

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AMERICAN AIRLINES, INC. AND
SOUTHWEST AIRLINES CO.,
Petitioner,

v.

INTELLECTUAL VENTURES I LLC,
Patent Owner.

IPR2025-00786
Patent 7,949,785 B2

Before KEN B. BARRETT, GEORGIANNA W. BRADEN, and
STEPHEN E. BELISLE, *Administrative Patent Judges*.

BARRETT, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. *Background and Summary*

American Airlines, Inc. and Southwest Airlines Co. (collectively, “Petitioner”)¹ filed a Petition requesting *inter partes* review of U.S. Patent No. 7,949,785 B2 (“the ’785 patent,” Ex. 1001). Paper 1 (“Pet.”). The Petition challenges the patentability of claims 1, 30, 35–38, 48, 62, 75, 77, and 78 of the ’785 patent. Intellectual Ventures I LLC (“Patent Owner”)² filed a Preliminary Response to the Petition. Paper 9 (“Prelim. Resp.”).

An *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). Having considered the arguments and evidence presented by Petitioner and Patent Owner, we determine that Petitioner has not demonstrated a reasonable likelihood of prevailing on at least one of the challenged claims of the ’785 patent. Accordingly, we do not institute an *inter partes* review of the challenged claims.

B. *Related Proceedings*

Both parties identify, as matters involving or related to the ’785 patent:

- *Intellectual Ventures I LLC et al. v. Liberty Mutual Holding Company Inc., et al.*, No. 23-cv-525 (E.D. Tex.);

¹ Petitioner identifies American Airlines, Inc. and Southwest Airlines Co. as real parties in interest. Pet. 70.

² Patent Owner identifies Intellectual Ventures I LLC as the real party in interest. Paper 3, 2.

- *Intellectual Ventures I LLC et al. v. Comerica Incorporated*, No. 23-cv-524 (E.D. Tex.);
- *Intellectual Ventures I LLC et al. v. JP Morgan Chase Bank, National Association et al.*, No. 23-cv-523 (E.D. Tex.);
- *Intellectual Ventures I LLC et al. v. American Airlines, Inc.*, No. 24-cv-980 (E.D. Tex.);
- *Intellectual Ventures I LLC et al. v. Southwest Airlines Co.*, No. 24-cv-277 (W.D. Tex.); and
- *Assurant, Inc. v. Intellectual Ventures I LLC, et al.*, No. 24-cv-344 (D. Del.).

Pet. 70–71; Paper 3, 2–3. Additionally, both parties indicate that the ’785 Patent was at issue in Patent Trial and Appeal Board case IPR2025-00201, and is the subject of an *ex parte* reexamination request filed by Unified Patents, LLC (Reexamination Control No. 90/019,519). Pet. 70–71; Paper 3, 3. On April 23, 2025, IPR2025-00201 was terminated due to settlement. On May 7, 2025, a reexamination certificate issued confirming the patentability of claims 30 and 34, and indicating that claims 1–29, 31–33, and 35–90 were not reexamined.

C. The ’785 Patent

The ’785 patent is titled “Secure Virtual Community Network System.” Ex. 1001, code (54). According to the ’785 patent:

One embodiment of the present invention provides for a secure Virtual Community Network or “VCN.” In essence, a VCN is a private dynamic network which acts as a private LAN [local area network] for computing devices coupled to public networks or private networks. This enables computing devices anywhere in the world to join into private enterprise intranets and communicate with each other. Thus, the invention provides

a separate private virtual address realm, seen to each user as a private network while seamlessly crossing public and private network boundaries.

Id. at 8:66–9:8.

Figure 4 is reproduced below.

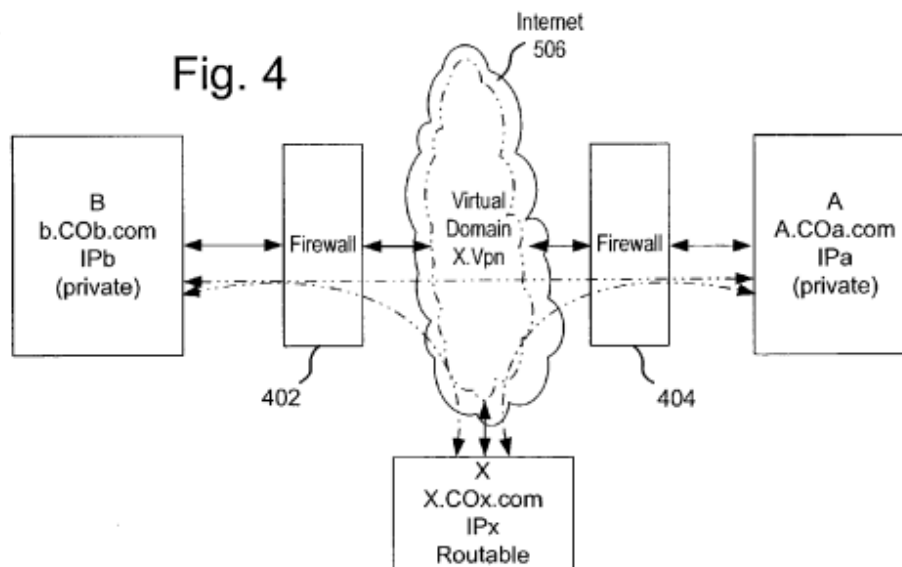


Figure 4 depicts a block diagram of an implementation of the system of the '785 patent. *Id.* at 9:6–7. The '785 patent explains:

FIG. 4 shows a computer or device B (host name—b.COOb.com) in a first private domain and computer or device A (host name—a.COa.com) in a second private domain, both of which are coupled to the Internet by firewall devices 402, 404. The firewall devices are configured to implement Network Address Translation (NAT). A and B have dynamic or static private IP addresses. Computer or device X is coupled directly to the public Internet and has a public IP address.^[3]

In the present invention, a virtual community network (VCN) X.VCN is formed. . . . Membership in the VCN is

³ “Public addresses are unique addresses that should only be used by one entity having access to the Internet.” *Id.* at 1:59–61. “Private addresses are not unique and are typically used for entities not having direct access to the Internet,” and “are used in private networks.” *Id.* at 1:62–65.

controlled by an administrator via an administrative interface. In general, the administrator defines certain aspects of the VCN and then invites members into the VCN by specifying the domain name for each member. . . . Once registered and joined, members can communicate with other members as though connected via a local LAN.

Id. at 9:9–35.⁴

The '786 patent, referring to Figure 5a (not reproduced here), further states that “an exemplary system for implementing a VCN in accordance with the invention comprises a VCN Manager 510, a Network Route Director 520 and/or Private Route Director [PRD] 530, and a number of Member Agents 565.” *Id.* at 10: 24–27. “The VCN manager and Network Route Director are shown in FIG. 5A as being coupled directly to Internet 506.” *Id.* at 10:29–31. “The Network Route Director (NRD) 520 is a stand-alone unit that runs on the public side of the Internet enabling Member Agents and Group Agents . . . to be reached inside one or more private networks from the public network.” *Id.* at 11:9–13. “Private Route Director (‘PRD’) 530 is an element that runs inside a private network enabling access to machines inside the private network from machines outside the private network.” *Id.* at 11:14–17.

Generally, VCNs are defined and managed by the VCN Manager 510. Clients utilize Member Agents or Group Agents to access other client machines (M_n), in private or public realms. The NRD or PRD routes communications to Member Agents.

Id. at 11:19–23.

⁴ Patent Owner states: “While FIG. 4 shows the domain name of the VCN as X.Vpn, this appears to be a typographical error as the specification refers to it as X.VCN.” Prelim. Resp. 6 n.1.

In order to route packets to a peer in a different addressing realm, the protocol stack knows the address of the appropriate Route Director that serves the peers realm, the private address of the peer or a NAT address. The Member Agent obtains the information by using the VCN Manager as a DNS [Domain Name System] authority for DNS lookup operations.

Id. at 12:23–28.

In discussing Figure 7 (not reproduced here), which is “flow chart describing the overall process for communicating between members of a VCN,” the ’785 patent states:

Consider an example when application on device M_A intends to initiate communication with an application on device M_B . Thus, M_A is the source device and M_B is the destination device. In step 654, the application on M_A will initiate a DNS request using the domain name for M_B . This DNS request is sent to VCN Manager 510. In step 656, VCN Manager 510 returns the public address of the Route Director for the destination, the private address for the destination device and a virtual IP address for the destination device. In the example described above, step 656 includes returning the public IP address for private Route Director 530, the private address for M_B and a virtual IP address for M_B .

Id. at 13:66–67, 14:29–40.

D. Illustrative Claim

Of the challenged claims of the ’785 patent, claims 1, 30, 38, 48, 62, and 75 are independent claims. The remaining challenged claims depend directly or indirectly from Claim 1. Claim 1, reproduced below with bracketed annotations inserted, is illustrative.

1. [1Pre] A virtual network system, comprising:
 - [1a] a virtual network manager implemented with a first device memory and a first device processor of a first computing device, the virtual network manager configured to register

devices in a virtual network that is defined by a domain name, each device in the virtual network being identified to the other devices by a virtual network address that is unique for each device and not directly routable via a public network, the virtual network manager further configured to distribute a virtual network address to a device when the device is registered in the virtual network;

[1b] a route director implemented with a second device memory and a second device processor of a second computing device, the route director configured to communicate data between the devices that are registered in the virtual network, the data being communicated as encapsulated packets from a source device to a destination device, an encapsulated packet including a first virtual network address that corresponds to the source device and a second virtual network address that corresponds to the destination device; and

[1c] the virtual network manager further configured to receive a DNS [Domain Name System] request from the source device, and return a public network address of the route director, a private network address for the destination device, and the second virtual network address that corresponds to the destination device.

Ex. 1001, 34:35–62.

E. Evidence

Petitioner relies on the following references:

Name	Reference	Exhibit No.
Caronni-I	US 6,970,941 B1, issued Nov. 29, 2005	1003
Caronni-II	US 7,814,228 B2, issued Oct. 12, 2010	1004
Hipp	US 6,766,371 B1, issued July 20, 2004	1005
RFC-1383	C. Huitema, Network Working Group Request for Comments: 1383, <i>An Experiment in DNS Based IP Routing</i> , December 1992	1006

Petitioner also relies on the declaration of Erez Zadok, Ph.D. (Ex. 1011) in support of its arguments, and Patent Owner relies on the

declaration of Dr. Guevara Noubir (Ex. 2008) in support of its arguments. The parties also rely on other exhibits as discussed below.

F. Asserted Challenges to Patentability

Petitioner asserts that the challenged claims are unpatentable on the following bases:

Claim(s) Challenged	35 U.S.C. §⁵	Reference(s)/Basis
1, 30, 35–38, 48, 62, 75, 77, 78	103(a)	Caronni-I, Caronni-II, Hipp
1, 30, 35–38, 48, 62, 75, 77, 78	103(a)	Caronni-I, Caronni-II, RFC-1383

II. ANALYSIS

A. Principles of Law

Petitioner bears the burden of persuasion to prove unpatentability of the claims challenged in the Petition, and that burden never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

A patent 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 the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying

⁵ The application that issued as the ’785 patent was filed before the effective date of the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), and we apply the pre-AIA version of 35 U.S.C. § 103. *Cf.* Pet. 1 (“All references to 35 U.S.C. §§ 102, 103 are to the pre-AIA statutory framework.”).

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) if present, any objective evidence of obviousness or non-obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. The Level of Ordinary Skill in the Art

In determining 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) (quoting *Custom Accessories, Inc. v. Jeffrey–Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986)).

Petitioner contends that:

A person of ordinary skill in the art (“POSITA”) relevant to this patent at the time of its invention would’ve had a bachelor’s degree in computer science, computer engineering, or a related technical field, combined with approximately two years of practical experience in fields of networking such as network virtualization, security, or management. Additional professional experience might substitute for less education and vice versa.

Pet. 10–11 (citing Ex. 1011 ¶¶ 33–35). Patent Owner, at this stage, does not disagree or propose a different definition of the person of ordinary skill in the art. However, Patent Owner’s proffered declarant, Dr. Noubir, opines that “a person of ordinary skill in the art in March 2003 would have a bachelor’s degree in computer science or electrical engineering, and would have one or two years of experience in computer networking or equivalent educational and professional experience.” Ex. 2008 ¶ 53.

We discern no material difference between the two definitions. Petitioner’s definition is consistent with the level of ordinary skill reflected in the prior art references of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (recognizing that the prior art itself may reflect an appropriate level of skill in the art). For purposes of this decision, we apply Petitioner’s definition of the person of ordinary skill in the art. We note, however, that were we to apply Patent Owner’s witness’s assessment, the outcome of this Decision would be the same.

C. Claim Construction

We apply the same claim construction standard used in district court actions under 35 U.S.C. § 282(b), namely that articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.100(b). In applying that standard, claim terms generally are given their ordinary and customary meaning as would have been 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). “[W]hile extrinsic evidence can shed useful light on the relevant art, . . . it is less significant than the intrinsic record in determining the legally operative meaning of claim language.” *Phillips*, 415 F.3d at 1317 (internal quotation marks omitted).

Petitioner proposes constructions for “virtual network address,” “register module” (of independent claim 30), and “join module” (of

dependent claims 35–37, 77, and 78). Pet. 11–15. Patent Owner proposes constructions for “domain,” “domain name,” “Domain Name Server [sic, System] (DNS).” Prelim. Resp. 15–17; *see id.* at 17 (noting that the Specifications indicates that the “S” in “DNS” refers to “System” (quoting Ex. 1001, 1:48–50)).

We discuss below, in the context of Petitioner’s Ground 1, the meaning of “domain name.” On this record and for purposes of this decision, we determine that no other claim terms require express construction.

D. The Asserted Obviousness of Claims 1, 30, 35–38, 48, 62, 75, 77, and 78 over Caronni-I, Caronni-II, and Hipp (Ground 1)

Petitioner asserts that claims 1, 30, 35–38, 48, 62, 75, 77, and 78 would have been obvious over Caronni-I, Caronni-II, and Hipp. *See* Pet. 26–30 (motivation section), 31–57 (addressing the independent claims). Patent Owner argues that “the combination of Caronni-I, Caronni-II, and Hipp does not disclose or suggest two central claim limitations: (1) a virtual network ‘defined by a domain name,’ and (2) a DNS response to a single query that returns three distinct addresses—the route director address, the address of the destination device, and the virtual address of the destination device.” Prelim. Resp. 27. Patent Owner also argues that “[t]he asserted art also lacks any non-conclusory, evidence-based rationale for combining these references.” *Id.* Based on our review of the record before us, we determine that Petitioner has not established a reasonable likelihood that it would prevail in showing that any of the challenged independent claims (and thus any challenged claim) would have been unpatentable as obvious over the combination of Caronni-I, Caronni-II, and Hipp, as discussed below.

1. Domain Name

Limitation 1a of independent claim 1 recites, “the virtual network manager configured to register devices in a virtual network that is defined by a *domain name*.” Ex. 1001, 34:38–40 (emphasis added). The other challenged independent claims also recite a domain name. *See* Pet. 33–34 (quoting the pertinent limitations). Petitioner addresses all of the independent claims together in this regard. *See id.* at 36–38.

Petitioner does not propose a construction for the term “domain name.” *See* Pet. 11–16 (claim construction section). Patent Owner asserts that “a person of ordinary skill would read ‘a domain name’ in its ordinary networking sense: an ASCII string label used with the Domain Name System (DNS) to resolve to an IP address.” Prelim. Resp. 16 (citing Ex. 1001, 1:47–48; Ex. 2008 ¶ 37). This is consistent with the Specification, which explains:

Users and software applications do not always refer to hosts or other resources by their numerical IP address. Instead of using numbers, they use ASCII strings called domain names. The Internet uses a Domain Name System (DNS) to convert a domain name to an IP address.

Ex. 1001, 1:45–50. According to the Patent Owner, the network in the Specification of the ’785 patent is defined by the domain name X.VCN. *Id.* at 33 (citing Ex. 1001, 9:18–19, 9:28–31). Patent Owner further contends that “[t]he use of a domain name to define the virtual network in the ’785 Patent’s claims provides more than an identifier of the virtual network or even a plain language identification of an IP address – it signifies a hierarchical structure for the virtual network that enables [certain functions].” Prelim. Resp. 33–34 (citing Ex. 2008 ¶¶ 83–84; Ex. 1001, 14:29–38).

The parties' proffered witnesses and an art-specific dictionary appear to be in agreement with each other and with Patent Owner's position that a domain name is a hierarchical address. For example, Petitioner's declarant, Dr. Zadok, testifies that "[a] 'domain name' is '[a]n address of a network connection that identifies the owner of that address in a hierarchical format: server.organization.type. For example, www.whitehouse.gov identifies the Web server at the White House, which is part of the U.S. government.'" Ex. 1011 ¶ 93 (quoting Ex. 1014 (Microsoft Computer Dictionary) 236). Patent Owner's declarant, Dr. Noubir, testifies somewhat similarly:

A POSITA would recognize that a domain name is a human-readable identifier that corresponds to a specific location on the Internet, such as a website or an online service. It acts as an alias for an IP address, the numerical identifier that computers use to locate and access network resources. Domain names simplify navigation by enabling users to enter a recognizable name, such as example.com (or X.VCN in the '785 Patent), instead of a complex numerical IP address. They are organized hierarchically into components separated by dots, such as www.example.com, where "www" is a subdomain, "example" is a second-level domain, and "com" represents the top-level domain name. The DNS resolves these domain names into their corresponding IP addresses, facilitating communication between computers and the appropriate servers or devices.

Ex. 2008 ¶ 32.

For purposes of this Decision, we adopt Patent Owner's proposed construction for "domain name."

Petitioner contends that the Supernet name of Caronni-I is a domain name. Pet. 36–37. Patent Owner disagrees, arguing that the Supernet name merely is a numerical identifier, and that "[t]he entry of the Supernet name by a network administrator results in the creation of a configuration file, and

not navigation to an IP address associated with the Supernet name.” Prelim. Resp. 36 (citing Ex. 2008 ¶ 87; Ex. 1003, 8:1–4). Patent Owner further argues that, when the Supernet name is entered (along with a user’s password), “it does not take the user to a specific location within a hierarchical address structure.” *Id.* (citing Ex. 1003, 10:5–7). According to Patent Owner, “Caronni-I does not disclose or suggest that the Supernet name is in a domain name format, such as X.VCN, that signifies a hierarchical structure with a top-level domain and sub-domains” and does not disclose or suggest that the Supernet name is convertible to the IP address by a DNS server. *Id.* at 37.

Petitioner, at most, has shown that Supernet is a human-readable label on a network. *See* Pet. 36–37. We determine, however, that Petitioner has not demonstrated adequately or persuasively that Supernet is a hierarchical address or that it would have been recognized by a person of ordinary skill in the art as a domain name within the meaning in the art and in the ’785 patent.

Petitioner also contends that “Hipp discloses a domain name (hostname) having an associated public network address,” and that “[a] POSITA would understand the assignment of hostnames and IP addresses to Hipp processes may be applied to the processes of Caronni-I (SASD, VARPD, and KMD) to disclose this limitation.” Pet. 38 (citing Ex. 1005, 6:1–4; Ex. 1011 ¶¶ 243–244). Petitioner again does not explain adequately how Hipp’s hostname is a hierarchical address or why it would have been recognized by a person of ordinary skill in the art as a “domain name.” *Cf.* Ex. 1011 ¶¶ 92–93 (Petitioner’s declarant, Dr. Zadok, *inter alia*, distinguishing a “host name” (two words) and a “domain name,” and

defining a “host name” as “[t]he name of a specific server on a specific network within the Internet, leftmost in the complete host specification. For example, www.microsoft.com indicates the server called ‘www’ within the network at Microsoft Corporation.” (quoting Ex. 1014 (Microsoft Computer Dictionary) 236)).

2. Returning Three Addresses in Response to a DNS Request

Limitation 1c of independent claim 1 recites:

[1c] the virtual network manager further configured to receive a DNS request from the source device, and return a public network address of the route director, a private network address for the destination device, and the second virtual network address that corresponds to the destination device.

Ex. 1001, 34:57–62. Thus, the response from the virtual network manager contains three specific addresses. The other challenged independent claims also recite the return of three addresses. *See* Pet. 51–52 (quoting the pertinent limitations). Petitioner discusses all of the independent claims together in this regard. *See id.* at 51–57. We, herein, refer to the language of independent claim 1.

This limitation was deemed by the Examiner during prosecution to be allowable subject matter. *See* Ex. 1002, 399 (the Examiner stating that dependent claim 16 would be allowable if rewritten in independent form); *id.* at 355 (claim 16 reciting: “The system of claim 1 wherein the virtual network manager is further configured to receive a DNS request from the source device, and return [the three addresses].”). Additionally, the comparable limitation in independent claim 30 was deemed the reason for confirmation by the Examiner in a recently concluded reexamination. *See* Ex. 1015, 643–645 (Explaining that the prior rejection relied on the primary reference for two of the three addresses and relied on a secondary reference

for the network route director address, and further explaining that the primary reference's HTTPS request is very different from a DNS request, and stating that "[a] DNS request essentially starts with the provision of a domain name (e.g. google.com / apple.com / ibm.com) to a DNS server.>").

Patent Owner, with the support of its declarant, asserts that, in the claimed systems and methods, "the virtual network manager includes its own DNS server that answers authoritatively for the virtual network; in response to a member's DNS query, it returns not just a single IP, but routing information tailored for the overlay: the route director's address, the target device's address, and that device's virtual (non-routable) network address." Prelim. Resp. 17 (citing Ex. 2008 ¶ 36). Patent Owner further asserts that "[t]his 'three-address response' is a central aspect of the claimed invention, enabling efficient, role-aware routing and address resolution through a single DNS transaction." *Id.* at 53–54. Patent Owner argues that:

Neither Caronni-I nor Caronni-II teaches returning more than one address type in a single query, much less doing so via DNS. At best, these references disclose resolving a virtual address to a real address, typically in kernel mode, with the virtual address already known to the resolver. Hipp's DNS disclosure is limited to conventional single-address hostname resolution and does not contemplate returning multiple addresses of different types or using DNS for NAT traversal or route director selection. Even in combination, these references do not yield the claimed DNS-based multi-address resolution mechanism.

Id. at 54; *see also id.* at 43–48 (citing Ex. 2008 (Dr. Noubir's testimony) ¶¶ 95–96, 98–101, 103–104, 106 in support of Patent Owner's arguments).

The burden of proof here lies with Petitioner, not Patent Owner, and as discussed below, we determine that Petitioner has not met that burden. We next discuss some exemplary shortcomings of the Petition.

Petitioner, in effect, asserts that each of the recited three address may be found in at least one of the three references and that combining the three references' teachings would result in a proposed combination where all three addresses would be returned in response to a DNS request. *See* Pet. 54–57; *see also id.* at 26–30 (the standalone motivation section for Ground 1).

For the first address, that of the route director, Petitioner relies on Caronni-II.⁶ *See* Pet. 54–55. Petitioner contends that “Caronni-II discloses the address of the reflecting agent [mapped to the route director] is added to the VARP [Virtual Address Resolution Protocol] table,” and that “[a]s a part of the VARP address resolution response, the reflecting agent’s address would be returned.” *Id.* at 55 (citing Ex. 1004, 3:20–23, 8:19–21; Ex. 1011 ¶¶ 334–335); *see id.* at 46–47 (mapping Caronni-II’s reflecting agent to the recited “route director”). Petitioner, in support of these conclusions, merely provides parenthetical quotes from Caronni-II but does not sufficiently explain *why* those passages teach or suggest returning the route director’s address in response to a DNS query from the source device as recited, for example, in claim 1. Whether the route director’s address is returned in response to a DNS request from a source device is an important issue that Petitioner does not address persuasively. *See, e.g.*, Prelim. Resp. 44 (Patent Owner arguing that “Petitioner’s expert declaration similarly focuses on Caronni-II’s disclosure of adding an address of a reflecting agent to a VARP

⁶ The Petition, under the heading for this first address, discusses the purported teachings of Caronni-II but not Hipp, yet includes a sentence, “Therefore, a POSITA would’ve been motivated to combine Caronni-II and Hipp to add this step of returning the public IP address.” Pet. 55. The Petition does not explain adequately the reasoning for the conclusory “Therefore” assertion.

table to justify the leap that, in the expert's opinion, *the address of the reflecting agent would be returned in response to a VARP query.*" (citing Ex. 1011 ¶¶ 336–337)).

For the second address, Petitioner contends that Caronni-I discloses the private address of the destination device. Pet. 56. Petitioner also quotes Caronni-II as disclosing the VARP lookup table entry containing certain addresses and other information, but Petitioner does not explain adequately the purported import of this quotation relative to returning the recited private network address for the destination device. *See id.* at 56–57. Thus, it is unclear as to whether Petitioner's combination utilizes for this second address Caronni-I, Caronni-II, or both in some combination.

For the third address, Petitioner contends that Caronni-I discloses the virtual network address of the destination device. Pet. 57. In support of this proposition, Petitioner asserts "[f]or example, '[e]ach time web client 1102 requests a packet from web server 1104a, the client requests the virtual address of the web server 1004a from computer system 1106.'" *Id.* (citing Ex. 1003, 13:14–17) (second alteration in original). Patent Owner argues that, in the relied-on web-server embodiment of Caronni-I, "there is no disclosure or suggestion that the computer system is a network administrator," that "only one address is returned in response to a query: . . . the virtual address (in the web-server embodiment)," and that "the web client is requesting a packet, not sending one, so a POSITA would not consider combining these embodiments to retrieve both addresses because Caronni-I clearly contemplated using only one or the other." Prelim. Resp. 45–46. Patent Owner's assertions here raise issues regarding whether the Petition is adequate. The Petition's two sentences on this point show

little more than Caronni-I discloses a request to some computer system and a virtual address of the source of a packet, whereas the language of claim 1 is in terms of the *virtual network manager* returning three addresses with the pertinent one being the virtual address of the *destination* device. We determine that Petitioner does not explain adequately a tie between its contentions regarding this third address and the claim limitation or to Petitioner's proposed combination.

Petitioner, for this third address, also asserts that, “[a]s explained above, Hipp also discloses returning a virtual network address that corresponds to the destination device,” and that “[a] POSITA would understand that the combination of Caronni-I/II and Hipp discloses a DNS response.” Pet. 57 (citing Pet. Section VII.5.a–b; Ex. 1005, 4:58–64, 6:16–26; Ex. 1011 ¶¶ 343–345).

Thus, Petitioner contends that each of the three recited addresses are disclosed in at least one prior art reference and that, in the proposed combination, the three addresses would be returned as a DNS response. These assertions, even if correct, are not enough to demonstrate obviousness, as Petitioner must also show that a person of ordinary skill would have had a rational reason to combine the three references' teachings in the manner claimed. *See Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011) (“Obviousness requires more than a mere showing that the prior art includes separate references covering each separate limitation in a claim under examination. . . . Rather, obviousness requires the additional showing that a person of ordinary skill at the time of the invention would have selected and combined those prior art elements in the normal course of research and development to yield the claimed invention.”).

Patent Owner argues that, for Petitioner’s Caronni-I/Caronni-II combination, “[t]he absence of a cogent ‘why’ is dispositive,” and further argues that the further combination with Hipp “suffers from the same defect.” Prelim. Resp. 50–51. Specifically, Patent Owner argues that:

Ground 1’s further combination of Caronni-I/II with Hipp . . . offers only a circular statement that a POSITA would have been motivated to combine in order to arrive at a combination that contains the claimed features. Petitioner describes Hipp’s DNS-based hostname resolution as “complement[ing]” the Caronni systems and enabling DNS to return a virtual IP address, a real IP address, and a reflecting agent address. But this is simply a restatement of the claim feature, not a reason why a skilled artisan would have made the combination in the first place. As with the Caronni-I/II combination, the Petition conflates “could combine” with “would be motivated to combine,” and provides no non-conclusory, evidence-based rationale.

Id. at 51. Patent Owner summarizes its position in arguing that “Petitioner has failed to identify, in any of the cited references, the specific teachings necessary to meet these core claim limitations, and has not provided any coherent rationale grounded in the art that would bridge these fundamental gaps without resorting to impermissible hindsight.” *Id.* at 54. We find Patent Owner’s arguments to be persuasive.

An important aspect of Petitioner’s case is the need for the combination to be a system that uses a *DNS* request and that returns three specific addresses in response to such a *DNS* request. We understand Petitioner to rely on Hipp’s teachings to modify the Caronni-I/Caronni-II combination to use DNS methodology. *See* Pet. 29; *see also id.* at 28 (Petitioner asserting that Caronni-II merely discloses a “DNS type” request); *id.* at 62 (Petitioner asserting that Caronni-I and Caronni-II merely are “similar to DNS operations”); *but see id.* at 28 (Petitioner contending that

“Caronni-I also refers to a domain name server (DNS),” with that important proposition apparently based on Caronni-I’s mention of “*querying network services in a well-known manner*” coupled with Petitioner’s assertion that DNS was well-known). Petitioner asserts that, if Hipp were combined with Caronni-I and Caronni-I, the resulting combination would have Hipp’s DNS capabilities and would be able to resolve a virtual hostname into three addresses. *See* Pet. 29 (“By incorporating Hipp’s DNS methodology into Caronni-I’s VARP operations and Caronni-II’s VARP reflecting agent entries, a POSITA would appreciate a DNS capability to resolve a virtual hostname into a virtual IP address, a real IP address and an IP address of a reflecting agent.”).

We agree with Patent Owner, however, that Petitioner has not explained adequately *why* a person of ordinary skill in the art would have further modified the Caronni-I/Caronni-II combination to have DNS capability or *why* a person of ordinary skill in the art would have combined the three references to have a system that returned the three specific addresses recited in the challenged independent claims. Rather than explaining the “why,” the Petition’s motivation argument focuses on the purported capabilities of the resulting combination and implying, but not explicitly stating, that the combination results in the claimed subject matter; this indicates impermissible hindsight. *See, e.g., id.* at 29 (“This integration would leverage Hipp’s DNS capability for virtual hostnames to return multiple address records from a single query, aligning with the dual addressing requirements of hybrid virtual/physical networks. The combination creates a cohesive system where DNS resolution triggers context-aware routing decisions—using virtual addresses for internal

Supernet traffic and NAT-translated addresses for cross-boundary communication.”).

We determine that Petitioner has failed to set forth an adequate and persuasive reason with rational underpinning as to why a person of ordinary skill in the art would have combined the three references’ teachings to arrive at the claimed subject matter where the three recited addresses are returned in response to a DNS request.

3. Conclusion Regarding the Caronni-I, Caronni-II, and Hipp Challenge

Based on our review of the record before us, we determine that Petitioner has not established a reasonable likelihood that it would prevail in showing that the independent claims (and thus any challenged claim) would have been unpatentable as obvious over the combination of Caronni-I, Caronni-II, and Hipp.

E. The Asserted Obviousness of Claims 1, 30, 35–38, 48, 62, 75, 77, and 78 over Caronni-I, Caronni-II, and RFC-1383 (Ground 2)

Petitioner asserts that claims 1, 30, 35–38, 48, 62, 75, 77, and 78 would have been obvious over Caronni-I, Caronni-II, and RFC-1383. *See* Pet. 30–31 (motivation section for Ground 2); *id.* at 59–64 (addressing the limitations for the independent claims). Petitioner again addresses all of the independent claims together with one set of contentions. *See, e.g., id.* at 60 (addressing the limitations that Petitioner characterizes as: “A virtual network defined by a domain name having an associated public network address.”).

Patent Owner asserts, *inter alia*, that “[t]he arguments in the Petition regarding Ground 2 are identical to the arguments made regarding Ground 1, except for the substitution of RFC-1383 for Hipp regarding the disclosure of

DNS,” and that RFC-1383 does not cure the deficiencies of the underlying Caronni-I and Caronni-II combination. Prelim. Resp. 55–56. According to Patent Owner, those deficiencies pertain to “a virtual network that is defined by a domain name and a response to a DNS request that returns three distinct addresses—specifically, the network address, virtual address, and route director address—for a destination device, as required by the Claims of the ‘785 Patent.” *Id.* at 56. Patent Owner also argues that “there is no basis provided to combine RFC-1383 with the Caronni-I and Caronni-II patents to arrive at the claimed invention.” *Id.* at 59 (citing Ex. 2008 ¶ 115). Patent Owner argues that “[a] POSITA would not have been motivated to combine these disparate systems in a way that results in the single-query, three address DNS response recited in the ‘785 Patent Claims,” and that “[a]ny such combination reflects an improper hindsight reconstruction of the claimed invention, not an obvious solution grounded in the prior art.” *Id.* (citing Ex. 2008 ¶ 115); *see also id.* at 60–61 (“Any such combination would be an exercise in impermissible hindsight, attempting to reconstruct the claimed invention using the patent’s claim elements as a checklist rather than the teachings from the prior art.”). We find Patent Owner’s arguments persuasive. We discuss next a few exemplary flaws in Petitioner’s ground.

1. Domain Name

As mentioned, limitation 1a of independent claim 1, for example, recites, “the virtual network manager configured to register devices in a virtual network that is defined by a *domain name*.” Ex. 1001, 34:38–40 (emphasis added). For this and the corresponding limitations of the other independent claims, Petitioner relies on its contention made in Ground 1 that Caronni-I discloses the limitation. Pet. 60. For the reasons discussed above in the context of Ground 1, we determine that Petitioner has not shown

adequately for institution that Caronni-I discloses the “domain name” limitations. *See supra* Section II.D.1.

2. *Returning Three Addresses in Response to a DNS Request*

Claim 1, for example, also recites:

the virtual network manager further configured to receive a DNS [Domain Name System] request from the source device, and return a public network address of the route director, a private network address for the destination device, and the second virtual network address that corresponds to the destination device.

Ex. 1001, 34:57–62.

For the return of the route director address, Petitioner relies on its contention, made in Ground 1, that Caronni-II discloses this feature. *See* Pet. 63. For the reasons discussed above in the context of Ground 1, we determine that Petitioner has not shown adequately for institution that Caronni-II discloses the recited feature. *See supra* Section II.D.2.

For the return of the private network address for the destination device, Petitioner also relies on its contentions for Ground 1, asserting that “Caronni-I/II disclose this limitation as discussed above in § VII.A.5.c.ii.” Pet. 63. As discussed above, Petitioner’s discussion is lacking at least as to Caronni-II and it unclear as to whether Petitioner’s combination utilizes for this second address Caronni-I, Caronni-II, or both in some combination. *See supra* Section II.D.2.

For the return of the destination device’s virtual network address, Petitioner again relies on its contentions for Ground 1, namely that Caronni-I discloses this limitation. *See* Pet. 64. For the reasons discussed above, we determine that Petitioner does not explain adequately a tie between its

contentions regarding this third address and the claim limitation or to its proposed combination. *See supra* Section II.D.2.

In the Petition’s motivation section for Ground 2, Petitioner sets forth contentions as to what RFC-1383 teaches and asserts that a person of ordinary skill in the art would have understood the purported capabilities of the proposed combination. *See, e.g.*, Pet. 30 (“A POSITA would understand the use of well-known DNS practices and would further recognize RFC-1383 as extending these frameworks [of the Caronni-I/Caronni-II combination] through a modified DNS functionality to virtual hostnames and multiple real IP addresses returned by a DNS service.”); *id.* at 31 (“[A] POSITA would’ve understood that when RFC-1383 returns one or more extra addresses in response to a DNS query, those could be easily used as the tunneling/encapsulation addresses to enable, for example, VPN and IPsec services, like the tunneling and encapsulation of the Caronni-I/II combination.”). However, Petitioner does not adequately or persuasively explain *why* a person of ordinary skill in the art would have had a rational reason to make the combination in the first place. *See id.* at 30–31.

3. Conclusion Regarding the Caronni-I, Caronni-II, and RFC-1383 Challenge

Based on our review of the record before us, we determine that Petitioner has not established a reasonable likelihood that it would prevail in showing that the independent claims (and thus any challenged claim) would have been unpatentable as obvious over the combination of Caronni-I, Caronni-II, and RFC-1383.

III. CONCLUSION

Petitioner has not demonstrated that there is a reasonable likelihood of establishing the unpatentability of any of the challenged claims of the '785 patent.

IV. ORDER

For the foregoing reasons, it is

ORDERED that the Petition is *denied* and no trial is instituted.

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Patent 7,949,785 B2

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