

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC.,
Petitioner,

v.

UMBRA TECHNOLOGIES LTD.,
Patent Owner.

IPR2024-00497
Patent 10,630,505 B2

Before ST. JOHN COURTENAY, III, MICHAEL R. ZECHER, and
GREGG I. ANDERSON, *Administrative Patent Judges*.

ANDERSON, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. Background

Cisco Systems, Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting an *inter partes* review of claims 1–20 (“the challenged claims”) of U.S. Patent No. 10,630,505 B2 (Ex. 1001, “the ’505 patent”). Petitioner also filed a Declaration of Dr. A.L. Narasimha Reddy with the Petition. See Ex. 1003. UMBRA Technologies Ltd. (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”).

We have authority to determine whether to institute an *inter partes* review. See 35 U.S.C. § 314 (2018); 37 C.F.R. § 42.4(a) (2022). Under 35 U.S.C. § 314(a), we may not authorize an *inter partes* review unless the information in the petition and the preliminary 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.”

Upon consideration of the Petition, the Preliminary Response, and the evidence of record, for the reasons given below we determine there is a reasonable likelihood that Petitioner would prevail in establishing the unpatentability of at least one challenged claim of the ’505 patent.

Accordingly, we institute an *inter partes* review of claims 1–20 of the ’505 patent based upon the asserted grounds of unpatentability set forth in the Petition. Pet. 21.

B. Related Proceedings

The parties identify the following related district court cases involving the ’505 patent: *Umbra Technologies Ltd. (UK) v. Cisco Systems, Inc.*, No. 1:23-cv-00903-DII (W.D. Tex.); *Umbra Technologies Ltd. (UK) v. VMware*,

Inc., No. 1:23-cv-00904-DII (W. D. Tex.). Pet. 74; Paper 4 (“Patent Owner’s Mandatory Notice Information”), 2.

C. Real Parties-in-Interest

Petitioner identifies itself, Cisco Systems, Inc., as the real party-in-interest. Pet. 74. Patent Owner identifies itself, UMBRA Technologies Ltd., as the real party-in-interest. Paper 4, 2.

D. The ’505 Patent

The ’505 patent was filed under the Patent Cooperation Treaty on January 28, 2016, as U.S. Patent Application No. 15/546,247 (“the ’247 application”). Ex. 1001 at codes [21], [22]. The ’247 application is a continuation of Application Nos. PCT/IB2016/000110 and PCT/US2015/064242, filed respectively on Jan. 5, 2016, and Dec. 7, 2015. *Id.* at code [63]. Five provisional applications were filed, the earliest of which is U.S. Provisional Patent Application No. 62/108,987, filed on Jan. 28, 2015. *Id.* at code [60]. Petitioner “assumes the earliest possible priority date of Jan. 28, 2015.” Pet. 16. The record does present any issue as to whether or not the references relied on are prior art.

1. Technical Background

The ’505 patent relates to “the configuration and operation of a global virtual network (GVN).” Ex. 1001, 1:25–26.

A Global Virtual Network (GVN) is a type of computer network on top of the internet providing global secure network optimization services utilizing a mesh of devices distributed around the world securely linked to each other by advanced tunnels, collaborating and communicating via Application Program Interface (API), Database (DB) replication, and other methods.

Ex. 1001, 3:11–17.

The problem addressed by the '505 patent is managing “long distance connectivity and throughput due to issues related to distance, protocol limitations, peering, interference, and other problems and threats.”

Ex. 1001, 1:30–34. One approach to the problem is wide area network (WAN) optimization which uses “a hardware (HW) device at the edge of a local area network (LAN) which builds a tunnel to another WAN optimization HW device at the edge of another LAN, forming a wide area network (WAN) between them.” *Id.* at 1:61–67. One way for creating WAN links “from one LAN to another LAN involve[s] the building of tunnels such as IPsec or other protocol tunnels between two routers, firewalls, or equivalent edge devices.” *Id.* at 2:48–51.

Advanced Smart Routing (ASR) for client devices, including End Point Device (EPD) and access point server (SRV_AP), ensure that traffic flows via the most ideal path from origin to destination. Ex. 1001, 3:17–32. A third layer of the GVN “is seen by client devices connected to the GVN as a normal internet path but with a lower number of hops, better security and in most cases lower latency than traffic flowing through the regular internet to the same destination.” *Id.* at 3:50–55.

2. The Global Virtual Network of the '505 Patent

The '505 patent describes systems and methods for connecting endpoints via first and second devices with a communication path of “one or more intermediate tunnels connecting each endpoint device to one or more intermediate access point servers and one or more control servers.” Ex. 1001, Abs. Figure 23 of the '505 patent is reproduced below.

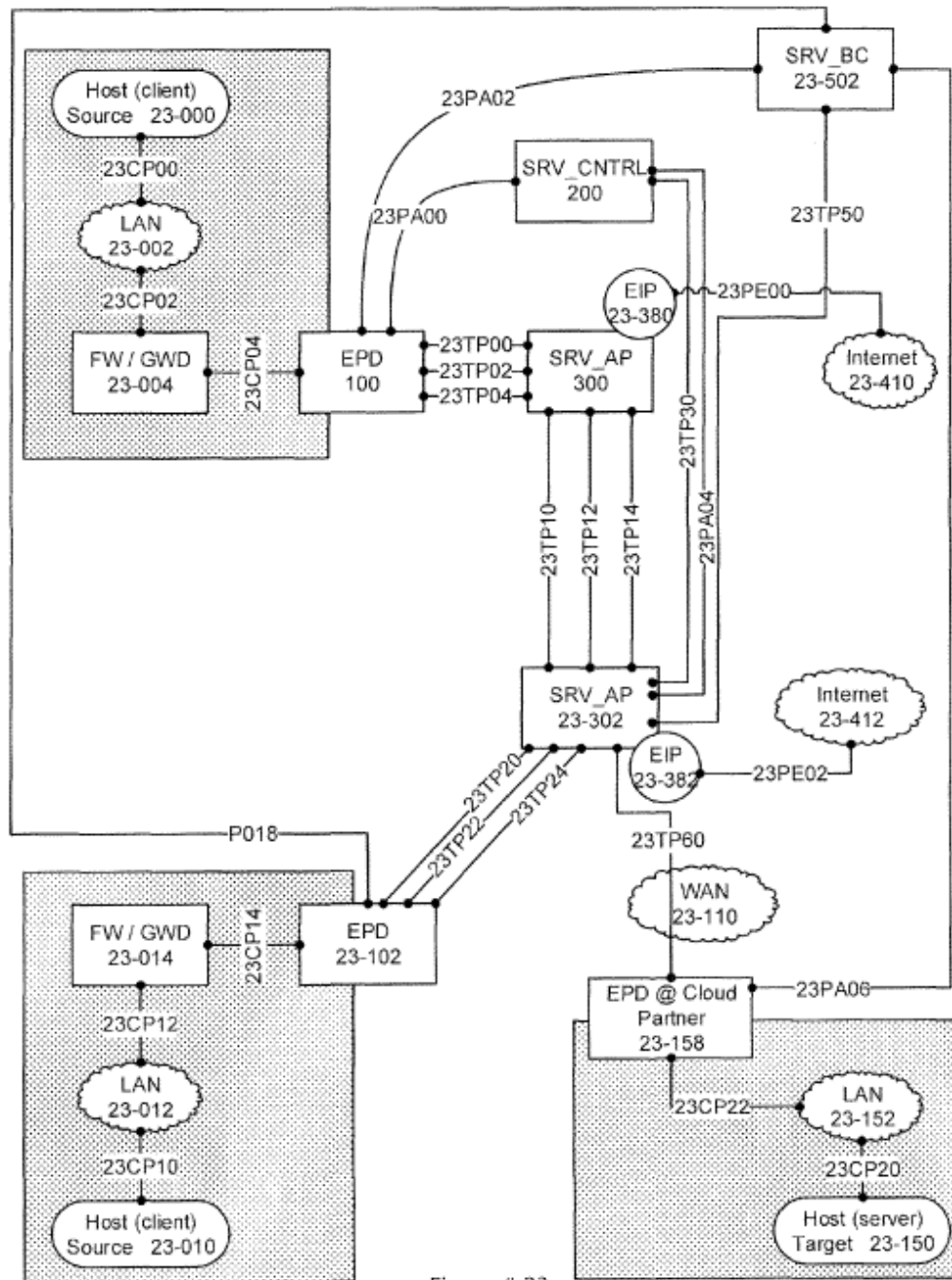


Figure # 23

Figure 23 illustrates multiple tunnel connectivity between End Point Devices (EPD) and Access Point Servers (SRV_AP).

Id. at 5:32–34, 23:55–57. With reference to Figure 23, the “tunnels can be used for client data traffic, internal system data or other transfers.” *Id.* at 23:57–59. Figure 23 shows the connection of “Global Virtual Network (GVN) in infrastructure devices such as Central Server (SRV CNTRL) 200 and Back Channel Admin Server (SRV BC) 23-502 with other devices within the GVN.” *Id.* at 23:60–63. “Multiple tunnels between two devices such as 23TP00 23TP02 23TP04 or 23TP10 23TP12 23TP14 or 23TP20 23TP22 23TP24 can either offer a single communication path by sending traffic down one tunnel, or two or more tunnels can be aggregated together where two or more bound tunnels can carry traffic as if they are one tunnel.” *Id.* at 24:33–39.

Figure 33 of the '505 patent is reproduced below.

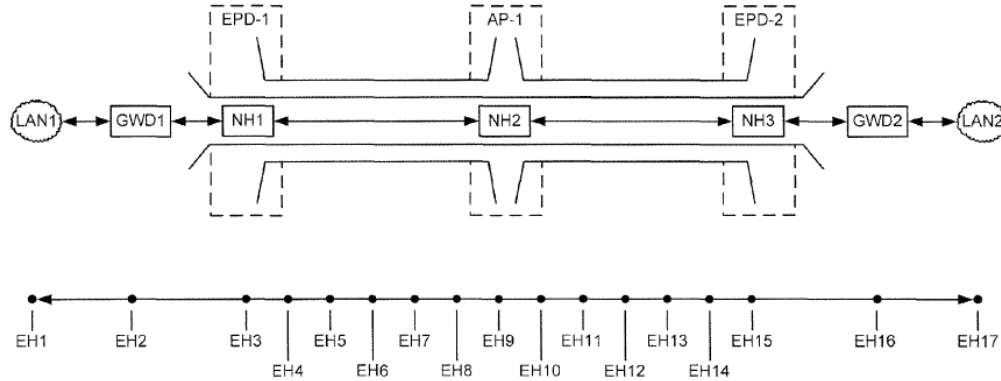


Figure # 33

Figure 33 illustrates a GVN Tunnel from LAN to EPD to SRV_AP to EPD to LAN.

Ex. 1001, 5:54–55, 32:50–51. Figure 33 illustrates a “third layer of the GVN with respect to neutrality and security of the GVN tunnel while comparing number of hops of the base Internet connection.” *Id.* at 32:42–45. Specifically, Figure 33 is an “end-to-end GVN tunnel(s) between edges of two LANs via one SRV_AP.” *Id.* at 33:9–11.

Figure 34 of the ’505 patent is reproduced below.

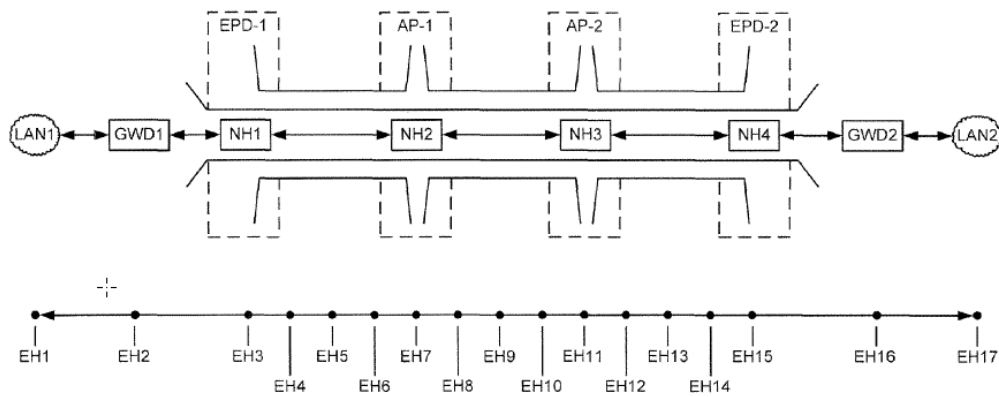


Figure # 34

Figure 34 illustrates a GVN tunnel from LAN to EPD to SRV_AP to SRV_AP to EDP to LAN.

Ex. 1001, 5:54–55, 33:25–26. Figure 34 illustrates another “third layer of the GVN with respect to neutrality and security of the GVN tunnel while comparing number of hops of the base Internet connection.” *Id.* at 32:42–45. Specifically, Figure 34 is an end-to-end GVN tunnel that has “a second AP-2 inserted into the path to represent another joining of tunnels AP-1 to AP-2 and AP-2 to EPD-2.” *Id.* at 33:29–31.

E. Illustrative Claim

The Petition challenges claims 1–20, of which claims 1, 11, and 14 are independent claims directed to, respectively, “[a] network system,” “[a] method,” and “[a] system.” Ex. 1001, 58:13, 58:59, 59:16. Claims 2–10, 12, 13, and 15–20 depend variously and ultimately from one of independent claims 1, 11, or 14. *Id.* at 58:25–58, 59:5–15, 60:4–27. Claim 1 is illustrative of the claimed subject matter and reproduced below:

[1.0]¹ A network system comprising:

[1.1] a first device;

[1.2] a second device; and

[1.3] a plurality of intermediate access point servers that form a plurality of end-to-end tunnels connecting the first device and the second device; and

[1.4] a control server, wherein the control server receives information from at least one of the plurality of intermediate access point servers, and wherein the control server selects one of the plurality of end-to-end tunnels for communication between the first and second devices based on the information.

Ex. 1001, 58:12–24.

F. References

The Petition relies on the following references:

Hankins, et al., US 10,177,957 B1, issued January 8, 2019 (Ex. 1004, “Hankins”);

¹ Paragraph labeling in brackets is based on Petitioner’s format identifying the claim elements. *See* Pet. 30–44 (showing for claim 1). Patent Owner also uses the format. Prelim. Resp. 3 (“Representative claim element 1.3”). We adopt the same format for purposes of this Decision.

Munger, et al., US 6,502,135 B1, issued December 31, 2002 (Ex. 1005, “Munger”); and

Treuhaff, et al., US 2013/0275570 A1, published October 17, 2013 (“Treuhaff,” Ex. 1009).

G. Asserted Grounds of Unpatentability

Petitioner asserts the challenged claims are unpatentable on the following grounds:

Grounds	Claims Challenged	35 U.S.C. § ²	References
1	1, 2, 4–12, 14–20	103	Hankins
1 ³	1, 2, 4–12, 14–20	103	Hankins, Munger
2	3, 13	103	Hankins
2	3,13	103	Hankins, Munger
2	3,13	103	Hankins, Treuhaff

Pet. 21.

² Because the earliest application from which the ’505 patent claims priority was filed after March 16, 2013, the AIA (“America Invents Act”) version of § 103 applies. Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011).

³ Petitioner uses “or” to list alternative grounds for Grounds 1 and 2. Pet. 21. We separate the grounds for clarity.

H. Overview of the Prior Art

1. Hankins (Ex. 1004)

Hankins describes managing networks, including connecting a private network to the Internet and communicating signal packets from a first device in a first logical broadcast domain to another network device in another logical broadcast domain using a tunnel server. Ex. 1004, Abs. Hankins explains that broadcast domain refers to a set of devices occupying a network address space, in which any device is able to communicate with any other device in the broadcast domain without rerouting transmission. *Id.* at 6:33–40. A logical broadcast domain means that portions of the broadcast domain may not be entirely related to a particular set of physical devices and instead can be associated with a cloud implemented functionality. *Id.* at 4:12–16, 7:45–50.

Figure 2 of Hankins is reproduced below.

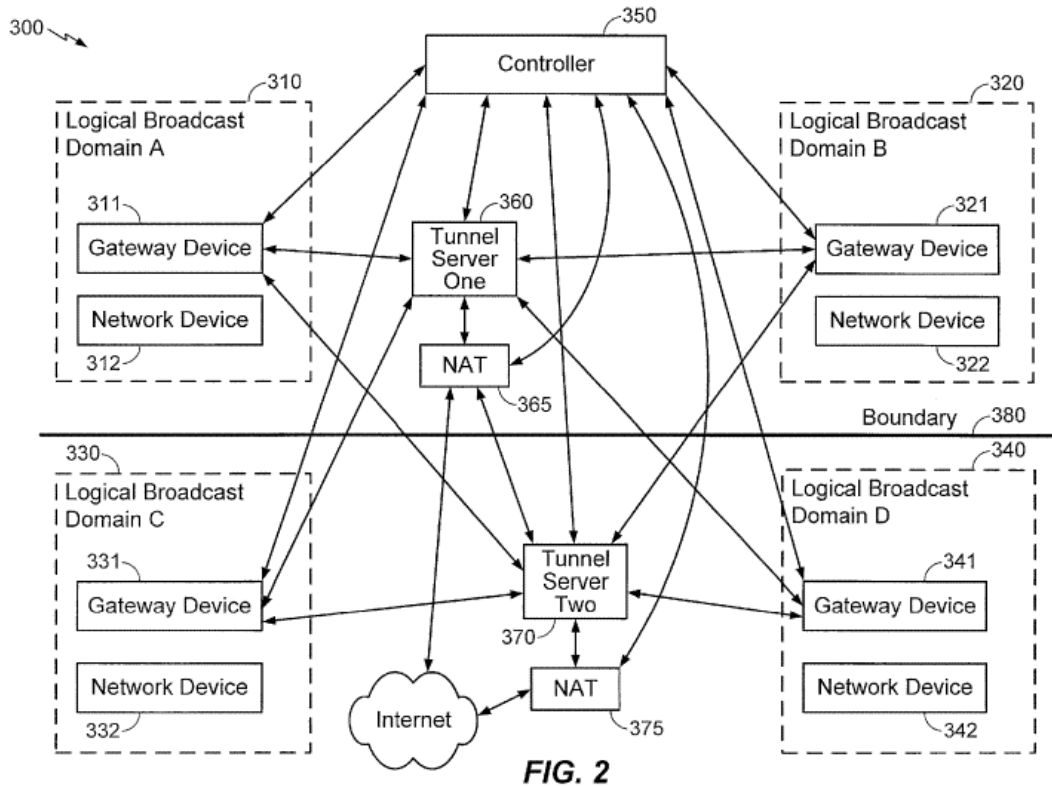


Figure 2 is a schematic diagram illustrating an embodiment to connect a private network to the Internet.

Ex. 1004, 1:45–46. As depicted in Figure 2, four logical broadcast domains A310, B320, C330, and D340 are in communication via one or more tunnel servers 360, 370. *Id.* at 24:45–47, 24:58–67. For example, “[g]ateway devices 311, 321, 331, and 341 may generate a broadcast domain configuration for their respective logical broadcast domains.” *Id.* at 24:47–49. “Gateway devices 311, 321, 331, and 341 may forward respective broadcast domain configurations to controller 350,” which provisions tunnel server one 360. *Id.* at 24:49–52.

The communication channel between remote physical locations, e.g., Los Angeles and New York, may be enhanced by provisioning a tunnel

server located more physically proximate to endpoints. Ex. 1004, 25:7–18. “A path or channel may potentially be enhanced by controller 350 provisioning an additional tunnel server located more physically proximate to logical broadcast domain C 330 and logical broadcast domain D 340.” *Id.* at 25:18–20.

2. *Munger (Ex. 1005)*

Munger describes a network where “[d]ata packets matching criteria defined by a moving window of valid addresses are accepted for further processing, while those that do not meet the criteria are quickly rejected.” Ex. 1005, Abs. Munger uses a “secure mechanism for communicating over the internet, including a protocol referred to as the Tunneled Agile Routing Protocol (TARP), [which] uses a unique two-layer encryption format and special TARP routers.” *Id.* at 2:66–3:2. “Each TARP packet’s true destination is concealed behind a layer of encryption generated using a link key.” *Id.* at 3:19–20. Munger further teaches domain name servers (DNSs) “provide a look-up function that returns the IP address of a requested computer or host.” *Id.* at 37:22–24.

3. *Treuhft (Ex. 1009)*

Treuhft discloses systems and methods for processing domain name system requests (DNS requests) in a network. Ex. 1009, Abs. Treuhft explains that

Network resources such as those available via the Internet are accessed according to Internet Protocol (IP) addresses. IP addresses are represented numerically, traditionally as a quartet of values having the form 111.111.111.111. From the early inception of network computing, familiar alphanumeric name-based addressing has been used to allow users to more easily

locate and remember the addresses for resources. For example, domain names are assigned to computing servers and clients. The domain name system facilitates the translation between IP addresses and domain names by maintaining accessible records that associate one or more domain names with one or more IP addresses.

Id. ¶ 4.

Treuhaff describes when a nameserver (network server) receives a DNS request, it “first checks a local cache to attempt to resolve the request.”

Id. ¶ 6. The “DNS nameserver maintains the local cache with domain name records that have already been resolved to improve performance in responding to subsequent DNS requests.” *Id.* If the nameserver is maintaining the requested domain name in the local cache, it will issue a DNS response to the client with the domain name record including the IP address corresponding to the request. *Id.* If the nameserver does not have an entry for the requested domain name, it will launch recursive processing to obtain it. *Id.* ¶ 7.

II. DISCRETIONARY DENIAL UNDER 35 U.S.C. § 325(d)

Regarding prior examination of the ’247 application that issued as the ’505 patent, 35 U.S.C. § 325(d) provides that “the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office.” Our analysis for discretionary denial under 35 U.S.C. § 325(d) is set forth in *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017) (precedential), and *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*,

IPR2019-01469, Paper 6 (PTAB Feb. 13, 2020) (precedential). *Advanced Bionics* sets out the following two-part framework:

- (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and
- (2) if either condition of first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.

Advanced Bionics, Paper 6 at 8.

Patent Owner asserts that the examination of the '505 patent included a rejection based on Chen⁴ which was overcome during prosecution.

Prelim. Resp. 1. Patent Owner alleges Hankins, relied on in the challenges in the Petition, is “in relevant respect identical” to Chen. *Id.* Patent Owner points out that the Petition does not address § 325(d) nor whether the Office erred in a manner material to the patentability of the challenged claims.

Thus, Patent Owner contends Hankins is “substantially the same” as Chen and there is no showing of material error by the Office. Prelim. Resp. 13 (comparing Hankins Fig. 2 and Chen Fig. 1B), 14 (Petition does not address § 325(d)).

⁴ Chen, US 2014/0359704 A1, published December 4, 2014 (Ex. 1006, Chen”).

A. Prosecution History

On June 21, 2019, the '247 application claim 1 was amended to overcome the Chen reference. Ex. 1002, 145⁵ (amended application claim 1), 154 (mailing date). In response to the June 21 amendment, the Office allowed claims 1–20, without an explanation as to how the amendments to claim 1 overcame Chen. *Id.* at 132 (Notice of Allowability). Thus, amended application claim 1 became claim 1 of the '505 patent.

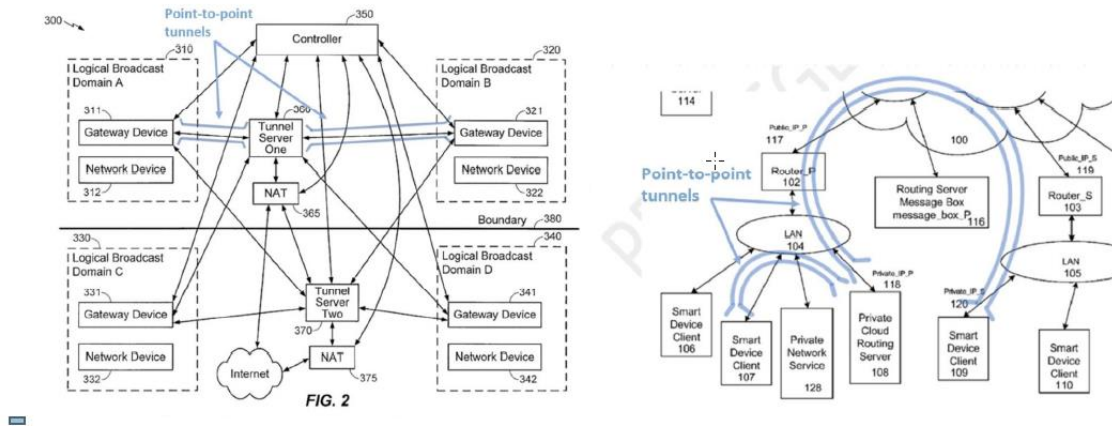
B. Patent Owner's § 325(d) Argument

Application claim 1 was rejected as anticipated by Chen (referenced as “Kingston Digital”). Ex. 1002, 164–165. Patent Owner points to its arguments made during prosecution to overcome Chen. Prelim. Resp. 6. During prosecution, Patent Owner argued that Chen “does not teach that the Private Cloud [Routing] Server 108 joins multiple VPN links to provide end-to-end encapsulation and consequently the VPN links would not form a ‘plurality of end-to-end tunnels.’” *Id.* (emphasis omitted) (quoting Ex. 1002, 150–151). Patent Owner alleges that the Examiner found these arguments persuasive to overcome the anticipation rejection based on Chen. *Id.*; see also Ex. 1002, 132 (Notice of Allowability).

According to Patent Owner, Petitioner argues Hankins' gateway device 311 of Figure 2 communicates with tunnel server 360 but not “directly with the remote gateway 321” of Figure 2. Prelim. Resp. 7 (citing

⁵ All references to the page numbers in the prosecution history of the '505 patent refer to the page numbers inserted by Petitioner in the bottom, right-hand corner of each page in Exhibit 1002.

Ex. 1004, Fig. 4⁶ at 423; Pet. 28–29). In furtherance of its argument, Patent Owner compares an annotated version of Hankins’ Figure 2 to a cropped, annotated version of Chen’s Figure 1B. *Id.* at 13. The comparison is reproduced below.



Ex. 1004, FIG. 2 (annotated); Ex. 1006, Figure 1B (cropped and annotated).

Comparison of Hankins’ Figure 2 and Chen Figure 1B.

Id. Referring to the above drawing figure comparison, Patent Owner argues “[t]he Petition simply fails to address how Hankins [Ex. 1004, Fig. 2] teaches” “a **series of point-to-point tunnels** between endpoints or rather an **end-to-end tunnel** as recited in the claims and shown in Figure 33 [reproduced in Section I.D.2 above] of the ’505 patent.” *Id.* at 12–13 (color emphasis omitted). Thus, Patent Owner contends there is nothing in Hankins “that is materially different than Chen [Ex. 1006, Fig. 1B] in this regard.” *Id.*

⁶ Figure 4 “is a flowchart illustrating an embodiment of a method for connecting a private network to the Internet.” Ex. 1004, 1:49–50.

C. Petitioner's § 325(d) Argument

As Patent Owner argues, Petitioner does not address § 325(d). *See* Prelim. Resp. 14.

D. Analysis

The issue presented implicates limitation 1.3. *See* Prelim. Resp. 1 (“end-to-end tunnels” of limitation 1.3). As discussed below, even accepting that Chen does not teach the “end-to-end tunnels” of limitation 1.3, Hankins is not “the same or substantially the same” as Chen.

General statements made by Patent Owner about what allegedly is “substantially the same” are not sufficient to show that Hankins is substantially similar to Chen. Petitioner relies on Hankins as teaching limitation 1.3 and the Examiner relied on Chen as teaching the ‘communication path’ recited in claim 1 prior to being amended to include limitation 1.3. *Compare* Ex. 1002, 150 (arguing patentability based on amendment to application claim 1) *and* Pet. 32 (arguing limitation 1.3 taught by Hankins). The question is not whether both references are relied on for the same limitation, but instead whether the teachings of the two references are the “same or substantially the same.” *See Advanced Bionics*, Paper 6 at 10 (factors (a), (b), (d)). In this case, Patent Owner has not shown substantial similarity between the two references.

As seen in Figure 1B of Chen, the “Private Cloud Routing Server 108” of Chen is not directly connected between any two of the “Smart Device Clients” 107 or 109. Ex. 1006, Fig. 1B. Instead, Smart Device Client 107 is connected to Private Cloud Routing Server 108 through LAN 104 while Smart Device Client 109 is connected to Private Cloud Routing Server 108 through LAN 105. *Id.* This architecture contrasts with Hankins

Figure 2 where tunnel servers 360 and 370 are directly connected to both Gateway Devices 311 and 321. Ex. 1004, Fig. 2. This analysis is further developed in Section II.B below, which determines, based on the current record, that Figure 33 of the '505 patent does not limit the “end-to-end tunnels” of limitation 1.3.

Because the first prong of the framework of *Advanced Bionics* is not satisfied, we determine that § 325(d) is not a reason to deny institution.

III. ANALYSIS OF THE CHALLENGED CLAIMS

A. Level of Ordinary Skill in the Art

Petitioner alleges a person of ordinary skill in the art would have a working knowledge of techniques for transmitting data via a VPN and establishing tunneling links. A [person of ordinary skill in the art] would have gained knowledge of these concepts through a mixture of training and work experience, such as by having a Bachelor's degree in computer science and four years of experience; or by obtaining a Master's degree in computer science, but having only one to two years of experience; or by having no formal education but experience in storage systems of at least eight years.

Pet. 16–17 (citing Ex. 1003 ¶ 53).

Patent Owner does not propose a level of ordinary skill in the art. See Prelim. Resp. Petitioner's proposal is supported by the testimony of Dr. Reddy and is consistent with the '505 patent and the asserted prior art. Accordingly, we apply Petitioner's articulation.

B. Claim Construction

We interpret claim terms 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).” 37 C.F.R. § 42.100(b) (2019). In this context, claim terms “are generally given their ordinary and customary meaning,” as would have been understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (citations omitted) (en banc). “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). Extrinsic evidence is “less significant than the intrinsic record in determining ‘the legally operative meaning of claim language.’” *Phillips*, 415 F.3d at 1317 (citations omitted).

Any special definition for a claim term must be set forth in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

We construe only those claim terms that require analysis to determine whether to institute an *inter partes* review. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

Neither party proposes any term for claim construction. Petitioner provides discussions of the “State of the Art” where it identifies four terms, “communication tunnels,” “selection of communication paths by controller,” “DNS look ups,” and “caches.” Pet. 17–21. The term “end-to-end tunnels” appears in challenged independent claims 1, 11, and 14. Because the term is

implicated in the § 325(d) analysis above with respect to Hankins and Chen, we construe it below.

1. “*end-to-end tunnels*” (*claims 1, 11, and 14*)

Petitioner’s “State of the Art” section of the Petition relies on extrinsic evidence to describe a “tunnel” as

a plurality of communication paths (tunnel 1 and tunnel 2) between wireless clients, which were identified as “peer-to-peer tunnels” established between “any two clients in the mobility domain” to route traffic between the clients. Traffic between the clients pass through the tunnels and intermediate access point servers.

Pet. 17 (citing Ex. 1007⁷ ¶¶ 15, 30; Ex. 1003 ¶ 56).

Patent Owner alleges “[t]he term ‘end-to-end tunnel’ refers to a tunnel that spans, in an uninterrupted fashion, the entire overlay network path between the endpoints.” Prelim. Resp. 3. Patent Owner points to Figures 32 and 33 of the ’505 patent (reproduced in Section I.D.2 above) as support for its contention that “an **end-to-end tunnel** [is a tunnel] that spans the entire overlay network path from one end point to the other,” as opposed to a “**tunnel that spans a single hop** between two points on the overlay network path between two endpoints.” *Id.* at 3–4 (citing annotated Figs. 32 and 33).

The ’505 patent does not define “end-to-end tunnels.” The ’505 patent explains that “tunnels” link one LAN to another through routers or equivalent edge devices. Ex. 1001, 2:48–50. The ’505 patent further explains that communication paths between endpoint devices “may comprise

⁷ Iyer et al., US 2010/0275017 A1, published October 28, 2010 (Ex. 1007, “Iyer”).

one or more intermediate tunnels connecting each endpoint device to one or more intermediate access point servers and one or more control servers.” *Id.* at 4:5–8. End point devices may be connected “with one or more multiple SRV_AP servers through one or more multiple concurrent tunnels.” *Id.* at 20:18–20.

The description of the ’505 patent is consistent with Petitioner’s “State of the Art” as it relates to “tunnels.” Patent Owner’s reliance on Figures 32 and 33 is an impermissible reading of limitations from the specification into the claims. *E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1369 (Fed. Cir. 2003) (claims must be interpreted “in view of the specification” without importing limitations from the specification into the claims unnecessarily) (internal quotations and citation omitted).

We preliminarily determine that the term “end-to-end tunnels” means communication paths connecting endpoint devices to one or more intermediate access point servers and one or more control servers. Ex. 1001, 4:5–8. Stated differently, the “end-to-end tunnels” connecting endpoint devices may include intermediate access point servers or control servers.

2. *Remaining Terms*

On this record, none of the terms remaining in the “State of the Art” section are in dispute. Unless otherwise indicated in this Decision, we do not need to construe any remaining claim term at this time, and we apply the plain and ordinary meaning, as would have been understood by a person of ordinary skill in the art, in the context of the ’505 patent.

The parties should develop the construction of the term “end-to-end tunnels,” or any other term that may require construction, during trial.

Failure to do so may result in waiver of the issue for purposes of a final decision.

C. Obviousness

A claim is unpatentable as obvious under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) where in evidence, so-called “secondary considerations,” including commercial success, long-felt but unsolved needs, failure of others, and unexpected results. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). At this stage, neither party has presented any evidence on the fourth *Graham* factor.

D. Claims 1, 2, 4–12, and 14–20 as Obvious Over Hankins or Hankins and Munger

Petitioner provides a limitation-by-limitation analysis as to how claims 1, 2, 4–12, and 14–20 would have been obvious over Hankins or Hankins and Munger. Pet. 21, 23–66. Petitioner relies on the Reddy Declaration. Ex. 1003 ¶¶ 66–141.

1. Claims 1, 11, and 14

Patent Owner disputes only Petitioner’s showing as to limitation 1.3 and corresponding limitations 11.1 and 14.3. Prelim. Resp. 3. The

argument was raised by Patent Owner in the context of § 325(d). These arguments were not persuasive as analyzed in Section II.D above. At this time, Patent Owner does not dispute Petitioner’s showing for any other limitation of claims 1, 11, and 14. *Id.* We begin by addressing the undisputed limitations of claims 1, 11, and 14, and then we turn to addressing limitation 1.3 and corresponding limitations 11.1 and 14.3.

a. Undisputed Limitations

Limitation 1.0 recites “[a] network system comprising.” Petitioner contends that, to the extent limitation 1.0 should be treated as limiting, Hankins teaches the preamble because it discloses a network that communicates packets from one device to another. Pet. 30–31 (citing Ex. 1004, Abst.; Ex. 1003 ¶ 82). We need not decide whether the preamble is limiting at this stage because, regardless of whether the preamble is limiting, Petitioner shows sufficiently for purposes of institution that the prior art satisfies the recitation in the preamble.

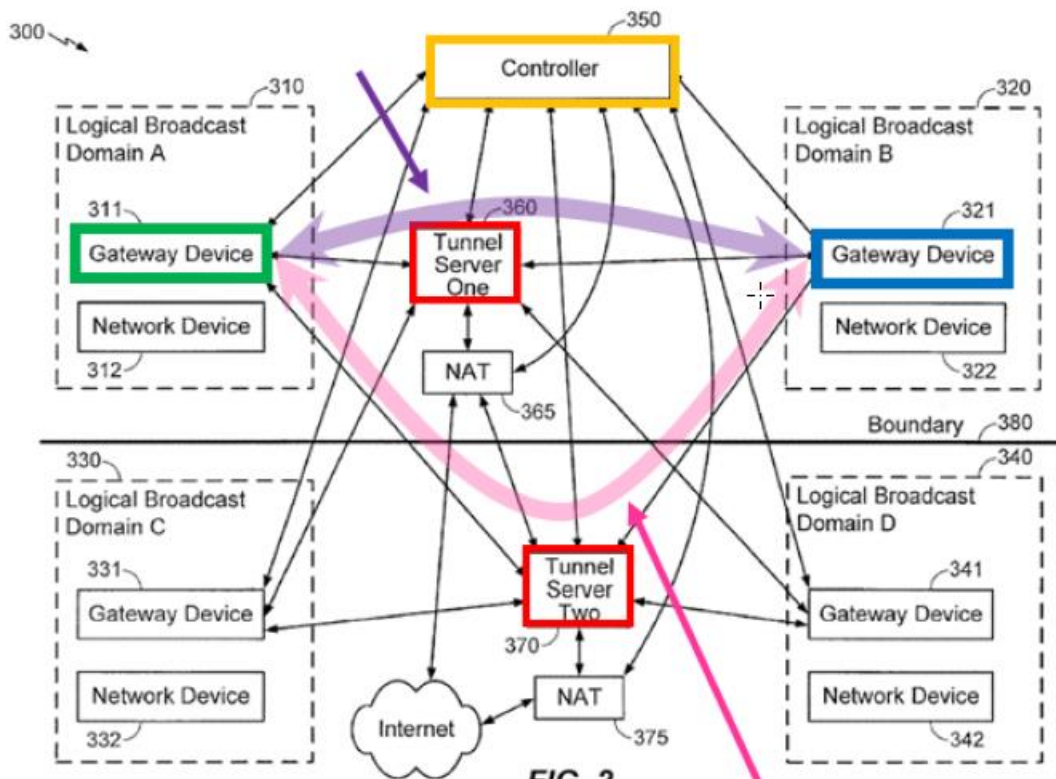
Limitations 1.1 and 1.2 recite “a first device” and “a second device,” respectively. Petitioner contends that Hankins teaches these two limitations because gateway device 311 amounts to “a first device” and gateway device 321 amounts to “a second device.” Pet. 31–32 (citing Ex. 1004, 24:39–57, Fig. 2; Ex. 1003 ¶¶ 83, 84). Limitation 1.4 recites “a control server wherein the control server receives information from at least one of the plurality of intermediate access point servers, and wherein the control server selects one of the plurality of end-to-end tunnels for communication between the first and second devices based on the information.” Petitioner contends that Hankins teaches this limitation because controller 350 receives network information from tunnel servers 360 and 370, and then uses that network

information to provision paths or channels for communication between gateway devices 311 and 321. *Id.* at 38–42 (citing Ex. 1004, 8:63–66, 9:10–22, 14:33–51, 15:25–20, 25:34–55, 30:15–29, Fig. 2; Ex. 1003 ¶¶ 94–97, 100, 102, 103). For the most part, Petitioner relies on the same arguments and evidence presented for the undisputed limitations of claim 1 to teach the undisputed limitations of claims 11 and 14. *Compare* Pet. 56, 58–64, *with id.* at 30–32, 38–44.

b. Limitations 1.3, 11.1, and 14.3

For limitation 1.3, which recites “a plurality of intermediate access point servers that form a plurality of end-to-end tunnels connecting the first and the second device,” Petitioner relies on an annotated version of Hankins Figure 2, which is reproduced below.

1st E2E Tunnel



2nd E2E Tunnel

Hankins Annotated Figure 2 illustrating a high-level block diagram of the Internet.

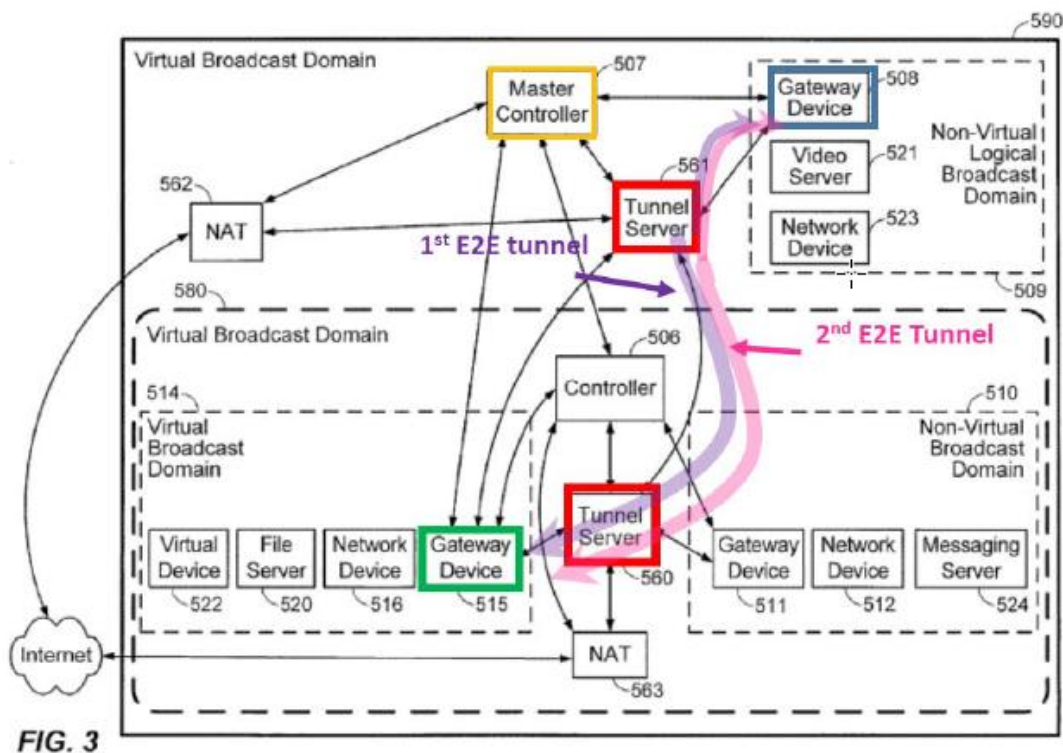
Pet. 33 (Annotated Figure 2); Ex. 1003 ¶ 86. Referring to Annotated Figure 2, Petitioner alleges

FIG. 2 shows a first end-to-end tunnel (**purple**) between gateway 311 and gateway 321 through tunnel server 360, and a second end-to-end tunnel (**pink**) between gateway 311 and gateway 321 through tunnel server 370. Thus, FIG. 2 discloses tunnel servers 360 and 370 (*a plurality of intermediate access point servers*) that form a first end-to-end tunnel from gateway 311 to gateway 321 through tunnel server 360, and form a second end-to-end tunnel from gateway 311 to gateway 321 through tunnel server

370 (a plurality of end-to-end tunnels connecting the first and the second devices).

Pet. 32 (citing Ex. 1004, 25:14–33, Fig. 2).

Petitioner further argues that, to the extent Patent Owner argues that each “end-to-end tunnel” is required to pass through a plurality of intermediate access point servers, Hankins provides another embodiment that teaches this configuration. Pet. 33 (citing Ex. 1004, Annotated Fig. 3). Petitioner’s Annotated Figure 3 is reproduced below.



Hankins Annotated Figure 3 is a block diagram showing the resolution of Universal Resource Locator (URLs) to numeric Internet Protocol (IP) addresses via the Domain Name System (DNS).

Pet. 34 (citing Ex. 1004, Fig. 3; Ex. 1003 ¶ 87). According to Petitioner, Hankins' embodiment in Figure 3 discloses "a plurality of end-to-end tunnels passing through tunnel servers 560 and 561." *Id.* at 33.

As previously noted, Patent Owner argues Hankins is substantially similar to Chen, which was cited during prosecution. This argument was analyzed above in our § 325(d) analysis. See Section II above. Moreover, applying our preliminary construction of the term "end-to-end tunnels," we preliminarily find Hankins teaches this feature of limitation 1.3 because it discloses establishing communication paths or channels connecting gateway devices 311 and 321 to one or more intermediate tunnel servers 360 and 370.

We have also reviewed what Petitioner alleges would have been "obvious in view of the knowledge of" a person of ordinary skill in the art. Pet. 42 (citing Ex. 1003 ¶ 104). Petitioner further alleges that, to the extent it is not disclosed explicitly in Hankins, a person of ordinary skill in the art would have been motivated to modify Hankins so tunnel servers 360 and 370 obtain and provide the network information to controller 350 for several reasons. *Id.* at 43–44. On this record, Patent Owner does not respond or dispute any of the evidence or arguments considering combining the knowledge of one of ordinary skill in the art and Hankins. See *Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013) ("[T]he knowledge of [an ordinarily skilled] artisan is part of the store of public knowledge that must be consulted when considering whether a claimed invention would have been obvious."). The preceding is the panel's preliminary view of these arguments without the benefit of any arguments from Patent Owner in response.

For the above reasons and those discussed in Section II above, on this record we preliminarily determine that Petitioner has sufficiently shown that Hankins teaches all the limitations of claims 1, 11, and 14.

2. Dependent Claims 2, 4–10, 12, and 14–20

A decision to institute under § 314 may not institute on fewer than all claims challenged in the petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018). In addition, per Board practice, if the Board institutes trial, it will institute “on all of the challenged claims and on all grounds of unpatentability asserted for each claim.” See 37 C.F.R. § 42.108(a) (2023). Accordingly, as to this and all remaining grounds we institute *inter partes* review. See Section III.D.1 above.

Claims 2 and 4–10 depend directly or indirectly from claim 1. Claim 12 directly depends from claim 11. Claims 15–20 depend directly or indirectly from claim 14. Patent Owner does not separately argue for the patentability of claims 2, 4–10, 12, or 15–20.

Petitioner cites Munger to expressly teach a “domain name system” (DNS), which is not used in Hankins. Pet. 6, 47–48 (citing Ex. 1005, Abs.; Ex. 1003 ¶ 111). Munger is relied on for the showing regarding claim 2 for its teaching of a “secure mechanism for communicating over the Internet.” *Id.* at 48. The motivation and reasons for combining Munger with Hankins are set forth by Petitioner. *Id.* at 48–50. The alleged motivation includes that DNS functionality, as taught by Munger, “would allow the network device, e.g., gateway or tunnel server, to return an IP address of the target network device outside the domain.” *Id.* at 49. On this record, we find

Petitioner's showing regarding combining Munger with Hankins is sufficient.

We have reviewed Petitioner's showing for claims 2, 4–10, 12, and 15–20. On this record, we find Petitioner has sufficiently shown the additional limitations of the claims 2, 4–10, 12, and 15–20. *See* Pet. 45–56 (claims 2, 4–10), 59 (claim 12), 64–66 (claims 15–20).

3. Summary

Petitioner has shown a reasonable likelihood that claims 1, 2, 4–12, and 14–20 would have been obvious over Hankins alone or the combination of Hankins and Munger.

E. Claims 3 and 13 as Obvious Over Hankins or Hankins and Munger or Hankins, Munger, and Treuhaft

Specific to this ground, Petitioner provides a limitation-by-limitation analysis as to how claims 3 and 13 would have been obvious over Hankins, Hankins and Munger, or Hankins, Munger, and Treuhaft. Pet. 66–71; Ex. 1003 ¶¶ 142–153.

1. Claims 3 and 13

Claim 3 directly depends from claim 1 and claim 13 directly depends from claim 11. Patent Owner does not separately argue for the patentability of claims 3 and 13.

We have reviewed Petitioner's showing for claims 3 and 13. On this record, we find Petitioner has made a sufficient showing as to the additional limitations of claims 3 and 13. *See* Pet. 67–71.

Petitioner argues Treuhaft would be combined with Hankins or with Hankins and Munger to show “the DNS service is performed from a cache,”

as recited in claims 3 and 13. Pet. 68 (citing Ex. 1009 ¶ 7; Ex. 1003 ¶ 147). Petitioner argues that “Treuhft specifically discloses the use of a ‘local cache with domain name records that have already been resolved to improve performance in responding to subsequent DNS requests.’” *Id.* at 70 (citing Ex. 1009 ¶ 6; Ex. 1003 ¶ 149).

Petitioner lists reasons for modifying Hankins or Hankins and Munger with Treuhft. Pet. 70. Petitioner concludes, “it would have been obvious to a [person of ordinary skill in the art] to modify the teachings of Hankins alone, or in view with Munger, and include use of a cache into Hankins[’s] network devices, (e.g., gateway or tunnel server) as taught by Treuhft.” *Id.*

On this record, we find Petitioner’s showing regarding combining Treuhft with Hankins or with Hankins and Munger is sufficient.

2. Summary

Petitioner has shown a reasonable likelihood that claims 3 and 13 would have been obvious over Hankins alone, the combination of Hankins and Munger, or the combination of Hankins, Munger, and Treuhft.

IV. CONCLUSION

For the foregoing reasons, we have determined that there is a reasonable likelihood that Petitioner would prevail with respect to at least one of the claims challenged in the Petition. We therefore institute trial as to all challenged claims on all grounds stated in the Petition.

V. ORDER

For the foregoing reasons, it is

ORDERED that pursuant to 35 U.S.C. § 314(a), an *inter partes* review of the '505 patent is hereby instituted for all of the challenged claims on all of the asserted grounds; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial; the trial will commence on the entry date of this Decision.

For PETITIONER:

Patrick D. McPherson
Patrick Muldoon
Joseph English
DUANE MORRIS LLP
pdmcpherson@duanemorris.com
pcmuldoon@duanemorris.com
japowers@duanemorris.com

For PATENT OWNER:

Greg H. Gardella
James E. Harris
Michael A. Dorfman
GARDELLA GRACE P.A.
ggardella@gardellagrace.com
jharris@gardellagrace.com
mdorfman@gardellagrace.com