

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ZOHO CORPORATION and
ZOHO CORPORATION PVT., LTD.
Petitioner,

v.

MEETRIX IP, LLC,
Patent Owner.

Case IPR2023-00382
U.S. Patent No. 9,843,612
(Claims 19-29)

PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 9,843,612

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1005	File History of Application No. 14/984,709 (the ’709 application)
1006	U.S. Patent No. 7,180,997 (“Knappe”)
1007	U.S. Patent No. 6,690,654 (“Elliott”)
1008	U.S. Patent No. 7,089,285 (“Drell”)
1010	Guichard <i>et al.</i> , “MPLS and VPN Architectures, A practical guide to understanding, designing and deploying MPLS and MPLS-enabled VPNs,” Cisco Press, 2001 (“VPN Textbook”)
1011	Declaration of Ingrid Hsieh-Yee, Ph.D., under 37 C.F.R. § 1.68
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1017	T.120 Standard (1996)
1018	U.S. Patent No. 6,237,025
1019	U.S. Patent No. 6,782,413
1020	U.S. Patent No. 6,980,526

Ex.	Description
1021	Caputo, “Cisco Packetized Voice & Data Integration,” McGraw-Hill, 2000
1022	De Moraes <i>et al.</i> , “The Internet Multicast from ITS: How it was Done and Implications for the Future,” IEEE Communications Magazine, January 1995
1023	U.S. Patent Publication No. 2004/0261116 A1
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1025	U.S. Patent No. 6,553,515
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I. INTRODUCTION

Zoho Corporation and Zoho Corporation Pvt., Ltd. (“Petitioner”) respectfully requests *inter partes* review (“IPR”) under 35 U.S.C. §§ 311, 312, 314(a), and 37 C.F.R. § 42.100, for claims 19-29 (“Challenged Claims”) of U.S. Patent No. 9,843,612, titled “Voice Conference Call Using PSTN and Internet Networks” (“’612 patent,” Ex_1001). Meetrix IP, LLC (“Patent Owner”) is the patent owner of record. Ex_1002 (conveying the ’612 patent family to Meetrix).

The ’612 patent is directed to “computer system architectures and more particularly to audio and video telecommunications for collaboration over hybrid networks.” Ex_1001, 1:21-23. The hybrid network includes a Public Switched Telephone Network (PSTN) and the Internet. *Id.*, 5:10-21, FIG. 3. As described below and in the Declaration of Dr. Henry H. Houh (Ex_1003), these concepts were well-known by the claimed priority date for the ’612 patent. The primary reference (“Knappe,” Ex_1006) describes a multiparty conferencing system, and teaches receiving and mixing audio data from multiple participants, including a moderator and PSTN telephone. Ex_1006, 1:8-27, 3:41-47, 4:18-28, 6:62-67, 8:52-57. Other claimed concepts, such as using virtual private network (VPN) tunneling and voice over IP (VoIP) for conferencing communications, were also well known in the prior art. The combination of these prior art teachings would

have been obvious to one of ordinary skill in the art, and thus the claims of the '612 patent are invalid.

II. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8(A)(1) AND (B)

A. Real Party-In-Interest Under 37 C.F.R. § 42.8(b)(1)

The real parties-in-interest are Zoho Corporation and Zoho Corporation Pvt., Ltd.

B. Lead and Back-Up Counsel and Service Information Under 37 C.F.R. § 42.8(b)(3) and (b)(4)

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Petitioner consents to electronic service by delivering the documents to the email addresses of primary and backup counsel. A Power of Attorney is being filed concurrently under 37 C.F.R. § 41.10(b).

C. Related matters Per 37 C.F.R. § 42.8(b)(2)

To the best of Petitioner's knowledge, the '612 patent is involved in the following pending district court cases:

Case Name	Case Number	Court	Date Filed
<i>Meetrix IP, LLC v. Zoho Corporation</i>	6:21-cv-01288	W.D. Tex.	12/10/21
<i>Meetrix IP, LLC v. Verizon Comms., Inc.</i>	6:21-cv-01289	W.D. Tex.	12/10/21

III. PAYMENT OF FEES – 37 C.F.R. § 42.103

Petitioner pays the fee for this petition as required by 37 C.F.R. § 42.15(a) contemporaneously with the filing of this petition.

IV. GROUND FOR STANDING UNDER 37 C.F.R. § 42.104(A)

Petitioner certifies under 37 C.F.R. § 42.104(a) that the '612 patent is available for IPR and that Petitioner is not barred or estopped from requesting an IPR challenging the validity of the challenged claims on the identified grounds. Petitioner has not filed a civil action challenging the validity of any claim of the '612 patent.

V. CHALLENGE UNDER 37 C.F.R. § 42.104(B) AND RELIEF REQUESTED

Petitioner requests IPR and cancellation of claims 19-29 of the '612 patent under pre-AIA 35 U.S.C. § 103. Pursuant to 37 C.F.R. § 42.6(c), copies of the Exhibits are filed herewith.

Under 37 C.F.R. §§ 42.104(b)(1) and (2), these grounds are offered as reasons for cancelling claims 19-29 of the '612 patent:

Ground	Claims	Statutory Basis	Reference(s)
1	19-21 and 25-27	§ 103	Knappe, Elliott, VPN Textbook, and Hendricks
2	22-24 and 28-29	§ 103	Knappe, Elliott, VPN Textbook, Hendricks, and Drell

U.S. Patent No. 7,180,997 to Knappe (“Knappe” – Ex_1006) was filed on September 6, 2022.

U.S. Patent No. 6,690,654 to Elliott, *et al.* (“Elliott” – Ex_1007) was filed on October 1, 1998.

U.S. Patent No. 7,089,285 to Drell (“Drell” – Ex_1008) was filed on October 5, 2000.

International Publication Number WO 01/18665 to Hendricks, *et al.* (“Henricks” – Ex_1040) was filed on September 8, 2000 and published March 15, 2001.

“MPLS and VPN Architectures,” (“VPN Textbook” – Ex_1010) by Guichard *et al.*, was published in 2000. *See* Declaration of Ingrid Hsieh-Yee, Ex_1011), ¶¶16, 23, 95-111.

Drell, Knappe, and Elliott are prior art under 35 U.S.C. § 102(e). The VPN Textbook and Hendricks are prior art under 35 U.S.C. § 102(b).

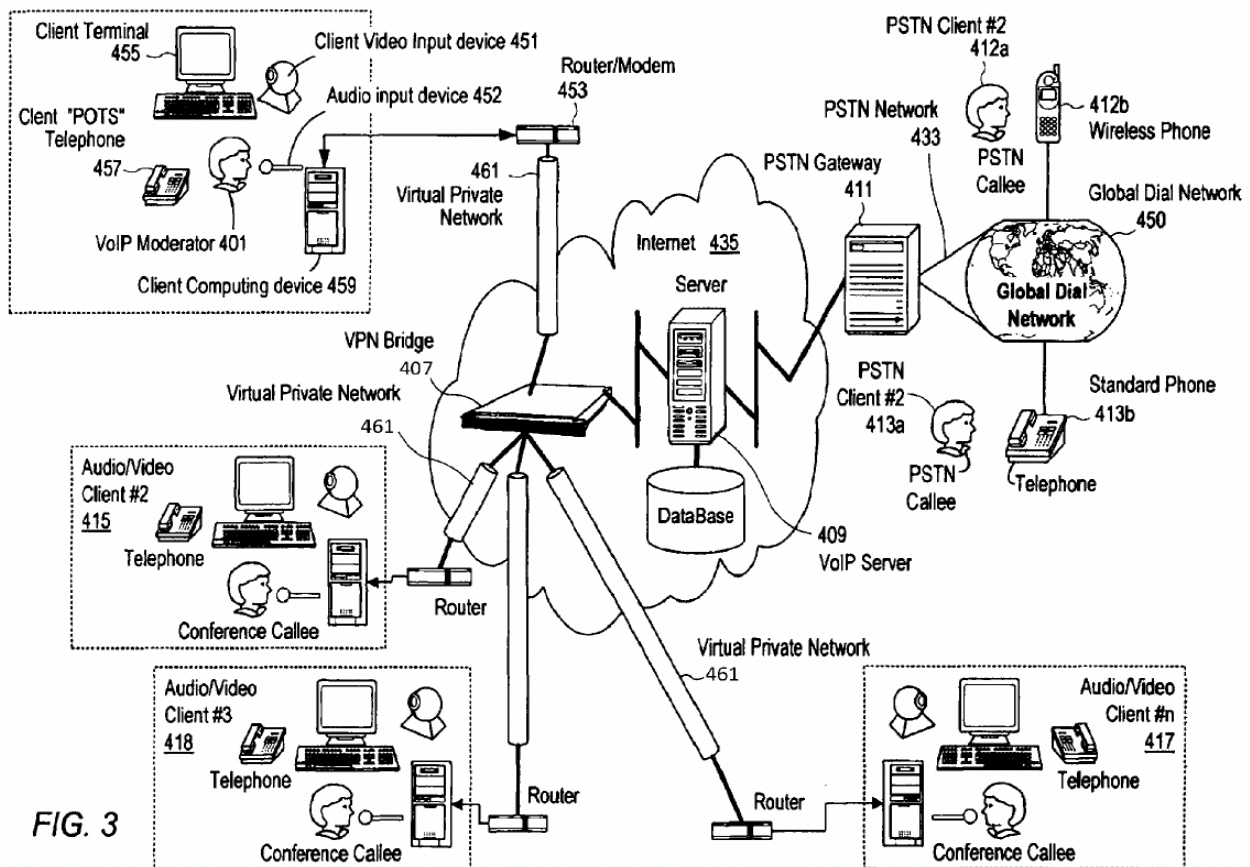
VI. OVERVIEW OF THE '612 PATENT

The '612 patent issued as a continuation of a string of applications, the first of which was a provisional application filed March 10, 2003. Ex_1001.

A. The Specification

The '612 patent relates “to computer system architectures and more particularly to audio and video telecommunications for collaboration over hybrid networks.” Ex_1001, 1:21-23.

The '612 patent describes a hybrid system that includes an Internet network 435 and a Public Switched Telephone Network (PSTN) network 433:



Id., FIG. 3.

Specifically, Figure 3 depicts Internet-based clients, including moderator 401, and audio video clients 415, 417, and 418 “connected through routers or modems 453 preferably in a virtual private network configuration 461” with “the VPN bridge 407” located in the center of a “star topology,” with connections to the VPN bridge serving as a “VPN tunnel.” Ex_1001, 5:1-13, 5:22-25, 5:45-48, FIGS. 4-5; Ex_1003 ¶¶50-51. The PSTN network includes “telephony clients using standard wired 413 or wireless telephone 412 systems,” with these PSTN clients connected to the Internet-based clients via PSTN gateway 411. Ex_1001, 5:14-15, 5:42-51, 6:40-62; Ex_1003 ¶52.

The specification also discloses performing encoding and decoding of audio data using codecs of the prior art H.323 standard and the transmission of collaboration data per the prior art T.120 standard. Ex_1001, 2:63-3:1, 3:17-22, FIG. 2; Ex_1003 ¶53.

B. The Challenged Claims.

Claims 19-29 are the Challenged Claims. Claims 19 and 25 are the independent claims. Claim 19 is a method claim, while claim 25 is the corresponding system configured to perform the method of claim 19. Ex_1003 ¶55. Claim 19 is directed to a method (and claim 25 is directed to an apparatus) for conducting a secure multi-participant conference call including full duplex audio, comprising receiving audio data, video data, and collaboration data from

remote clients and audio data from PSTN clients, mixing the received data, and transmitting the mixed data to conference participants. Ex_1001, 11:22-47; 12:13-38. The dependent claims recite additional requirements of receiving additional data, use of a cellular phone, and compressing/decompressing data. *Id.*, 11:48-12:12, 12:39-49.

C. Level of Ordinary Skill in the Art

The subject matter of the '612 patent generally relates to the technical field of audio/video conferencing systems. A Person of Ordinary Skill in the Art ("POSITA") in March 2003 would have had a working knowledge of the conferencing art. Ex_1003, ¶27. A POSITA would have had a bachelor's degree in computer science, computer engineering, or an equivalent, and three or more years of professional experience relating to conferencing systems in packet-based networks, or without said professional experience, further education relating to conferencing systems in packet-based networks. *Id.* ¶¶24-27.

D. Claim Construction

During IPR claims are construed according to the "*Phillips* standard," as set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*). *See* 83 Fed. Reg. 51341 (October 11, 2018). Petitioner believes that, for purposes of this proceeding, no claim term requires express construction for the Board to evaluate

the patentability of the claims.¹ *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.2d 795, 803 (Fed. Cir. 1999). Accordingly, this Petition analyzes the claims consistent with their ordinary and customary meaning as would be understood by a POSITA in light of the specification. *Phillips*, 415 F.3d at 1314-17; Ex_1003 ¶57.

E. The '612 Patent Priority Date

The '612 patent issued from U.S. Patent Application No. 14/984,709 (the '709 application), filed December 30, 2015. Ex_1001, 1. The '709 application is a continuation of a series of applications that claim the benefit of U.S. Provisional Patent Application No. 60/453,307, filed March 10, 2003. *Id.*, 1-2. For this Petition, Petitioner relies on March 10, 2003 as the priority date for the Challenged Claims.

VII. THE BOARD'S DISCRETION UNDER 35 U.S.C. § 314(A) SHOULD NOT PRECLUDE INSTITUTION

On June 21, 2022, the Director of the USPTO issued a memorandum setting forth interim procedures for determining institution of IPRs in view of the factors set forth in *Apple Inc. v. Fintiv, Inc.* See https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary

¹ Petitioner reserves its rights to: (1) respond to assertions by Patent Owner that any claim term requires construction for the purposes of this IPR proceeding; and (2) seek construction of any claim term in other forums as appropriate.

(“Memorandum”). The Memorandum clarified (1) that the PTAB will not rely on the *Fintiv* factors to discretionarily deny institution where a petition presents compelling evidence of patentability, and (2) consistent with *Sotera Wireless*, the PTAB will not discretionarily deny institution where a petitioner presents a stipulation not to pursue in a parallel proceeding the same grounds or any grounds that could have been raised before the PTAB. In light of both these factors, the Board should not exercise its discretion to deny institution here.

First, this Petition presents compelling evidence of unpatentability. As set forth below in this Petition and in the accompany declaration of Dr. Houh (Ex_1003), the subject matter of the ’612 patent relates to well-known concepts of multi-party conferencing between participants in hybrid Internet and PSTN networks. By the ’612 patent’s claimed priority date, there were many available multi-party conferencing systems and a POSITA was well aware of how to use known communications technologies such as audio mixing, audio codecs, VPN tunneling, and IP packets to communicate conferencing data across the hybrid networks. *See e.g.* Ex_1003 ¶¶58-110. Thus, this is not a case in which Petitioner barely meets the IPR standards with obscure technical references. Here, there is compelling evidence that the claims of the ’612 patent merely recite well-established multi-party conferencing technology.

Second, upon the filing of this Petition, Petitioner intends to file in the district court litigation a request for pre-institution stay of proceedings with a stipulation that, if the IPR is instituted, Petition will not rely on any grounds that is raised or could have been in this Petition.

Finally, the remaining *Fintiv* factors weigh against denial:

Fintiv factor 1, likelihood of a stay. As noted, Petition is seeking a pre-institution stay and if needed, will renew the request for a stay upon institution. Even if Patent Owner suggests that district court litigation may not be stayed, the Board “will not attempt to predict how the district court in the related district court litigation will proceed because the court may determine whether or not to stay any individual case, including the related one, based on a variety of circumstances and facts beyond [its] control and to which the Board is not privy.” *Sand Revolution II, LLC v. Continental Intermodal Group-Trucking LLC*, IPR2019-01393, Paper 24, 7 (June 16, 2020) (Informative); *see Intel Corp. v. VLSI Tech. LLC*, IPR2020-00158, Paper 16, *7 (May 20, 2020).

Fintiv factor 2, trial date proximity to Final Written Decision. No trial date has been set in the district court litigation. The district court litigation is still in the early stages, having been transferred between divisions in the W.D. Texas and stayed for several months pending re-assignment. Given the parties have yet to initiate discovery or conduct claim construction, it is likely a Final

Written Decision would issue far in advance of any potential trial date in the district court litigation, particularly as Petitioner will be seeking a stay.

Fintiv factors 3 and 4, investment in the parallel proceedings and overlap in issues. As of the filing this Petition, the district court remains in the early stages. Although the case was originally filed in December 2021, early procedural motions and an intra-district transfer and stay of the case means that there has been no fact discovery, no substantive motions, and no claim construction proceedings. In short, no substantive action has been taken in the district court and very little court and party investment has been made in that proceeding. *Sand Revolution*, IPR2019-01393, Paper 24 at 10-11 (two-page *Markman* Order did not demonstrate high level of investment of time and resources).

Critically, the invalidity grounds, arguments, and evidence presented in this Petition will be different than those presented in the district court. As noted above, Petitioner will stipulate in the Litigation that if the Board institutes IPR, it will not pursue invalidity on the same grounds at issue in this Petition or any grounds that could have been raised in this Petition. This mitigates concerns of duplicated efforts and conflicting decisions. *See Sotera Wireless, Inc. v. Masimo Corp.* , IPR2020-01019, Paper 12 (PTAB Dec 1, 2020); *see also VMware, Inc. v. Intellectual Ventures I LLC*, IPR2020-00470, Paper 13 at 20 (PTAB Aug. 18, 2020) (finding

similar stipulation “mitigates any concerns of duplicative efforts between the district court and the Board, as well as concerns of potentially conflicting decisions”). As such, these factors weigh against discretionary denial.

VIII. IDENTIFICATION OF WHERE EACH ELEMENT OF EACH CLAIM IS FOUND IN THE PRIOR ART

Petitioner respectfully requests cancellation of claims 19-29 of the '612 patent.

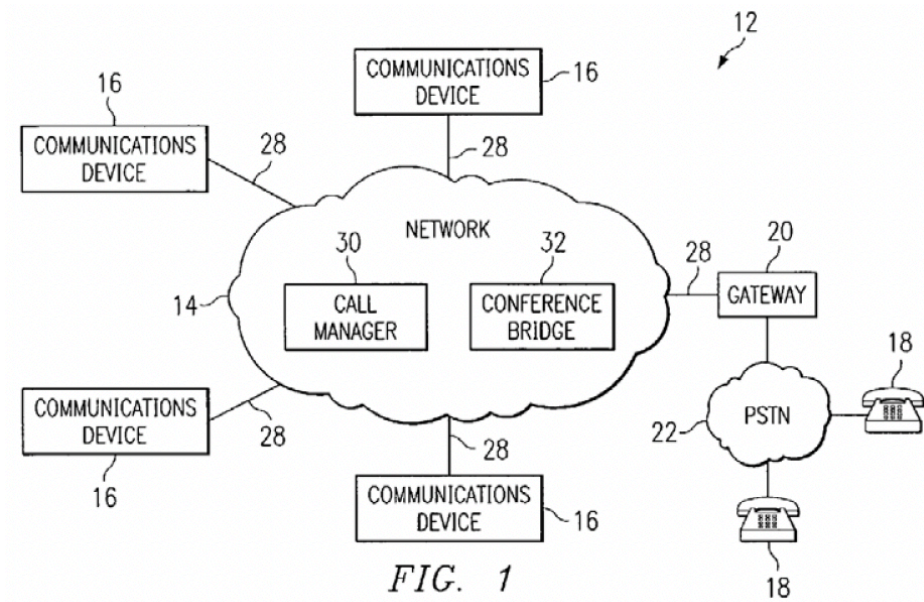
A. Ground 1: Claims 19-21 and 25-27 Are Obvious Over Knappe in Combination with Elliott, the VPN Textbook, and Hendricks

1. The Prior Art

a) Summary of Knappe

Like the '612 patent, Knappe discloses a multiparty conferencing system over a hybrid network “connecting a plurality of communication devices 16 to each other and to standard analog telephones 18 through a gateway 20 and the public switched telephone network.” Ex_1006, 3:41-45; Ex_1003 ¶122; *see also id.* ¶334.

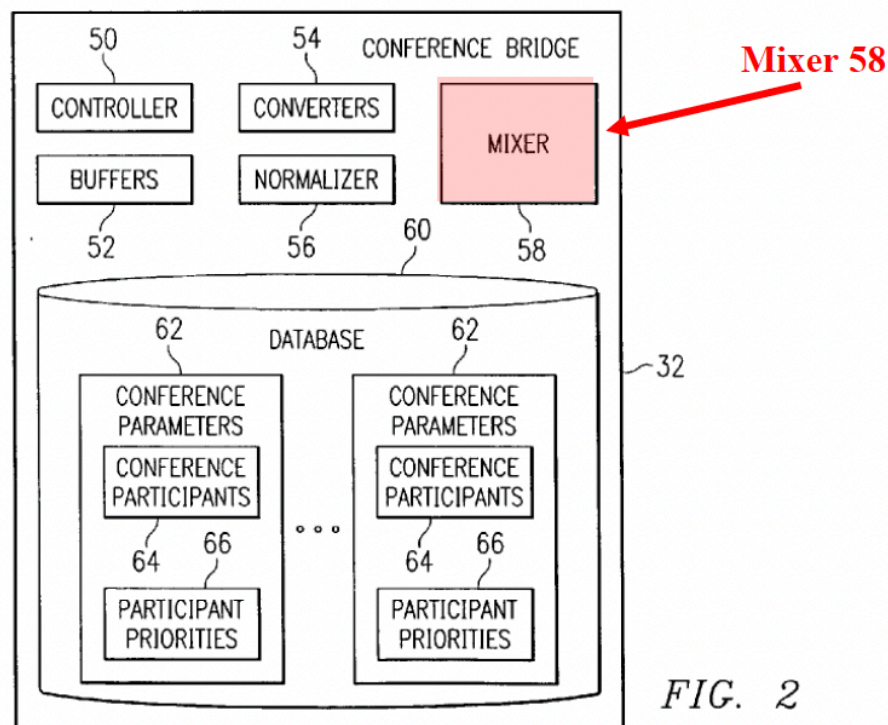
Figure 1 of Knappe illustrates the conferencing system, showing multiple conference endpoints, including communication devices 16 and standard analog PSTN telephones 18:



Ex_1006, FIG. 1; Ex_1003 ¶123; *see also id.* ¶¶124-126. Knappe explains that “communication devices 16 comprise IP or other digital telephones, personal and other suitable computers or computing devices, personal digital assistants (PDAs), cell or other mobile telephones or handset or any other device or set of devices such as the telephone 18 and gateway 20 combination capable of communicating real- time audio, video and/or other information over the network 14.” Ex_1006, 3:62-4:1.

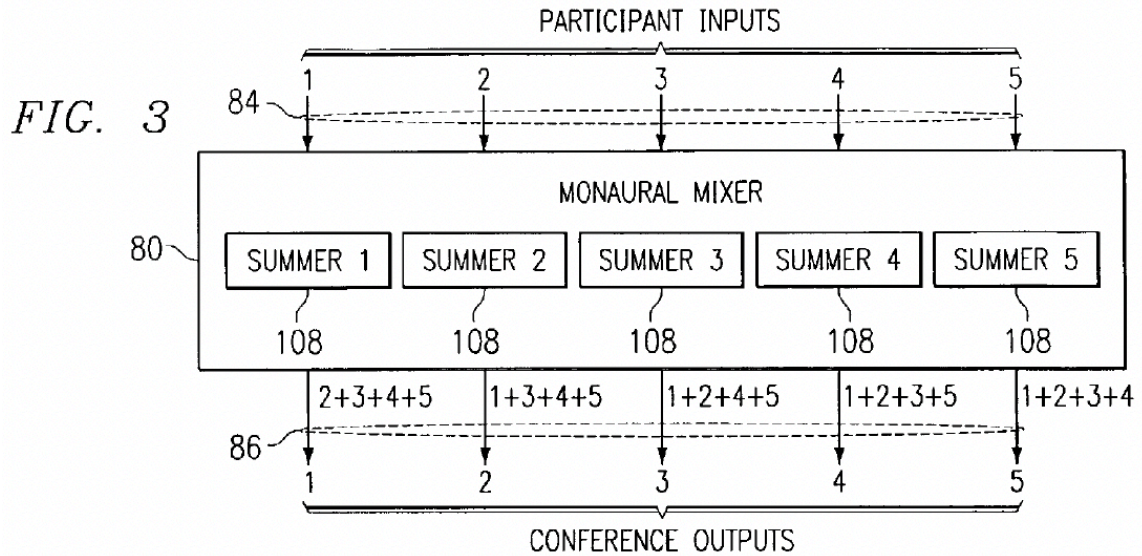
Knappe’s “participants are connected and stream media through the conference bridge 32,” which provides conference call and other suitable audio, video, and/or real-time multi-party communication sessions[.]” Ex_1006, 5:32-33, 4:58-60; Ex_1003 ¶127. Knappe’s conference bridge 32 employs mixer 58, which “includes a plurality of summers or other suitable signal processing resources each

operable to sum, add or otherwise combine a plurality of input.” Ex_1006, 6:33-37.



Id., FIG. 2 (annotated); Ex_1003 ¶128.

Knappe’s FIG. 3 shows an example of a mixer that “combines the streams in summers 82 to generate conference output streams 86 for each participant to a conference call”:



Ex_1006, FIG. 3; 6:59-62; Ex_1003 ¶¶128-131.

b) Summary of Elliott

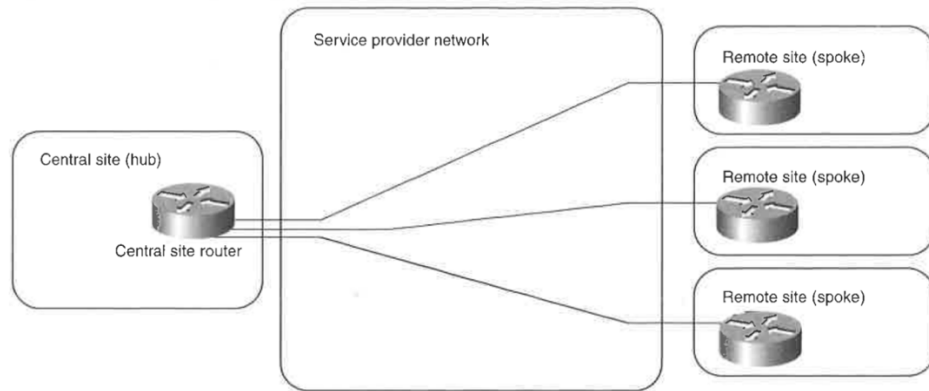
Elliott teaches conferencing features such as “collaborative Web browsing, audio conferencing, video conferencing, and application sharing.” Ex_1007, 1:40-44. Elliott employs a “virtual private network (VPN)” and “IP-tunneling” for the conference transmissions. *Id.*, 2:66-3:1, 4:29-34, 6:53-54; Ex. 1003, ¶¶132-133; *see also id.* ¶335.

c) Summary of the VPN Textbook

The VPN Textbook describes well-known topologies for implementing VPNs. Ex_1003 ¶337. Specifically, the VPN Textbook describes that “[t]he most commonly encountered topology is a hub- and-spoke topology, where a number of remote offices (spokes) are connected to a central site (hub).” Ex_1010 at 129.

The “hub-and-spoke” topology, also referred to as a “star” topology” is shown below:

Figure 7-10 *Hub-and-spoke Topology*



Id at 130l; *see also* Ex_1027 at 438; Ex_1003 ¶¶337-339. According to the VPN Textbook, even where an implementation may “benefit from a different topology” “the hub-and-spoke topology [is chosen] for cost or complexity reasons.” Ex_1010 at 129; Ex_1003 ¶339.

d) Summary of Hendricks

Hendricks discloses “multi-party call...utilizing only one or a combination of several types of media (e.g., voice only or voice plus video and/or other media such as data, programs, etc.)” that communicate using “full duplex.” Ex_1040, 3:4-10; Ex_1003 ¶340. Hendricks uses a “conferencing central node” to support users “participating in a conference call,” including the “transmissions of video, audio and possibly other media.” *Id.*, 27:12-18. Like Knappe, Hendricks also

discloses that the network can be a “[h]ybrid... [of] the PSTN, and other networks, such as the Internet.” *Id.*, 23:13-14, Fig. 7; Ex_1003 ¶¶134-135, 340-341.

2. Reasons to Combine Prior Art

a) Reasons to Combine Knappe and Elliott

A POSITA would have been motivated to combine the teachings of Knappe and Elliott to produce, among other benefits, the obvious, beneficial, and predictable results of using different types of collaboration data and VPN tunneling within Knappe’s conferencing system. Ex_1003 ¶342.

A POSITA, when considering the teachings of Knappe, also would have considered the teachings of Elliott since they are analogous and pertain to multiparty conferencing. Ex_1006, Abstract, 3:26-29; Ex_1007, Abstract; Ex_1003 ¶343. Also, both Knappe and Elliott support conferencing across a hybrid network, with computer and PSTN telephone conference participants. *See, e.g.*, Ex_1006, 3:41-49, FIG. 1; Ex_1007, 5:35-39, 6:1-11, 8:16-39, FIG. 1; Ex_1003 ¶343.

A predictable and beneficial result of combining Knappe and Elliott includes the sharing of collaboration data in a multiparty conference. Ex_1003, ¶344. As discussed above, Knappe teaches a communications system capable of “transmitting audio, video, voice, data and other suitable types of ... traffic between source and destination endpoints.” Ex_1006, 3:26-29; Ex_1003 ¶345. To

a POSITA, transmitting “data” or other “traffic” would suggest the transmission of various types of data during the conference call to facilitate collaboration.

Ex_1003 ¶345. A POSITA would have recognized that sharing collaboration data in Knappe is desirable since it beneficially provides additional ways to convey information among participants in a multiparty conference. *Id.*

Notably, Elliott evidences this understanding, expressly teaching sharing of “collaborative Web browsing, audio conferencing, video conferencing, and application sharing.” Ex_1007, 1:43-44; Ex_1003 ¶346. And Elliott discloses connecting calls “over the public switched telephone network (PSTN) 30” using “session server 12 ... that follows the ITU T.120 standard” capable of “support[ing] real-time, multi-point data communications,” the server “able to set up to conduct video conferences, audio conferences, and data conferences with application sharing,” as well as “[c]ollaborative Web browsing.” Ex_1007, 5:35-61; Ex_1003 ¶¶346-347

It would have been obvious to a POSITA, in view of Elliott’s teachings, to implement Knappe’s transmission of various types of data as collaboration data, because this type of collaboration data would allow a greater variety of information among the participants, improving the experience and enhancing the effectiveness of collaboration in a variety of contexts. Ex_1003 ¶348. Indeed, other patents and printed publications confirm that it was known at the time that additional

collaboration data improves the conferencing experience. *Id.* ¶349; *see also* Ex_1018, 1:29-39 (“interactive data sharing significantly enhances the effectiveness of collaboration in a variety of contexts”). Indeed, sharing collaborative information such as written or graphic material during a video conference had been known in the conferencing art for over 30 years prior to the priority date of the ’612 patent. Ex_1003 ¶350; *see also e.g.* Ex_1014, Abstract, 17:20-41 (claims 7-11), 18:30-49 (claims 21-24). Accordingly, a POSITA would have recognized that sharing collaboration data (e.g., web browsing data, application data, and data provided by the T.120 standard, as Elliott teaches) would be beneficial to Knappe’s participants. Ex_1003 ¶351.

Such a combination would have simply involved combining prior art elements—collaboration data taught by Elliott with the conferencing system of Knappe— according to known elements to yield predictable results, namely allowing participants in Knappe’s system to share various types of data during a conference for collaboration purposes, including using standard collaboration data that was specifically designed for a multimedia conference in an environment such as that disclosed in Knappe. *Id.* ¶352. Additionally, the combination of Knappe and Elliott is merely the ordinary use of common techniques (transmitting collaboration web browsing data, application sharing data, and collaboration data per the T.120 standard as Elliott teaches) to improve the similar conferencing

system of Knappe in the same way by allowing for enhanced collaboration among participants. *Id.*

Another predictable and beneficial result of combining Knappe and Elliott is the use of a VPN to protect communications between conference participants. *Id.* ¶353. It was known that data transmitted over public IP networks is vulnerable to eavesdropping and other problems. *Id.* ¶354; Ex_1010 at 119 (stating that “more and more business-to-business traffic takes place over the Internet,” which is “riddled with security issues”). Using a VPN was a known solution for securing communications over public networks. Ex_1003 ¶355; Ex_1010 at 115 (“A Virtual Private Network (VPN) ... [provides] connectivity amongst multiple sites ... with the same access or security policies as a private network.”). Thus, it would have been obvious to a POSITA to use VPNs with Knappe’s multiparty conferencing to secure communications over the Internet. Ex_1003 ¶356.

The obviousness of adding a VPN feature to Knappe’s conferencing system is further demonstrated by the work of others making similar feature combinations as evidenced by other prior art patents. Ex_1003 ¶357; *see, e.g.*, Ex_1020, 2:65-3:3, 5:52-55 (disclosing “need for a videoconferencing system ... for delivering secure ... services over an IP network” by using a “VPN ... over public networks ... which is encrypted to make it secure from outside access and interference”); Ex_1019, 2:66-3:1, 4:23-27, 6:36-41 (describing a “conference bridge application”

that transmits data “over public networks, using technologies such as ... [a] Virtual Private Network (VPN”). Therefore, a POSITA would have found it obvious to combine Knappe’s conferencing system with the VPN technology described in Elliott and the VPN Textbook (discussed below). Ex_1003 ¶358.

Specifically, Elliott teaches using a “virtual private network (VPN) ... which uses IP or IP-tunneling” to transmit “voice, fax, data, video” and “[o]ther types of collaboration ... data.” Ex_1007, 2:66-3:1, 4:29-34, 6:53-54; Ex_1003 ¶359. In view of Elliott, it would have been obvious to a POSITA to use VPN tunneling when communicating audio, video, and collaboration data across Knappe’s Internet network 14 to make the transmitted data secure without the need to lease private data lines and to otherwise reduce costs for implanting a private network securely over the Internet. Ex_1003 ¶359; *see* Ex_1020, 5:52-55 (“VPN refers to a network that is carried over public networks, but which is encrypted to make it secure from outside access and interference.”); Ex_1026, 44:10-12 (“[O]ffices [] create virtual private networks (VPNs) to save money on remote access and interoffice connectivity.”).

Indeed, the combination of Knappe and Elliott is merely the ordinary use of the common technique of VPN tunneling of conferencing data, as disclosed in Elliott, in the similar conferencing system of Knappe to yield predictable results, including securing transmitted data and reducing costs associated with leasing

private data lines. Ex_1003 ¶360. Petitioner’s proposed combination permits, but does not require, physical incorporation of elements from Elliott and Knappe. *See In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012); *In re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985) (en banc) (noting that the criterion for obviousness is not whether the references can be combined physically, but whether the claimed invention is rendered obvious by the teachings of the prior art as a whole); Ex_1003 ¶361.

b) Reasons to Combine Knappe and the VPN Textbook

A POSITA would have been motivated to combine the teachings of Knappe and the VPN Textbook to produce the obvious, beneficial, and predictable results of providing hub-and-spoke VPN topology when implementing VPN tunneling in the Knappe and Elliott combination, and to provide a cost effective and streamlined VPN implementation. Ex_1003 ¶362.

As discussed above, Knappe teaches a conferencing system capable of “transmitting audio, video, voice, data and other suitable types of ... traffic between source and destination endpoints,” and Elliott teaches VPN tunneling of conferencing data for a conferencing system like Knappe’s. *Id.* ¶363. A POSITA would have been familiar with conventional VPN tunneling implementations well documented in readily available textbooks, such as the VPN Textbook. *Id.*

A POSITA looking to implement Knappe’s system with VPN tunneling would have looked to the VPN Textbook to consider various topologies, including

the “most commonly encountered topology is a hub-and-spoke topology, where a number of remote offices (spokes) are connected to a central site (hub).” *Id.* ¶364; Ex_1010 at 129; Ex_1027 at 438.

Combining Knappe with the VPN Textbook would merely be a combination of prior art elements (e.g., VPN topology teachings of the VPN Textbook and Knappe’s system) according to known methods to yield predictable results—securing traffic exchanged in Knappe’s conferencing system. Ex_1003 ¶365. As confirmed by Dr. Houh, he “personally researched and purchased VPN hardware routers” for a system that could be used for conferencing “in the 1998-1999 time frame.” *Id.*

A POSITA would have been motivated to combine the teachings of Knappe, as modified by Elliott, with the teachings of the VPN Textbook for cost and complexity savings. *Id.* ¶367; Ex_1010 at 129 (noting the choice of “the hub-and-spoke topology for cost or complexity reasons”). In addition, a POSITA would have been able to predict the result of combining a hub-and-spoke VPN topology, as described in the VPN Textbook, in Knappe’s system, for example, as modified by Elliott (as described above), to communicate data between conferencing participants (e.g., remote clients) over secure VPN tunnels. *Id.* ¶366. The hub-and-spoke topology was conventional and known to be applied in the conferencing context. *Id.* ¶368. Modifying Knappe to accommodate teachings of the VPN

Textbook would have been well within the level of ordinary skill in the art, as demonstrated by the numerous examples of systems, patents, and printed publications combining conferencing and VPN technologies. *Id.* ¶369. Again, as noted by Dr. Houh, he “personally configured, deployed, and used VPN technology for carrying VoIP traffic using the NBX 100 system, capable of performing conference calls, before the earliest claimed priority date of the ’612 patent.” *Id.*

Petitioner’s proposed combination permits, but does not require, physical incorporation of elements from the VPN Textbook into Knappe’s system. *See In re Mouttet*, 686 F.3d at 1322; Ex. 1003 ¶370.

c) Reasons to Combine Knappe and Hendricks

A POSITA would have been motivated to combine the teachings of Knappe with Hendricks, for multiple reasons, including to produce the obvious, beneficial, and predictable results of providing full duplex audio to the conference participants. Ex_1003 ¶371.

A POSITA when considering the teachings of Knappe would have also considered the teachings of Hendricks as they are analogous prior art both pertaining to the field of multiparty conference calling. Ex_1006, Abstract; Ex_1040, 3:4-10 (“...multi-party call...utilizing only one or a combination of several types of media”).

As already noted, Knappe communicates audio data over Internet network 14 and PSTN 22 to multiple conference participants (communications devices 16 and PSTN telephone 18). Ex_1006, 3:40-51, FIG. 1. A POSITA would have known that audio data could be transmitted in two modes; namely, full duplex and half duplex. Ex_1003 ¶373; *see* Ex_1041, 1:20-21 (“Speakerphones may be designed to operate in either half-duplex or full-duplex.”); Ex_1042, 7:17-20 (“[T]he mode can be specified to be full duplex (full participation, speaking and listening) or half duplex (listen only).”).

A POSITA would have recognized that for conferencing applications full duplex is preferred. Ex_1003 ¶374; *e.g.* Ex_1041, 1:28-35 (describing full duplex as eliminating “clipping or choppiness” and providing “much more natural and spontaneous flowing conversation”). Thus, it would have been obvious to a POSITA that full duplex audio would be beneficial to the communication system in Knappe that conducts multiple party conferencing. Ex_1003 ¶374.

Hendricks discloses “multi-party call...utilizing only one or a combination of several types of media (e.g., voice only or voice plus video and/or other media such as data, programs, etc.)” that communicate over PSTN and Internet networks using “full duplex.” Ex_1040, 3:4-10, 23:13-14, Fig. 7; *see also id.*, 17:19-22 (“The network [] provides full duplex interconnectivity”). It would have been obvious for a POSITA to utilize full duplex audio (as Hendricks teaches) in

Knappe's conferencing system because doing so would beneficially (1) reduce clipping or choppiness (2) facilitate natural and spontaneous flowing conversation among the conference participants, and (3) improve audio when more than one person is in a room using the speakerphone for a conference call. Ex_1003 ¶¶375-376.

Each of these benefits separately and together would have motivated a POSITA. *Id.* ¶376. It would have been obvious to try full duplex in Knappe's conferencing system since there are a finite number of identified predictable solutions (full duplex and half duplex) and there would have been a reasonable expectation of success. *Id.*

That the result would have been predictable and that there would have been a reasonable expectation of success is evidenced by that fact that at the time "many speakerphones [were already] designed to operate in full-duplex mode." Ex. 1041, 1:28-33;; Ex_1003 ¶377. Further, other artisans had implemented full duplex systems. *See* Ex_1042, 7:14-20, 7:51-55; Ex_1003 ¶377. Moreover, any modification needed to the teachings of Knappe to accommodate the full duplex teachings of Hendricks, such as utilizing software programing and hardware, would have been within the level of ordinary skill in the art. Ex_1003 ¶377; Ex_104, 12:20-32 ("the above software and hardware configurations [can be] modified to provide for full duplex communications between all the parties").

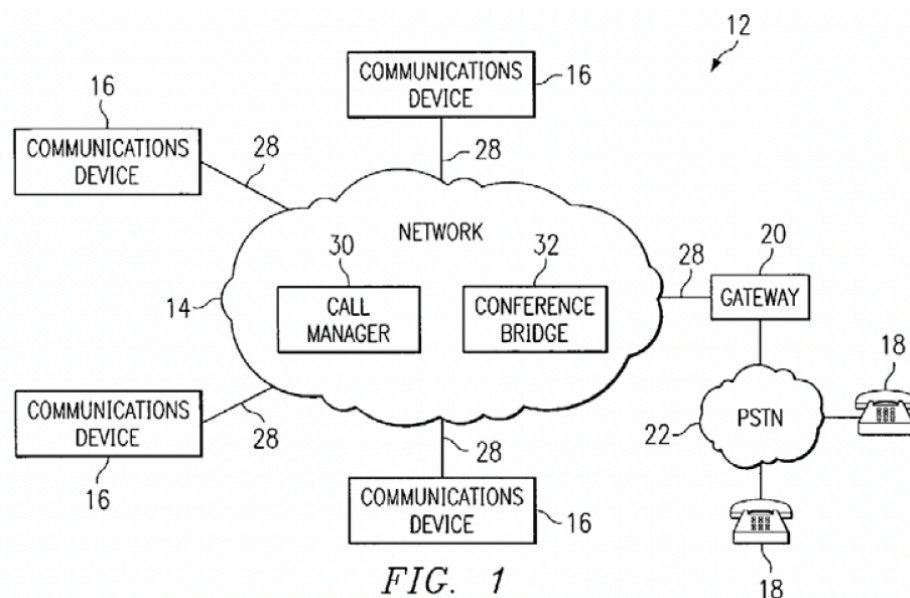
Petitioner’s proposed combination permits but does not require physical incorporation of elements from Hendricks into Knappe’s system. *See In re Mouttet*, 686 F.3d at 1322; Ex. 1003 ¶378.

3. Claim 19

[19.P] A method for conducting a secure multi-participant conference call including full duplex audio, the method comprising:

Knappe discloses “multiparty communications, and more particularly [] a method and system for improving the intelligibility of a moderator during a multiparty communication session...Such communication networks also allow multiple people to participate in...a ‘conference call.’” Ex_1006, 1:8-27; *see also id.*, 8:46-10:50, FIG. 8; Ex_1003 ¶380.

Figure 1 of Knappe shows the system that performs the method of supporting multiparty communications:



Id., FIG. 1. Specifically, Figure 1 shows “communication devices 16” that comprise “IP or other digital telephones...cell or other mobile telephones or handset or any other device or set of devices such as the telephone 18 and gateway 20 combination capable of communicating real-time audio, video and/or other information over the network 14.” Ex_1006, 3:62-4:4. “Conference bridge 32 provides conference call and other suitable audio, video, and/or real-time multiparty communication sessions between communication devices 16.” *Id.* 4:58-63. Thus, Knappe discloses “[a] method for conducting a...multi-participant conference call including...audio.” Ex_1003 ¶¶380-385.

Elliott supplements Knappe and teaches using VPN tunneling for securing communications over a public network like the Internet. Ex_1007, 4:6-12; Ex_1003 ¶¶194-195, 353-361, 386. It would have been obvious to use in Knappe the VPN tunneling as taught in Elliott to secure communications over Knappe’s Internet network 14, which renders obvious “*secure*” as claimed. Ex_1003 ¶¶194-195, 353-361, 386.

Knappe teaches that the conference participants communicate with each other through conference bridge 32, which mixes the audio from other participants while excluding the audio of the participant that receives the mixed audio. Ex_1006, 6:59-7:11 (“During normal operation, each participant receives the audio input of each other participant. Thus, for example, the conference output stream of

participant 1 includes the audio inputs of participants 2–5.”); Ex_1003 ¶¶387-388.

A POSITA would have understood that Knappe’s conference bridge 32 is excluding audio from participant 1 because it is not desirable for that participant to hear his or her voice while speaking. Ex_1003 ¶388. A POSITA would recognize this simultaneous transmission and reception as a conference call that includes full-duplex audio. *Id.*

To the extent determined that Knappe does not disclose full-duplex audio, Hendricks discloses providing “full duplex calls” and “full duplex interconnectivity” to a conference call. Ex_1003 ¶¶197, 389; Ex_1040, 3:4-10, 17:19-22, 27:12-19. Accordingly, Hendricks renders obvious that the conference call includes “*full duplex*” audio. Ex_1003 ¶¶197, 389.

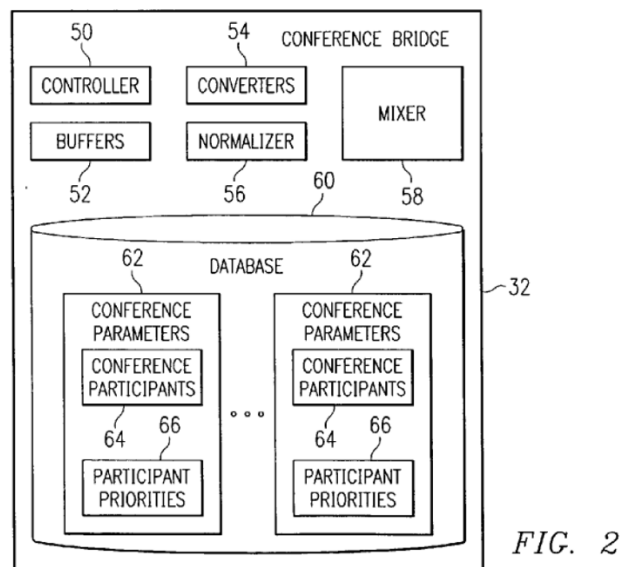
It would have been obvious for a POSITA to utilize full duplex audio in Knappe’s system (as Hendricks teaches) because doing so would provide the participants of Knappe’s communication devices 16 and telephones 18 a more natural way to communicate with each other during the conference. Ex_1003 ¶390; Ex_1041, 1:20-39; Ex_1042, 7:14-34; *see also* Ex_1003 ¶¶ 371-378.

Thus, Knappe in combination with Elliott and Hendricks teaches a method and a system for supporting multiple participants in a secure (VPN tunneling) conference call including full duplex audio, which renders obvious the preamble. Ex_1003 ¶¶379-391.

[19.1.1] receiving first audio data, first video data, and first collaboration data at a server from a first remote client

Knappe's conference call manager 30 provides "multiparty communications and/or other suitable services for the communications devices 16." Ex_1006, 4:50-54; Ex_1003 ¶393. Relatedly, the conference bridge 32 "provides conference call and other suitable audio, video, and/or real-time multiparty communication sessions between communication devices 16." Ex_1006, 4:58-61. Thus, the call manager 30 and conference bridge 32 provide a conferencing service where "participants are connected and stream media through the conference bridge 32." *Id.* 5:31-33; Ex_1003 ¶¶393-394.

Conference bridge 32 is illustrated in Figure 2 of Knappe:

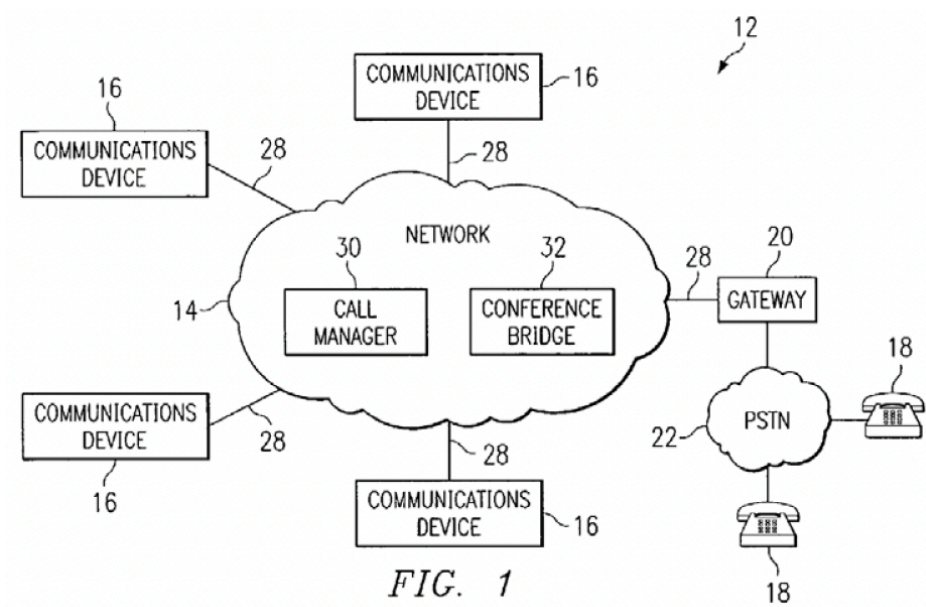


Ex_1006, FIG. 2. Knappe's call manager 30, either alone or in combination with the conference bridge 32, corresponds to the claimed "server" because it (and they

collectively) provide a conference call service to communication devices 16 and PSTN telephones 18. Ex_1003 ¶395.

Knappe's also discloses that its conference allows people who are in different physical locations to participate. Ex_1003 ¶396. For example, Knappe's Internet transports "packets containing data that represents audible sounds from one location to another." Ex_1006, 1:18-21. Knappe also refers to "minimizing travel expenses" and how its conferencing techniques improve over "a meeting with persons physically present in the same location." Ex. 1023, 1:42-44. A POSITA would have understood that Knappe contemplates that the users of the conference system are not physically present in the same location; instead, they are remote from one another and communicate over the Internet and PSTN. Ex_1003 ¶396.

As shown below, Knappe's system includes communication devices 16 that are connected via links 28 to network 14:



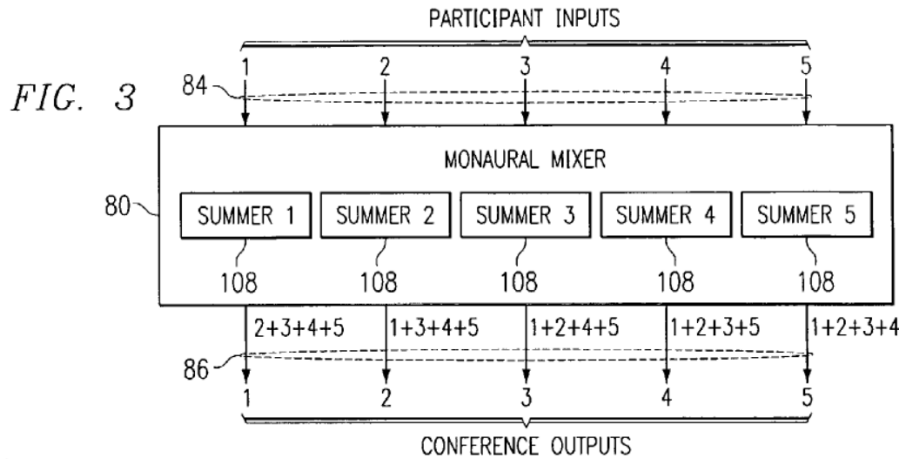
Ex_1006, FIG. 1. It would have been obvious to a POSITA that the conference participant at any one of communications device 16 is remote with respect to the other devices. Ex_1003 ¶398.

Knappe also teaches that “conference bridge 32 receives media from participating devices 16,” which Knappe discloses as “capable of communicating real-time audio, video, and/or other information over the network 14.” Ex_1006, 4:63-64, 3:62-4:1. Thus, a POSITA would have understood Knappe’s conference bridge 32 to receive “audio, video, and/or other information” and “data.”

Ex_1003 ¶¶398-400; *see, e.g.*, Ex_1006, 1:29-41.

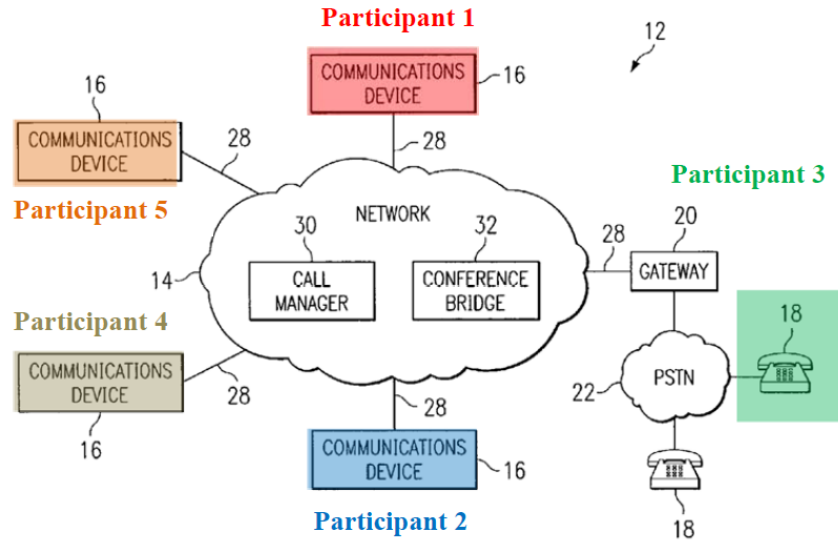
More specifically, Knappe explains that “monaural mixer 80 [of conference bridge 32] receives participant input streams.” Ex_1006, 6:59-7:11. Thus, a

POSITA would have understood that the inputs to the monaural mixer include data streams.



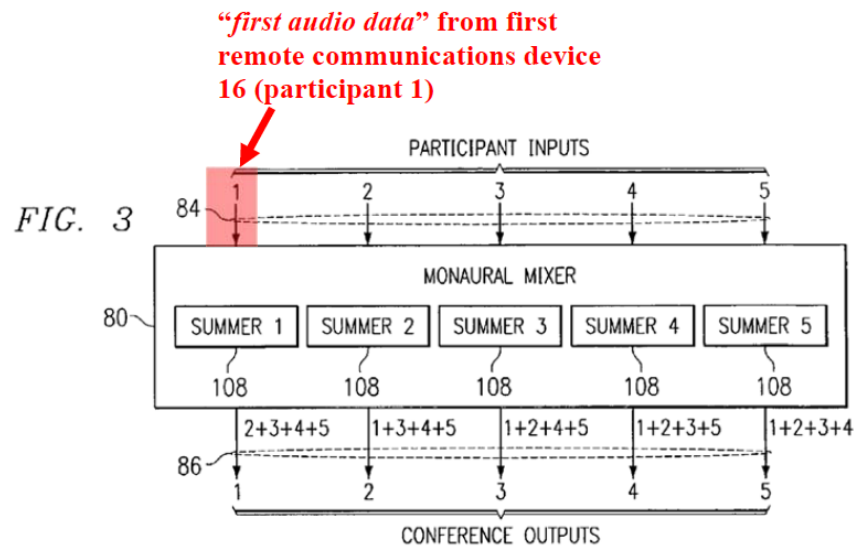
Id., FIG. 3; Ex_1003 ¶401.

Knappe does not identify which specific communications device 16 or PSTN telephone 18/gateway 20 (in Figure 1) corresponds with which specific participant 1-5 (in Figure 3). Ex_1003 ¶402. A POSITA reading Knappe, however, would have understood that this assignment of participant number is arbitrary. *Id.* Thus, for explanation purposes, and without limiting Knappe's disclosure, provided below are participant numbers corresponding to devices in Figure 1:



Ex_1006, FIG. 1 (annotated); Ex_1003 ¶402. The communications device 16 of participant 1 corresponds to the claimed “*first remote client.*” Ex_1003 ¶402.

As further explanation, and without limiting Knappe’s disclosure, annotated Figure 3 below identifies participant 1 as corresponding to the “*first remote client*” communications device 16 that provides audio data to input 1 of mixer 80 of conference bridge 32:



Ex_1006, FIG. 3 (annotated); Ex_1003 ¶403. Thus, a POSITA would have understood that Knappe's "audio, video, and/or other information" and "data" corresponds to "media" transmitted in real-time and received by the conference bridge 32 that is used for collaboration among the participants and therefore teaches "*receiving first audio data, first video data, and first collaboration data.*" Ex_1003 ¶404.

Additionally, a POSITA would have understood that Knappe contemplated that the real-time "data" transmitted during conferencing (Ex_q1006, 3:27-29, 3:62-4:1, 5:45-48) include well-known collaboration data, such as T.120 standard data. Ex_1003 ¶405. Along these lines, Elliott describes "[m]ulti-media collaboration services" allowing for the "exchange [of] information in a conference setting." Ex_1007, 1:40-44. Specifically, Elliott explains such services "include collaborative Web browsing, audio conferencing, video conferencing, and application sharing" using "communication and application protocols" defined in the "T.120 standard." *Id.*, 1:40-44, 6:46-54, 5:49-61. Elliott's teaching of collaboration services, which exchange data using the T.120 standard, discloses a multimedia conferencing stream including "*collaboration data.*" Ex_1003 ¶¶254-255, 406-407.

A POSITA would have understood that when Knappe's communication devices 16 are implemented as personal computers, Elliott's teachings of web

browsing and application sharing would be directly applicable. *Id.* ¶408.

Accordingly, it would have been obvious to a POSITA that Knappe's "other information" would include collaboration data as Elliott teaches (e.g., application sharing data, web browsing data, and other collaboration data per the T.120 standard). *Id.* Including Elliott's collaboration data in the additional data exchanged by Knappe's communication devices would allow different ways for the participants to collaborate thereby enhancing the effectiveness of the collaboration among the participants. *Id.*; *see also id.* ¶¶ 342-361.

As noted above, Knappe teaches that "[d]uring the multiparty communications sessions, participants are connected and stream media through the conference bridge 32," where the media includes "audio, video, voice, data and other suitable types of real-time...traffic between source and destination endpoints." Ex_1006, 3:26-29, 5:31-33. Accordingly, it would have been obvious to a POSITA that in the combination, conference bridge 32 would receive the audio, video, and data (such as collaboration data per Elliott) from each participant and distribute the mixed data (including audio, video, and collaboration data) to each participant. Ex_1003 ¶409. Thus, the prior art teaches that that call manager 30 and conference bridge 32 provide conference services, including receiving audio, video, and data (e.g., collaboration data such as web browsing data,

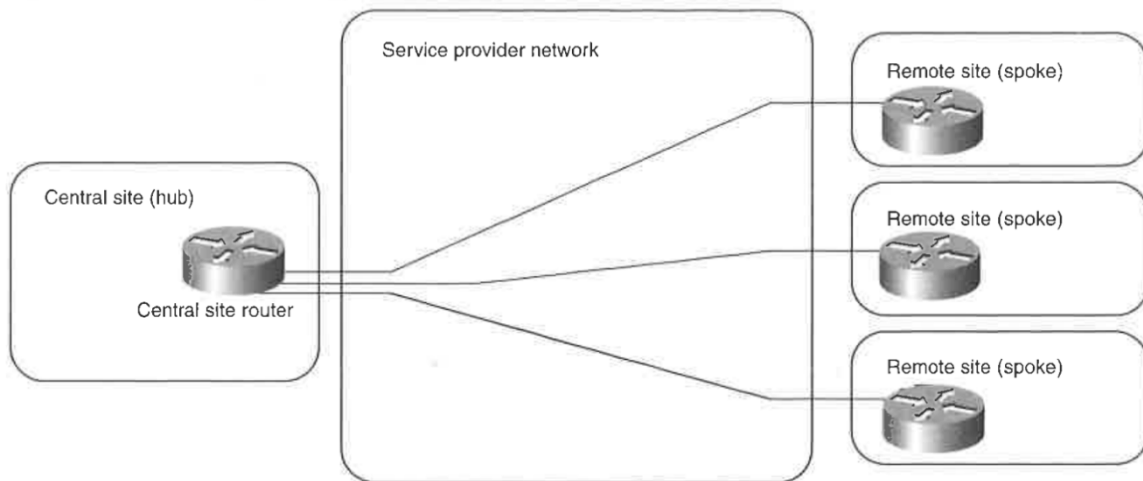
application sharing data, and other collaboration data) from a first remote communications device 16, which renders this limitation obvious. *Id.* ¶410.

[19.1.2] through a first Virtual Private Network (VPN) tunnel;

As discussed at [19.1.1], Knappe in combination with Elliott teaches receiving audio, video, and collaboration data from a first remote communications device 16. Ex_1003 ¶412. Elliott teaches “multi-media collaboration,” including “voice, fax, data, video” transmitted over a “virtual private network (VPN)” using “IP or IP-tunneling.” Ex_1007, 2:66-3:1, 4:31-34; Ex_1003 ¶¶234-235, 413. In view of Elliott’s teachings, it would have been obvious to a POSITA to utilize VPN tunneling when communicating audio, video, and collaboration data between the first remote communication devices 16 and the call manager 30/conference bridge 32, because it would provide Knappe with secure communications as the communications traverse the Internet network 14. Ex_1003 ¶¶234-235, 414; *see also id.* ¶¶342-361.

Further, the VPN Textbook teaches that the most commonly encountered topology is a hub-and-spoke topology, where a number of remote offices (spokes) are connected to a central site (hub), similar to the setup in Figure 7-10”:

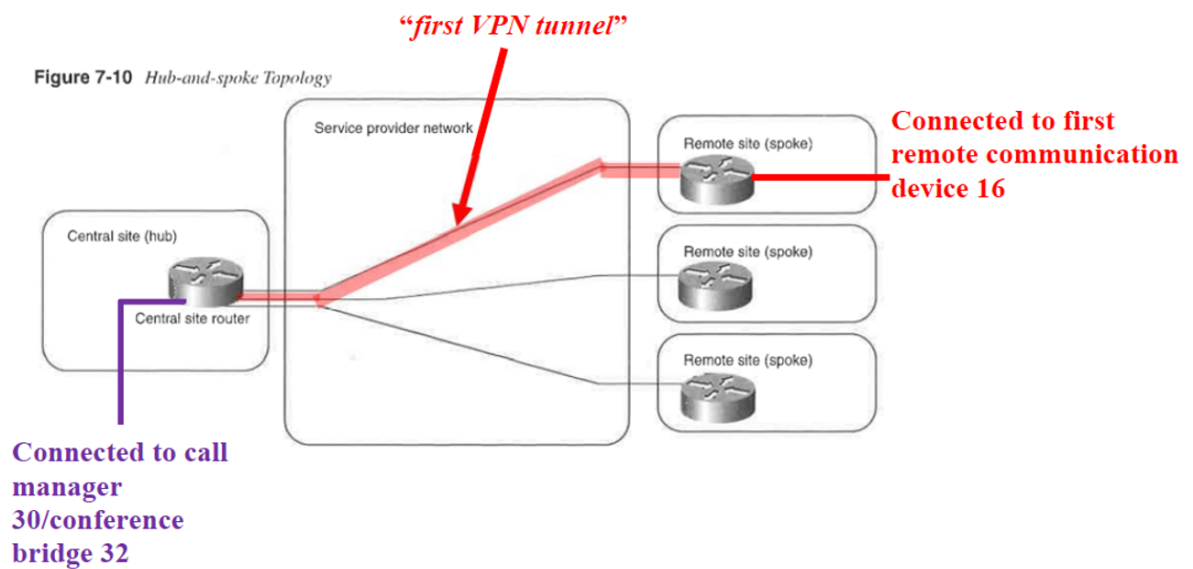
Figure 7-10 *Hub-and-spoke Topology*



Ex_1010 at 129, Fig. 7-10 (p. 130).

A POSITA would have understood that each remote site router (spoke) would have one or more network devices connected to it. Ex_1003 ¶¶416-417. As explained above, Knappe’s devices may be at different remote locations on the network. *See, e.g.*, discussion at [19.1.1]; Ex_1006, 4:30-33, FIG. 1. Thus, when implementing VPN tunneling in Knappe, per Elliott, it would have been obvious to a POSITA to connect each of Knappe’s devices (which are located at different locations) to a separate remote router (spoke) that is connected to the central router (hub), as the VPN Textbook teaches, because this common topology provides a cost effective and less complex implementation. Ex_1003 ¶418; Ex_1010 at 129 (“has nonetheless chosen the hub-and-spoke topology for cost or complexity reasons.”); *see also* Ex_1003 ¶¶ 362-370.

A POSITA would have recognized that the call manager 30 and conference bridge 32 would be located at a central site because they are depicted in a topologically central location in Knappe's Figure 1. Ex_1006. 4:30-31 ("The call manager 30 and the conference bridge 32 may be located in a central facility."); Ex_1003 ¶419. Similarly, a POSITA would have recognized that each communications device 16 would be located at a remote site because they are depicted at the topological periphery in Knappe's Figure 1 and are endpoint devices used by remotely-located conference participants. Ex_1006, 3:62-4:1, 6:17-21, 1:42-47; Ex_1003 ¶419. Accordingly, it would have been obvious to a POSITA that when implementing the commonly used hub-and-spoke VPN topology, per the VPN Textbook, Knappe's first remote communications device 16 would be connected to a remote site (spoke) router, while the call manager 30/conference bridge 32 would be connected to the central site (hub) router, as illustrated below in annotated Figure 7-10:



Ex_1010 at Fig. 7-10 (annotated); Ex_1003 ¶419.

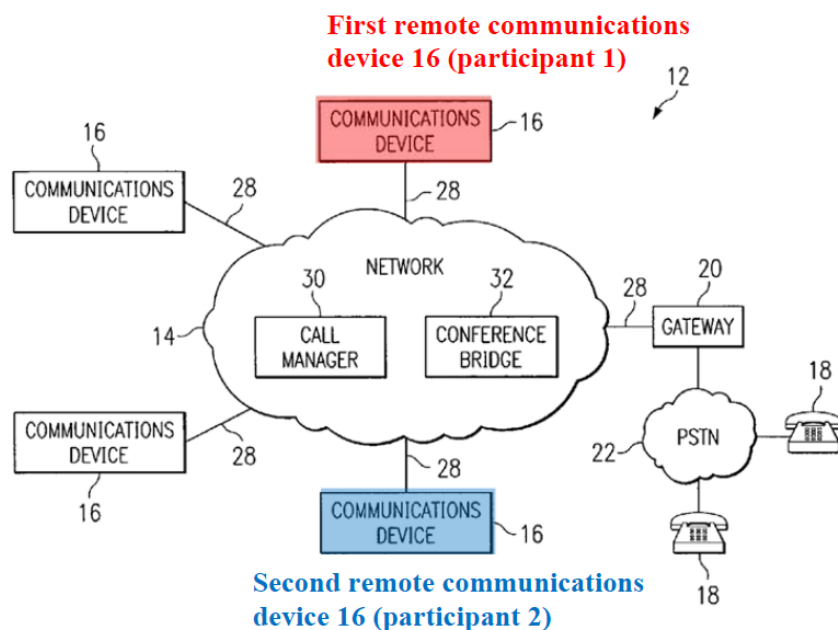
When the conference bridge 32 receives data from or transmits data to the first remote communications device 16, the data would be received/sent through the same VPN tunnel, which corresponds to “*a first VPN tunnel.*” Ex_1003 ¶420. Thus, the prior art teaches that audio, video, and collaboration data from the first remote communications device 16 is received through a VPN tunnel, which renders obvious this limitation. *Id.* ¶421.

[19.2.1] receiving second audio data at the server from a second remote client

As discussed at [19.1.1], conference bridge 32, either alone or together with conference call manager 30, corresponds to the claimed “*server.*” Ex_1003 ¶ 423.

Further, as discussed at [19.1.1], Knappe teaches that each of communication devices 16 is remote with respect to each other. *Id.*

Consistent with the analysis at [19.1.1], Knappe's annotated Figure 1 below shows a participant 2 participating in the conference by communicating real-time audio, video and/or other information over the network 14 using a second remote communication device 16 ("*second remote client*"):

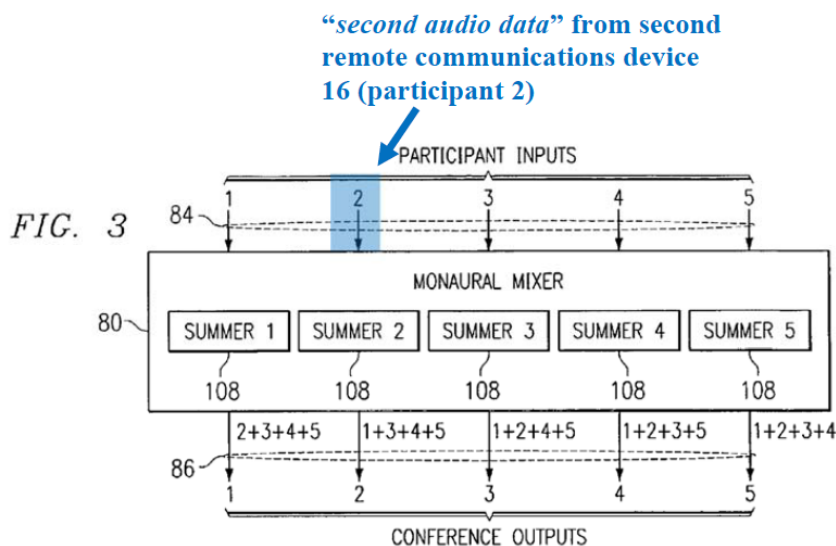


Ex_1006, FIG. 1 (annotated); Ex_1003 ¶424.

Since Knappe teaches that “[t]he conference bridge 32 provides conference call and other suitable audio, video, and/or real-time multiparty communication sessions between communication devices” and “receives media from participating devices 16,” it would have been obvious to a POSITA that the devices illustrated in Figure 1 communicate audio/video and other data over links 28 and network 14 to

the conference bridge 32. Ex_1006, 4:58-66; Ex_1003 ¶425; *see also* Ex_1006, 3:45-49, 5:31-33. Since audio and video are forms of media, it would have been obvious to a POSITA that the conference bridge 32 receives audio data from the second remote communications device used by participant 2. Ex_1003 ¶425.

Knappe further teaches that mixer 80 (which is a part of conference bridge 32, as discussed at [19.1.1]) receives the audio data from the participating communication devices 16. Ex_1006, 4:63-66, 6:59-7:11; Ex_1003 ¶¶426, ¶¶400-402. Thus, shown below in annotated Figure 3, in one example, Knappe's mixer 80 receives input audio from participant 2, which corresponds to the second remote communications device 16 (*"second remote client"*):



Ex_1006, FIG. 3 (annotated); Ex_1003 ¶¶426-427.

Thus, the prior art discloses that that call manager 30 and conference bridge 32 provide conference services, including receiving audio data from a second

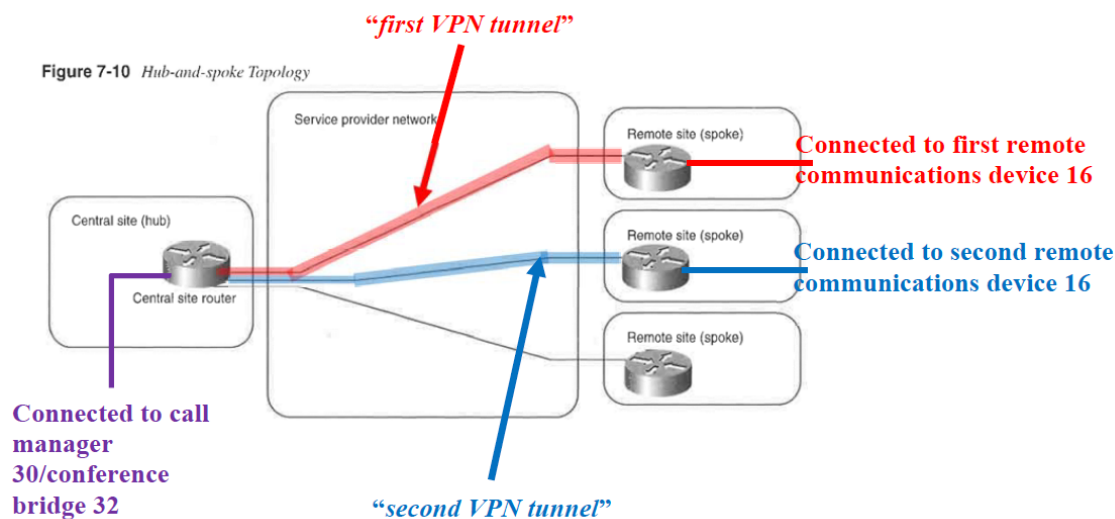
remote communications device 16, which renders this limitation obvious.

Ex_1003 ¶428.

[19.2.2] through a second VPN tunnel;

As discussed at [19.1.2], the prior art teaches using a conventional hub-and-spoke VPN topology, where each remote site router (hub) is connected through a VPN tunnel to the central router (hub) to transmit and receive data. Ex_1003 ¶430.

It would have been obvious to a POSITA that when implementing the commonly used hub-and-spoke VPN topology for conferencing (per Elliott and the VPN Textbook), a second VPN tunnel would connect call manager 30 and conference bridge 32 to the second communications device 16 (“*second remote client*”), as illustrated below:



Ex_1010 at Fig. 7-10 (annotated); Ex_1003 ¶431.

When the conference bridge 32 receives data from or transmits data to the second remote communications device 16, the data would be sent through the same VPN tunnel, which corresponds to “*a second VPN tunnel.*” Ex_1003 ¶432. It would have been obvious to a POSITA to utilize the conventional hub-and-spoke VPN topology, when setting up a second VPN tunnel between the second remote communication device 16 and call manager 30/conference bridge 32, because it would secure communications among the connected devices in a cost effective and relatively simple way. Ex_1003 ¶¶342-370, 433.

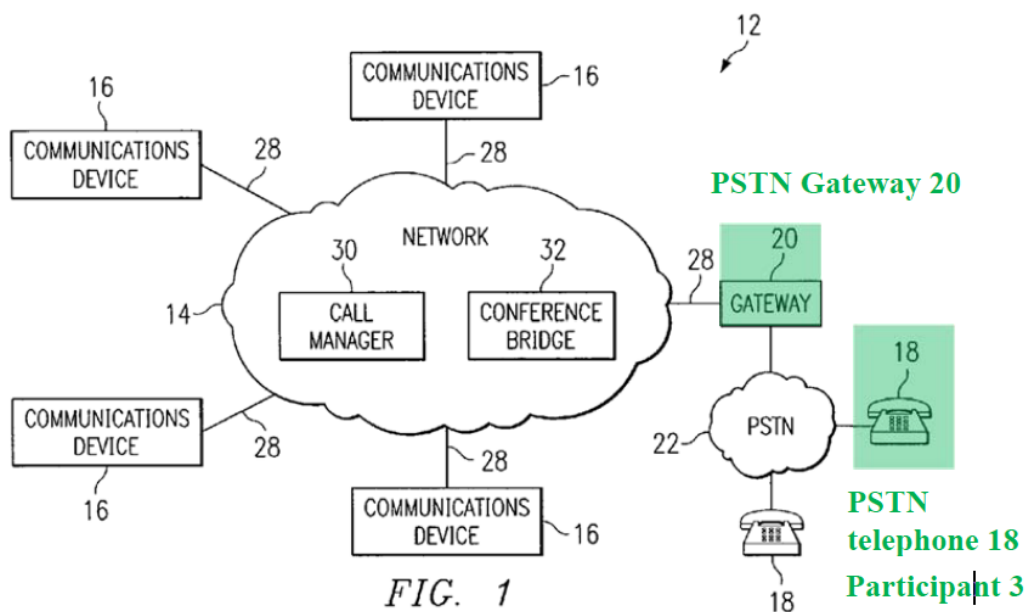
Thus, the prior art teaches that the second audio data from the second remote communications device 16 is received through a second VPN tunnel, which renders obvious this limitation. *Id.* ¶434.

[19.3] receiving third audio data at the server from a Public Switched Telephone Network (PSTN) client through a PSTN gateway

As discussed at [19.1.1], conference bridge 32, either alone or together with conference call manager 30, corresponds to the claimed “*server.*” Ex_1003 ¶436.

Knappe teaches a public switched telephone network (PSTN) telephone 18 that generates audio data which is sent through gateway 20 to the conference bridge 32. Ex_1003 ¶437. Specifically, Knappe teaches that “telephones 18 communicate standard telephony signals through PSTN 22 to the gateway 20.” Ex_1006, 4:18-20. “At the gateway 20, the signals are converted to IP packets in the VoIP format.” *Id.*, 4:20-22. Conference bridge 32 then “receives media from

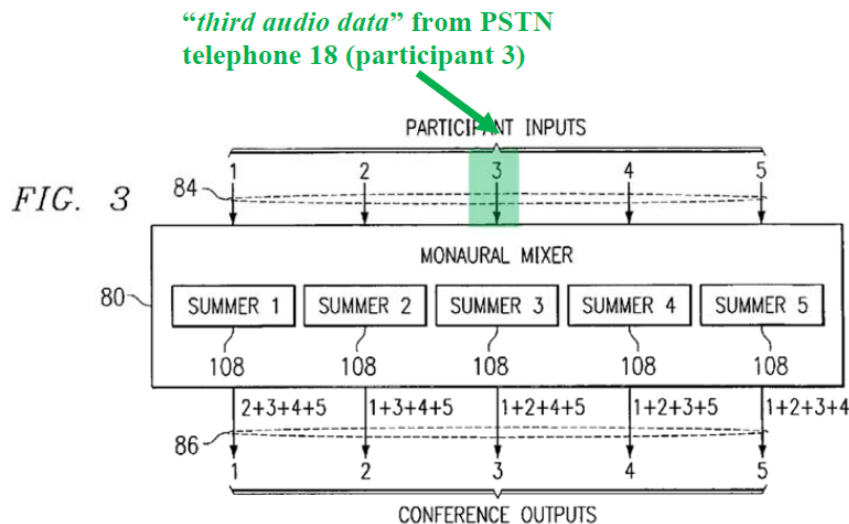
participating devices 16.” *Id.* 4:63-66. Thus, a POSITA would have understood that when the PSTN telephone 18 is the originating device, it sends data over gateway 20 which communicates the data to the conference bridge 32, which facilitates the multiparty communications. Ex_1003 ¶¶437-438. This is illustrated in annotated Figure 1 of Knappe, below:



Ex_1006, FIG. 1 (annotated); Ex_1003 ¶439. It would have been obvious to a POSITA that the devices illustrated in Figure 1, *e.g.*, telephone 18 and gateway 20, communicate audio data over link 28 over network 14 to the conference bridge 32. *Id.* ¶440.

Additionally, as discussed at [19.1.1], Knappe discloses that mixer 80 of conference bridge 32 receives input data from participants 1-5. Ex_1003 ¶441. For explanation purposes, and without limiting Knappe’s disclosure, below is an

annotated example of Figure 3 of Knappe identifying participant 3 as corresponding to the PSTN telephone 18 that provides audio data to input 3 of mixer 80 via gateway 20:



Ex_1006, FIG. 3 (annotated); Ex_1003 ¶441.

Thus, the prior art discloses that call manager 30 and conference bridge 32 provide conference services, including receiving audio data from a PSTN telephone 18 through gateway 20, which renders obvious this limitation. Ex_1003 ¶442.

[19.4] mixing the first audio data with the second audio data into a first mixed audio data;

As discussed at [19.1.1], conference bridge 32, either alone or together with conference call manager 30, corresponds to the claimed “server.” Ex_1003 ¶444. Further, as discussed at [19.1.1] and [19.2.1], Knappe teaches that the conference bridge 32 receives the first audio data from the first remote communication device

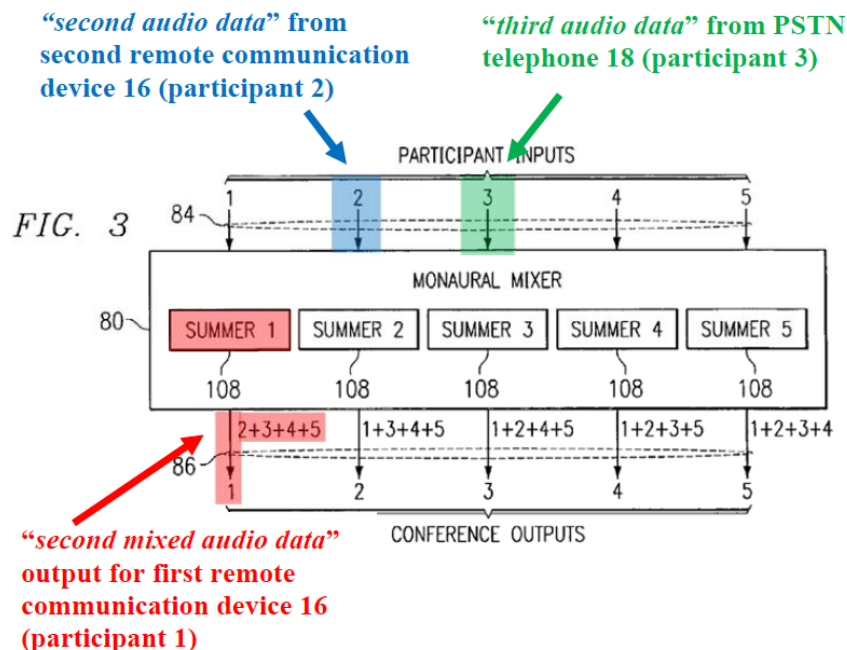
16 (participant 1) and also receives the second audio data from the second remote communication device 16 (participant 2). *Id.*

Knappe also teaches that mixer 80 of the conference bridge 32 mixes the audio data from participant 1 and participant 2 into a mixed output stream for participant 3. Ex_1003, 6:59-7:11 (“output stream of participant 3 includes the audio inputs of participants 1-2 and 4-5); *see* Ex_1003, ¶¶243, 267, 323, 387, 401, 445.

As discussed at [19.1.1], [19.2.1], and [19.3], participant 1 corresponds to the first remote communications device 16, participant 2 corresponds to the second remote communication device 16, and participant 3 corresponds to the PSTN telephone 18. Ex_1003 ¶446. Thus, as shown below in Figure 3, Knappe’s mixer 80 includes summer 3 that mixes the streams from the first remote communications device 16 (participant 1) and second remote communications device 16 (participant 2) and outputs a mixed data stream (“*a first mixed audio data*”) comprising signals from participants 1+2+4+5 for PSTN telephone 18 (participant 3):

telephone 18 (participant 3). *Id.* Similar to the mixing discussed at [19.4], mixer 80 of the conference bridge 32 mixes the audio data from participant 2 and participant 3 into a mixed output stream for participant 1. Ex_1006, 6:59-7:11 (“output stream of participant 1 includes the audio inputs of participants 2-5”); *see also* Ex_1003 ¶¶243, 267, 323, 387, 401, 450.

Thus, as shown below in exemplary annotated Figure 3 of Knappe, mixer 80 combines streams from the second remote communications device 16 (participant 2) and the PSTN telephone 18 (participant 3) and outputs mixed data stream (“a second mixed audio data”):



Ex_1006, FIG. 3 (annotated).; Ex_1003 ¶¶450-451.

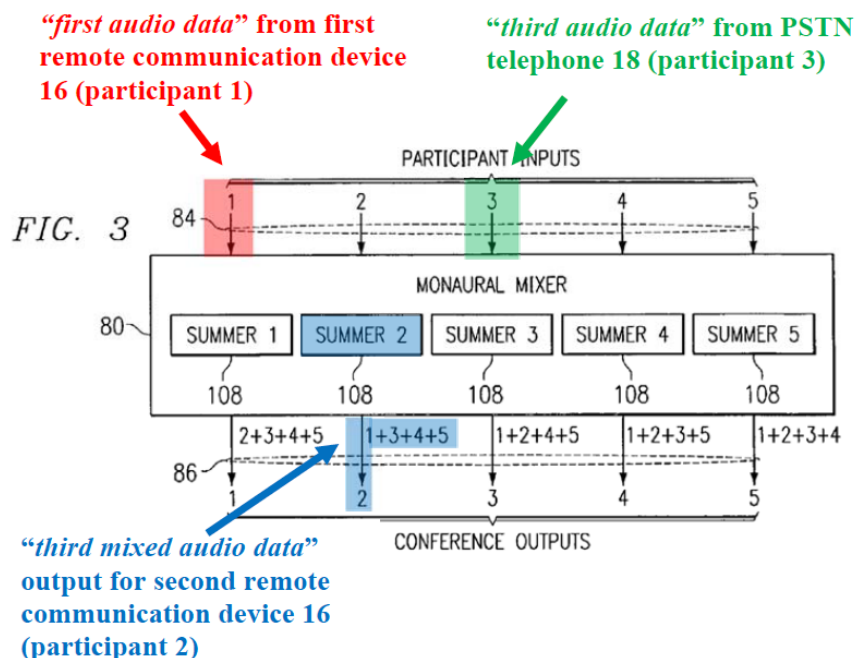
Thus, Knappe discloses that mixer 80, including summer 1, mixes audio data from the second remote communication device 16 with audio data from the PSTN

telephone 18 into a second mixed audio data, which renders obvious this limitation. Ex_1003 ¶452.

[19.6] mixing the first audio data with the third audio data into a third mixed audio data;

Knappe teaches that mixer 80 of the conference bridge 32 mixes the audio data from participant 1 and participant 3 into a mixed output stream for participant 2. Ex_1006, 6:59-7:11 (“output stream of participant 2 includes the audio inputs of participants 1 and 3-5”); Ex_1003 ¶¶ 243, 267, 323, 387, 401, 454.

Thus, as shown below in exemplar annotated Figure 3 of Knappe, mixer 80 includes summer 2 that mixes the streams from the first remote communications device 16 (participant 1) and the PSTN telephone 18 (participant 3) and outputs a mixed data stream (“a third mixed audio data”):



Ex_1006, FIG. 3 (annotated); Ex_1003 ¶¶454-455.

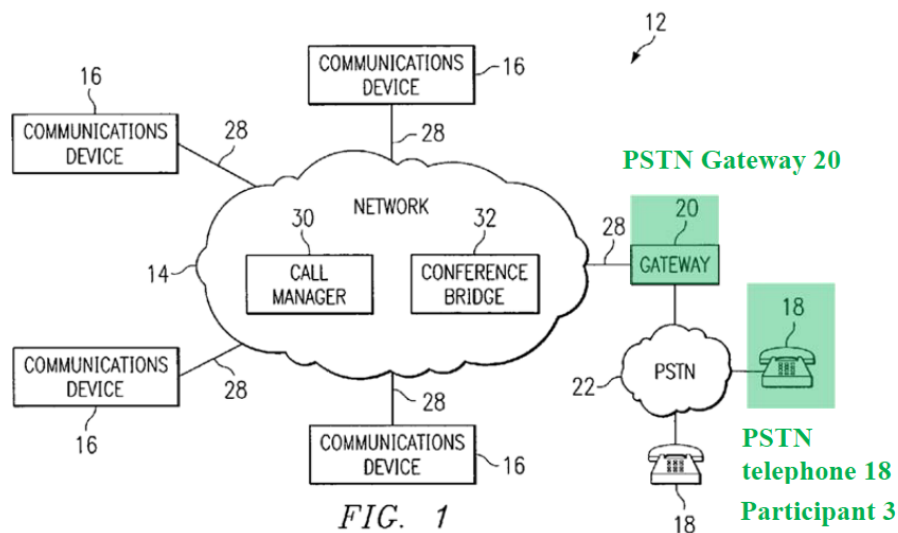
Thus, Knappe discloses that mixer 80, including summer 2, mixes audio data from the first remote communication device 16 with audio data from the PSTN telephone 18 into a third mixed audio data, which renders obvious this limitation. Ex_1003 ¶456.

[19.7] transmitting the first mixed audio data from the server to the PSTN client through the PSTN gateway;

As discussed at [19.1.1], conference bridge 32, either alone or together with conference call manager 30, corresponds to the claimed “server.” Ex_1003 ¶458. Further, as discussed at [19.3], Knappe teaches that the conference bridge 32 communicates to the PSTN telephone 18 through gateway 20. *Id.* Further, as discussed at [19.4], Knappe teaches generating “*first mixed audio data*” as an output intended for participant 3 using the PSTN telephone. *Id.*

Knappe discloses that the conference bridge 32 “transmit[s] audio, video, voice, data and other suitable types of real-time and/or non real-time traffic between source and destination endpoints.” Ex_1006, 3:24-29, FIG. 1. Knappe further explains that “[a]t the gateway 20...VoIP packets received from the network 14 are converted into standard telephony signals for delivery to the destination telephone 18 through PSTN 22.” *Id.*, 4:21-25; Ex_1003 ¶¶459-460. Knappe also explains that “[d]uring normal operation, each participant receives the audio input of each other participant.” Ex_1006, 7:1-7.

Thus, it would have been obvious to a POSITA, that the conference bridge 32 transmits the mixed audio output of summer 3 to the communication device of participant 3, previously identified in [19.3] as the PSTN telephone 18 which receives audio data via gateway 20. Ex_1003 ¶¶460-461. As shown below, the PSTN telephone 18 receives communications from conference bridge 32 via PSTN gateway 20:

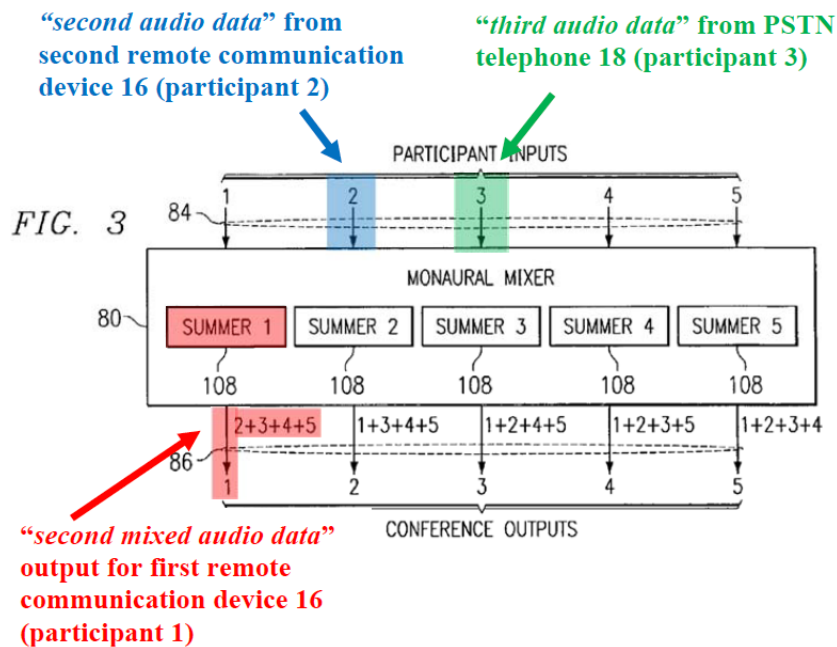


Ex_1006, FIG. 1 (annotated); Ex_1003 ¶461.

Thus, Knappe discloses transmitting the first mixed audio data from the conference bridge 32 to the PSTN telephone 18 through gateway 20, which renders obvious this limitation. Ex_1003 ¶462.

[19.8] transmitting the second mixed audio data from the server to the first remote client through the first VPN tunnel

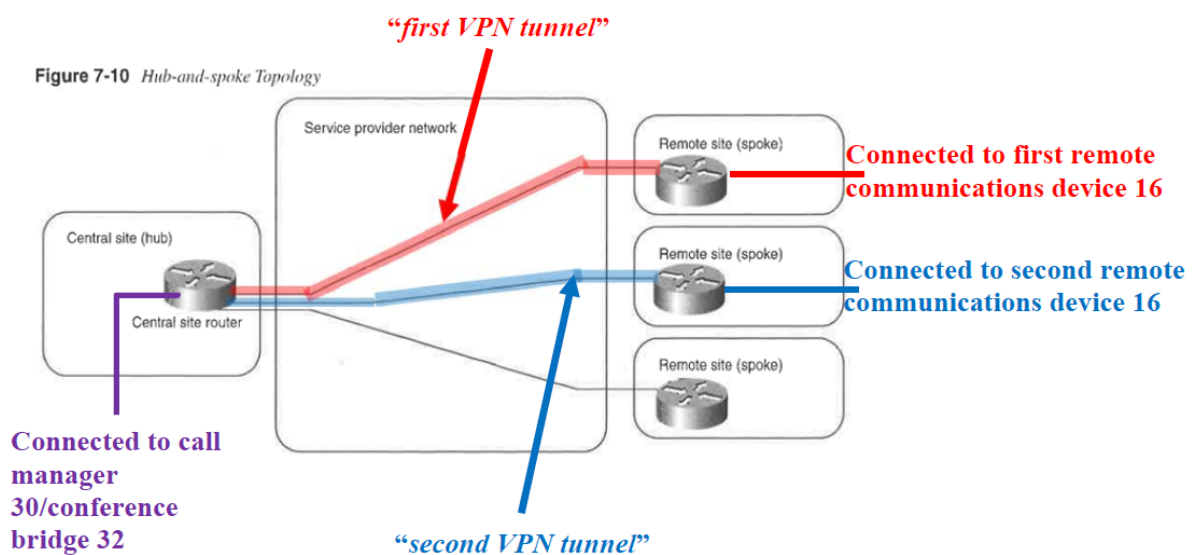
As discussed at [19.1.1], conference bridge 32, either alone or together with conference call manager 30, corresponds to the claimed “server.” Ex_1003 ¶464. Further, as discussed at [19.1.1], Knappe teaches a first remote communications device 16. *Id.* Further still, as discussed at [19.5], Knappe teaches generating second mixed audio data as an output for first remote communication device 16:



Ex_1006, FIG. 3 (annotated); Ex_1003 ¶¶451, 464-466.

For the same reasons discussed at [19.7], Knappe discloses transmitting the second mixed audio data to the first remote communications device 16, which receives the audio data. Ex_1006, 3:24-29, 5:31-39, 7:1-7, 4:42-51 (“each device 16 receives a conference signal that includes contributions from all other participating devices”); *see also id.*, 10:33-35, FIG. 8; *see also* Ex_1003 ¶¶ 459, 465.

As discussed at [19.1.2], Knappe in combination with Elliott and the VPN Textbook teaches using a first VPN tunnel between the central site (hub) router of the conference bridge 32 and the remote site (spoke) router of the first remote communications device 16, as illustrated below:



Ex_1010 at Fig. 7-10 (annotated); Ex_1003 ¶467. When the conference bridge 32 transmits the second mixed audio data to the first remote communications device 16, the data would be sent through the first VPN tunnel that was already established (see discussion at [19.1.2]), which corresponds to *"the first VPN tunnel."* Ex_1003 ¶¶467-468.

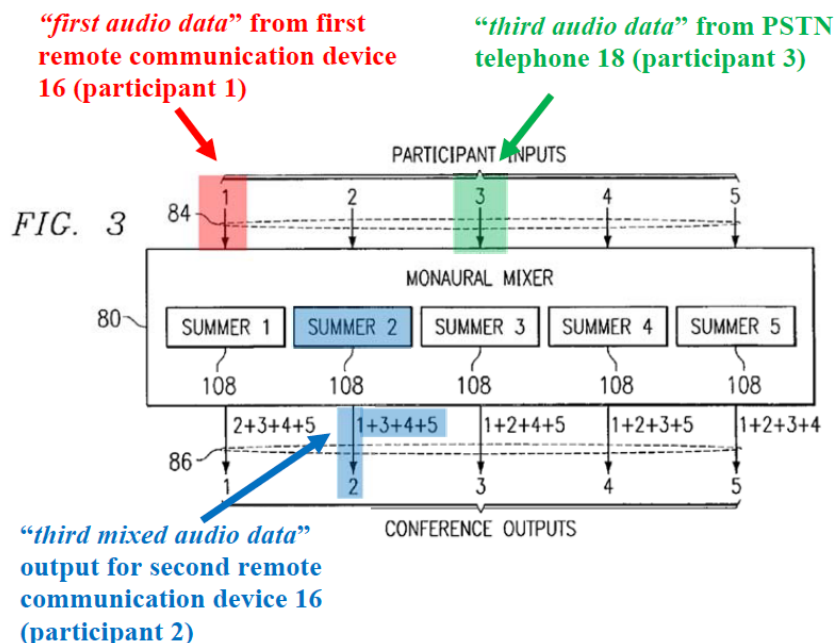
It would have been obvious to a POSITA to utilize the VPN tunnel set up between the first remote communications device 16 and conference bridge 32 when the conference bridge 32 transmits the mixed audio data to the first remote

communications device 16, because it would provide Knappe with secure communications and also because it would be a cost effective and relatively simple implementation. *Id.* ¶469; *see also id.* ¶¶342-370

Thus, the prior art teaches that the conference bridge 32 transmits the second mixed audio data to the first remote communications device 16 through the first VPN tunnel, which renders obvious this limitation. *Id.* ¶470.

[19.9] transmitting the third mixed audio data from the server to the second remote client through the second VPN tunnel;

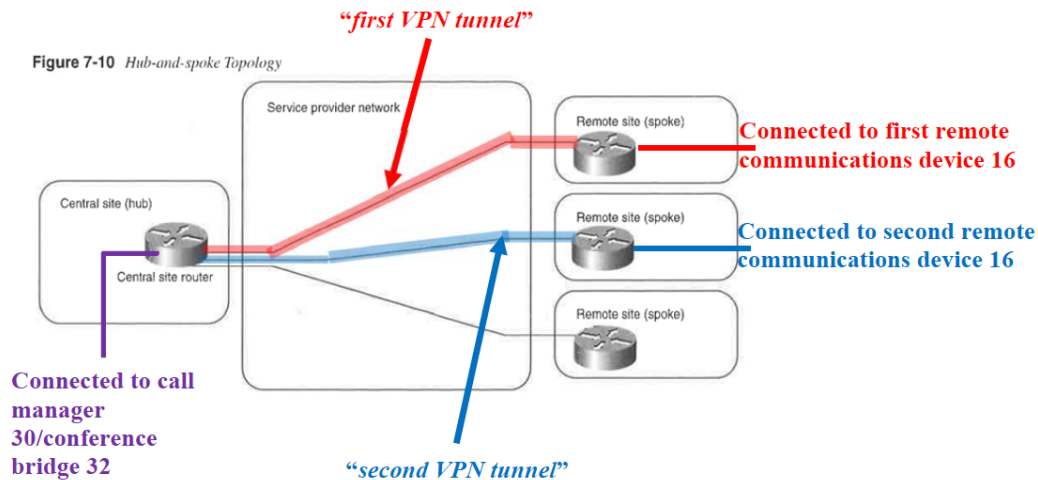
As discussed at [19.1.1], conference bridge 32, either alone or together with conference call manager 30, corresponds to the claimed “server.” Ex_1003 ¶472. Further, as discussed at [19.2.1], Knappe teaches a second remote communication device 16. *Id.* Further still, as discussed at [19.6], Knappe teaches generating third mixed audio data as an output intended for participant 2 using the second remote communications device 16.:



Ex_1006, FIG. 3 (annotated); Ex_1003 ¶¶472-474.

For the reasons discussed in [19.7] and [19.8], Knappe discloses transmitting the third mixed audio data to the second remote communications device 16, which receives the audio data. *See* Ex_1006, 3:24-29, 5:31-39, 7:1-7, 4:42-51 (“each device 16 receives a conference signal that includes contributions from all other participating devices”); *see also id.*, 10:33-35, FIG. 8; *see also* Ex_1003 ¶¶ 459, 465, 473.

As discussed at [19.2.2], Knappe in combination with Elliott and the VPN Textbook teaches using a second VPN tunnel between the central site (hub) router of the conference bridge 32 and the remote site (spoke) router of the second remote communications device 16, as illustrated below:



Ex_1010 at Fig. 7-10 (annotated); Ex_1003 ¶475. When the conference bridge 32 transmits the third mixed audio data to the second remote communications device 16, the data would be sent through the second VPN tunnel that was already established (see discussion at [19.2.2]), which corresponds to “the second VPN tunnel.” Ex_1003 ¶¶475-476. It would have been obvious to a POSITA to utilize the VPN tunnel set up between the second remote communications device 16 and conference bridge 32 when the conference bridge 32 transmits the mixed audio data to the second remote communications device 16, because it would provide Knappe with secure communications and also because it would be a cost effective and relatively simple implementation. *Id.* ¶477; see also *id.* ¶¶342-370.

Thus, the prior art teaches that the conference bridge 32 transmits the third mixed audio data to the second remote communications device 16 through the second VPN tunnel, which renders obvious this limitation. *Id.* ¶478.

[19.10] transmitting the first video data and the first collaboration data from the sever [sic] to the second remote client

As discussed at [19.1.1], conference bridge 32, either alone or together with conference call manager 30, corresponds to the claimed “server.” Ex_1003 ¶489. Further, as discussed at [19.1.1], Knappe in combination with Elliott teaches that the conference bridge 32 receives the first video data and the first collaboration data from the first remote communications device 16. *Id.*

Knappe teaches that conference bridge 32 transmits video data and collaboration data to the communications devices 16. Ex_1006, 3:24-29 (“the communication system 12 is a distributed system transmitting audio, video, voice, data and other suitable types of real-time...traffic”), 4:42-5:1, FIG. 3, 4:9-17, 5:45-57; *see also* Ex_1003 ¶¶ 459, 465, 481. It would have been obvious to a POSITA that Knappe’s “video, voice, data and other suitable types of real-time...traffic” corresponds to the “media” received by the conference bridge 32 and, after mixing, suitable signals are transmitted by the conference bridge 32 to the other conference participants. Ex_1003 ¶482. It would have further been obvious to a POSITA that the transmitted data include video and collaboration data because the “output stream for a participant includes the media of all other participants.” Ex_1006, 5:35-39; Ex_1003 ¶482.

As discussed at [19.1.1], Elliott teaches transmitting collaboration data, such as “application sharing” data, “web browsing” data, and data per the “T.120

standard.” Ex_1007, 1:40-44, 6:46-54, 5:49-61; *see also* Ex_1003 ¶¶ 254, 289, 406, 483. A POSITA would have understood that when Knappe’s communication devices 16 are implemented as personal computers, Elliott’s teachings of web browsing and application sharing would be directly applicable. Ex_1003 ¶484. Accordingly, a POSITA would understand that Knappe’s “other information” would include collaboration data as Elliott teaches (e.g., application sharing data, web browsing data, and other collaboration data per the T.120 standard). *Id.* Including Elliott’s collaboration data in the additional data exchange by Knappe’s communication devices would allow different ways for the participants to collaborate thereby enhancing the effectiveness of the collaboration among the participants. *Id.*; *see also id.* ¶¶342-361.

As noted, Knappe teaches that “[d]uring the multiparty communications sessions, participants are connected and stream media through the conference bridge 32,” where the media includes “audio, video, voice, data and other suitable types of real-time...traffic between source and destination endpoints.” Ex_1006, 3:26-29, 5:31-33. Accordingly, it would have been obvious to a POSITA that in the combination, conference bridge 32 would receive the audio, video, and data (such as collaboration data per Elliott) from each participant and distribute the mixed data (including audio, video, and collaboration data) to each participant, including the second remote communications device 16. Ex_1003 ¶¶485.

Thus, the prior art teaches that the conference bridge transmits the video and collaboration data to the remote second communications device 16, which renders obvious this limitation. *Id.* ¶486.

4. Claim 20

[20.P] The method of claim 19, further comprising:

See [19.P]-[19.10].

[20.1] receiving second video data at the server from the second remote client

As discussed at [19.1.1], conference bridge 32, either alone or together with conference call manager 30, corresponds to the claimed “*server*.” Ex_1003 ¶489. Further, as discussed at [19.2.1], Knappe teaches that conference bridge 32 receives audio data from the second remote communications device 16. *Id.*

Knappe renders obvious that the conference bridge 32 also receives video data from the second communication device 16 for reasons analogous to that discussed at [19.1.1]. For example, Knappe teaches that each communications device 16 is “capable of communicating real-time audio, video and/or other information over the network 14” and that participants “stream media through the conference bridge.” Ex_1006, 3:62-4:1, 5:31-33; Ex_1003 ¶490. A POSITA would have understood Knappe’s description of “stream[ing] media” to refer at least to its discussion of “communicating real-time audio, video, and/or other information” and “data.” Ex_1003 ¶491.

Thus, the prior art teaches that conference bridge 32 receives second video data from the second remote communications device 16, which renders obvious this limitation. *Id.* ¶492.

5. Claim 21

[21.P] The method of claim 19, further comprising:

See [19.P]-[19.10].

[21.1] wherein the PSTN client is a cellular phone

As discussed at [19.3], Knappe discloses that PSTN telephone 18 communicates conference data through gateway 20. Ex_1003 ¶495.

Knappe teaches that the PSTN conference endpoint may be a “standard analog telephone[] 18” that communicates using “radio frequency” or other “wireless links.” Ex_1006, 3:41-49. Knappe also explains that the communication devices 16 that make up the conference participants “comprise...cell other mobile telephones or handset or any other device or sets of devices such as the telephone 18 and gateway 20 combination[.]” Ex_1006, 3:62-4:1. Knappe’s disclosure that telephone 18 communicates over the PSTN network 22 using “any...suitable type of...wireless link,” and its example of a cellular telephone, which a POSITA would have understood uses a cellular wireless link, renders obvious that the PSTN conference endpoint is a “*cellular phone*.” Ex_1003 ¶¶295-297, 496-497. Thus, the prior art teaches that the PSTN conference endpoint is a “*cellular phone*,” which renders obvious this limitation. *Id.* ¶¶295-299; 494-498.

6. Claim 25

Claim 25 is an apparatus claim generally directed to a server that is configured to perform the steps of the method recited in claim 19. Specifically, the server is “*configured to receive*” the data recited in the three “*receiving*” steps of claim 19, “*configured to mix*” the data recited in the three “*mixing*” steps of claim 19, and “*configured to transmit*” the data recited in the four “*transmitting*” steps of claim 19. *See* Ex_1003 ¶55.

As discussed above, conference bridge 32 (alone or with conference call manager 30) corresponds to the “*server*” recited in the “*receiving*” and “*transmitting*” steps of claim 19. *E.g.* Ex. 1003 ¶¶393-395, 423, 436, 444, 449, 458, 464, 472, 480, 500-501. As shown in the analysis of [19.4]-[19.6], Knappe’s conference bridge 32 includes a mixer 80 with summers 1, 2, and 3 that perform the three mixing steps recited in claim 19. Accordingly, Knappe’s conference bridge 32 also performs the “*mixing*” steps of claim 19. Knappe’s conference bridge 32, either alone or with conference call manager 30, also correspond to the claimed “*server*” in claim 25. Thus, for the same reasons provided above regarding claim 19, Knappe and the other cited prior art render obvious a “*server configured to receive...*,” “*to mix...*,” and “*to transmit...*” as recited in claim 25. Ex_1003, ¶499-512.

7. Claims 26-27

Claims 26 and 27 are apparatus claims that, like claim 25 discussed above, correspond to method claims 20 and 21, respectively. For the reasons provided above regarding claims 20-21 and 25, claims 26 and 27 are rendered obvious by the prior art. Ex_1003 ¶¶513-516.

B. Ground 2: Claims 22-24 and 28-29 are Obvious Over Knappe in Combination with Elliott, the VPN Textbook, Hendricks, and Drell

1. Summary of Drell

Drell describes multi-point (MP) conferencing, specifically video conferencing among a plurality of endpoints, as shown in Figure 1:

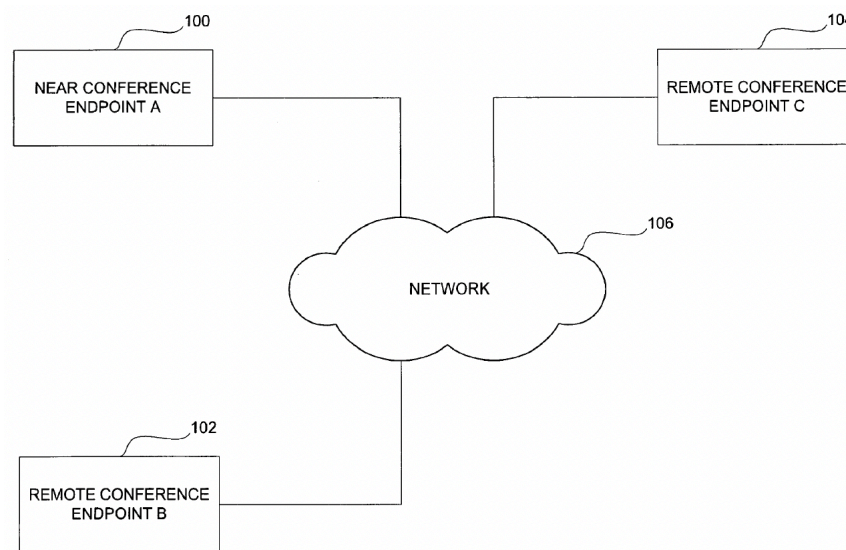


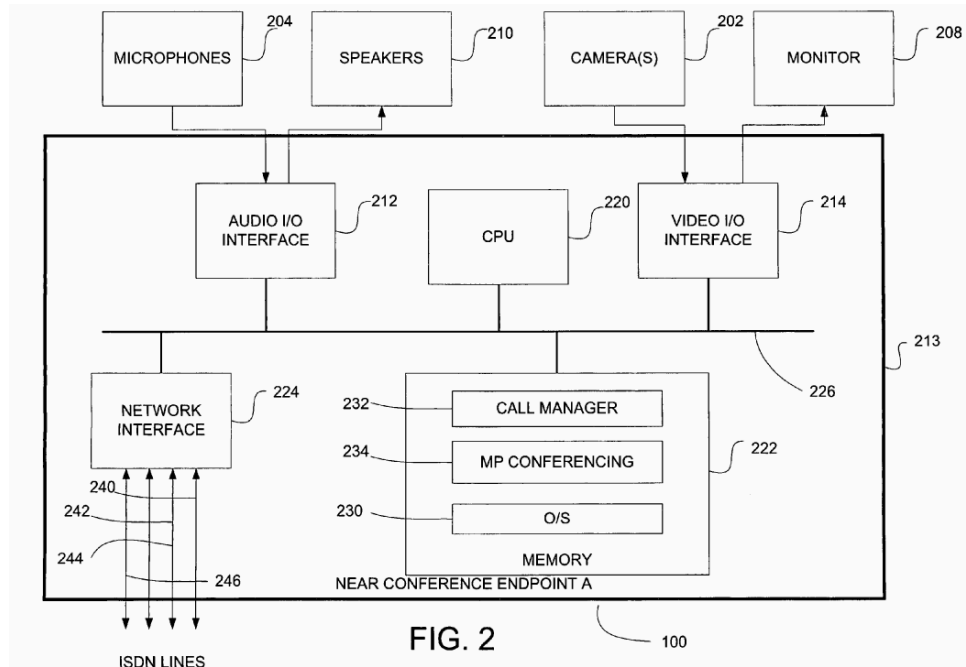
FIG. 1

Ex_1008, FIG. 1; Ex_1003 ¶116.

Specifically, Drell discloses a videoconferencing apparatus “to combine and distribute audio and video signals received from a plurality of remote conference

endpoints[.]” Ex_1008, Abstract. Drell explains that “network 106” facilitates the transmission of “audio and video data between and among near conference endpoint 100 and remote conference endpoints 102 and 104.” *Id.*, 3:20-23. Drell explains that “[a]lthough a single network 106 is shown,” Drell “contemplates the use of two or more networks (for example, the PSTN and the Internet) to connect conference endpoints utilizing different communication protocols.” *Id.*, 3:33-38. Drell further explains “that while only two remote conference endpoints are depicted in Fig. 1 for the purpose of clarity, a greater number of remote conference endpoints may be accommodated by near conference endpoint 100.” *Id.*, 3:15-19.

Drell’s system implements a software-based conference manager, explaining that centrally located conference bridges can have significant cost disadvantages. Ex_1003 ¶118. It thus teaches use of “MP conferencing application 234” that is located at a “near conference point 100.” Ex_1008, 1:5-2:8, 4:6-20. Drell’s near conference endpoint 100 is illustrated in Figure 1, below:



Id., FIG. 2; Ex_1003 ¶118.

Drell's MP conferencing application 234 is illustrated in Figure 3, reproduced below:

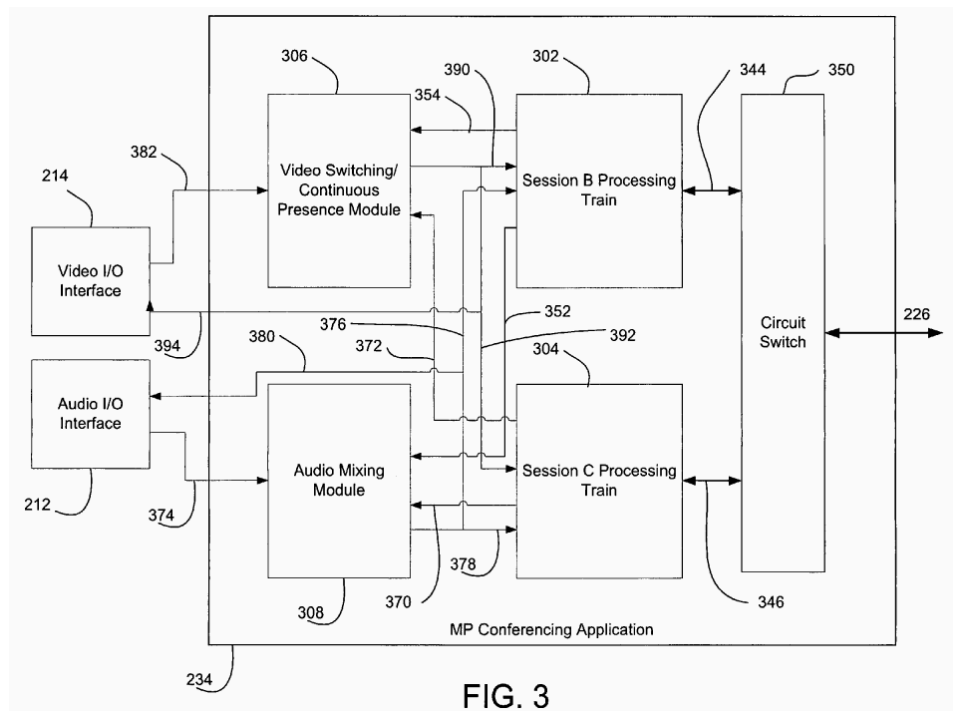


FIG. 3

Ex_1008, FIG. 3.

Drell teaches that MP conferencing application 234 uses “a set of codecs” and that the communication process may “comprise an H.320 process (ISDN-based) or H.323 (packet-based) process.” *Id.*, 2:17-33, FIG. 4.

To process received audio data, the “[a]udio codec 408 receives the audio data stream ... and applies ... decoding in accordance with a standard ... or proprietary audio compression algorithm.” The decoded received audio and video data streams “together with the locally generated audio and video signals, are combined at an audio mixer and a video switching/continuous presence module.” *Id.*, 2:17-37. During transmission, “video codec 406 encodes the video data stream output by video switching/continuous presence module 306 (representative, for example, of a “continuous presence” image) using a standard or proprietary video compression algorithm (e.g., H.261) and...[a]udio codec 408 encodes the audio data stream output by audio mixing module 308 (representative, for example, of the blended speech of conference participants located at near conference endpoint 100 and remote conference endpoints 102 and 104) using a standard or proprietary audio compression algorithm.” *Id.*, 6:33-44; Ex_1003 ¶¶115-120.

2. Reasons to Combine Knappe and Drell

A POSITA would have been motivated to combine the teachings of Knappe and Drell for multiple reasons, including to produce the obvious, beneficial, and

predictable result of implementing in Knappe's conferencing devices an audio codec using a standard or proprietary compression algorithm to reduce the data transmitted. Ex_1003 ¶¶517-518.

Knappe and Drell are analogous prior art both pertaining to the field of multiparty conferencing. *See, e.g.*, Ex_1006, Abstract, 1:8-9; Ex_1008, 1:16-18; Ex_1008 ¶519. Knappe teaches that "the communication devices 16 comprise...[a] codec (coder/decoder) [that] converts audio...IP packets received from the network. Ex_1006, 4:5-17. Regarding codecs, Drell teaches that the near communications endpoint 100 utilizes an "[a]udio codec [that] receives the audio data stream...[which is] decod[ed] in accordance with a standard...or proprietary audio compression algorithm." Ex_1008, 6:18-45. It would have been obvious to a POSITA for Knappe's system, including the communication devices 16, to utilize an audio codec that employs a compression algorithm for encoding/decoding received IP packet data, as Drell teaches, because it would beneficially reduce the amount of data transmitted over the network. Ex_1003 ¶520; Ex_1021 at 12-13 ("[C]ompression algorithms can be used to **reduce the amount of voice data that is transmitted**...This reduction...allows for more voice calls to transit links with limited bandwidth."). Dr. Houh confirms this, having worked on as system prior to the priority date of the '612 patent "which allowed for a system administrator to

select an audio compression algorithm for reducing the amount of audio data transmitted over the network by 50%.” Ex_1003 ¶520.

The combination of Knappe and Drell is simply the use of a known technique (implementing a codec using standard or proprietary algorithms that compress/decompress data, per Drell) in the devices of Knappe’s system, including conference bridge 32 and the communication devices 16, to yield predictable results (reduce the amount of voice data transmitted). *Id.* ¶521. Moreover, the result would have been predictable and there would have been a reasonable expectation of success since Knappe already includes a codec (*see* Ex_1006, 4:9) and Drell itself evidences success with a compression codec in the conferencing context. Ex_1003 ¶522. Further, any modification needed to the teachings of Knappe, such as adding software programming and/or hardware to accommodate the teachings of Drell would have been within the level of ordinary skill in the art. *Id.* Indeed, that there would have been a reasonable expectation of success is also evidenced by Drell. *Id.*

Petitioner’s proposed combination permits but does not require physical incorporation of elements from the Drell into Knappe’s system. *See In re Mouttet*, 686 F.3d at 1322; Ex_1003 ¶523.

3. Claim 22

[22.P] The method of claim 19, further comprising:

See [19.P]-[19.10].

[22.1] compressing the second mixed audio data before the transmitting to the first remote client

Drell teaches that the “audio codec 408” of moderator near conference endpoint 100 “encodes the audio data stream output by audio mixing module 308...using a standard or proprietary audio compression algorithm[.]” Ex_1008, 6:33-44. The “audio codec 408” then “delivers the encoded audio data to communication process 404” for transmission. *Id.*, 6:44-45. In addition, as Drell discloses using an H.323 process, a POSITA would have understood Drell to use the compression protocols and codecs described in the H.323 standard. Ex_1003 ¶¶304, 526. Thus, the prior art teaches using a compression algorithm and/or compression protocols for compressing the mixed audio data before the mixed audio data is transmitted to the remote conference endpoint 102, which renders obvious this limitation. *Id.* ¶¶301-305, 526.

It would have been obvious to a POSITA to utilize in Knappe an audio codec (using a compression algorithm or protocol) that compresses the mixed audio data before transmission to the first remote communications device 16, as Drell teaches, because this would provide Knappe’s system the benefit of reducing the amount of data transmitted over the network. *Id.* ¶¶137-157, 517-523, 527.

Thus, the prior art teaches using a compression algorithm and/or compression protocols for compressing the second mixed audio data before

transmitting the second mixed audio data to the first remote communications device 16, which renders obvious this limitation. *Id.* ¶528.

4. Claim 23

[23.P] The method of claim 22, further comprising:

See [22.P]-[22.1].

[23.1] decompressing the compressed digital audio data at the first remote client.

As a threshold matter, the phrase “*compressed digital audio data*” is not previously recited in the claim, which only discusses “*compressing the second mixed audio data*” (see element [22.1]). For analysis purposes only, this Petition will assume that the claimed “*compressed digital audio data*” in [23.1] corresponds to the output of the “*compressing*” step discussed at [22.1]. Ex_1003 ¶543.

As discussed at [22.1], Knappe and Drell teach that the second mixed audio data is compressed with a codec (using a standard or proprietary compression algorithm) and transmitted to the first remote communications device 16. *Id.* 544.

Knappe teaches that the data communicated over its network is digitally encoded. Ex_1006, 4:11-14 (“The digital encoded data is encapsulated into IP or other suitable packets for transmission over the network 14. IP packets received from the network 14 are converted back into analog signals and played to the user.”). It would have been obvious to a POSITA that data transmitting over

Internet network 106 is in digital form because communications over the Internet utilize digital data encapsulated in packets. Ex_1003 ¶¶533-534; Ex_1021 at 12-13. Further, it would have been obvious to a POSITA that Drell's codec performs its encoding to generate digital signals since that is how codecs work. Ex_1003 ¶534. Thus, it would have been obvious that the compressed second mixed audio data (discussed at [22.1]) is "*digital*," as claimed. *Id.* Notably, the '612 patent specification's only reference to "digital" data is a description of how "digital IP is routed via Internet." Ex_1001, 6:18-20; Ex_1003 ¶534.

Drell discloses that a conference endpoint utilizes a codec (using a standard or proprietary algorithm) to decompress received compressed audio data. Ex_1003 ¶535. Specifically, Drell describes a "receive mode" in which an audio codec performs "decoding in accordance with a standard...or proprietary audio compression algorithm." Ex_1008, 5:66-6:23. It would have been obvious to a POSITA that Drell's remote conference endpoint, which receives compressed audio data during the conference, would utilize a codec to decompress the compressed communications for playback to the conference participant. Ex_1003 ¶536.

Additionally, as discussed at [22.1], Drell teaches that the communication process may include a standard process such as H.323, which a POSITA understands includes compression and decompression protocols and codecs

described in the standard. *Id.* ¶¶304, 526, 537. It would have been obvious to a POSITA that in H.323 communications, the device receiving compressed audio data would utilize a codec to decompress the received compressed communications for playback to the conference participant. *Id.* ¶¶526, 537.

It would have been obvious to a POSITA to utilize in Knappe an audio codec (using a compression algorithm or protocol) that decompresses compressed digital audio data received at the first remote communications device 16, as Drell teaches, because this would allow Knappe's system to beneficially reduce the amount of data transmitted over the network. *Id.* ¶538. Further, it would have been obvious to a POSITA to decompress received compressed audio to facilitate playback to the conference participant at the first remote communications device 16, thereby facilitating conference participation. *Id.* Without decompression, the audio data could not be played back to the conference participant. *See, e.g.,* Ex_1006, 4:13-17 ("IP packets received from the network 14 are converted back into analog signals and played to the user. It will be understood that the communication devices 16 may otherwise suitably encode and decode signals transmitted over or received from the network 14."); Ex_1008, 3:45-46 ("[A] loudspeaker [] present[s]...speech of the remote conference participants."); *see also* Ex_1003 ¶¶137-157, 517-523, 538.

Thus, the prior art teaches decompressing the compressed digital audio data at the first remote communications device 16, which renders obvious this limitation. Ex_1003 ¶539.

5. Claim 24

[24.P] The method of claim 22, further comprising:

See [22.P]-[22.1].

[24.1] wherein the compressing the second mixed digital audio data is compressed using a standard audio codec.

The phrase “*second mixed digital audio data*” is not previously recited in the claim, which only discusses “*compressing the second mixed audio data*” (see element [22.1]). Ex_1003 ¶543. For analysis purposes only, this Petition will assume that the claimed “*second mixed digital audio data*” in [24.1] corresponds to the input of the “*compressing*” step discussed at [22.1]. *Id.*

As discussed at [22.1], Knappe and Drell teach that the second mixed audio data is compressed with a codec and transmitted to the first remote communications device 16. *Id.* ¶544. It would have been obvious to a POSITA that the second mixed audio data is “digital” audio data for several reasons. *Id.* ¶545. First, Knappe discloses that the conference output streams produced by the mixer are “converted by a corresponding converter and buffered by a corresponding output buffer for transmission to the corresponding participant.” Ex_1006, 6:38-42. A POSITA would have been aware that buffering digital audio

data is relatively trivial and could be accomplished in various ways, such as using well-known data structures like a first-in, first-out data queue or circular data buffer. *Id.* ¶545. Buffering audio data in analog form, however, would be substantially more complicated. *Id.* Thus, a POSITA would have understood that the mixed audio data output by Knappe’s mixer 80 is “*digital*” audio data. *Id.* This understanding is further confirmed by Knappe’s incorporation (Ex_1006, 8:40-43) of the contents of U.S. Patent No. 6,011,851, which describes how “**audio processing is performed on digitally sampled 16-bit linear audio samples, with the resultant output also in 16-bit linear form.**” Ex_1045, 4:17-18; Ex_1003 ¶545. Accordingly, a POSITA reading Knappe’s disclosure would have understood that the mixed audio output generated for the first remote communication device 16 (“*second mixed audio data*”) is “*digital*.” Ex_1003 ¶545.

It would have been obvious to a POSITA that Drell describes mixing audio in a digital format because Drell describes performing audio mixing using software running on a computer. *Id.* ¶546. Specifically, Drell “utilizes software-based processing of video and audio data streams.” Ex_1008, 6:63-64. Drell’s “MP conferencing application” includes an “audio mixing module 308.” *Id.*, 4:32-38. Because all, or substantially all, computers for executing software are digital computers, it would have been obvious to a POSITA that Drell’s software-based

“audio mixing module 308” processes audio data in “*digital*” form. Ex_1003 ¶546.

And again, Drell teaches that audio codec 408 (discussed at [22.1]) is “using a standard... audio compression algorithm.” Ex_1008, 6:43-44. Further, the H.323 codecs (discussed at [22.1]) are also standard. Ex_1003 ¶547. It would have been obvious to a POSITA to utilize a standard audio codec (using a standard compression algorithm or protocol) that compresses the mixed audio data, as Drell teaches, because this would provide Knappe’s system the benefit of reducing the amount of data transmitted over the network. *Id.* Further, a POSITA would have recognized that by utilizing standard audio codecs to compress and decompress audio data throughout the network would beneficially allow Knappe to avoid investing time and money to develop proprietary compression algorithms. *Id.* Furthermore, using standard audio codecs to compress and decompress in Knappe would beneficially facilitate interoperability among conferencing devices from different manufacturers. *Id.*; *see also id.* ¶¶137-157, 517-523.

Thus, the prior art teaches that the compressing the second mixed digital audio data is compressed (see discussion at [22.1]) with a standard audio codec, which renders obvious this limitation. Ex_1003 ¶548.

6. Claim 28

[28.P] The apparatus of claim 25:

See [25.P]-[25.10].

[28.1] wherein the second mixed audio data is compressed digital audio data.

As discussed at [19.5] and [19.8], the prior art teaches mixing and subsequently transmitting the second mixed audio data to the first remote communications device 16. Ex. 1003 ¶551. As discussed at [22.1] and [23.1], Drell teaches using a compression algorithm to compress mixed audio data. *Id.* ¶552. As discussed in [23.1] and [24.1], Drell and Knappe teach mixing and compressing audio data in the form of “*digital*” audio data. *Id.* ¶554; *see also id.* ¶¶533-534. Thus, it would have been obvious that Drell’s compressed second mixed audio data is “*compressed digital audio data*,” as claimed. *Id.*

Thus, the prior art teaches that the second mixed audio data is compressed with an audio codec before transmission to the first remote communications device 16, which renders obvious this limitation. *Id.* ¶555.

7. Claim 29

[29.P] The apparatus of claim 85:

See [28.P]-[28.1].

[29.1] wherein the compressed audio data is compressed using a standard audio codec.

As discussed at [28.1], the prior art teaches that the second mixed audio data is compressed with an audio codec into compressed digital audio data. Ex_1003 ¶557. As discussed at [24.1], the prior art teaches that the audio codec is a

standard audio codec. *Id.* Thus, the prior art teaches that the second mixed audio data is compressed with a standard audio codec, which renders obvious this element. *Id.* ¶558.

IX. CONCLUSION

For the reasons given above, Petitioner has demonstrated a reasonable likelihood of success in establishing the unpatentability of claims 19-29 of the '612 patent and respectfully requests institution of IPR for each of the grounds presented herein and cancellation of the challenged claims.

Respectfully submitted,

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CERTIFICATE OF WORD COUNT PURSUANT TO 37 C.F.R. § 42.24(D)

The undersigned hereby certifies that the word count for the above Petition for *inter partes* review is 13,979, which is less than the 14,000 allowed under 37 CFR § 42.24(a)(1)(i).

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CERTIFICATE OF SERVICE PURSUANT TO
37 C.F.R. § 42.6 AND 37 C.F.R. § 42.105

Pursuant to 37 C.F.R. § 42.6(e)(4) and 42.105(b), the undersigned certifies that on December 16, 2022, a complete and entire copy of this Petition for *inter partes* review and all supporting exhibits were provided via FedEx First, to the Patent Owner by serving the correspondence address of record as follows:

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