

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CHARTER COMMUNICATIONS, INC.,
Petitioner,

v.

IARNACH TECHNOLOGIES, INC.,
Patent Owner.

IPR2024-01286
Patent 8,942,378 B2

Before KARA L. SZPONDOWSKI, JOHN R. KENNY,
and RUSSELL E. CASS, *Administrative Patent Judges*.

SZPONDOWSKI, *Administrative Patent Judge*.

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

I. INTRODUCTION

Charter Communications, Inc. (“Petitioner”) filed a Petition (Paper 1, “Pet.”) to institute an *inter partes* review of claims 1–13 of U.S. Patent No. 8,942,378 B2, issued on January 27, 2015 (Ex. 1001, “the ’378 patent”). Iarnach Technologies, Inc. (“Patent Owner”) filed a Preliminary Response (Paper 11, “Prelim. Resp.”).

Institution of an *inter partes* review is authorized when “the information presented in the petition . . . and any response . . . 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).

Based on the current record, and for the reasons explained below, we determine that Petitioner has not established a reasonable likelihood that it would prevail with respect to at least one challenged claim. Therefore, we do not institute an *inter partes* review.

II. BACKGROUND

A. *Real Parties-in-Interest*

Petitioner identifies itself as the real party-in-interest. Pet. 2. Patent Owner also identifies itself as the real party-in-interest. Paper 5, 2 (Patent Owner’s Mandatory Notices).

B. *Related Matters*

The parties identify the following district court case involving the ’378 patent: *Iarnach Technologies, Inc. v. Charter Communications, Inc.*, Case No. 2:24-cv-00230 (ED. Tex.). Pet. 2; Paper 3, 2. Patent Owner also identifies *Iarnach Technologies, Inc. v. Charter Communications, Inc.*, Case No. 2:24-cv-00231 (ED. Tex.) and *Iarnach Technologies, Inc. v. Verizon*

Communications, Inc., et al., Case No. 2:23-cv-00631 (ED. Tex.). Paper 3, 2.

C. The '378 Patent (Ex. 1001)

The '378 patent is titled “Method and Device for Encrypting Multicast Service in Passive Optical Network System” and is generally directed to providing “a method and device for encrypting multicast service in a passive optical network (PON) system to increase the security and reduce the complexity of OLT [(Optical Line Terminal)] encryption mechanism and the burden of the OLT.” Ex. 1001, code (54), 1:58–62.

As background, the '378 patent describes the structure of a PON as one PON port corresponding to a plurality of optical network units (“ONU”) that are the PON terminal users, and where each ONU is able to receive all the data sent from the OPT. Ex. 1001, 1:14–18. A legal user is a user who has legal registration information and can be activated by interacting messages with the OLT, whereas a malicious user is a user who does not have legal registration information and neglects the registration request sent from the OLT, but receives the downlink information. *Id.* at 1:20–28. “To date, the PON techniques define some encryption mechanisms, such as the Advanced Encryption Standard (AES) encryption mechanism in the Gigabit-Capable-Passive Optical Network (GPON) system or the stirring encryption mechanism and the triple stirring encryption mechanism in the Ethernet Passive Optical Network (EPON) . . . [but] these encryption mechanisms, however, are unicast encryption mechanisms.” *Id.* at 1:32–39.

According to the '378 patent, “[f]or multicast data (that is, only one service data is sent from the OLT PON port, and all users or part of users who meet the requirements receive and use the service data), there is no

effective encryption mechanism right now.” Ex. 1001, 1:39–43.

“Generally, the operators set a universal key in the overall network range to encrypt the services, whose disadvantage is that once the key is acquired by a malicious user, all service content in the overall network will be decrypted and stolen.” *Id.* at 1:43–47. The ’378 patent seeks to encrypt multicast service in a PON system to increase the security and reduce the complexity of OLT encryption and the burden on the OLT. *Id.* at 1:58–62, 3:9–13. It purportedly “limits the range affected by disclosing the key from the whole network to a certain PON port.” *Id.* at 3:14–16. Additionally, “since the multicast service data born in the PON is transmitted after encrypted, and the key is only sent to the users that are activated successfully, the malicious users cannot acquire the key, nor the legal users before registration, thus it prevents illegal behaviors of the malicious users . . . , meanwhile, it does not affect the legal users normally using the encrypted multicast service after being activated.” *Id.* at 3:19–26.

More specifically,

[T]he OLT generates a public key and uses the public key to encrypt the multicast service data in the bearer channel and then sends the encrypted data, the data in the same one bearer channel is encrypted with the same public key; said OLT sends the public key applied in encrypting the multicast service data to the ONU that is activated successfully and applies to receive said multicast service data via a management control channel (such as the optical network terminal (ONT) management control interface (OMCI) or the operation administration maintenance (OAM)).

After the ONU acquires the public key, it uses the key to decrypt the multicast service data that the ONU applies to receive in the bearer channel.

Ex. 1001, 3:47–60. The bearer channel is described as “a logical channel of the PON, and it can be the general encapsulation model (GEM) channel born by the GPON port or the logical link identification (LLID) channel of the EPON port, and is maintained and updated by the OLT.” *Id.* at 4:4–8. The management control channel is described as “a logical channel of the PON, such as a physical layer operation administration maintenance (PLOAM) channel or an OMCI channel in the GPON system, or an extended OAM channel in the EPON system.” *Id.* at 4:9–14.

D. Illustrative Claim

Of the challenged claims, claims 1 and 9 are independent. Independent claim 1, reproduced below with Petitioner’s identifiers in brackets, illustrates the claimed subject matter:

1. [preamble] A method for encrypting multicast service in a passive optical network system, the method comprising:

[a] an optical line terminal (OLT) generating a common key, [b] and using the common key to encrypt multicast service data of all different multicast services in a same bearer channel and then sending encrypted data, [c] wherein the multicast service data of all different multicast services in the same one bearer channel use a same common key to carry out encryption; and

[d] said OLT sending the common key *applied in encrypting* the multicast service data via a management control channel to an optical network unit (ONU) that is activated successfully and applies to receive said multicast service data.

Ex. 1001, 7:61–8:7. Independent claim 9 recites similar limitations for a device. *Id.* at 8:59–9:6.

E. Prior Art and Asserted Challenges to Patentability

Petitioner asserts that claims 1–13 are unpatentable based on the following challenges (Pet. 19):

Claim(s) Challenged	35 U.S.C. §¹	Basis/References
1, 2, 4, 6–10, 12, 13	103(a)	Murakami, ² RFC 1112, ³ RFC 4601 ⁴
3, 5, 11	103(a)	Murakami, RFC 1112, RFC 4601, Yen ⁵

Petitioner separately references the knowledge of a person of ordinary skill in the art as part of each challenge. Pet. 19. When analyzing whether claims would have been obvious and whether it would have been obvious to modify prior art, it is always from the perspective of an ordinarily skilled artisan and one must consider knowledge generally available to one of ordinary skill in the art. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398,

¹ Because the earliest possible effective filing date of the ’378 patent is before March 16, 2013, patentability is governed by the version of 35 U.S.C. § 103 preceding the Leahy-Smith America Invents Act (“AIA”), Pub L. No. 112–29, 125 Stat. 284 (2011). *See* Pet. 3.

² Murakami et al., JP 2004-343243 A, published Dec. 2, 2004 (Ex. 1005, “Murakami”). Petitioner contends Murakami is prior art under 35 U.S.C. § 102(b). Pet. 15–16.

³ RFC 1112, Host Extensions for IP Multicasting, Aug. 1989 (Ex. 1006, “RFC 1112”). Petitioner contends RFC 1112 is prior art under 35 U.S.C. § 102(b). Pet. 16. We note that Patent Owner refers to RFC 1112 as “IGMPv1.” Prelim. Resp. 22.

⁴ RFC 4601, Protocol Independent Multicast – Sparse Mode (PIM-SM): Protocol Specification (Revised), Aug. 2006 (Ex. 1007, “RFC 4601”). Petitioner contends RFC 4601 is prior art under 35 U.S.C. § 102(b). Pet. 17. We note that Patent Owner refers to RFC 4601 as “PIM-SM.” Prelim. Resp. 34.

⁵ Yen et al., US 2002/0150097 A1, published Oct. 17, 2002 (Ex. 1008, “Yen”).

418 (2007) (one considers “the background knowledge possessed by a person having ordinary skill in the art”). The knowledge of a person of ordinary skill in the art is, therefore, always a consideration and is not a separate basis in an obviousness challenge.

In support of its proposed challenges, Petitioner relies on the Declaration of Dr. George Rouskas. *See* Ex. 1003. In opposition, Patent Owner relies on the Declaration of Dr. Kerry Litvin. *See* Ex. 2002.

III. ANALYSIS

A. *Legal Standards*

A claim is unpatentable under 35 U.S.C. § 103(a) if “the differences between the subject matter sought to be patented 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*, 550 U.S. 398 at 406. 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) objective evidence of nonobviousness, i.e., secondary considerations. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3)); *see also Intelligent BioSystems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016). At this preliminary stage, we determine whether the information presented in

the Petition shows there is a reasonable likelihood that Petitioner would prevail in establishing that at least one of the challenged claims would have been obvious.

B. Level of Ordinary Skill in the Art

Petitioner contends a person of ordinary skill in the art “would have had at least a bachelor’s degree in electrical engineering, computer science or comparable degree or 2-3 years industry experience designing and/or maintaining back-end networking equipment.” Pet. 13.

Patent Owner contends that Petitioner’s proposal reflects an education level and experience that is too low. Prelim. Resp. 37. Therefore, Patent Owner proposes that a person of ordinary skill in the art “would have at least a bachelor’s degree in electrical engineering, computer science, or a similar degree plus at least two years of experience in optical networks.” *Id.* (citing Ex. 1001, 1:7–10; Ex. 2002 ¶¶ 18–24). Patent Owner further contends that “[a] higher level of experience would compensate for a lower education and vice versa.” *Id.*

Although Patent Owner proposes an alternative level of ordinary skill in the art, Patent Owner does not explain how it impacts Petitioner’s contentions or Patent Owner’s arguments in opposition. For purposes of this Decision, we adopt Petitioner’s proposed level of ordinary skill in the art, as consistent with the ’378 patent’s specification and the level of ordinary skill in the art reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). However, our findings would not change even under Patent Owner’s proposed level of skill in the art.

C. Claim Construction

A claim “shall be 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) (2024); *see also Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

Petitioner proposes constructions for the terms “common key” and “bearer channel.” Pet. 13–15. Patent Owner responds to Petitioner’s proposals, and further proposes a construction for the term “service.” Prelim. Resp. 37–43.

1. “common key”

Petitioner contends that the term “common key” is “nowhere to be found in the specification,” which “refers to a ‘public key.’” Pet. 13 (citing Ex. 1001). Relying on the prosecution history and testimony of Dr. Rouskas, Petitioner contends that a person of ordinary skill in the art would understand a “common key” to be “a key used to both encrypt and decrypt communications.” *Id.* at 14 (citing Ex. 1002, 313–316; Ex. 1003 ¶¶ 26–33).

Patent Owner “agrees with Petitioner that a ‘common key’ is used in symmetric encryption, where the same key is used for both encryption and decryption.” Prelim. Resp. 41. However, Patent Owner contends that this is the plain and ordinary meaning of the term, so it does not require explicit construction. *Id.* at 41–42.

There is no dispute between the parties as to this term that would affect our Decision. Therefore, we do not need to explicitly construe it for purposes of this Decision. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017); *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”).

2. “*bearer channel*”

Petitioner contends that a “bearer channel” should be construed to mean “a logical channel of the PON that can be a LLID or GEM.” Pet. 15 (citing Ex. 1001, 4:4–8; Ex. 1003 ¶ 34).

Patent Owner disputes that a “bearer channel” is “limited to a logical channel of the PON,” however, Patent Owner agrees that it “*can be* a logical channel of the PON.” Prelim. Resp. 42. Therefore, Patent Owner states that construction of this term is not required.

As both parties recognize (Pet. 15; Prelim. Resp. 42), the specification of the ’378 patent states that a “bearer channel is a logical channel of the PON, and it can be the general encapsulation model (GEM) channel born by the GPON port or the logical link identification (LLID) channel of the EPON port, and it is maintained and updated by the OLT.” Ex. 1001, 4:4–9. There is no dispute between the parties as to this term that would affect our Decision. Therefore, we do not need to explicitly construe it for purposes of this Decision. *See Nidec*, 868 F.3d at 1017 (Fed. Cir. 2017).

3. “*service*”

Patent Owner argues that “services” are different from “sources.” Prelim. Resp. 41. That is, Patent Owner argues that “services” “refer[] to the

intangible activities that service provides on the PON network provide a user, such as digital broadcast services,” whereas “sources” “refer[] to an address, paradigmatically an IP address.” *Id.* Patent Owner provides examples of services, such as digital broadcast services, video on demand (“VOD”), file download, content broadcast, e-mail, file exchange, distance learning, telemedicine, online-gaming, group software, and private line services. *Id.* at 38 (citing Ex. 2005,⁶ 10–11; Ex. 2002 ¶ 101).

Petitioner does not explicitly construe the term “service.” *See generally* Pet.

For purposes of this Decision, we need not explicitly construe the term “service.” *See Nidec*, 868 F.3d at 1017 (Fed. Cir. 2017). We will address further arguments as to Petitioner’s contentions as to the “multicast service data” and “different multicast services” below in our analysis of limitation 1[b].

D. Alleged Obviousness Over Murakami, RFC 1112 and RFC 4601

Petitioner contends claims 1, 2, 4, 6–10, 12, and 13 would have been obvious over the combination of Murakami, RFC 1112, and RFC 4601. Pet. 19–54. Specifically, Petitioner contends that Murakami discloses all but one element of claim 1 and the remaining element (i.e., “all different multicast services”) is “implicitly disclosed by Murakami and would have been obvious” to a person of ordinary skill in the art in view of RFC 1112 and RFC 4601. *Id.* at 19. Patent Owner disputes Petitioner’s contentions. Prelim. Resp. 43–62. Having considered the arguments and evidence before us, we find that the record does not establish a reasonable likelihood that

⁶ Exhibit 2005 is the Gigabit-capable Passive Optical Networks (GPON) specification, which is referenced at 1:34–35 in the ’378 patent.

Petitioner would prevail on at least one claim in this asserted ground of unpatentability.

1. Murakami (Ex. 1005)

Murakami is titled “Method and Central Office Unit for Multicast Communication in PON System” and generally describes “provid[ing] a PON system that allows efficient multicasting” in which “communications are carried out through the use of logical links.” Ex. 1005, codes (54), (57). Murakami describes using Internet Group Management Protocol (IGMP), of which there are versions 1 and 2, to implement multicasting in IP communications. *Id.* ¶¶ 3, 4, 27. Generally, IGMP operates by using a multicast router to periodically multicast query messages and acknowledge its members by the absence or presence of report messages. *Id.* ¶ 4. “When a host participates in a group or responses to a query message, it replies with a report message.” *Id.* “When the host leaves the group, it provides a notification in the form of a leave message.” *Id.* “When a subscriber terminal leaves multicast communication, it simply does not transmit a report message back.” *Id.*

Figure 1, reproduced below, shows an example of the configuration of OLT 10. Ex. 1005 ¶ 19.

Figure 1

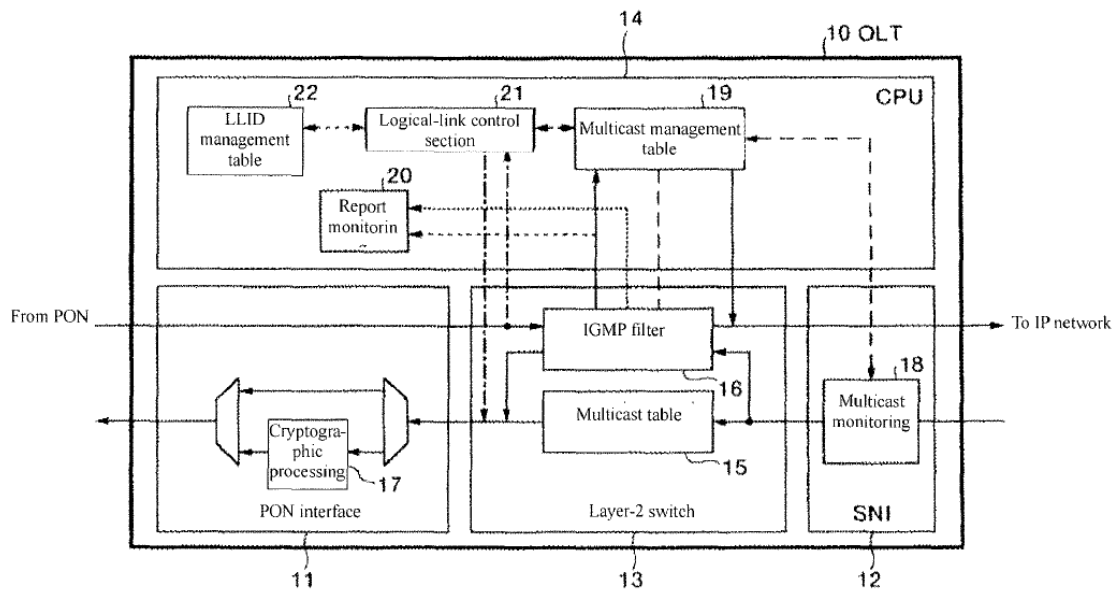


Figure 1, above, shows, among other things, OLT 10 including PON interface 11, which accommodates one or more ONUs via a splitter and has a cryptographic processing section 17 for encrypting multicast data; service node interface (“SNI”) 12, which establishes a connection to the IP network and includes multicast monitoring section 18; CPU 14, which includes report monitoring section 20, LLID management table 22, logical-link control section 21, and multicast management table 19. Ex. 1005 ¶¶ 20, 23, 24

Figure 3, reproduced below, shows an example of multicast management table 19.

Figure 3

Multicast Management Table 19

Multicast Address (IP Group Address)	Access Port	ONU (LLID for P2P)	LLID for multicasting	Encryption key
yyy.yyy.yyy.yyy	2	1	100	#1
		3		
	4	2	110	#3
		5		
⋮	⋮	⋮	⋮	⋮

Multicast Management Table 19 shows “two access ports (2 and 4) for the multicast communication with the destination IP address of ‘yyy.yyy.yyy.yyy,’ allowing access by a total of four ONUs: two ONUs on port 2 (point-to-point logical links 1 and 3, respectively) and two ONUs on port 4 (point-to-point logical links 2 and 5, respectively).” Ex. 1005 ¶ 25. “For port 2, the LLID of the multicast logical link is 100, and the encryption key is #1.” *Id.* “For port 4, the LLID of the multicast logical link is 110, and the encryption key is #3.” *Id.*

Figure 4, reproduced below, shows an example configuration of a network.

Figure 4

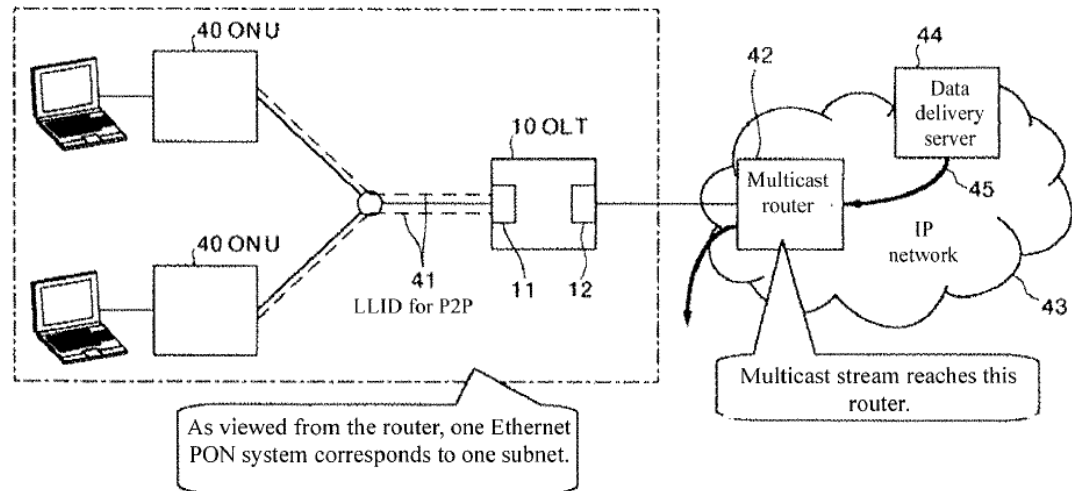


Figure 4 depicts PON system on the left, including one OLT 10 and multiple ONUs 40. Ex. 1005 ¶ 26. OLT 10 accommodates one or more PON interfaces 11, which accommodate multiple ONUs 40. *Id.* Point-to-point logical link 41 connects to each ONU 40. *Id.* Service network interface (“SNI”) 12 on OLT 10 connects to multicast router 42 on IP network 43. *Id.*

Murakami describes that in OLT 10, report messages, containing an IP group address used for multicast communication, are received from PON interface 11 and are snooped through IGMP filter section. Ex. 1005 ¶ 27. “OLT 10 searches multicast management table 19 . . . by using the IP group address as key. If no matching multicast address is found, it is recognized as the first access, upon which the IP multicast address, the access port, and the ONU (LLID) are remembered in an unused entry in multicast management table 19.” *Id.* ¶ 29. Further, “OLT 10 transmits the captured report messages only to SNI interface 12 . . . then sets up a multicast logical link

for the ONU that has made access.” *Id.* ¶ 30. To do so, “logical-link control section 21 refers to LLID management table 22, selects one of the unused LLIDs at the access port, and transmits REGISTER message . . . containing said LLID to point-to-point logical link 41 of the ONU concerned.” *Id.* “The ONU concerned, upon receipt of the REGISTER message . . . uses the LLID stored in [the] message . . . as the LLID of the multicast logical link and transmits [an acknowledgement] message . . . to the point-to-point logical link.” *Id.* ¶ 31. In addition, “OLT 10 remembers, in multicast management table 19, the LLID value assigned through this procedure.” *Id.* “OLT 10 generates a new encryption key used in this multicast communication and transmits to the point-to-point logical link 41.” *Id.*

Murakami further explains that the encryption key may be included in the REGISTER message. *Id.* ¶ 32. For data transfer from OLT to ONU on the point-to-point logical link 41, the REGISTER message is also encrypted, “preventing the stored encryption key from being eavesdropped by another ONU.” *Id.* “Subsequent multicast data arriving from SNI interface 12 are forwarded to the access port . . . encrypted with the encryption key corresponding to the multicast communication concerned (the encryption key corresponding to the encryption key index in the entry whose destination IP address matches the IP multicast address in the multicast management table), and then transmitted to PON interface 11.” *Id.* ¶ 34.

Alternatively, “if a matching multicast address is found in the [multicast management] table, it is recognized as the second or subsequent access, and a new ONU (LLID) is remembered in the matching entry in multicast management table 19.” Ex. 1005 ¶¶ 19, 36. “OLT 10 then sets up a multicast logical link for the ONU that has made access.” *Id.* ¶ 37. “If the

new ONU is accommodated on the same PON port as that of the ONU which has already made access, REGISTER message . . . containing the LLID already being used is selected; whereas if the new ONU is accommodated on a different PON port from that of the ONU which has already made access, one of the unused LLIDs on the PON port is selected.”

Id. Then, the REGISTER message “containing the LLID thus selected is transmitted to point-to-point logical link 41 of the ONU.” *Id.* In the case where “the new ONU is accommodated on a different PON port from that of the ONU which has already made access, OLT 10 remembers, in multicast management table 19, the LLID value assigned through this procedure.” *Id.* ¶ 39. “Further, OLT 10 generates a new encryption key to be used in this multicast communication [in this case].” *Id.*

2. RFC 1112 (Ex. 1006)

RFC 1112 is titled “Host Extensions for IP Multicasting” and “specifies the extensions required of a host implementation of the Internet Protocol (IP) to support multicasting.” Ex. 1006, 1. “It is the recommended standard for IP multicasting in the Internet.” *Id.*

RFC 1112 states that “IP multicasting is the transmission of an IP datagram to a ‘host group’, a set of zero or more hosts identified by a single IP destination address.” Ex. 1006, 1. It specifies that “hosts may join and leave groups at any time,” and “[a] host need not be a member of a group to send datagrams to it.” *Id.* “A host transmits an IP multicast datagram as a local network multicast which reaches all immediately-neighboring members of the destination host group.” *Id.* Among other things, RFC 1112 describes use of the IGMP version 1 from the perspective of the host. Ex. 1006, 11–15.

3. *RFC 4601 (Ex. 1007)*

RFC 4601 is titled “Protocol Independent Multicast – Sparse Mode (PIM-SM): Protocol Specification (Revised)” and “specifies an Internet standards track protocol for the Internet community.” Ex. 1007, 1. RFC 4601 implements the service model from RFC 1112. *Id.* at 6.

4. *Analysis of Independent Claim 1*

As described above, Petitioner contends that Murakami teaches all limitations in claim 1 except for the limitation “**all different multicast services.**” Pet. 19. According to Petitioner, that limitation is “implicitly disclosed by Murakami and would have been obvious” to a person of ordinary skill in the art in view of RFC 1112 and RFC 4601. *Id.* We focus our analysis on this limitation.

Limitation 1(b) recites “and using the common key to encrypt multicast service data of all different multicast services in a same bearer channel and then sending encrypted data.” Ex. 1001, 7:64–66.

Petitioner relies on the combination of Murakami, RFC 1112, and RFC 4601 to teach limitation 1(b). Pet. 20–39. Specifically, Petitioner contends that Murakami discloses use of a bearer channel in the form of a logical link and establishing logical links for multicast communications downstream to ONUs. Pet. 21–24 (citing, e.g., Ex. 1003 ¶¶ 72–77; Ex. 1005, code (57), ¶ 18, Figs. 3, 10). Petitioner further contends that Murakami’s “OLT encrypts all data of all multicast services communicated in a particular bearer channel (i.e., logical link) with a key.” *Id.* at 25 (citing Ex. 1003 ¶ 79). Pointing to Multicast Management Table 19 (i.e., Figure 3) of Murakami, Petitioner contends that “all data for the different group multicast services communicated via link 100 to ONUs 1 and 3 . . . is

encrypted with encryption key #1 and all multicast data for all services communicated via link 110 to the remaining two ONUs is encrypted with encryption key #3.” *Id.* at 27.

According to Petitioner, a person of ordinary skill in the art “would understand that Murakami discloses that all multicast data for all different multicast services transmitted on the same bearer channel (LLID 100 or 110) to ONUs that are members of a multicast group is encrypted with the same encryption key.” Pet. 27–28 (citing Ex. 1003 ¶ 82). Alternatively, Petitioner argues that “[t]o the extent Murakami does not explicitly disclose delivery in a logical link (i.e., bearer channel) of all multicast data from different sources encrypted with a common key, such a disclosure would have been implicitly in Murakami, or the encryption and transmission of different multicast service data in the same bearer channel would have been obvious, in view of RFCs 1112 and 4601.” *Id.* at 28 (citing Ex. 1003 ¶¶ 78–100).

Petitioner contends that Murakami employs Internet Management Group Protocol (IGMP), RFC 1112 describes what a person of ordinary skill in the art would understand to be version 1 of IGMP, and RFC 4601 implements the service model described in RFC 1112. Pet. 29 (citing Ex. 1003 ¶ 85; Ex. 1005 ¶ 27; Ex. 1006, 11–15; Ex. 1010, Ex. 1007, 6). In addition, Petitioner contends that Murakami’s architecture is consistent with RFC 1112’s multicasting model, and RFC 4601 implements the service model described in RFC 1112. *Id.* (citing Ex. 1003 ¶ 86; Ex. 1001, Fig. 3; Ex. 1006, 1; Ex. 1007, 6); *see also* Pet. 30.

Petitioner contends that RFC 1112 discloses that “multicast communications can be composed of data from a plurality of sources.”

Pet. 30 (citing Ex. 1003 ¶ 89). Petitioner argues that “‘IP multicasting’ involves transmission of an IP datagram to ‘a single IP destination address’ representing one or more recipients (*i.e.* hosts).” *Id.* at 30–31 (citing Ex. 1006, 1). Petitioner contends that “[a]ny number of sources may direct such IP datagrams to this single destination address.” *Id.* at 31 (citing 1006, 1 (stating that “A host need not be a member of a group to send datagrams to it”). Additionally, Petitioner contends that RFC 4601 “confirms that the implementation of the IGMP model described in RFC 1112 includes multicast data drawn from a plurality of sources.” *Id.* (citing Ex. 1003 ¶ 90; Ex. 1007, 4, 7). Petitioner also contends that RFC 4601 “explains that IGMPv3 maintained functionality permitting a host to receive all multicast data from a plurality of sources.” *Id.* (citing Ex. 1003 ¶ 90; Ex. 1007, 6).

Petitioner contends that “[d]ata from these different sources constitutes multicast service data of different multicast services.” Pet. 32 (citing Ex. 1003 ¶ 91). According to Petitioner, a person of ordinary skill in the art

would understand, and it would have been obvious to such a person, that multicast data transmitted from a plurality of different sources can and would encompass data relating to different multicast services. [Ex. 1002, 352.] In view of the RFC disclosures that *multiple different sources* (*i.e.* a plurality of different data streams) can send data packets to the *same* multicast group, a [person of ordinary skill in the art] would understand that Murakami’s multicasting communications can involve *different* multicast services sent to the *same* multicast group. Murakami’s OLT transmits all of these multicast services on the *same* multicast LLID/bearer channel, encrypting them with the same key. *Id.*

Pet. 32.

Petitioner contends that a person of ordinary skill in the art would have been motivated to communicate known/conventional configurations of multicast data drawn from different sources as described in RFC 1112 and RFC 4601 in Murakami's system for various reasons, including (1) to enhance the services offered and to deliver the data more efficiently; (2) to ensure compatibility with published standards protocols; and (3) to enable more selection of more selective data sources. Pet. 34. Additionally, Petitioner argues that a person of ordinary skill in the art would not have differentiated multicast data composed of data from a plurality of sources based upon its source, or sought to encrypt data differently based on its original source. *Id.* (citing Ex. 1003 ¶¶ 94). Petitioner argues that Murakami does not suggest restricting its system to a single source of data and/or a single multicast service or contemplate differentiating between sources of multicast data received. Pet. 33–35 (citing Ex. 1003 ¶¶ 93–94). Petitioner also argues that a person of ordinary skill in the art would have had a reasonable expectation of success in the combination. *Id.* at 35–38.

Petitioner also argues that Murakami's encryption key is a “common key” because it is a single key used to encrypt and decrypt the multicast data communicated on a particular bearer channel. Pet. 38–39 (citing Ex. 1003 ¶¶ 98–9; Ex. 1005 ¶¶ 29, 35–37, 39, claim 5).

Among other things, Patent Owner contends that Petitioner “equates ‘sources’ with ‘services’ by arguing that “[d]ata from . . . different *sources* constitutes multicast service data of different multicast, services.” Prelim. Resp. 37 (citing Pet. 32). Patent Owner argues that “the ‘378 Patent never uses the word ‘source,’” which, according to RFC 1112 and RFC 4601, “is the IP address from which a low-level packet is sent.” *Id.* at 39 (citing

Ex. 2002 ¶ 104; Ex. 1006, 6; Ex. 1007, 18). Patent Owner argues that the words “source” and “service” are not equivalent because one service may have multiple sources, for example, for redundancy reasons. *Id.* at 39, 52. According to Patent Owner, RFC 4601 “teaches that communications to a multicast group can be drawn from different ***sources***, not ***services***” and RFC 1112 “says nothing concerning multiple sources ***or*** services.” *Id.* at 51; *see also id.* at 51–52 (arguing that RFC 1112 “says nothing about how many sources—whether part of the group or not—can send data to a group, much less the relationship of a service to a source, or that multiple services can or should address a group”).

On this record, we determine that Petitioner has not sufficiently shown, for purposes of institution, that the combination of references teaches “using the common key to encrypt **multicast service data of all different multicast services** in a same bearer channel and then sending encrypted data,” as recited in claim 1. To teach this limitation, Petitioner relies on disclosures from RFC 4601 and RFC 1112⁷ purporting to show that communications to a multicast group can be drawn from **different sources**. Pet. 28–31. As set forth above, Petitioner argues that “[d]ata from . . . different sources constitutes multicast service data of different multicast services.” *Id.* at 32 (citing Ex. 1003 ¶ 91). Therefore, Petitioner’s argument

⁷ We tend to agree with Patent Owner that Petitioner’s reliance on RFC 1112’s disclosure that “[a] host need not be a member of a group to send datagrams to it” does not seem to support that “[a]ny number of sources may direct such IP datagrams to [a] single destination address.” Prelim. Resp. 51–52; Pet. 31; Ex. 1003 ¶ 89. However, there is no dispute that RFC 4601 teaches that communications to a multicast group can be drawn from different sources. *See* Pet. 31; Prelim. Resp. 51.

presumes that by showing that RFC 4601 and RFC 1112 teaches multicast communications from different sources, Petitioner has also shown that the multicast communications are from different multicast services. We disagree.

The entirety of Petitioner's contentions as to this claim limitation (i.e., all different multicast services) are set forth above. In support, Petitioner points to the prosecution history of the '378 patent, arguing that "applicant acknowledged that different multicast 'data streams' equated to multicast service data of different multicast services." Pet. 32 (citing Ex. 1002, 352). Petitioner relies on Applicant's arguments addressing the He reference, where Applicant argued that He:

discloses to encrypt the multicast data stream in **one** service channel . . . , does **not** disclose any information about more than one service channel and further does **not** disclose any information about the bear[er] channel at all; and from the description of HE, there is no prompt for encrypt all multicast data streams, it only disclose[s] that **the key (not different multicast data streams)** is transmitted using different service channels to different users in the same multicast group.

Ex. 1002, 352. On this record, we fail to see how these arguments support Petitioner's position that multicast data from different sources constitutes multicast service data of different multicast services. Although Applicant pointed out various alleged deficiencies in the He reference, neither Petitioner nor Dr. Rouskas tie these arguments to the disclosure in Murakami, RFC 4601, or RFC 1112 or provide any explanation as to how these arguments support their position. Dr. Rouskas's cited testimony (Ex. 1003 ¶ 91) is "conclusory and unsupported, adds little to the conclusory assertion for which it is offered to support, and is entitled to little weight."

Xerox Corp. v. Bytemark, Inc., IPR2022-00624, Paper 9 (PTAB August 24, 2022) (precedential). The record lacks any analysis or discussion as to how RFC 1112 or RFC 4601 teaches multicast **service data of all different multicast services**, as recited in claim 1. As Patent Owner points out, neither RFC 1112 or RFC 4601 “discuss[es] the relationship between a source and a service.” Prelim. Resp. 52 (citing Ex. 2002 ¶ 135).⁸

Petitioner does not sufficiently show, for purposes of institution, that any of the asserted references describe multicast service data of **all different multicast services**, as recited in claim 1.⁹ At best, Petitioner has shown multicast data may be sent from different sources (i.e., different data streams), but we agree with Patent Owner that disclosure of multiple sources “falls short of teaching all multiple services would or should share a single multicast destination address.” Prelim. Resp. 52. What Petitioner has shown is simply not recited in claim 1. Moreover, Patent Owner’s declarant, Dr. Litvin, provides examples of how a single service may have multiple

⁸ Although Petitioner states that “RFCs 1112 and 4601 teach that . . . the content of communications to each such multicast group can be drawn from different services,” (Pet. 28), Petitioner does not provide any citation to RFC 1112 and/or RFC 4601 supporting this statement. Likewise, Dr. Rouskas’s testimony merely repeats this statement without any supporting citation, evidence, or explanation. Ex. 1003 ¶ 83.

⁹ We acknowledge that Murakami more broadly refers to “multicast communication” and “multicast data.” E.g., Ex. 1005, code (57), ¶¶ 12–14, 23. However, aside from conclusory statements that Murakami discloses “multicast data for all different multicast services,” (e.g., Pet. 27) Petitioner does not provide any citations to Murakami or testimony supporting these statements. On this record, Murakami does not explicitly mention multicast service data, much less discuss different multicast services transmitted to the same multicast address (IP Group address).

sources, as well as reasons why a single service may have multiple sources, such as, for example, redundancy reasons, load balancing, and latency improvements. *See* Ex. 2002 ¶¶ 144–148; Prelim. Resp. 51–52. As discussed herein, Petitioner provides nothing more than conclusory statements that lack sufficient explanation or support in the record.

Petitioner states that a person of ordinary skill in the art “would understand, and it would have been obvious to such a person, that multicast data transmitted from a plurality of different sources can and would encompass data relating to different multicast services.” Pet. 32. However, aside from the previously discussed citation to the prosecution history and to Dr. Rouskas’s testimony at paragraph 91, Petitioner provides no evidentiary support to substantiate this understanding of a person of ordinary skill in the art. As discussed above, Dr. Rouskas’s testimony merely repeats this statement, with no further explanation or evidentiary support. As explained in our Consolidated Trial Practice Guide¹⁰ (Nov. 2019) at 36:

Expert testimony, however, cannot take the place of a disclosure in a prior art reference, when that disclosure is required as part of the unpatentability analysis [I]n an obviousness analysis, conclusory assertions from a third party about general knowledge in the art cannot, without supporting evidence of record, supply a limitation that is not evidently and indisputably within the common knowledge of those skilled in the art. *K/S Himpp v. Hear-Wear Techs., LLC*, 751 F.3d 1362, 1365 (Fed. Cir. 2014). Furthermore, because an *inter partes* review may only be requested “on the basis of prior art consisting of patents or printed publications,” 35 U.S.C. § 311(b), expert testimony cannot take the place of disclosure from patents or printed publications. In other words, expert

¹⁰ Available at <https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf>.

testimony may explain “patents and printed publications,” but is not a substitute for disclosure in a prior art reference itself.

As Patent Owner points out, “Petitioner and [Dr. Rouskas] have not provided a single example of multiple services sharing a group multicast address.” Prelim. Resp. 61. As such, Petitioner’s conclusory assertion does not satisfy Petitioner’s burden to demonstrate patentability.

Similarly, Petitioner contends that “[i]n view of the RFC disclosures that *multiple different sources* (*i.e.*, a plurality of different data streams) can send data packets to the same multicast group, a [person of ordinary skill in the art] would understand that Murakami’s multicasting communications can involve *different* multicast services sent to the same multicast group.” Pet. 32. However, this statement rests on the underlying assumption that multiple sources constitutes multiple different services, which Petitioner has not sufficiently established for purposes of institution.

Finally, although Petitioner argues that Murakami does not explicitly disclose “all different multicast services,” Petitioner also argues that a person of ordinary skill in the art “would understand that Murakami discloses that all multicast data for all different multicast services transmitted on the same bearer channel (LLID 100 or 110) to ONUs that are members of a multicast group is encrypted with the same encryption key,” but Petitioner does not provide further explanation as to how or why Murakami alone teaches “all different multicast services.” Pet. 19, 27–28. Dr. Rouskas’s testimony merely repeats this statement, without further explanation or evidentiary support. Ex. 1003 ¶ 82. Similarly, Petitioner also argues that “such a disclosure would have been implicit in Murakami,” (Pet.

28) but this theory, too is not sufficiently explained for purposes of institution.

For the reasons given above, we are not persuaded that Petitioner's argument and evidence demonstrate a reasonable likelihood Petitioner would prevail in showing the unpatentability of claim 1 as obvious over Murakami, RFC 1112, and RFC 4601. *See KSR*, 550 U.S. at 418 (obviousness "cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness").

5. *Claims 2, 4, 6–10, 12, 13*

Claims 2, 4, and 6–8 depend from claim 1, and claims 10, 12, and 13 depend from independent claim 9. Ex. 1001, 8:8–58, 9:7–10:19. Claim 9 recites a similar limitation, i.e. "encrypt multicast service data of all different multicast services born in a same one bearer channel." Ex. 1001, 8:65–67. For analysis of this limitation, Petitioner refers to limitation 1(b), discussed above. Pet. 49–50.

Therefore, for the same reasons as for claim 1, we are not persuaded that Petitioner has demonstrated a reasonable likelihood in showing the unpatentability of claims 2, 4, 6–10, 12, and 13 as obvious over Murakami, RFC 1112, and RFC 4601.

E. Alleged Obviousness Over Murakami, RFC 1112, RFC 4601, and Yen

Petitioner asserts that dependent claims 3, 5, and 11 are obvious over Murakami, RFC 1112, RFC 4601, and Yen. Pet. 54–63. The addition of Yen does not cure the deficiencies discussed above. Therefore, for the same reasons as for claim 1, we are not persuaded that Petitioner has demonstrated

a reasonable likelihood in showing the unpatentability of claims 3, 5, and 11 as obvious over Murakami, RFC 1112, RFC 4601, and Yen.

IV. CONCLUSION

After considering the evidence and arguments presented in the Petition and Preliminary Response, we determine Petitioner has *not* established a reasonable likelihood of prevailing on its assertion that at least one claim of the '378 patent is unpatentable on at least one ground.¹¹ Therefore, we do not institute an *inter partes* review.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is denied and no *inter partes* review is ordered.

¹¹ Patent Owner also argued that we should deny institution under 35 U.S.C. § 314(a) because of the related district court litigation in the Eastern District of Texas. Prelim. Resp. 2–11. However, because we are denying institution on the merits, we need not reach these arguments.

IPR2024-01286
Patent 8,942,378 B2

For PETITIONER:

Raymond Ricordati
MARSHALL, GERSTEIN & BORUN LLP
rricordati@marshallip.com

For PATENT OWNER:

Blaine Larson
Michael Heim,
HEIM PAYNE & CHORUSH, LLP
blarson@hpcllp.com
mheim@hpcllp.com

Joshua Wyde
ALAVI & ANAIPAKOS, PLLC
jwyde@aatriallaw.com