

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC.,
Petitioner,

v.

NETSOCKET, INC.,
Patent Owner.

IPR2023-00607
Patent 7,190,698 B2

Before RICHARD M. LEBOVITZ, STACEY G. WHITE, and
GARTH D. BAER, Administrative Patent Judges.

LEBOVITZ, *Administrative Patent Judge.*

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

I. INTRODUCTION

A. *Background and Summary*

Cisco Systems, Inc. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–9 of U.S. Patent No 7,190,698 B2 (Ex. 1001, “the ’698 patent”). Paper 2 (“Pet.”). NetSocket, Inc. (“Patent Owner”) filed a Preliminary Response. Paper 8 (“Prelim. Resp.”). Petitioner, with our authorization, filed a one-page Preliminary Reply limited to the impact of the Joint Motion to Amend the Docket Control Order (Ex. 1043) on *Fintiv*¹ Factors 2 and 3 (Paper 12, “Pet. Prelim. Reply”), Patent Owner, also with our authorization, filed a Preliminary Sur-reply (Paper 13, “PO Prelim. Sur-reply”).

An *inter partes* review may be instituted only if “the information presented in the petition . . . and any [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.” 35 U.S.C. § 314(a) (2018). The following findings of fact and conclusions of law are not final, but are made for the sole purpose of determining whether Petitioner meets the threshold for initiating review. Any final decision shall be based on the full trial record, including any response timely filed by Patent Owner. Any arguments not raised by Patent Owner in a timely filed response may be deemed waived.

For the reasons below, we decline to exercise our discretion to deny institution under 35 U.S.C. §§ 314(a) or 325(d). We determine that Petitioner has established a reasonable likelihood that it would prevail in

¹ *Apple, Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) (“*Fintiv*”).

showing the unpatentability of the challenged claims. Accordingly, we institute an *inter partes* review of the challenged claims on all grounds raised in the Petition.

B. Real Parties in Interest

Petitioner and Patent Owner identify only themselves as real parties in interest. Pet. 86; Paper 3, 1.

C. Related Matters

The parties identify *NetSocket, Inc. v. Cisco Systems, Inc.*, Case No. 2-22-cv-00172 (E.D. Tex.), as a related district court proceeding. Prelim. Resp. 11; Paper 3, 1.

D. The '698 Patent

The '698 patent is titled "Network Optimisation Method." The patent issued on March 13, 2007. The '698 patent claims priority to U.S. Provisional Patent Application No. 60/197,006, filed on April 13, 2000 ("the '006 provisional"). Ex. 1001, code (60). The patent also claims priority to PCT/EP01/04062 ("PCT application"), which was filed April 6, 2001. *Id.* at codes (22), (86).

Petitioner argues that the '006 provisional application does not support the issued claims of the '698 patent. Pet. 12. Petitioner contends that the provisional application "fails to disclose '*establish[ing] a virtual leased line,*' '*generat[ing] a request . . . ,*' or that the bandwidth broker '*establishes the different domains involved . . .* '". *Id.* For this reason, Petitioner contends that the '698's priority date is the PCT filing date of April 6, 2001. *Id.*

Patent Owner asserts that the '698 patent claims priority to the '006 provisional, but does not at this time address Petitioner's contention that the '698 patent is not entitled to the provisional's filing date. *See* Prelim. Resp. 2. Thus, for the purpose of this Decision, we consider the earliest priority

date of the '698 patent to be April 6, 2001, the filing date of the PCT application. *See Dynamic Drinkware, LLC v. National Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (Patent Owner bears the initial burden of producing evidence sufficient to show its claims are entitled to an earlier effective filing date).

The '698 patent describes its invention as establishing a virtual leased line ("VLL") between a source ("SRC") and destination ("DST") in different domains to achieve packet transfer between a source in one domain and a destination in another domain. Ex. 1001, 1:5–10. The '698 patent describes this as a "packet based communication network." *Id.*

One of the network domains described in the '698 patent is the prior art multiprotocol label switching ("MPLS") network domain. Ex. 1001, 1:21–22. The '698 patent explains that a primary objective of MPLS network domains is to maintain Quality of Service ("QoS"), which involves "control[ling] the path from ingress node to egress node to optimize utilisation of network resources and enhance performance." Ex. 1001, 2:10–14. An MPLS network domain associates labels with specific data streams, distributes the labels across the network domain to establish a Label Switched Path ("LSP"), assigns labels to packets when entering the domain, and finally forwards packets through the domain based on the labels. *Id.* at 1:36–51.

The '698 patent teaches the prior art "Routing and Traffic Engineering Server (RATES)" which is "an MPLS traffic-engineering server." Ex. 1001, 3:49–51. According to the '698 patent, RATES finds a path in the domain that can accommodate requests for service subject to bandwidth constraints. *Id.* at 3:59–61. RATES also implements admission control in the MPLS domain. *Id.* at 4:4–20.

The '698 patent also describes another prior art network domain, Differentiated Services (“DiffServ”), which is a type of network domain that also provides admission control and QoS. Ex. 1001, 2:56–63.

The '698 patent teaches that “[b]y introducing a Bandwidth Broker (BB) into the network[,] QoS policy management can be handled in a more flexible way.” Ex. 1001, 2:45–47. A bandwidth broker is described in the '698 patent as “an entity in a network domain that manages policies for bandwidth resources.” *Id.* at 2:48–49. The '698 patent explains that “[b]y maintaining a database of the domains resources,” the bandwidth broker “provides admission control decisions on QoS service requests.” *Id.* at 2:49–51. The '698 patent further discloses that bandwidth broker “may be able to communicate with bandwidth brokers in neighbouring domains, allowing QoS services spanning several domains.” *Id.* at 2:53–55.

The '698 patent discloses that bandwidth brokers were known in the art to operate in both DiffServ (BB_{OLOV} described in a thesis by Olov Schelén) and MPLS (RATES) networks. Ex. 1001, 3:64–4:5 (referencing Figure 1 of the '698 patent). The '698 patent discloses that an important property of both BB_{OLOV} and RATES “is the implementation of path sensitive admission control.” *Id.* at 4:6–17. The '698 patent discloses that “[t]he present invention relates to a method using an inventive combination of the ideas in [OLOV] and [RATES].” *Id.* at 5:57–58. In the “Summary of the Invention, the '698 patent explains that its invention “makes use of a concept of admission control to achieve services across domain borders. *Id.* at 65–67. The '698 patent further discloses:

The key merits of the invention are:
Deployment. Network operators all over the world are using different solutions for their networks. For any type of global service, Support for heterogeneous networking technologies is

very important. This invention makes it possible to deploy bandwidth guaranteed end-to-end VLL services across the two of the most commonly used QoS models [i.e., MPLS and DiffServ”].

Network utilisation. The use of admission control in advance allows network resources to be more efficiently utilised [OLOV]. This invention makes previously unknown use of this powerful tool in MPLS networks.

Ex. 1001, 6:1–13.

As indicated above, the ’698 patent describes a method for providing a virtual leased line (“VLL”) “between a source (SRC) and a destination (DST) in different domains to achieve packet transfer between the source and destination. Ex. 1001, 1–10. Each network domain has a bandwidth broker responsible for managing resources. *Id.* at 7:10–12.

The ’698 patent discloses an example of a VLL spanning two domains, A and B, where one domain A is a DiffServ network and domain B is an MPLS network. Figure 4 of the ’698 patent, reproduced below, shows a VLL spanning two domains:

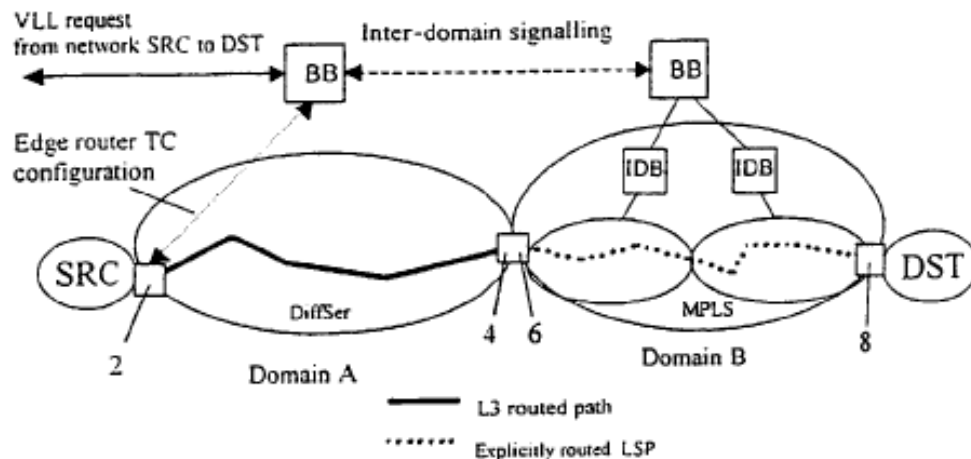


Figure 4 of the ’698 patent, shown above, depicts an example of setting up a virtual leased line spanning two domains, domain A is configured as a

DiffServ network and domain B is configured as a MPLS network. Ex. 1001, 7:19–20. “SRC” in domain A is the source and “DST” in domain B is the destination. Domain A comprises an ingress router 2 and an egress router 4. *Id.* at 7:20–21. The egress router 4 of domain A is connected to, or is equivalent to an ingress router 6 of domain B. *Id.* at 7:21–23. Domain B also comprises an egress router 8. *Id.* at 7:23–24. “BB” is the bandwidth broker. Each domain is shown as having one bandwidth broker. “IDB” is an intra-domain broker which is shown as only being present in the MPLS domain B. Domain A, the DiffServ network, is shown as having L3 routed path. Domain B, the MPLS network, is shown as having two IDBs and LSP routed paths. The LSPs are “virtual traffic trunks that carry flow aggregates generated by classifying the packets arriving at the edge or ingress routers of an MPLS network.” *Id.* at 2:21–24. L3 is the routed path through domain A/

With reference to Figure 4, the ’698 patent describes, step-by-step, a method in which a VLL is set up between SRC and DST to achieve packet transfer. The first step is a request for a VLL of a specific rate or bandwidth R. Ex. 1001, 7:26–36. The request is applied to the BB_A of domain A associated with the source network. *Id.* at 7:35–36. BB_A passes the request to a bandwidth broker in domain B regarding a VLL of rate R from the domain ingress in domain B to DST. *Id.* at 7:37–39. At the same time, BB_A performs path sensitive admission control “by looking up the path through domain A and evaluating the resource availability on each link in the path.” *Id.* at 7:45–50. The ’698 patent explains that the admission control “is achieved by looking up the path through domain A and evaluating the resource availability on each link in the path.” *Id.* at 7:47–50.

Upon receiving the request from domain A, the bandwidth broker for domain B passes the request to the appropriate IDB in its domain, the latter

which performs admission control and LSP setup in its area of domain B. Ex. 1001, 7:51–61. These steps are accomplished for each IDB in domain B. *Id.* The results of the admission control (the “answers”) are passed back to the BB in domain B. *Id.* at 7:62–64. Next, “[t]he BB in domain A receives the response from domain B and passes it back to the requesting party.” *Id.* at 7:65–66. When the request was admitted successfully along all pieces of the path, “there is now a VLL of rate R from SRC to DST.” *Id.* at 8:3–4.

E. Challenged Claims

Petitioner challenges the patentability of claims 1–9. Claim 1, the sole independent claim, is reproduced below as annotated with bracketed numbers and reformatted by Petitioner:

[1.0.1] 1. Method in a packet based communication network including network domains, wherein at least one domain is a Multiprotocol Label Switching MPLS domain,
[1.0.2] to establish a virtual leased line, VLL, between a source (SRC) and a destination (DST) in different domains in order to achieve packet transfer between the source (SRC) and the destination (DST),
[1.0.3] wherein the bandwidth broker (BB) is associated to each network domain and the
[1.0.4] bandwidth broker (BB) is configured to control a hierarchical routing domain, the method comprises the following steps:
[1.1.1] i) generate a request from an entity² for a Virtual Leased Line, VLL, having a predefined Quality of Service, QoS, from a source network (SRC) to a destination network (DST) and,

² The original amended claim recited “an entity.” Preliminary Amendment (Oct. 10, 2002). Step v) [1.5.1] of the claim refers to “the requesting entity.” Consequently, we assume “an entity” is an error and that it should read “an entity.”

[1.1.2] apply the request to a Bandwidth Broker (BB) of a domain A, BB_A, associated to the source network;

[1.2] ii) BB_A establishes the different domains involved to reach the destination network (DST);

[1.3] iii) BB_A directly or indirectly passes requests to all Bandwidth Brokers (BB) of the involved domains regarding a VLL of the predefined QoS from ingress to egress of each domain;

[1.4] iv) each involved bandwidth broker (BB) performs admission control in its domain;

[1.5.1] v) each involved bandwidth broker (BB) returns a result of the admission control to BB_A that passes it back to the requesting entity and

[1.5.2] if the request was admitted along all domains between the source (SRC) and the destination (DST) a VLL of the predefined QoS is granted,

[1.6.1] characterized in that step iv) comprises the following step: performing [LSP] Label Switched Path, LSP.^[3] setup and

[1.6.2] passing resource requests from the Bandwidth Broker (BB) to at least one intra-domain (1DB),^[4]

[1.7.1] wherein each intra-domain broker (1DB) is responsible for admission control and

[1.7.2] wherein each intra-domain broker (1DB) is responsible for admission control the Label Switched Path, LSP, setup.

Ex. 1001, 9:60–10:31.

F. Prior Art and Asserted Grounds

Petitioner raises the following grounds of unpatentability with respect to the challenged claims:

³ The period mark is a typographical error appearing in the issued claim.

⁴ The original claim, as amended during prosecution of the application which led to the '698 patent, abbreviated the intra-domain broker as "IDB." The abbreviation "1DB" in the issued claim therefore appears to be an error in transcribing the "I" as "1."

Claims Challenged	35 U.S.C. § ⁵	References/Basis
1–5, 7, 8	103	Xiao, ⁶ Schelen-1, ⁷ Gibson ⁸
4–8	103	Xiao, Schelen-1, Gibson, Schelen-2 ⁹

Pet. 12.

II. ANALYSIS

A. Legal Standards

“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 never shifts to Patent Owner. *See Dynamic*, 800 F.3d at 1378 (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–1327 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review). Furthermore, Petitioner must explain with particularity how the prior art would have rendered the challenged

⁵ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. §§ 102, 103. We apply the pre-AIA version of 35 U.S.C. § 103 because it appears the claims at issue have an effective filing date prior to March 16, 2013, the effective date of the AIA. *See* Ex. 1001, codes (22), (60).

⁶ Xiao et al., Internet QoS: A Big Picture, March/April 1999, *IEEE Network*, 13(2):8–18 (Ex. 1005, “Xiao”).

⁷ Schelén et al., An Agent-based Architecture for Advance Reservations, 1997, *Proceedings of the IEEE Conference on Computer Networks*, 451–459 (Ex. 1032, “Schelen-1”).

⁸ Gibson, U.S. Pat. No. 6,678,264 B1, issued Jan. 13, 2004 (Ex. 1006, “Gibson”).

⁹ Schelén et al., Resource sharing in advance reservation agents, 1998, *J. High Speed Networks*, 7:2103–228 (Ex. 1007, “Schelen-2”).

claims unpatentable. 35 U.S.C. § 312(a)(3); 37 C.F.R. § 42.104(b)(4) (“The petition must specify where each element of the claim is found in the prior art patents or printed publications relied upon.”).

A claim is unpatentable under 35 U.S.C. § 103 if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR 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) when presented, objective indicia relating to obviousness.¹⁰ *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Additionally, the obviousness inquiry typically requires an analysis of “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”)). Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements,” but “must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

¹⁰ The record at this point contains no contentions of objective indicia relating to obviousness.

B. Level of Ordinary Skill in the Art

Petitioner argues that:

A Person of Ordinary Skill in The Art (“POSITA”) on April 13, 2000 [the filing dated of the ’006 provisional application], would have been knowledgeable and familiar with packet-based communication network techniques available at the time. Such a POSITA would have had a bachelor’s degree in computer science, computer engineering, electrical engineering, or equivalent training, and approximately two years of experience working in the field of network communications. Additional work experience can substitute for specific educational background, and vice versa. Ex. 1003,^[11] ¶¶27-29.

Pet. 10.

Patent Owner applies Petitioner’s proposed level of skill for the purposes of its Preliminary Response. Prelim. Resp. 6.

For purpose of this Decision, we adopt Petitioner’s definition of the level of ordinary skill in the art, which is also consistent with the level of skill reflected in the Specification of the ’698 patent and in the asserted prior art references. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

C. Claim Construction

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

¹¹ Declaration of Henry H. Houh, Ph.D. under 37 C.F.R. § 1.68. (“Houh Declaration” or “Houh Decl.”).

Petitioner proposes a construction of the claim term “bandwidth broker.” Pet. 11. Patent Owner takes no position on the construction of “bandwidth broker.” Prelim. Resp. 6–7.

We do not need to construe “bandwidth broker” to determine whether to institute *inter partes* review. Consequently, for the purpose of this Decision, we decline to address Petitioner’s construction of “bandwidth broker.”

D. Discretion to Deny Institution

Institution of *inter partes* review is discretionary. *See Harmonic Inc. v. Avid Tech, Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) (“the PTO is permitted, but never compelled, to institute an IPR proceeding.”). Patent Owner asserts that it would be proper for us to exercise our discretion and not institute this proceeding pursuant to our discretion under 35 U.S.C. §§ 314(a), 325(d).

1. Discretionary Denial under 35 USC 314(a)

There is parallel District Court litigation in Texas. Prelim. Resp. 11. There are seven asserted patents in the district court litigation. Ex. 2002, 6–7. One of those patents is the ’698 patent and the other is U.S. Patent No. 7,616,601, which is the subject of IPR2023-00607. *Id.*

Patent Owner argues that we should exercise discretion to deny institution under 35 U.S.C. § 314(a) because the factors identified in *Fintiv* support denial when “considered in relation to efficiency, fairness, and the merits.” Prelim. Resp. 11–12. For the reasons below, we decline to deny institution under § 314(a).

a. Fintiv Analysis

The Board’s decision in *Fintiv* identifies a non-exclusive list of factors parties may consider addressing where there is a related, parallel district

court action to determine whether such action provides any basis for discretionary denial. *Fintiv*, Paper 11 at 5–16. Those factors include:

1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
2. proximity of the court’s trial date to the Board’s projected statutory deadline for a final written decision;
3. investment in the parallel proceeding by the court and the parties;
4. overlap between issues raised in the petition and in the parallel proceeding;
5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
6. other circumstances that impact the Board’s exercise of discretion, including the merits.

Id. at 5–6.

In evaluating the *Fintiv* factors, we take “a holistic view of whether efficiency and integrity of the [patent] system are best served by denying or instituting review.” *Id.* at 6. The Director has issued additional guidance on the application of *Fintiv*. See Katherine K. Vidal, *Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation* (June 21, 2022) (“*Fintiv* Memo”). Additionally, guidance is provided by the precedential decisions in *OpenSky Indus., LLC v. VLSI Tech. LLC*, IPR2021-01064, Paper 102, 49–50 (Oct. 4, 2022) (precedential) (“*OpenSky*”) and *CommScope Techs. LLC v. Dali Wireless, Inc.*, IPR2022-01242, Paper 23 (Feb. 27, 2023) (precedential) (“*CommScope-01242*”).

Patent Owner argues that “every factor considered in relation to efficiency, fairness, and the merits supports denial.” Prelim. Resp. 12. We address the *Fintiv* factors below.

i) Factor 1—Whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted

“A district court stay of the litigation pending resolution of the PTAB trial allays concerns about inefficiency and duplication of efforts.” *Fintiv*, 6. *Fintiv* indicated that, in previous Board decisions, a district court stay pending Board resolution of an *inter partes* review has weighed strongly against discretionary denial, while a denial of such a stay request sometimes weighs in favor of discretionary denial. *Id.* at 6–8.

Patent Owner argues that a stay has not been granted and there exists no evidence that the district court will grant one “in view of the fact that many of the asserted patents in the Texas Action are not subject to any post-grant proceedings in the PTAB.” Prelim. Resp. 12–13. Petitioner asserts that no motion to stay has been filed and thus, this factor should be neutral. Pet. 83.

Because there is no evidence of a requested stay of the related district court cases, this factor does not weigh for or against denying institution. *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 15 at 12 (PTAB May 13, 2020) (informative) (Institution Decision) (holding that “[t]his factor does not weigh for or against discretionary denial” when neither party requested a stay). We therefore consider factor 1 to be neutral.

ii) Factor 2—Proximity of the court’s trial date to the Board’s projected statutory deadline for a final written decision

We evaluate our discretion to deny institution in light of a trial date that has been set in a parallel litigation under the proximity factor in *Fintiv*. *See Fintiv*, 3, 5.

In *NHK Spring Co. v. Intri-Plex Techs., Inc.*, IPR2018-00752, Paper 8 at 20 (PTAB Sept. 12, 2018) (precedential) (“*NHK*”), the Board expressed concern that a trial before the deadline for a final written decision addressing the same prior art and arguments would undermine the Board’s objectives of

providing an effective and efficient alternative to district court litigation (citing *General Plastic Indus. Co., Ltd. v. Cannon Kabushiki Kaisha*, IPR2016-01357, Paper 19 at 16–17 (PTAB Sept. 6, 2017 (precedential))).

Initially, Patent Owner argues that the Texas district court in the related litigation issued its Scheduling Order on February 2, 2023, setting trial for May 2024. Prelim. Resp. 14 (citing Ex. 2001). After filing the Preliminary Response, the parties were authorized to file a copy of the Joint Motion to Amend the Docket Control Order (Ex. 1043), along with briefing that addressed the proposed new district court schedule. *See* Pet. Prelim. Reply, PO Prelim. Sur-reply. Petitioner informs us that “[t]he proposed schedule provides for a 5-month extension for all future litigation deadlines, including claim construction and trial. On August 11, 2022, the district court held a hearing tentatively granting the parties’ request and referred to an expectation of scheduling trial in late October or November 2024.” Pet. Prelim. Reply 1 (internal citations omitted).

Under 35 U.S.C. § 316(a)(11), “the final determination in an inter partes review” must “be issued not later than 1 year after the date on which the Director notices the institution of a review.” The projected statutory deadline for a final written decision is September 26, 2024.

The predicted trial date in late October or November 2024 is therefore about one or two months *after* the projected final written decision deadline. Thus, in view of the likelihood that a final written decision will precede the trial date, *Fintiv* factor 2 weighs in favor of not denying institution, particularly because if the final written decision precedes the district court date, Petitioner would be estopped under 35 U.S.C. § 315(e)(2) from raising at trial any grounds that were raised or reasonably could have been raised in this proceeding.

iii) Factor 3—Investment in the parallel proceeding by the court and the parties

If, at the time of institution, the district court in the parallel proceeding has issued substantive orders related to the challenged patent, such as a claim construction order, this fact weighs in favor of denial. *See Fintiv*, 9–10. On the other hand, if the district court has not issued such orders, this weighs against discretionary denial. *Id.* at 10.

Petitioner argues that factor 3 weighs against discretionary denial because “the co-pending litigation is still in its very early stages.” Pet. Prelim. Reply 1. Petitioner asserts that claim construction briefs “are not due until next spring.” *Id.* (citing Ex. 1044). Petitioner also asserts that the parties will not “begin narrowing the asserted claims or invalidity arguments until next spring.” *Id.*

Patent Owner argues that the parties “have already served both infringement and invalidity contentions.” Prelim. Resp. 15. Patent Owner further asserts that discovery is underway and that the district court has entered a docket control order, discovery order, and protective order. PO Prelim. Sur-reply 1.

Patent Owner cites *Supercell Oy v. Gree, Inc.*, IPR2020-00513, Paper 11 at 12 (PTAB June 24, 2020) (“*Supercell*”) to support that “substantial investments strongly weigh in favor of discretionary denial.” Prelim. Resp. 15. However, in *Supercell*, claim construction had been briefed and argued, the district court had issued its Claim Construction Memorandum Opinion and Order, and fact and expert discovery had closed. *Supercell*, 6, 7, 11–12. Patent Owner does not assert that any of these same activities have been completed at this time in the parallel district court proceeding. Prelim. Resp. 15; *see* Pet. 84 (“parties have not exchanged preliminary positions on

claim construction or invalidity, expert discovery has not begun”). Thus, *Supercell* is distinguishable from the proceeding here. Although there has been some activity in the parallel proceeding, that litigation is still in its early stages. The record before us at this time does not show extensive investment by either party or district court.

Accordingly, we consider the investment in the parallel proceeding by the court and the parties to be a neutral factor.

iv) *Factor 4—Overlap between issues raised in the petition and in the parallel proceeding*

“[I]f the petition includes the same or substantially the same claims, grounds, arguments, and evidence as presented in the parallel proceeding, this fact has favored denial.” *Fintiv*, 12. “Conversely, if the petition includes materially different grounds, arguments, and/or evidence than those presented in the district court, this fact has tended to weigh against exercising discretion to deny institution under *NHK*.” *Id.* at 12–13.

Patent Owner contends that “Petitioner’s invalidity contentions, served on March 22, 2023, set out substantially the same arguments, using the same references including Xiao, Gibson, Schelen-1, and Schelen-2 against at least Claim 1” presented in the Petition. Prelim. Resp. 16 (citing Ex. 2002). Petitioner contends there “is no present overlap of prior art issues due to the early stage of district court litigation.” Pet. 84.

Exhibit 2002 includes a list of 45 patents and publications which are asserted by Petitioner (i.e., defendant Cisco Systems, Inc.) to be prior art to the ’698 patent. Ex. 2002, 14–16. The list includes the four prior art publications Xiao, Schelen-1, Schelen-2, and Gibson cited by Petitioner in the patentability challenge. *Id.* Evidence has not been provided that the district court invalidity contentions are substantially the same as those raised

in the Petition involving these four publications. Indeed, only a handful of the prior art references listed in Exhibit 2002 is asserted against the '698 patent claims in the patentability challenges raised in the Petition. Pet. 12. Thus, any overlap of prior art issues is at most speculative. Moreover, even if there were overlap, a final decision issued before the district court trial, as noted above, would moot any overlap in grounds because Petitioner would be estopped from raising those grounds at trial.

In sum, the current record does not support Patent Owner's contention that "Petitioner's invalidity contentions, served on March 22, 2023, set out substantially the same arguments, using the same references including Xiao, Gibson, Schelen-1, and Schelen-2 against at least Claim 1. Ex. 2002 at 10–12." Prelim. Resp. 16. Pages 10–12 of Exhibit 2002, cited by Patent Owner, list prior art for US Pat. No. 7,616,601 and not the '698 patent, and therefore do not support Patent Owner's contention.

Accordingly, we concluded that factor 4 favors not denying institution.

v) *Factor 5—Whether the petitioner and the defendant in the parallel proceeding are the same party*

There is no dispute that Patent Owner and Petitioner are the same parties in the parallel proceeding. Pet. 84; Prelim. Resp. 17. Thus, this factor favors denying institution. *Fintiv*, 13–14 (if the petitioner is unrelated to the defendant in the parallel proceeding, that might weigh against denial).

vi) *Factor 6—Other circumstances, including the merits*

Under *CommScope-01242*, even if we determine that the other *Fintiv* factors favor discretionary denial, we must also consider whether the Petition presents compelling merits. *CommScope-01242* at 5. Here, factors 1 and 3 are neutral. However, factors 2 and 4 weigh in favor of not denying

institution, while factor 5 favors denying institution. In this case, we find the merits compelling for the reasons stated below, and as such we need not determine the extent to which other relevant circumstances not discussed in the other factors could have impacted this analysis. Below, we address the merits of the patentability challenges set forth in the Petition. We then address whether the Petition presents compelling merits.

2. Discretionary denial under 35 U.S.C. § 325(d)

Under 35 U.S.C. § 325(d), “[i]n determining whether to institute . . . , the Director may take into account whether, and reject the petition . . . because, the same or substantially the same prior art or arguments previously were presented to the Office.” Petitioner argues that denial under § 325(d) is not appropriate because “[n]one of the references presented in the petition were cited or considered by the Examiner during prosecution of the ’698 patent.” Pet. 82. Petitioner acknowledges that the “Schelen Thesis,” a doctoral thesis by Olov Schelén (Ex. 2012), is cited in the ’698 patent (Ex. 1001, 3:64–4:2) having “some overlap in subject matter with the disclosure of Schelen-1 and Schelen-2.” Pet. 82. However, Petitioner argues that the relevant teachings and the evidence” in the Schelen Thesis, which are relied upon in the patentability challenges presented here based on disclosures in Schelen-1 and Schelen-2, were not considered by the Examiner. *Id.*

Patent Owner contends that “Petitioner’s blanket statement that ‘the relevant teachings and the evidence were not considered as presented herein’ is insufficient to satisfy Petitioner’s burden under § 325(d).” Prelim. Resp.17. Patent Owner argues that Petitioner failed to address “the substantive facts of the references in the context of 325(d),” which should be

“fatal” to its Petition, and that the similarities between the Schelen Thesis and the Schelen-1 and Schelen-2 references “preclude any finding that the Petition provides ‘compelling merit.’” *Id.*

In determining whether to deny institution under § 325(d), we use 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 [the] 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, LLC v. MED-EL Elektromedizinische Geräte GmbH, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020) (precedential).

Under the first part of the *Advanced Bionics* framework, we consider “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.” *Id.* It is undisputed that the same art was not presented to the Office. The question before us is whether substantially the same art or arguments were previously presented.

The Schelen Thesis is cited in the ’698 patent’s specification. However, Patent Owner has not presented evidence that the Examiner considered the Schelen Thesis in allowing the claims of the application which issued as the ’698 patent. While Petitioner provides evidence that an IDS was submitted listing a paper with Schélen as first author¹² (Ex. 1011¹³), who is the same Schélen of the Schelen Thesis (Pet. 9), this Schelén IEEE

¹² The Petition misidentified the exhibit as Ex. 1031. The paper listed on the IDS was submitted in this proceeding by Petitioner as Exhibit 1011.

¹³ Schélen et al., 1999, Performance of QoS Agents for Provisioning Network Resources, IEEE, 17–26.

paper is not Schelen-1 or Schelen-2 cited in the patentability challenges or the Schelen Thesis cited in the '698 patent. Compare Ex. 1001, 3:64–4:2 with Ex. 1002, 117. Patent Owner did not establish overlap in the content of this IDS-listed IEEE reference with Schelen-1, Schelen-2, or the Schelen Thesis. Furthermore, the Examiner expressly declined to consider the Schelén IEEE paper referenced in the IDS “because applicant failed to provide a legible copy.” Ex. 1002, 41; *see also id.* at 44 (returned IDS with Examiner’s signature, lines drawn through the IEEE paper, and instructions that examiners are to “[d]raw line through citation if . . . not considered”).

Moreover, even if there is substantial overlap, a reference that “was neither applied against the claims nor discussed by the Examiner” does not weigh in favor of exercising discretion under § 325(d). *Bowtech, Inc. v. MCP IP, LLC*, IPR2019-00379, Pap. 14, *20, 18 (July 3, 2019). As a result, Patent Owner has not satisfied the first part of the *Advanced Bionics* framework. Accordingly, for the reasons discussed above, we decline to deny institution under § 325(d).

E. Overview of Asserted Prior Art

1. Xiao

Xiao describes a framework for the Internet quality of service (QoS), which includes differentiated services (DiffServ) and multiprotocol label switching (MPLS). Ex. 1005, 8.

Xiao describes a “premium service” in differentiated services that can be used to create virtual leased lines of low-delay and low-jitter. Ex. 1005, 10, 11. Xiao discloses an example, with reference to Figure 4, in which host S in customer network 1 (“CN1”) wants to use premium service to send data to host D in customer network 2 (“CN2”). Internet service provider 1 (“ISP1”) is between CN1 and CN2. *Id.* at 12 (Example 2). Figure 4,

reproduced below, shows the process for delivering premium service across CN1, ISP1, and CN2.

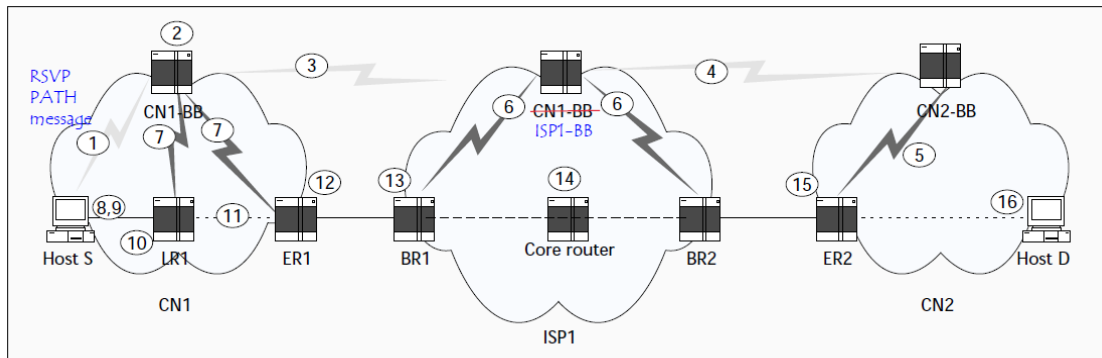


Figure 4. The delivery process of premium service with a dynamic SLA.

Figure 4 of Xiao, reproduced above (with annotations added), shows the delivery process for delivering premium service comprising setting up paths and reserving resources from host S in CN1 to ISP1, and then from ISP1 to host D in CN2. The figure shows that each network has its own local BB. Each of the networks also have routers through which packets are received and forwarded. Ex. 1005, 10.

The host S in CN1 sends an RSVP PATH message (annotated above) to CN1-BB, the local bandwidth broker of CN1. Ex. 1005, 12 (step 1). RSVP stands for Resource Reservation Protocol, which is “a signaling protocol for setting up paths and reserving resources.” *Id.* at 8.

CN1-BB makes an admission control decision in CN1 for a request for resources by host S. Ex. 1005, 12 (step 2). Xiao defines “admission control” as a “decision process of whether to accept a request for resources (link bandwidth plus buffer space).” *Id.* at 9 (Table 1). When the request is accepted by CN1-BB, the PATH message is sent to the bandwidth broker of ISP1, ISP1-BB,¹⁴ which also makes an admission control decision. *Id.* at 12

¹⁴ Figure 4 of Xiao shows ISP1 as having bandwidth broker “CN1-BB,” but the text refers to it as “ISP1-BB.” We annotated Figure 4 by crossing out

(steps 3, 4). When the request is accepted by ISP1-BB, the PATH message is sent to the bandwidth broker of CN2, CN2-BB, which makes an admission control decision. *Id.* (step 4, 5). Upon acceptance of the request, CN2-BB sends a RESV message to ISP1-BB, which passes it back to CN1-BB, and in turn to host S. *Id.* (steps 5–7). “When host S receives the RESV message, it can start transmitting data.” *Id.* at 13 (step 8).

Xiao discloses that there may be multiple ISPs between CN1 and CN2. *Id.* Xiao teaches that “MPLS can be used together with differentiated services to provide QoS.” *Id.* at 14. Xiao discloses that while BBs are in each customer domain, “BBs may not be needed in MPLS-based ISP networks.” *Id.* But Xiao teaches “it is technically better to have a BB to allocate resources.” *Id.* at 11.

2. *Schelen-1*

Schelen-1 describes “an architecture where clients can make advance reservations through agents.” Ex. 1032, 451. Schelen-1 teaches that “[f]or each routing domain in the network there will be an agent responsible for admission control on behalf of the routers in the domain.” *Id.* Figure 1 of Schelen-1 shows three routing domains (“AS”), each with a reservation agent (“A”). *Id.* at 452. “A reservation agent is a host that is responsible for reserving resources on a part of the Internet.” *Id.* “Each reservation agent must know the topology of its routing domain to perform admission control on behalf of that domain.” *Id.* Each reservation agent must also be able “to detect topology changes that require re-computation of forwarding state setup in routers, or renegotiation with adjacent reservation agents.” *Id.*

“CN1-BB” and adding “ISP1-BB” as the bandwidth broker for ISP1, consistent with the text of Xiao.

Schelen-1 describes its approach as advantageous because “advance reservations can be provided with little support from routers and without having to maintain reservation state in routers through periods when reservations have no effect on packet forwarding.” Ex. 1032, 452.

Schelen-1 further discloses

A reservation agent is a host that is responsible for reserving resources on a part of the Internet. Typically there is one reservation agent responsible for each autonomous system (AS) in the Internet (an AS is an administrative domain containing a number of routers running a routing protocol internally) . . . Inside an AS there may be backup agents as well as a hierarchy of agents, e.g., different agents for different areas of the AS.

Ex. 1032, 452.

Schelen-1 further teaches that “[a]gents can interoperate to support end-to-end advance reservation requests in the global network.” Ex. 1032, 453.

3. *Gibson*

Gibson describes its invention as relating to “a method of establishing a connection between two endpoints in a communications network such that the connection provides a pre-specified quality of service [QoS] for a specified communication session.” Ex. 1006, 1:9–16. Gibson teaches that although the communication network is not limited to an MPLS network, the MPLS network is exemplified. *Id.* at 3:7–8; 6:11–16.

The system comprises admission managers, connection managers, and an administrative server 35, each of which can serve a MPLS network. Ex. 1006, 6:11–16. “The admission managers, connection managers and administrative server can be though[t] of as a ‘management layer’ of the communications network.” *Id.*

Gibson discloses that the admission manager in the network “is responsible for maintaining network topology information and using this to select a route across the network.” Ex. 1006, 7:26–28.

A connection manager (CM) is associated with each abstract node (“AN,” including AN1 and AN2) of the network which “monitors the bandwidth used in each of the label switch paths that emanate from the label switch router (or group of label switch routers).” Ex. 1006, 7:60–8:3 (*see* Fig. 1, which contains multiple connection managers). The abstract nodes represent one or more label switch routers (“LSR”). *Id.* at 6:40–42.

Gibson’s system also comprises an administrative server “used to provision paths in the communications network upon initialisation.” Ex. 1006, 8:17–18. The administrative server “has a much more detailed view of the topology of the intermediate MPLS network than the endpoints attached to it.” *Id.* at 8:32–34. “By pre-provisioning label switch paths of high capacity the administrative server constrains the number of possible routes between two end points for a proposed communication session of a given capacity.” *Id.* at 8:36–40. Gibson disclose that “an administrative server 35 may take the form of multiple servers that administer their local area.” *Id.* at 8:22–24. “An Administrative Server may also add new paths or change the characteristics of an existing path during the operation of the network.” *Id.* at 8:42–44.

Gibson further explains that endpoint 10 or admission manager 35 issues a request for a new route between two abstract nodes AN1, 12 and AN2, 13 in the MPLS network. Ex. 1006, 8:55–58 (referencing Fig. 2). Administrative server 35 accepts a request and signals to one of the specified abstract nodes AN1, 12 that it should set-up a path to the other abstract node AN2, 13. Ex. 1006, 8:58–62. “The first abstract node 12 then registers the

requested new path and its characteristics with its Connection Manager 32.”
Ex. 1006, 8:66–67.

Gibson also describes a messaging protocol, SIP++. Ex. 1006, 5:13–25. SIP++ uses INVITE messages sent from the admission manager to a connection manager, which examines information about the session requirements and then “makes a temporary reservation for the session and forwards the INVITE message to the next abstract node in the path description.” *Id.* at 10:25–27.

F. Ground 1 based on Xiao, Schelen-1, and Gibson

Petitioner argues that claims 1–5, 7, and 8 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Xiao, Schelen-1, and Gibson. Pet. 12–71.

Patent Owner presents arguments relating to Petitioner’s showing with respect to the claim limitation “passing resource requests from the Bandwidth Broker (BB) to at least one intra-domain [broker] (1DB), wherein each intra-domain broker (1DB) is responsible for admission control and the Label Switched Path, LSP setup.” Prelim. Resp. 8. Petitioner annotates these claim limitations as [1.6.2], [1.7.1], and [1.7.2]. *See* Pet. 56–70. To establish the context of these limitations in claim 1 as a whole, we provide a summary of Petitioner’s unpatentability challenge to claim 1.

1. Independent Claim 1

The first ground of unpatentability is based on Xiao, Schelen-1, and Gibson. Patent Owner raises arguments at this time only for limitations [1.6.2], [1.7.1], and [1.7.2] of claim 1 (as numbered by Petitioner in the Petition). Prelim. Resp. 8–11.

We summarize Petitioner’s unpatentability evidence for each limitation in the claim and then address Patent Owner’s arguments regarding limitations [1.6.2], [1.7.1], and [1.7.2] of claim 1.

At this time, Patent Owner does not provide comments on the sufficiency of Petitioner’s evidence for limitations [1.0.1] through [1.6.1] of claim 1. Patent Owner also has not provided comments on Petitioner’s proposed reasons for combining Xiao, Schelen-1, and Gibson.

[1.0.1] *Method in a packet based communication network including network domains, wherein at least one domain is a Multiprotocol Label Switching MPLS domain*

Petitioner provides evidence that Xiao describes “a ‘process of premium service’ for delivering ‘packets’ in a communication network including multiple network domains, as illustrated at Figure 4. Ex.1005, 12–13 (Example 2).” Pet. 19. Petitioner identifies Xiao’s teaching in Figure 4 as showing a source “corporate network 1” (CN1), a destination “corporate network 2” (CN2), and an internet service provider network “ISP1.” Pet. 20 (citing Ex. 1005, 10, 12–13, Fig. 4). The source corporate network CN1 and the destination corporate network CN2 are two different “customer domains” that are separated by at least ISP1, an ISP “domain.” Ex.1005, 13. Petitioner acknowledges that Figure 4 illustrates only one ISP, but cites Xiao’s disclosure that ““there are multiple ISPs between CN1 [corporate network 1] and CN 2 [corporate network 2]”” Pet. 20 (citing Ex. 1005, 13). Petitioner also cites to teachings in Xiao of using MPLS and DiffServ networks, arguing it would have been obvious to a POSITA “to implement multiple ISPs in the communications network of Figure 4, including ISPs that support different QoS protocols such as DiffServ and MPLS, since Xiao

itself suggests this modification.” Pet. 19–20 (e.g., citing Ex. 1005, 14 (“MPLS can be used together with differentiated services to provide QoS”); Ex. 1003 ¶¶ 126–129). Petitioner provides an annotated drawing of Xiao’s Figure 4 showing an MPLS domain added to the existing network domains in the original figure. Pet. 21.

[1.0.2] *to establish a virtual leased line, VLL, between a source (SRC) and a destination (DST) in different domains in order to achieve packet transfer between the source (SRC) and the destination (DST),*

Petitioner contends that hosts S and D in corporate networks CN1 and CN2, respectively, represent, respectively, the claimed source (SRC) and destination (DST) in different domains. Pet. 25 (citing Ex. 1005, 11–15, Fig. 4; Ex. 1003, ¶¶ 145–146). Petitioner further cites Xiao’s disclosure that “[p]remium service is suitable . . . for creating virtual lease lines,’ between the source and the destination” as rendering obvious the limitation of “establish[ing] a virtual leased line, VLL, between a source (SRC) and a destination (DST) in different domains.” Pet 25 (citing Ex. 1005, 11; Ex. 1003, ¶ 147); *see also* Pet. 27. Petitioner contends that it would have been obvious to a POSITA in view of Xiao’s teaching “to use premium service to establish a virtual lease line between the source Host S and the destination Host D to “sav[e] the cost of building and maintaining a separate network.” Pet. 26 (citing Ex. 1033,¹⁵ 2; Ex. 1003, ¶ 151; Ex. 1005, 10, 12, 14 (premium services to send data and in MPLS-architecture).

¹⁵ Nichols et al., “A Two-bit Differentiated Services Architecture for the Internet,” July 1999.

[1.0.3] *wherein the bandwidth broker (BB) is associated to each network domain and*

As evidence of limitation [1.0.3], Petitioner cites Xiao's disclosure of bandwidth brokers associated with customer domains and DiffServ ISP1 domain. Pet. 28–29 (Ex. 1005, 12–14). Petitioner contends that based on these disclosures “it would have been obvious to a POSITA to associate a bandwidth broker with MPLS domain ISP2 in modified Figure 4, since it is better to have a bandwidth broker to allocate resources.” Pet. 29 (citing Ex. 1005, 11 (“it is technically better to have a [bandwidth broker] to allocate resources”); Ex. 1003 ¶ 61). Because original Figure 4 had only one ISP1 domain, Petitioner annotated the figure to add a second ISP2 domain and provided reasons why a POSITA would have added a second domain. *See* Pet. 21–24, 30.

As further evidence of a bandwidth broker associated with each network domain, Petitioner cites Schelen-1's teaching of the same. Pet. 29 (citing Ex. 1032, 451–452); *see, e.g.*, Ex. 1032, Fig. 1 (showing each routing domain with a reservation agent, the latter which Petitioner contends is a bandwidth broker).

Petitioner cites the teaching in Gibson of an “admission manager” as part of its management layer, which Petitioner contends corresponds to a bandwidth broker, providing additional evidence of the obviousness of having a bandwidth broker associated with each domain. Pet. 29 (citing Ex. 1006, 6:11–16, 7:1–28, 7:46–48, Fig. 1; Ex. 1003 ¶¶ 162–163).

Petitioner argues it would have been obvious to a POSITA to associate a BB with Xiao's MPLS domain “to provide admission control” and “scaling benefits” within the network domain. Pet. 30.

[1.0.4] *the bandwidth broker (BB) is configured to control a hierarchical routing domain, the method comprises the following steps:*

The preamble of the claim further recites that “bandwidth broker (BB) is configured to control a hierarchical routing domain.” Petitioner cites Xiao’s disclosure of the bandwidth broker as a “resource controller,” which is configured to “to allocate resources,” and the role of the BB in making “admission control decisions” as teaching a bandwidth broker that is configured to control a routing domain. Pet. 32 (citing Ex. 1005, 11, 12; Ex. 1003 ¶¶ 170–173). For hierarchical routing, Petitioner cites Schelen-1’s teaching of a “hierarchy of routing domains” and a “corresponding hierarchy of reservation agents [bandwidth brokers] that aggregate reservations and register with the next highest level” in which “an agent cannot have knowledge about the internals of remote autonomous systems and therefore can only provide admission control for it’s [sic, its] own routing domain.” Ex. 1032, 452, 454 (cited by Pet. 32–33). Petitioner contends it would have been obvious to use hierarchical routing when implementing Xiao to “support scaling and accommodate a network with a large topology.” Pet. 33.

[1.1.1] *i) generate a request from [an entity] for a Virtual Leased Line, VLL, having a predefined Quality of Service, QoS, from a source network (SRC) to a destination network (DST)*

Petitioner, in reference to Figure 4 of Xiao, contends that Xiao’s disclosure that “[h]ost S sends a RSVP message to the local BB, CN1-BB” in a process in which “host S in CN1 wants to use premium service to send data to host D in CN2” (Ex. 1005, 12), describes the claimed requirement of limitation [1.1.1] of generating a request for a virtual leased line between

source and destination networks. Pet. 34–35 (*see also* limitation [1.0.2] discussed above for the virtual leased line).

With respect to the recitation that the VLL have a “predefined Quality of Service,” Petitioner references the description in Xiao that “[p]remium service provides low-delay and low-jitter service for customers that generate fixed peak bit rate traffic” and that the “ISP guarantees that the contracted bandwidth will be available when traffic is sent” as evidence of predefined QoS. Pet 35–36 (citing Xiao 11).

Petitioner also argues that Gibson renders the limitation obvious. Pet. 36–37 (citing Ex. 1003 ¶ 187). Gibson discloses “a method of establishing a connection between two endpoints in a communications network, such that the connection provides a pre-specified quality of service.” Ex. 1006, 2:6–12; *see also id.* at 20:53–56 (“A method of establishing a connection between two endpoints in a communications network such that a specified level of quality of service is given for a specified communication session using the established connection.”). Petitioner contends that, in view of Gibson, it would have been obvious to a POSITA to allow a user in Xiao to interact with the endpoint of host S “to generate a request for a communication session having a pre-specified QoS, because this would allow the user [to] initiate an immediate session or schedule in advance a session for Internet telephony and videoconferencing, which have predefined QoS.” Pet. 37.

Petitioner further argues that Schelen-1’s teaching of “generating a ‘reservation request[]’ from a user for service, with the request being ‘parameter-based’ with predefined ‘traffic descriptions’ used to ‘setup resources along the path’ and ‘perform QoS routing’ between source and destination” further makes limitation [1.1.1] obvious in combination with

Xiao because it would allow Xiao to schedule resources more effectively and ““avoid undue signaling and scalability problems.”” Pet. 37–38 (citing Ex. 1032, 451, 453; Ex. 1034, 29;¹⁶ Ex. 1003 ¶¶ 81–82, 114–115, 192, 193, 194–195).

[1.1.2] *i) apply the request to a Bandwidth Broker (BB) of a domain A, BB_A, associated to the source network*

Petitioner cites the teaching in Xiao of CN1-BB, associated with corporate network CN1, accepting a PATH message from host S, as making the claim limitation obvious. Pet. 39 (citing Ex. 1005, 12; Ex. 1003 ¶¶ 196–199) *Id.* Petition also cites Schelen-1, for the same limitation, referencing the disclosure in Schelen-1 of “requests are forwarded to the agent [bandwidth broker] responsible for the routing domain.” Pet. 39 (quoting from Ex. 1032, 451).

Petitioner contends that it would have been obvious “for Xiao’s CN1-BB to receive the generated PATH message request, per Schelen-1 and Gibson, to perform admission control so that premium service is set up based on the request. Ex.1005, 12; Ex.1003, ¶¶202-203.” Pet. 40.

[1.2] *ii) BB_A establishes the different domains involved to reach the destination network (DST)*

For limitation [1.0.1], Petitioner provides evidence that Xiao teaches or suggests “different domains” in a communication network involved in reaching a destination network, including a DiffServ domain ISP1 and an

¹⁶ Schelén et al., “Aggregating Resource Reservations over Multiple Routing Domains,” 1998, *1998 Sixth International Workshop on Quality of Service (IWQoS’98)*, 29–32.

MPLS domain ISP2. Pet. 40. Petitioner cites additional evidence in Xiao that the bandwidth broker in the customer domain uses a signaling protocol to request services from its ISP domain. Pet. 41 (citing Ex. 1005, 12 (“In Fig. 4, host S in CN1 wants to use premium service to send data to host D in CN2. CN1 has a dynamic SLA [service license agreement] with ISP1...Host S sends an RSVP PATH message to the local BB, CN1-BB...CN1-BB sends the PATH message to ISP1-BB.”).” Petitioner contends that it would have been obvious to a POSITA that the bandwidth broker CN1-BB would have determined that “the ISP1 domain was *involved to reach* the domain of the destination corporate network CN2” when sending “the PATH message to the bandwidth broker ISP1-BB of the ISP1 domain.” Pet. 41 (italic added) (citing Ex. 1003 ¶¶ 208–209); *see also* Pet. 41–43 (referencing annotated Fig. 4 of Xiao).

Petitioner also cites Schelen-1 for its disclosure of “a bandwidth broker [that] listens to a well-known multicast address where all other bandwidth brokers ‘giv[e] their identity and which routing domain (AS) they are responsible for,’ thereby allowing the bandwidth broker to establish the existence of all other bandwidth brokers and their domains.” Pet. 43 (citing Ex.1032, 452). Petitioner contends it would have been obvious to a POSITA to apply Schelen-1’s teaching to Xiao for a message to be sent to the destination network CN2 with awareness of the bandwidth brokers and domains to reserve resources for the request. Pet. 44 (citing Ex.1003, ¶¶ 83–84, 116, 216–217).

[1.3] *iii) BB_A directly or indirectly passes requests to all Bandwidth Brokers (BB) of the involved domains regarding a VLL of the predefined QoS from ingress to egress of each domain;*

Petitioner cites Xiao's Example 2, "Delivery of Premium Service" as making limitation [1.3] obvious to one of ordinary skilled in the art. Specifically, Petitioner cites the disclosure in "Phase 1: Signaling" that "CN1-BB [directly] sends the PATH message to ISP1-BB" and that indirectly, when the request is accepted, CN1-BB "sends the PATH message to CN2-BB." Pet. 45 (citing Ex. 1005, 12, steps "3" and "4"). Petitioner further cites Xiao's disclosure that when multiple domains between CN1 and CN2 are present, the bandwidth broker would forward messages directly or indirectly to the involved ISP domains. Pet. 45 (citing Ex. 1005, 13). Petitioner also contends that in a parallel implementation, the message would be sent "directly" to both ISPs because if one ISP is not available, the redundant ISP could still provide services. Pet. 45. But, if the ISPs were implemented in series, the PATH message would be passed serially to downstream ISPs to reserve resources, corresponding to "indirectly" passing the request. Pet. 45–46.

Petitioner cites additional disclosure from Schelen-1 (Ex. 1032, Abstract, 453) for rendering the claim limitation "BB_A directly or indirectly passes requests to all Bandwidth Brokers (BB) of the involved domains" obvious in combination with Xiao. Pet. 46.

Limitation [1.3] further recites the requests are "regarding a VLL of the predefined QoS from ingress to egress of each domain." Petitioner cites Xiao's teaching as discussed for limitations [1.0.2] and [1.1.1] of premium service comprising a VLL having predefined QoS in which requests for service are forwarded to each domain, making the claimed limitation obvious to a POSITA. Pet. 46–47.

Petitioner also argues that to the extent "Xiao is insufficient to show that the request is regarding 'from ingress to egress of each domain,'"

Schelen-1 teaches “end-to-end reservations,” which would have been understood by a POSITA to mean “from ingress to egress of each domain involved, per the request.” Pet. 48 (citing Schelen-1, Abstract, 453; Xx.1003, ¶ 226). Petitioner explains it would have been obvious in view of Schelen-1, “for Xiao’s PATH message request, to regard reserving end-to-end resources (from ingress to egress) of each involved domain so that resources would be reserved and available to establish the VLL per the original request from source Host S.” Pet. 49.

[1.4] *iv) each involved bandwidth broker (BB) performs admission control in its domain;*

Petitioner cites evidence that Xiao discloses that each involved domain has a bandwidth broker. Pet 49 (citing Ex. 1005, 12 (“Phase 1 Signaling”; Fig. 4). Petitioner cites further evidence that Xiao also discloses that each bandwidth broker “makes an admission control decision.” Pet. 49 (citing Ex. 1005, 12, steps 2, 4, 5 (each of CN1-BB (bandwidth broker), ISP1-BB, and CN2-BB “makes an admission control decision”))).

Petitioner also contends that each of Schelen-1 and Gibson teaches the claimed limitation. Pet. 50 (citing Ex. 1032, 451 (for “each routing domain in the network, there will be a reservation agent [bandwidth broker] responsible for admission control”); Pet. 50–51 (citing Ex. 1006, 7:42–48 (“enables the admission manager to build up a map of all the reachable nodes on the MPLS network and their availability over time. An admission manager also monitors the bandwidth of connections”))).

Petitioner contends it would have been obvious to the POSITA in view of Schelen-1 and Gibson, “for the involved bandwidth brokers ISP1-BB, ISP2-BB, and CN2-BB to perform admission control, so that end-to-end

reservations may be made for the requested service if resources are available such that Xiao's source and destination would be able to communicate." Pet. 51.

[1.5.1] *v) each involved bandwidth broker (BB) returns a result of the admission control to BB_A that passes it back to the requesting entity and*

As evidence that limitation [1.5.1] is described by Xiao, Petitioner cites Xiao's disclosure in Example 2 that the bandwidth broker "of the involved ISP domain [ISP1-BB], and destination customer domain [CN2-BB] 'makes an admission control decision' and returns a result (e.g., 'an error message' if the request is denied or 'an RSVP RESV message' if admitted) to CN1-BB, which passes the result to Host S." Pet. 51 (citing Ex. 1005, 12–13 (steps 2, 4, 5–8 of Example 2); Ex. 1003, ¶¶ 238–241) (emphasis omitted).

[1.5.2] *if the request was admitted along all domains between the source (SRC) and the destination (DST) a VLL of the predefined QoS is granted,*

Petitioner provides evidence that Xiao describes a customer having a service level agreement ("SLA") with its ISP for providing a premium service of "virtual lease lines." Ex. 1005, 11 ("Premium service provides low-delay and low-jitter service for customers that generate fixed peak bit rate traffic. Each customer will have an SLA with its ISP"; "The ISP guarantees that the contracted bandwidth will be available when traffic is sent. Premium service is suitable for Internet telephony, videoconferencing, or for creating virtual lease lines for virtual private networks (VPNs).").

Petitioner further points to the disclosure in Xiao of the receipt of an RESV (reservation message) by the bandwidth brokers, subsequent rule

setting, and transmission of data by host S along the path. Pet. 52–53 (citing Ex. 1005, 12–13, disclosing that bandwidth brokers receive the RESV (reservation) message that resource are reserved; the bandwidth brokers “configure the classification and policing rules on router”; CN1-BB “will set the classification and shaping rules on router LR1, “policing and reshaping rules on router ER1, “send the RESV message to host S”; “[w]hen host S receives the RESV message, it can start transmitting data.”).

Based on these disclosures, Petitioner contends that the “POSITA would have understood that configuring boundary routers with classification, policing, and shaping rules for premium service establishes the VLL” and that because “Host-S is able to start transmitting, it would have been understood that the requested premium service for VLL of the predefined QoS was granted.” Pet. 53 (further citing Ex. 1003 ¶ 248).

[1.6.1] *characterized in that step iv) comprises the following step: performing [LSP] Label Switched Path, LSP, setup and*

We understand limitation [1.6.1] to refer to actions performed by each involved bandwidth broker (“iv) each involved bandwidth broker (BB) performs admission control in its domain”). The LSP, or label switched path, represent labels for forwarding packets along paths in MPLS networks and represent “virtual traffic trunks.” Ex. 1001, 1:37–51; 2:20–21,

For limitation [1.6.1], Petitioner points to Xiao’s disclosure “that “[w]ith MPLS, LSPs are set up between each ingress-egress pair.; Ex.1005, 17.” Pet. 54. Petitioner reasons that “because the LSP set up may be triggered by the request, the LSP set up is performed, at least in part, when the bandwidth broker performs admission control in response to the request.” Pet. 54. Petitioner contends that it would have been obvious “to

dynamically set up an LSP as part of admission control in Xiao, because it would allow for creating an LSP path that provides services across the MPLS network domain ISP2.” Pet. 55.

Petitioner also contends that Gibson describes limitation [1.6.1]. Specifically, Petitioner provides evidence that Gibson describes an “admission manager 30” (“AM”) which Petitioner contends corresponds to a bandwidth broker. Pet. 54 (citing Ex. 1006, 6:14–16; Ex. 1003 ¶¶ 254–255). Citing Figure 2 of Gibson, Petitioner argues that the admission server 35 works with the connection manager 32 (“CM”) to set up an LSP in response to the request by the admission manager 30 (i.e., the bandwidth broker). Pet. 54–55 (Ex. 1006, Fig. 2 (“New LSP AN1 to AN2”).

[1.6.2] *passing resource requests from the Bandwidth Broker (BB) to at least one intra-domain [broker] (IDB),*

Limitation [1.6.2] involving the IDB is one of the limitations contested by Patent Owner in the Preliminary Response. Prelim. Resp. 1, 6.

Petitioner argues that Gibson’s administrative server and connection manager (“CM”) serve as the claimed intra-domain bandwidth broker (IDB). Pet. 57–58. Specifically, Petitioner contends that the administrative server and connection manager work together in Gibson’s system “to setup LSPs and perform admission control within different areas of the MPLS network.” Pet. 57. Petitioner argues that a POSITA “would have understood that the administrative server and the connection manager may be readily implemented together as a centralized entity, to the extent that is required” to serve as the claimed IDB. Pet. 59 (citing Ex. 1005, 12; Ex. 1016, 2; Ex. 1025, 5; Ex. 1003 ¶ 273).

To establish the function of the administrative server pertaining to bandwidth resource requests, Petitioner refers to Gibson’s disclosure that the administrative server uses “standard CR-LDP (Constraint-based Routing Label Distribution Protocol) protocol . . . to establish labelled flows in MPLS networks.” Ex. 1006, 17:47–50 (cited at Pet. 57). The protocol, according to the disclosure in Gibson cited by Petitioner, “is designed to allow traffic engineering methods to be applied to an MPLS network such that specific paths can be established through a set of chosen nodes with a particular Quality of Service.” *Id.* at 17:50–53. Gibson further teaches that the administrative server “uses CR-LDP . . . to provision high capacity label switch paths [LSPs] between these label switch routers via any number of intermediate label switch routers.” *Id.* at 8:25–29. Petitioner asserts this is the same function provided by a bandwidth broker.

Petitioner cites Gibson’s teaching that the administrative server “may take the form of multiple servers that administer their local area” as evidence that Gibson teaches multiple administrative servers/connection managers, and therefore multiple IDBs. Pet. 59 (citing Ex. 1006, 8:22–24).

Petitioner contends it would have been obvious to apply Gibson’s teachings to Xiao “to facilitate setting up LSPs in Xiao’s MPLS network domain ISP2.” Pet. 60. Petitioner explains “the admission manager (‘bandwidth broker’) would be free to manage communications with neighboring bandwidth brokers while the internal management elements (administrative server and connection manager) handle internal resource reservations and admission control” to allow for scaling and fine-grained resource allocation. *Id.*

Limitation [1.6.2] also requires that the bandwidth broker passes “resource requests” to at least one intra-domain bandwidth broker. Petitioner

argues that Gibson's requests for new LSPs correspond to the claimed "resource requests." Pet. 61. As evidence, Petitioner cites Gibson's disclosure that the administrative manager (the asserted claimed bandwidth broker) "request[s]" from the administrative server (the asserted IDB) "new high capacity label switch paths [LSP's] across the MPLS Network." Ex. 1006, 8:49–53 (cited at Pet. 61). Gibson, explains in the disclosure cited by Petitioner, that the administrative server signals to the nodes to set-up paths and the nodes register the paths and characteristics with the connection manager. Ex. 1006, 8:55–67 (cited at Pet. 61–62; *see also* Ex. 1006, Fig. 2 (showing LSP resource requests being passed from the administrative manager 32 to the administrative server 35); Ex. 1003 ¶¶ 275–276). Gibson further discloses that abstract node "registers the requested new path and its characteristics with its Connection Manager 32," providing evidence that the connection manager receives the request, as well.

Petitioner further cites Gibson's INVITE message sent from admission manager (the bandwidth broker) to connection manager as the claimed request for resources. Pet. 63–65 (citing Ex. 1006, 9:51–10:34). Gibson specifically discloses that each INVITE message is sent to the connection manager associated with the reachable abstract node and this is "is repeated for each INVITE message issued by the admission manager." Ex. 1006, 10:6–12.

[1.7.1] wherein each intra-domain broker (IDB) is responsible for admission control and

Limitation [1.7.1] is the second contested limitation addressed in the Preliminary Response. Prelim. Resp. 1, 6.

Petitioner contends that the cited prior art “renders obvious passing requests (for new LSPs and INVITE messages for resources) from the bandwidth broker ISP2-BB to a connection manager.” Pet. 65 (citing Ex. 1003 ¶¶ 286–287).

Petitioner provides evidence that “Gibson’s disclosure of the connection manager deciding whether to accept the resource request (for a new LSP) discloses that the ‘intra-domain broker (1DB) is responsible for admission control.’” Pet. 65 (citing Ex.1006, 8:55-9:10; see also Ex.1006, 8:11-14; Ex.1003 ¶ 288) (emphasis omitted).

Petitioner further cites Gibson’s teaching that “[w]hen a connection manager receives an INVITE message, it examines the information about the session requirements and next abstract node to see if it has a path to that abstract node and if it can accommodate the new session.” Ex. 1006, 10:13–16 (cited at Pet. 65). Gibson further teaches, in the disclosure cited by Petitioner, that the connection manager “makes a temporary reservation for the session and forwards the INVITE message to the next abstract node in the path description.” Ex. 1006, 10:25–34 (cited at Pet. 66). These functions are asserted to be those of a bandwidth broker as described in the ’698 patent. Ex. 1001, 2:48–49 (“an entity in a network domain that manages policies for bandwidth resources”).

Petitioner argues it would have been obvious to implement the connection manager in Xiao because “[the] connection manager has visibility of the MPLS network that it manages (Ex.1006, 7:66-8:15) so it would be well positioned to decide whether to accept or deny the request for a new LSP” and “is able to determine if there are sufficient resources for a newly requested communication session defined by the INVITE message.” Pet. 66–67.

[1.7.2] wherein each intra-domain broker (IDB) is responsible for . . . the Label Switched Path, LSP, setup.

Limitation [1.7.2] is the third contested limitation addressed in the Preliminary Response. Prelim. Resp. 1, 6

As explained above, Petitioner provides evidence that Gibson’s administrative server in combination with the connection manager meets the limitations of the claimed intra-domain bandwidth broker. Petitioner references Gibson’s disclosure “that the administrative server initially provisions LSPs and sets up new LSPs via a request mechanism” as evidence that the latter is responsible for the LSP setup as recited in the claim. Pet. 67 (citing Ex.1006, 8:16-9:10; Ex.1003, ¶¶ 293-295.” Petitioner also cites Figure 2 of Gibson as showing that “connection manager is responsible for the LSP setup since it sends an ‘OK’ decision message to the abstract node 12 to set up the LSP.” Pet. 68–69 (citing Ex.1006, 8:55–9:10).

Petitioner further argues that it would have been obvious “when setting up an LSP in Xiao’s MPLS network domain ISP2 (*see* limitation [1.6.1]), for the administrative server and each connection manager along the path [f]oward to cooperate to set up the LSP within its MPLS area, to thereby provide ‘new high capacity label switch paths across the MPLS network.’” Pet. 70 (citing Ex.1006, 8:49–54; Ex.1003, ¶¶118, 300–301).

2. Patent Owner’s arguments

Patent Owner’s arguments are generally directed to limitations [1.6.2], [1.7.1], and [1.7.2] involving the recited intra-domain bandwidth broker of claim 1. Prelim, Resp. 1, 3–6, 8–11.

Patent Owner contends that Xiao “lacks the sophistication of the invention described in the ’698 Patent.” Prelim. Resp. 4. Patent Owner contends that Xiao “merely depicts Bandwidth Brokers (e.g. CN1-BB) in

communication with edge routers (e.g. ER1) in a DiffServ domain.” *Id.*

Patent Owner contends that the bandwidth brokers “described in Xiao do not have any visibility into routing within their own Domain, let alone into other Domains” and that “[t]herefore, Xiao could not configure the type of guaranteed bandwidth VLLs described in the ’698 Patent.” *Id.*

Patent Owner further argues that the administrative server of Gibson “is incompatible with the teachings of the ’698 Patent for numerous reasons.” Prelim. Resp. 5. “For example, the Administrative Server is only described in the context of MPLS networks and cannot provide visibility into network paths that span domains as set forth in the ’698 Patent.” *Id.* Patent Owner also contends that “Petitioner does not explain how the Administrative Server could perform the function of an Intra-Domain Broker (IDB).” *Id.* at 6.

Patent Owner contends that Petitioner does not explain “how the combination of Xiao and Gibson can arrive at the limitation” recited in claim 1 of “passing resource requests from the Bandwidth Broker (BB) to at least one intra-domain [broker] (IDB), wherein each intra-domain broker (IDB) is responsible for admission control and the Label Switched Path, LSP, setup.” Prelim. Resp. 8.

Patent Owner acknowledges Petitioner’s contention that the combination of a connection manager and administrative server described by Gibson discloses or makes obvious the claimed intra-domain broker. Prelim. Resp. 8–9 (citing Pet. 56–70). However, Patent Owner contends that Petitioner does not explain how the skilled worker would have arrived at the claimed IDBs. *Id.* Patent Owner argues that Petitioner does not explain how the combination of the connection manager and administrative server would function as an “intra’ domain broker when Gibson’s connection

manager and administrative server is “across/between domains (*inter* domain).” *Id.* at 9.

Patent Owner also contends that Petitioner’s “mapping only identifies one alleged intra-domain broker (IDB),” while the claim requires at least two IDBs. *Id.* at 9. Specifically, Patent Owner asserts that the claim requires at least two network domains, each having a bandwidth broker. Prelim. Resp. 10. Patent Owner states that each bandwidth broker “passes resource requests to its own intra-domain broker (IDB).” *Id.* Patent Owner states that “step (iv) of claim 1 refers to ‘each [] bandwidth broker’ performing certain functions.” *Id.* (brackets in the original). Citing step (iv) of “passing resource requests from the Bandwidth Broker (BB) to at least one intra-domain [broker] (IDB), wherein each intra-domain broker (IDB) is responsible for admission control and the Label Switched Path, LSP, setup,” Patent Owner argues that “because claim 1 recites at least two bandwidth brokers and each bandwidth broker is associated with at least one IDB, there are at least two IDBs—one for each bandwidth broker.” *Id.* In contrast, Patent Owner contends that Petitioner’s “mapping” only discloses “one IDB . . . in direct contravention of claim 1.” *Id.*

3. Discussion

Independent claim 1 is directed to a packet-based communication network to establish a virtual leased line (VLL). The communication network includes network domains, at least one of which is an MPLS domain. The method comprises requesting a VLL, using bandwidth brokers to perform admission control in the domains,¹⁷ and when the request is

¹⁷ “(‘Admission control’ is ‘[t]he decision process of whether to accept a request for resources (link bandwidth plus buffer space).’)” Houh Decl. ¶ 88 (citing Ex. 1005, 9).

admitted along all the domains, a VLL of a predefined QoS is granted. The Ground 1 patentability challenge to claims 1–5, 7, and 8 is based on the combination of Xiao, Schelen-1, and Gibson. Pet. 12.

Petitioner provides evidence that Xiao describes a communication network comprising MPLS and DiffServ domains. *See supra*, pages 22, 30. Petitioner also provides evidence that Schelen-1 describes multiple network domains, each with a bandwidth broker (*see* Ex. 1032, Figure 1, showing routing domains AS1–AS3, each with a reservation agent A1–A3 that serves as a bandwidth broker). *See supra*, pages 24, 30. Thus, Petitioner provides evidence that the combination of Xiao and Schelen-1 teaches at least two network domains, which Patent Owner asserts is a requirement of claim 1. Prelim. Resp. 10.

Petitioner provides evidence that Xiao describes a premium service for creating a VLL with a predefined QoS as recited in the claim. *See supra*, pages 22–23, 28–29, 32–34, 35. Xiao’s method, as Petitioner shows, includes a bandwidth broker, associated with each network domain, to perform admission control in its domain. *See supra*, pages 23, 30, 33–34. Petitioner also identifies a disclosure in Xiao in which the results of the admission control by each bandwidth broker are passed back to the entity requesting the VLL. *See supra*, pages 24, 37.

Petitioner does not identify Xiao as describing “passing resource requests from the Bandwidth Broker (BB) to at least one intra-domain [broker].” For this claim limitation, Petitioner refers to the description in Gibson of an admission manager, which Petitioner contends serves as a bandwidth broker (BB), and of an administrative server and connection manager that Petitioner contends work together to provide the functions of an intra-domain bandwidth broker. *See supra*, pages 39–41.

Patent Owner argues that Petitioner does not explain how Gibson’s administrative server and connection manager would function as an intra-domain bandwidth broker when it is described by Gibson as functioning “across/between domains.” Prelim. Resp. 9 (citing Gibson’s Figure 1). We understand Patent Owner’s allegation to be that the administrative server and connection manager of Gibson operate across domains.

On the current record, Patent Owner’s argument about the deficiency of Gibson’s administrative server and connection manager to serve as the claimed *intra-domain* broker is unavailing.

In explaining Gibson's teaching of an intra-domain broker, Petitioner references Gibson's Figure 1. Pet. 58. Figure 1 of Gibson is reproduced below, as annotated by Petitioner:

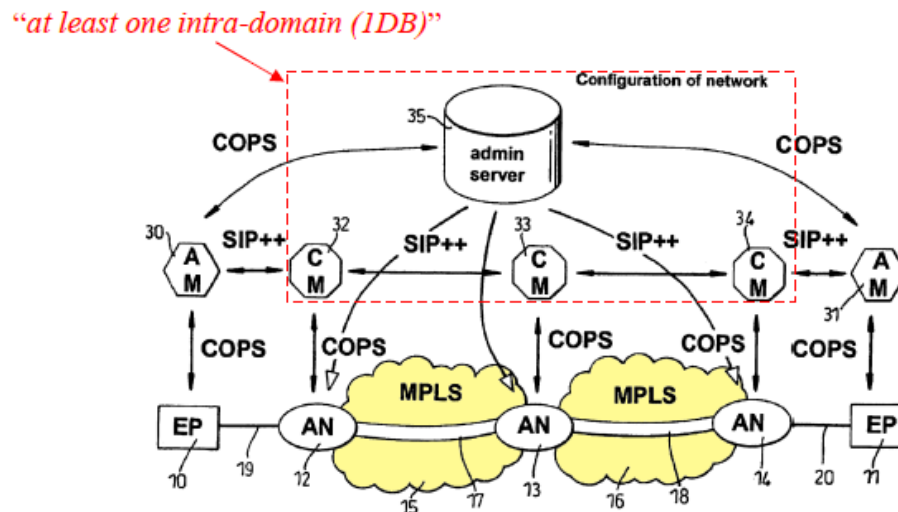


Figure 1 of Gibson, reproduced above, is “a schematic diagram of a communication network.” Ex. 1006, 4:36–37. The endpoints EP are connected by links between abstract nodes AN. Ex. 1006, 4:38–40. Three abstract nodes are shown: AN12, AN13, and AN14, where each node represents a label switch router. Ex. 1006, 6:40–42. A first cloud labeled “MPLS” is drawn between AN12 and AN13 and a second cloud label

“MPLS” is drawn between AN13 and AN14 (the figure is annotated by coloring each cloud yellow). Admission managers (“AM”) 30, 31 are shown as communicating with connection managers (“CM”) 32, 33, 34 and endpoints 10, 11. One administrative server (“admin server”) 35 is shown as communicating with the administrative managers AM 30, 31 and nodes AN12, 13, 14. COPS and SIP++ are messaging protocols used to communicate between the admission managers, administrative server, and connection managers. Ex. 1006, 5:15–25.

Petitioner identifies Gibson’s Admission Managers 30, 31 as bandwidth brokers, a contention Patent Owner does not dispute. *See supra*, pages 40–42. Petitioner cites Gibson at column 8, line 55 to column 9, line 10, for disclosing that “Admission Manager [30] . . . issues a Request for a new route between two Abstract Nodes 12, 13,” which is responded to by Administrative Server 35. Pet. 65. The same passage cited by Petitioner further discloses that the “first abstract node 12 then registers the requested new path and its characteristics with its Connection Manager [CM] 32.” Ex. 1006, 8:66–67. Citing the Houh Declaration, Petitioner identifies administrative server 35 together with one or more connection managers 32, 33, 34 as corresponding to the claimed “*at least one intra-domain*” broker because they operate in the single domain. Pet. 57 (citing Ex. 1003, ¶ 263); *supra*, pages 40–42.

Patent Owner argues that each of the clouds shown in Gibson’s Figure 1 represents a different domain and therefore, the connection managers CM act in combination with the Administrative Server *across* domains and not *intra-domain* as the claim requires. Prelim. Resp. 9.

Patent’s Owner’s argument is not supported by persuasive evidence in the record currently before us.

Petitioner indicates that Figure 1 of Gibson depicts a single network communication domain. *See* annotated Figure 1, reproduced above, showing a box labeled “intra-domain” around Administrative Server 35 and Connection Managers CM32, CM33, and CM34. *See supra* at page 48. In other words, the Administrative Server 35 and CM32, CM33, and CM34 are characterized by Petitioner as an intra-domain broker and therefore execute their actions in a single domain.

Furthermore, in explaining Figure 1, Petitioner cites Gibson’s statement that although administrative server 35 is “pictured as a single entity in FIG. 1, an administrative server 35 may take the form of multiple servers that administer their *local area*.” Pet. 59 (citing Ex. 1006, 8:22–24 (emphasis added)). Consistently, the Houh Declaration refers to clouds 15 and 16 as “local areas.” Ex. 1003 ¶ 72. Based on this evidence, it is reasonable to conclude that the *local areas* represented by the clouds are part of the same domain and thus operate in the same domain.

In contrast, Patent Owner does not identify any disclosure in Gibson, or other evidence in the current record, to establish that administrative server 35 and connection manager 32 perform their functions *across* domains, rather than across *local areas* within the same domain. Patent Owner asserts that the clouds shown in Figure 1 represent different domains, but Patent Owner has not provided evidence that the administrative server and connection manager of Gibson operate across different domains. On this point, we direct attention to Petitioner’s evidence that Gibson discloses having a server administer local areas and Houh declaration testimony that MPLS clouds 15 and 16 represent local areas of a MPLS network managed by administrative server 35. *See* Ex. 1003, ¶¶ 72, 271, 275, 292. We have

considered Patent Owner's argument and we find Petitioner's argument and evidence to be persuasive on the current evidentiary record.

Next, Patent Owner contends that we should deny institution because Petitioner's "mapping only identifies one alleged intra-domain broker (IDB)," while the claim requires at least two. Prelim. Resp. 9. Patent Owner's contention is based on its interpretation of claim 1 to require at least two intra-domain bandwidth brokers. For the reasons below, on the current record, we find Patent Owner's contention unavailing.

We begin with the language of the claim.

Claim 1 recites in limitation [1.2] that "ii) BB_A [of domain A] establishes the different domains involved to reach the destination network (DST)." The recitation of "different domains" indicates that there is more than one "involved" domain to reach the destination. The claim further recites in limitation [1.3] that iii) "BB_A directly or indirectly passes requests to all Bandwidth Brokers (BB) of the involved domains." The functions of "each involved bandwidth broker" are recited in limitation [1.4] "iv)" and limitation [1.5.1] "v)" of claim 1. The claim further recites that, in step iv, "passing resource requests from the Bandwidth Broker (BB) to at least one intra-domain (IDB)." To the extent this claim language is read to require at least two bandwidth brokers, as asserted by Patent Owner, Petitioner's evidence on the current record supports the obviousness of having more than one IDB, i.e., one IDB for each bandwidth broker in each involved domain,¹⁸ operating in the claimed method.

¹⁸ We do not understand Patent Owner to have challenged whether it would have been obviousness to have more than one IDB in the *same* domain.

First, Petitioner identifies Xiao's disclosure of "multiple ISPs between CN1 and CN2." Pet. 20 (citing Ex.1005, 13); *supra*, pages 24, 28–29, 35. *See also* Schelen-1, *supra*, page 24. Second, as discussed *supra*, page 39–41, Petitioner provided sufficient evidence at this time that it would have been obvious to have a bandwidth broker and intra-domain bandwidth broker in a single MPLS domain. Third, Xiao does not exclude more than one MPLS from being used in the communication network. *See* Ex. 1003, ¶ 130 ("[I]t would have been obvious to a POSITA to implement multiple ISPs in the communications network of Figure 4, including ISPs that support different QoS protocols such as DiffServ and MPLS, since Xiao itself suggests this modification 'to provide QoS.' Ex.1005, 14."). When multiple MPLS domains are present, each would have a bandwidth broker and intra-domain bandwidth broker.

All of Petitioner's analysis with regard to the IDB of Gibson is generic to any MPLS domain in the communication network and to the advantages the IDB provides. Pet. 60. Patent Owner's arguments in the Preliminary Response that Petitioner identified only one IDB, fails to address Petitioner's evidence that Xiao teaches multiple domains and that multiple MPLS domains would mean a bandwidth broker and intra-domain bandwidth broker for each domain.

Patent Owner's argument that Petitioner's "mapping" identifies only one IDB appears to be based on Petitioner's annotation of Figure 1 of Gibson with the label "'at least one intra-domain (1DB)'" pointing to a dashed lined box around multiple CMs and a single administrative server. Prelim. Resp. 9. But this ignores Petitioner's discussion of multiple domains in Xiao's communication network, as explained above. Patent Owner's arguments at this time do not fully address Petitioner's arguments on pages

56–63 of the Petition that discuss limitation “[1.6.2] passing resource requests from the Bandwidth Broker (BB) to at least one intra-domain [broker] (1DB).”

Patent Owner further argues that Petitioner “does not explain how one of ordinary skill in the art would have modified Gibson so that ‘each’ alleged IDB (Gibson’s administrative server 35 in combination with connection managers (CMs) 32) would communicate with a Bandwidth Broker.” Prelim. Resp. 11.

Petitioner relies on Gibson’s teaching of an admission manager, which Petitioner identifies as a bandwidth broker, passing resource requests to the administrative server and connection manager. Pet. 61–62 (citing Ex. 1003 ¶¶ 274–277, 278 (“it would have been obvious to a POSITA for the admission manager,” when there are multiple CMs and an administrative server, “to pass a plurality of requests to set up a plurality of new LSP routes when sustaining a plurality of separate communications sessions”), 279–280). Patent Owner has not provided any reasoning or factual evidence in the present record why having more than one IDB would change how each IDB interacts with the admission manager, nor has Patent Owner identified a defect in Declarant Houh’s facts or reasoning. Consequently, we have no basis in the current record to doubt that Gibson’s configuration of a single administrative server with multiple CMs would operate any differently when multiple administrative servers, each with its own CM, are communicating with an admission manager.

Patent Owner’s argument about Xiao “lacking the sophistication of the invention described in the ’698 Patent” does not identify a deficiency in what is *claimed* in the ’698 patent or what is missing from the combination

of Xiao, Schelen-1, and Gibson with respect to the *claimed* invention, e.g., as recited in claim 1. *See* Prelim. Resp. 5.

Patent Owner argues that the Administrative Server of Gibson “is only described in the context of MPLS networks and cannot provide visibility into network paths that span domains as set forth in the ’698 Patent.” Prelim Resp. 5.

On the current record, this argument is unavailing.

Patent Owner has not identified a claim limitation that requires the recited intra-domain broker to provide “visibility” into networks that “span domains.” We further note that Patent Owner later argues that “Gibson’s administrative server 35/CMs 32 . . . is across/between domains (*inter* domain),” which appears to be inconsistent with the argument that Gibson cannot provide visibility across (*inter*) domains. Prelim. Resp. 9.

We find Petitioner has sufficiently shown, on the present record and for the purposes of institution, that a person of ordinary skill in the art would have had a reason to combine the teachings of Xiao, Schelen-1, and Gibson, and that the combined teachings of these references disclose every limitation of claim 1. Therefore, Petitioner has demonstrated at least a reasonable likelihood of showing that claim 1 is unpatentable over Xiao, Schelen-1, and Gibson.

4. *Dependent claims 2–5, 7, and 8*

Petitioner asserts that dependent claims 2–5, 7, and 8 are unpatentable under 35 U.S.C. § 103 as obvious over Xiao, Schelen-1, and Gibson. Pet. 71–76. We have reviewed Petitioner’s arguments and evidence and we find them to be persuasive. Patent Owner’s Preliminary Response does not separately address these dependent claims. *See* Prelim. Resp. 8–11.

Based on the evidence in this present record, we are persuaded that Petitioner has shown sufficiently for purposes of this Decision that the combination of Xiao, Schelen-1, and Gibson teaches or suggests all of the limitations recited in claims 2–5, 7 and 8, and has articulated sufficient reasoning to combine these references. Therefore, Petitioner has demonstrated a reasonable likelihood of showing that these claims are unpatentable over Xiao, Schelen-1, and Gibson.

G. Ground 2 based on Xiao, Schelen-1, Gibson, and Schelen-2

Petitioner asserts that dependent claims 4–8 are unpatentable under 35 U.S.C. § 103 as obvious over Xiao, Schelen-1, Gibson, and Schelen-2 Pet. 76–82. We have reviewed Petitioner’s arguments and evidence and we find them to be persuasive. Patent Owner’s Preliminary Response does not separately address these dependent claims. *See* Prelim. Resp. 8–11.

Based on the evidence in this present record, we are persuaded that Petitioner has shown sufficiently for purposes of this Decision that the combination of Xiao, Schelen-1, Gibson, and Schelen-2 teaches or suggests all of the limitations recited in claims 4–8, and has articulated sufficient reasoning to combine these references. Therefore, Petitioner has demonstrated a reasonable likelihood of showing that these claims are unpatentable over Xiao, Schelen-1, Gibson, and Schelen-2.

H. Compelling merits

“Compelling, meritorious challenges are those in which the evidence, if unrebutted in trial, would plainly lead to a conclusion that one or more claims are unpatentable by a preponderance of the evidence.” *Fintiv* Memo, 4. We determine that on this record, Petition’s obviousness challenge of claim 1 meets this standard. As set forth in the previous sections, Petitioner demonstrates at this stage that the combination of Xiao, Schelen-1, and

Gibson clearly teaches all elements of claim 1. If unrebutted at trial, we would conclude by a preponderance of the evidence that at least claim 1 is obvious based on Xiao, Schelen-1, and Gibson.

On the current record, Patent Owner has not identified sufficient evidence that would tip the balance of evidence in a different direction. Patent Owner's arguments are directed only to limitations [1.6.2], [1.7.1], and [1.7.2] of claim 1. None of these arguments at this time provide sufficient evidence that Petitioner's factual basis for the patentability challenge would not succeed under the preponderance of evidence standard imposed at trial absent additional supporting evidence.

For example, under Patent Owner's claim construction that claim 1 requires an IDB in each of the two involved domains required by the claim, there is sufficient evidence that, when two MPLS domains are part of the claimed communication network, each would have its own IDB. Patent Owner's arguments are not persuasive at this stage because they do not fully address the disclosure in Xiao of multiple ISP domains, including ISPs that are MLS domains.

In addition, Patent Owner's argument that Gibson's administrative server and connection manager lack the functionality to perform as an intra-domain bandwidth broker in a single domain is not supported by Gibson's disclosure or other evidence provided at this stage.

In sum, we determine that Petitioner's challenge to claim 1 meets the "compelling merits" standard as set forth in the *Fintiv* Memo. For this reason, we decline to exercise our discretion to deny institution under Section 314 (a). *See Fintiv* Memo, 2 ("[T]he PTAB will not rely on the *Fintiv* factors to discretionarily deny institution in view of parallel district

court litigation where a petition presents compelling evidence of unpatentability.”).

CONCLUSION

We determine that Petitioner establishes at least a reasonable likelihood that it would prevail in showing that at least one of claims 1–9 of the ’698 patent is unpatentable. We further determine not to discretionarily deny the Petition. Accordingly, we institute an *inter partes* review of all challenged claims on all grounds asserted against those claims in the Petition. At this juncture in the proceeding, we have not made a final determination with respect to the patentability of the challenged claims, or with respect to claim construction.

III. ORDER

It is

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–9 of the ’698 patent is instituted commencing on the entry date of this Decision; 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 trial. The trial will commence on the entry date of this Decision.

IPR2023-00607
Patent 7,190,698 B2

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