

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

SMART MOBILE TECHNOLOGIES LLC,
Patent Owner.

IPR2022-01222
Patent 8,982,863 B1

Before KEVIN F. TURNER, HYUN J. JUNG, and NATHAN A. ENGELS,
Administrative Patent Judges.

JUNG, *Administrative Patent Judge.*

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

I. INTRODUCTION

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Apple Inc. (“Petitioner”) has not shown by a preponderance of the evidence that claims 1–12, 14, 19, and 24 of U.S. Patent No. 8,982,863 B1 (Ex. 1001, “the ’863 patent”) are unpatentable.

A. Background and Summary

Petitioner filed a Petition (Paper 2, “Pet.”) requesting institution of an *inter partes* review of claims 1–12, 14, 19, and 24 of the ’863 patent. Smart Mobile Technologies LLC (“Patent Owner”) did not file a Preliminary Response. Pursuant to 35 U.S.C. § 314, we instituted an *inter partes* review of claims 1–12, 14, 19, and 24 of the ’863 patent on all presented challenges. Paper 11 (“Inst. Dec.”), 2, 30.

After institution, Patent Owner filed a Response (Paper 17, “PO Resp.”), to which Petitioner filed a Reply (Paper 23, “Pet. Reply”), and Patent Owner thereafter filed a Sur-reply (Paper 30, “PO Sur-reply”). An oral hearing in this proceeding was held on November 7, 2023; a transcript of the hearing is included in the record. Paper 33.

B. Real Parties in Interest

Petitioner identifies Apple Inc., Samsung Electronics Co., Ltd., and Samsung Electronics America, Inc. as real parties in interest. Pet. 87. Patent Owner only identifies itself as a real party in interest. Paper 5, 1.

C. Related Matters

The parties identify *Smart Mobile Techs. LLC v. Apple Inc.*, 6-21-cv-00603 (W.D. Tex.) as a related matter. Pet. 87; Paper 5, 1. Related patents

are challenged in IPR2022-00766, IPR2022-01004, IPR2022-01005, IPR2022-01223, IPR2022-01248, and IPR2022-01249.

D. The '863 Patent (Ex. 1001)

The '863 patent issued on March 17, 2015 from an application filed on September 22, 2014, which is a continuation application of several previously filed continuation and continuation-in-part applications, the earliest of which was filed on June 4, 1999. Ex. 1001, codes (22), (45), (63), 1:7–17.

The '863 patent states that an unfulfilled need exists for multiple transmitters and receivers (“T/R”) in a cellular telephone or mobile wireless device (“CT/MD”). Ex. 1001, 1:48–49. Figure 5A of the '863 patent is reproduced below.

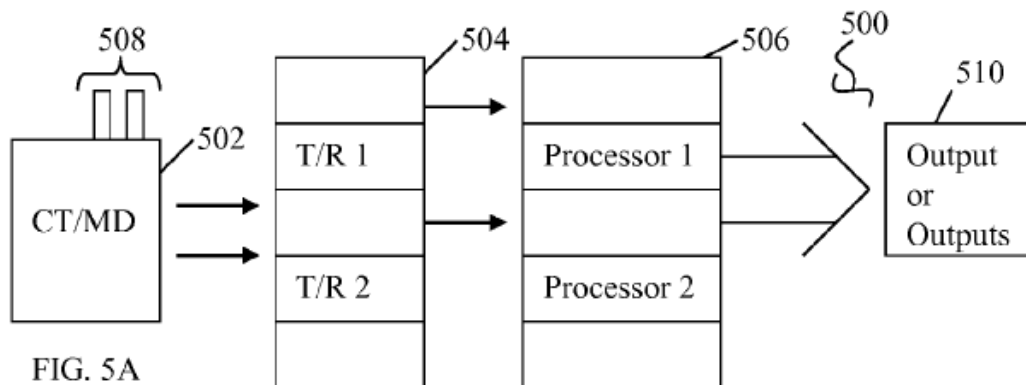


Figure 5A shows a “a dual antenna, dual T/R unit in a CT/MD interfacing with a dual processor.” Ex. 1001, 2:15–17. Dual antenna 508 and dual T/R unit 504 interface with dual processor 506 in dual band system 500. *Id.* at 4:37–39. System 500 can communicate through outputs 510, which can be “fibre optic channel, ethernet, cable, telephone, or other.” *Id.* at 4:42–45. “The multiple processors 506 allow for parallel and custom processing of each signal or data stream to achieve higher speed and better quality of output.” *Id.* at 4:51–53.

“By extension the feature of multiple antennas, multiple T/R units and multiple processors is extendable to the network switch box or network switch boxes that form a local, wide area, [v]irtual private network or connect to the Internet.” Ex. 1001, 4:45–48. The ’863 patent states that “a CT/MD and a network switch box are very similar in many ways” but “completely different functional units, with the CT/MD providing personal services and the network switch box providing system services.” *Id.* at 3:16–19; *see also id.* at 5:40–45 (describing network switch box 552 and CT/MD 502 similarly). The network switch box “may be used in the wireless mode only in a wireless network or it may also be connected to one or more networks by wired and wireless means to fully leverage all the input/output ports.” *Id.* at 5:16–20. “The network switch box may have a universal serial bus (USB) port, a coaxial cable port, a standard telephone (POTS) port, a twisted pair port, Ethernet port, and most importantly an optical port.” *Id.* at 9:50–53.

“A server such as Server C controls the communication protocols in conjunction with the network switching box or other devices, such as CT/MD.” Ex. 1001, code (57); *see also id.* at 4:49–51 (describing similarly Server C of CT/MD 502). In one embodiment, “Server C 910 oversees the allocation of data to the different channels and keeps the process under control.” *Id.* at 7:9–10. In another embodiment, Server C 1030 interfaces with separate data streams or a combined data stream 1028. *Id.* at 7:28–30, Fig. 10. Similarly, Server C 1130 interfaces with combined data stream 1128. *Id.* at 7:55–57, Fig. 11. Server C 1314 can supervise at least one of virtual private networks (“VPN”) 1302, 1306, 1310. *Id.* at 8:45–47, 8:66–67, Fig. 13.

E. Illustrative Claim

The '863 patent includes 24 claims, of which Petitioner challenges claims 1–12, 14, 19, and 24. Claims 1 and 14 are independent, and reproduced below is claim 1.

1. A system for controlling Internet Protocol (IP) based wireless devices, IP based cellular phones, networks or network switches by servers comprising:

an IP enabled wireless device including a portable device or a cellular phone, said IP enabled wireless device comprising a plurality of antennas and ports, wherein the IP enabled wireless device is configured for voice and data communication and comprises a plurality of transmit and receive units;

a first server connected to at least one internet protocol enabled network, said server configured with a controller in communication with a plurality of network devices; and

a network switchbox, wherein the network switchbox is configured with a plurality of ports, wherein the network switch box is connected to at least two networks, wherein the network switchbox is configured to transmit and receive one or more data packets between the at least two networks.

Ex. 1001, 11:59–12:10.

F. Asserted Prior Art and Proffered Testimonial Evidence

Petitioner identifies the following references as prior art in the asserted grounds of unpatentability:

Name	Reference	Exhibit
Hardwick	US 5,550,816, issued Aug. 27, 1996	1008
Matero	US 5,768,691, issued June 16, 1998	1007
Ahopelto	US 5,970,059, filed Jan. 8, 1996, issued Oct. 19, 1999	1005
Sood	US 6,697,632 B1, filed May 7, 1998, issued Feb. 24, 2004	1009

Pet. 17. Petitioner argues that Hardwick is prior art under § 102(b), Matero is prior art under § 102(a), and Ahopelto and Sood are prior art under

§ 102(e).¹ *Id.* Petitioner also provides a Declaration of Dr. Michael Allen Jensen. Ex. 1003.

Patent Owner provides a Declaration of Dr. Todor Cooklev. Ex. 2008. Deposition transcripts for Dr. Jensen (Ex. 2005) and Dr. Cooklev (Ex. 1029) were filed.

G. Asserted Grounds

Petitioner asserts that claims 1–12, 14, 19, and 24 are unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §	References/Basis
1–6, 8, 10, 11, 14, 19, 24	103(a)	Ahopelto, Matero
7, 9	103(a)	Ahopelto, Matero, Hardwick
12	103(a)	Ahopelto, Matero, Sood

Pet. 17.

II. ANALYSIS

A. Legal Standards

In *inter partes* reviews, the petitioner bears the burden of proving unpatentability of the challenged claims, and the burden of persuasion never shifts to the patent owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail in an *inter partes* review, the petitioner must support its challenges by a preponderance of the evidence. 35 U.S.C. § 316(e) (2018); 37 C.F.R. § 42.1(d) (2021).

¹ The relevant sections of the Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, 125 Stat. 284 (Sept. 16, 2011), took effect on March 16, 2013. Because the ’863 patent claims priority to an application filed before that date, our citations to 35 U.S.C. §§ 102 and 103 in this Decision are to their pre-AIA versions. *See also* Pet. 1 (requesting the challenged claims be canceled under “(pre-AIA) 35 U.S.C. § 103(a)”).

Petitioner contends that the challenged claims of the '863 patent are unpatentable under § 103. Pet. 17. A claim is unpatentable under § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). When evaluating a combination of teachings, we must also “determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

B. Level of Ordinary Skill in the Art

Petitioner argues that one of ordinary skill in the art “would have had a working knowledge of the wireless communication arts pertinent to the '863 patent” and “a bachelor’s degree in electrical engineering, computer engineering, computer science, or a related field, and at least two years of experience related to the design or development of wireless communication systems, or the equivalent.” Pet. 9–10 (citing Ex. 1003 ¶¶ 27–28). Petitioner also argues that “[l]ack of work experience can be remedied by additional education, and vice versa.” *Id.* at 10 (citing Ex. 1003 ¶¶ 27–28).

We preliminarily adopted Petitioner’s proposed level of ordinary skill in the art. Inst. Dec. 8. Patent Owner does not dispute Petitioner’s proposal and does not propose its own level of ordinary skill in the art. *See generally*

PO Resp.; *see also* Ex. 2008 ¶ 22 (Patent Owner’s declarant accepting Petitioner’s proposed level of ordinary skill in the art).

Based on the full record, we maintain and affirm that one of ordinary skill in the art “would have had a working knowledge of the wireless communication arts pertinent to the ’863 patent” and “a bachelor’s degree in electrical engineering, computer engineering, computer science, or a related field, and at least two years of experience related to the design or development of wireless communication systems, or the equivalent” and that “[l]ack of work experience can be remedied by additional education, and vice versa.” Pet. 9–10 (citing Ex. 1003 ¶¶ 27–28).

C. Claim Construction

In an *inter partes* review, the claims are construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.

37 C.F.R. § 42.100(b); *see Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc).

Petitioner argues that “said server configured with a controller in communication with a plurality of network devices” recited by claim 1 “should be understood to recite that a **server** is ‘*configured with a controller*’ and that it is the **server** that is ‘*in communication with a plurality of network devices*. ” Pet. 11 (citing Ex. 1001, 12:1–4; Ex. 1003 ¶ 54). We preliminarily adopted Petitioner’s understanding of the phrase. Inst. Dec. 9.

“Patent Owner does not concede that Petitioner’s construction [of a ‘server configured with a controller in communication with a plurality of

network devices’] is correct” and argues that “Petitioner’s arguments fail under any construction so it is not necessary to construe the term to resolve this IPR.” PO Resp. 14 n.1.

Based on the full record, we determine that “said server configured with a controller in communication with a plurality of network devices” does not require express interpretation to resolve the parties’ dispute. *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those 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)).

Petitioner also argues that, “for the purposes of this proceeding,” the remaining terms should be “given their plain and ordinary meaning.” Pet. 10 (citing Ex. 1003 ¶¶ 30, 53). Patent Owner does not propose an interpretation for any claim term. *See generally* PO Resp.

Based on the full record, we determine that no other claim term requires express interpretation. *Realtime Data* 912 F.3d at 1375.

D. Asserted Obviousness Based on Ahopelto and Matero

Petitioner argues with citations to record evidence that claims 1–6, 8, 10, 11, 14, 19, and 24 would have been rendered obvious in view of Ahopelto and Matero. Pet. 23–75. Petitioner notes that it “applies prior art in a manner consistent with Patent Owner’s allegations of infringement before the district court.” Pet. 10 n.1.

1. Ahopelto (Ex. 1005)

Ahopelto “relates to routing data packets independently of protocol between a mobile station of a packet radio network and a party connected to an external network.” Ex. 1005, 1:11–14. Figure 1 of Ahopelto is reproduced below.

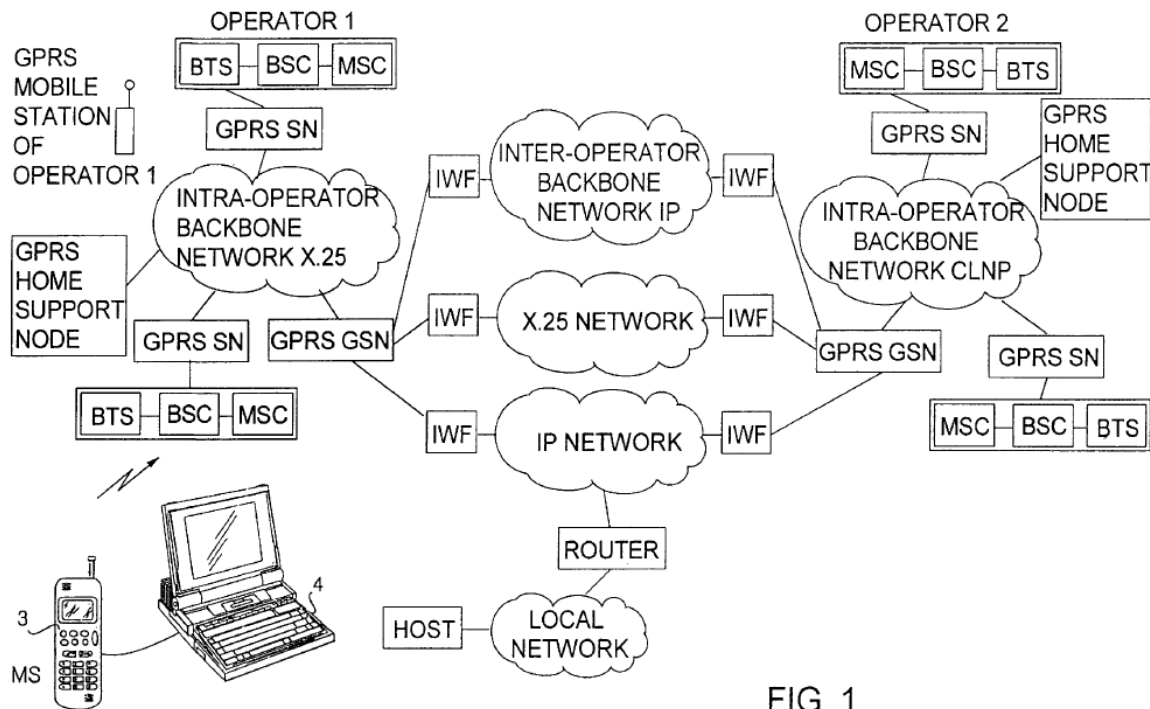


FIG. 1

Figure 1 shows two General Packet Radio Service (“GPRS”) networks and associated local and data networks. Ex. 1005, 3:63–64, 4:41–43. According to Ahopelto, GPRS is a new service in the Global System for Mobile Communication (“GSM”), a digital mobile communication system, and Ahopelto “is particularly well suited” for implementing GPRS in GSM. *Id.* at 1:28–35, 4:29–34.

The telecommunication system of Figure 1 shows two GPRS operators 1, 2, and each has two GPRS support nodes (“GPRS SN”), a GPRS home support node (“GPRS HSN”), GPRS gateway support node (“GPRS GSN” or “GGSN”), and interworking functions (“IWF”), all of which are interconnected by an intra-operator backbone network. Ex. 1005, 4:41–49. The intra-operator backbone network may be a local network. *Id.* at 6:7–10. Each GPRS SN “controls a packet data service within the area of one or more cells in a cellular packet radio network” and is connected to a part of a GSM mobile system, such as base station controller (“BSS”) or

base station (“BTS”). *Id.* at 4:50–58. A mobile station (“MS”), such as mobile station 3 and portable computer 4, communicates with BTS over a radio interface and with a GPRS SN over a mobile communication network. *Id.* at 4:58–62, 5:16–19. Mobile station 3 and portable computer 4 can be “integrated into one unit.” *Id.* at 5:31–34.

Each GGSN connects one operator to another operator of the GPRS network and other data networks, such as inter-operator backbone network, IP network, or X.25 network. Ex. 1005, 6:16–19. An IWF is provided between a GGSN and other networks. *Id.* at 6:20–21. Different operators communicate through a GGSN and the inter-operator backbone network. *Id.* at 6:28–30.

A host computer (“Host”) is connected to a local network and to an IPX network via a router. Ex. 1005, 6:50–53. The Host can send data packets to and receive data packets from a mobile station even when different protocols are used. *Id.* at 7:17–42, 8:27–45, Figs. 2–5.

2. *Matero (Ex. 1007)*

Matero relates particularly “to circuits used in single and dual band radio telephones, such as cellular telephones.” Ex. 1007, 1:5–8. Matero describes that band switching was accomplished with a mechanical relay or switch, but a mechanical switch required “a large and bulky component with a slow switching time.” *Id.* at 1:40–50. Matero also describes using an electronic switch, but such a switch “introduces a significant insertion loss into the RF path” or required higher transmitter power. *Id.* at 1:50–65.

Matero provides an “antenna switching circuitry for use in a radio telephone of a type that includes a first transceiver operable in a first frequency band and a second transceiver operable in a second frequency

band” and “a first antenna port and a second antenna port.” Ex. 1007, 2:55–59. Figure 6 of Matero is reproduced below.

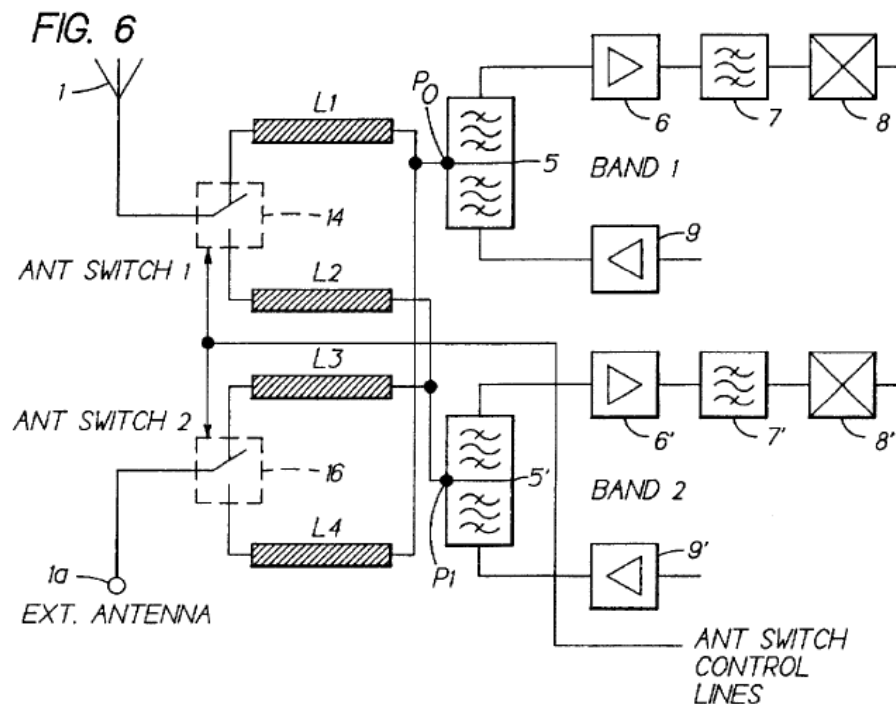


Figure 6 shows an embodiment that “employs impedance matching lengths of transmission line to couple the duplexers to two antenna switches.” Ex. 1007, 4:45–48. The embodiment shown “employs lengths of transmission line (L1–L4) to couple the duplexers 5 and 5' to two antenna switches 14 and 16” and “thus overcomes the problems associated with the conventional approach.” *Id.* at 5:44–49. “Although the embodiment of FIG. 6 employs the two electronic switches 14 and 16 (or mechanical switches if so desired), there is only one switch in the RF signal path,” so that “the insertion loss is not doubled.” *Id.* at 5:51–55. Matero also describes an embodiment “particularly useful for systems where the frequency of the higher band is a multiple of the frequency of the lower band, e.g. GSM . . . and PCN.” *Id.* at 8:19–22.

3. *Claim 1*

- a) *“A system for controlling Internet Protocol (IP) based wireless devices, IP based cellular phones, networks or network switches by servers comprising:”*

For the preamble, Petitioner argues that Ahopelto teaches the recited “server” because its GGSN has a server functionality “that determines how to forward a packet based on the packet’s protocol type” and “exercis[es] control over how a packet is routed based on the protocol type” or because the GGSN has an “Access Server.” Pet. 23–25 (citing Ex. 1003 ¶¶ 77, 78; Ex. 1005, 7:35–42, 8:40–41, 10:22–23, 10:48–50, 10:56–59, Fig. 1; Ex. 1006, 11:51–55; Ex. 1010, 87; Ex. 1011, 15:10–18, Fig. 9); *see also id.* at 17 (citing Ex. 1003 ¶¶ 19–26) (noting that “additional prior art” is cited “to demonstrate the background knowledge” of an ordinarily skilled artisan and “to provide contemporaneous context to support Petitioner’s assertions regarding what a [person of ordinary skill in the art] would have understood from the prior art”), 23 (citing Ex. 1003 ¶ 76). Petitioner also argues that the GGSN’s server functionality also controlled “mobile stations’ access to networks external to the public land mobile network” and would have controlled “forwarding traffic or not.” *Id.* at 25 (citing Ex. 1003 ¶¶ 80–81; Ex. 1006, 5:32–39, 14:1–10, 16:44–48; Ex. 1011, 15:13–18; Ex. 1021, 3). Petitioner further argues that Ahopelto discloses controlling IP based wireless devices, networks, and network switches. *Id.* at 25–28 (citing Ex. 1003 ¶¶ 82–30; Ex. 1005, code (57), 4:41–62, 5:2–7, 5:16–34, 6:16–19, Fig. 1; Ex. 1022, 528).

b) *“a first server connected to at least one internet protocol enabled network, . . . and a network switchbox, wherein the network switchbox is configured with a plurality of ports,”*

For the required “first server,” Petitioner argues that Ahopelto’s GGSN server functionality to determine protocol type would have rendered obvious the recited first server. Pet. 33 (citing Ex. 1003 ¶¶ 104–105; Ex. 1005, 7:35–40, 8:40–41). Petitioner alternatively argues that the GGSN’s Access Server would teach the recited first server. *Id.* at 33–34 (citing Ex. 1003 ¶ 106; Ex. 1005, Fig. 1; Ex. 1006, 11:51–55; Ex. 1010, 87; Ex. 1011, 15:10–18, Fig. 9). Petitioner also argues that the GGSN server functionality is connected to an IP enabled network. *Id.* at 34–35 (citing Ex. 1003 ¶¶ 107–108; Ex. 1005, 6:16–19, 6:37–42, Fig. 1).

For the “network switchbox,” Petitioner argues that Ahopelto’s GGSN includes a routing functionality that connects different data packet networks, such as another GPRS system, inter-operator backbone network, X.25 network, and IP network, so that the GGSN’s routing functionality operates as a network switch box. Pet. 38–39 (citing Ex. 1005, code (57), 6:16–19), 39–40 (citing Ex. 1003 ¶ 124; Ex. 1005, Fig. 1). Petitioner also argues that the GGSN acts like an IP router to external packet networks. *Id.* at 39 (citing Ex. 1003 ¶¶ 119–122; Ex. 1006, 5:15–24; Ex. 1010, 85, 87; Ex. 1013, 14:1–3; Ex. 1014, 2:9–11).

Petitioner further argues that it would have been obvious that connecting between networks would have done through the GGSN’s routing functionality. Pet. 39 (citing Ex. 1003 ¶ 123; Ex. 1010, 84, 87; Ex. 1022, 12). Petitioner additionally argues that it would have been obvious that the GGSN has multiple ports for its routing functionality. *Id.* at 40 (citing Ex. 1003 ¶¶ 125–126; Ex. 1005, Fig. 1; Ex. 1013, 14:1–3).

c) Patent Owner's Response

Patent Owner responds that, because claim 1 recites “server” and “network switch box” separately, the claim requires those elements to be separate and distinct. PO Resp. 4. According to Patent Owner, Petitioner fails to establish that the asserted “server functionality” and “router functionality” are two separate and distinct elements. *Id.* at 4–5 (citing Pet. 33, 38–39, 62, 69). Patent Owner argues that Petitioner’s evidence and argument, instead, show that the asserted functionalities are not separate and distinct because Petitioner contends that the functionalities do the same thing. *Id.* at 5 (citing Pet. 24, 40; Ex. 1005, 7:35–42, 8:40–41, 10:22–23, 10:48–50, 10:56–59; Ex. 1013, 14:1–3), 6 (citing Pet. 24, 69).

Patent Owner also argues that Petitioner’s declarant testified that determining how to forward a data packet is part of routing, contrary to his declaration. PO Resp. 5 (citing Ex. 1003 ¶ 80; Ex. 2005, 46:22–47:1). Patent Owner further argues that Petitioner relies on the same disclosure that describes the functionalities and, thus, relies on the same disclosure for teaching the recited server and network switch box. *Id.* at 6 (citing Pet. 24, 34, 43–44; Ex. 1003 ¶¶ 132–133; Ex. 1005, 6:16–19, 7:21–42, 8:27–45; Ex. 1006, 5:15–24).

Patent Owner contends that Ahopelto does not teach Petitioner’s asserted server and routing functionalities, never uses the terms “server functionality” and “routing functionality,” and, thus, cannot make a distinction between the asserted server and routing functionalities of its GGSN. PO Resp. 7 (citing Pet. 38). Patent Owner also contends that the cited support for Petitioner’s alleged implementation of the server and routing functionalities does not teach or suggest separate logical or hardware entities. *Id.* (citing Pet. 39; Ex. 1010, 84; Ex. 1022, 12).

Patent Owner further contends that, for the hardware implementation argument, Petitioner cites to a part of its declaration that only describes software. PO Resp. 7–8 (citing Pet. 39; Ex. 1003 ¶ 123). Patent Owner argues that one of ordinary skill in the art would have expected to implement a routing functionality on a router, not a separate piece of hardware. *Id.* at 8 (citing Ex. 2008 ¶ 41). According to Patent Owner, the cited support is silent on implementing on hardware any routing functionality separate from a server functionality. *Id.* at 8 (citing Ex. 2008 ¶ 41).

As for a separate implementation in logic, Patent Owner argues that Petitioner’s declarant admitted that the cited support does not show a routing functionality separately from a server functionality and could not explain how any reference shows the asserted separate functionalities. PO Resp. 8 (citing Ex. 1003 ¶ 123; Ex. 2005, 56:16–57:2, 57:19–58:1, 63:21–64:17). Patent Owner also argues that one of ordinary skill in the art would not have viewed the asserted functionalities to be separate in Ahopelto’s GGSN. *Id.* at 9–10 (citing Ex. 2008 ¶¶ 34–43).

Patent Owner also responds that Ahopelto does not disclose the asserted “Access Server” of Petitioner’s alternative argument. PO Resp. 10. Patent Owner argues that Petitioner cites other exhibits to support an alleged disclosure, but these exhibits are not part of the proposed combination. *Id.* (citing Ex. 1006; Ex. 1010; Ex. 1011). Patent Owner also argues that there is no explanation or analysis as to why one of ordinary skill in the art would have looked to these exhibits. *Id.* In Patent Owner’s view, Petitioner is relying on general knowledge in the art to supply a critical missing element without a reasoned explanation. *Id.* at 11. Merely arguing that it would have been obvious to include an Access Server in Ahopelto’s GGSN is,

according to Patent Owner, conclusory and is not a reasoned explanation.

Id.

Patent Owner contends that the alternative Access Server argument is also “undeveloped and fails to connect all the relevant claim limitations,” such as how the asserted Access Server is “in communication with a plurality of network devices.” PO Resp. 11 (citing Pet. 36–37). Patent Owner also contends that Petitioner’s only argument for that limitation uses the “server functionality,” not the Access Server. *Id.* at 11–12. Patent Owner further contends that Petitioner fails to connect the asserted Access Server with other arguments about the preamble of claim 1 and claim 14’s limitation that a “server is configured for communication with the first network switch box and the second network switch box.” *Id.* at 12–13 (citing Pet. 24–25, 69).

d) Petitioner’s Reply

Petitioner replies that one of ordinary skill in the art “would have understood Ahopelto’s teachings of GGSNs to include the generic functions known in the art for a ‘server’ and a ‘network switch box,’ since the claims themselves do not impose distinguishing limits on the terms” as demonstrated by testimonial evidence. Pet. Reply 6 (citing Pet. 33, 35–39; Ex. 1003 ¶¶ 105, 111, 113, 117, 123), 7 (citing Ex. 1001, 12:1–10, 12:64–13:10). Petitioner argues that the analysis should focus “on the *teachings* of the prior art,” not missing words. *Id.* at 6 (citing PO Resp. 7).

Petitioner contends that GGSN’s were known to “include logical components for different functions, such as ‘server’ and ‘network switch box’ functionalities,” and “Ahopelto teaches implementing different equipment functions (such as GGSN and SGSN) ‘in a single computer.’” Pet. Reply 8 (citing Pet. 37; Ex. 1005, 6:10–15). Petitioner also contends

that other record evidence shows that GGSNs were known to have “modular software,” “[m]odular functions included a ‘router function,’ ‘access-server functionality,’ border gateway function, and charging function,” and that routers and servers were implemented on the same GGSN hardware. *Id.* (citing Pet. 25, 34–36, 39; Ex. 1003 ¶¶ 111, 122; Ex. 1010, 84, 85, 87; Ex. 1011, 15:10–18; Ex. 1015, 10:9–13, 11:14–16, 11:20–24, Fig. 7).

According to Petitioner, one of ordinary skill in the art would have understood that Ahopelto teaches the server functionality that would have rendered obvious the “server” and connecting two networks that would have rendered obvious the “network switch box.” Pet. Reply 9–10 (citing Pet. 24, 33–34; Ex. 1003 ¶¶ 77, 105, 121, 128; Ex. 1005, Abstract, 6:16–19, Fig. 1; Ex. 1029, 62:5–6). Petitioner also argues that GGSNs were known to have multiple ports for different connections to different networks for receiving and transmitting packets. *Id.* at 10–11 (citing Pet. 40, 43–44, 45; Ex. 1003 ¶¶ 121, 125, 134–136; Ex. 1005, 7:21–29, 7:40–42, Fig. 1; Ex. 1013, 14:1–3).

Petitioner also replies that the Petition demonstrates that the functionalities are logically separate and “there is simply no blanket requirement for separate claim limitations to be physically separate or distinct.” Pet. Reply 11 (citing PO Resp. 4, 5, 7–8). Petitioner argues that its declarant “explained with supporting evidence that a ‘server’ and a ‘network switch box’ were known to [persons of ordinary skill in the art] to be implemented logically on the same physical hardware, beginning with Ahopelto itself.” *Id.* at 11–12 (citing Pet. 39; Ex. 1003 ¶ 123; Ex. 1005, 6:10–15; Ex. 1010, 84; Ex. 1015, 10:9–13, 11:14–16; Ex. 1022, 12). Petitioner also argues that it is irrelevant whether the functionalities have distinct hardware and one of ordinary skill in the art would have found the

“server” and “network switch box” obvious from the logically distinct GGSN functions. *Id.* at 12 (citing Pet. 24; PO Resp. 6, 8; Ex. 1003 ¶¶ 77, 130, 208–216; Ex. 1005, 7:37–40, 8:40–45, 10:22–27, 10:48–62).

Petitioner contends that “‘where’ to forward was **not** the ‘server functionality’ identified in Ahopelto,” but how. Pet. Reply 12–13 (citing Pet. 24, 39–40; PO Resp. 5; Ex. 1003 ¶¶ 77, 123–125; Ex. 2005, 46:22–47:18). Petitioner also contends that one of ordinary skill in the art would have recognized the functionalities, even if they are not expressly stated. *Id.* at 13–14 (citing Pet. 24, 38–39; PO Resp. 6–7; Ex. 1003 ¶ 77; Ex. 1005, 7:37–40, 8:40–45, 10:22–27, 10:48–62).

Petitioner further replies that one of ordinary skill in the art would have understood that the GGSN includes an access server for connecting operators of GPRS systems and data networks. Pet. Reply 14 (citing Pet. 25, 34; Ex. 1003 ¶ 106; Ex. 1005, 6:16–19; Ex. 1006, 11:51–55; Ex. 1010, 87; Ex. 1011, 15:10–18). Petitioner contends that its declarant’s analysis provided copious support and Patent Owner’s declarant admitted that a GGSN includes an access server. *Id.* at 14 (citing Pet. 25, 34; PO Resp. 10–11; Ex. 1029, 57:8–16). Petitioner also contends that the “access server” would meet the preamble, further rendering obvious the above-quoted limitation. *Id.* at 14–15 (citing Pet. 25, 35, 36; PO Resp. 11–12; Ex. 1003 ¶¶ 80, 112, 113; Ex. 1006, 14:1–10, 16:44–48; Ex. 1011, 15:13–18).

e) Patent Owner’s Sur-Reply

Patent Owner replies that “Petitioner still cannot show any difference between the alleged ‘server functionality’ and alleged ‘routing functionality.’” PO Sur-reply 1. According to Patent Owner, “Petitioner does not dispute that the ‘server’ and ‘network switch box’ of claims 1 and 14 are separate and distinct components.” *Id.* (citing Pet. Reply 11–12).

Patent Owner argues that it “does not contend that the claimed ‘server’ and ‘network switch box’ must be *physically* separate” and that “Petitioner still must establish the ‘server’ and ‘network switch box’ ‘as distinct components, regardless of whether [they] are on a single or multiple physical machines.’” *Id.* at 2.

Patent Owner also argues that Ahopelto does not make a distinction between “server functionality” and “routing functionality,” but Petitioner imagines a distinction that is inaccurate and inconsistent with Ahopelto and undermined by arguments in the Petition. PO Sur-reply 2 (citing Pet. 33, 38–39; PO Resp. 4–10; Pet. Reply 9). Patent Owner further argues that Ahopelto does not support Petitioner’s reply argument that how and where to forward a packet are distinctions, and Petitioner does not identify any description in Ahopelto for support. *Id.* (citing PO Resp. 7; Pet. Reply 13). In Patent Owner’s view, Ahopelto does not contemplate implementing separate functionalities for how and where to forward a packet.

Patent Owner contends that “the absence of any express differentiation in Ahopelto weighs against Petitioner’s argument that the alleged functionalities are distinct.” PO Sur-reply 3 (citing Pet. Reply 13). Patent Owner also contends that Ahopelto shows that asserted distinction does not exist because the relied-upon checking of a data packet’s protocol is part of the routing functionality, not a separate server functionality. *Id.* at 3–4 (citing Pet. 24, 64–68; Reply 12; Ex. 1003 ¶¶ 208–216; Ex. 1005, 7:11–14, 7:37–40, 8:40–41, 10:22–23, 10:48–50, 10:56–59). Patent Owner further argues that the alleged server and routing functionalities mirror each other because Petitioner’s declarant conceded that checking a data packet’s address is part of routing and the alleged server functionality involves checking for protocol. *Id.* at 4 (citing Ex. 1005, 7:37–42; Ex. 2005, 46:22–

47:1). In Patent Owner’s view, Petitioner offers no reason “why checking a data packet’s protocol field would teach or suggest a ‘server functionality’ that is separate and distinct from a ‘routing functionality’ when the ‘routing functionality’ also checks the data packet (to determine an address).” *Id.* at 4–5.

Patent Owner argues that Ahopelto describes checking the protocol field of a data packet to determine where to send the packet and “that the functionality that Petitioner contends determine ‘how’ to forward a packet actually works to determine ‘where’ to forward a packet,” thus making the alleged functionalities “indistinguishable under Petitioner’s definition of the terms.” PO Sur-reply 5 (citing Ex. 1005, 3:5–6, 10:7–10, 10:14–19). Patent Owner also argues that Petitioner confuses the alleged functionalities and cites the same disclosures from Ahopelto for both. *Id.* at 5–6 (citing PO Resp. 7; Pet. Reply 12, 13–14, 16–17; Ex. 2008 ¶¶ 37–38).

Patent Owner further argues that, for dependent claim 4, “Petitioner alleges that the ‘server functionality’ determines *where* to send a packet, not *how* to send a packet, *i.e.*, along a first network path or a second network path;” for dependent claim 3, “Petitioner alleges that the ‘server functionality’ controls *where* data packets are sent by determining their protocol, not *how* to send data packets;” and for dependent claim 6, “Petitioner alleges the ‘server functionality [uses] a different network path depending on whether the GGSN supports that protocol or not.[.]” PO Sur-reply 6–7 (citing Pet. 49, 52, 54–55). According to Patent Owner, Petitioner’s declarant could not explain how the alleged functionalities could be implemented as separate logical entities and could not identify any reference that shows the functionalities separately implemented. *Id.* at 7 (citing Ex. 2005, 63:21–64:17).

No other reference, Patent Owner argues, supports the allegedly distinct functionalities. PO Sur-reply 7–8 (citing Pet. Reply 8; Ex. 1010; Ex. 1015, 10:9–13, 11:14–16; Ex. 2005, 56:16–57:2). Patent Owner also asserts that Petitioner’s arguments based on Exhibit 1015 for claim 1 are new. *Id.* at 8 (citing Pet. 57; Ex. 1003 ¶ 180).

Patent Owner also replies that Petitioner’s “access server” arguments ignore elements of claims 1 and 14. PO Sur-reply 1. Patent Owner argues that “[i]t is undisputed that this argument seeks to fill a critical, missing element (the ‘server’) with general knowledge of a [person of ordinary skill in the art] concerning the alleged ‘access server,’” and “Petitioner must provide evidence *and* a reasoned explanation why the gap left by the missing element should be filled with general knowledge of a [person of ordinary skill in the art].” PO Sur-reply 12. In Patent Owner’s view, “Petitioner failed to provide a reasoned explanation,” and the Reply “merely points back to the Petition.” *Id.* at 13 (citing PO Resp. 10–11; Pet. Reply 14). Patent Owner argues that “the cited content lacks any reasoned explanation” and merely presents assertions. *Id.* (citing Pet. 25, 34).

Patent Owner also argues that the cited testimony “contains little more than a verbatim recitation of the Petition, which is itself deficient” and “does not fill Petitioner’s gap.” PO Sur-reply 13 (citing Pet. 24–25, 33–34). Patent Owner further argues that the cited deposition testimony of its declarant “does not provide a ‘reasoned explanation’ required to show that it would be obvious to apply the general knowledge of a [person of ordinary skill in the art] to Ahopelto to fill in the missing claim limitation with general background knowledge.”

Patent Owner further replies that the Reply “ignores the full text of the claim, which includes the limitation ‘in communication with a plurality of

network devices,” which was not addressed in the Petition under the “access server” theory. PO Sur-reply 14 (citing Pet. 35–38; PO Resp. 11–12; Pet. Reply 14–15). Because not all elements are addressed, Patent Owner argues that Petitioner’s “access server” theory fails. *Id.*

f) Petitioner Fails to Show by a Preponderance of the Evidence that Claim 1 is Unpatentable

(1) Separate and Distinct Components

The parties agree that the claim requires a server and a network switch box as separate and distinct components. Pet. 38 (“Ahopelto’s GGSN also includes routing functionality (in addition to and distinct from the server functionality for controlling packet forwarding) that operates as a ‘*network switch box*.’”); Pet. Reply 11 (“Inasmuch as this pertains to separate logical elements, the Petition demonstrated this as reiterated above.”), 12 (“Instead, the question is whether a POSITA would have found the claimed ‘*server*’ and ‘*network switch box*’ obvious from Ahopelto’s logically distinct GGSN function teachings.”); PO Sur-reply 1 (“Petitioner does not dispute that the ‘server’ and ‘network switch box’ of claims 1 and 14 are separate and distinct components.”).

(2) No Express Disclosure

For the recited “server,” Petitioner argues that the “functionality that determines how to forward a packet based on the packet’s protocol type (referred to simply herein as ‘server functionality’) . . . is a ‘*server*.’” Pet. 24 (citing Ex. 1005, 7:35–42, 8:40–41, 10:22–23, 10:48–50, 10:56–59).

The cited portions of Ahopelto describe “[t]he encapsulation format . . . contains an identification field, which can be used for determining the protocol type of the encapsulated data packet (IPX, in this case),” “[t]he GPRS GSN forwards the X.25 packet to the home support node GPRS

HSN,” and “[t]he GPRS GSN receives the X.25 data packet and checks the protocol for the encapsulated IPX packet.” Ex. 1005, 7:35–42, 8:40–41; *see also id.* at 7:27–28 (“The GPRS GSN encapsulates the received IPX packet in an X.25 packet.”). Other cited portions describe similarly that the GGSN receives a packet and checks the protocol of the packet. *Id.* at 10:22–23, 10:48–50, 10:56–59.

We find that the cited portions of Ahopelto describe a GGSN receives a packet and determines the protocol of the encapsulated packet. Ex. 1005, 7:35–42, 8:40–41, 10:22–23, 10:48–50, 10:56–59; *see also* Pet. 18 (“a GPRS gateway support node (GPRS GSN or ‘GGSN’)”). The GGSN can send the encapsulated packet through the intra-operator backbone network (Ex. 1005, 7:40–42, Fig. 2), an IP network (*id.* at 8:40–46, Fig. 4), or an inter-operator backbone network (*id.* at 9:1–11, Fig. 6). Ahopelto also describes that “[t]he X.25 packet is provided with the address GPRS-HSN1-X.25 of the home support node of the operator 1 and with the address GPRS-GSN1-X.25 of the gateway support node.” Ex. 1005, 7:29–32.

For the recited “network switch box,” Petitioner argues that “Ahopelto’s GGSN also includes routing functionality (in addition to and distinct from the server functionality for controlling packet forwarding) that operates as a ‘*network switch box*.’” Pet. 38. Petitioner also argues that “Ahopelto’s routing functionality of the GGSN connects data packet networks to each other, such as other operators’ GPRS systems and ‘an inter-operator backbone network, IP network, or X.25 network.’” *Id.* (citing Ex. 1005, code (57), 6:16–19).

A relied-upon portion of Ahopelto describes that a “GPRS gateway support node GPRS GSN connects the operator to the GPRS systems of the other operators of the GPRS network and to data networks, such as an inter-

operator backbone network, IP network, or X.25 network.” Ex. 1005, 6:16–19; *see also id.* at code (57) (“A data packet network is connected to other packet radio networks, data networks or the backbone network between packet data networks via a gateway node (GPRS GSN).”).

We find that the cited portions of Ahopelto describe a GRPS GSN or GGSN connects to data networks, such as an inter-operator backbone IP network, X.25 network, and IP network. Ex. 1005, code (57), 6:16–19, Fig. 1.

Based on the portions relied upon by Petitioner, we find that Ahopelto does not describe expressly that its GGSN is “a server” and a separate and distinct “network switch box.” Ex. 1005, code (57), 6:16–19, 7:35–42, 8:40–41, 10:22–23, 10:48–50, 10:56–59; Ex. 1003 ¶ 78 (“Ahopelto does not describe any details about a GGSN’s hardware/software”). We also find that Ahopelto does not describe expressly that a GGSN has separate and distinct functionalities (1) for receiving a packet and determining the protocol of the encapsulated packet is separate and (2) for connecting to data networks. Ex. 1005, code (57), 6:16–19, 7:35–42, 8:40–41, 10:22–23, 10:48–50, 10:56–59; Ex. 1003 ¶ 78; Ex. 2008 ¶ 39 (“Ahopelto never mentions the term ‘server functionality’ or the term ‘routing functionality.’”).

(3) Insufficient Testimonial Evidence

Because Ahopelto does not expressly support Petitioner’s argument regarding the GGSN, we turn to Petitioner’s testimonial evidence. Petitioner’s declarant states that “Ahopelto’s GGSN operates as a router by including routing functionality (e.g., in addition to the server functionality . . .).” Ex. 1003 ¶ 121. The declarant does not explicitly opine that the routing functionality of the GGSN is separate *and distinct* from the asserted server functionality of the GGSN. *See id.* ¶¶ 121–126.

Petitioner’s declarant also states that “a GGSN appears to external packet networks to ‘act[] like an IP router.’” Ex. 1003 ¶ 122 (citing Ex. 1006, 5:14–24; Ex. 1010, 85, 87; Ex. 1013, 14:1–3; Ex. 1014, 2:9–11). The declarant’s citations to record evidence (Ex. 1003 ¶ 122 (citing Ex. 1006, 5:14–24; Ex. 1010, 85, 87; Ex. 1013, 14:1–3; Ex. 1014, 2:9–11)) do not support Petitioner’s argument that the asserted “routing functionality of the GGSN connects data packet networks to each other” and “allows interconnections between different data packet networks and data networks” (Pet. 38–39 (citing Ex. 1003 ¶¶ 119–122; Ex. 1006, 5:14–24; Ex. 1010, 85, 87; Ex. 1013, 14:1–3; Ex. 1014, 2:9–11)).

The declarant includes the quotation that “the GGSN routing process decides to which output port a packet will be sent based on destination address, etc.” Ex. 1003 ¶ 122 (quoting Ex. 1013, 14:1–3). The quote from Exhibit 1013 does not relate to “connect[ing] data packet networks to each other” or “allow[ing] interconnections between different data packet networks and data networks.” *See* Ex. 1013, 14:1–3. We find that the quote more closely aligns with Ahopelto’s description of how a packet is forwarded, which Petitioner relies on for the asserted server functionality. *See* Ex. 1007, 7:27–42, 9:1–11 (describing using addresses to send data packets to other GGSNs); *see also* Pet. 24 (citing Ex. 1005, 7:35–42, 8:40–41, 10:22–23, 10:48–50, 10:56–59).

Petitioner’s declarant also opines that the asserted server functionality includes controlling where a packet is routed. *See* Ex. 1003 ¶ 77 (“A [person of ordinary skill in the art] would have recognized that Ahopelto’s GGSN exercises control over how a packet is routed, based on the protocol type (the ‘server functionality’ herein for simplicity of reference).”), ¶ 78 (“[T]he GGSN’s server functionality would exercise the disclosed control

over how a packet is routed using a combination of hardware and software (the platform implementing the GGSN).”); Ex. 2005, 46:22–47:4 (Petitioner’s declarant answering “Yes” and “Routing is about where to send a packet,” in response to whether it was correct that “deciding where to send a packet is an essential part of routing”). According to Petitioner’s declarant, the asserted server functionality includes, or overlaps with, aspects of a “GGSN routing process.” Ex. 1003 ¶¶ 77, 78; Ex. 1013, 14:1–3; Ex. 2005, 46:22–47:4. Petitioner’s testimonial evidence does not show a clear distinction between the asserted server and routing functionalities to support that one of ordinary skill in the art would have recognized a server functionality separate and distinct from a routing functionality in Ahopelto’s GGSN.

Petitioner’s declarant also opines that one of ordinary skill in the art “would have recognized that the GGSN itself, as well as including the GGSN’s server functionality, access server functionality, and routing functionality, would be implemented as different logical (e.g., software) entities on a shared platform.” Ex. 1003 ¶ 123 (citing Ex. 1010, 84; Ex. 1022, 12). We find that the citations to the record do not support the opinion. Ex. 2008 ¶ 42.

The relevant portions of page 84 of Exhibit 1010 state that “two new support nodes—the SGSN and GGSN—can be combined into one physical node” and that “[t]he GPRS support nodes (GSN) are based on Ericsson’s AXB 250 platform, a new, general-purpose, high-performance, packet-switching platform.” It also states that “[d]esigned for nonstop operation, the platform incorporates duplicated hardware and modular software.” Ex. 1010, 84.

This cited exhibit does not support that one of ordinary skill in the art would have recognized that the asserted functionalities of Ahopelto's GGSN "would be implemented as different logical (e.g., software) entities on a shared platform." *See* Ex. 1010, 84. It does not describe any functionality that can be understood to be the asserted functionalities, and it does not relate to the asserted functionalities being "different logical (e.g., software) entities on a shared platform." Moreover, the record does not make clear how server and routing functionalities could be modularized in software "for nonstop operation," when these functionalities appear to be the core functions of a GGSN.

Pages 11–12 of Exhibit 1022 states that "[e]xamples of entities are user application programs, file transfer packages, data-base management systems, electronic mail facilities, and terminals," "[e]xamples of systems are computers, terminals, and remote sensors," and "that in some cases the entity and the system in which it resides are coextensive (e.g., terminals)." The cited exhibit does not support that one of ordinary skill in the art would have recognized that the asserted functionalities of Ahopelto's GGSN "would be implemented as different logical (e.g., software) entities on a shared platform." *See* Ex. 1022, 12.

Also, during deposition, Petitioner's declarant, in response to whether it was correct that "you can't point to any reference that you cited in your declaration that shows implementing the server functionality and the routing functionality of a GGSN as different entities," stated that "[o]bviously all of these things work together in a system," "[t]he system requires those different functionalities," and "Ahopelto talks about implementing those functionalities -- he doesn't talk about those specific ones, but the GGSN, you know, functionalities along with other functionalities on a single

computer.” Ex. 2005, 63:11–64:17. The declarant did not identify a reference. *See id.* Petitioner also does not address this deposition testimony in its Reply. *See generally* Pet. Reply.

Turning to Petitioner’s separate hardware argument, we agree with Patent Owner’s declarant that Petitioner’s testimonial evidence only addresses software. Ex. 2008 ¶ 41 (citing Ex. 1003 ¶ 123). The cited evidence, thus, does not support Petitioner’s argument that “[t]he GGSN routing functionality would be implemented . . . via separate hardware with the server functionality for controlling how received packets are forwarded based on protocol type.” Pet. 39 (citing Ex. 1003 ¶ 123; Ex. 1010, 84; Ex. 1022, 12).

Other portions of Petitioner’s testimonial evidence related to “a server” and “a network switch box” do not address the above-discussed issues. *See* Ex. 1003 ¶¶ 76–90, 104–108, 124–126. Based on the full record before us, we give little weight to Petitioner’s testimonial evidence and determine that the opinion fails to show that one of ordinary skill in the art would have understood that Ahopelto’s GGSN includes a server functionality and a separate and distinct routing functionality.

(4) Additional Cited Evidence

Petitioner cites additional record evidence but does not argue one of ordinary skill in the art would have modified Ahopelto with the teachings of any of the additional material. *See* Pet. 18–75; PO Resp. 10. Petitioner’s additionally cited evidence also fails to show that one of ordinary skill in the art would have understood that Ahopelto’s GGSN includes a server functionality and a separate and distinct routing functionality. *See, e.g.*, Ex. 1006, 5:15–24 (“For example, in the internet, the GGSN acts like an IP router behind which the entire GPRS network is hidden.”); Ex. 1014, 2:9–11

(“The GGSN functions as a router between the external address and the internal routing information (e.g. SGSN).”); Ex. 1015, 10:9–13 (“FIG. 6 shows a modification . . . in which a gateway node 60 is inserted in the gateway GPRS support node (GGSN) 51, and FIG. 7 illustrates the functional elements of the gateway node 60 shown in FIG. 6.”), 11:14–16 (“FIG. 7 is a schematic diagram showing the interrelationships between the various functional elements of the gateway node 60 in detail.”), 11:20–24 (“As is conventional with processor-based technology, the various functional elements may be embodied in software in a general-purpose computer. Moreover, certain functions occur at more than one point in the system, and are not necessarily embodied in distinct physical elements.”).

(5) *“Access Server”*

Turning to the alternative “access server” argument for the recited “server” (Pet. 24–25, 33–35), those arguments also fail to address the issues discussed above, such as whether the “access server” would have been separate and distinct from the asserted “routing functionality,” what one of ordinary skill in the art would have understood is the “routing functionality,” and whether the “access server” and routing functionality are “different logical . . . entities.” Ex. 1003 ¶¶ 79, 106, 112, 119–126.

(6) *Asserted Reason to Combine*

Petitioner argues that one of ordinary skill in the art would have considered Ahopelto and Matero to be analogous art because both pertain to wireless networking. Pet. 21 (citing Ex. 1003 ¶¶ 68–69; Ex. 1005, code (57); Ex. 1007, code (57)). According to Petitioner, one of ordinary skill in the art would have combined Ahopelto with Matero because Matero “addresses insertion loss and switching time issues” and “reduced insertion loss while maintaining a fast switching speed.” Pet. 22–23 (citing Ex. 1003

¶¶ 73–74; Ex. 1007, 1:40–66, 5:44–49). Petitioner contends that the proposed combination “would also beneficially have reduced power consumption from reduced insertion loss, providing better battery life” and “result in a radio telephone operable in both GSM and PCN bands.” *Id.* at 23 (citing Ex. 1003 ¶ 74).

Petitioner further contends that the proposed combination would have been

nothing more than the combination of known elements (Ahopelto’s mobile station operating in GSM and/or PCN networks, and Matero’s transceiver circuitry used in GSM and/or PCN radio telephones), according to known methods (using Matero’s dual-band transceivers in Ahopelto’s packet radio network), to yield predictable results (Matero’s radio telephone operating in Ahopelto’s GSM and/or PCN network(s)).

Pet. 23 (Ex. 1003 ¶ 75). Petitioner additionally contends that one of ordinary skill in the art would have turned to Matero for details about mobile stations serving as endpoints because Ahopelto focuses on routing between networks. Pet. 21 (citing Ex. 1003 ¶¶ 69–71; Ex. 1005, code (57), 1:11–14, 5:2–7, 5:16–34; Ex. 1007, 1:5–8, 2:55–60). Petitioner argues that one of ordinary skill in the art would have had a reasonable expectation of success in combining Ahopelto and Matero because both relate to GSM and PCN. Pet. 22 (citing Ex. 1003 ¶¶ 71–72; Ex. 1005, 1:32–67; Ex. 1007, 8:19–25; Ex. 1012, 1:37–41).

The asserted motivation to combine does not address the issues related to Petitioner’s asserted server and routing functionalities.

(7) Conclusion

For the reasons discussed above, based on the full record, Petitioner fails to show that the proposed combination teaches, suggests, or would have been understood to include all the recited limitations of claim 1. Therefore,

based on the full record, Petitioner fails to show by a preponderance of the evidence that claim 1 is unpatentable over Ahopelto and Matero.

4. Dependent Claims 2–11.

Claim 2 depends from claim 1 and recites “further comprising a second network switch box, wherein the first network switch box is configured to transmit and receive a plurality of data packets from and to the second network switch box over at least one network path.” Ex. 1001, 12:11–15. Petitioner argues that Ahopelto teaches that the routing functionality of a GGSN is a network switch box and that a router is a second network switch box. Pet. 45–46 (citing Ex. 1001, 9:48–55; Ex. 1003 ¶¶ 120–122, 138–139, 141; Ex. 1005, 6:50–53, Figs. 1, 8, 10, 12; Ex. 1022, 528). Petitioner also argues that Ahopelto teaches the GGSN communicating with the router to route data packets between a mobile station and an external host. *Id.* at 46–48 (citing Ex. 1003 ¶¶ 142–146; Ex. 1005, code (57), 3:55–57, 7:11–14, 8:12–15, Figs. 2, 4, 6, 8, 10, 12).

Claim 3 depends from claim 2 and recites “wherein the controller is configured to control the first network switch box to use a first network path to send at least one data packet to the second network box and to reconfigure the first network box to use a second network path to send at least one data packet.” Ex. 1001, 12:16–20. Petitioner argues that Ahopelto teaches that its GGSN has a controller and the GGSN’s server functionality controls the routing functionality to send a data packet to the router. Pet. 48–50 (citing Ex. 1003 ¶¶ 147–149; Ex. 1005, code (57), 3:55–57, 6:7–15, 10:13–19, 10:22–33, Fig. 10; Ex. 1006, 14:1–5; Ex. 1010, 84). Petitioner also argues that Ahopelto teaches that the GGSN can reconfigure its routing functionality to send data packets by another route. *Id.* at 50–51 (citing

Ex. 1003 ¶¶ 150–155; Ex. 1005, 9:50–10:10, 10:34–36, 10:39–55, Figs. 8, 10, 12).

Claim 4 depends from claim 2 and recites “wherein the server is configured to dynamically control and change the network flow between the first network switch box and second network switch box such that the first network switch box and second network switch box transmit and receive data packets using dynamically changing network paths.” Ex. 1001, 12:21–26. Petitioner argues that Ahopelto teaches that the GGSN’s server functionality changes network paths based on which one supports the data packet’s protocol and, thus, shows dynamically controlling and changing network paths. Pet. 52 (citing Ex. 1003 ¶¶ 156–160; Ex. 1005, 2:28–53, 4:29–30, Figs. 10, 12).

Claim 5 depends from claim 2 and recites “wherein the server is configured to control the first network switch box to switch between a first network path and a second network path in response to a network condition.” Ex. 1001, 12:27–30. Petitioner argues that Ahopelto teaches that the GGSN’s server functionality changes network paths based on which one supports the data packet’s protocol and, if the protocol is not supported (the asserted network condition), the GGSN sends the data packet through a different network using encapsulation. Pet. 53–54 (citing Ex. 1003 ¶¶ 161–165; Ex. 1005, 10:6–10, Figs. 10, 12).

Claim 6 depends from claim 2 and recites “wherein the server is configured to control the first network switch box to switch between a first network path and a second network path in response to an application.” Ex. 1001, 12:31–34. Petitioner argues that Ahopelto teaches that the GGSN’s server functionality changes network paths based on a data packet’s protocol which depends on the application associated with the data packet or

based on billing or security reasons. Pet. 54–55 (citing Ex. 1003 ¶¶ 166–172; Ex. 1005, code (57), 6:54–61, 9:50–57, 10:13–21, 10:34–36, 10:39–47, Figs. 8–13).

Claim 8 depends from claim 2 and recites “further comprising at least two machines, wherein a first machine generates a first data stream to send to the second machine via the first network box and the second machine is configured to receive the first data stream from the first network box.”

Ex. 1001, 12:37–41. Petitioner notes that claim 8 recites a “first network box,” while claim 1 recites a “first network switch box.” Pet. 55 n.2.

Petitioner argues that Ahopelto teaches a mobile station sending data packets (a data stream) to a host, and the data packets are routed by the GGSN’s routing function, the asserted network switch box. Pet. 55–57 (citing Ex. 1003 ¶¶ 173–177; Ex. 1005, 10:63–11:6, Fig. 12).

Claim 10 depends from claim 2 and recites “wherein at least one network is an overlay network, virtual network and/or virtual private network.” Ex. 1001, 12:45–47. Petitioner argues that Ahopelto’s GPRS network was known to be an overlay to a GSM network and that Ahopelto would have rendered obvious a virtual private network because a protocol for implementing a virtual private network was known and could be used in Ahopelto. Pet. 57–58 (citing Ex. 1003 ¶¶ 178–183; Ex. 1005, 1:32–35, 1:52–54, 4:29–34, Fig. 1; Ex. 1015, 8:53–55; Ex. 1020, 45:54–67, 46:1–5).

Claim 11 depends from claim 2 and recites “wherein the server is configured to send control parameters to the network switch box using at least one protocol.” Ex. 1001, 12:48–50. Petitioner argues that the GGSN’s server functionality would have controlled the routing functionality by sending control parameters based on determining how to forward a data packet. Pet. 58–61 (citing Ex. 1003 ¶¶ 184–192; Ex. 1005, 7:37–40, 8:40–

41, 10:22–23, 10:48–50, 10:56–59; Ex. 1006, 12:60–65, 13:6–12, 14:6–10; Ex. 1010, 84, 87; Ex. 1021, 3, 10; Ex. 1022, 11–12; Ex. 1023, 326–327, 338).

For the reasons discussed above for claim 1, Petitioner does not show by a preponderance of the evidence that the proposed combination of Ahopelto and Matero would have had “a server” and “a network switch box.” Petitioner’s arguments for dependent claims 2–11 do not address the issues discussed for claim 1.

Therefore, based on the full record, Petitioner fails to show by a preponderance of the evidence that claims 2–11 are unpatentable over Ahopelto and Matero.

5. *Independent Claim 14*

For the preamble, Petitioner argues with reference to contentions for claim 1, *inter alia*, that Ahopelto’s GGSN and its server functionality would have rendered obvious servers and the server functionality communicates with the router. Pet. 61 (citing Ex. 1003 ¶¶ 193–196), 69 (citing Ex. 1003 ¶¶ 219–221; Ex. 1005, 7:21–26). Petitioner alternatively argues that the GGSN’s access server would have also rendered obvious “a server,” because that functionality controls the path of data packets. *Id.* at 69–70 (citing Ex. 1003 ¶¶ 222–223; Ex. 1005, 7:37–40, 8:40–41, 10:22–23, 10:48–50, 10:56–59).

For the recited first and second network switch boxes, Petitioner argues with reference to contentions for claims 1 and 2 that Ahopelto’s GGSN teaches the first network switch box and Ahopelto’s router teaches the second network switch box. Pet. 62 (citing Ex. 1003 ¶¶ 198–199; Ex. 1005, Fig. 1).

Petitioner also argues that Ahopelto teaches that a GGSN connects a data packet network with other packet radio networks and so would have rendered obvious that the GGSN with routing functionality would have a wired or wireless interface as was known in the art. Pet. 63–64 (citing Ex. 1003 ¶¶ 203–204; Ex. 1005, code (57); Ex. 1008, 27:42–28:4; Ex. 1027, 1:66–2:11, 11:1–8). Petitioner further argues with reference to claim 4 contentions that Ahopelto teaches both the GGSN’s routing functionality and router (first and second network switch boxes) transmit and receive mobile terminated and mobile originated data packets (data streams). Pet. 64–69 (citing Ex. 1003 ¶¶ 207–218; Ex. 1005, 2:28–53, 4:29–30, 7:21–26, 9:9–22, 10:22–27, Figs. 6, 10; Ex. 1010, 86–87).

For the reasons discussed above for claim 1, Petitioner does not show by a preponderance of the evidence that the proposed combination of Ahopelto and Matero would have had “a server” separate and distinct from “a first network switch box.” Ex. 1003 ¶¶ 195, 199–201, 204, 208, 220–222, 226, 227.

Therefore, based on the full record, Petitioner fails to show by a preponderance of the evidence that claim 14 is unpatentable over Ahopelto and Matero.

6. Dependent Claims 19 and 24

Claim 19 depends from claim 14 and recites “wherein the server is configured with software stored in a non transitory computer readable medium to be executed by a processor on the server, wherein the software defines the optimal data path between at least two or more network switch boxes for a specific data stream flow.” Ex. 1001, 14:3–8. Petitioner argues with reference to its contentions for claims 1 and 14 that Ahopelto’s GGSN would have been known to include the recited non-transitory computer

readable medium and processor and that Ahopelto teaches that the GGSN can be implemented on “a single computer.” Pet. 71–72 (citing Ex. 1003 ¶¶ 230–231; Ex. 1005, 6:7–15; Ex. 1010, 84). Petitioner also argues that one of ordinary skill in the art would have recognized that implementing on a computer would require software and a non-transitory memory. *Id.* at 72 (citing Ex. 1003 ¶¶ 232–233; Ex. 1006, 11:51–55).

For the wherein clause of claim 19, Petitioner argues that the GGSN’s server functionality determines how to forward a data packet and so it exercises control over how the packet is routed based on the protocol used for the data packet. Pet. 72 (citing Ex. 1005, 7:37–40, 8:40–41, 10:22–23, 10:48–50, 10:56–59). Petitioner also refers to its arguments for claims 3, 5, and 6 to contend that the GGSN controls a data path between two network switch boxes and an optimal path would depend on the protocol used for data packets. *Id.* at 72–73 (citing Ex. 1003 ¶¶ 234–237).

Claim 24 depends from claim 14 and recites “wherein the server is configured to route a plurality of data streams from the first network box to a second network box in response to a network condition.” Ex. 1001, 14:35–38. Petitioner refers to its claims 8 and 14 contentions to argue that Ahopelto teaches data streams and that Ahopelto’s GGSN routing functionality corresponds to the first network box and the router corresponds to the second network box. Pet. 73–74 (citing Ex. 1003 ¶¶ 238–239; Ex. 1005, Fig. 1). Petitioner argues that it would have been obvious Ahopelto’s mobile stations communicated data packets through the GGSN and router via different paths depending on the protocol of the data packet. Pet. 73–75 (citing Ex. 1003 ¶¶ 240–242; Ex. 1005, 10:6–10, Figs. 1, 10, 12).

For the reasons discussed above for claims 1 and 14, Petitioner does not show by a preponderance of the evidence that the proposed combination

would have rendered obvious all the limitations of claim 14, from which claims 19 and 24 depend.

Therefore, based on the full record, Petitioner fails to show by a preponderance of the evidence that claims 19 and 24 are unpatentable over Ahopelto and Matero.

E. Asserted Obviousness Based on Ahopelto, Matero, and Hardwick

1. Hardwick (Ex. 1008)

Hardwick “relates to the operation of virtual switches within physical switching systems that direct the flow of protocol data units in the data communication networks.” Ex. 1008, 1:25–28. Hardwick describes a “third class of switches (commonly referred to as bridge/routers)” that “must handle multiple protocols simultaneously” and “make fairly complex changes to the data packet as they pass through the packet switch.” *Id.* at 3:24–42. The “packet protocols” in the third class of switches “are intended to be used in very large data networks having many very dissimilar links (such as mix of very high speed local area networks (LANs) and low speed long distance point to point lines).” *Id.* at 3:15–19.

Hardwick “provides a packet processing system which contains virtual switches within physical switching systems that direct the flow of protocol data units in a data communication network” and provides “protocols, algorithms, and bridge/router architectural designs that are capable of processing packets at multi-gigabyte rates while maintaining appropriate access policies and/or network security measures.” Ex. 1008, 6:38–41, 6:43–46, 22:63–67; *see also id.* at code (57) (describing a physical switching device with at least first and second virtual switches, processor, data ports, data interfaces, and management apparatus), 15:18–29 (describing virtual routers or switches and their implementation). Hardwick

describes “significant” cost savings by using virtual routers. *Id.* at 15:41–47, 22:67–23:13.

2. *Dependent Claims 7 and 9*

Claim 7 depends from claim 2 and recites “wherein at least one network switch box is a virtual switch.” Ex. 1001, 12:35–36. Petitioner argues with references to contentions for claim 1 that Ahopelto would have rendered obvious a network switch box. Pet. 77 (citing Ex. 1003 ¶¶ 248–249; Ex. 1006, 5:15–24; Ex. 1010, 85, 87; Ex. 1011, 14:1–3). Petitioner also argues that Hardwick teaches implementing routing functions with a virtual switch. *Id.* at 77–78 (citing Ex. 1003 ¶¶ 250–253; Ex. 1008, code (57), 15:18–19, 15:24–29).

Claim 9 depends from claim 8 and recites “wherein at least one machine is a virtual machine and/or at least one network switch box is a virtual switch.” Ex. 1001, 12:42–44. Petitioner argues with reference to contentions for claim 7 that the proposed combination would have a GGSN with virtual switches. Pet. 78–79 (citing Ex. 1003 ¶ 225). Petitioner also argues that Ahopelto’s mobile stations would have been known to include or implement a virtual machine as part of its software. *Id.* at 79 (citing Ex. 1003 ¶¶ 257–258; Ex. 1016, 3:2–21, 3:49–53; Ex. 1017, 3:17–30; Ex. 1018, 1:66–2:9, 2:43–56).

According to Petitioner, one of ordinary skill in the art would have been motivated to turn to Hardwick for implementing virtual switches in Ahopelto for the benefits described in Hardwick. Pet. 75–77 (citing Ex. 1003 ¶¶ 244, 246; Ex. 1005, 5:15–24, 6:16–19; Ex. 1006; Ex. 1008, 3:15–48, 6:38–47, 15:29–50, 22:61–23:13). Petitioner also argues that its proposed combination would have been nothing more than combining known elements according to known methods to yield predictable results.

Id. at 76 (citing Ex. 1003 ¶ 245). Petitioner further argues that one of ordinary skill in the art would have had a reasonable expectation of success in combining the references because the combination would have been within ordinary skill and predictable. *Id.* at 77 (citing Ex. 1003 ¶ 247; Ex. 1006, 5:15–24; Ex. 1008, 15:29–50; Ex. 1010, 85, 87; Ex. 1013, 14:1–3).

For the reasons discussed above for claim 1, Petitioner does not show by a preponderance of the evidence that the proposed combination would have rendered obvious all the limitations of claim 1, from which claims 7 and 9 depend. The arguments for claims 7 and 9 do not address the issues discussed for claim 1.

Therefore, based on the full record, Petitioner fails to show by a preponderance of the evidence that claims 7 and 9 are unpatentable over Ahopelto, Matero, and Hardwick.

F. Asserted Obviousness Based on Ahopelto, Matero, and Sood

1. Sood (Ex. 1009)

Sood relates particularly to “a system and method of synchronizing a multi-media message communication.” Ex. 1009, 1:8–10. Sood describes “mobile and land-line systems allow[ing] voice, data, and sometimes video information to be communicated in real-time, or near real-time.” *Id.* at 1:28–30.

Sood provides “a method of coordinating the delivery of two independent messages, of different mediums, for simultaneous presentation” that is “useful in multi-media, e-mail, and wireless communications,” and the “medium types are selected from the group consisting of audio, audio/video, video, text, images, and data.” Ex. 1009, code (57), 2:35–38,

3:47, 10:60–63. Information from a third source can also be synchronized. *Id.* at 8:10–13.

2. *Dependent Claim 12*

Claim 12 depends from claim 1 and recites “wherein the wireless device includes a video streaming application and the data communication comprises a video stream data.” Ex. 1001, 12:51–53. Petitioner argues that the ’863 patent does not define “video streaming application” or “video stream data.” Pet. 82–83 (citing Ex. 1001, 2:5–57, 4:32–33, 5:35–39, 10:14–21, 11:49–55; Ex. 1003 ¶¶ 267–268).

Petitioner also argues that Ahopelto discloses routing data packets to a wireless device but does not disclose the payload of those data packets. Pet. 83 (citing Ex. 1005, 1:11–14). According to Petitioner, it would have been obvious that Ahopelto included video streaming applications. *Id.* (citing Ex. 1019, 1:35–40).

Petitioner relies on Sood to show that it was known for mobile systems to use data packets with video stream data to support video streaming applications. Pet. 83–84 (citing Ex. 1003 ¶ 270; Ex. 1009, 1:28–30). Petitioner contends that Sood also synchronizes the presentation of communication streams of audio/video and video. *Id.* at 84 (citing Ex. 1009, 2:35–38, 3:48–54). Petitioner, thus, contends that its proposed combination would have rendered obvious claim 12. *Id.* (citing Ex. 1003 ¶¶ 271–272).

Petitioner further contends that, if video streaming application requires software application on a mobile station, then it would have been obvious that its proposed combination would use a software application at the mobile station to present video data because Sood teaches its mobile station including an “application program” and a client seeing a presentation on a video monitor. Pet. 84–85 (citing Ex. 1003 ¶ 273; Ex. 1009, 3:66–4:6,

5:25–34, 8:10–13, 8:19–22). Petitioner, thus, argues that the proposed combination would have a software “application.” *Id.* at 85 (citing Ex. 1003 ¶¶ 273–275; Ex. 1006, 13:24–41).

In Petitioner’s view, one of ordinary skill in the art would have been “motivated to turn to Sood for details about the possible kinds of data packets.” Pet. 80 (citing Ex. 1003 ¶ 260; Ex. 1005, 1:11–14). Petitioner also argues that Sood teaches synchronizing multi-media message communication in wireless telephones and teaches different types of streams of information, including “audio/video” and “video,” over wireless communication, such as GSM used by Ahopelto. *Id.* at 80–81 (citing Ex. 1003 ¶ 261; Ex. 1005, 1:32–67, 4:29–40; Ex. 1009, code (57), 1:8–10, 1:47–51, 2:35–48, 3:54–56; Ex. 1012, 1:37–41).

Petitioner further argues that one of ordinary skill in the art would have been motivated to make the proposed combination to synchronize different kinds of data streams in Ahopelto. Pet. 81–82 (citing Ex. 1003 ¶ 264; Ex. 1009, 1:38–54, 2:35–38, 9:26–32). Petitioner contends that its proposed combination would have been nothing more than combining known elements according to known methods to yield predictable results. *Id.* at 82 (citing Ex. 1003 ¶ 265).

Petitioner additionally argues that one of ordinary skill in the art would have had a reasonable expectation of success in combining the references because Sood and Ahopelto are applicable to GSM and the combination would have been within ordinary skill and predictable. Pet. 81 (citing Ex. 1003 ¶¶ 262–263), 82 (citing Ex. 1003 ¶ 266; Ex. 1009, 2:35–38; Ex. 1011, 1:33–36).

For the reasons discussed above for claim 1, Petitioner does not show by a preponderance of the evidence that the proposed combination would

have rendered obvious all the limitations of claim 1, from which claim 12 depends. The arguments for claim 12 do not address the issues discussed for claim 1.

Therefore, based on the full record, Petitioner fails to show by a preponderance of the evidence that claim 12 is unpatentable over Ahopelto, Matero, and Sood.

III. CONCLUSION²

In summary:

Claims	35 U.S.C. §	References/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–6, 8, 10, 11, 14, 19, 24	103(a)	Ahopelto, Matero		1–6, 8, 10, 11, 14, 19, 24
7, 9	103(a)	Ahopelto, Matero, Hardwick		7, 9
12	103(a)	Ahopelto, Matero, Sood		12
Overall Outcome				1–12, 14, 19, 24

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

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–12, 14, 19, and 24 of U.S. Patent No. 8,982,863 B1 have not been shown, by a preponderance of the evidence, to be unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, the parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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