

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC, CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
VERIZON CORPORATE SERVICES GROUP INC.,
T-MOBILE USA, INC., SPRINT LLC F/K/A SPRINT CORP.,
and AT&T SERVICES, INC.,
Petitioner,

v.

HEADWATER RESEARCH LLC,
Patent Owner.

IPR2024-00943
Patent 8,589,541 B2

Before HYUN J. JUNG, 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

Google LLC, Cellco Partnership d/b/a Verizon Wireless, Verizon Corporate Services Group Inc., T-Mobile USA, Inc., Sprint LLC f/k/a Sprint Corp., and AT&T Services, Inc. (collectively “Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting *inter partes* review of claims 1, 91–152, 158, and 159 of U.S. Patent No. 8,589,541 B2 (Ex. 1001, “the ’541 patent”). Pet. 1. Headwater Research LLC (“Patent Owner”) did not file a Preliminary Response. However, Patent Owner filed a statutory disclaimer disclaiming certain claims of the ’541 patent, including challenged claim 1. Ex. 3001.¹

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) (2024). “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).

¹ Because claim 1 has been disclaimed, we may not institute *inter partes* review on that claim. 37 C.F.R. 42.107(c) (2023). Accordingly, we treat the Petition as only challenging claims 91–152, 158, and 159 (“the challenged claims”).

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 Google LLC, Cellco Partnership d/b/a Verizon Wireless, Verizon Corporate Services Group Inc., T-Mobile USA, Inc., Sprint LLC f/k/a Sprint Corp., AT&T Services, Inc., AT&T Mobility LLC, and AT&T Enterprises LLC as the real parties in interest. Pet. 90.

Patent Owner identifies Headwater Research LLC as the real party in interest. Paper 8, 1 (Patent Owner's Mandatory Notices).

C. Related Matters

Petitioner indicates that “[t]he ’541 patent is, or has been, involved” in the following proceedings:

1. *Headwater Research LLC v. Verizon Communications Inc.*, 2:23-cv-00352 (E.D. Tex. Jul. 28, 2023)
2. *Headwater Research LLC v. AT&T Inc.*, 2:23-cv-00397 (E.D. Tex. Sept. 1, 2023)
3. *Headwater Research LLC v. AT&T Inc.*, 2:23-cv-00398 (E.D. Tex. Sept. 1, 2023)
4. *Headwater Research LLC v. T-Mobile US, Inc.*, 2:23-cv-00377 (E.D. Tex. Aug. 21, 2023)
5. *Headwater Research LLC v. T-Mobile US, Inc.*, 2:23-cv-00379 (E.D. Tex. Aug. 21, 2023).

Pet. 91. Petitioner further indicates that above proceedings 2 and 3 have been consolidated and above proceedings 4 and 5 have been consolidated. *Id.*, nn.4–5.

Patent Owner indicates the above proceedings (but omitting proceedings 3 and 5) and additionally indicates the following PTAB proceedings:

1. *Google LLC v. Headwater Research LLC*, IPR2024-00942 (PTAB)
2. *Google LLC v. Headwater Research LLC*, IPR2024-00944 (PTAB).

Paper 8, 1.

D. The '541 patent (Ex. 1001)

The '541 patent is titled “Device-Assisted Services for Protecting Network Capacity” and relates to software “of a wireless end-user device” aimed at addressing the “growing digital networking demand” for “user capacity” without “degrad[ing] overall network service experience” (e.g., without overly “consum[ing] the available [network] capacity”). Ex. 1001, codes (54), (57), 7:35–55.

Figure 14 is reproduced below.

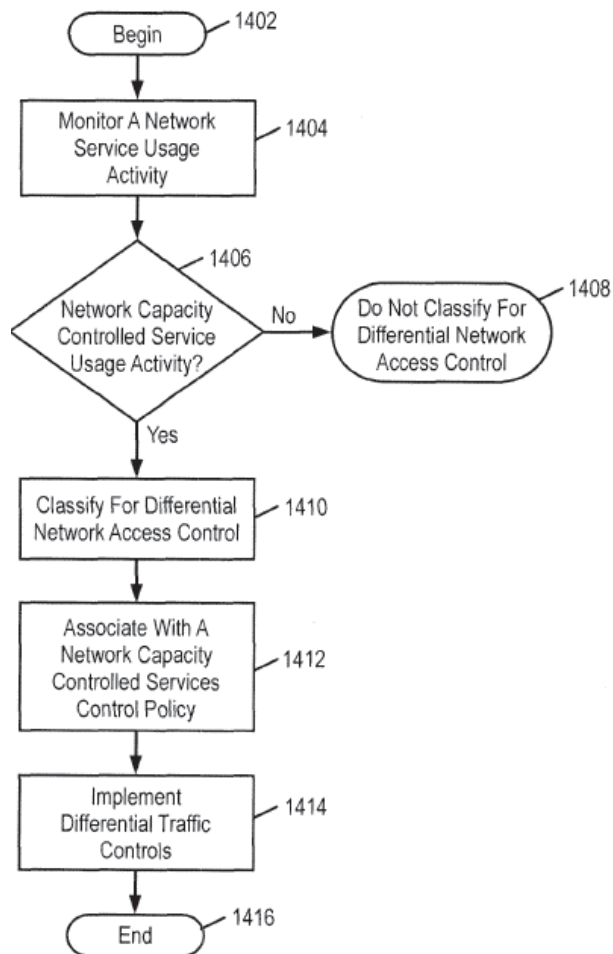


Figure 14 “illustrates a flow diagram for device assisted services (DAS) for protecting network capacity.” Ex. 1001, 8:47–49; *see also id.* at 69:5–38 (describing Figure 14 in detail).

Step 1402 begins the process. Ex. 1001, 69:7. Step 1404 monitors the network service usage activity of a wireless network device. *Id.* at 69:7–10. Step 1406 determines whether the monitored network service usage activity is a network capacity controlled service. *Id.* at 69:10–12. If the answer is no, then at step 1408, “the network service usage activity is not classified for differential network access control.” *Id.* at 69:12–15. But, if the answer is yes, then “the network service usage activity is classified (e.g.,

into one or more network capacity controlled services) for differential network access control for protecting network capacity.” *Id.* at 69:15–20. The “classifying the network service usage activity includes classifying the network service usage activity into one or more of a plurality of classification categories for differential network access control for protecting network capacity,” such as “a background services classification and/or a background priority state classification.” *Id.* at 69:20–27. Based on the particular classification of the network service usage activity for differential network access control (e.g., “background services classification”), step 1412 associates the network service usage activity with a network capacity controlled services control policy to facilitate differential network access control for protecting network capacity. *Id.* at 69:28–32. Step 1414 implements differential network access control for protecting network capacity by implementing different traffic controls for all or some of the network service usage activities (e.g., based on a network busy state or another criteria/measure). *Id.* at 69:33–37. Step 1416 completes the process. *Id.* at 69:37–38.

Figure 18 is reproduced below.

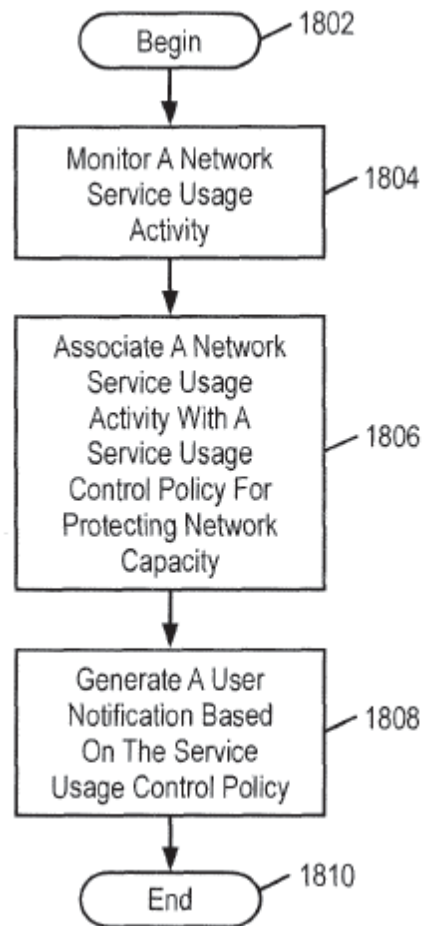


Figure 18 “illustrates another flow diagram for device assisted services (DAS) for protecting network capacity.” Ex. 1001, 8:59–61; *see also id.* at 70:57–71:3 (describing Figure 18). Step 1802 begins the process. *Id.* at 70:59. Step 1804 monitors the network service usage activities of a wireless network device. *Id.* at 70:59–61. Step 1806 associates a network service usage activity (e.g., a network capacity controlled service) with a service usage control policy (e.g., a network capacity controlled services policy) based on a classification of the network service usage activity for differential network access control for protecting network capacity. *Id.* at 70:61–71:1.

Step 1808 generates a user notification based on the service usage control policy. *Id.* at 71:1–2. Step 1810 completes the process. *Id.* at 71:2–3.

E. Illustrative Claim

Claim 1 was the only independent claim. Claim 91 depends from independent claim 1 and is illustrative of the claimed invention. Claims 1 and 91 are reproduced below.

1. [1a] A non-transitory computer-readable storage medium storing machine-executable instructions that, when executed by one or more processors of a wireless end-user device, cause the one or more processors to:

[1b] identify a service usage activity of the wireless end-user device, the service usage activity being associated with a first software component of a plurality of software components on the wireless end user device,

[1c] the service usage activity comprising one or more prospective or successful communications over a wireless network;

[1d] determine whether the service usage activity comprises a background activity;

[1e] determine at least an aspect of a policy based on a user input obtained through a user interface of the wireless end-user device or based on information from a network element,

[1f] the policy to be applied if the service usage activity is the background activity, the policy at least for controlling the service usage activity; and

[1g] if it is determined that the service usage activity is the background activity, apply the policy.

91. The non-transitory computer-readable storage medium recited in claim 1, wherein apply the policy comprises cause a notification to be presented through a user interface of the wireless end-user device.

Ex. 1001, 110:14–31, 118:13–16 (bracketed material reflects limitations as argued by Petitioner (Pet. viii)).

F. Prior Art and Asserted Grounds

Petitioner asserts that the challenged claims would have been unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §²	Reference(s)/Basis
91–96, 99, 102–138, 140–152, 158, 159	103(a)	Rao, ³ Fadell ⁴
97, 98, 100, 101, 139	103(a)	Rao, Fadell, Freund ⁵

Petitioner also relies on the testimony of Andrew Wolfe (Ex. 1015).

II. ANALYSIS

A. Legal Standards

In *Graham v. John Deere Co. of Kansas 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.”

² The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. §§ 102 and 103 that became effective on March 16, 2013. Because the ’541 patent has an application filing date of May 11, 2011, we apply the pre-AIA version of the statutory basis for unpatentability. *See* Ex. 1001, code (22).

³ US 2006/0039354 A1, published Feb. 23, 2006 (Ex. 1002).

⁴ US 2010/0017506 A1, published Jan. 21, 2010 (Ex. 1003).

⁵ US 5,987,611, issued Nov. 16, 1999 (Ex. 1004).

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 Co.*, 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

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

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, 696–97 (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.*

Petitioner argues that a person having ordinary skill in the art “would have at least a bachelor’s degree in computer science, computer engineering,

or a similar field, and approximately two years of industry or academic experience in a field related to computer software development and/or computer networking.” Pet. 2 (citing Ex. 1015 ¶¶ 50–52). Petitioner further argues that “[w]ork experience can substitute for education, and additional education can substitute for work experience.” *Id.* at 2–3 (citing Ex. 1015 ¶¶ 50–52).

Because Petitioner’s proposed level of ordinary skill in the art is consistent with the field of the invention of the ’541 patent and not yet disputed by Patent Owner, for purposes of this Decision, we adopt Petitioner’s formulation of the person having ordinary skill in the art.⁶

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

⁶ If Patent Owner disagrees with this formulation of the level of skill in the art, it must raise that disagreement 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 failure of Patent Owner to describe how a different level of skill in the art is determinative will be a forfeiture of that argument. If there is a dispute regarding the level of ordinary skill in the art, then the parties are also encouraged to submit evidence, other than conclusory expert testimony, that supports their position. See 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”).

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 states “[n]o terms require construction to resolve this Petition.” Pet. 3.

For the purposes of this Decision, we need not expressly construe any claim terms.⁷ 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. Obviousness of Claim 91 over Rao and Fadell

Petitioner argues that claim 91 is unpatentable as obvious in view of Rao and Fadell. Pet. 6–30. Based on the current record, we are sufficiently persuaded that Petitioner has established a reasonable likelihood of prevailing on this asserted ground with respect to at least claim 91.

1. Overview of Rao

Rao is titled “Systems and Methods for Client-Side Application-Aware Prioritization of Network Communications.” Ex. 1002,

⁷ If either party intends to argue a claim construction at trial, including what is the plain and ordinary meaning of a term, they should do so in a clearly designated section of their briefing. See Patent Trial and Appeal Board Consolidated Trial Practice Guide (Nov. 21, 2019) (“CTPG”), 46, 49 (available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>); *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1361 (Fed. Cir. 2008) (“A determination that a claim term ‘needs no construction’ or has the ‘plain and ordinary meaning’ may be inadequate when a term has more than one ‘ordinary’ meaning or when reliance on a term’s ‘ordinary’ meaning does not resolve the parties’ dispute.”). Claim construction arguments should not be relegated to patentability arguments on the facts.

code (54). Rao's invention "generally relates to optimizing peer-to-peer network communications, and in particular, to techniques for application-aware prioritizations of network communications on a client." *Id.* ¶ 2.

Rao identifies a problem of processing network communications in the order the communications are generated by client applications of a user's device. Ex. 1002 ¶ 3. "For example, . . . , although an application is running in the foreground and currently in active use by the user, a network packet [earlier] generated or received for an application running in the background may be processed ahead of a network packet generated or received for the application running in the foreground." *Id.*

Figure 1C is reproduced below.

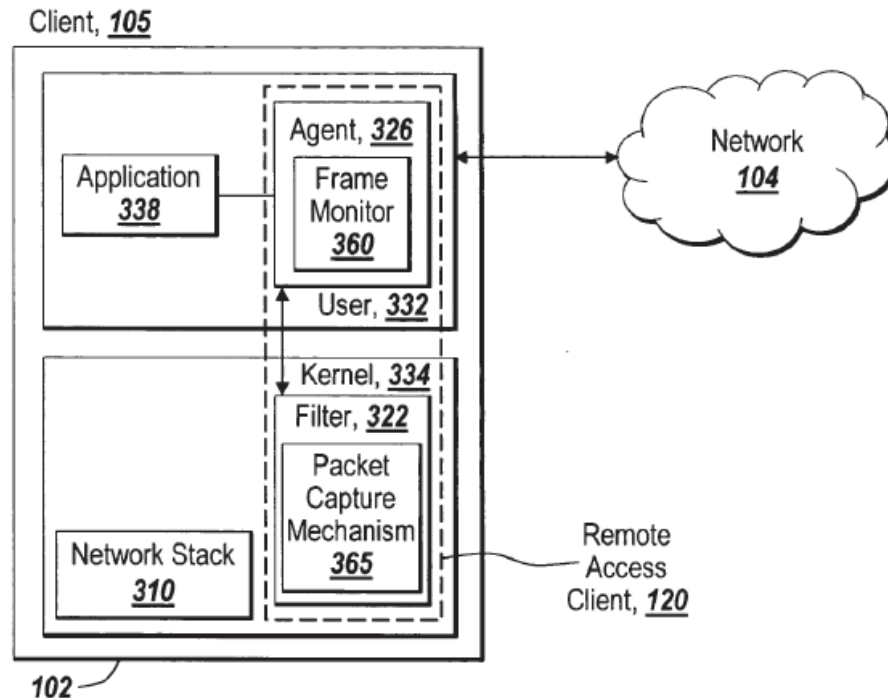


Figure 1C illustrates "a block diagram . . . of a remote access client . . . for network communications." Ex. 1002 ¶ 62. Figure 1C also illustrates a computing device 102 operating as client 105 via network 104 and including

user space 332 and kernel space 334. *Id.* ¶ 99. User space 332 includes application 338, agent 326, and frame monitor 360 (of the agent 326) having logic that applies policies to received network packets. *Id.* ¶¶ 99, 108.

Kernel space 334 includes network stack 310, filter 322 that determines action taken upon packets, and packet capture mechanism (PCM) 365 (of filter 322) that intercepts network packets. *Id.* ¶¶ 99–104, 180.

Agent 326 and filter 322 form the remote access client (RAC) 120.

Ex. 1002 ¶ 99. Agent 326 provides RAC 120 a filtering table that PCM 365 of RAC 120 uses to selectively intercept/forward outbound network packets to frame monitor 360 of agent 326. *Id.* ¶ 104.

Figure 5A is reproduced below.

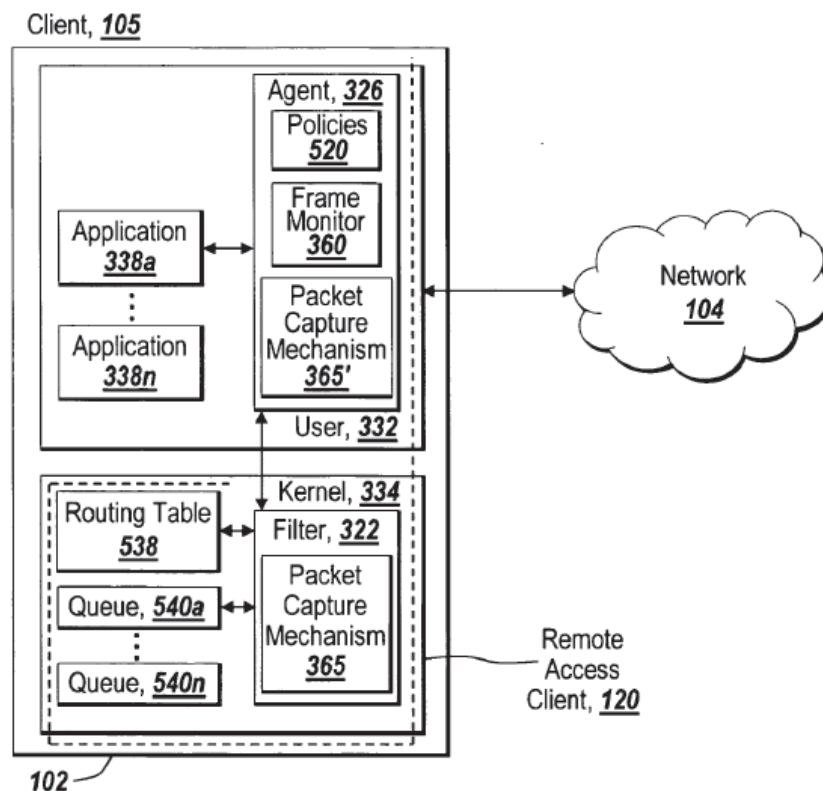


Figure 5A illustrates “block diagram depicting an environment of a client for providing client-side application-aware prioritization techniques.” Ex. 1002

¶ 70. Figure 5A shows client computing device 102, 105 similar, but not identical to, the one shown in Figure 1A. *Compare* Fig. 5A, with Fig. 1A.

Unlike in the Figure 1A embodiment, RAC 120 of the kernel space 334 includes queues 540a–540n that queue and prioritize network packets intercepted by PCM 365. *Id.* ¶ 180. Queues 540a–540n are associated with respective applications 338a–338n of the client 105 and organized by levels of priority, e.g., high, medium, low. *Id.* Routing table 538 dictates how agent 326 routes the network packets. *Id.* ¶ 181.

Further, unlike in the Figure 1A embodiment, RAC 120 of user space 332 includes policies 520 specifying client-side prioritizations of network packets generated by the applications 338a–338n. Ex. 1002 ¶ 182. For example, the policies may prioritize, based on the respective communication protocols of applications 338a–338n, the payload sizes of the network packets, and/or whether a given application is running in the foreground or background of client 105. *Id.*

Figure 5B is reproduced below.

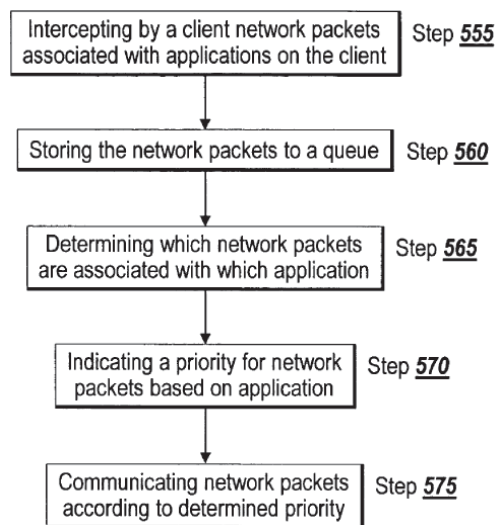


Figure 5B illustrates “a flow diagram depicting . . . [the] client-side application-aware prioritization” (Ex. 1002 ¶ 71) of the Figure 1A and

Figure 5A embodiments (*id.* ¶ 184). Step 555 intercepts a network packet generated by one of applications 338a–338n. *Id.* Step 560 stores the intercepted network packet to one of queues 540a–540n. *Id.* Step 565 determines a priority of the intercepted, queued network packet based on the priority for the respective one of applications 338a–338n. *Id.* Steps 570 and 575 respectively indicate the determined priority for the network packet and accordingly communicate the network packet. *Id.*

2. Overview of *Fadell*

Fadell is titled “Systems and Methods for Monitoring Data and Bandwidth Usage” and is directed to “metering . . . data usage in a system or device connected to a data service provider.” Ex. 1003, code (54), ¶ 2. According to *Fadell*, there is a “need to monitor data usage and provide users, data providers, or both with the means to effectively manage such pricing mechanisms.” *Id.* ¶ 7.

Fadell Figure 3 is reproduced below.

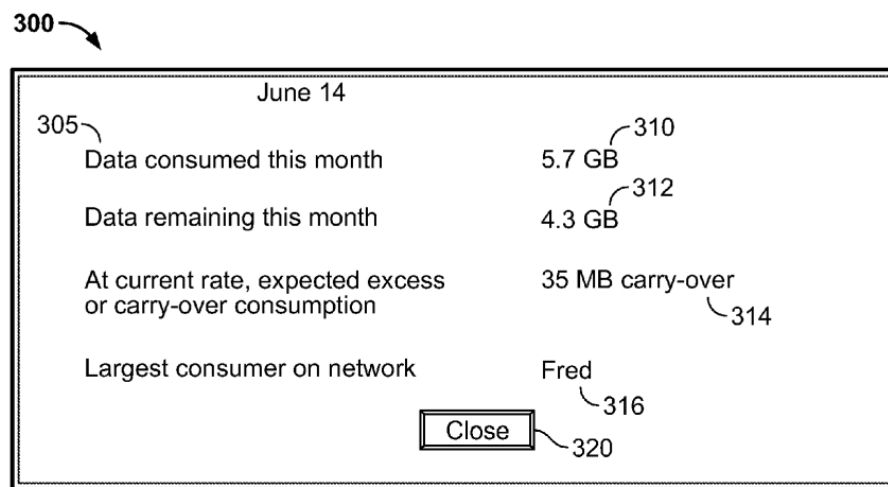


FIG. 3

Figure 3 “is an illustrative screen of a notice of data provider resources used.” Ex. 1003 ¶ 50. “Screen 300 may include notifications 305 with data

resource usage information. For example, screen 300 may include notification 310 of the data consumed for the current period (e.g., current month) and notification 312 of the data remaining for the current period.” *Id.* “Screen 300 may include notification 314 of the expected excess consumption or carry-over for the period (e.g., month). In the example of FIG. 3, at the consumer’s current rate of resource consumption, a carry-over is expected.” *Id.*

Fadell Figure 4 is reproduced below.

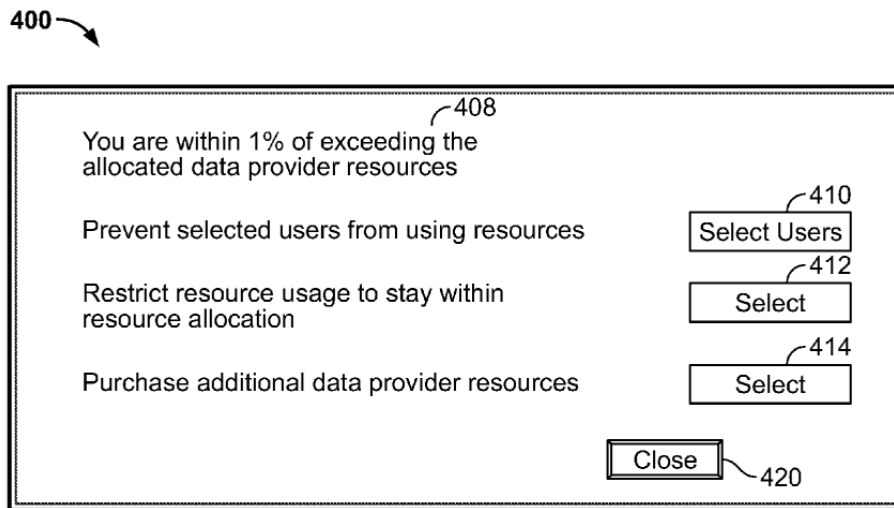


FIG. 4

Figure 4 “is an illustrative screen indicating that the consumer has reached a limit in data provider resources.” Ex. 1003 ¶ 54. “Screen 400 may include notification 408 indicating that the consumer is within a predetermined range of the allocated data provider resource limit.” *Id.* “[S]creen 400 may [also] include option 410 for preventing particular users or devices from using data provider resources” and/or “option 412 for restricting resource usage to stay within the resource allocation.” *Id.* ¶¶ 55 (first quote), 56 (second quote). “Screen 400 may [also] include option 414 for purchasing additional data provider resources.” *Id.* ¶ 56.

Fadell Figure 5 is reproduced below.

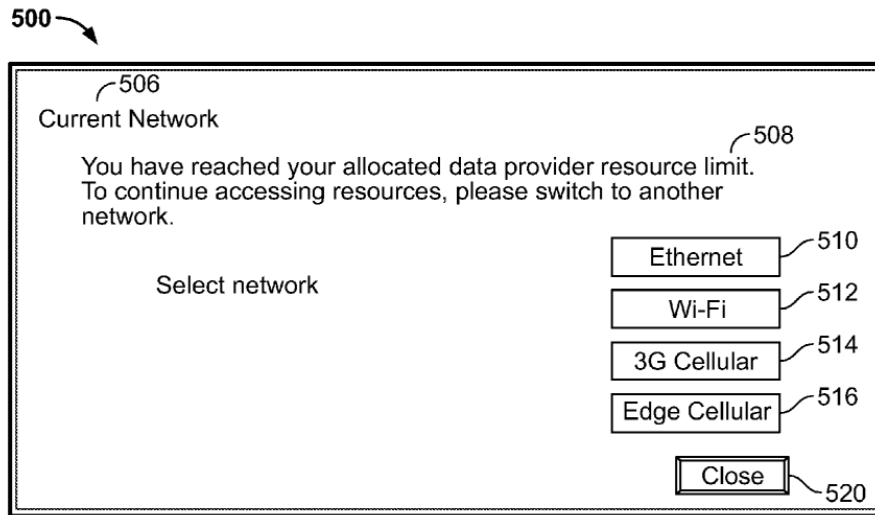


FIG. 5

Figure 5 “is an illustrative screen prompting a user to switch networks.”

Ex. 1003 ¶ 63. In Figure 5, “[s]creen 500 may include notification 508 indicating to the user that the allocated data provider resource limit for the current network (identified by indication 506) has been reached.” *Id.* Fadell describes how screen 500 can be used to provide the user with the ability to switch to a different data provider with sufficient resources:

In response to determining that the limit for the current network has been reached, the resource utilization component may identify other networks available to the consumer for which allocated data provider resources remain. For example, if a consumer has consumed all allocated cellular resources (e.g., 3G resources), the resource utilization component may identify a Wi-Fi or Ethernet network for which resources are available. Screen 500 may include selectable options for each identified available network. For example, screen 500 may include Ethernet option 510, Wi-Fi option 512, 3G cellular network option 514 and EDGE cellular network option 516. In some embodiments, the displayed options may identify networks by unique identifiers, such as by name (e.g., so that several networks of the same type, such as Wi-Fi, may be available for selection).

Id.

3. *Analysis of Claim 1*

a) *Limitation 1a: The Preamble*⁸

The preamble of claim 1 recites “[a] non-transitory computer-readable storage medium storing machine-executable instructions that, when executed by one or more processors of a wireless end-user device, cause the one or more processors to.” Ex. 1001, 110:14–17. Petitioner argues that Rao⁹ teaches the preamble. Pet. 7; *see also* Ex. 1015 ¶¶ 68–73.

After reviewing Petitioner’s arguments and information regarding the preamble, including the Wolfe Declaration, which are not addressed by Patent Owner at this stage, we are persuaded that Petitioner sufficiently demonstrates, for purposes of this Decision, that Rao teaches the preamble of claim 1.¹⁰ Our specific preliminary findings are set forth below.

Rao teaches “computing device 102” which includes a central processing unit and a main memory. Ex. 1002 ¶ 118, Figs. 1D–1E. Computing device 102 includes storage 120 which stores, *inter alia*, remote access client software 120. *Id.* at Fig. 1D. A person having ordinary skill in

⁸ Because claim 91 depends from claim 1, our analysis includes the limitations set forth in claim 1,

⁹ Petitioner argues that the preamble (1a) and limitations 1b, 1c, and 1e of claim 1 are also taught by Fadell. *See, e.g.*, Pet. 9–11 (arguing Fadell teaches the preamble). Because we determine that Petitioner sufficiently explains how Rao teaches each of the limitations and Patent Owner does not make any arguments regarding Fadell, we do not address Fadell with respect to those limitations.

¹⁰ 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. If Patent Owner contends that the preamble is limiting, it must do so in the claim construction section of the Patent Owner’s Response.

the art would have understood that computing device 102 may be a wireless device. Ex. 1015 ¶ 72 (“[C]omputing device 102 may include a network interface 118 to interface to a Local Area Network (LAN), **Wide Area Network (WAN)** or the Internet through a variety of connections including, but not limited to, standard telephone lines, LAN or **WAN links** (e.g., **802.11**, T1, T3, 56 kb, X.25), broadband connections (e.g., ISDN, Frame Relay, ATM), **wireless connections**, or some combination of any or all of the above.” (quoting Ex. 1002 ¶ 125)); *see also* Ex. 1002 ¶ 100 (describing the use of a wireless protocol).

b) Limitation 1b: Identifying a Service

Limitation 1b recites “identify a service usage activity of the wireless end-user device, the service usage activity being associated with a first software component of a plurality of software components on the wireless end-user device.” Ex. 1001, 110:17–21. Petitioner argues Rao teaches that limitation. Pet. 11–14; *see also* Ex. 1015 ¶¶ 74–83.

After reviewing Petitioner’s arguments and information regarding limitation 1b, including the Wolfe Declaration, which are not addressed by Patent Owner at this stage, we are persuaded that Petitioner sufficiently demonstrates, for purposes of this Decision, that Rao teaches limitation 1b. Our specific preliminary findings are set forth below.

Rao teaches network packets which are communicated over the wireless network. *See, e.g.*, Ex. 1002 ¶¶ 41–46, 101–106, Figs. 1A, 1B, 5A, 5B. A person having ordinary skill in the art would have understood such packets to be “a service usage activity.” Ex. 1015 ¶ 83. Those network packets are associated with one of the applications 338a–338n (a first

software component) of a wireless end-user device. Ex. 1002 ¶¶ 179, 184, 188, Fig. 5A; Ex. 1015 ¶¶ 76–77.

Rao further teaches identifying those network packets (service usage activity). Ex. 1015 ¶¶ 78–82. Specifically, Rao teaches intercepting the network packets, storing them in a queue, and determining with what application each is associated. Ex. 1002 Fig. 5B (steps 555, 560, and 565), ¶¶ 185–188; *see also* Ex. 1002 ¶¶ 78–82. A person having ordinary skill in the art “would have understood that inspecting and associating a network packet is identifying a packet and its contents, or that at a minimum inspecting and associating a network packet requires identifying a network packet.” Ex. 1015 ¶ 82.

c) Limitation 1c: Prospective or Successful Communication

Limitation 1c recites “the service usage activity comprising one or more prospective or successful communications over a wireless network.” Ex. 1001, 110:21–23. Petitioner argues Rao teaches that limitation. Pet. 16; *see also* Ex. 1015 ¶¶ 84–86.

After reviewing Petitioner’s arguments and information regarding the limitation 1c, including the Wolfe Declaration, which are not addressed by Patent Owner at this stage, we are persuaded that Petitioner sufficiently demonstrates, for purposes of this Decision, that Rao teaches limitation 1c. Our specific preliminary findings are set forth below.

Rao teaches that “remote access client 120” “intercept[s] network traffic of any of the applications 338a-338n of the client 105,” where remote access client 120 of computing device 102 “is connected to network 104.” Ex. 1002 ¶¶ 180 (first two quotations), 179 (last quotation). That can include a wireless network. Ex. 1002 ¶ 125. Rao further teaches that

“packet capture mechanism 365” may “obtain inbound and/or outbound packets of the client 105, such as the network traffic associated with application 338.” *Id.* ¶ 110; *see also id.* ¶ 185 (“Any inbound and/or outbound network packets of an application 338a-338n may be intercepted by the remote access client 120 of the present invention.”).

A person having ordinary skill in the art would have understood that “Rao’s intercepting, inspecting, and/or storing network packets associated with network 104 in queues before communicating them from the queues teaches identifying one or more *prospective* communications over a wireless network.” Ex. 1015 ¶ 86 (citing Ex. 1002 ¶ 184). Additionally, a person having ordinary skill in the art would have also understood that “Rao’s intercepting ‘inbound . . . [network packets] of the client 105 . . . associated with application 338’ teaches identifying one or more successful communications over a wireless network.” *Id.* (quoting Ex. 1002 ¶ 184).

d) Limitation 1d: Determining Background Activity

Limitation 1d recites “determine whether the service usage activity comprises a background activity.” Ex. 1001, 110:23–24. Petitioner argues Rao teaches that limitation. Pet. 17–19; *see also* Ex. 1015 ¶¶ 87–90.

After reviewing Petitioner’s arguments and information regarding limitation 1d, including the Wolfe Declaration, which are not addressed by Patent Owner at this stage, we are persuaded that Petitioner sufficiently demonstrates, for purposes of this Decision, that Rao teaches limitation 1d. Our specific preliminary findings are set forth below.

Rao teaches that after intercepting the network packets, remote access client 120 “determines the association of network packets with applications 338a-338n in order to determine priorities and apply any priority based

policies 520.” Ex. 1002 ¶ 187; *see also id.* Fig 5B (step 565: “Determining which network packets are associated with each application”). This includes “determin[ing] whether the application 338a-338n associated with the network packet is running in the foreground or the background of the client 105.” *Id.* ¶ 188. A person having ordinary skill in the art would have understood that “by determining whether network packets are associated with an application ‘running in the background,’ Rao’s remote access client 120 determines that the service usage activity associated with that application ‘comprises a background activity.’” Ex. 1015 ¶ 89. A person having ordinary skill in the art would have further understood that “by determining whether network packets are associated with an application running in the background of client 105, Rao’s remote access client 120 determines whether the service usage activity associated with a first software component comprises a background activity, as claimed.” *Id.*

e) Limitation 1e: Determining an Aspect of a Policy

Limitation 1e recites “determine at least an aspect of a policy based on a user input obtained through a user interface of the wireless end-user device or based on information from a network element.” Ex. 1001, 110:24–27. Petitioner argues Rao teaches that limitation. Pet. 19–21; *see also* Ex. 1015 ¶¶ 91–95.

After reviewing Petitioner’s arguments and information regarding limitation 1e, including the Wolfe Declaration, which are not addressed by Patent Owner at this stage, we are persuaded that Petitioner sufficiently demonstrates, for purposes of this Decision, that Rao teaches limitation 1e. Our specific preliminary findings are set forth below.

Rao teaches that “remote access client 120 may have one or more policies 520 [(a policy)] for specifying client-side prioritization of network communications related to applications 338a-338n.” Ex. 1002 ¶ 182. Rao further teaches that the policies may be “provided by or downloaded [to agent 326] via the gateway 340” (a network element) over network 104. *Id.* ¶ 183. In addition, Rao teaches that “a user” may “configur[e]” an aspect of a policy through “a user interface, graphical or otherwise, design[ed] and constructed for configuring or specifying the policies 520.” *Id.* Rao further teaches that agent 326 is part of the is part of remote access client 120 (*id.* at Fig. 5A), which is a wireless end-user device (Section II.D.3.b, *supra*).

f) Limitation 1f: Policy for Background Activity

Limitation 1f recites “the policy to be applied if the service usage activity is the background activity, the policy at least for controlling the service usage activity.” Ex. 1001, 110:27–29. Petitioner argues Rao teaches that limitation. Pet. 24–25; *see also* Ex. 1015 ¶¶ 97–101.

After reviewing Petitioner’s arguments and information regarding limitation 1f, including the Wolfe Declaration, which are not addressed by Patent Owner at this stage, we are persuaded that Petitioner sufficiently demonstrates, for purposes of this Decision, that Rao teaches limitation 1f. Our specific preliminary findings are set forth below.

Rao teaches packet prioritization relating to network communications: “[T]he remote access client 120 may have one or more policies 520 for specifying client-side prioritization of network communications related to applications 338a-338n running on application.” Ex. 1002 ¶ 182. “[T]he policies 520 [may] define prioritization based on whether an application is running in the foreground or the background of the client 105.” *Id.* “[T]he

policies 520 may be specified conditionally, such as if one application 338a is running, a second application 338b may have a higher or lower priority.” *Id.* As a result, “one or more queues 540a-540n may be used for network packets intercepted but not prioritized because a policy 520 does not . . . apply to the network packet, or the policies 520 indicate to ignore or not process the network packet for prioritization.” *Id.* A person having ordinary skill in the art would have understood that Rao’s policies “are conditional and apply based on the characteristics of the applications, such as whether the applications (and thus, the associated network communications/service usage activities) are running in the foreground or background.” Ex. 1015 ¶¶ 100. Accordingly, Rao teaches “a policy to be applied if the service usage activity is the background activity.” *Id.*

Rao further teaches that, after the network packets are prioritized in step 570, they are communicated “according to the determined priority” in step 575. Ex. 1002 Fig. 5B (steps 570 and 575), ¶¶ 189–195.

g) Limitation 1g: Applying to Policy

Limitation 1g recites “if it is determined that the service usage activity is the background activity, apply the policy.” Ex. 1001, 110:29–31. Petitioner argues Rao teaches that limitation. Pet. 26–27; *see also* Ex. 1015 ¶¶ 106–109.

After reviewing Petitioner’s arguments and information regarding limitation 1g, including the Wolfe Declaration, which are not addressed by Patent Owner at this stage, we are persuaded that Petitioner sufficiently demonstrates, for purposes of this Decision, that Rao teaches limitation 1g. Our specific preliminary findings are set forth below.

Rao teaches that “agent 326 uses the policies 520 to apply a priority to network packets of applications 338a-338n in accordance with the prioritization rules specified or indicated by the policies 520,” including those based on “characteristics . . . such as running in the foreground or background, to indicate priority for a network packet of the application.” Ex.1002 ¶ 189; *see also id.* at Fig. 5B (step 570). Rao further teaches that “the agent 326 indicates the priority to the filter 322 for management of network packet queues 540a-540n to apply the indicated priorities.” *Id.* ¶ 190.

h) Claim 91

Claim 91 depends from claim 1 and recites “wherein apply the policy comprises cause a notification to be presented through a user interface of the wireless end-user device.” Ex. 1001, 118:13–16. Petitioner argues Fadell discloses the additional limitation recited in claim 91 and that a person having ordinary skill in the art would have combined the teachings of Rao and Fadell with a reasonable expectation of success. Pet. 6–8, 28–30.

After reviewing Petitioner’s arguments and information regarding claim 91, including the Wolfe Declaration, which are not addressed by Patent Owner at this stage, we are persuaded that Petitioner sufficiently demonstrates, for purposes of this Decision, that Fadell teaches the additional limitation recited in claim 91 and that a person having ordinary skill in the art would have combined Rao and Fadell with a reasonable expectation of success. Our specific preliminary findings are set forth below.

Fadell teaches that the consumer “receive[s] any suitable type of report, notice, reminder or alarm related to data provider resource

consumption.” Ex. 1003 ¶ 49; *see also* Ex. 1015 ¶504. Specifically, Fadell teaches that screen 300 provides information regarding data resource usage, screen 400 provides selectable options for actions the consumer may take regarding data resources (such as preventing/restricting usage or purchasing more resources), and screen 500 prompt[s] a user to “switch to another network.” Ex. 1003 Figs. 3–5, ¶¶ 50, 57, 63; *see also* Ex. 1015 ¶ 504. A person having ordinary skill in the art would have understood the screens to be notifications provided to the user when a resource threshold is met. Ex. 1015 ¶ 503.

Based on the current record, a person having ordinary skill in the art would have combined Fadell’s notifications with Rao’s system with a reasonable expectation of success. *See* Pet. 6–8; Ex. 1015 ¶¶ 317–328, 332. Specifically, a person having ordinary skill in the art would have “combined the functionality of Rao and Fadell (e.g., of Rao’s remote access client and Fadell’s resource utilization component) to apply a policy that applies a prioritization to network packets from a background activity and notifies a user when resource usage approaches a threshold.” Ex. 1015 ¶ 321; *see also id.* ¶¶ 318–320 (discussing the advantages of Rao and Fadell). In such a system, “when the resource usage threshold is met, network packets from the background activity would be queued and deprioritized . . . , and the user would be notified of the resource usage threshold and afforded options for how to proceed.” *Id.* ¶ 322. This combination “would have improved . . . Rao’s system by enabling a policy that limits (potentially unwanted or unnecessary) background activity and notifies the user when resource usage limits are reached” and “enable[] a user to selectively control when

background activity is deprioritized and held in queues to avoid data usage overages.” *Id.* ¶ 323.

Because such a combination “would have been nothing more than the simple combination of known elements to obtain predictable results,” a person having ordinary skill in the art “would have had a reasonable expectation of success in combining Rao with Fadell.” Ex. 1015 ¶ 327.

i) Conclusion Regarding Claim 91

Based on the current record, there is a reasonable likelihood that Petitioner will prevail in demonstrating that claim 91 is unpatentable as obvious in light of Rao and Fadell.

E. Analysis of Other Claims

Because Petitioner demonstrates a reasonable likelihood of success in proving that at least one claim of the ’541 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 us to provide an assessment of every challenge raised by Petitioner, especially, as in this case, when Patent Owner does not provide a response to those claims. 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.

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 the challenged claims of the '541 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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