAN links . . . wireless connections, or some combination of any or all of the above.” *Id.* ¶ 125. “[N]etwork interface 118 may comprise a . . . modem or any other device suitable for interfacing the computing device 102 to any type of network.” *Id.* “[R]emote access client 120 may be used to practice one or more of the optimization techniques” Rao describes, such as “optimizing any real-time

data communications, such as VoIP, desktop sharing, or web conferences.”
Id. ¶ 117.

Figure 5A of Rao shows a more detailed illustration of computing device 102, also referred to as client 105, for use in “client-side application-aware network communication prioritization techniques.” Ex. 1005 ¶ 179.

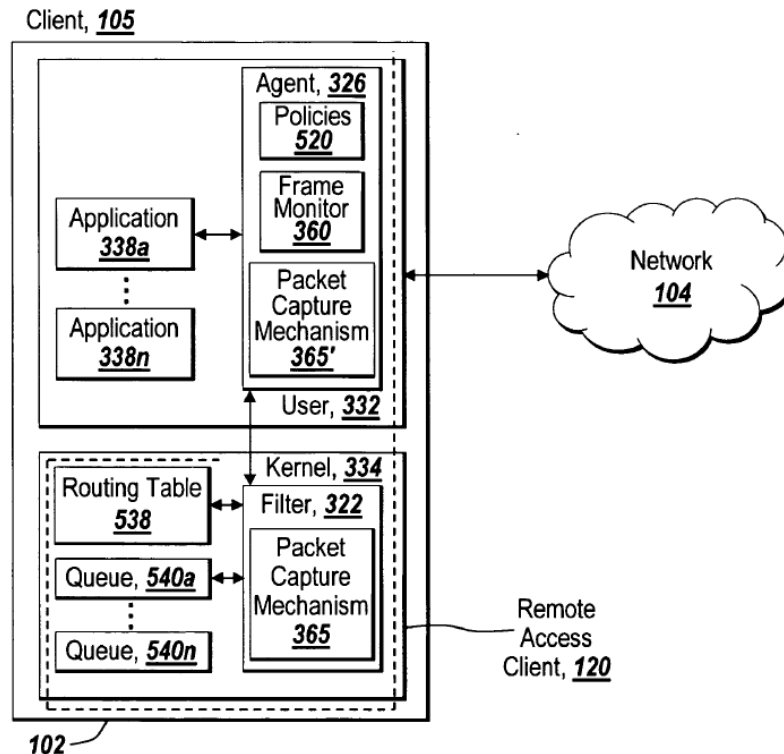


Fig. 5A

In particular, as shown in Figure 5A, “remote access client 120 may have one or more policies 520 for specifying client-side prioritization of network communications related to applications 338a-338n.” *Id.* ¶ 182, Fig. 5A. In an embodiment, “policies 520 may be specified in accordance to the type of one or more protocols used by the applications 338a-338n and/or the size of the payload of the network packet.” *Id.* In operation, client 105 may intercept network packets associated with an application 338a-338n and

store the packets in one of queues 540a–540n, where a priority is determined for the packets based on the type and/or priority of the application with which the packets are associated. *Id.* ¶ 184. “[A]ll network packets for a type of application 338a-338n, such as an email or voice application, or all network packets for a type of protocol used by the application 338a-338n, such as RPT or UDP, may be placed in a queue 540a-540n for prioritizing network[] packets for one or more applications.” *Id.* ¶ 192.

2. *Overview of Cole*

Cole is titled “Connection Manager with Deferred Configuration” and relates to “configuring a mobile device including a plurality of communication interfaces.” Ex. 1006, codes (54), (57). Figure 1 of Cole illustrates a communication system in which a mobile device may interface with different communication networks, and is reproduced below.

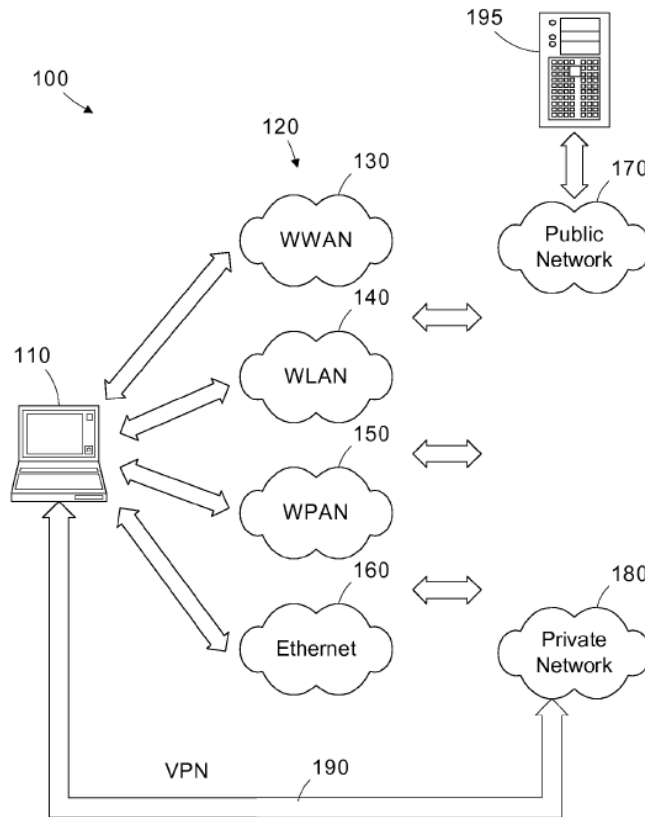


Figure 1

As shown in Figure 1, communication system 100 includes mobile device 110, which interfaces with a number of communication networks 120, including, for example, WWAN 130. *Id.* ¶ 31, Fig. 1.

A detailed diagram of mobile device 110 is shown in Figure 2, reproduced below.

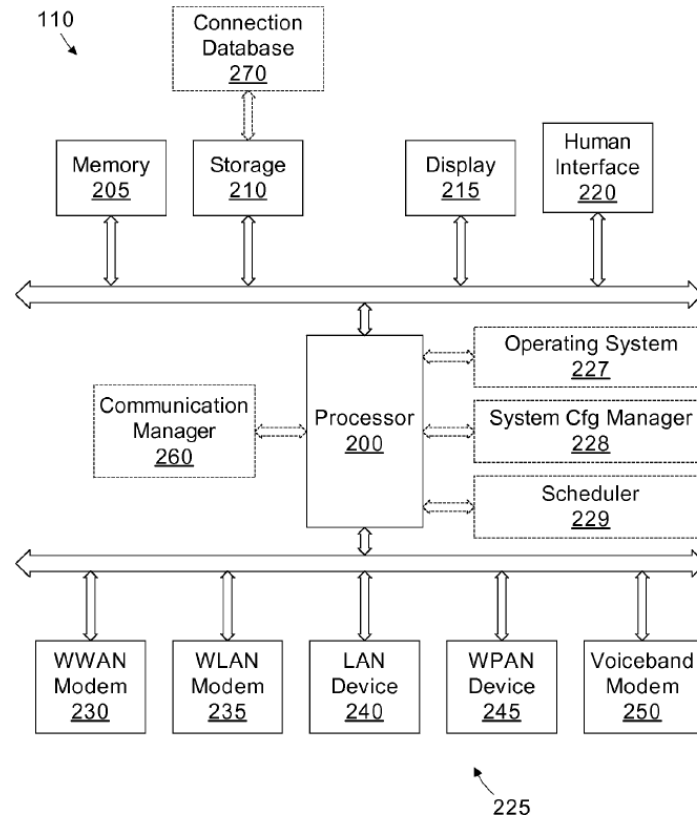


Figure 2

As shown in Figure 2, mobile device 110 includes various communication interfaces 225, such as WWAN modem 230. Ex. 1006 ¶ 35, Fig. 2.

Connection manager 260 “manages the various communication interfaces 225 to determine which connections should be active at any given time” (*id.* ¶ 36), and performs “communication load monitoring and deferred action functions” (*id.* ¶ 88). In an example, a user may select a file to download, but the file may take longer than anticipated to transfer using the WWAN modem 230, “which consumes significant battery power.” *Id.* ¶ 88. In this case, “[t]he connection manager 260 identifies the load on the WWAN modem 230 and asks the user to find a better connection.” *Id.*

3. *Claim 1*

a) *Limitation 1.6*¹¹

Claim 1, limitation 1.6 states that the processor is configured to “determine whether to apply the one or more Internet activity access controls with respect to a first Internet access request by or on behalf of the first end-user application, *based at least on which of the plurality of wireless network types is to provide data communication for Internet access requests.*”

Ex. 1001, 105:59–64 (emphasis added). Petitioner sets forth two theories on how this limitation is taught by the prior art. First, Petitioner argues Rao teaches the limitation. Pet. 28–29. Second, Petitioner argues that Rao in combination with Cole teaches the limitation. *Id.* at 29–30; *see also* Ex. 1003 ¶ 109. For the reason set forth below, we are sufficiently persuaded by Petitioner’s second theory.

(1) *Rao Theory*

Petitioner argues that Rao teaches limitation 1.6. Pet. 28–29 (citing Ex. 1003 ¶¶ 106–108; Ex. 1005 ¶¶ 81, 104, 140, 182). Specifically, Petitioner argues that “Rao renders obvious determining whether to apply Internet activity access controls based at least on which network protocol (e.g., wireless network type) is being used.” Pet. 28 (citing Ex. 1003 ¶ 106). Petitioner further argues that “Rao describes that the policies ‘may be specified in accordance to the **type of one or more protocols used by the applications**’” and “that ‘[t]he configuration settings may include information regarding which . . . protocols . . . to filter.’” *Id.* (quoting Ex. 1005 ¶¶ 182 (first quote), 104 (second quote)). Petitioner further argues

¹¹ We focus on the disputed claim limitations—limitations 1.6 and 1.7—before turning to the undisputed limitations.

that a person having ordinary skill in the art “would have known that each network type can be implemented using one or more networking protocols (e.g., 3G can be implemented using Global System for Mobile Communications (GSM) or Code Division Multiple Access (CDMA); WiFi can be implemented using 802.11).” *Id.* (citing Ex. 1003 ¶ 106). According to Petitioner, “identifying the protocol (e.g., GSM) used by the network type also identifies the network type (e.g., 3G).” *Id.* at 28–29 (footnote omitted). “Therefore,” Petitioner argues, “because Rao teaches that policies can be applied based on network interface protocols, and network interface protocols indicate wireless network types, Rao teaches or renders obvious determining whether to apply Internet activity access controls based on network type.” *Id.*

Based on the current record, we question whether Petitioner has sufficiently shown that Rao teaches or suggests limitation 1.6. Protocols can fit into two distinct categories. First, there are “network interface protocols” such as GSM, CDMA, and 802.11, which are used by wireless modems to physically transmit data signals across a wireless network. *See* Pet. 29; Ex. 1003 ¶ 106. But, Rao does not mention GSM or CDMA and only mentions 802.11 when describing the network of Figure 1A. *See* Ex. 1005 ¶ 95.

A second type of protocol known as an application protocol, such as UDP,¹² RTP,¹³ ICA,¹⁴ and RDP,¹⁵ is used by applications to send packet information in a series of bits. *See* Ex. 1005 ¶¶ 51, 77, 192. Petitioner does

¹² User Datagram Protocol.

¹³ Real Time Protocol.

¹⁴ Independent Computing Architecture.

¹⁵ Remote Desktop Protocol.

not argue that application protocols can be used to determine the wireless network type. *See* Pet 28–29. To the contrary, RTP and UDP are described as being “used by the application,” and are independent of the network type used for physical communication between devices. *See* Ex. 2007, 1 (RTP Specification); Ex. 2008, 1 (UDP Specification).

Petitioner has not sufficiently shown that the references to “protocol” in Rao relate to network interface protocols, which indicate the wireless network type. *See* Ex. 1005 ¶¶ 104, 182. Instead, when Rao gives specific information about protocols, based on the current record, it appears to be referencing application protocols. *See id.* ¶¶ 182 (“[T]he policies 520 may be specified in accordance to the type of one or more protocols used by the applications”), 192 (“a type of protocol used by the application 338a–338n, such as RTP or UDP”), 192 (“In a further example, a queue 540a may be used for applications [338a]–338n communicating using a remote display protocol, such as ICA or RDP.”). Because application protocols are agnostic to wireless network type, based on the current record, we question whether Petitioner has sufficiently shown that Rao teaches or suggest limitation 1.6.

Dr. McDaniel testifies about Rao paragraph 81. *See* Ex. 1003 ¶ 108 (cited at Pet. 29). Dr. McDaniel testifies that Rao teaches shielding portions of the network in the event of a temporary disruption in a network connection. *Id.* (citing Ex. 1005 ¶ 81). Based on this example, Dr. McDaniel testifies that a person having ordinary skill in the art “would have recognized that this example describes determining whether to apply Internet activity access controls with respect to a first Internet access request based on the network type ‘when the client switches between networks (e.g., from a wired network to a wireless network).’” *Id.* (quoting Ex. 1005 ¶ 81).

However, the example cited by Dr. McDaniel simply discusses a “network disruption shielding technique,” which “provides a persistent and reliable connection to a client network.” Ex. 1005 ¶ 81. Specifically, Rao describes how “a temporary disruption on a network connection may occur when the mobile client roams between different access points in the same network, or when the client switches between networks (e.g., from a wired network to a wireless network).” *Id.* According to Rao, the system describes how to shield a portion of the network during a disruption and resuming communication once the connection is reestablished:

The techniques of the present invention detects a disruption in the network and shields a portion of the network stack from the network disruption. The shielded portion of the network stack is maintained while the other portion of the network stack is reestablished and reconnected to the network. Once the network is available, the present invention continues with the client’s network communications.

Id. Although Rao describes what happens during the disruption, it does not describe determining the type of network connection, let alone applying “Internet activity access controls” based on the wireless network type. *See id.* Nor has Dr. McDaniel sufficiently explained how Rao determines whether to apply any alleged access controls based on the type of network connection that was disrupted or the type of network connection that is reestablished. *See* Ex. 1003 ¶ 108.

(2) *Rao and Cole Theory*

As an alternative, Petitioner argues that the combination of Rao and Cole teaches limitation 1.6.¹⁶ See Pet. 29–30 (citing Ex. 1003 ¶ 109; Ex. 1006 ¶¶ 77–78, 88); Ex. 1003 ¶ 109.

Cole teaches using different networks for performing data transfers based on the network type:

In one example, the user is surfing a web site and selects a file for download. The file i[s] larger than the user anticipated and is taking a long time to transfer. *The user is in a public place and the lengthy transfer is conducted using the WWAN modem 230 (e.g., a 3G channel), which consumes significant battery power. The connection manager 260 identifies the load on the WWAN modem 230 and asks the user to find a better connection. A better connection is not available in the public setting, so the user opts to be reminded to download the web file later. When the user returns home, connects the mobile device 110 to a power source, and the communication manager 260 connects using the WLAN modem 235 (e.g., a Wi-Fi connection), the connection manager 260 reminds the user to download the file.*

Ex. 1006 ¶ 88 (emphasis added); see also Ex. 1003 ¶ 109. That is, the processor determines, based at least in part on the network, whether to apply an Internet activity access to control and change the type of network being used. Therefore, Petitioner has sufficiently shown that “Cole teaches applying Internet access controls (asking the user to find a better connection) on behalf of the first end-user application (file download) based on being connected to the 3G wireless network type that is to provide data

¹⁶ Although the Petition and Dr. McDaniel’s testimony both state that this alternative theory is based on the combination of Rao and Cole, the focus is exclusively on Cole. See Pet. 29–30; Ex. 1003 ¶ 109. Similarly, Patent Owner only addresses Cole when discussing this alternative theory. Prelim. Resp. 17–23. Accordingly, we do the same.

communication for the request.” Ex. 1003 ¶109; *see also id.* (citing Ex. 1006 ¶¶ 77–78).

Patent Owner argues that Cole’s teaching is based on battery consumption, not network type:

As an initial matter, there is no evidence that the alleged “Internet access control” of Cole—asking a user to find a better connection when a download consumes significant battery power—is determined “based at least on which of the plurality of wireless network types is to provide data communication.” Cole does not disclose that this request to the user would be based on network type. *Instead, Cole teaches that the download proceeds over the network until the download is observed to “consume[] significant batterypower,” and the request is issued on that basis. See Ex. 1006 ¶[0088]; see also id. ¶[0087] (“determin[ing] if an acceptable network is available” “may entail determining if sufficient batter[y] power is present to complete the transaction”).* Cole does not disclose that the connection *type*, separate from the observed battery consumption resulting from Internet usage, forms the basis for requesting whether the user wants to search for a better connection. Rather, Cole teaches that the connection manager will take the *same* action to conserve battery power regardless of whether the user is connected to WWAN or WLAN (two different wireless network types).

Prelim Resp. 18–19 (*bold italics* in original, *italics* added).

On the current record, we do not agree with Patent Owner’s argument. Although Cole sends a message based, in part, on battery status, Petitioner has sufficiently shown for purposes of institution that Cole also indicates that the determination to send the message is also based, at least in part, on the network type and how much power that network connection consumes. That is, although paragraph 88 relies in part on the battery power, it does so in the context of a 3G network using the WWAN modem, “which consumes significant battery power.” *See* Ex. 1006 ¶ 88. Cole further describes how

the download is resumed once a different connection type—WiFi using a WLAN modem—is used. Thus, the action is based, at least in part, on the type of network connection.

This is confirmed by paragraph 89, which Patent Owner directs us to. *See* Prelim. Resp. 19. Paragraph 89 focuses on the power consumption used with various types of connections—comparing using a LAN in the office to a WLAN while traveling. Ex. 1006 ¶ 89. It is notable that although paragraph 89 focuses on the different types of networks and the different power consumption associated with it, the deferred download is resumed when the network changes without any discussion of the device being connected to a power supply. *Id.* This demonstrates that the control is based, at least in part, on network type. That is all that the claim requires.¹⁷

Patent Owner further argues “that ‘asking’ a user to take certain action does not meet the plain meaning of ‘applying’ an ‘access control’—at most, it is **requesting** that the user herself apply a particular control (switching network connections).” Prelim. Resp. 19–20; *see also id.* at 20–23.

Based on the current record, we do not agree with Patent Owner’s argument. Given the evidence discussed above—as opposed to unsworn attorney argument in the Preliminary Response—Petitioner has sufficiently shown that the request satisfies the plain meaning of the claim limitation. Dr. McDaniel testifies for Petitioner that “asking the user to find a better connection” is “applying Internet access controls” as recited in limitation

¹⁷ The parties may wish to provide an explicit construction of “*based at least on* which of the plurality of wireless network types is to provide data communication for Internet access requests” in the Patent Owner’s Response and Petitioner’s Reply. Failure to do so will result in forfeiture of any claim construction arguments.

1.6. Ex. 1003 ¶ 109. Although a user response is necessary before the processor executes the control, based on the current record, Petitioner has sufficiently shown that Cole paragraph 88 teaches or suggests limitation 1.6.

Moreover, Dr. McDaniel further testifies that the processor can execute the control to change the network without a user input. Specifically, Dr. McDaniel testifies that Cole teaches that “the connection manager can ‘attempt to establish a connection with a higher bandwidth,’ such as ‘a visible or invisible network 120 having higher capacity.’” *Id.* (quoting Ex. 1006 ¶ 77); *see also* Pet. 30 (citing same). He further testifies that Cole teaches that the connection manager will switch networks to use a larger pipeline when appropriate:

Cole further explains that if “the connection manager 260 can identify a more appropriate connection (e.g., by enabling the LAN device 240), the connection manager 260 switches to the larger pipeline by enabling the proper communication interface 225 and changing the appropriate operating system 227 configurations to make use of the new communication interface 225” and the resulting larger pipeline increases the responsiveness of the mobile device 110 to user requests, helps applications complete their data transfer activities sooner, or reduces the mobile device 110 power consumption.

Ex. 1003 (quoting Ex. 1006 ¶ 78); *see also* Pet. 30 (citing same). This testimony, which is supported by disclosures in Cole, in combination with the teaching in paragraph 88 sufficiently shows that Cole teaches or suggests limitation 1.6.¹⁸

¹⁸ Because the parties’ dispute what is an “Internet activity access control,” the parties may wish to provide an explicit construction of that term in the Patent Owner’s Response and Petitioner’s Reply. Failure to do so will result in forfeiture of any claim construction arguments.

b) Limitation 1.7

Claim 1, limitation 1.7 recites “when the one or more Internet activity access controls are to be applied, apply the one or more Internet activity access controls to aggregate network activity for the first Internet access request with network activity for one or more other data communication requests, which are otherwise not associated with the first end-user application, before allowing network activity in association with the first Internet access request.” Ex. 1001, 105:65–106:6. Petitioner argues Rao teaches the limitation. Pet. 30–33; *see also* Ex. 1003 ¶¶ 110–115. For the reason set forth below, we are sufficiently persuaded by Petitioner’s argument.

Rao teaches intercepting and storing packets associated with an application in a queue in which the priority of the stored packets “is determined based on the type and/or priority of the application.” Ex. 1005, ¶ 184; *see also* Ex. 1005 claim 1; Ex. 1003 ¶ 112. Stated differently, “Rao teaches queuing packets based on the priority of an application.” Ex. 1003 ¶ 112.

Rao further teaches that this priority-based queue can be applied to multiple applications, such as VoIP and other unrelated applications. *See* Ex. 1003 ¶ 113; Ex. 1005 ¶¶ 80, 182. Those packets from the different applications are aggregated such that the client holds “in the queue a network packet associated with the second application” and “releas[es] the held network packet [of the second application] upon communication of the one or more network packets associated with the first application prioritized ahead of the held network packet [of the second application].” Ex. 1005, claim 5; *see also* Ex. 1003 ¶ 114; Ex. 1005 ¶ 184, claim 1. That is, the client “may prioritize the real-time data communication so application 338a[, the

VoIP packets,] ahead of other applications, such as non-real-time data communication applications.” Ex. 1005 ¶ 184; Ex. 1003 ¶ 114.

Additionally, based on the current record, a person having ordinary skill in the art would have applied “non-starvation” to the priority-based queue. *See* Ex. 1003 ¶ 115 (citing Ex. 1013, 5–8; Ex. 1026, 6–7; Ex. 1037). That is, although the client would give priority to high-priority packets and generally transmit those packets first, the client would allocate some bandwidth to lower-priority packets, thereby “allowing them to transmit some [lower-priority] packets, even if at a lower rate compared to higher-priority queues.” *Id.* Because “higher-priority traffic is allocated a larger share of the bandwidth, the packets are communicated consistent with the priorities, while still allocating some bandwidth to lower-priority packets, avoiding starvation.” *Id.* As a result, a person having ordinary skill in the art would understand that “Rao teaches applying Internet activity access controls to aggregate network activity for the first Internet access request (from Rao’s second application) with network activity for one or more other data communication requests (from Rao’s first application), before allowing network activity in association with the first Internet access request (Rao’s second application).” *Id.* (citing Ex. 1005, claims 1, 5).

Patent Owner argues that limitation 1.7 is written such that it “**disallows** any network activity for the first Internet access request **unless** it has been aggregated with network activity for other requests from other applications.” Prelim. Resp. 24; *see also id.* at 24–25 (discussing ’433 patent). According to Patent Owner, although “Rao may or may not perform the alleged ‘aggregation’ for a request, . . . Rao teaches that it will *always* allow (i.e., attempts to transmit) network activity for that request.” *Id.* at 26. That is, according to Patent Owner, if only a single application is sending

packets, all of the packets would be transmitted without aggregation or delay. *Id.* at 26–28.

We do not agree with Patent Owner’s argument. Patent Owner does not dispute that Rao teaches limitation 1.7 when multiple applications are sending packets. Instead, Patent Owner’s argument focuses on one example where there is not aggregation because there is only a single application. But that one example does not change the fact that Petitioner has shown other examples where there is aggregation before the network activity is allowed. So long as the prior art sometimes practices the claimed invention, that is enough:

[A] prior art reference may anticipate or render obvious an apparatus claim—depending on the claim language—if the reference discloses an apparatus that is reasonably capable of operating so as to meet the claim limitations, even if it does not meet the claim limitations in all modes of operation.

ParkerVision, Inc. v. Qualcomm Inc., 903 F.3d 1354, 1361 (Fed. Cir. 2018). For example, the Federal Circuit held that it was sufficient to show that a reference anticipated in “the process of startup,” even if the reference did not show anticipation during “normal operation,” reasoning that “[n]othing in the claims requires that the current threshold increase during the power supply’s normal operation.” *Power Integrations, Inc. v. Fairchild Semiconductor International, Inc.*, 843 F.3d 1315, 1336 (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*

Communications Research, Inc. v. Vitalink Communications Corp., 55 F.3d 615, 622–623 (Fed. Cir. 1995))).

c) Undisputed Limitations

Petitioner argues that Rao or Cole (or a combination of the references) teach the remaining undisputed limitations of claim 1¹⁹ and that a person having ordinary skill in the art would have combined the features of the prior art references. Pet. 14–28. After reviewing Petitioner’s arguments and information regarding the limitations identified above, including the McDaniel Declaration, which are not addressed by Patent Owner at this stage (*see* Prelim. Resp.), we are persuaded that Petitioner sufficiently demonstrates, for purposes of this Decision, that the combination of Rao and Cole teaches limitations 1.1–1.5 and that a person having ordinary skill in the art would have combined the teachings of the references in the manner set forth in the Petition.

d) Conclusion Regarding Claim 1

Based on the current record, there is a reasonable likelihood that Petitioner will prevail in demonstrating that claim 1 is unpatentable as obvious in view of Rao and Cole.

4. Claims 2, 3, 6, 10, 11, 13, 14, and 17

Because Petitioner demonstrates a reasonable likelihood of success in proving that at least one claim of the ’443 patent is unpatentable, we institute on all grounds and all claims raised in the Petition. *See* 37 C.F.R. § 42.108(a). Therefore, at this stage of the proceeding, it is not necessary for

¹⁹ The undisputed limitations are limitations 1.1–1.5, which includes the preamble. Because Petitioner has sufficiently shown that the prior art teaches the preamble, we need not determine at this time whether the preamble is limiting. *See Nidec*, 868 F.3d at 1017.

us to provide an assessment of every challenge raised by Petitioner, especially, as in this case, when Patent Owner does not separately argue those claims. *See* Prelim. Resp. Those challenges, in our view, are best left for trial after full development of the record.

F. Remaining Grounds

Petitioner also asserts various other challenges against claims 2–5, 7–9, 12, 15, 16, 18, and 19. *See* Pet. 46–74. Patent Owner does not separately address the merits of Petitioner’s other prior art challenges. *See* Prelim. Resp. 7–28. Because, as discussed above, Petitioner meets the threshold for institution by demonstrating a reasonable likelihood that at least claim 1 is unpatentable as obvious, we need not decide whether Petitioner’s other challenges demonstrate the same. Those challenges, in our view, are best left for trial after full development of the record.

III. CONCLUSION

Following § 314, we have determined that the totality of the information presented at this stage shows there is a reasonable likelihood that Petitioner would prevail with respect to at least one of the claims challenged in the Petition, and we institute on all grounds raised and all claims challenged in the Petition. Additionally, we decline to exercise our discretion under § 325(d) to deny institution.

Our factual findings, conclusions of law, and determinations at this stage of the proceeding are preliminary, and based on the evidentiary record developed thus far. This is not a final decision as to the patentability of claims for which *inter partes* review is instituted. Our final decision will be based on the record as fully developed during trial.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review is instituted for claims 1–20 of the '433 patent on the unpatentability grounds asserted in the Petition; and

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, which commences on the entry date of this decision.

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