

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LENOVO (UNITED STATES) INC.,
Petitioner,

v.

INTELLECTUAL VENTURES, II LLC,
Patent Owner.

IPR2024-00109
Patent 8,474,016 B2

Before HYUN J. JUNG, JOHN D. HAMANN, and STEPHENE. BELISLE,
Administrative Patent Judges.

HAMANN, *Administrative Patent Judge.*

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

In this *inter partes* review, Lenovo (United States) Inc. (“Petitioner”) challenges the patentability of claims 1–3, 6–9, 12, and 14–17 (“the challenged claims”) of U.S. Patent No. 8,474,016 B2 (Ex. 1001, “the ’016 patent”), owned by Intellectual Ventures II LLC (“Patent Owner”). We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons discussed herein, we determine that Petitioner shows by a preponderance of the evidence that the challenged claims are unpatentable.

A. *Procedural History*

Petitioner filed a Petition requesting *inter partes* review of the challenged claims. Paper 1 (“Pet.”). Patent Owner filed a Preliminary Response. Paper 6. We instituted *inter partes* review of the challenged claims on all grounds raised in the Petition. Paper 7 (“Dec. on Inst.”), 36.

Following institution, Patent Owner filed a Response to the Petition. Paper 9 (“PO Resp.”). Petitioner filed a Reply to Patent Owner’s Response. Paper 11 (“Pet. Reply”). Patent Owner filed a Sur-reply to Petitioner’s Reply. Paper 12 (“PO Sur-reply”). An oral hearing was held on November 19, 2025. A transcript of the oral hearing is included in the record. Paper 20.

B. *Real Parties-in-Interest*

Petitioner identifies itself and Lenovo Group Ltd. as real parties-in-interest. Pet. 84. Patent Owner identifies itself as a real party-in-interest. Paper 4, 2.

C. Related Matters

The parties identify *Intellectual Ventures II LLC v. Lenovo Group Ltd.*, 6:23-cv-00307-ADA-DTG (W.D. Tex.) as a matter that may affect, or be affected by, a decision in this proceeding. Pet. 85; Paper 4, 2.

D. The Challenged Patent

The '016 patent “relates in general to . . . managing devices or systems in a communication network and more particularly to methods and apparatus for remote management of these devices or systems in a secure manner.” Ex. 1001, 1:27–31. The '016 patent explains that “[i]n distributed computer networks[,] the vast majority of the networking elements are not in the same geographic location or easily accessible by the skilled technicians or network administrators typically responsible for normal maintenance of the elements.” *Id.* at 1:35–39. Thus, “[i]n general, it is not practical to require physical access to the systems for general maintenance or troubleshooting and repair.” *Id.* at 1:47–49. “The costs would be prohibitive, both in time and person[ne]l, to require a skilled technician to be dispatched for every required activity on a system.” *Id.* at 1:49–51. “This has driven a strong requirement to provide for remote management of network elements and servers,” according to the '016 patent. *Id.* at 1:51–53. However, “the security of the network elements and servers is a concern when remote management is allowed.” *Id.* at 1:64–65.

“It is important . . . to realize that opening up a device to remote management allows a larger window for attackers to utilize in an attack,” and thus, “[t]he use and security of remote management must be carefully considered.” *Id.* at 2:4–8. The '016 patent explains that for known ways “to address most of the concerns” of remote management, “[i]t would take a number of different devices configured to work together,” which “would

require a number of additional devices in an environment where rack space is very expensive.” *Id.* at 4:4–7.

In response, the ’016 patent “provide[s] for the secure management of devices without requiring additional devices taking up additional rack space by embedding the necessary hardware and software for secure management of the device in the device to be managed.” *Id.* at 4:10–14. More specifically, the ’016 patent describes “a Secure Management Access Control for Computer Chipset (SMACC) for inclusion in devices that are to be enabled for remote management.” *Id.* at 5:50–52. Figure 1 of the ’016 patent is shown below.

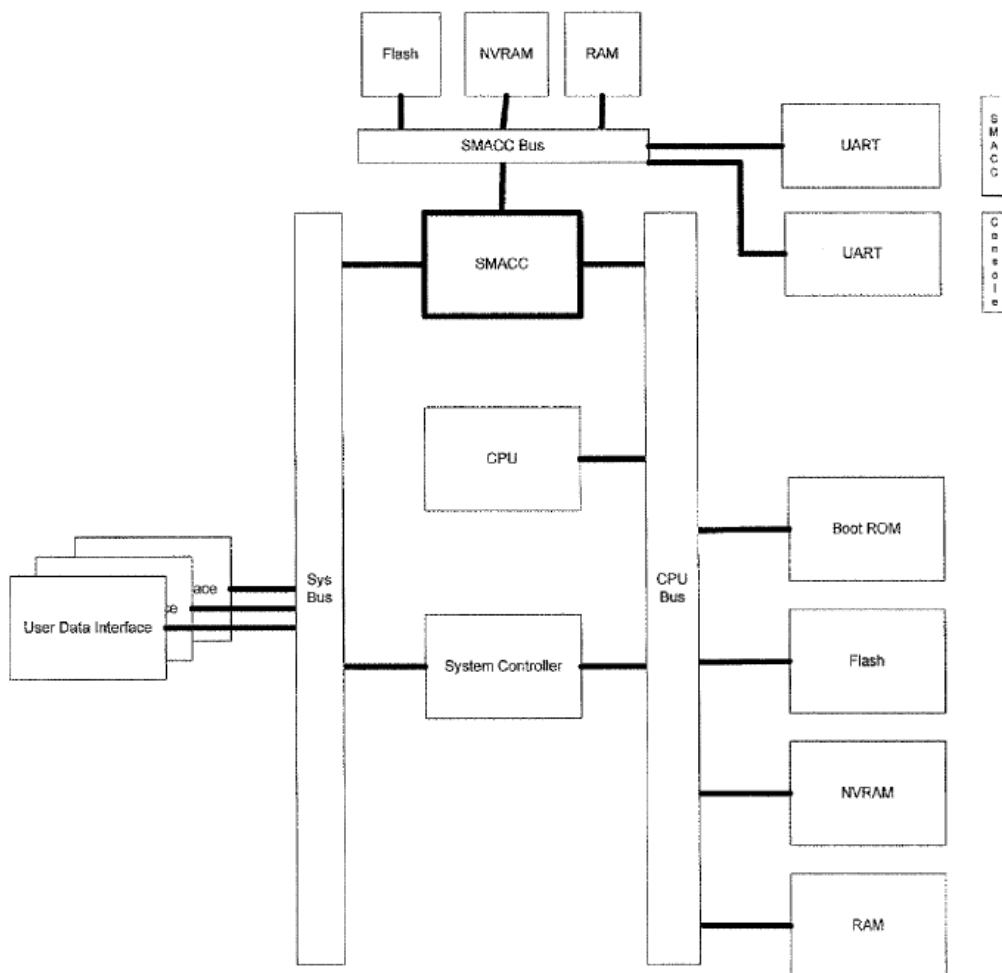


Fig. 1

Figure 1 “is a block diagram for an exemplary embodiment of the embedded SMACC” chipset and “illustrates the positioning of the SMACC chipset within the managed device.” *Id.* at 9:39–41, 11:1–2. As illustrated, “the SMACC processor has its own flash, Non-Volatile Random Access Memory (NVRAM), and Random Access Memory (RAM) for operating.” *Id.* at 11:2–5, Fig. 1. The SMACC is coupled both to the Central Processing Unit (“CPU”) Bus and the System Bus of the managed device. *Id.* at Fig. 1. The System Bus also is coupled to User Data Interfaces for user data traffic. *Id.*

In addition, the ’016 patent discloses that “[r]emote management . . . can be provided in-band ([i.e.,]the remote administrator communicates with the system using the same network as the user data for the managed system).” *Id.* at 1:55–58. Moreover, the managed device can be configured with a Virtual Management Interface (“VMI”), which uses a Virtual Private Network (“VPN”) and “logically separates management traffic from user data traffic when a user interface on the managed device is going to be utilized for the network connection.” *Id.* at 11:64–12:4, 12:10–17.

E. The Challenged Claims

Petitioner challenges claims 1–3, 6–9, 12, and 14–17 in this proceeding. Claims 1 and 12 are independent claims. Claim 1 is illustrative of the challenged claims and is reproduced below:

1. An apparatus, comprising:
 - a processor configured to control one or more functions of a network device having a network interface, wherein the network device is configured to receive data requests and an encrypted form of management requests via the network interface, wherein the management requests are from a remote administrator;
 - a first bus; and
 - a bus controller coupled to the processor via the first bus, wherein the bus controller is also coupled to a second bus of the

network device that is distinct from the first bus, wherein the bus controller is configured to receive the encrypted form of the management requests from the second bus, and to convey the encrypted form of the management requests to the processor via the first bus;

wherein the processor is configured to decrypt the encrypted form of the management requests, wherein the network device includes a processor configured to facilitate operation of the network device, and wherein the processor of the apparatus is distinct from the processor included in the network device.

Ex. 1001, 22:25–45.

F. Instituted Grounds of Unpatentability

We instituted trial based on the following grounds of unpatentability, which are all the grounds of unpatentability raised in the Petition:

Claim(s) Challenged	35 U.S.C. §¹	Reference(s)/Basis
1–3, 6, 9, 12, 17	103(a)	Neufeld ²
1–3, 6, 9, 12, 17	103(a)	Neufeld, Frantz, ³ Peripheral Component Interconnect (“PCI”) Bridge Spec ⁴
2	103(a)	Neufeld, Frantz, PCI Bridge Spec, Martenson ⁵
3	103(a)	Neufeld, Frantz, PCI Bridge Spec, MacWilliams ⁶

¹ The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. § 103 that became effective on March 16, 2013. Because the ’016 patent issued from an application having a filing date before March 16, 2013, we apply the pre-AIA version of the statutory basis for unpatentability.

² US 2003/0226015 A1, published Dec. 4, 2003 (Ex. 1005, “Neufeld”).

³ US 7,085,385 B2, issued Aug. 1, 2006 (Ex. 1006, “Frantz”).

⁴ “PCI-to-PCI Bridge Architecture Specification,” rev. 1.1 (Ex. 1008, “PCI Bridge Spec”).

⁵ US 6,219,708 B1, issued Apr. 17, 2001 (Ex. 1011, “Martenson”).

⁶ US 5,651,137, issued July 22, 1997 (Ex. 1012, “MacWilliams”).

7, 16	103(a)	Neufeld, Frantz, PCI Bridge Spec, Rossman, ⁷ RFC1492 ⁸
8	103(a)	Neufeld, Frantz, PCI Bridge Spec, Syvanne ⁹
14	103(a)	Neufeld, Network Time Protocol (“NTP”) Applicant Admitted Prior Art (“AAPA”), ¹⁰ Frantz, PCI Bridge Spec, Hrastar ¹¹
15	103(a)	Neufeld, Frantz, PCI Bridge Spec, RFC1157 ¹²
1–3, 9, 12, 15, 17	103(a)	IPMI, ¹³ Frantz, Huckins ¹⁴
1–3, 9, 12, 15, 17	103(a)	IPMI, IPMIv2.0, ¹⁵ Huckins
6	103(a)	IPMI, Frantz, Huckins, Virtual Private Network (“VPN”) AAPA ¹⁶
6	103(a)	IPMI, Frantz, Huckins, Rossman
6	103(a)	IPMI, Frantz, Huckins, VPN AAPA, Rossman
6	103(a)	IPMI, IPMIv2.0, Huckins, VPN AAPA
6	103(a)	IPMI, IPMIv2.0, Huckins, Rossman

⁷ US 7,260,555 B2, issued Aug. 21, 2007 (Ex. 1015, “Rossmann”).

⁸ RFC1492: An Access Control Protocol, Sometimes Called TACACS (Ex. 1013, “RFC1492”).

⁹ US 2003/0097590 A1, published May 22, 2003 (Ex. 1016, “Syvanne”).

¹⁰ Petitioner asserts that the ’016 patent contains NTP AAPA. Pet. 52 (citing Ex. 1001, 3:30–36).

¹¹ US 7,383,577 B2, issued June 3, 2008 (Ex. 1017, “Hrastar”).

¹² RFC1157: A Simple Management Network Management Protocol (SNMP) (Ex. 1018, “RFC1157”).

¹³ IPMI – Intelligent Platform Management Interface Specification V1.5 (Rev. 1.1 dated Feb. 20, 2002) (Ex. 1020, “IPMI”).

¹⁴ US 2003/0097503 A1, published May 22, 2003 (Ex. 1007, “Huckins”).

¹⁵ IPMI – Intelligent Platform Management Interface Specification V2.0 (Sept. 15, 2003) (Ex. 1023, “IPMIv2.0”).

¹⁶ Petitioner asserts that the ’016 patent contains VPN AAPA. Pet. 79 (citing Ex. 1001, 3:53–59).

6	103(a)	IPMI, IPMIv2.0, Huckins, VPN AAPA, Rossman
7, 16	103(a)	IPMI, Frantz, Huckins, Rossman, RFC1492
7, 16	103(a)	IPMI, Frantz, Huckins, Rossman, RFC2865 ¹⁷
7, 16	103(a)	IPMI, IPMIv2.0, Huckins, Rossman, RFC1492
7, 16	103(a)	IPMI, IPMIv2.0, Huckins, Rossman, RFC2865
8	103(a)	IPMI, Frantz, Huckins, Syvanne
8	103(a)	IPMI, IPMIv2.0, Huckins, Syvanne
14	103(a)	IPMI, Frantz, Huckins, NTP AAPA
14	103(a)	IPMI, Frantz, Huckins, Hrastar
14	103(a)	IPMI, Frantz, Huckins, NTP AAPA, Hrastar
14	103(a)	IPMI, IPMIv2.0, Huckins, NTP AAPA
14	103(a)	IPMI, IPMIv2.0, Huckins, Hrastar
14	103(a)	IPMI, IPMIv2.0, Huckins, NTP AAPA, Hrastar
15	103(a)	IPMI, Frantz, Huckins, RFC1157
15	103(a)	IPMI, IPMIv2.0, Huckins, RFC1157

Pet. 1–2, 16–83. Petitioner submits as evidence the Declaration of Sigurd Meldal, Dr. Scient. (Ex. 1003) and the Declaration of Nathaniel E. Frank-White (Ex. 1039). Patent Owner submits as evidence the Declaration of Dr. Steven Goldberg (Ex. 2001) and the Expert Report of Dr. Prabhat Mishra (Ex. 2007).

¹⁷ RFC2865: Remote Authentication Dial In User Service (RADIUS) (Ex. 1014, “RFC2865”).

II. LEVEL OF ORDINARY SKILL IN THE ART

To determine whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). In assessing the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citing *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962–63 (Fed. Cir. 1986)). “[O]ne or more factors may predominate.” *Id.*

In our Decision on Institution, we adopted the definition Petitioner proposes for one having ordinary skill in the art at the time of the invention of the ’016 patent. Dec. on Inst. 8–9. Namely, we found that one of ordinary skill in the art “would have had a Bachelors’ degree in electrical or computer engineering or a comparable field of study, plus approximately two to three years of professional experience in the field of computer and/or network design and security or other relevant industry experience,” and that “[a]dditional graduate education could substitute for professional experience, and significant experience in the field could substitute for formal education.” *Id.* (citing Pet. 6 (citing Ex. 1003 ¶ 56)). Patent Owner does not address Petitioner’s definition, nor provide its own. *See generally* PO Resp.

Because Petitioner’s definition of the level of skill in the art is consistent with the ’016 patent and the asserted prior art, we maintain it for purposes of this Final Written Decision. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC*, 57 F.3d at 1579; *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978).

III. CLAIM CONSTRUCTION

Because the Petition was filed after November 13, 2018, we apply the same claim construction standard that would be used in a civil action under 35 U.S.C. § 282(b), following the standard articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b); 83 Fed. Reg. 51,340, 51,340–41, 51,343 (Oct. 11, 2018). In applying such standard, claim terms generally are given their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art, at the time of the invention and in the context of the entire patent disclosure. *Phillips*, 415 F.3d at 1312–13. “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Petitioner argues that the terms of the challenged claims should be given their plain and ordinary meaning. Pet. 6–7. In addition, Petitioner argues for claim 12’s “controlling, by the processor, one or more functions of the network device according to the management requests” limitation that the recited “processor” is “of [the] management device.” *Id.* at 7–8.

Patent Owner does not set forth any term for construction, nor address Petitioner’s construction arguments. *See generally* PO Resp.

We determine that we do not need to construe any term to resolve the disputes between the parties. *See, e.g., Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir.

1999)) (“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’”).

IV. PRINCIPLES OF LAW

“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) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to Patent Owner except in limited circumstances not present here. *See Dynamic Drinkware*, 800 F.3d at 1378 (discussing the burden of proof in *inter partes* review).

A claim is unpatentable under 35 U.S.C. § 103(a) 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 of the invention to a person having ordinary skill in the art. *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 ordinary skill in the art; and (4) objective evidence of non-obviousness, if present.¹⁸ *See Graham*, 383 U.S. at 17–18. When evaluating a claim for obviousness, we also must “determine whether there was an apparent reason to combine the known elements in the fashion

¹⁸ Patent Owner does not present arguments or evidence of such objective evidence of non-obviousness. *See generally* PO Resp.

claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

V. OBVIOUSNESS OVER NEUFELD

Petitioner argues that Neufeld renders claims 1–3, 6, 9, 12, and 17 obvious. Pet. 16–36. For the reasons that follow, we determine that Petitioner shows by a preponderance of the evidence that Neufeld renders these claims obvious.

A. *Summary of Neufeld*

Neufeld “relates generally to computer security systems and, more particularly, to a technique for providing user profiles.” Ex. 1005 ¶ 2. In particular, Neufeld teaches “[a] security system [which] includes different authentication levels and/or different privileges based on certain criteria.” *Id.* at code (57). “For example, if a user’s identity can be somewhat assured due to the directness of the connection, authentication may be less rigorous than in a situation where the connection is more remote, thus making the user’s identity less assured.” *Id.* Neufeld also teaches that “a user’s privileges may be restricted if the user accesses the system from a remote location or during non-business hours.” *Id.*

B. *Challenged Claim 1*

1. *Apparatus*

Petitioner argues that Neufeld teaches “[a]n apparatus,” as recited in the preamble of claim 1. Pet. 16. More specifically, Petitioner argues that Neufeld is titled “**Method and Apparatus** for Configuring Security Options in a Computer System,” and that “Neufeld’s remote management controller 116 . . . is the claimed ‘apparatus.’” *Id.* (quoting Ex. 1005, code (54); citing *id.* ¶ 43, Fig. 2) (first alteration in original).

After reviewing Petitioner’s arguments and evidence, which are not addressed by Patent Owner (*see generally* PO Resp.), we find that Petitioner demonstrates by a preponderance of the evidence that Neufeld teaches claim 1’s preamble. In light of our finding, we need not, and thus do not, reach whether claim 1’s preamble is limiting.

2. Processor To Control Functions of a Network Device

Petitioner argues that Neufeld teaches “a processor configured to control one or more functions of a network device having a network interface,” as recited in claim 1. Pet. 16–18. Petitioner annotates Neufeld’s Figure 2, as shown below, to support its arguments. *Id.* at 17.

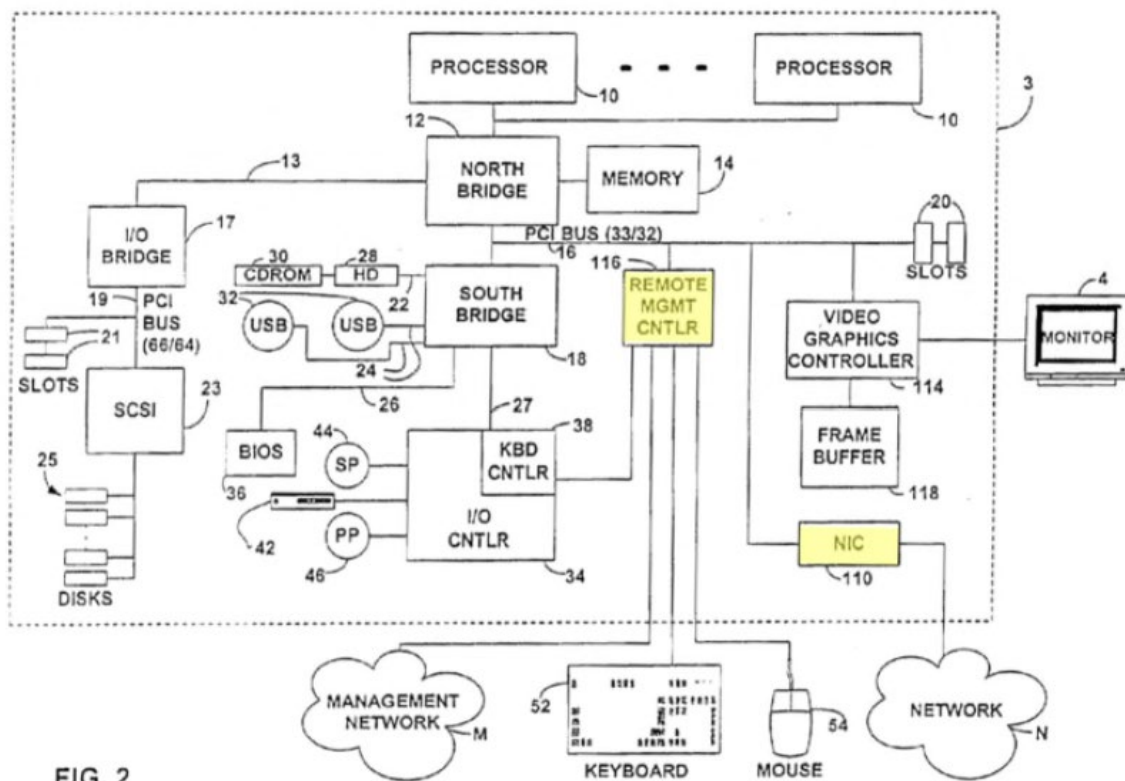


Figure 2 is a block diagram of a managed server for connection to a remote management console according to Neufeld’s teachings. Ex. 1005 ¶¶ 25–26. As illustrated, the managed server “includes a [CPU] 3 housing processing, memory, communications, interface, and other circuitry . . . , and may be

connected to a monitor 4.” *Id.* ¶ 34. Petitioner annotates this figure by coloring in yellow the remote manager controller 116 and the network interface controller (“NIC”) 110. Pet. 17; Ex. 1005 ¶¶ 43, 45. Petitioner argues that Neufeld’s managed server is the claimed “network device” and the NIC 110 is the claimed “network interface” that interfaces to the network N. Pet. 16–18 (citing Ex. 1005, Fig. 2, ¶ 45).

In addition, Petitioner argues that Neufeld teaches that the remote management controller 116 (i.e., the apparatus) “includes an Input/Output processor (‘IOP’) 156, which provides general control and functions as a management processor for the remote server management controller 116.” *Id.* at 16–17 (quoting Ex. 1005 ¶ 54; citing *id.* at Fig. 3). In particular, Petitioner argues that the “IOP 156 controls functions of Neufeld’s managed server 2, such as rebooting, modifying BIOS and/or communicating with server operating system features such as the Emergency Management Services facility of Windows XP, via the slave instrumentation module 152.” *Id.* at 18 (citing Ex. 1005 ¶¶ 66–74). Petitioner argues that the IOP 156 is the claimed “processor.” *Id.* at 16.

After reviewing Petitioner’s arguments and evidence, which are not addressed by Patent Owner (*see generally* PO Resp.), we find that Petitioner demonstrates by a preponderance of the evidence that Neufeld teaches this limitation.

3. *Network Device is Configured to Receive Requests*

Claim 1 further recites “wherein the network device is configured to receive data requests and an encrypted form of management requests via the network interface, wherein the management requests are from a remote administrator.” Ex. 1001, 22:27–31. We agree with Petitioner and find that Neufeld teaches this limitation. Pet. 18–22; Pet. Reply 2–11.

communication refers to communicating with the server over a standard network connection, such as the managed server's normal Ethernet connection.” *Id.* ¶ 11. We find persuasive Dr. Meldal's testimony that one of ordinary skill in the art “would have understood the ‘server's normal Ethernet connection’ to be the Ethernet connection over which normal user (non-administrator) data requests are received,” as we find this testimony is consistent with Neufeld's teachings. *Compare* Ex. 1003 ¶¶ 84–85, *with* Ex. 1005, Fig. 2 (showing that the managed server connects to the network N via the NIC 110), *id.* ¶ 11 (“In-band communication with the server is . . . only possible when the server is able to communicate over its normal network connection.”), *and id.* ¶ 35 (“The network N can be virtually any sort of network capable of transmitting data between two devices” (e.g., a local area network (“LAN”), a wide area network, . . . and an Internet connection)).

We also agree with Petitioner and find that Neufeld teaches “the desirability of providing in-band as well as out-of-band communications for” controlling the managed server. Pet. 19–20 (citing Ex. 1005 ¶ 15) (arguing that Neufeld teaches “that it is ‘highly desirable’ to provide in-band communications to capture the maximum amount of information from, and allow control of, the managed server”). More specifically, Neufeld's paragraph 15 reads as follows:

An important goal in the development of remote server management tools is to increase the number of server problems that may be analyzed and repaired remotely (that is, without requiring direct, on-site intervention by a member of the network management team). To facilitate that goal, *it is highly desirable to have a network management tool* that is able to capture the maximum amount of information from a managed server in the *maximum range of operational states* of the server (for example,

(1) *in-band online*;^[20] (2) in-band offline; (3) out-of-band online; and (4) out-of-band offline) and *to allow control of the managed server based on that data*.

Ex. 1005 ¶ 15 (emphases added). In other words, Neufeld teaches that it is highly desirable for remote server management tools to be able to control the managed server via an in-band online connection, as well as via other connections. *Id.*

In addition, as Petitioner argues, Neufeld teaches that “[t]he remote management controller 116 connects to . . . *the network N and/or a management network M* . . . to provide functionality for accessing, interacting, and monitoring the managed server 2 from the remote console 5.” Ex. 1005 ¶ 43 (emphasis added); Ex. 1003 ¶ 87; Pet. 20. In other words, Neufeld teaches that the remote management PC 5 can communicate with the remote management controller 116 via network N, as well as network M, to remotely access, interact, and monitor the managed server. Ex. 1005 ¶ 43.

Based on these above teachings from Neufeld, we agree with Petitioner and find that Neufeld teaches that its managed server 2 is configured to receive both data requests and in-band management requests

²⁰ “The term ‘online’ refers to a managed server in which the [operating system (‘OS’)] is up and running,” and “[t]he managed server is said to be ‘offline’ if its OS is not up and running.” Ex. 1005 ¶ 14.

over a Network N (via the NIC 110) from a remote management PC 5. *See* Ex. 1005 ¶¶ 11–12, 15, 34–35, 43, Figs. 1–2.²¹

In addition, we find not credible Dr. Mishra’s deposition testimony that Neufeld teaches only out-of-band communication, and it is not possible for a remote management command to come to remote management controller 116 via network N and through NIC 110. *See* Ex. 1043,²² 43:5–44:6, 49:9–50:7; PO Sur-reply 4–5. This testimony is inconsistent with Neufeld’s express teachings, which we discuss above. *Compare* Ex. 1043, 43:5–44:6, 49:9–50:7, *with* Ex. 1005 ¶¶ 11–12, 15, 34–35, 43, Figs. 1–2.

We also find unavailing Patent Owner’s argument that paragraph 15’s last sentence “says that it is ‘highly desirable’ to be able to capture the maximum amount of information from a managed server in four different operational states -- i.e., when in-band communications are on-line/off-line and when out-of-band communications are on-line/off-line.” PO Sur-reply 7 (quoting Ex. 1005 ¶ 15). According to Patent Owner, “[t]he sentence is talking about capturing information from a server in different states -- not about sending management requests to the managed server over both in-band and out-of-band connections.” *Id.* But Patent Owner truncates the

²¹ The parties also dispute whether paragraph 47 teaches using in-band communication. In particular, the parties agree that paragraph 47 has a typographical error, but dispute what correction one of ordinary skill in the art would have understood is needed. *See, e.g.*, Pet. 20; Pet. Reply 6–7, 9–13; PO Resp. 28–31, 40–41; PO Sur-reply 2–8. Petitioner’s proffered correction would teach in-band communication, while Patent Owner’s proffered correction would not. *See, e.g.*, Pet. 20; PO Resp. 40–41. We do not reach this issue because we find that Neufeld’s other teachings that we discuss establish by a preponderance of the evidence that Neufeld teaches in-band communication for remote management.

²² Transcript of the June 26, 2025 Deposition of Dr. Prabhat Mishra.

sentence, and leaves off its end—“and to allow control of the managed server based on that data.” *Id.* The sentence as a whole makes clear that Neufeld teaches that having a network management tool that can capture information from a managed server and control the managed server using maximum states—including in-band—to do so is highly desirable. Ex. 1005 ¶ 15. And thus, contrary to Patent Owner’s argument, this sentence does talk about sending management requests to the managed server over both in-band and out-of-band connections—allowing the tool to control the managed server based on captured information teaches sending management requests. *Id.* In addition, we do not credit Dr. Mishra’s testimony that Patent Owner cites for this issue as the testimony also does not account for the last part of paragraph 15 that teaches allowing control of the managed server. PO Sur-reply 7–8 (citing Ex. 1043, 31:16–32:17).

We also find unavailing Patent Owner’s arguments regarding Neufeld’s paragraph 43. PO Resp. 50–52; PO Sur-reply 8–9. More specifically, we find unavailing Patent Owner’s argument that paragraph 43 “is describing the hardware-level connections that enable the [remote management controller] 116 to perform passive out-of-band monitoring of the server—not active in-band communication.” PO Resp. 50 (citing Ex. 2007 ¶ 124). Rather, we agree with Petitioner that paragraph 43 is not so limited. Pet. Reply 6. It includes that “[t]he remote management controller 116 connects to . . . the network N . . . to provide functionality for accessing, interacting, and monitoring the managed server 2 from the remote console 5.” Ex. 1005 ¶ 43. Thus, Neufeld teaches that the remote console 5 (i) can connect to the remote management controller 116 via Network N—(in-band communication)—and (ii) access and interact with the managed server 2—not just monitor—which provides management. *Id.*

We also find unavailing Patent Owner’s argument that paragraph 43’s “reference to network N is simply identifying that [remote management controller] 116 is able to snoop on the data being sent/received by the managed device via the network N.” PO Resp. 51. Rather, we agree with Petitioner that Patent Owner does not identify any portion of Neufeld that teaches snooping data sent or received by the managed device via the network N. Pet. Reply 16. Neufeld’s discussion of snooping relates to circuitry for snooping the PCI bus for transactions between processor 10 and the video graphics controller, all of which are within the network device, rather than snooping network traffic. Ex. 1005 ¶ 47.

In addition, we find inapposite Patent Owner’s argument that paragraph 43 “informs a person of ordinary skill in the art that the [remote management controller] 116 is physically connected to system components such as the PCI bus and keyboard controller, which allows it to snoop on system activity without relying on or interfering with the host operating system.” PO Resp. 50. This purported functionality is inapposite to the claims, and again, paragraph 43’s teachings are not limited to monitoring, but include accessing and interacting functionality. Ex. 1005 ¶ 43.

We also find unavailing Patent Owner’s arguments regarding Neufeld’s purported direction, focus, thrust, or solution. For example, Patent Owner argues that “Neufeld is directed to an out-of-band remote management system.” PO Resp. 38. Patent Owner also argues that “the singular focus of Neufeld’s solution was an out-of-band system.” *Id.* at 39 (citing Ex. 2007 ¶ 104). Patent Owner also argues that “characteriz[ing] Neufeld as supporting in-band management is inconsistent with the entire thrust of Neufeld.” *Id.* at 40 (citing Ex. 2007 ¶ 105). And Patent Owner argues that having in-band management “is fundamentally opposed to the

solution disclosed in Neufeld.” *Id.* (citing Ex. 2007 ¶ 106). These arguments incorrectly do not consider all of what Neufeld teaches. *See EWP Corp. v. Reliance Universal Inc.*, 755 F.2d 898, 907 (Fed. Cir. 1985) (“A reference must be considered for everything it *teaches* by way of technology and is not limited to the particular *invention* it is describing and attempting to protect.”); *In re Applied Materials, Inc.*, 692 F.3d 1289, 1298 (Fed. Cir. 2012) (“A reference must be considered for everything that it teaches, not simply the described invention or a preferred embodiment.”). As we discuss above, Neufeld also teaches using in-band communication for remote management.

We also find unavailing Patent Owner’s arguments concerning Neufeld’s teachings of using out-of-band communication to provide remote management for the managed server. *See, e.g.*, PO Resp. 39–44, 49–53. There is no dispute that Neufeld teaches such out-of-band embodiments, but Petitioner focuses on Neufeld’s in-band teachings and how they relate to claim 1. Moreover, we agree with Petitioner that Neufeld teaches that in-band and out-of-band communication for remote management are not mutually exclusive, and having both functionalities is highly desirable. *E.g.*, Pet. Reply 9; Ex. 1005 ¶ 15. And as we discuss above, Neufeld, also teaches using in-band communication to provide remote management for the managed server.

We also find unavailing Patent Owner’s arguments that amount to arguing that Neufeld teaches away from using in-band communication for remote management, although Patent Owner does not characterize them as such. PO Resp. 43; PO Sur-reply 14–15. In particular, Patent Owner argues that “[t]he only discussion in Neufeld of ‘in-band’ communication is in the ‘Background of the Related Art’ where ‘in-band’ solutions are disparaged in

favor of ‘out-of-band’ solutions such as the one offered by Neufeld.” PO Resp. 43 (citing Ex. 1005 ¶¶ 11–12). According to Patent Owner, “[w]hile Neufeld mentions in-band solutions as existing in the related art, Neufeld goes on to emphasize the advantages of out-of-band solutions and then focuses solely on proposing its own out-of-band solution.” *Id.* (citing Ex. 2007 ¶ 110; Ex. 1005 ¶¶ 11–12, 59–62). Patent Owner also argues that “Neufeld acknowledges that in-band communication refers to accessing the server over its standard network interface, and that doing so is only possible when the operating system is online and the network stack is functional.” *Id.* Patent Owner also argues that “[t]his form of management is described as inherently limited, because it cannot be used when the server is down or otherwise unable to communicate over its primary network path.” *Id.* (citing Ex. 2007 ¶ 110; Ex. 1005 ¶ 11); *see also* PO Sur-reply 7 (citing Ex. 1005 ¶¶ 11–12) (arguing that Neufeld teaches that in-band communication is only possible when the managed server’s OS is online, and that “[o]ut-of-band communication . . . is a much more powerful tool for server management”).

First, as we discuss above, paragraph 43 teaches that the remote console 5 can use in-band communication (connecting to network N) for accessing, interacting, and monitoring the managed server 2. Ex. 1005 ¶ 43. Thus, Patent Owner is incorrect that in-band communication is only discussed in the background section of Neufeld. And regardless, paragraph 15 teaches that it is highly desirable to include in-band communication for remote management, and being in the background section does not negate this. Ex. 1005 ¶ 15. In fact, it at least suggests that in-band communication for remote management was well-known in the art.

Second, we disagree with Patent Owner that Neufeld criticizes using in-band communication for remote management so as to discourage its use.

Ex. 1005 ¶¶ 11–12; *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004) (teaching away requires that a reference “criticize, discredit, or otherwise discourage” investigation into the claimed solution). At most, Neufeld teaches that out-of-band communication may be preferable, which is insufficient for teaching away. Ex. 1005 ¶ 12; *Galderma Labs., L.P. v. Tolmar, Inc.*, 737 F.3d 731, 738 (Fed. Cir. 2013) (“A reference does not teach away . . . if it merely expresses a general preference for an alternative invention but does not criticize, discredit, or otherwise discourage investigation into the invention claimed.”) (citation omitted); *Merck & Co. v. Biocraft Labs., Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989) (quoting *In re Lamberti*, 545 F.2d 747, 750 (CCPA 1976)) (“[I]n a section 103 inquiry, ‘the fact that a specific [embodiment] is taught to be preferred is not controlling, since all disclosures of the prior art, including unpreferred embodiments, must be considered.’”). In fact, as we discuss above, Neufeld teaches that it is highly desirable also to have in-band communication for remote management. Ex. 1005 ¶ 15.

We also find unavailing Patent Owner calling arguments Petitioner makes about what Neufeld expressly teaches as “attorney argument” to the extent that Patent Owner is contending that we should not consider these teachings. *See generally* PO Sur-reply. Rather, we properly can evaluate what Neufeld expressly states. *See Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1079 (Fed. Cir. 2015) (providing that there is no requirement that “an expert guid[e] the Board as to how it should read prior art”).

In addition, we agree with Petitioner that Neufeld teaches the encryption of the remote management requests sent to the remote management controller 116 via network N. Pet. 20–21. In particular, Neufeld teaches that “any type of remote access would typically utilize

encryption techniques, while direct access may not.” Ex. 1005 ¶ 85. Moreover, Neufeld provides a table showing that encryption is used when a network administrator connects via a remote in-house or outside terminal, in contrast with using no encryption for a direct connection. *See id.* (Table 2). And we find persuasive Dr. Meldal’s testimony that one of ordinary skill in the art would have understood that a network administrator would have been responsible for managing the server 2 and would have sent management requests, including when connecting remotely via the remote management controller 116. Ex. 1003 ¶¶ 88–90. This testimony is consistent with Neufeld’s teachings we discuss above.

In sum, we find that Petitioner demonstrates by a preponderance of the evidence that Neufeld teaches this limitation.

4. *First Bus*

Petitioner argues that Neufeld teaches “a first bus,” as recited in claim 1. Pet. 22. More specifically, Petitioner argues that Neufeld teaches an internal local bus 166 (i.e., the first bus) that is part of the remote management controller 116. *Id.* (citing Ex. 1005 ¶ 56); Ex. 1005 ¶ 56 (“The IOP 156 is operatively coupled to the other functional modules (and possibly many sub-modules) of the remote server management controller 116 via an internal local bus 166.”).

After reviewing Petitioner’s arguments and evidence, which are not addressed by Patent Owner (*see generally* PO Resp.), we find that Petitioner demonstrates by a preponderance of the evidence that Neufeld teaches this limitation.

5. *Bus Controller*

Claim 1 further recites “a bus controller coupled to the processor via the first bus, wherein the bus controller is also coupled to a second bus of the

network device that is distinct from the first bus, wherein the bus controller is configured to receive the encrypted form of the management requests from the second bus, and to convey the encrypted form of the management requests to the processor via the first bus.” Ex. 1001, 22:33–39. We agree with Petitioner and find that Neufeld teaches this limitation. Pet. 22–28; Pet. Reply 17–19.

In particular, we agree with Petitioner and find that Neufeld’s Figure 3, shown below as annotated by Petitioner, supports that Neufeld teaches this limitation.

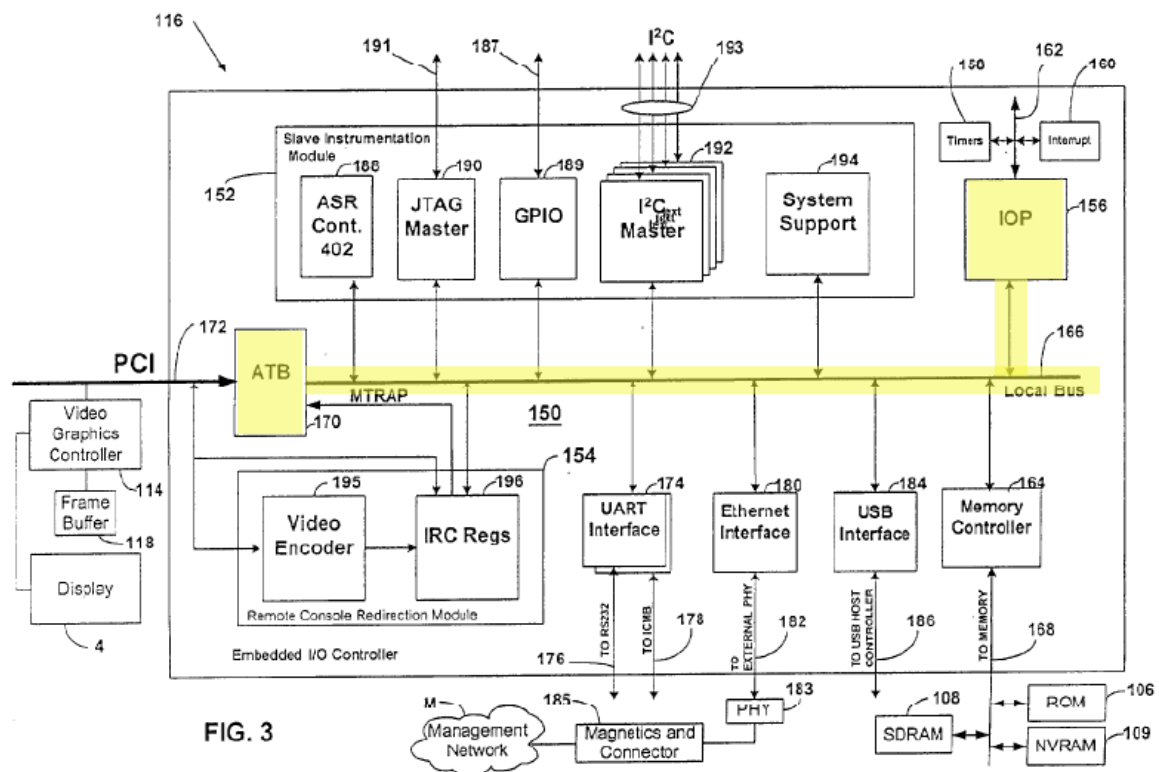


Figure 3 “is a block diagram of [a] remote management controller,” in accordance with Neufeld’s teachings. Ex. 1005 ¶ 27. Petitioner annotates this figure by coloring in yellow (i) the address translation and bridging (“ATB”) unit 170, (ii) the internal local bus 166, and (iii) the IOP 156. Pet. 23.

We agree with Petitioner and find that Neufeld's ATB unit 170 teaches the claimed bus controller. First, we find that the ATB unit 170 is coupled to the IOP 156 (i.e., the processor) via the local bus 166 (i.e., the first bus). Ex. 1005 ¶¶ 56–57, Fig. 3. Second, we find that the ATB unit 170 is also coupled to a second bus (i.e., the PCI bus 172) of the network device (i.e., the managed server 2) that is distinct from the first bus (i.e., the local bus 166). *Id.* In particular, Neufeld teaches that the ATB “unit 170 is operatively coupled to the internal local bus 166 and to a PCI bus 172,” and that the “PCI bus 172 is integral within and operatively coupled with the managed server 2.” *Id.* ¶ 57.

Third, the ATB unit 170 is configured to receive the encrypted form of the management requests from the second bus (i.e., the PCI bus 172, which is “an extension of the PCI bus 16”), and to convey the encrypted form of the management requests to the processor (i.e., the IOP 156) via the first bus (i.e., the local bus 166). *Id.* ¶¶ 56–58, Fig. 3. In particular, Neufeld teaches that “[t]he PCI bus 172 . . . serves as the main communication interface between the managed server 2 and the remote server management controller 116.” *Id.* ¶ 57; *see also id.* Fig. 2 (showing that the Network N is connected to the NIC 110, which is connected to the remote management controller 116 via the PCI bus 16), ¶ 58 (the PCI bus 172 “is merely an extension of the PCI bus 16”). Moreover, Neufeld teaches that the internal local bus 166 exists to allow communication between and among logical components of the remote server management controller 116, such as between the ATB unit 170 and the IOP 156. *Id.* ¶ 56.

In addition, Neufeld teaches that the PCI bus 172 “may be configured as a 32-bit, 33 MHz PCI master/slave interface.” *Id.* ¶ 57. Neufeld also teaches that “the ATB unit 170 is constructed to allow the remote server

management controller 116 to decode bus cycles on the PCI bus 172 and to communicate over the PCI bus 172 by initiating PCI bus cycles.” *Id.*

We view these disclosures as sufficient for teaching that the ATB unit 170 is a bus controller. Neufeld explicitly teaches that it is the ATB unit 170 that “allow[s]” the remote server management controller 116 to decode PCI bus cycles (i.e., act as a “slave”) and to communicate over the PCI bus 172 by initiating PCI bus cycles (i.e., act as a “master”). *Id.*; *see also* Ex. 2001 ¶ 57 (describing an arbiter giving access to devices on a PCI bus).

Alternatively, we agree with Petitioner and find that one of ordinary skill in the art would have found it obvious to include a bus controller in the ATB unit 170, which connects the PCI bus 172 to the internal local bus 166. Pet. 23–24, 39–41, 43–44. In particular, we find persuasive Dr. Meldal’s testimony that “[i]t was known in the art and customary for a bus bridge that links a primary bus to a secondary bus to include a bus controller to control the secondary bus.” Ex. 1003 ¶¶ 96, 135–136. This testimony is supported by PCI Bridge Spec and Huckins’s teachings, which evidence what one of skill in the art would have known. *See* Ex. 1008, 11, 13, 109 (“Every bus segment in a PCI system requires an arbiter. Since a bridge creates a new bus segment, it is anticipated that an arbiter will be a common bridge feature.”), Fig. 1-1; Ex. 1007 ¶ 26, Fig. 1. We appropriately consider such evidence of the knowledge that one of ordinary skill in the art would have had as part of our obviousness analysis. *See Randall Mfg. v. Rea*, 733 F.3d 1355, 1362–63 (Fed. Cir. 2013). We also find that one of ordinary skill in the art would have had a reasonable expectation of success in including bus controller functionality in the ATB 170 because doing so was known. Ex. 1003 ¶ 136.

We find unavailing Patent Owner’s arguments that Petitioner cannot identify a second bus that is distinct from a first bus. PO Resp. 44–47. These arguments incorrectly are predicated on receiving out-of-band communication for the management requests, and local bus 166 being the second bus. *Id.* But as we discuss above, Petitioner relies on Neufeld’s teachings of in-band communication for remote management and maps the second bus to the PCI bus 172.

We also find unavailing Patent Owner’s generalized arguments regarding what Neufeld fails to teach. For example, Patent Owner argues that “Neufeld never places encrypted management requests on a PCI bus and never discloses a bus controller that receives and conveys still encrypted managements requests, as claimed.” PO Sur-reply 11. Similarly, Patent Owner argues that Neufeld “is silent about encrypted management traffic residing on a PCI bus and being handled by a bus controller in encrypted form before decryption by the [remote management controller]’s processor.” *Id.*; *see also id.* at 17 (same). And Patent Owner argues that Petitioner “leans on an ‘in-band via network N / NIC 110’ narrative, but fails to establish[] that management requests are encrypted at the point of ingress via NIC 110 in Neufeld, or that such encrypted requests appear on PCI, after which the encrypted requests are received by a bus controller that forwards them, still-encrypted, to the [remote management controller]’s processor.” *Id.* at 15. But as we detail herein, Petitioner shows that Neufeld teaches to one of ordinary skill in the art these—and the remaining—limitations of claim 1. *See, e.g., supra* Section V.B.

In sum, we find that Petitioner demonstrates by a preponderance of the evidence that Neufeld teaches this limitation.

6. *Processor Configured to Decrypt Management Requests*

Claim 1 further recites “wherein the processor is configured to decrypt the encrypted form of the management requests.” Ex. 1001, 22:40–41. We agree with Petitioner and find that Neufeld teaches this limitation. Pet. 27–28.

In particular, we agree with Petitioner and find that Neufeld teaches that the IOP 156 (i.e., the processor) “provides general control and functions as a management processor for the remote server management controller 116,” and dictates control and monitoring functions in the managed server 2. Ex. 1005 ¶¶ 54, 66. In other words, when Neufeld teaches that the remote management controller 116 performs a general function (e.g., decryption), Neufeld is teaching that the IOP 156 portion of the remote management controller 116 is doing it. We find persuasive Dr. Meldal’s testimony that one of ordinary skill in the art thus “would have understood and found it obvious that IOP 156 would be configured to receive the encrypted form of the management requests and to decrypt and act on them, because IOP 156 is a processor and therefore can be programmed to perform these functions.” Ex. 1003 ¶ 101. This testimony is consistent with Neufeld’s teachings regarding the IOP 156. Ex. 1005 ¶¶ 54, 66. Moreover, Neufeld’s Figures 2 and 3 do not show another processor along the communication path from the NIC 110 to IOP 156. *See* Ex. 1005, Figs. 2–3. In addition, we also find persuasive Dr. Meldal’s testimony that one of ordinary skill in the art would have found obvious “the need to decrypt management requests in order to act on them.” Ex. 1003 ¶ 102.

After reviewing Petitioner’s arguments and evidence, which are not addressed by Patent Owner (*see generally* PO Resp.), we find that Petitioner

demonstrates by a preponderance of the evidence that Neufeld teaches this limitation.

7. Network Device Includes Processor

Petitioner argues that Neufeld teaches “wherein the network device includes a processor configured to facilitate operation of the network device,” as recited in claim 1. Pet. 28–29. More specifically, Petitioner argues that “Neufeld’s managed server 2 includes a CPU 3 with multiple processors 10 that facilitate operation of the managed server 2.” *Id.* (citing Ex. 1005 ¶ 38; annotating *id.* at Fig. 2 (processors 10)).

After reviewing Petitioner’s arguments and evidence, which are not addressed by Patent Owner (*see generally* PO Resp.), we find that Petitioner demonstrates by a preponderance of the evidence that Neufeld teaches this limitation.

8. Distinct Processors

Petitioner argues that Neufeld teaches “wherein the processor of the apparatus is distinct from the processor included in the network device,” as recited in claim 1. Pet. 30. More specifically, Petitioner argues that “[t]he IOP 156 in the remote management controller 116 is distinct from the processors 10 of the managed server CPU 3.” *Id.* (citing Ex. 1003 ¶ 105; Ex. 1005, Fig. 2).

After reviewing Petitioner’s arguments and evidence, which are not addressed by Patent Owner (*see generally* PO Resp.), we find that Petitioner demonstrates by a preponderance of the evidence that Neufeld teaches this limitation.

9. *Summary*

In sum, we determine that Petitioner shows by a preponderance of evidence that claim 1 would have been obvious to one of ordinary skill in the art in view of Neufeld.

C. *Challenged Claims 2, 3, 6, 9, 12, and 17*

Petitioner argues that Neufeld teaches claims 2, 3, 6, 9, 12, and 17. Pet. 30–36. Claims 2, 3, 6, and 9 depend from independent claim 1, and claim 17 depends from independent claim 12. Patent Owner does not provide separate arguments directed to any of these claims, but rather relies on its arguments made for independent claim 1. PO Resp. 39, 54; *generally* PO Sur-reply. As we discuss above, we find these arguments unavailing. *See supra* Section V.B.

We have reviewed Petitioner’s showings for claims 2, 3, 6, 9, 12, and 17. Based on the evidence and arguments of record, we find that Petitioner demonstrates by a preponderance of the evidence that the limitations of these claims are taught by Neufeld.

VI. REMAINING GROUNDS INVOLVING NEUFELD

Petitioner argues that the combination of (i) Neufeld, Frantz, and PCI Bridge Spec renders claims 1–3, 6, 9, 12, and 17 obvious; (ii) Neufeld, Frantz, PCI Bridge Spec, and Martenson renders claim 2 obvious; (iii) Neufeld, Frantz, PCI Bridge Spec, and MacWilliams renders claim 3 obvious; (iv) Neufeld, Frantz, PCI Bridge Spec, Rossman, and RFC1492 renders claims 7 and 16 obvious; (v) Neufeld, Frantz, PCI Bridge Spec, and Syvanne renders claim 8 obvious; (vi) Neufeld, NTP AAPA, Frantz, PCI

Bridge Spec, and Hrastar renders claim 14 obvious;²³ and (vii) Neufeld, Frantz, PCI Bridge Spec, and RFC1157 renders claim 15 obvious. Pet. 36–54.

Patent Owner does not provide separate arguments directed to any of these claims for any of these grounds, but rather relies on its arguments made for independent claim 1 for the Neufeld ground. PO Resp. 39, 54; *generally* PO Sur-reply. As we discuss above, we find these arguments unavailing. *See supra* Section V.B.

We have reviewed Petitioner’s showings for each of these challenged claims for each of these asserted grounds. Based on the evidence and arguments of record, we find that Petitioner demonstrates by a preponderance of the evidence that the limitations of these claims are taught by the asserted combinations, and that one of ordinary skill in the art would have been motivated to combine the references of the asserted combinations in the manner Petitioner does.

VII. ALLEGED OBVIOUSNESS OVER IPMI, FRANTZ, AND HUCKINS

Petitioner argues that the combination of IPMI, Frantz, and Huckins renders claims 1–3, 9, 12, 15, and 17 obvious. Pet. 54–76. The parties dispute, among other things, whether one of ordinary skill in the art would have been motivated to combine IPMI and Huckins to teach the claimed bus controller element. We agree with Patent Owner as to this dispute, and thus, for the reasons that follow, we determine that Petitioner does not show by a

²³ For this asserted ground, we determine that Petitioner’s arguments concerning Hrastar are persuasive by the preponderance of the evidence, and that Hrastar’s cited teachings are in relevant aspects duplicative of NTP AAPA, which we do not rely on.

preponderance of the evidence that this combination renders these challenged claims obvious.

A. Summary of IPMI

IPMI “presents the base specifications for the *Intelligent Platform Management Interface* (IPMI) architecture.” Ex. 1020, 23. “The term ‘platform management’ is used to refer to the monitoring and control functions that are built in to the platform hardware and primarily used for the purpose of monitoring the health of the system hardware.” *Id.* “The IPMI specifications define standardized, abstracted interfaces to the platform management subsystem,” “includ[ing] the definition of interfaces for extending platform management between board within the main chassis, and between multiple chassis.” *Id.* In particular, IPMI “defines the overall architecture, common commands, event formats, data records, and capabilities used across IPMI-based systems and peripheral chassis.” “This includes the specifications for IPMI management via LAN, serial/modem, PCI Management bus, and the local interface to the platform management.” *Id.*

B. Summary of Huckins

Huckins “relates generally to the field of microprocessors and computer systems,” and “[m]ore particularly, . . . relates to a method and apparatus for [PCI] compatible bus model for non-PCI compatible bus architectures.” Ex. 1007 ¶ 1. More specifically, Huckins teaches “a computer system . . . having the capability to communicate with a non-PCI bus architecture via a PCI compatible bus.” *Id.* ¶ 22. Huckins describes the following method: “identifying a hardware controller coupled to a PCI compatible bus, the hardware controller compatible to a PCI bus protocol and to a non-PCI bus protocol”; “[t]he hardware controller is initialized”;

“[a] non-PCI compatible bus coupled to the hardware controller is searched for a non-PCI compatible device, the non-PCI compatible device compatible to the non-PCI bus protocol;” “[t]he non-PCI compatible device is configured;” and “[t]he non-PCI compatible device is recognized as a PCI compatible device coupled to said PCI compatible bus.” *Id.* at code (57).

C. Challenged Claim 1

The parties dispute whether one of ordinary skill in the art would have been motivated to combine IPMI and Huckins to teach the claimed bus controller. Pet. 62–65; PO Resp. 57–63; Pet. Reply 20–26; PO Sur-reply 19–22. We find that Petitioner does not make a sufficient showing to support making this combination.

Petitioner argues that IPMI teaches a LAN Controller that connects to a PCI bus on the managed platform, and that includes a side-band interface to an I²C bus or System Management Bus (“SMBus”) which connects to a Baseboard Management Controller (“BMC”) for conveying in-band IPMI management messages received from a remote management system to the BMC. Pet. 61–62 (citing Ex. 1020, 106 (Fig. 12-1)). This is illustrated in Figure 12-1, shown below.

Figure 12-1, Embedded LAN Controller Implementation

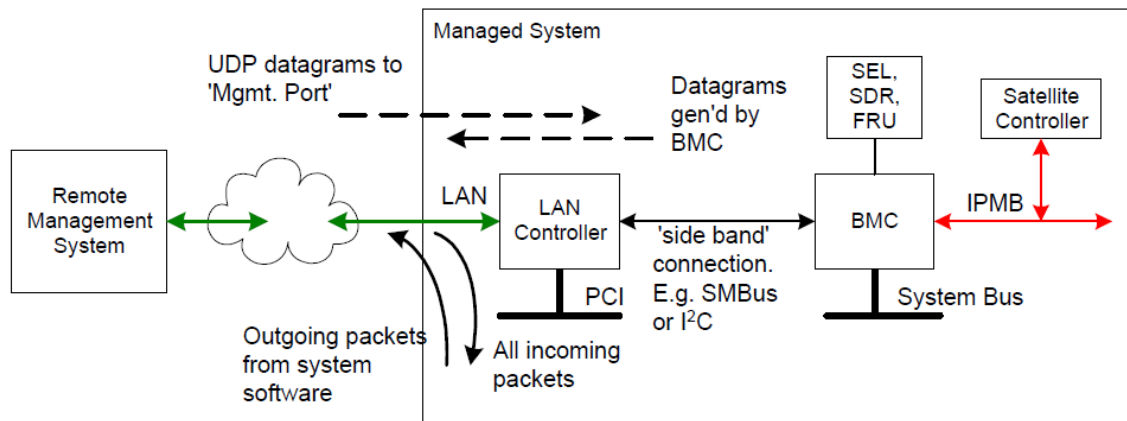
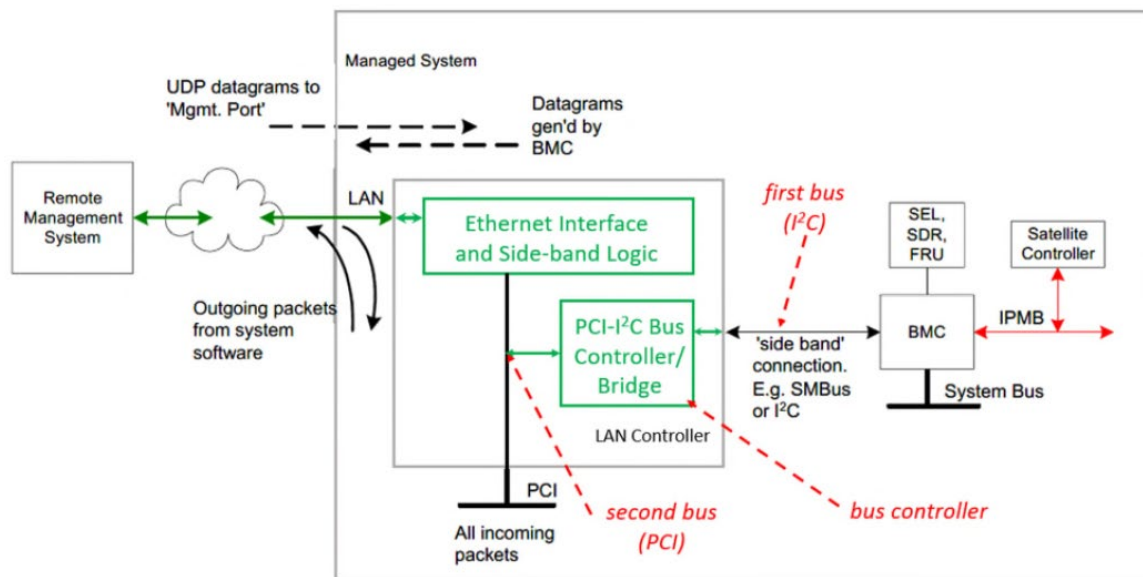


Figure 12-1 is an implementation using an embedded LAN controller to deploy an IPMI LAN Interface using a shared LAN controller. Ex. 1020, 106. Petitioner argues that IPMI “does not explain how to implement such a network controller with such a side-band interface,” and thus, one of ordinary skill in the art “would look to prior art sources for guidance as to how to implement such a side-band interface.” Pet. 62 (citing Ex. 1003 ¶ 196).

Next, Petitioner argues that as shown in Figure 12-1, the LAN Controller “must interface to a PCI bus.” *Id.* Using this, Petitioner argues that one of ordinary skill in the art “would have recognized that *one way to implement a side-band connection using a [LAN] Controller that interfaces with a PCI bus* is by (1) adding a bridge between the PCI bus to which the [LAN] Controller interfaces and the side-band bus, which IPMI identified in Figure 12-1 as an I²C bus or an SMBus, and (2) configuring the [LAN] controller to direct packets addressed to the BMC to the bridge.” Pet. 62 (citing Ex. 1003 ¶ 196) (emphasis added). Petitioner then argues that one of ordinary skill in the art “would therefore look to known implementations of a bridge between a PCI bus and an I²C bus or an SMBus,” such as Huckins. *Id.* (citing Ex. 1003 ¶ 196).

Petitioner relies on Huckins’s teachings and shows how Petitioner proposes IPMI would have been modified. *Id.* at 64. Figure 12-1 as modified by Petitioner is shown below.



Again, Figure 12-1 shows an IPMI LAN Interface using an embedded, shared LAN controller. Ex. 1020, 106. Petitioner annotates the figure by (i) adding a block titled “Ethernet Interface and Side-band Logic” within the LAN controller; (ii) adding a block titled “PCI-I²C Bus Controller/Bridge” within the LAN controller, and labeling it “*bus controller*”; (iii) labeling the PCI bus “*second bus (PCI)*”; and (iv) labeling the side band connection “*first bus (I²C)*.” Pet. 64.

Petitioner argues that one of ordinary skill in the art “would have found it obvious to implement a network controller/side-band interface as described in IPMI by combining Ethernet LAN controller logic with a PCI-I²C bus controller and bridging device of the type described in Huckins as shown in the modified version of Figure 12-1.” *Id.* (citing Ex. 1003 ¶ 198). Petitioner explains how its modifications would work:

In this modified version of Figure 12-1, the Network (LAN) Controller is implemented using known Ethernet Interface logic with additional Sideband logic that recognizes UDP datagram packets directed toward the management port which carry IPMI management messages. [Ex. 1003 ¶ 199].

These packets can be differentiated from packets carrying normal user data based on IP addresses and/or or UDP port numbers. *Id.* Those packets are transmitted over the PCI bus (the second bus . . .) to a PCI-I²C bus controller bridge of the type described in Huckins. [Ex. 1007 ¶ 26; Ex. 1003 ¶ 199]. The packets are then transmitted from the PCI-I²C bus controller-bridge over the I²C/first bus to the BMC (the claimed processor). [Ex. 1007 ¶ 26; Ex. 1003 ¶ 199]. The normal user data packets are transmitted from the Ethernet Logic to the system PCI bus for normal processing by the managed platform. [Ex. 1003 ¶ 199].

Id. at 64–65.

“[O]bviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art to arrive at the claimed invention.” *See Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015); *Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1068–69 (Fed. Cir. 2018) (finding that “the Board focused on what a skilled artisan would have been *able* to do, rather than what a skilled artisan would have been *motivated* to do at the time of the invention”). Petitioner’s arguments focus on that the modified version of IPMI *could* have been made, rather than that one of ordinary skill would have been motivated to combine the teachings to make the proffered combination. For example, Petitioner argues that the modified IPMI version is “one way to implement a side-band connection.” Pet. 62. This argues that the modified IPMI version could have been made. Petitioner also argues that one of ordinary skill in the art would have been motivated to make the combined modifications because “IPMI’s LAN Controller already has the necessary logic and hardware to send packets to [the] managed server via the PCI bus as shown in unmodified version of Fig. 12-1.” Pet. Reply 23; *see also id.* at 24 (arguing that “implementing the I²C sideband interface taught by IPMI using a PCI-I²C controller/bridge is a simple and logical solution

that makes use of the LAN Controller’s existing capability to transmit data on the PCI bus”). We agree with Patent Owner that Petitioner does not explain why this would be a motivation to add Huckins’s “PCI-I²C Bus Controller/Bridge” to IPMI’s teachings. *E.g.*, PO Resp. 60; PO Sur-reply 20. And, we find persuasive Dr. Mishra’s testimony that “[r]equiring a LAN controller to offload management data onto the PCI bus only to route it back internally via the I/O Controller Hub introduces unnecessary design complexity, reduces system performance, and consumes additional bandwidth and power, all without technical justification.” Ex. 2007 ¶ 148; *see also id.* ¶¶ 145–146 (testifying to the modified combination’s operation).

We also find unavailing Petitioner’s argument that Patent Owner’s criticisms of the modified version of Figure 12-1 “do not defeat the Petition’s showing of obviousness because ‘[i]t’s not necessary to show that a combination is the *best* option, only that it be a *suitable* option.’” Pet. Reply 26 (citing *Intel Corp. v. PACTXPP Schweiz AG*, 61 F.4th 1373, 1380 (Fed. Cir. 2023) (citing *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 784, 799–800 (Fed. Cir. 2021)). But Petitioner does not address why the modified version of IPMI is suitable. Nor does Petitioner persuasively counter Dr. Mishra’s testimony as to why one of skill in the art would not have made the proposed combination. *See* Pet. Reply 24–26; Ex. 2007 ¶¶ 145–148.

In addition, in our view, Petitioner’s modification of IPMI to add Huckins’s “PCI-I²C Bus Controller/Bridge” is driven by impermissible hindsight and the desire to locate a distinct, second bus (the PCI bus) as required by the claims. Petitioner’s arguments to this end rely impermissibly on the ’016 patent itself as a roadmap. *See Grain Processing Corp. v. Am.-Maize Prods. Co.*, 840 F.2d 902, 907 (Fed. Cir. 1988) (quoting *Orthopedic Equip. Co. v. United States*, 702 F.2d 1005, 1012 (Fed. Cir.

1983) (“Care must be taken to avoid hindsight reconstruction by using ‘the patent in suit as a guide through the maze of prior art references, combining the right references in the right way so as to achieve the result of the claims in suit.’”)); *Metalcraft of Mayville, Inc. v. The Toro Co.*, 848 F.3d 1358, 1367 (Fed. Cir. 2017) (“[W]e cannot allow hindsight bias to be the thread that stitches together prior art patches into something that is the claimed invention.”).

Lastly, we recognize that our findings here may be inconsistent with our agreement with Petitioner in the Decision on Institution that one of ordinary skill in the art would “look to known implementations of a bridge between a PCI bus and an I²C bus or an SMBus.” Dec. on Inst. 33. But we have now had the benefit of the full record of the trial, and additional arguments from Patent Owner. *See Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1068 (Fed. Cir. 2016) (“At th[e Institution] point, the Board is considering the matter preliminarily without the benefit of a full record. The Board is free to change its view of the merits after further development of the record . . .”). Upon a review of the full record, we find insufficient Petitioner’s showing for combining IPMI and Huckins’s teachings.

Accordingly, we find that Petitioner has not shown that one of ordinary skill in the art would have modified IPMI with Huckins’s teachings in the manner Petitioner proposes. And therefore, we find that Petitioner has not shown by a preponderance of the evidence that claim 1 is obvious.

D. Challenged Claims 2, 3, 9, 12, 15, and 17

Petitioner argues that the combination of IPMI, Frantz, and Huckins renders claims 2, 3, 9, 12, 15, and 17 obvious. Pet. 68–76. Claims 2, 3, and 9 depend from independent claim 1, and claims 15 and 17 depend from independent claim 12. Above we find for this ground that Petitioner does

not show that independent claim 1 would have been obvious. *See* Section VII.C. For independent claim 12, Petitioner relies on its showing for claim 1, and thus, we also find Petitioner does not show that claim 12 would have been obvious over this combination. Pet. 72–74. As to the dependent claims, they do not cure the deficiencies we find as to the independent claims, and thus, we find Petitioner does not show that these dependent claims would have been obvious over this combination.

Accordingly, we find that Petitioner does not show by a preponderance of the evidence that the combination of IPMI, Frantz, and Huckins renders claims 2, 3, 9, 12, 15, and 17 obvious.

VIII. REMAINING GROUNDS INVOLVING IPMI AND HUCKINS

Petitioner argues that the combination of (i) IPMI, IPMIv2.0, and Huckins renders obvious claims 1–3, 9, 12, 15, and 17; (ii) IPMI, Frantz, Huckins, and VPN AAPA renders obvious claim 6; (iii) IPMI, Frantz, Huckins, and Rossman renders obvious claim 6; (iv) IPMI, Frantz, Huckins, VPN AAPA, and Rossman renders obvious claim 6; (v) IPMI, IPMIv2.0, Huckins, and VPN AAPA renders obvious claim 6; (vi) IPMI, IPMIv2.0, Huckins, and Rossman renders obvious claim 6; (vii) IPMI, IPMIv2.0, Huckins, VPN AAPA, and Rossman renders obvious claim 6; (viii) IPMI, Frantz, Huckins, Rossman, and RFC1492 renders obvious claims 7 and 16; (ix) IPMI, Frantz, Huckins, Rossman, and RFC2865 renders obvious claims 7 and 16; (x) IPMI, IPMIv2.0, Huckins, Rossman, and RFC1492 renders obvious claims 7 and 16; (xi) IPMI, IPMIv2.0, Huckins, Rossman, and RFC2865 renders obvious claims 7 and 16; (xii) IPMI, Frantz, Huckins, and Syvanne renders obvious claim 8; (xiii) IPMI, IPMIv2.0, Huckins, and Syvanne renders obvious claim 8; (xiv) IPMI, Frantz, Huckins, and NTP AAPA renders obvious claim 14;

(xv) IPMI, Frantz, Huckins, and Hrastar renders obvious claim 14;
(xvi) IPMI, Frantz, Huckins, NTP AAPA, and Hrastar renders obvious claim 14; (xvii) IPMI, IPMIv2.0, Huckins, and NTP AAPA renders obvious claim 14; (xviii) IPMI, IPMIv2.0, Huckins, and Hrastar renders obvious claim 14; (xix) IPMI, IPMIv2.0, Huckins, NTP AAPA, and Hrastar renders obvious claim 14; (xx) IPMI, Frantz, Huckins, and RFC1157 renders obvious claim 15; and (xxi) IPMI, IPMIv2.0, Huckins, and RFC1157 renders obvious claim 15. Pet. 76–83.

These claims and grounds all rely (directly or indirectly) on Petitioner’s showing for independent claim 1, which above we find deficient. *Id.*; *supra* Section VII.C. And these grounds do not cure the deficiencies. Accordingly, we find that Petitioner does not show by a preponderance of the evidence that the claims challenged for these asserted grounds would have been obvious.

IX. CONCLUSION²⁴

Based on the full record, we determine that Petitioner shows by a preponderance of the evidence that the challenged claims would have been obvious over the grounds involving Neufeld. And we find that Petitioner does not show by a preponderance of the evidence that the challenged claims would have been obvious over the grounds involving IPMI and Huckins.

²⁴ Should Patent Owner wish to pursue amendment of the challenged claims 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).

Claim(s)	35 U.S.C. §	Reference(s) /Basis	Claim(s) Shown Unpatentable	Claims Not Shown Unpatentable
1–3, 6, 9, 12, 17	103(a)	Neufeld	1–3, 6, 9, 12, 17	
1–3, 6, 9, 12, 17	103(a)	Neufeld, Frantz, PCI Bridge Spec	1–3, 6, 9, 12, 17	
2	103(a)	Neufeld, Frantz, PCI Bridge Spec, Martenson	2	
3	103(a)	Neufeld, Frantz, PCI Bridge Spec, MacWilliams	3	
7, 16	103(a)	Neufeld, Frantz, PCI Bridge Spec, Rossman, RFC1492	7, 16	
8	103(a)	Neufeld, Frantz, PCI Bridge Spec, Syvanne	8	
14	103(a)	Neufeld, NTP AAPA, Frantz, PCI Bridge Spec, Hrastar	14	
15	103(a)	Neufeld, Frantz, PCI Bridge Spec, RFC1157	15	
1–3, 9, 12, 15, 17	103(a)	IPMI, Frantz, Huckins		1–3, 9, 12, 15, 17
1–3, 9, 12, 15, 17	103(a)	IPMI, IPMIv2.0, Huckins		1–3, 9, 12, 15, 17
6	103(a)	IPMI, Frantz, Huckins, VPN AAPA		6
6	103(a)	IPMI, Frantz, Huckins, Rossman		6
6	103(a)	IPMI, Frantz,		6

		Huckins, VPN AAPA, Rossman		
6	103(a)	IPMI, IPMIv2.0, Huckins, VPN AAPA		6
6	103(a)	IPMI, IPMIv2.0, Huckins, Rossman		6
6	103(a)	IPMI, IPMIv2.0, Huckins, VPN AAPA, Rossman		6
7, 16	103(a)	IPMI, Frantz, Huckins, Rossman, RFC1492		7, 16
7, 16	103(a)	IPMI, Frantz, Huckins, Rossman, RFC2865		7, 16
7, 16	103(a)	IPMI, IPMIv2.0, Huckins, Rossman, RFC1492		7, 16
7, 16	103(a)	IPMI, IPMIv2.0, Huckins, Rossman, RFC2865		7, 16
8	103(a)	IPMI, Frantz, Huckins, Syvanne		8
8	103(a)	IPMI, IPMIv2.0, Huckins, Syvanne		8
14	103(a)	IPMI, Frantz, Huckins, NTP AAPA		14
14	103(a)	IPMI, Frantz, Huckins, Hrastar		14
14	103(a)	IPMI, Frantz,		14

		Huckins, NTP AAPA, Hrastar		
14	103(a)	IPMI, IPMIv2.0, Huckins, NTP AAPA		14
14	103(a)	IPMI, IPMIv2.0, Huckins, Hrastar		14
14	103(a)	IPMI, IPMIv2.0, Huckins, NTP AAPA, Hrastar		14
15	103(a)	IPMI, Frantz, Huckins, RFC1157		15
15	103(a)	IPMI, IPMIv2.0, Huckins, RFC1157		15
Overall Outcome			1–3, 6–9, 12, 14–17	

X. ORDER

In consideration of the foregoing, it is hereby

ORDERED that, pursuant to 35 U.S.C. § 314(a), Petitioner has shown by a preponderance of the evidence that claims 1–3, 6–9, 12, and 14–17 of the '016 patent are unpatentable; and

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

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