IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of:	Maureen Brigid Gallagher	
U.S. Patent No.:	6,704,304	Atty Docket No.: 35548-0131IP1
Issue Date:	March 9, 2004	
Appl. Serial No.:	09/588,248	
Filing Date:	June 6, 2000	
Title:	SELECTIVE ESTABLISHMENT OF TELECOMMUNICATIONS CONNECTIONS OVER PACKET AND CIRCUIT SWITCHED NETWORKS	

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PETITION FOR *INTER PARTES* REVIEW OF UNITED STATES PATENT NO. 6,704,304 PURSUANT TO 35 U.S.C. §§ 311–319, 37 C.F.R. § 42

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EXHIBITS

EX1001 U.S. Patent No. 6,704,304 to Gallagher et al. ("the '304 patent")

EX1002 Prosecution History of the '304 Patent (Serial No. 09/588,248)

EX1003 Declaration of Mr. Peter Rysavy

EX1004 U.S. Patent No. 6,064,653 ("Farris")

EX1005 U.S. Patent No. 6,075,784 ("Frankel")

EX1006 U.S. Patent No. 6,731,627 ("Gupta")

EX1007 U.S. Patent No. 6,282,192 ("Murphy")

EX1008 U.S. Patent No. 6,781,983 ("Armistead")

EX1009-1011 Reserved

EX1012 Complaint filed in *WSOU Investments LLC v. Huawei Technologies Co., Ltd., et al*., Case No. 6:20-cv-00889 (W.D. Tex.)

EX1013 Plaintiff's Preliminary Constructions in *WSOU Investments LLC v. Huawei Technologies Co., Ltd., et al*., Case No. 6:20-cv-00889 (W.D. Tex.)

EX1014 Defendant's Preliminary Constructions in *WSOU Investments LLC v. Huawei Technologies Co., Ltd., et al*., Case No. 6:20-cv-00889 (W.D. Tex.)

EX1015-1099 Reserved

EX1100 Complaints filed in *WSOU Investments LLC v. Huawei Technologies Co., Ltd., et al*., Case Nos. 6:20-cv-00889, 6:20-cv-00891-00893, 6:20-cv-00916-00917 (W.D. Tx.)

EX1101 Scheduling Order (Document 29), *WSOU Investments LLC v. Huawei Technologies Co., Ltd., et al*., Case Nos. 6:20-cv-00889, 6:20-cv-00891-00893, 6:20-cv-00916-00917 (W.D. Tx.)

EX1102 Huawei's Stipulation served in *WSOU Investments LLC v. Huawei Technologies Co., Ltd., et al*., Case Nos. 6:20-cv-00889, 6:20-cv-00891-00893, 6:20-cv-00916-00917 (W.D. Tx.)

CLAIM LISTING

Claim Element	Claim Language
[1.P]	In a telecommunications network, comprising a core packet network and a circuit public switched telephone network (PSTN), apparatus for establishing a telecommunications connection comprising:
[1.1]	a packet access network connectable to a plurality of customer telephone stations; and
[1.2]	a server system;
[1.3]	said packet access network comprising an interface gateway and a packet switch;
[1.4]	said packet switch for accessing said PSTN and said core packet network;
[1.5]	said interface gateway comprising circuits for converting signals from said plurality of customer telephone stations to packets for switching by said packet switch;
[1.6]	said saver [*sic*] system for controlling connections through said packet switch.
[3]	The apparatus of claim 1, wherein said server system comprises means for determining whether a call should be routed over said PSTN or said core packet network.
[7]	The apparatus of claim 1, wherein said server system comprises a call feature server for controlling connections trough [*sic*] said packet switch in response to signals from said customer telephone stations.

Huawei Technologies Co., Ltd. ("Huawei" or "Petitioner") petitions for Inter Partes Review ("IPR") of claims 1, 3 and 7 of U.S. Patent No. 6,704,304 ("the '304 patent").

I. MANDATORY NOTICES—37 C.F.R § 42.8(a)(1)

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

Huawei Technologies Co., Ltd.; Huawei Device USA, Inc.; Huawei Technologies USA Inc.; Huawei Investment & Holding Co., Ltd.; Huawei Device (Shenzhen) Co., Ltd.; Huawei Device Co., Ltd.; Huawei Tech. Investment Co., Ltd.; and Huawei Device (Hong Kong) Co., Ltd. are the real parties-in-interest. No other parties had access to or control over this Petition, and no other parties funded this Petition.

B. Related Matters—37 C.F.R. § 42.8(b)(2)

WSOU Investments, LLC d/b/a Brazos Licensing and Development ("WSOU")—the alleged Patent Owner—filed on September 29, 2020 a complaint asserting the '304 patent against Huawei Technologies Co., Ltd. and Huawei Technologies USA Inc. in the U.S. District Court for the Western District of Texas (Case No. 6:20-cv-00893). The complaint was one of six patent lawsuits filed by WSOU against Huawei between September 29, 2020 and October 2, 2020:

Asserted Patent No.	Civil Case No. (W.D. Tex.)
6,704,304	6-20-cv-00889
7,406,260	6-20-cv-00891
7,460,658	6-20-cv-00892
7,933,211	6-20-cv-00893
7,406,074	6-20-cv-00916
7,423,962	6-20-cv-00917

None of the six asserted patents is related to another. Four of the six patents are currently challenged in other IPR proceedings (IPR case nos. IPR2021-00689; IPR2021-00690; IPR2021-00691; and IPR2021-00692).

Petitioner is not aware of any disclaimers or reexamination certificates addressing the '304 patent.

C. Lead And Back-Up Counsel—37 C.F.R. § 42.8(b)(3)

Petitioner provides the following designation of counsel.

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D. Service Information

Please address all correspondence and service to the address listed above. Petitioner consents to electronic service by email at IPR35548-0131IP1@fr.com (referencing No. 35548-0131IP1 and cc'ing PTABInbound@fr.com and hawkins@fr.com).

II. PAYMENT OF FEES—37 C.F.R. § 42.103

Huawei authorizes the Patent and Trademark Office to charge Deposit Account No. 06-1050 for the fee set in 37 C.F.R. § 42.15(a) for this Petition and further authorizes payment for any additional fees to be charged to this Deposit Account.

III. REQUIREMENTS FOR IPR—37 C.F.R. § 42.104

A. Standing

Huawei certifies that the '304 Patent is available for IPR and that Huawei is not barred or estopped from requesting IPR.

B. Challenge and Relief Requested

Huawei requests IPR of claims 1, 3, and 7 of the '304 patent on the grounds listed below. A declaration from Mr. Peter Rysavy (EX1003) supports this Petition.

Ground	Claims	Basis for Rejection
1	1, 3, 7	§102 – Farris (6,064,653)
2A	1, 3, 7	§103 – Frankel (6,075,784) in view of Gupta (6,731,627)
2B	3	§103 – Frankel in view of Gupta and Armistead (6,781,983)
3A	1, 3, 7	§102 – Gupta
3B	3	§103 – Gupta in view of Murphy (6,282,192)

The '304 patent does not make a claim of priority. For purposes of this Petition, Huawei treats the June 6, 2000 filing date of the '304 patent as the Critical Date for evaluating prior art status:

Reference	Filed	Published	Status
Farris (EX1004)	01/07/1997	05/16/2000	§§102(a), (e)
Frankel (EX1005)	07/09/1998	06/13/2000	§102(e)
Gupta (EX1006)	11/17/1999	05/04/2004	§102(e)
Murphy (EX1007)	05/09/2000	08/28/2001	§102(e)
Armistead (EX1008)	05/03/1999	08/24/2004	§102(e)

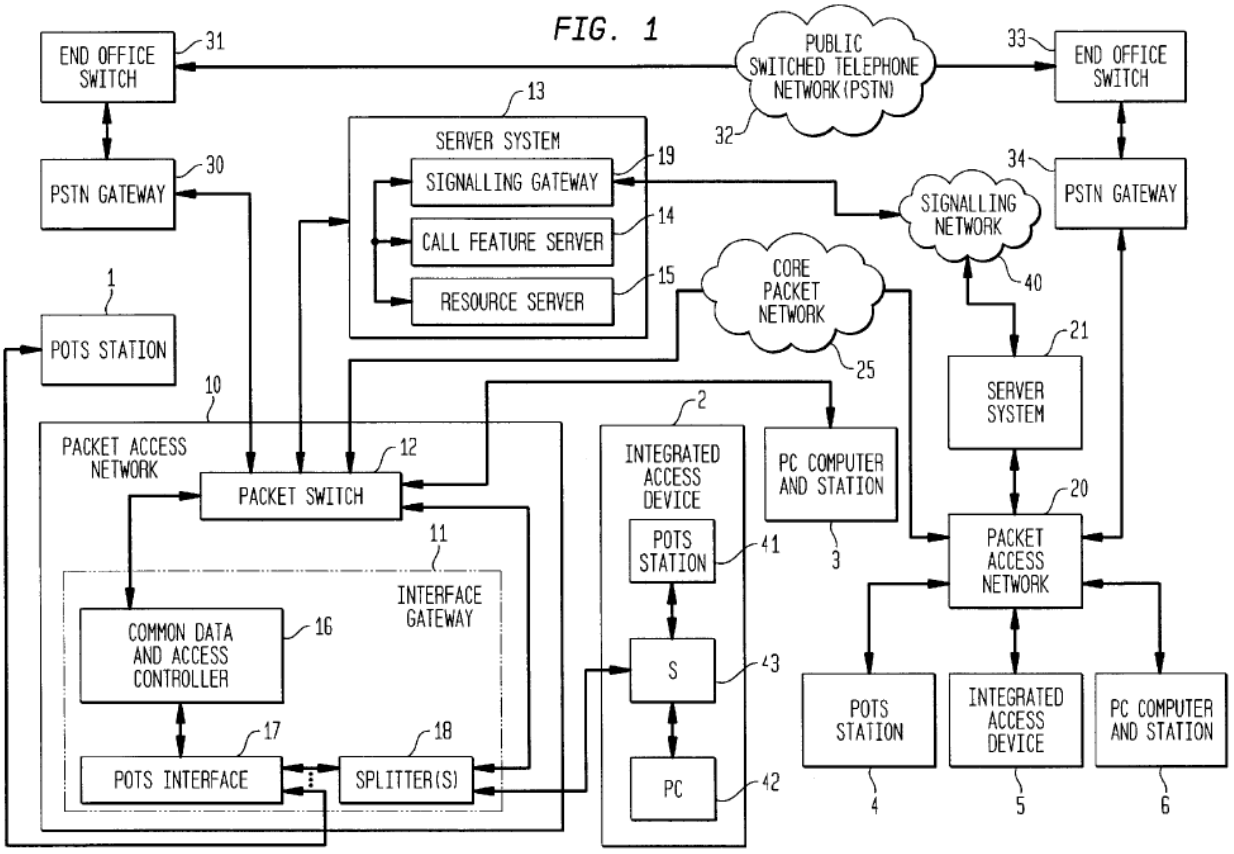
Farris and Murphy were listed in the "Notice of References Cited" form ("PTO-892") during prosecution, but never applied in any rejection. EX1002, 56. The other references (Frankel, Gupta, and Armistead) have not been formally cited or applied in a rejection during prosecution. *See generally* EX1002; *see also, infra*, Section VIII.A.

IV. THE '304 PATENT

A. Brief Description

The '304 patent generally describes selective "establishment of telecommunications connections over packetized networks and the Public Switched Telephone Network (PSTN)." EX1001, Title, 1:9-11. The '304 patent notes "[a] problem of the prior art is how to use the combined resources of the Internet and the PSTN effectively." EX1001, 1:35-36. For example, the '304 patent describes "when the Internet or some equivalent packet network becomes too heavily loaded, traffic should be moved to the Public Switched Telephone Network (parts of which may use ATM transmission) for new calls and, ideally, also for calls that are already in progress." EX1001, 1:39-46, 1:46-50.

The '304 patent purports to address this problem by employing "a local packet access network" that "is used to access either a core packet network, such as the Internet, or the Public Switched Telephone Network (PSTN). EX1001, 1:51-55, FIG. 1 (below). An embodiment of the packet access network includes "interface circuits for interfacing with local customer stations, a common data and access controller (COMDAC), and a packet switch." EX1001, 2:10-13. "The COMDAC converts PCM signals generated by the interface circuits into packets, generally of the H.323 protocol used for transmitting voice over the Internet, for use by the packet switch and the packet switch accesses a core packet network 25, such as the Internet, directly, and accesses the PSTN 32 via a PSTN gateway and an end office switch." EX1001, 2:13-19.



EX1001, FIG. 1.

Further, the '304 patent describes a server system for "check[ing] whether the call can be routed via the packet network, (Action Block 203)," "based on whether the core packet network can be expected to provide packet transmission that meets the quality requirements of the network." EX1001, 4:1-6, FIG. 2. If it is determined that the call can be routed via the packet network, "the COMDAC or CPE, in cooperation with the server system, selects a route and attempts to route the call via the core packet network, (Action Block 207)." EX1001, 4:10-15. If "packet delay during the conversation" is excessive, "then the COMDAC or CPE causes the server

system to switch the call to the PSTN." EX1001, 4:19-25, FIGS. 2-3.

B. Prosecution History

The examination of the '304 patent was terse, without any rejection based on the prior art reference. A first (and only) office action noted an issue related to antecedent basis for a term in claim 1, but otherwise indicated all claims were allowable. EX1002, 52-55.

Applicant filed a response on November 16, 2003, which corrected the antecedent basis and further amended some dependent claims for alleged clarification. EX1002, 57-61. The examiner then mailed a notice of allowance, but yet again, there was no mention of reasons for allowance over any particular prior art. Indeed, there were no reasons for allowance at all. EX1002, 62-66.

That was it. Based on this examination record, the '304 patent issued. Petitioner submits that the '304 patent is ripe for review in light of the more pertinent prior art grounds detailed below and Patent Owner's broad assertions for the '304 patent in the concurrent litigation more than 16 years after the patent issued.

V. LEVEL OF ORDINARY SKILL

A person of ordinary skill in the art at the time of the '304 patent (a "POSITA") would have had a least a Bachelor's degree in computer science, computer engineering, electrical engineering, or a related field, with 2-3 years of experience in information or communication systems. EX1003, ¶20. Such experience

could be obtained through research and study in a graduate program or through comparable exposure to research literature through industry employment working in the field of network routing, and additional years of experience could substitute for the advanced-level degree. *Id*.

VI. CLAIM CONSTRUCTION

All claim terms should be construed according to the *Phillips* standard. *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005); 37 C.F.R. §42.100. The parties have submitted preliminary claim constructions in district court litigation involving the '304 patent, and claim construction remains ongoing. *See* EX1013, EX1014. For purposes of addressing claim 1 in this proceeding, no formal construction is necessary due to the noticeable overlap between the preferred embodiment of the '211 patent and the prior art analyzed in detailed below. *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011).

Petitioner acknowledges that, for purposes of institution, the Board need not formally construe any dependent claim when assessing the reasonable likelihood that Petitioner's grounds would prevail against independent claim 1 ("at least 1 of the claims"). 35 U.S.C. § 314(a). Regardless, for dependent claim 3, Petitioner submits the following alternative constructions for the recited "means for determining," and also notes which Grounds here apply to each alternative construction. *General Electric Co. v Vestas Wind Systems A/S*, IPR2018-00928, Paper 9, 12-16 (PTAB Nov. 5,

2018) ("the rule does not prohibit a petitioner from submitting more than one construction"); *Intel Corp. v Qualcomm Inc.*, IPR2018-01340, Paper 8, 11-13 (PTAB Jan. 15, 2019). In the Related Litigation, a *Markman* hearing is scheduled for August 12, 2021, and thus it is believed that a *Markman* order addressing the '304 patent may be available before the Board's institution here. EX1101, 3.

A. "means for determining whether a call should be routed over said PSTN or said core packet network" (claim 3)

This term includes the word "means ...," which creates a presumption that the term is governed by 35 U.S.C. §112, ¶6. *Williamson v. CitrixOnline, LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015) (*en banc*). This presumption remains intact here because the "means for" element is followed by a recitation of pure function ("determining whether a call should be routed over said PSTN or said core packet network") without any sufficient structural recitation in the element. *Id.* This Petition sets forth first and second alternative constructions for this "means for" element, but notably, claim 3 is unpatentable under either alternative construction for the reasons detailed below (*infra*, Section VII), and thus institution is appropriate. *General Electric*, Paper 9, 12-16; *Intel*, Paper 8, 11-13.

According to a first alternative construction, the corresponding structure for this "means for" element is the "call feature server" labeled as element "14" in FIG. 1. The '304 patent describes that the call feature server 14 is used for "analyzing this dialed input from the resource server 15 and combining it with customer data

from the customer database and network routing information from a network routing database, to determine where the call should be terminated and how the call should be routed." EX1001, 3:16-27; *see also* 2:35-41. Thus, under the first alternative construction, the scope of this "means for" element includes the corresponding structure—the call feature server—or equivalents thereof. EX1003, ¶¶51-52.

As detailed below, Grounds 1, 2A, and 3A demonstrate that dependent claim 3 is unpatentable under the first alternative construction.

According to a second alternative construction, the corresponding structure for this "means for" element is the "server system" programmed to perform a known network algorithm—namely, the algorithm that "checks whether the call can be routed via the packet network" according to a decision "based on whether the core packet network can be expected to provide packet transmission that meets the quality requirements of the network," and when "the server recognizes that the packet network connection is less economical than a PSTN connection, the result of this check would also be negative." EX1001, 4:1-10, 1:55-62, 4:19-25, FIG. 2 (blocks 203 and 205). Thus, under the second alternative construction, the scope of this "means for" element includes the corresponding structure—the algorithm cited above—or equivalents thereof. *Williamson*, 792 F.3d at 1348; EX1003, ¶53.

As detailed below, Grounds 1, 2B, and 3B demonstrate that claim 3 is unpatentable under the second alternative construction.

VII. THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. GROUND 1: FARRIS (Claims 1, 3, 7)

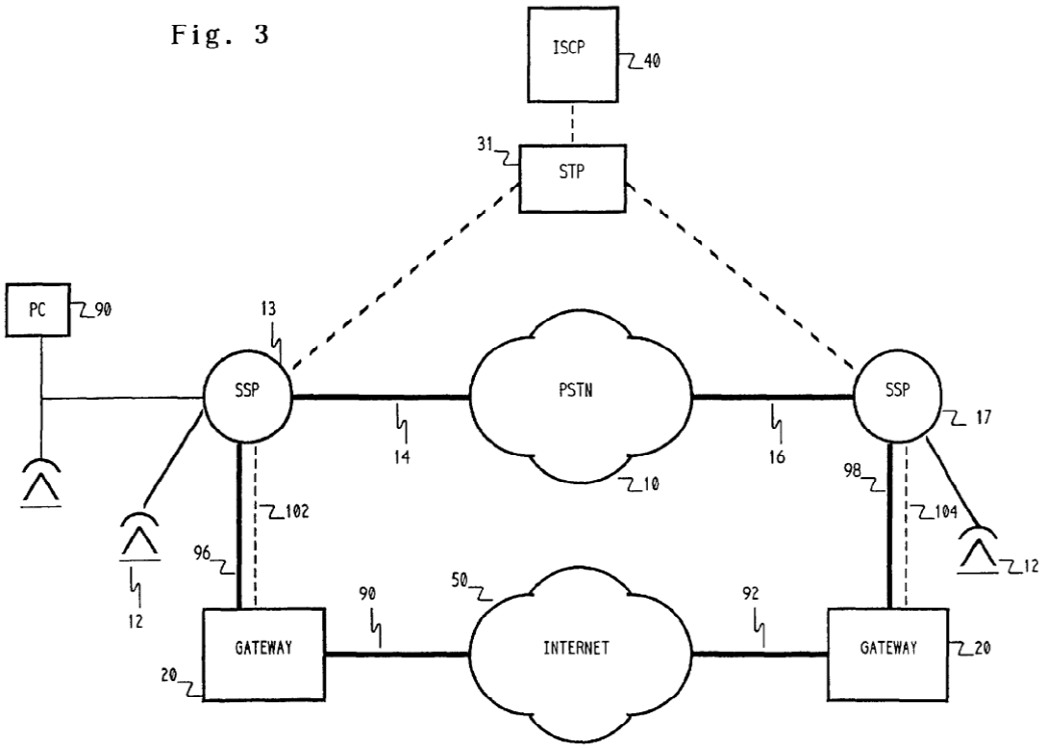
1. Overview of Farris

Similar to the '304 patent, Farris describes "telecommunications networks" for "alternative routing of voice calls placed through a data internetwork" either through the Internet or the PSTN, and further recognizes "[w]ith increasing volume of use on the Internet and the bursty nature of data transmission, traffic patterns have become unstable and unpredictable." EX1004, 1:25-27, 3:49-51, FIG. 1. To address such shortcomings, Farris provides a network solution (including "gateway servers") that "continuously monitor[s] the data traffic between two end nodes of a data internetwork, and that converts calls to appropriate formats (i.e., packets) for digital transmission and transmits the data through either the Internet or the PSTN, based on monitored data network conditions. EX1004, 5:16-45; EX1003, ¶33.

For example, as shown in FIG. 3 below, Farris's network includes gateway servers 20 and SSP capable central offices 13, 17 that are connected to "subscribers customer premises equipment (CPE) such as telephone terminals 12 and PC 90." EX1004, 8:52-9:3, FIG. 3. The gateway server includes "a packet assembler/disassembler (PAD) 116 that packetizes data on the LAN 114 into TCP/IP packets for transport onto the Internet." EX1004, 10:18-32. Further, the gateway server includes a master control unit (MCU) 108 that "tracks traffic conditions on the Internet

between the server and various remote servers." EX1004, 10:46-59. "If traffic conditions for communication with a particular remote location are unacceptable," the MCU instructs the PAD 116 to reroute the "appropriately addressed packets at the output of TCP/IP [PAD] 116" so that they are transmitted to "the final destinations through the local PSTN." EX1004, 10:60-11:5; EX1003, ¶¶34-36.

Fig. 3



EX1004, FIG. 3.

2. Analysis of Farris

Preamble [1.P]:

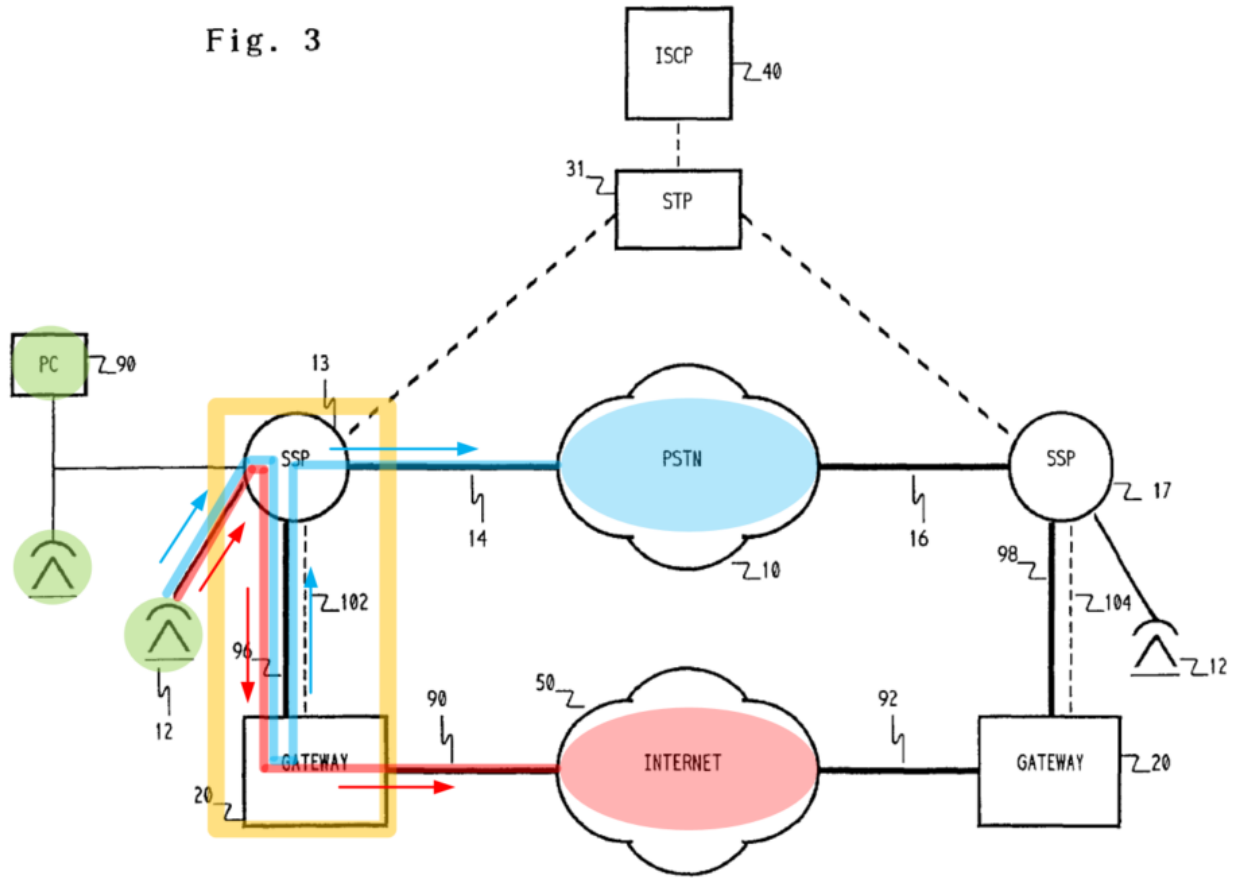
To the extent the preamble is limiting, Farris discloses this. EX1003, ¶55. For example, Farris "relates to telecommunications networks and more particularly to alternative routing of voice calls" between PSTN and the Internet ("data packet

network"). EX1004, 1:25-27, 8:52-61. Further, Farris discloses a network including one or more apparatuses, such as service switching points central offices ("SSP capable central offices 13 and 17" or "SSPs 13 and 17") and gateways ("gateway 20"), that operate to establish a telecommunications connection through the PSTN and the Internet. EX1004, 8:52-9:21, FIG. 3.

Element [1.1]:

Farris discloses a network (yellow box in FIG. 3 below) that is connected to "subscribers customer premises equipment (CPE) such as telephone terminals 12 and PC 90." EX1004, 8:64-66. In particular, this network includes the "SSP capable central offices 13 and 17" and the "gateway 20" to which "[e]ach of the central office SSPs 13 and 17 is connected." EX1004, 9:11-12, FIG. 3; EX1003, ¶56.[1]

[1] While Farris primarily illustrates "SSP capable central office" and "gateway" as two separate components, Farris describes the gateway can be incorporated within the SSP capable central office so that the network is implemented as a single system or apparatus. EX1004, 9:12-14; EX1003, ¶57.



EX1004, FIG. 3 (annotated).

Further, Farris's network (yellow box in FIG. 3 above) corresponds to the "***packet access*** network"[2] in that the network provides access to a packet network (e.g., Internet 50). EX1003, ¶58. Indeed, the network, including the central office 13 and the gateway 20, enables telephone terminals 12 to connect to the Internet (***packet network***) or the PSTN. EX1004, FIG. 3, 8:52-9:3, 9:11-21, 5:37-41; *see also* 10:18-20 ("***Ethernet-based network***"), 10:23-26 ("a packet assembler/disassembler (PAD) 116 that packetizes data on the LAN 114 into ***TCP/IP packets*** for

[2] All emphases throughout this Petition were added, unless indicated otherwise.

transport onto the Internet.").

Element [1.2]:

Farris discloses a server system that implements the gateway 20. EX1003, ¶¶59-60; EX1004, 9:40-43 ("a respective gateway 20a-20c that functions as an Internet telephony interface and ***server***, providing an interface between the corresponding telephone system 10 and the Internet. It is to be understood that the use of the term "gateway" may be variously described as an Internet module or interface, ***gateway server***, or gateway router."); *see also* EX1004, 5:37-42 ("by the ***gateway servers***"); *see infra* analysis of element [1.6].

Element [1.3]:

Farris's network (***packet access network***) (yellow box in FIG. 3 above) includes elements that correspond to the ***interface gateway*** of the '304 patent. EX1003, ¶¶61-63; *infra* analysis of element [1.5]. Further, Farris describes that the gateway functions as an interface. EX1004, 9:39-45 ("a respective ***gateway*** 20a-20c that functions as an Internet telephony ***interface*** and server, providing an ***interface*** between the corresponding telephone system 10 and the Internet. It is to be understood that the use of the term ***"gateway"*** may be variously described as an Internet module or ***interface***, gateway server, or gateway router.").

Additionally, Farris's network (***packet access network***) further includes elements that correspond to the ***packet switch*** of the '304 patent. EX1003, ¶64; *see*

infra analysis of element [1.4].

Element [1.4]:

Farris discloses the "packet assembler/disassembler (PAD) 116," the "master control unit (MCU) 108," and/or the "router 118," which cooperatively operate to access the PSTN and the Internet. EX1003, ¶65; EX1004, 10:23-28, 10:39-46, 10:60-11:5, 11:18-33, FIG. 5 (below).

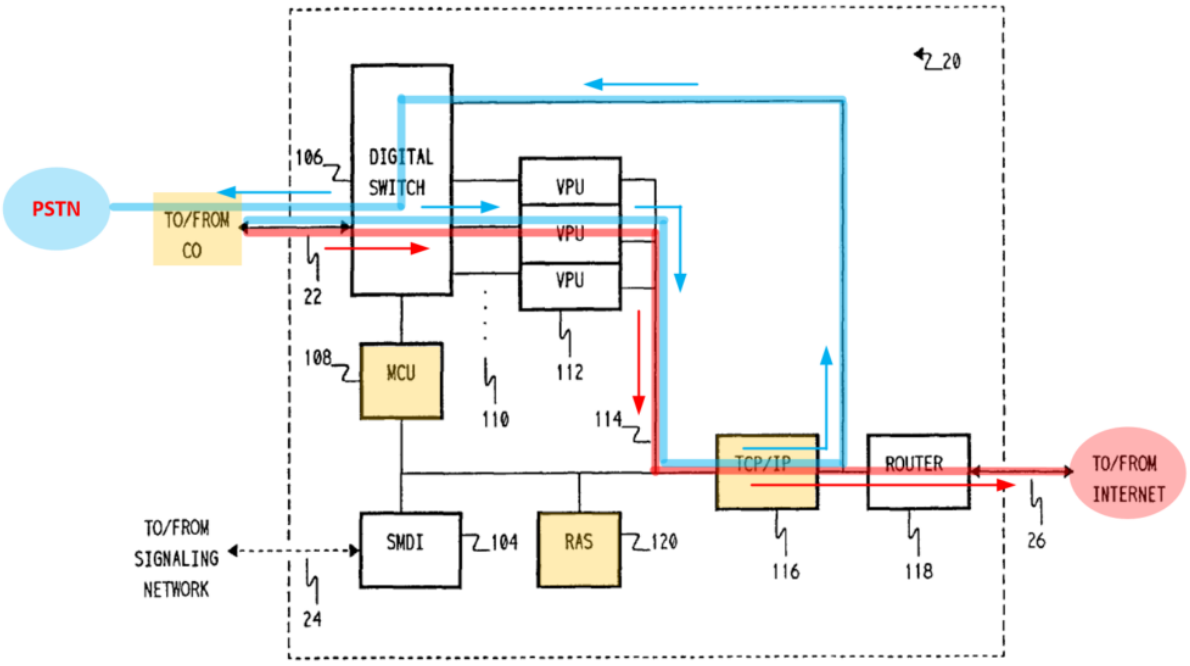


Fig. 5

EX1004, FIG. 5 (annotated).

In particular, "[u]nder direction of the MCU," the PAD 116 switches packets toward the Internet (via the router 118) or the PSTN, depending on "traffic conditions for communication with a particular remote location." EX1004, 10:60-11:5;

EX1003, ¶66. For example, as illustrated in FIG. 5 above, the PAD 116 transmits packets toward the Internet via the router 118 (following the red line extending from the PAD 116) or toward the PSTN (following the blue line extending from the PAD 116). EX1003, ¶66; EX1004, 10:60-11:5 ("Under direction of the MCU, ***appropriately addressed packets at the output of TCP/IP*** 116 destined for the remote server will be multiplexed and ***rerouted back through digital switch 106 through the pipeline to the remote server***. The remote server will process packets ... and ***transmit to the final destinations through the local PSTN***."); *see also* 10:23-28, 10:39-46, 11:18-33.

Element [1.5]:

Farris discloses that the SSP capable central office 13 and the gateway 20, either individually or in combination, provide the "circuits" structure recited in this element. EX1003, ¶67. Indeed, as detailed below, Farris actually teaches more detail than the terse specification of the '304 patent regarding the structure of the claimed "circuits." *See In re Epstein*, 32 F.3d 1559, 1568 (Fed. Cir. 1994) ("[T]hat appellant did not provide the type of detail in his specification that he now argues is necessary in prior art references supports the Board's finding that one skilled in the art would have known how to implement the features of the references.").

In general, Farris describes various components of the gateway 20 as "circuits," as illustrated in FIGS. 6 and 7. EX1003, ¶68; *see e.g.*, EX1004, 11:6-40 ("T1

circuit," "multi-tasking central processing unit (CPU) 174"), 11:54-12:56 ("BRI or PRI type ISDN line circuits." "each ISDN line circuit," "T1 (or T3) circuit"). Further, Farris discloses that the central office 13 that performs "conversion of analog voice [from a telephone] to digital signals." EX1004, 8:67-9:2. Then, as illustrated in FIG. 5 (below), the digital ***signals*** from the SSP capable central office are transmitted to the gateway 20, specifically to the "digital switch 106" and the "voice processor unit (VPU) 112," and finally converted into "TCP/IP ***packets***" at the "packet assembler/disassembler (PAD) 116." EX1004, 10:1-26; EX1003, ¶¶69-70; *see also* 10:10-26 ("The LAN 114 transports data ***packets***.").

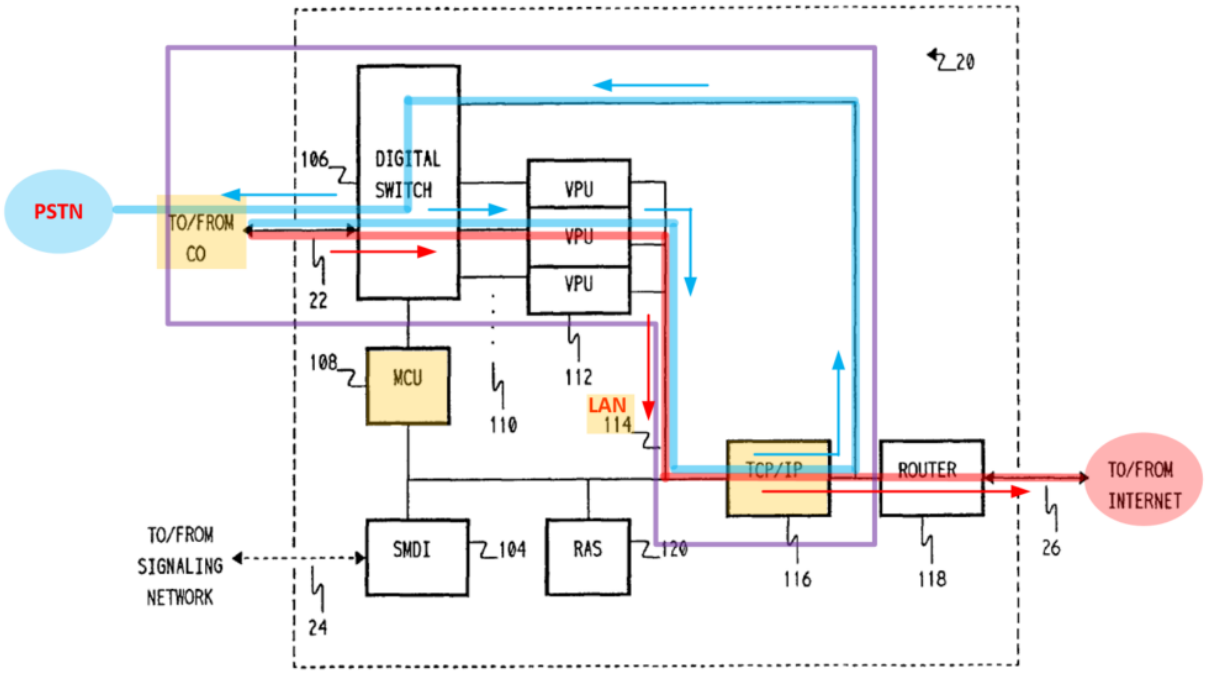


Fig. 5

EX1004, FIG. 5 (annotated). The evidence here confirms that, based upon these

straightforward teachings in Farris, a POSITA would have readily recognized that at least part of Farris's central office and gateway (e.g., the digital switch 106, the VPU 112, the LAN 114, and/or the PAD 116) (as depicted in a purple box in FIG. 5 above) provide circuits "for converting signals from said plurality of customer telephone stations to packets." EX1003, ¶71; EX1004, 8:67-9:2, 9:12-14, 10:1-26. Additionally, the evidence here confirms that these structures in Farris's system convert the signals (as detailed above) for purposes of "switching by said packet switch." EX1003, ¶72. Indeed, Farris describes that the converted packets are switched toward the Internet or the PSTN by the PAD 116 and/or the MCU 108. EX1003, ¶72; EX1004, 10:60-11:5, *supra* analysis of element [1.4].

Element [1.6]:

Farris discloses at least part of the gateway that corresponds to the server system of this element. EX1003, ¶73. For example, Farris discloses the "master control unit (MCU) 108 that controls the overall operations of the gateway." EX1004, 10:4-6. For example, the MCU instructs the PAD 116 (***packet switch***) to switch the packets that are output from the PAD 116, either toward the Internet through the router 118, or toward the PSTN by rerouting back through the digital switch 106. EX1004, 10:23-26 ("The LAN 114 transports data packets to ***a packet assembler/disassembler (PAD) 116*** that packetizes data on the LAN 114 into TCP/IP packets for

transport onto the Internet."); 10:60-11:5 ("***Under direction of the MCU***, appropriately addressed ***packets at the output of TCP/IP 116*** destined for the remote server will be multiplexed and rerouted back through digital switch 106 through the pipeline to the remote server. The remote server will ... transmit to the final destinations ***through the local PSTN***."); EX1003, ¶73.

Further, Farris discloses that the MCU 108 is implemented in a server. EX1003, ¶74. As discussed above (element [1.2]), Farris's gateway 20 functions as a server, and the MCU 108 is part of the gateway 20. EX1004, 9:39-46 ("It is to be understood that the use of the term "gateway" may be variously described as an Internet module or interface, ***gateway server***, or gateway router."), 9:60-62 ("FIG. 5 is a block diagram of a preferred embodiment of gateway 20 that comprises a combined telephony and Internet ***server platform***."), FIG. 5.

Therefore, Farris discloses the server system (e.g., the MCU and/or other components being part of the gateway server) "for controlling connections through said packet switch" (e.g., the PAD), as recited in element [1.6]. EX1003, ¶74; *see also* EX1004, 11:40-13:50, FIG. 7.

Element [3]:

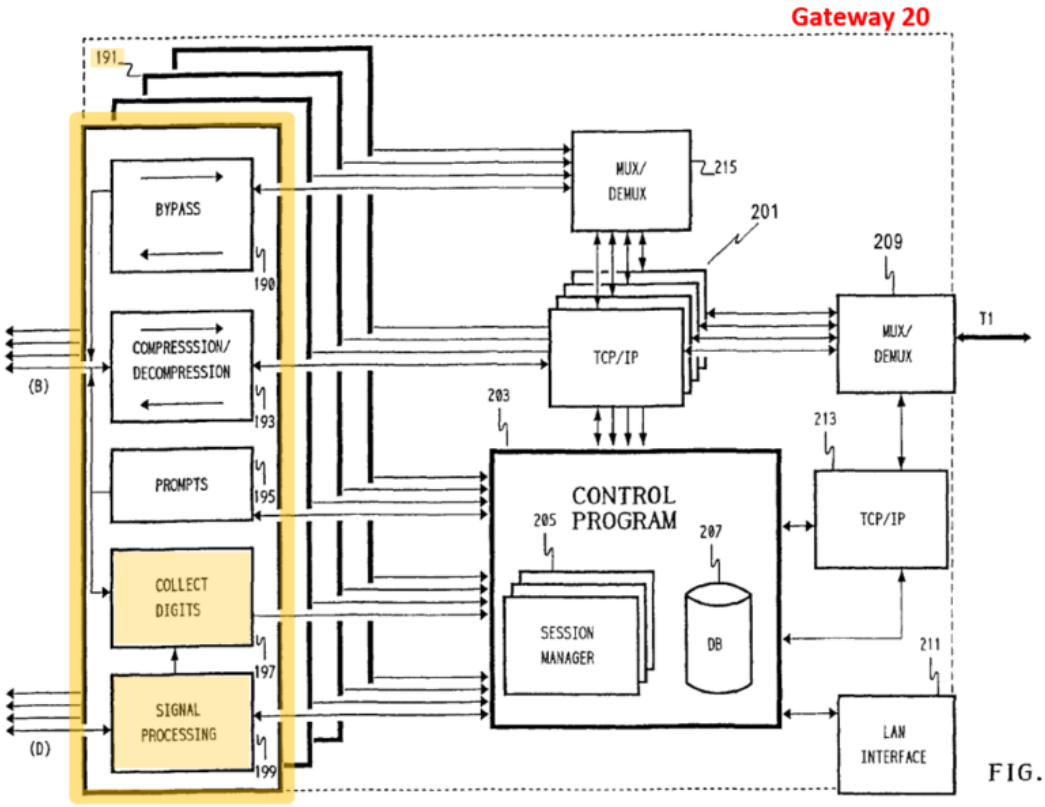
According to the first alternative construction of this "means for" term, the scope of element [3] includes the "call feature server" or equivalents thereof. *Supra* Section VI.A. Farris plainly discloses the corresponding structure, or equivalents

thereof, under the first alternative construction of element [3]. EX1003, ¶¶75-78.

In particular, Farris's gateway includes one or more components that correspond to the "call feature server" or equivalent thereof. EX1003, ¶76. For example, Farris's gateway includes "an ***RAS database*** 120 that is an image of the database in the RAS server 30." EX1004, 10:34-35. The RAS server includes a ***routing and administration database*** for managing ***call routing translations*** and user access permissions." EX1004, 9:52-59, FIG. 4. Further, Farris discloses that "[t]he routing and administration database stores ***records for every area code/NNX*** served by a telephony system 10, along with the ***network address*** for the corresponding gateway 20." EX1004, 9:56-59.

In addition, Farris discloses the gateway performs "a number of ***call processing function routines*** 191 for processing incoming and outgoing calls." EX1004, 11:54-67, FIG. 7. For example, subroutine collects "***digits input by users***" that are "received as dual tone multifrequency ***signals***." EX1004, 12:8-12. The signal processing routine is executed such that "***incoming signals*** may indicate a new incoming call on one of the associated B channels and identify the call as a data call or a voice call. The ***signals*** for such a call may include ***the dialed number*** as well as ***a number associated with the origin of the call***." EX1004, 12:18-26. Further, "[t]he session manager [205 of the control program 203] receives and processes

various signals from the call processing function routines 191 and provides the necessary instructions to the routines to ***execute each individual call processing function***." EX1004, 12:27-39.



EX1004, FIG. 7 (annotated).

As such, under the first alternative construction of Element [3], Farris's server system (e.g., ***at least part of gateway 20***) discloses a "call feature server," or an equivalent thereof, because at least part of the gateway 20 (e.g., ***call processing function routines 191***) analyzes customer dialed information (e.g., ***digits input by users***) from the resource server (e.g., ***routing and administration server (RAS)***) and combines it with customer data (e.g., ***dialed number***, ***number associated with the***

original of the call, ***records for every area code/NNX***, etc.) and network routing information (e.g., ***routing and administration database***), in order to determine the routing of a call—much like the call feature server disclosed in the '304 patent. EX1003, ¶78; EX1001, 2:35-41, 3:16-27.

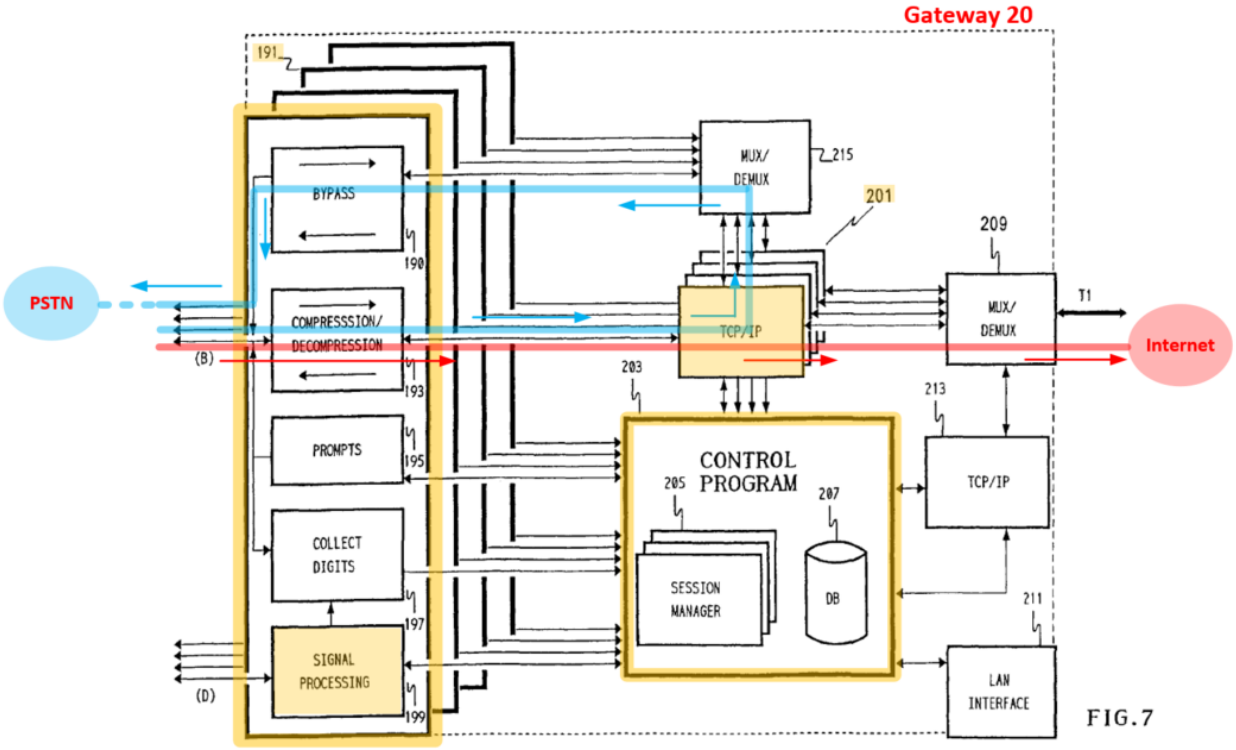
In addition, Farris discloses the corresponding structure of Element [3], or equivalents thereof, under the second alternative construction. EX1003, ¶¶79-81. According to the second alternative construction of this "means for" term, the scope of element [3] includes the "server system" that performs the known network algorithm as described in the '304 patent, at 4:1-10, 1:55-62, 4:19-25, FIG. 2 (blocks 203 and 205) or equivalents thereof. *See supra* Section VI.A.

For example, Farris discloses the MCU in the gateway (***the server system***) "controls the overall operations of the gateway" and monitors "traffic conditions on the Internet" such as "***response time***, percentage utilization, ***packet forwarding rate***, ***throughput***, ***errors per second***, ***packet loss rate***, and ***data transfer rate***." EX1004, 10:1-8, 10:47-59. "If traffic conditions for communication with a particular remote location are unacceptable," the MCU "signal[s] the PSTN network to set up one or more ISDN or T1 pipeline connections" for routing a call through the PSTN, instead of the Internet. EX1004, 10:60-11:5; *see also* 5:16-37 ("Calls between two end location gateway servers of the data internetwork can be diverted, ***during periods of unacceptable network conditions***, through the PSTN network"). Therefore, Farris

discloses the server system (e.g., at least the MCU), which monitors traffic conditions and sets up PSTN connections based on the monitored traffic condition (e.g., "unacceptable network conditions"), as the same as, or equivalent of, the server system for performing the algorithm described in the '304 patent, at 1:55-62, 4:1-10, 4:19-25, and Figure 2 (blocks 203 and 205). EX1003, ¶81.

Element [7]:

As discussed above (element [1.6]), Farris discloses that the gateway 20 (***the server system***) "for controlling connections through said packet switch." *Supra* analysis of element [1.6]; EX1003, ¶82. Again, as illustrated in FIG. 7 below, Farris's gateway includes the TCP/IP processing routine 201 (e.g., the packet assembler/disassembler (PAD) 116 in FIG. 5) that, under direction of the control program 203 (e.g., the master control unit (MCU) 108 in FIG. 5), "performs the two-way protocol processing to send and receive compressed, digitized voice data in ***TCP/IP packet format over the Internet***." EX1004, 12:40-48. Further, if outgoing call data in TCP/IP packet format is to be routed through the PSTN instead of the Internet, such packets are "directed under control program 230 to MUX/DEMUX 215 routine" so as to be transmitted to "the appropriate ***PSTN destination***." EX1004, 13:25-50; EX1003, ¶83.



EX1004, FIG. 7 (annotated).

In addition, Farris's gateway provides "a number of ***call processing function routines*** 191 for processing incoming and outgoing calls." EX1004, 11:54-55, FIG. 7 (above). The call processing function routine 191 includes the signal processing routine 199 that provides "***incoming signals***" that "indicate a new incoming call on one of the associated B channels and identify the call as a data call or a voice call. The signals for such a call may include ***the dialed number as well as a number associated with the origin of the call***." EX1004, 12:18-26. Further, "[t]he session manager [205 of the control program 203] receives and processes various signals from the call processing function routines 191 and provides the necessary instructions to the routines to execute each individual call processing function. The control

program 203 also controls or administers TCP/IP addressing functions and initiates certain necessary signaling communications through the Internet." EX1004, 12:27-39.

Accordingly, Farris's server system (e.g., ***gateway***) includes the call feature server (e.g., ***call processing function routines*** and/or ***control program***) for controlling connections through the packet switch (e.g., ***TCP/IP processing routine*** or ***packet assembler/disassembler (PAD)***) in response to signals from said customer telephone stations (e.g., ***incoming signals***, ***dialed number***, ***number associated with the origin of the call***, etc.), as recited in element [7]. EX1003, ¶¶84-85.

B. GROUND 2A: FRANKEL IN VIEW OF GUPTA (Claims 1, 3, 7)

1. Overview of Frankel

Frankel describes "a system and method for utilizing a local packet network (LPN) that supports a digital packet-based transport architecture, such as Digital Subscriber Line (DSL), to provide voice and optionally data services over a single local loop, such as a DSL, to a customer site." EX1005, 3:55-63. Frankel describes "a control site within or connected to the LPN (such as a central switching facility)" where "voice-band packets, call control packets and data packets from the customer site are received via the LPN." EX1005, 4:21-24. "The voice-band packets received from the customer site via the LPN" are transmitted to the PSTN via "a public switched telephone network (PSTN) switch, and "[d]ata packets received from the

customer site are coupled to a data switch for transfer to a data network (such as the Internet)." EX1005, 4:24-30.

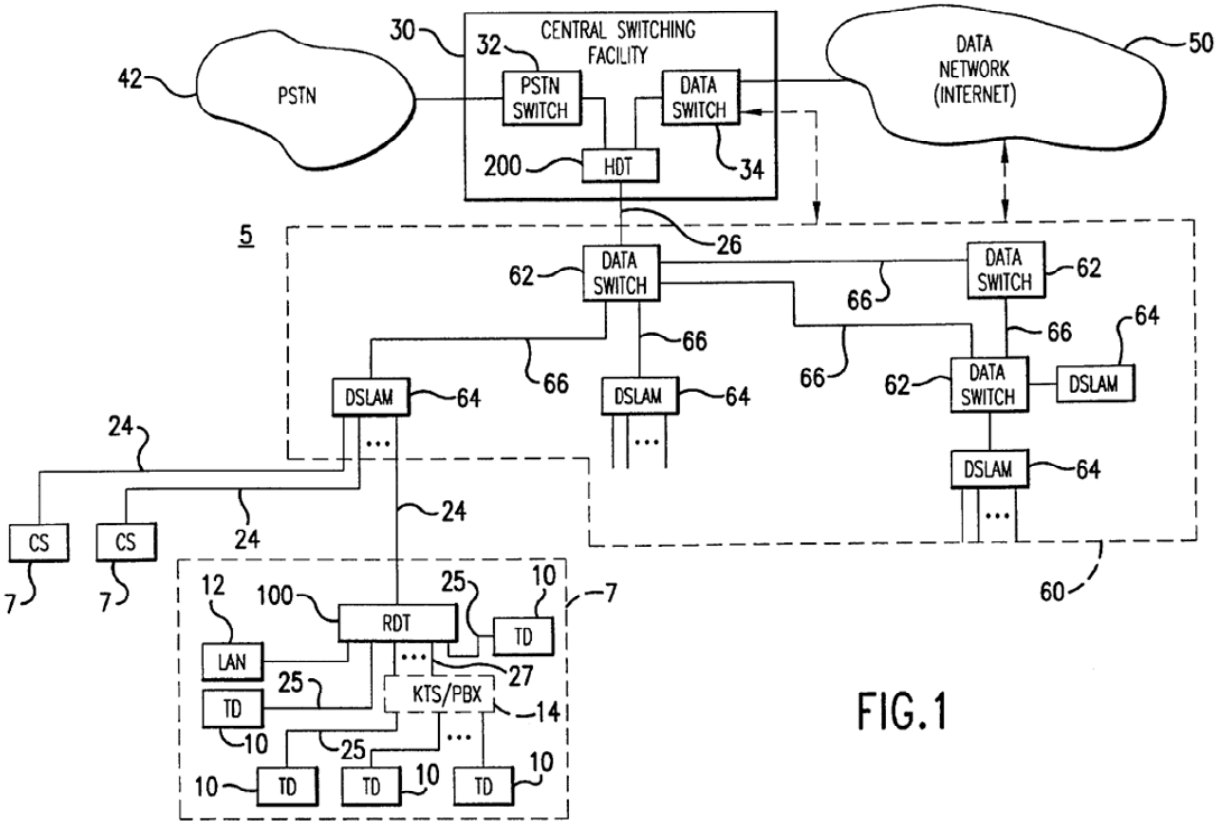


FIG.1

EX1005, FIG. 1.

Frankel further provides "a specialized apparatus called a remote digital terminal (RDT) is provided at the customer site and another specialized apparatus, called a host digital terminal (HDT) is provided at the central switching facility." EX1005, 4:39-43. "The RDT converts the voice-band packets suitable for communication over the LPN to and from analog telephone signals suitable for use by attached telephone devices." EX1005, 4:49-53. Further, the HDT "resides at control site within or without the LPN" and "converts voice-band packets to and from a

time-division multiplexed format suitable for communication via the PSTN switch." EX1005, 4:53-55, 6:18-19. The HDT is coupled to a PSTN switch that "route[s] voice calls to the local PSTN" and to a data switch that "route data packets to and from a data network 50, such as the Internet." EX1005, 6:18-25; EX1003, ¶¶37-40.

2. Overview of Gupta

Gupta discloses "a migration strategy that uses the broadband network for multiplexing efficiencies (which leads to significantly lower unit costs) and logical provisioning benefits (which leads to significant reduction in service turn-up times) while continuing to leverage the PSTN's switching and service control engines (Class 4/5 switches, SCPs, etc.) for providing value-added services." EX1006, 1:58-65. To accomplish such a "low-risk migration," Gupta provides "a gateway between the broadband network and the PSTN." EX1006, 1:65-67.

For example, Gupta discloses a "virtual loop carrier system 10 which provides access to voice and data services." EX1006, 4:61-66. Gupta provides a "home LAN hub (HLH) 20" that is connected to "telephone modules (TMs) 16" at a "home LAN 15." EX1006, 5:6-14. The HLH "converts the PCM samples," which are digital signals converted from analog voice signals from a connected telephone, into "ATM cells" or "IP packets." EX1006, 5:14-33, 2:8-28. Further, Gupta describes a "virtual loop gateway 40" that is controlled by a "call processing adjunct (CPA) 42" and switches the ATM cells or IP packets to the PSTN 52 and the data network 54.

EX1006, 5:43-59, 34:11-48, 1:65-67, 2:33-41, 4:64-66 ("an exemplary virtual loop carrier system 10 which provides access to voice and data services in accordance with the present invention."), 5:3-5 ("a virtual loop gateway (VLG) 40 which connects the voice and data between the ATM network 38 and a local digital switch (LDS) 50 [connected to the PSTN 52] or data network 54."), 6:9-45; EX1003, ¶¶41-43.

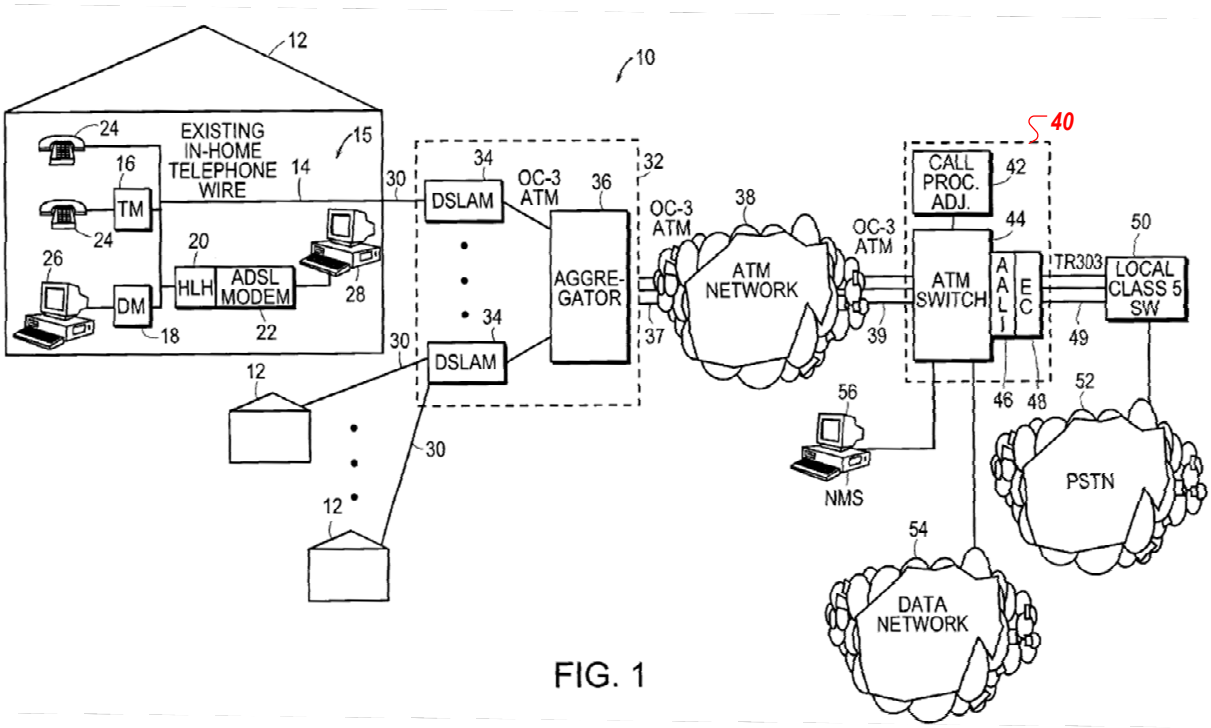


FIG. 1

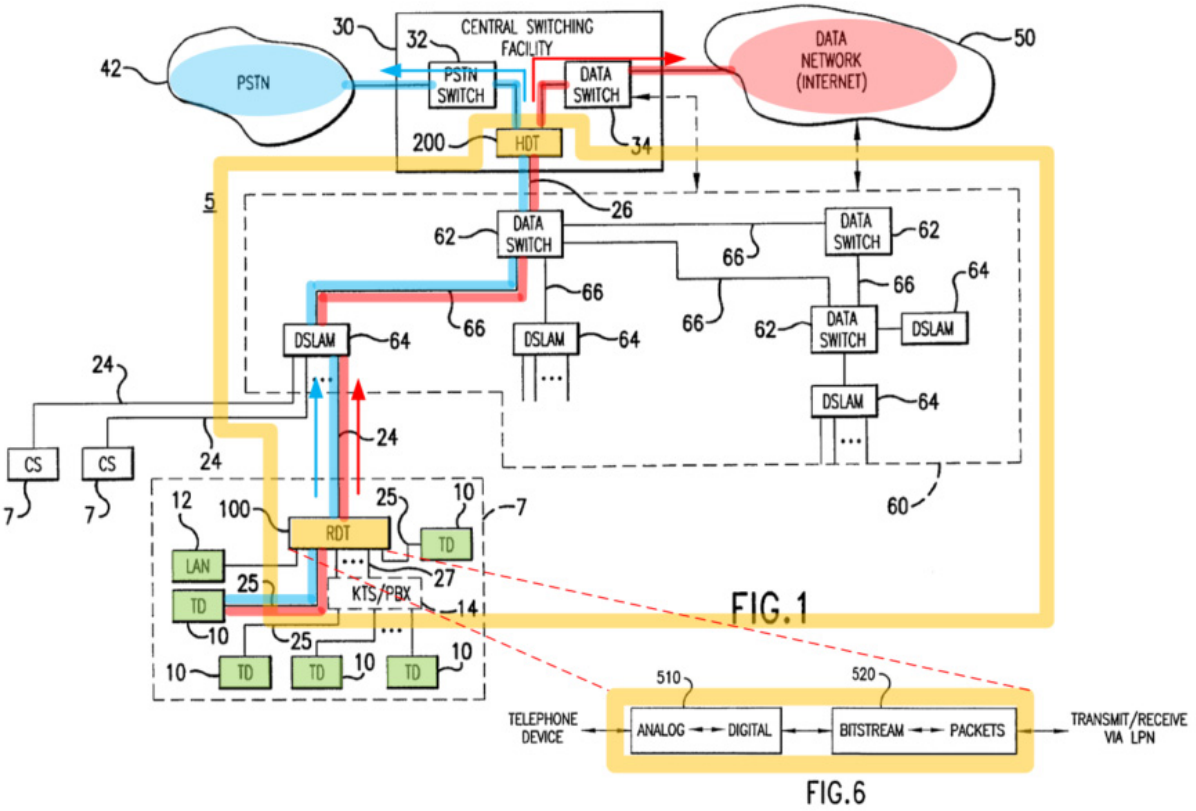
EX1006, FIG. 1 (annotated).

3. Analysis of Frankel in view of Gupta

Preamble [1.P]:

To the extent the preamble is limiting, Frankel discloses a telecommunications network that includes the data network (the Internet) 50 and the PSTN 42. EX1005,

6:19-25, FIG. 1 (below). It was well-known that the Internet is an example of a core packet network. EX1003, ¶86; EX1005, 6:23-25 ("The data switch 34 may route ***data packets*** to and from a data network 50, such as the Internet."); *see also* EX1004, 4:14 ("a data packet network, such as the Internet"). Frankel discloses network components (e.g., a remote digital terminal (RDT) 100, a host digital terminal (HDT) 200, a local packet network (LPN) 60, etc.) for establishing telecommunications connection to the PSTN 42 and the Internet 50. EX1005, 5:25-6:45; EX1003, ¶¶86-87.



EX1005, FIGS. 1 and 6 (annotated).

Element [1.1]:

Frankel discloses a packet access network (yellow box in FIG. 1 above) that is connected to a plurality of customer telephone stations. EX1003, ¶88. For example, Frankel discloses the local ***packet network*** (LPN) 60 and the remote digital terminal (RDT) 100 connected to the LPN 60. EX1006, 5:37-57. The RDT 100 is connected to "a plurality of telephone devices (TDs) 10." EX1005, 5:27-29.

Element [1.2]:

Frankel discloses a central switching facility 30 as a server system. EX1003, ¶89; Frankel, 6:19-28. Frankel describes that at least part of the central switching facility 30 is implemented in a computer system and operates to remotely manage multiple customer sites 7 that each include the RDT 100 and multiple telephone devices (TDs) 10. EX1005, 8:10-11 ("In the preferred embodiment, the HDT 200 is implemented in a conventional computer system.").

To the extent that Frankel is not explicit as to a server system, Gupta teaches a server that controls a switch for accessing the PSTN and the data network. EX1003, ¶90. In the same field of Frankel, Gupta discloses the call processing adjunct (CPA) 42 that controls the ATM switch 44 for accessing the PSTN and the data network. EX1006, 34:12-25, 35:25-38, FIG. 1 (below). Further, Gupta discloses that the CPA is implemented in a server system (including the "COBRA ***server*** 386"). EX1006, 38:56-40:30 ("a management subsystem in the CPA is built

around a CORBA (Common Object Request Broker Architecture) server at its core"), FIG. 28 (below).

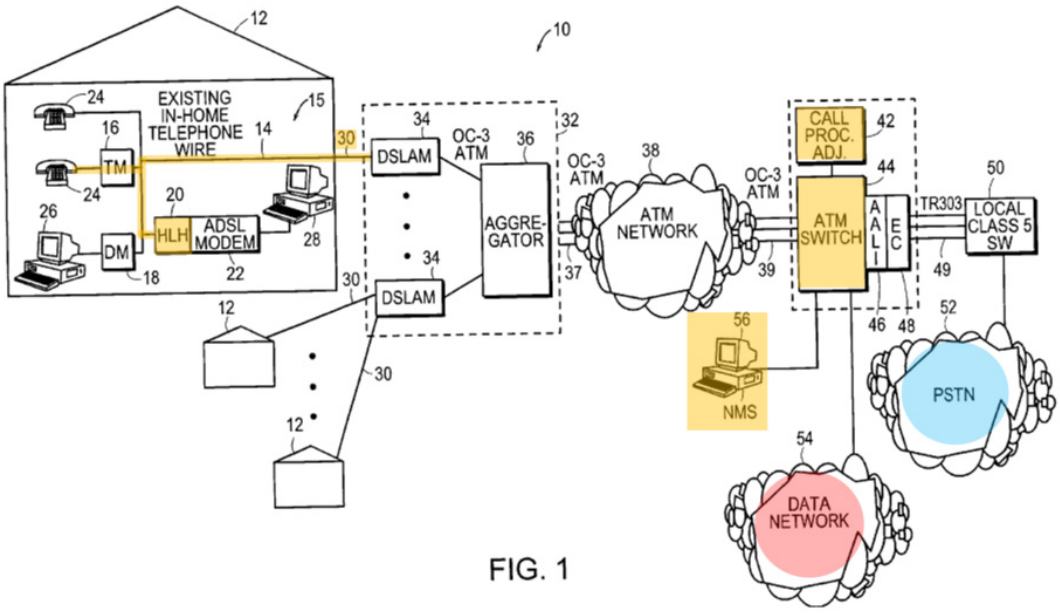


FIG. 1

EX1006, FIG. 1 (annotated).

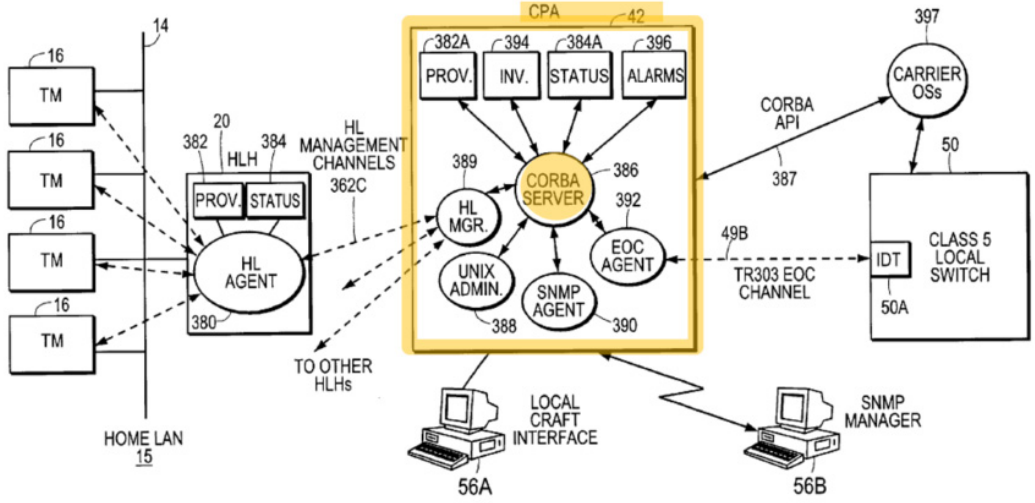


FIG. 28

EX1006, FIG. 28 (annotated).

It would have been obvious to a POSITA to implement Frankel in accordance with Gupta's suggestion (e.g., the CPA being implemented in a server system for controlling the ATM switch for accessing the PSTN and the data network), such that at least part (e.g., the HDT) of Frankel's central switching facility, which controls a packet switch (e.g., the packet conversion processor 280 in the HDT) for accessing the PSTN and the Internet, is implemented in a server system. EX1003, ¶91; *see infra* analysis of elements [1.3], [1.4].

A number of reasons would have motivated a POSITA to apply Gupta's suggestions to Frankel in this manner, including the multiple benefits expressly described by Gupta. EX1003, ¶92; EX1006, 38:33-65, 40:21-30. For example, the predictable combination of Frankel and Gupta would (i) make it easy to "share management information from the network element across the different operations support systems (OSSs) that might already be in place in the PSTN," (ii) provide reliable and cost-efficient methods for network element management without relying on "an ordinary PC or UNIX-based, desktop workstation," (iii) make "all of the capabilities of the network element [] available through a CORBA interface," (iv) make it "easy to add new protocols as CORBA clients, such as the BellCORE TL1 protocol, if desired to inter-operate with OSSs," and (v) improve overall system reliability and availability by allowing other OSSs to communicate with the CPA directly if a particular element manager fails to work. EX1006, 38:33-65, 40:21-30; EX1003, ¶92.

Additionally, a POSITA would have had a reasonable expectation of success in combining Frankel and Gupta. EX1003, ¶93. As discussed above, Frankel and Gupta are in the same field of endeavor (e.g., the telecommunications network that uses the PSTN and the packet data network) and use similar techniques (e.g., using local packet network (ATM network) to access the PSTN and the data network) to solve the same problems of effectively using the combined resources of the PSTN and the data network. EX1003, ¶93; EX1005, 6:18-33, 4:21-30, 3:56-63; EX1006, 4:61-5:5, 6:9-45, 6:46-63, 1:59-67. Combining Gupta's server with Frankel's system merely incorporates switching control components (e.g., the HDT) as disclosed in Frankel into a server system (e.g., the CPA being implemented as the CORBA server) as disclosed in Gupta. EX1003, ¶93; EX1005, 6:18-25; EX1006, 38:56-40:30. A POSITA would have naturally looked to Gupta's server for advantages of providing improved system reliability and availability of the voice and data communications network as disclosed in Frankel. EX1003, ¶93.

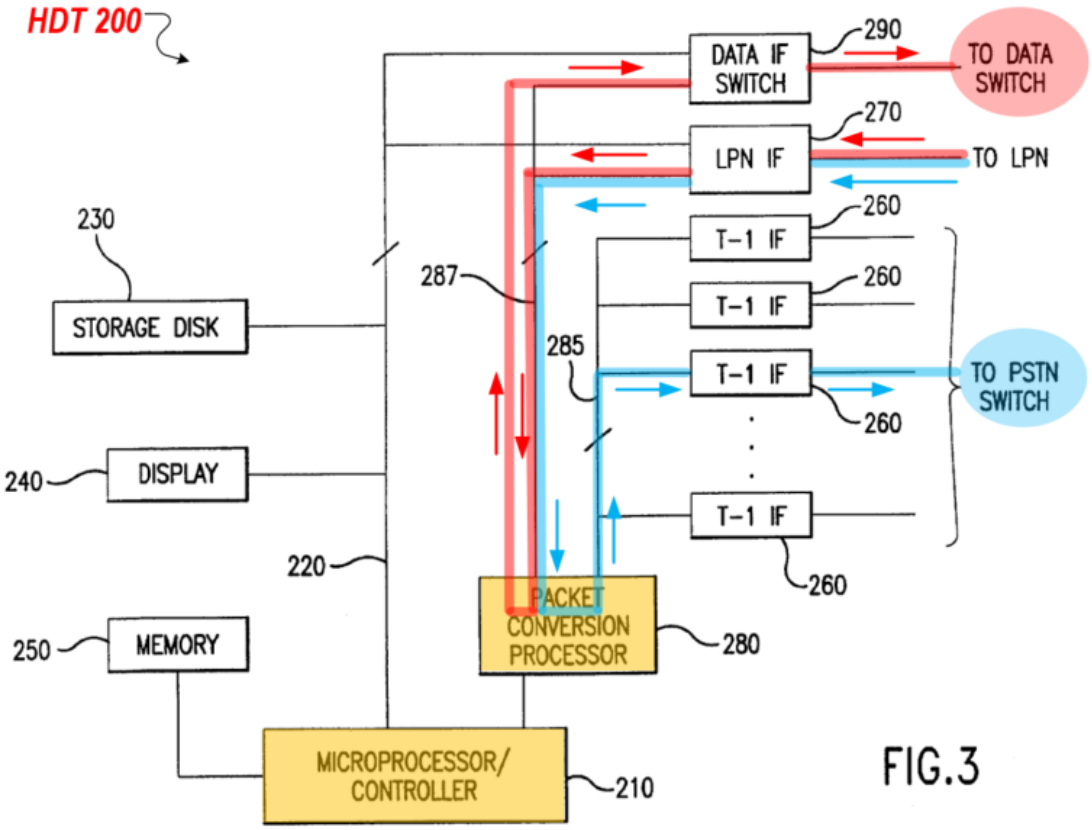
Element [1.3]:

Frankel discloses the ***packet access network*** (e.g., yellow box in FIG. 1 above) that includes the RDT 100 and the HDT 200 as the ***interface gateway*** and the ***packet switch***, respectively. EX1003, ¶¶94-96; *infra* analysis of elements [1.4], [1.5]. In particular, Frankel's packet access network includes the RDT 100 that "***interfaces*** a plurality of telephone devices (TDs) 10 and, optionally, a local area network (LAN)

12 to a local loop link, such as a line supporting the Digital Subscriber Line (DSL) transport protocol." EX1005, 5:27-32. Further, Frankel's packet access network includes the HDT 200 that is connected to the PSTN 43 through the PSTN switch 32 and connected to the Internet 50 through the data switch 34. EX1005, 6:18-25, FIG. 1. Frankel teaches that the HDT at the central switching facility receives ***packets*** from the LPN and transmits the packets to the PSTN or the Internet through the PSTN switch and the data switch, respectively. EX1005, 4:21-30.

Element [1.4]:

Frankel discloses the HDT 200 for accessing the PSTN and the Internet. EX1003, ¶97; EX1005, 4:21-30, 4:38-55, 6:18-45, 13:55-14:8, FIG. 1. In particular, as shown in FIG. 3 (below), Frankel's HDT includes a ***packet conversion processor*** 280 that "converts packets received from LPN via the LPN IF 270" to a format suitable to be transmitted to either the PSTN via the PSTN switch or the Internet via the data switch. EX1005, 8:42-58, FIG. 3.

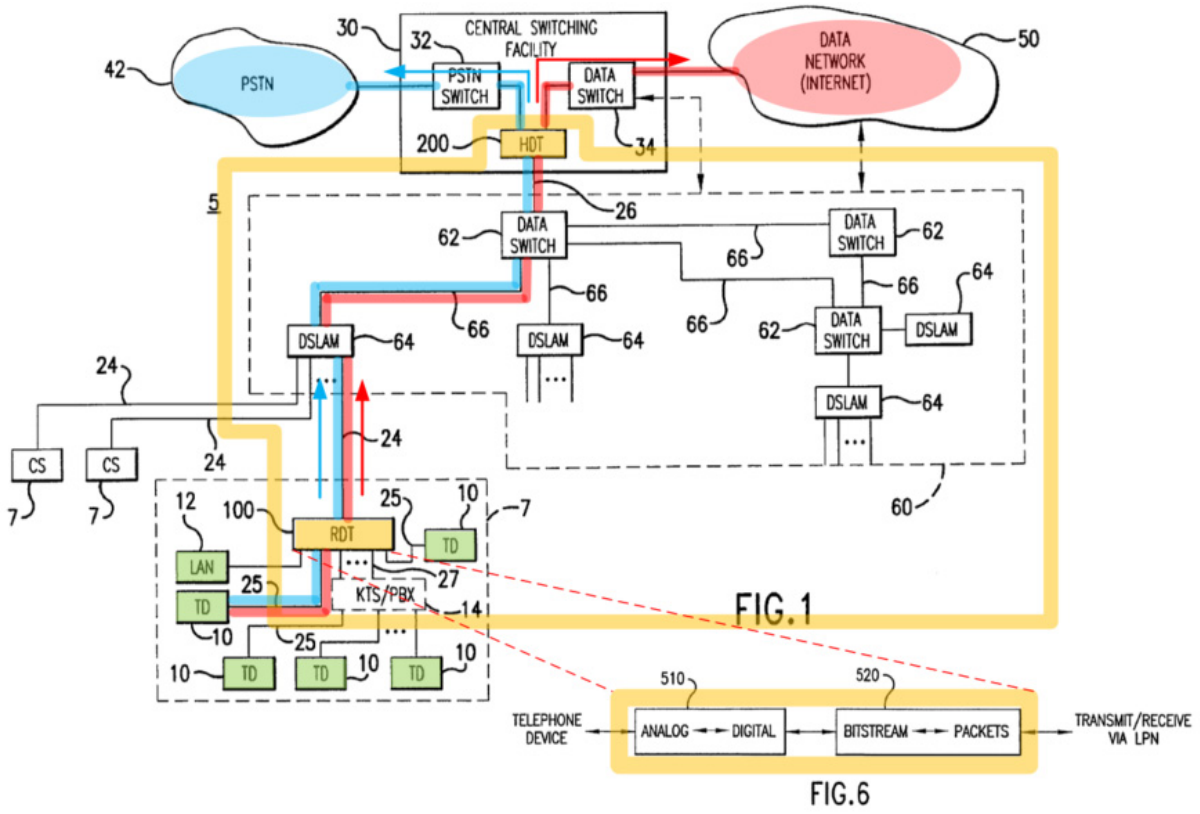


EX1005, FIG. 3 (annotated).

Element [1.5]:

Frankel discloses that the RDT (***interface gateway***) includes the "circuits" in this element. EX1003, ¶98. For example, Frankel discloses that the RDT 100 provides circuits that receive signals from multiple telephone devices (TDs) 10 and convert the signals to packets (e.g., "voice-band packets," "call control packets," and "data packets") that are suitable for communication via the LPN 60 and switching by the HDT 200 (***packet switch***). EX1005, 5:56-6:8, 6:47-50 ("the RDT 100 is embodied as ***circuit*** board"), 3:64-4:10, 7:57-8:4 ("converting voice-band packets to and from conventional analog telephone signals"), 13:33-54, 9:22-59 ("The RDT

100 ***converts analog telephone signals to and from a suitable digital packet format***."); EX1003, ¶¶99-100.



EX1006, FIGS. 1 and 6 (annotated).

More specifically, as illustrated in FIG. 2 below, Frankel discloses that the RDT includes the DSL modem 120, along with the controller 110, that "formats the modulated information into a suitable ***packet*** format, such as the asynchronous transfer mode (ATM) protocol for example, that is utilized by the equipment in the LPN 60 for the transport of information." EX1005, 6:63-7:1, 7:36-38 ("voice-band data conversion"), FIG. 2; *see also* 11:26-28 ("The bit stream-to-packet (and vice versa) conversion is performed by the controller 110."), 11:42-59, FIG. 6; EX1003, ¶101.

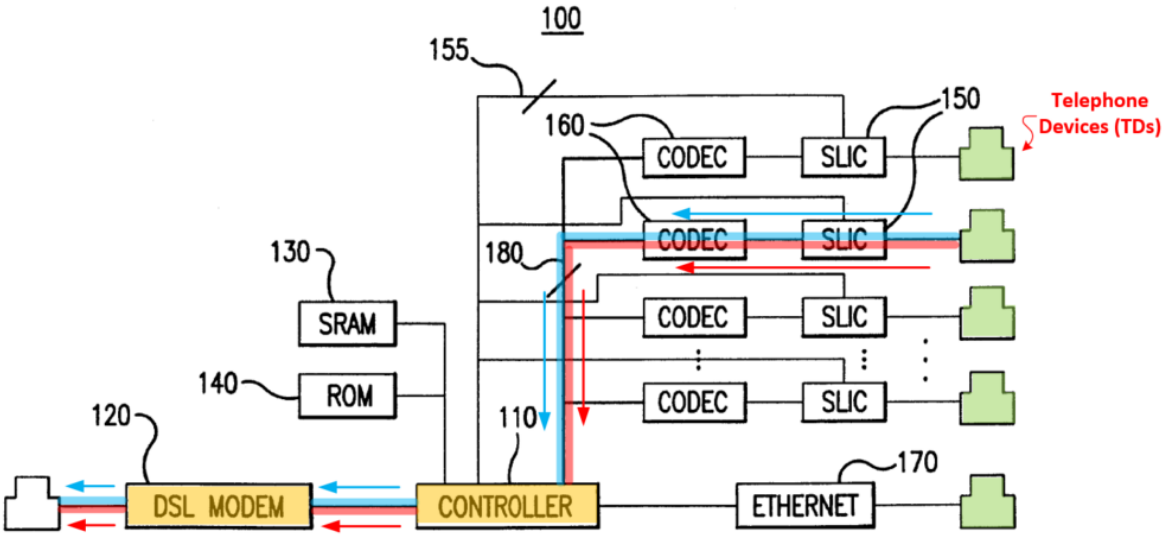


FIG.2

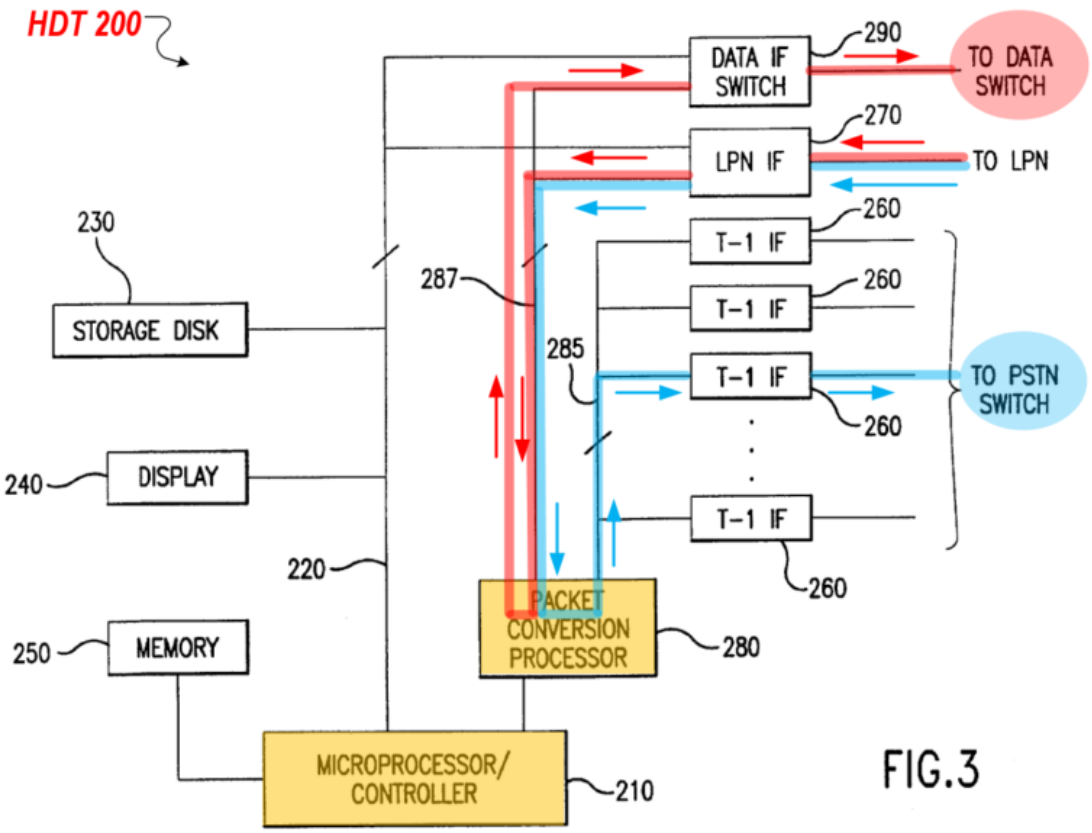
EX1006, FIG. 2 (annotated).

Additionally, these structures convert the signals (as detailed above) for the purposes of "switching by said packet switch." EX1003, ¶102. Indeed, Frankel describes that the converted packets are eventually routed to, and switched by, the HDT toward the PSTN or the Internet. EX1005, 8:42-58, 9:22-59, FIG. 3; *supra analysis* of element [1.4].

Element [1.6]:

As discussed above (element [1.4]), Frankel's HDT includes the packet conversion processor 280 for receiving packets from the LPN, and switching the packets toward the Internet (through the data switch) and the PSTN (through the PSTN switch) after converting the packets to suitable formats for the PSTN switch and the

data switch. EX1005, 8:39-59, FIG. 3 (below); EX1003, ¶103. Further, Frankel describes that the packet conversion processor 280 "is supervised by the microprocessor/controller 210." EX1005, 8:52-56.



EX1006, FIG. 3 (annotated).

In addition, Frankel teaches that the HDT resides at the central switching facility 30. EX1005, 6:18-32, FIG. 1. As discussed above (element [1.2]), Frankel teaches that at least part of the central switching facility 30 is implemented by a server system. EX1005, 6:19-28. Therefore, Frankel discloses that a server system (e.g., central switching facility 30 that contains microprocessor/controller 210) controls connections to the PSTN and the Internet through the packet switch (e.g., packet

conversion processor 280). EX1003, ¶104.

Even if Frankel were viewed as not expressly disclosing element [1.6], this element also would have been achieved by the predictable combination of Frankel in view of Gupta. EX1003, ¶105. Gupta teaches a gateway ("virtual loop gateway 40") that includes the ATM switch 44 that switches AAL1 cells ("packets") between the PSTN 52 and the data network 54. EX1006, 5:1-5, 5:43-59; 35:44-45 ("voice packets (e.g., AAL1, AAL2, AA5, IP)"); *see also* 43:19-44:13. Further, Gupta discloses the call processing adjunct (CPA) 42 that controls the ATM switch 44 for accessing the PSTN and the data network. EX1006, 34:12-25, 35:25-38, FIG. 1 (below). Further, Gupta discloses that the CPA is implemented in a server system (including the "CORBA server 386"). EX1006, 38:56-40:30, FIG. 28; *see supra* analysis of element [1.2].

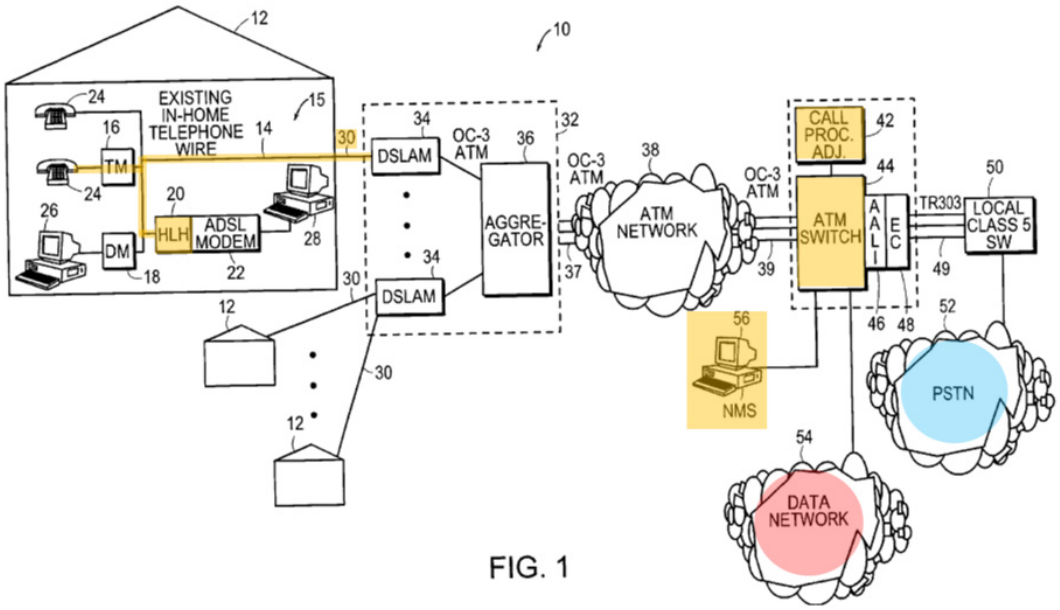


FIG. 1

EX1006, FIG. 1 (annotated).

Similarly, Frankel teaches that the HDT functions as the packet switch for accessing the PSTN and the Internet. EX1005, 4:21-30, 4:38-55, 6:18-45, 8:42-58, 13:55-14:8; *see supra* analysis of element [1.4]. Further, Frankel teaches that the HDT "may be incorporated into the ATM switch (the data switch 62) of the LPN 60. Frankel, 6:35-37, 5:38-41. Therefore, a POSITA would have been readily recognized the Gupta's teaching in the same technical field of Frankel, and would have been motivated to apply Gupta's teaching of the server system in the Frankel's HDT (or the ATM switch incorporating the HDT) such that Frankel's HDT functionality (for switching to the PSTN and the Internet) is controlled by a server system as taught by Gupta. EX1003, ¶106.

In addition to the reasons discussed above (element [1.2]), several other reasons would have prompted a POSITA to modify Frankel according to Gupta's suggestion to thereby achieve known benefits. EX1003, ¶107. First, a POSITA would have readily motivated to implement at least part of Frankel's HDT (***packet switch***) as a server system in view of Gupta's suggestions, to achieve known benefits of, for example, centralizing controls of switching systems and functionalities at a server system that provides more computing powers, speed, and efficiency than local solutions. EX1003, ¶108.

Second, a POSITA would have been motivated to apply Gupta's teaching of

the server system for the purpose of improving Frankel's communications network by achieving the express advantages explained by Gupta. EX1003, ¶109. Gupta, for example, provides "low-risk migration" strategy of the broadband networking platforms into the PSTN, thereby providing "data services with high efficiencies and fast service creation" while preventing a "significant discontinuity in the features, services, and overall quality that customers have come to expect from the well-established circuit-switched network." EX1006, 1:11-35, 1:59-67; *see also* EX1005, 3:45-53. A POSITA would have readily recognized that Gupta's suggested benefits were similarly applicable to improve Frankel, a contemporaneous reference also concerned with providing voice and data services through the broadband network and the PSTN. EX1003, ¶109.

Third, a POSTA would have recognized that implementing Frankel's system in a manner that applies Gupta's suggested server system yields a predictable result (e.g., a CORBA server that controls connections through the HDT or the ATM switch) from combining known prior art elements according to known benefits. EX1003, ¶110; *KSR*, 550 U.S. at 416. Indeed, a POSTIA would have appreciated that the Frankel-Gupta combination would not change the hallmark aspects of either reference. EX1003, ¶110. Frankel's HDT for accessing the PSTN and the Internet via the PSTN switch and the data switch respectively would remain unchanged, as would Gupta's suggested features of a CORBA server for implementing the CPA

that controls the ATM switch (corresponding to Frankel's HDT incorporated in the ATM switch). EX1003, ¶110. The respective teachings would work in combination just as they did apart, with Gupta's suggestions merely improving/adding to Frankel's system. EX1003, ¶110.

Element [3]:

According to the first alternative construction of this "means for" term, the scope of element [3] includes the "call feature server" or its equivalent thereof. *Supra* Section VI.A. Frankel plainly discloses the corresponding structure, or an equivalent thereof, for element [3] under the first alternative construction. EX1003, ¶¶111-114.

In particular, Frankel discloses the HDT includes "[t]he packet conversion processor 280" that "is preferably implemented by an application-specific processor, and its operation is supervised by the microprocessor/controller 210 for ***call control functions***, ***call setup***, system errors and other matters." EX1005, 8:52-56. Further, Frankel teaches the HDT that, "when a call is initiated by a telephone device connected to the RDT" "receives the call control packet containing ***a control message*** from the RDT 100 ***indicating that a telephone device has gone off-hook***," and "identifies ***the source of the call control message*** by looking at the address provided in the ATM cell containing the call control packet request." EX1005, 10:18-30. Further, the HDT verifies that the call control packet request comes from ***a customer***

site having an active account, and notifies the PSTN switch 32 ***for routing a call*** over the PSTN. EX1005, 10:30-42; *see also* 10:43-63. Moreover, Frankel teaches "the '***telephone numbers***' associated with the TDs 10 connected to the RDT 100 are managed by the PSTN switch 32 located in the central switching facility 30." EX1005, 10:64-11:5 ("When a person somewhere in the PSTN 42 ***dials a number***, such as 404-555-1234, traditional PSTN technology ***routes that call*** to the PSTN switch 32, which in turn presents the ***call information***, as described herein, to the HDT 200, for transmission to the RDT 100 and ultimately to the connected TD 10.").

Further, Frankel, either alone or modified based on Gupta, teaches the HDT or part of the central switching facility is implemented as a server system. *See supra*, analysis of elements [1.2] and [1.6].

Accordingly, a POSITA would have recognized that the server system of the predictable Frankel-Gupta combination (e.g., HDT or central switching facility) includes a "call feature server," or an equivalent thereof, because it provide the above-described structure (e.g., ***packet conversion processor*** and ***microprocessor/controller*** for "***call control functions***, ***call setup***, system errors and other matters," and/or ***PSTN switch*** associated with HDT) for analyzing customer dialed information (e.g., "identif[ying] the source of the call control message by looking at the address provided in the ATM cell," managing "the 'telephone numbers' associated with the TDs," presenting "call information") and combining it with customer data (e.g.,

"verif[ying] that the call control packet request comes from a customer site having an active account"), in order to determine the routing of a call. EX1005, 10:18-42, 10:64-11:5; EX1001, 2:35-41, 3:16-27; EX1003, ¶114.

Element [7]:

As discussed above (element [1.6]), Frankel alone or in view of Gupta teaches the HDT (***server system***) "for controlling connections through said packet switch." *Supra* analysis of element [1.6]; EX1003, ¶115. Further, Frankel discloses the HDT includes "***[t]he packet conversion processor*** 280" that "is preferably implemented by an application-specific processor, and its operation is supervised by the ***micro-processor/controller*** 210 for ***call control functions***, call setup, system errors and other matters." EX1005, 8:52-56.

In addition, Frankel teaches that "when a call is initiated by one of the TDs 10 connected to the RDT 100," "an SLIC 150 [in the RDT 100] detects that a connected TD 10 is off-hook, and a ***corresponding signal*** is coupled to the controller 110," and the controller 110 "generates a ***control message*** (formatted into a call control packet) indicating the off-hook status and requesting a dial-tone, that is ***transmitted to the HDT 200*** via the LPN 60." EX1005, 9:60-7:2. Further, the HDT 200 "receives the call control packet containing a ***control message*** from the RDT 100 indicating that ***a telephone device has gone off-hook***," and "identifies ***the source of the call control***

message by looking at the address provided in the ATM cell containing the call control packet request." EX1005, 10:18-30. Further, the HDT verifies that the call control packet request comes from "a customer site 7 whose account is active," and "notifies the PSTN switch 32" for routing a call over the PSTN. EX1005, 10:30-42; *see also* 10:43-63.

Further, Frankel, either alone or modified based on Gupta, teaches the HDT or part of the central switching facility is implemented as a server system. *See supra*, analysis of elements [1.2] and [1.6].

Accordingly, a POSITA would have recognized that the server system of the predictable Frankel-Gupta combination (e.g., HDT or central switching facility) includes the "call feature server" (e.g., ***packet conversion processor*** and ***microprocessor/controller*** for "***call control functions***, ***call setup***, system errors and other matters," and/or ***PSTN switch*** associated with HDT) for controlling connections through the packet switch in response to signals from customer telephone stations (e.g., "corresponding signal," "control message," "call control message," etc.), as required in element [7]. EX1003, ¶¶115-119.

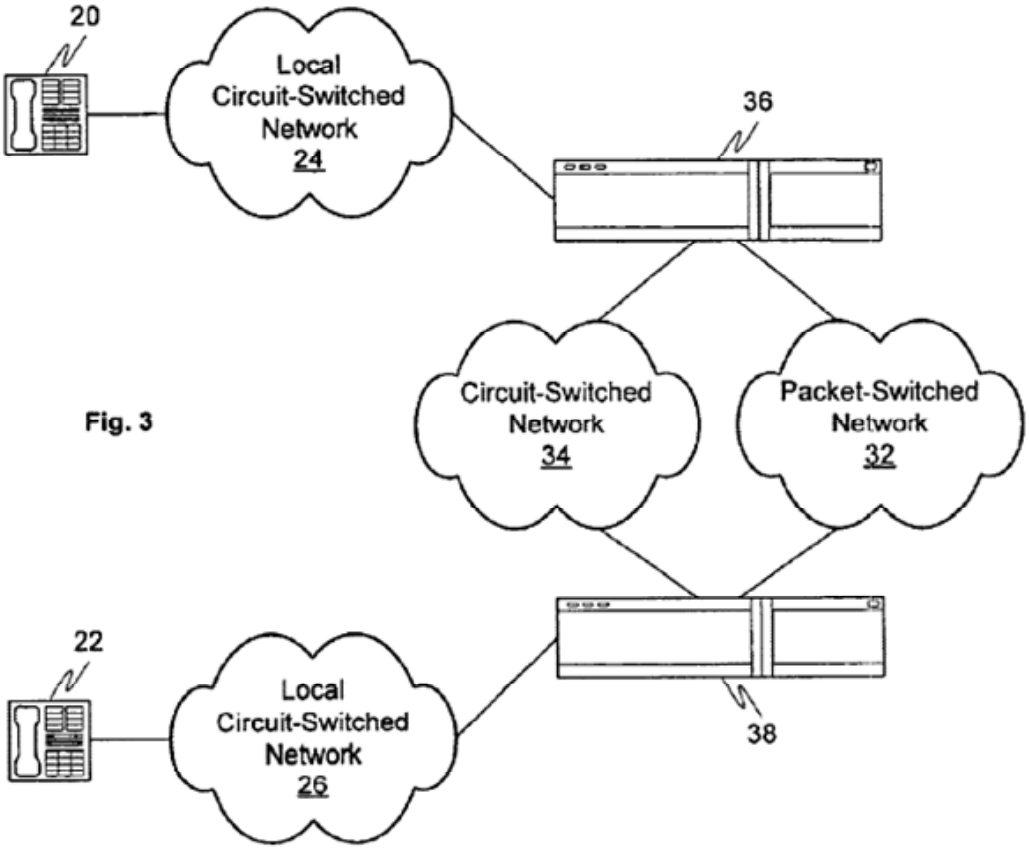
C. GROUND 2B: FRANKEL IN VIEW OF GUPTA AND ARMISTEAD (Claim 3)

1. Overview of Armistead

As with the '304 patent, Armistead describes a "packet voice switch" or "packet voice gateway" to "provide a more uniform quality of service by providing

a mechanism for re-routing calls from a packet-switched connection to a circuit-switched connection, and preferably, from a circuit-switched connection to a packet-switched connection." EX1008, 2:2-29, 3:34-47, FIG. 3 (below).

Similarly to the '304 patent, Armistead further describes that "the gateway next determines which network path is most desirable" by gathering information such as "[r]ound trip latency." EX1008, 7:4-24. Further, "the gateway examines a time-filtered estimate of latency and computes a packet-switched figure of merit." EX1008, 7:35-44. "If the packet-switched FOM drops below the circuit-switched FOM for the call, the initiating gateway attempts a parallel connection to the remote gateway over the circuit-switched network," and "the voice data is re-routed over the circuit-switched connection." EX1008, 7:35-58; EX1003, ¶¶47-49.



EX1008, FIG. 3 (annotated).

2. Analysis of Frankel in view of Gupta and Armistead

Element [3]:

According to the second alternative construction of this "means for" term, the scope of element [3] includes the "server system" that performs the known network algorithm as described in the '304 patent, at 4:1-10, 1:55-62, 4:19-25, FIG. 2 (blocks 203 and 205) or equivalents thereof. *See supra* Section VI.A. The teachings of Frankel in view of Gupta and Armistead provides the corresponding structure/algorithm, or an equivalent thereof, for element [3] under the second alternative construction. EX1003, ¶¶120-128.

Frankel discloses the HDT in the central switching facility (***server system***) "continuously monitor the amount of bandwidth of the local loop link used by a given RDT 100 at customer site for voice traffic." EX1005, 13:3-19. Further, Frankel recognizes delay problems in packet networks and provides a solution "to avoid the delays (latency) inherent in some packet networks." EX1005, 13:27-32; EX1003, ¶121.

In the similar technical field (e.g., accessing the PSTN and the packet network using ATM protocol), Armistead discloses a packet voice gateway 36 that is connected to a packet-switched network 32 and a circuit-switched network 34 to define two possible paths for a telephone call. EX1008, 3:14-47, FIG. 3 (below); EX1003, ¶¶122-123. Armistead teaches that a typical gateway includes "a packet data transceiver 58 [that] communicates with a packet-switched network, e.g., using IP (Internet Protocol) or ***ATM (Asynchronous Transfer Mode) packets***." EX1008, 1:53-61. Further, Armistead recognizes disadvantages of packet delay in packet-switched networks. EX1008, 1:27-41 ("As traffic increases, ***packets may be delayed***, increasing the latency of the connection."). Accordingly, Armistead's gateway "determines which network path is most desirable" by monitoring "[r]ound trip latency" or "examin[ing] a time-filtered estimate of latency." EX1008, 7:4-41, FIG. 8 (below), 7:41-44 (***If the packet-switched FOM drops below the circuit-switched FOM for the call***, the initiating gateway attempts a parallel connection to the remote gateway

over the circuit-switched network"), 5:24-36 ("a 'figure of merit' (FOM) for each possible network path").

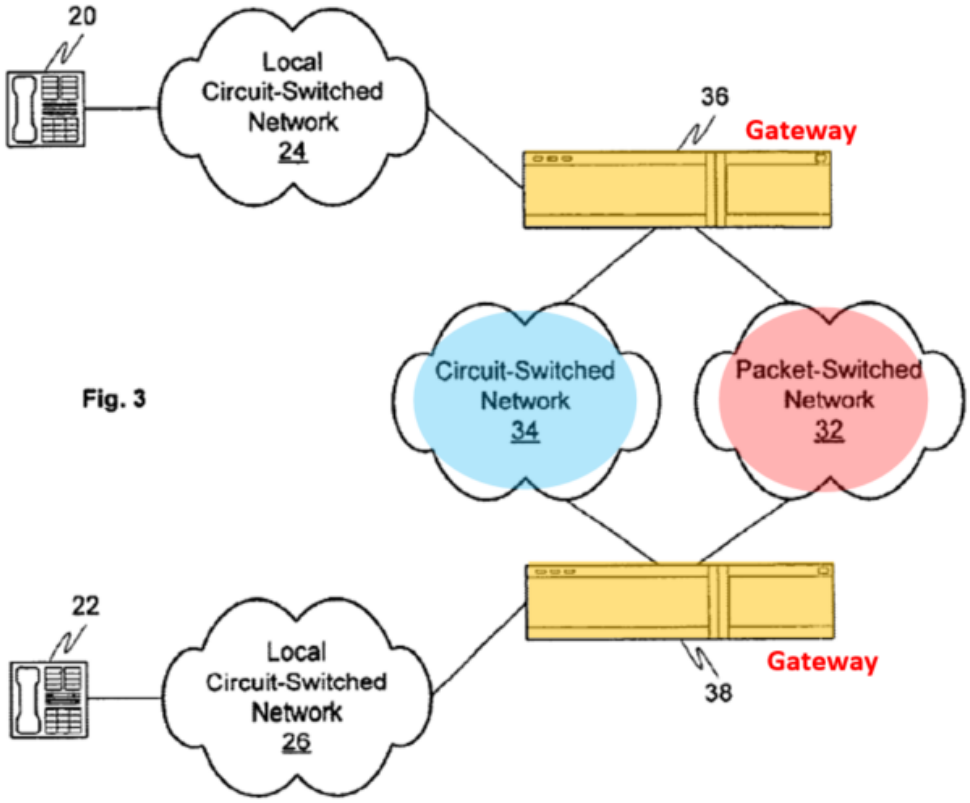
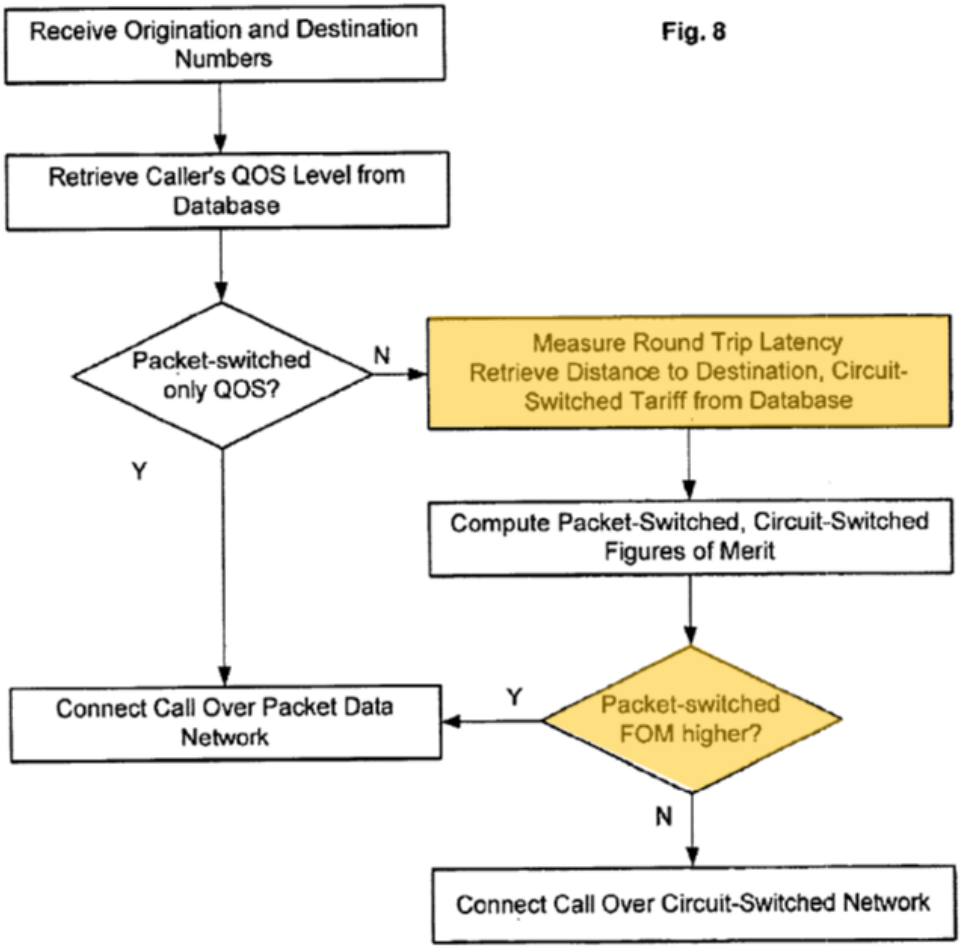


Fig. 3

EX1008, FIG. 3 (annotated).



EX1008, FIG. 8 (annotated).

A POSITA would have been readily recognized the Armistead's teaching in the same technical field of Frankel and Gupta, and would have been motivated to apply Armistead's suggestion for a gateway that measures latency (packet delay), in Frankel-Gupta's communications network using the ATM protocol (e.g., the central switching facility or the HDT therein) for accessing the PSTN and the Internet. EX1003, ¶124. Further, a POSITA would have recognized that Frankel-Gupta's ATM protocol-based network for accessing the PSTN and the Internet, as modified

based on Armistead's teaching of the gateway monitoring latency, would be the same as, or an equivalent of, the algorithm described in the '304 patent, at 1:55-62, 4:1-10, 4:19-25, and Figure 2 (blocks 203 and 205). EX1003, ¶124.

Multiple reasons would have prompted a POSITA to modify Frankel-Gupta according to Armistead's suggestion to thereby achieve known benefits. First, a POSITA would have been motivated to apply Armistead's teaching of examining latency (packet delay) for the purpose of providing a uniform quality of service during a call by selectively utilizing the circuit-switched connection and the packet-switched connection. EX1008, 2:1-14; EX1003, ¶¶125-126.

Second, a POSTA would have recognized that implementing Frankel-Gupta's system in a manner that applies Armistead's suggested technique of monitoring latency yields a predictable result (e.g., Frankel-Gupta's central switching facility or the HDT therein, capable of determining latency to determine whether packet voice-band packets should be routed over the PSTN or the Internet) from combining known prior art elements according to known benefits. EX1003, ¶127; *KSR*, 550 U.S. at 416. Indeed, a POSTIA would have appreciated that the Frankel-Gupta-Armistead combination would not change the hallmark aspects of each reference. EX1003, ¶128. Frankel-Gupta's ATM-based network (including the central switching facility with the HDT) would remain unchanged, as would Armistead's suggested features of monitoring packet delay through the packet-switched network.

EX1003, ¶128. The respective teachings would work in combination just as they did apart, with Armistead's suggestions merely improving/adding to Frankel-Gupta's system. EX1003, ¶128.

D. GROUND 3A: GUPTA (Claims 1, 3, 7)

1. Analysis of Gupta

Preamble [1.P]:

To the extent the preamble is limiting, Gupta discloses a telecommunications network ("virtual loop carrier system 10") that uses both the PSTN 52 and the data network 54 (***core packet network***). EX1003, ¶¶129-130; EX1006, 4:63-5:5, 6:48-53 ("The HLH 20, as shown in FIG. 1, provides a gateway function for communication between devices on the home LAN 15 and ***the wide area network (WAN)*** that includes the access gateway 32, ATM network 38, the virtual loop gateway 40, the LDS 50 and other networks including the PSTN 52 and ***data networks 54***."), 5:3-5 ("a virtual loop gateway (VLG) 40 which connects the ***voice*** and ***data*** between the ATM network 38 and a ***local digital switch (LDS) 50 [connected to the PSTN 52]*** or ***data network 54***."), 6:9-45, 1:59-67, FIG. 1.

Element [1.1]:

Gupta discloses a network (e.g., yellow box in FIG. 1 below) connected to a plurality of telephones 24. EX1003, ¶131. For example, Gupta's network includes "telephone modules (TMs) 16" that each "convert[] analog voice signals from a connected telephone 24 to digital signals in the form of pulse code modulation (PCM)

samples." EX1006, 5:6-14. The network is a ***packet access network*** in that it includes "a home LAN hub (HLH) 20" that "converts the PCM samples along with channel associated signaling (CAS) into an ***ATM cell*** format optimized for transport voice" or alternatively into "***Internet Protocol (IP) packets***." EX1006, 5:14-22, 5:25-31; EX1003, ¶132. As recognized in Gupta, ATM cells and IP packets are examples of ***voice packets***. EX1006, 2:23-26.

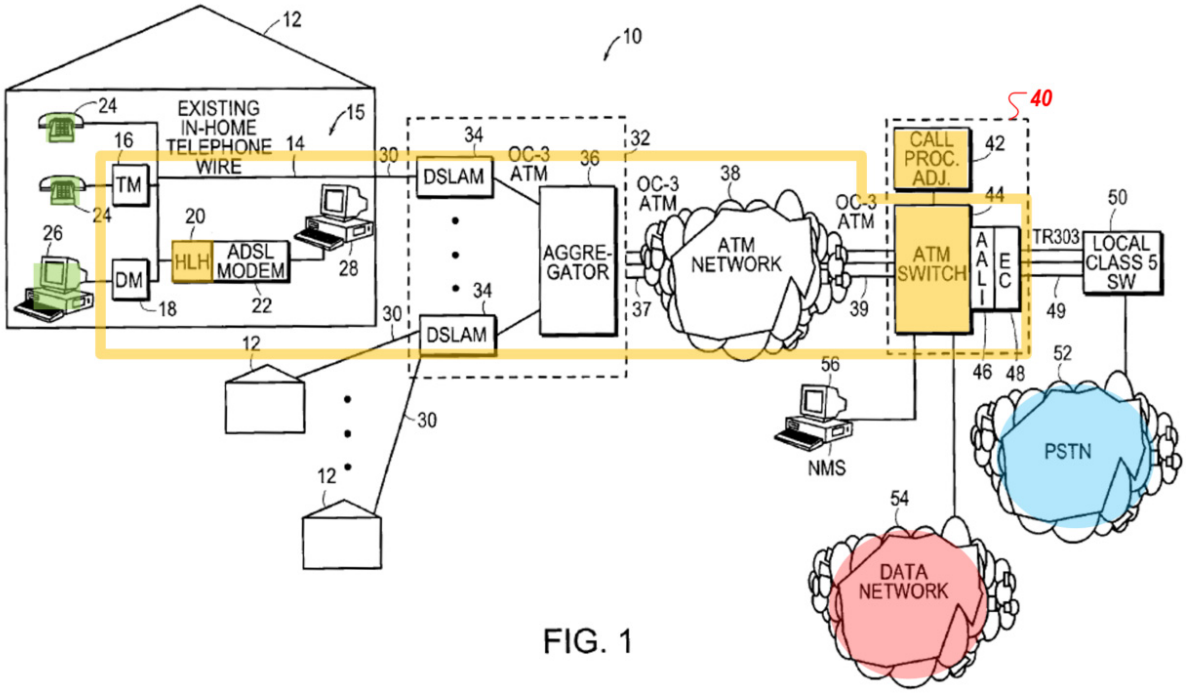


FIG. 1

EX1006, FIG. 1 (annotated).

Element [1.2]:

Gupta discloses a server system that controls a switch for accessing the PSTN and the packet data network. EX1003, ¶133. For example, Gupta discloses a "call processing adjunct (CPA) 42" that controls an "ATM switch 44" for accessing the PSTN 52 and the data network 54. EX1006, 34:12-25, 35:25-38, FIG. 1 (above).

Further, Gupta discloses that the CPA is implemented in a server system (including the "COBRA ***server*** 386"). EX1006, 38:56-40:30, FIG. 28 (below).

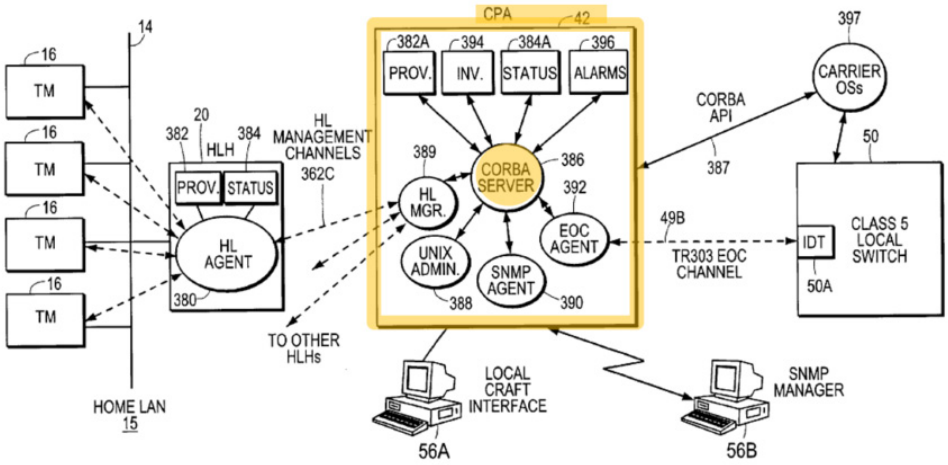


FIG. 28

EX1006, FIG. 28 (annotated).

Element [1.3]:

Gupta's packet access network includes the HLH 20 (***interface gateway***) and the ATM switch 44 (***packet switch***). EX1003, ¶134; EX1006, 6:48-53 ("The HLH 20, as shown in FIG. 1, provides a ***gateway*** function."). In particular, Gupta discloses a telephone module (TM) 16 that "converts analog voice signals from a connected telephone 24 to digital signals in the form of pulse code modulation (PCM) samples." EX1006, 5:6-11. Then, "***[t]he HLH 20 converts the PCM samples*** along with channel associated signaling (CAS) ***into an ATM cell format*** optimized for transport of voice" or alternatively into "***Internet Protocol (IP) packets***." EX1006, 5:14-22, 5:25-31; EX1003, ¶135. As recognized in Gupta, ATM cells and IP packets

are examples of ***voice packets***. EX1006, 2:23-26, 5:16-22, 35:44-45 ("voice packets (e.g., AAL1, AAL2, AA5, IP)").

In addition, Gupta discloses that the packets converted from the signals of telephones are transmitted to the ATM switch 44 (***packet switch***) for routing the packets to the PSTN and the data network. EX1006, 5:42-59, 34:11-48, 1:11-35, 1:59-67, 2:4-7, 2:33-41, 4:64-66, 5:3-5, 6:9-45, FIG. 1; EX1003, ¶136.

Element [1.4]:

As shown in FIG. 1 (below), Gupta discloses the ATM switch 44 for accessing the PSTN 52 (through a local digital switch (LDS)) and the data network 54. EX1006, 5:1-5, 5:42-59, 34:11-48, 6:9-45, FIG. 1; EX1003, ¶137; *supra* analysis of element [1.P]. The ATM switch 44 is a ***packet*** switch in that it routes packets (e.g., ATM packets, IP packets, etc.) toward the PSTN 52 and the data network 54. EX1006, 5:49-50 ("In particular, the AAL1 cells are routed through ATM switch 44."), 2:23-25; EX1003, ¶138.

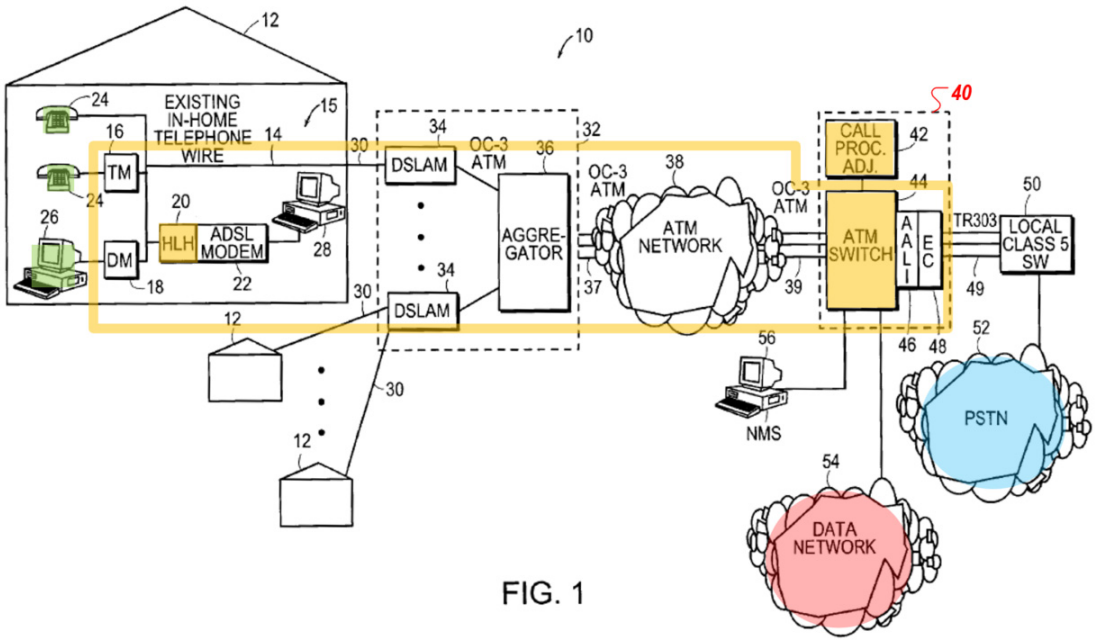


FIG. 1

EX1006, FIG. 1 (annotated).

Element [1.5]:

Gupta discloses that the HDH (***interface gateway***) includes the "circuits" in this element. EX1003, ¶139. For example, Gupta discloses "telephone modules (TMs) 16" "converts analog voice signals from a connected telephone 24 to digital signals in the form of pulse code modulation (PCM) samples." EX1006, 5:6-14. Then, "a home LAN hub (HLH) 20" "converts the PCM samples along with channel associated signaling (CAS) into an ***ATM cell*** format optimized for transport voice" or alternatively into "***Internet Protocol (IP) packets***." EX1006, 5:14-22, 5:25-31. As recognized in Gupta, ATM cells and IP packets are examples of voice ***packets***. EX1006, 2:23-26.

More specifically, as shown in FIG. 3A (below), the HLH provides circuits

that "includes an analog front end (AFE) 70 which connects to the home wiring 14 (FIG. 1) on line 71 for transmitting and receiving voice signals according to the home LAN physical (PHY) layer." EX1006, 6:56-60; EX1003, ¶142. The HLH further includes "a multi-service chip (MSC) device 64 which includes an ATM adaptation layer circuit 64A that is configured to ***convert the PCM samples to AAL1 cells and the signaling to AAL5 cells***." EX1006, 6:9-21, 6:64-7:13.

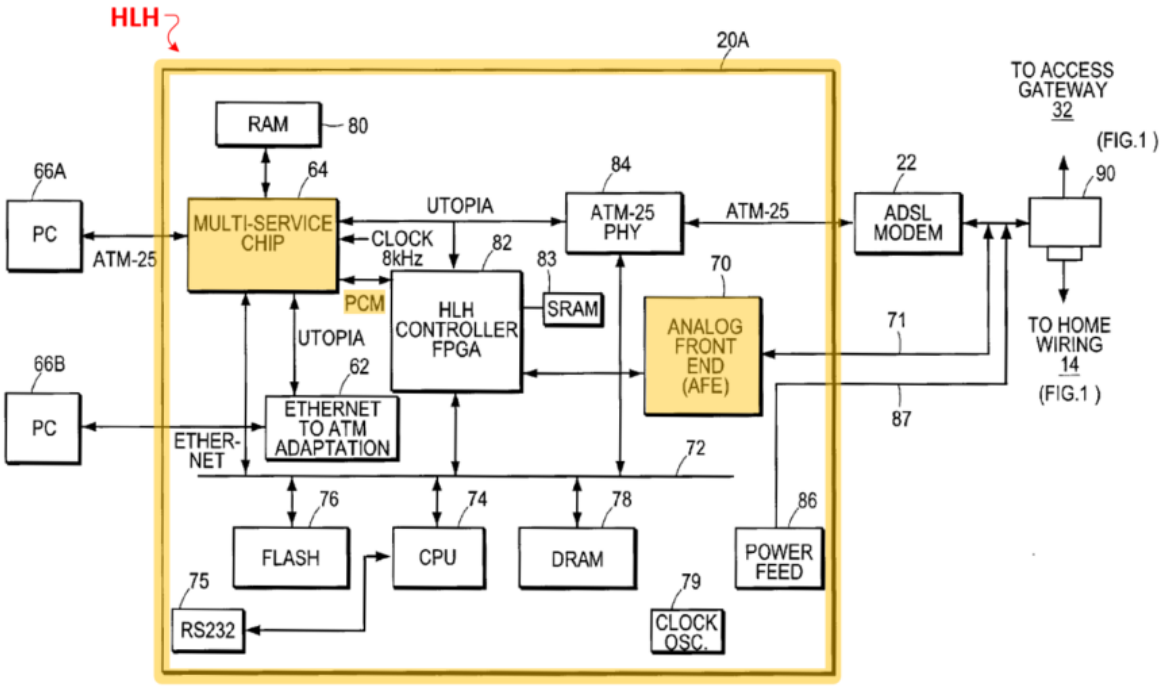


FIG. 3A

EX1006, FIG. 3A (annotated).

Accordingly, Gupta discloses that the HLH (***gateway interface***) includes the MSC (and/or the AFE) (***circuits***) for converting signals from the plurality of telephones to packets for switching by the ATM switch (***packet switch***). EX1003,

¶¶139-143; EX1006, cl. 1 ("the hub further including a ***packet converter circuit*** converting between the voice signals and voice packets").

Element [1.6]:

Gupta discloses a gateway ("virtual loop gateway 40") that includes the ATM switch 44 that switches ATM cells or IP packets ("packets") between the PSTN 52 and the data network 54. EX1006, 5:1-5, 5:43-59; 35:44-45. Further, Gupta discloses a call processing adjunct (CPA) 42 that controls the ATM switch 44 for accessing the PSTN and the data network. EX1006, 34:12-25, 35:25-38, FIG. 1. Moreover, Gupta discloses that the CPA is implemented in a server system (including the "COBRA server 386"). EX1006, 38:56-40:30, FIG. 28 (below); *see supra* analysis of element [1.2]; *see also supra* analysis of elements [1.2], [1.6] in Section VII.B (Ground 2A); EX1003, ¶144.

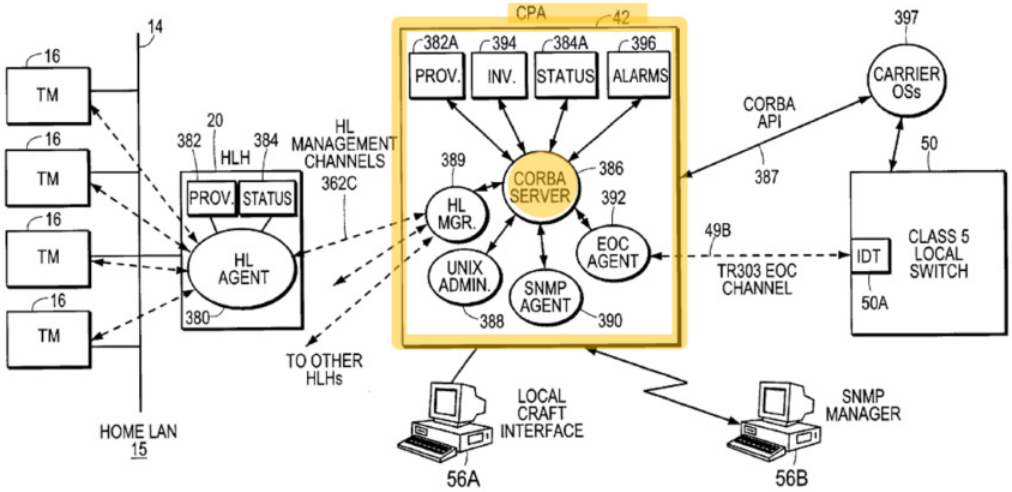


FIG. 28

EX1006, FIG. 28 (annotated).

Element [3]:

According to the first alternative construction of this "means for" term, the scope of element [3] includes the "call feature server" or its equivalent thereof. *Supra* Section VI.A. Frankel plainly discloses the corresponding structure, or an equivalent thereof, for element [3] under the first alternative construction. EX1003, ¶¶145-147.

For example, the CPA (***server system***) converts particular ATM cells to call processing messages to provide "well-known services and ***custom calling features*** at subscribers at home." EX1006, 5:52-58. Further, Gupta's CPA is "the focal point for supporting end-to-end ***call control functions***," and includes "call processing task 364" and "switch controller task 366." EX1006, 35:25-26, 34:21-25, 35:33-34. Moreover, the CPA stores "call reference value (CRV) table 370" "used to associate an ***incoming or outgoing call*** to a TM on an HLH." EX1006, 34:26-31. Gupta also describes the "call agent 514, similar to the CPA 42 (FIG. 1)" provide "the conventional custom ***calling features*** such as call waiting and three-way calling." EX1006, 43:60-63.

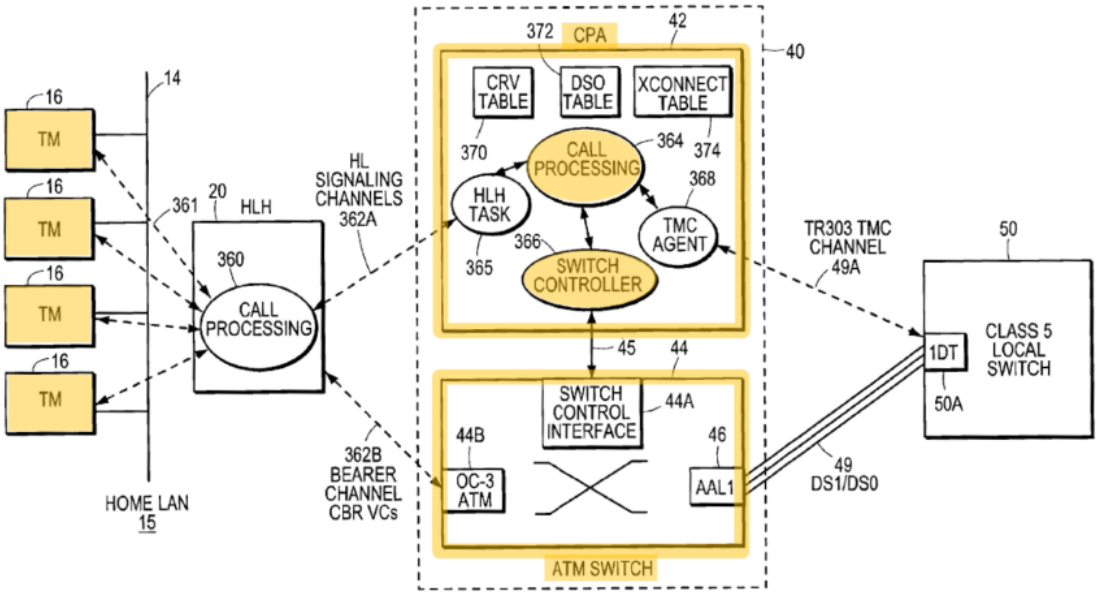


FIG. 24

EX1006, FIG. 24 (annotated).

Accordingly, Gupta's server system (e.g., CPA) includes the "call feature server," or an equivalent thereof, because it provides the server structure (e.g., call processing task, switch controller task, call agent, and/or the above-described structures of the CPA) for analyzing customer dialed information (e.g., "incoming or outgoing call") and combining it with customer data (e.g., "call reference value (CRV) table"), in order to determine the routing of a call (e.g., "well-known services and custom calling features" or "the conventional custom calling features such as call waiting and three-way calling."). EX1006, 5:52-58, 35:25-26, 34:21-34, 43:60-63; EX1001, 2:35-41, 3:16-27; EX1003, ¶147.

Element [7]:

Gupta discloses that the CPA (***server system***) converts particular ATM cells

to call processing messages to provide "well-known services and custom calling features at subscribers at home. EX1006, 5:52-58. Further, Gupta's CPA is "the focal point for supporting end-to-end call control functions," and includes "call processing task 364" and "switch controller task 366" that interact with each other. EX1006, 35:25-26, 34:21-25, 35:33-34, FIG. 24 (below). In Gupta, the CPA stores in memory tables such as "call reference value (CRV) table 370" that is "used to associate an incoming or outgoing call to a TM on an HLH." EX1006, 34:26-31. Gupta also discloses that the "call agent 514, similar to the CPA 42 (FIG. 1)" provide "the conventional custom calling features such as call waiting and three-way calling." EX1006, 43:60-63.

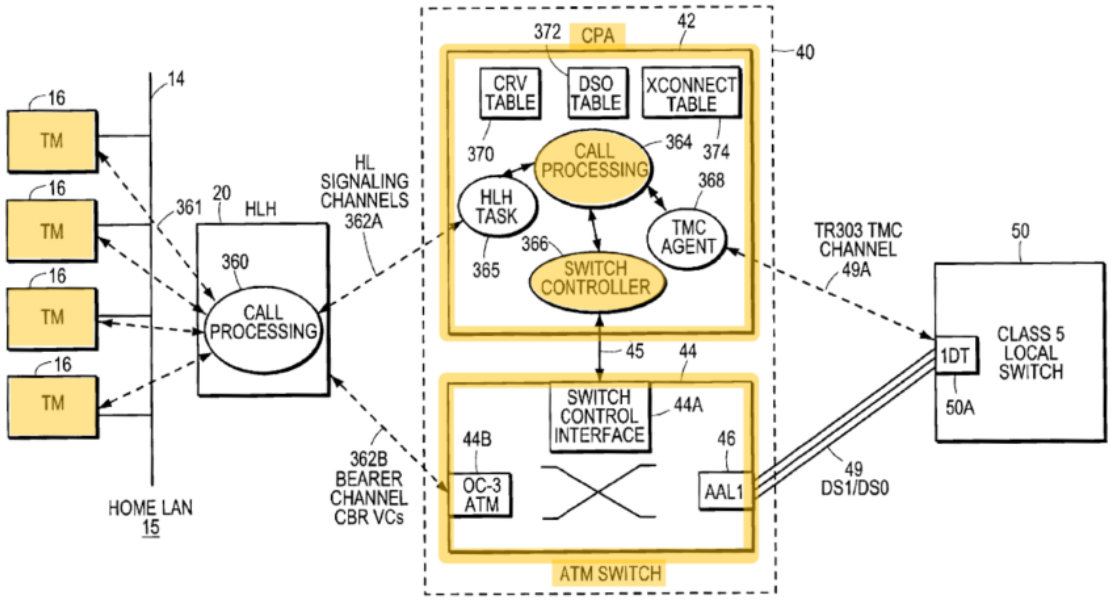


FIG. 24

EX1006, FIG. 24 (annotated).

As such, Gupta discloses the CPA (***server system***) including the call processing task and/or the call agent (***call feature server***) for controlling connections through the switch controller task (***packet switch***) in response to, e.g., ***signals*** representative of incoming or outgoing calls from TMs (***signals from said customer telephone stations***). EX1003, ¶¶148-149.

E. GROUND 3B: GUPTA IN VIEW OF MURPHY (Claim 3)

1. Overview of Murphy

As with the '304 patent and Farris, Murphy describes "a communication network 10 that includes a PSTN network 18 and a Voice over Internet Protocol (VoIP) network 20." EX1007, 2:60-3:6, FIG. 1; EX1003, ¶44-46. "The VoIP network 20 is an Internet Protocol (IP) packet switched network." EX1007, 2:67-3:2.

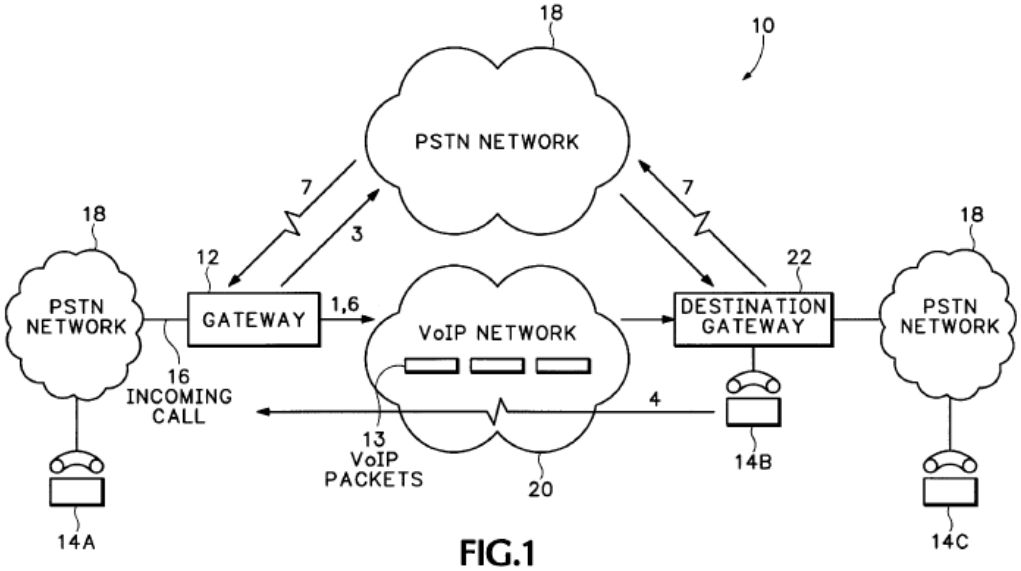


FIG.1

EX1007, FIG. 1.

Murphy describes "[a] call fallback scheme" that "is provided in a packet

switched network" over which "a Voice over IP (VoIP) link is established for incoming calls." EX1007, 1:64-67. The incoming calls are converted to "VoIP packets" that are "sent over the VoIP link to the destination endpoint." EX1007, 1:67-2:2, 3:18-34. Similarly to the '304 patent and Farris, Murphy recognizes that "[w]hen a low quality of service condition is detected on the VoIP link with the destination endpoint, a fallback call is established with the destination endpoint over a circuit switched network," and "[t]he VoIP packets for the incoming calls are redirected from the VoIP link to the circuit switched data link." EX1007, 2:2-16, 3:18-42.

In addition, Murphy describes that the gateway includes a Dial on Demand Routing (DDR) controller that provides a "congestion detector 126 detects IP network congestion by monitoring VoIP packets for IP addresses that are associated with VoIP link 111." EX1007, 7:55-8:43 ("The congestion detector 126 can also observe RTCP reports for IP addresses to determine if there is excessive ***packet delay***, packet loss, or packet jitter.").

2. Analysis of Gupta in view of Murphy

Element [3]:

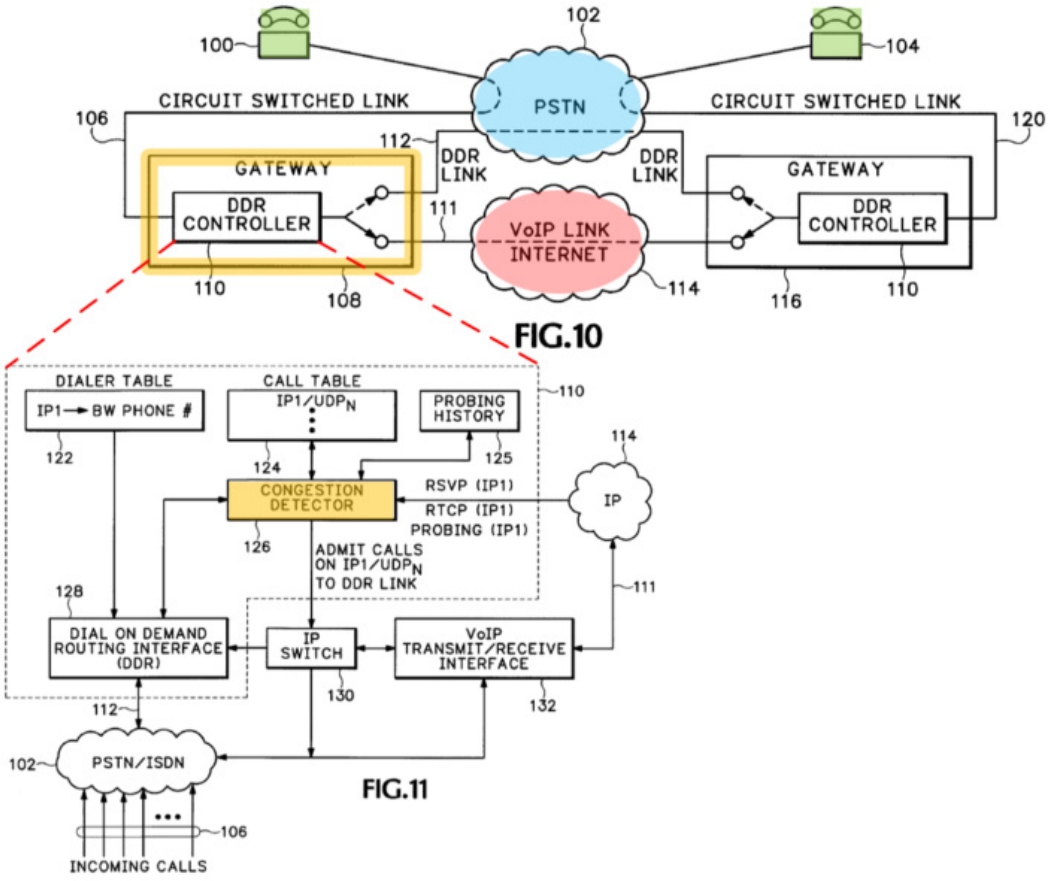
According to the second alternative construction of this "means for" term, the scope of element [3] includes the "server system" that performs the network algorithm as described in the '304 patent, at 4:1-10, 1:55-62, 4:19-25, FIG. 2 (blocks 203

and 205) or equivalents thereof. *See supra* Section VI.A. The teachings of Gupta in view of Murphy provide the corresponding structure/algorithm, or an equivalent thereof, for element [3] under the second alternative construction. EX1003, ¶¶150-157.

Gupta recognizes delay or congestion problems in packet networks and provides a solution (e.g., "network clock synchronization algorithm") to address such problems. EX1006, 9:28-39 ("In a real network, any clock synchronization algorithm on the receiver has to contend with ***cell delay variation (CDV)***, clock drift and cell impairments caused by ***delays or congestion through the network***."), 9:39-42 ("A network clock synchronization algorithm and implementation that is robust in the face of CDV, clock drift and cell impairments is now described."); *see also* 9:43-13:20; 13:21-41 ("ATM cells in a real network are subject to several kinds of impairments such as ***cell delay*** greater than the maximum CDV calculated above, cells being dropped and cells becoming corrupted.").

In the similar technical field (e.g., accessing the PSTN and the packet network using ATM protocol), Murphy discloses a gateway 108 that selectively routes a call over the PSTN and the Internet. EX1007, 7:55-8:43; EX1003, ¶152. Further, Murphy teaches a Dial on Demand Routing (DDR) scheme by including a DDR controller 110 in the gateway that establishes a channel over the PSTN, instead of the In-

ternet, based on detected congestion. EX1007, 8:4-23. In particular, Murphy's gateway 108 includes a congestion detector 126 that "detects IP network congestion" and "determine[s] if there is excessive ***packet delay***." EX1007, 8:23-8:43, FIGS. 10 and 11 (below). Murphy further teaches routing calls between the PSTN and the Internet based on congestion associated with the addresses to which the calls are directed. Murphy, 8:44-9:15, 1:54-2:16 ("***When a low quality of service condition is detected on the VoIP link with the destination endpoint***, a fallback call is established with the destination endpoint over a circuit switched network."), cls. 12, 19, 27. Murphy teaches that this DDR scheme "can be extended to any circuit switch technology, not just the PSTN, for example, Frame Relay or ***ATM***." EX1007, 11:49-51.



EX1007, FIGS. 10 and 11 (annotated).

A POSITA would have been readily recognized the Murphy's teaching in the same technical field of Gupta, and would have been motivated to apply Murphy's teaching of the congestion detector for detecting packet delay in Gupta's gateway for accessing the PSTN and the data network. EX1003, ¶153. Further, a POSITA would have recognized that Gupta's ATM protocol-based network for accessing the PSTN and the data network, as modified based on Murphy's teaching of the congestion detector, would be the same as, or equivalent of, the algorithm described in the '304 patent, at 1:55-62, 4:1-10, 4:19-25, and Figure 2 (blocks 203 and 205).

EX1003, ¶153.

Multiple reasons would have prompted a POSITA to modify Gupta according to Murphy's suggestion to thereby achieve known benefits. First, a POSITA would have been motivated to apply Murphy's teaching of monitoring packet delay for the purpose of providing a high quality of voice services "in the face of CDV [cell delay variation], clock drift and cell impairments" using the PSTN and the data network. EX1006, 9:28-42; EX1007, 2:2-16, 3:18-22, 3:34-42; EX1003, ¶¶154-155.

Second, a POSTA would have recognized that implementing Gupta's system in a manner that applies Murphy's suggested technique of monitoring packet delay yields a predictable result (e.g., Gupta's gateway 40 including the ATM switch 44, capable of monitoring packet delay to address problems caused by delays or congestions through the network and accordingly route packets through the PSTN and the data network) from combining known prior art elements according to known benefits. EX1003, ¶156; *KSR*, 550 U.S. at 416. Indeed, a POSTIA would have appreciated that the Gupta-Murphy combination would not change the hallmark aspects of either reference. EX1003, ¶157. Gupta's ATM-based network would remain unchanged, as would Murphy's suggested features of monitoring packet delay through the Internet. EX1003, ¶157. The respective teachings would work in combination just as they did apart, with Murphy's suggestions merely improving/adding to Gupta's system. EX1003, ¶157.

VIII. DISCRETIONARY CONSIDERATIONS

A. The Petition's New Prior Art and Errors Made During Prosecution Warrant Institution—35 U.S.C. § 325(d)

This Petition applies materially different prior art and arguments from those considered in any office action during prosecution, and does not warrant discretionary denial under 35 U.S.C. § 325(d). *See Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 (PTAB Feb. 13, 2020) (precedential); *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017).

Notably, only the Farris and Murphy references (EX1004, EX1007) were cited during prosecution, and even then, those two references were merely listed in the "Notice of References Cited" form and never addressed in any office action or response. *Supra*, Section IV.B. The other references (Frankel, Gupta, and Armistead) cited in this Petition were not before the Office. Thus, four of five Grounds (2A, 2B, 3A, and 3B) were certainly absent during examination, and the level of the examiner's consideration of the one remaining Ground (1) was apparently less than fulsome during the unusually terse examination.

Accordingly, regarding the first part of the framework set forth in *Advanced Bionics*, at least the Grounds based on Frankel, Gupta, and Armistead (Grounds 2A, 2B, 3A, and 3B) are plainly not based on "the same or substantially the same art

previously was presented to the Office."[3]

For the remaining Ground 1 based on Farris, that prior art teaching was certainly never applied in a rejection from the examiner, for there was never any prior art cited in any rejection during examination. *See generally* EX1002. So, even if Farris was considered as "the same or substantially the same art previously was presented to the Office" in satisfaction of the first part of the framework set forth in *Advanced Bionics*, the facts cited here show how the examiner erred in a manner material to the patentability of the challenged claims under the second part of *Advanced Bionics* framework. *Advanced Bionics*, IPR2019- 01469, Paper 6 at 8 n.9 ("An example of a material error may include misapprehending or overlooking specific teachings of the relevant prior art where those teachings impact patentability of the challenged claims."). As explained in Section VII.A (above) and in the pertinent testimony of Mr. Rysavy, the record here amply demonstrates the examiner over-

[3] Ground 3B cites to Murphy as a secondary reference in combination with Gupta for addressing dependent claim 3 (under the second alternative construction), but nothing in the file history indicates that the Examiner considered a rejection against claim 3 that was the same or substantially as any prior art combination based upon Gupta as a primary reference.

looked or otherwise erred in understanding the remarkable similarities between Farris and claims 1, 3, and 7.

Again, Farris was only listed in the "Notice of References Cited" form, but never used as the basis for rejection or evaluated during prosecution (*Becton, Dickinson* factors (c) and (e)). Further, this Petition articulates how Farris discloses the communications network apparatus recited in the Challenged Claims (*Becton, Dickinson* factor (f)). For example, this Petition specifically identifies relevant pin cites to Farris (*see* Section VII.A), and presents these pertinent teachings along with expert testimony in unexamined manners never contemplated in any office action or response. Under such circumstances, the Board has repeatedly instituted review and elected to not exercise discretion under §325(d). *See e.g.*, *Vudu, Inc., v. Ideahub, Inc.*, IPR2020-01689, Paper 16 at 17-20 (PTAB April 19, 2021) (declining to deny institution under 325(d) where references, which had been cited but not applied in a rejection during prosecution, were relied on in the petition); *Amazon.com, Inc. v. M2M Sols. LLC*, IPR2019-01205, Paper 14 at 15 (PTAB. Jan. 27, 2020) ("The Board frequently holds that a reference that 'was neither applied against the claims nor discussed by the Examiner' does not weigh in favor of exercising the Board's discretion under § 325(d) to deny a petition."); *Mylan Pharm. Inc., v. Merck Sharp & Dohme Corp.*, IPR2020-00040, Paper 21 at 17-18 (PTAB May 12, 2020) (instituting

review even though "WO '498 was presented to the Examiner" because the "Examiner never discussed WO '498 or made a rejection based on it" and "gave no reasons for allowance" even though the "disclosure meets the claimed invention" and "[t]he likeliest explanation … is that the Examiner simply overlooked [its] teachings"). Petitioner seeks to be treated no differently here.

B. *Fintiv* Factors Weigh in Favor of Institution—35 U.S.C. § 314(a)

In *Apple Inc. v. Fintiv, Inc.*, the Board enumerated six factors that provide a "holistic view" as to "whether efficiency, fairness, and the merits support the exercise of authority to deny institution in view of an earlier trial date in [a] parallel proceeding." IPR2020-00019, Paper 11 at 2-3 (PTAB "precedential" Mar. 20, 2020) ("*Fintiv I*"). Guided by precedent, Huawei took affirmative steps to promote the Board's efficiency and fairness goals. Huawei initiated this proceeding with prompt diligence and provided a stipulation akin to *Sand Revolution* to eliminate overlapping prior art grounds between the instituted IPR proceeding and the Related Litigation. EX1102. These facts, paired with the strong merits of Grounds 1-3B, provide compelling reasons to institute. *Sand Revolution II, LLC v. Continental Intermodal Group*, IPR2019-01393, Paper 24, 12 (PTAB "Informative" June 16, 2020).

Relevant Facts— Between September 29, 2020 and October 2, 2020, WSOU filed six separate infringement actions against Huawei involving six unrelated patents asserted against several unrelated products. *See* EX1100. These six lawsuits

are concurrently pending in the Western District of Texas ("the Court") before the Honorable Judge Alan D. Albright. *Id*. The action involving the '304 patent was assigned Case No. 6:20-cv-00889 ("the Related Litigation"). The remaining lawsuits are identified by different cases numbers and are not formally consolidated. The district court's scheduling order indicates that they will be consolidated into two or more groups—with a trial for the "first of the consolidated cases" starting on September 26, 2022 and a subsequent trial(s) for the "remaining consolidated cases" on a later (unknown) date. EX1101, 5.

WSOU served its preliminary infringement contentions on February 5, 2021, but oddly characterized the contentions as "confidential" and did not authorize Huawei's in-house counsel to view the charts of the preliminary infringement contentions until February 24, 2021. *See* EX1101, 1. As such, this Petition was filed just 3.5 months after initially learning of the asserted claims and about three months after actually viewing infringement charts. This Petition was served on Patent Owner long before fact discovery is formally opened in the litigation. In particular, the Court set a *Markman* hearing for August 12, 2021. *See* EX1101, 2-3. Per the Court's default order, fact discovery will formally open on August 16, 2021, two business days after the *Markman* hearing. *See* EX1101, 3. In other words, little discovery—and certainly no meaningful expert discovery regarding invalidity of the '304 patent—will be completed at the time of the Board's institution decision here.

For purposes of planning earlier dates throughout discovery, etc., the Court set two placeholder trial dates—a first trial starting on September 26, 2022 for an unknown "first" subset of the six asserted patents and a subsequent trial for the "remaining consolidated cases" starting on a date that "will be determined." EX1101, 5. No party knows whether the '304 patent will be part of "the first of the consolidated cases" for trial starting on September 26, 2022 or part of the "remaining consolidated cases" starting on a later (unknown) date. *Id.* Any allegation to the contrary is pure speculation.

Factor 1 (Stay)—No party in the Related Litigation has requested a stay at this time. Huawei currently plans to seek a motion to stay after the Board's decision to institute IPR here because, in Judge Albright's court, a motion filed earlier would be premature. Again, the facts at play here are unique. There are six distinct lawsuits (asserting six unrelated patents) all unrealistically scheduled for trial on the same date. In such unique circumstances, it is unclear how Judge Albright would rule on a motion to stay for the particular lawsuit involving the '304 patent, especially after IPR is instituted against the '304 patent months before Patent Owner narrows the number of asserted claims (February 2022) and long before expert reports/discovery (March 2022). EX1101, 3-4. This cloud of uncertainty means Factor 1 is neutral.

Factor 2 (Trial Date)—While the Court set September 26, 2022 as a placeholder trial date for an unknown "first" subset of the six asserted patents and a later

(unknown) trial for the "remaining consolidated cases," it is far from certain whether the '304 patent will be part of the "first" trial or the later second trial. EX1101, 5. The only certainty at this time is that several of the six patents will not be part of the September 26, 2022 trial because they will be grouped into the "remaining consolidated cases." *Id.* Presently, there is no hint as to how the scheduling shuffle will play out, and it would be erroneous for any part to speculate that the '304 patent will necessarily be excluded from the "remaining consolidated cases." *Id.*

The *Fintiv* panel noted that the Board "generally take[s] courts' trial schedules at face value absent some strong evidence to the contrary." *Apple Inc. v. Fintiv, Inc*., IPR2020-00019, Paper 15, 13 (PTAB, "informative," May 13, 2020) ("*Fintiv II*"). For the reasons detailed above, such "strong evidence" exists on this record. Due to WSOU's litigation tactics, neither the Court nor any party knows which one of the six asserted patents will be the subject of the trial starting on September 26, 2022. There is, in effect, no *certain* date for a jury trial that specifically addresses the '304 patent.

The "informative" guidance in *Sand Revolution* aligns with the facts of this case. *Sand Revolution*, IPR2019-01393, Paper 24 at 8-10. Even if Patent Owner (improperly) speculates the district court will necessarily insert the '304 patent into the "first" subset for a jury trial on September 26, 2022, the narrow gap in time between the jury's final verdict (end of September 2022 or later) and the Board's

projected Final Written Decision (early December 2022) is about three months. The panel in *Sand Revolution*, also facing meaningful questions of uncertainty about the trial date, weighed Factor 2 "marginally" *against* denial with a three-month time gap. *Id.* The *Sand Revolution* guidance demonstrates the proper result when the district court's "evolving schedule" makes it "unclear" when the trial would be held. *Id.* A similar lack of clarity exists in this case but for a different reason—there is significant uncertainty as to whether the '304 patent will be in the "first" subset for trial on September 26, 2022 or in the second subset of the "remaining consolidated cases" for trial at a later unknown date. EX1101, 5.

Similarly, the Board's analysis in *Google LLC, et al. v. Parus Holdings, Inc.* is compelling. *See* IPR2020-00846, Paper 9, 12-14 (PTAB Oct. 21, 2020). There, the district court reserved a broad range of "predicted" trial dates but declined to specify further. *Id*. (noting a trial date range of July 12-30, 2021, and further noting the court's statement that it was "not going to pick a date right now"). With "only three months" between the range of trial dates and a final written decision, the Board deemed Factor 2 "neutral" based on "substantial uncertainty in the Texas court's 'Predicted Jury Selection/Trial' date." *Id*.

The time gap presently at issue and the trial date uncertainty is comparable to *Sand Revolution* and *Google v. Parus*. The well-reasoned analysis in *Sand Revolution* weighed Factor 2 against discretionary denial. A similar outcome is appropriate

here.

Factor 3 (Investment)—The Related Litigation is currently in its infancy. Huawei acted promptly in response to WSOU's identification of asserted claims in preliminary infringement contentions, filing this Petition only about three months after Huawei's in-house counsel was finally permitted to view the charts of the preliminary infringement contentions, and before any claim construction briefing or the formal opening of fact discovery. *See* EX1101, 1.

At the projected date of institution (December 2021), the fact discovery period will have months of duration before the close of fact discovery (March 24, 2022), and expert reports/discovery will not even start until later (closing in May 19, 2022). EX1101, 4. Beyond a *Markman* order, which is not dispositive here and is unrelated to the invalidity issues based upon the prior art publications cited in this Petition, the Court will have not issued any substantive orders relevant to invalidity based on prior art publications.

The facts here compare favorably to *Fintiv*. In that case, also co-pending with litigation at the Western District of Texas, the petitioner filed *five months* after receiving preliminary infringement contentions, but the petition here was filed about 3.5 months after learning the asserted claim numbers (and about three months after Patent Owner finally authorized Huawei's in-house counsel to view the charts of those preliminary infringement contentions). *See Fintiv II* at 9. Much like *Fintiv*,

"[a]t the time of filing the Petition, the parties were in the midst of preparations for the *Markman* hearing." *Id*.

The "informative" guidance in *Sand Revolution* is telling here too. By the time of institution in this proceeding, the Related Litigation will be at a similar posture where "aside from the district court's *Markman* Order, much of the district court's investment relates to ancillary matters untethered to the validity issue itself." *Sand Revolution*, IPR2019-01393, Paper 24, 10-11. The parallels are also notable because:

> [M]uch work remains in the district court case as it relates to invalidity: fact discovery is still ongoing, expert reports are not yet due, and substantive motion practice is yet to come.

Id. at 11 (internal citation omitted); *see also Fintiv I* at 10 ("If, at the time of the institution decision, the district court has not issued orders related to the patent at issue in the petition, this fact weighs against exercising discretion to deny institution").

In fact, the circumstances under Factor 3 here are similar to *Sotera*. *See Sotera Wireless, Inc. v. Masimo Corporation*, IPR2020-01019, Paper 12, 16-17 (PTAB Precedential Dec. 1, 2020) ("much other work remains in the parallel proceeding as it relates to invalidity" and the "explanation for timing of the Petition is reasonable, … particular in view of the large number of patents and claims"). In this case too, Factor 3 "weighs in favor of not exercising discretion to deny" as a result of "the

relatively limited investment in the parallel proceeding to date" and "the fact that the timing of the Petitioner was reasonable." *Id.* at 17.

Factor 4 (Overlap)— As an initial matter, no party currently knows whether the '304 patent will be part of the "remaining consolidated cases" for second trial starting on a later (unknown) date after the Board's final written decision here. EX1101, 5; *supra*, Analysis of Factors 1-2. In such circumstances, there would be absolutely no overlap between invalidity grounds addressed in the Board's final written decision and in the later jury trial because §315(e)(2) necessarily forbids it. Given the undefined nature of which one of the jury trials will actually include the '304 patent, these questions related to "overlap" in Factor 4 are, at best, speculative.

Moreover, even if Patent Owner indulges in speculation to assume that the '304 patent will necessarily be part of the "first" subset of cases for trial on September 26, 2022 rather than in the later subset, Huawei's stipulation here "mitigates" concerns related to overlapping prior art grounds. *Sand Revolution*, IPR2019-01393, Paper 24, 11-12; *see* EX1102 (not pursue "the same prior art grounds"). According to this informative guidance, Factor 4 weighs at least "marginally in favor not exercising discretion to deny IPR." *Sand Revolution*, IPR2019-01393, Paper 24, 12.

Factor 5 (Parties)—Because the parties here and at the District Court are the same, Factor 5 favors denial if trial precedes the Board's Final Written Decision and

favors institution if the opposite is true (due to the 35 U.S.C. 315(e)(2) estoppel provision). *Google*, IPR2020-00846, Paper 9, 20-21 ("[W]e decline to speculate as to whether we are likely to address the challenged patent before the Texas court. Thus, [Factor 5] is neutral."). Neither circumstance can be confirmed in this case without improper speculation because the *actual* date of a jury trial involving the '304 patent is uncertain. EX1101, 5 (a later unknown trial for "the remaining consolidated cases"). Under these unique circumstances, Factor 5 is neutral.

Factor 6 (Merits and Other Circumstances)—The merits of this Petition are particularly strong as demonstrated in Grounds 1-3B, which include both anticipation and obviousness grounds. Moreover, WSOU—an entity specializing in patent licensing and negotiation—has broadly viewed the '304 patent's claims for assertion against a Unified Communications (UC) platform. EX1012, 4-5. Fully vetting a twenty-one-year-old patent (filed 2000) that was tersely examined, especially now after it is asserted against a common unified gateway product long after the '304 patent issued, would be just and beneficial to the public. *Consolidated Trial Practice Guide*, 56 (quoting 35 U.S.C. §316(b)). Factor 6 and the *Fintiv* Factors as a whole strongly favor institution.

Finally, Petitioner notes the ongoing legal challenge to discretionary denials of IPR based on the *Fintiv* and *NHK* precedential decisions (*e.g.*, *Apple Inc. et al. v. Iancu*, No. 5:20-cv-06128 (N.D. Cal.)), and reserves the opportunity to address the

result of that case and any impact in this proceeding.

IX. CONCLUSION

Petitioner requests IPR of the Challenged Claims pursuant to Grounds 1-3B.

Respectfully submitted,

Dated May 26, 2021

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CERTIFICATION UNDER 37 CFR § 42.24

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for *Inter partes* Review totals 13,640 words, which is less than the 14,000 allowed under 37 CFR § 42.24.

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on May 26, 2021, a complete and entire copy of this Petition for *Inter partes* Review, Power of Attorney, and all supporting exhibits were provided via Federal Express, to the Patent Owner by serving the correspondence address of record as follows:

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