

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner

v.

FLYPSI, INC.,
Patent Owner

Patent No. 9,667,770

**DECLARATION OF DR. BILL LIN
IN SUPPORT OF PETITION FOR INTER PARTES REVIEW
OF U.S. PATENT NO. 9,667,770**

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I, Bill Lin, declare as follows:

I. INTRODUCTION

1. I have been retained as an independent expert consultant in this proceeding before the United States Patent and Trademark Office (“PTO”) regarding U.S. Patent No. 9,667,770 (“the ’770 patent”) (Ex. 1001).¹ I have been asked to consider whether prior art references disclose or suggest the features recited in claims 1-6 (“the challenged claims”) of the ’770 patent. My opinions are set forth below.

2. I am being compensated at my standard consulting rate for my work in this proceeding. My compensation is in no way contingent on the nature of my findings, the presentation of my findings in testimony, or the outcome of this or any other proceeding. I have no other interest in this proceeding.

¹ In this Declaration, I refer to exhibits that I understand are to be attached to the petition for *Inter Partes* Review of the ’770 patent.

II. BACKGROUND AND QUALIFICATIONS

3. My qualifications are stated more fully in my curriculum vitae, which is attached as Ex. 1003. Below is a summary of my education, work experience, and other qualifications.

4. I am currently a Professor of Electrical and Computer Engineering at the University of California, San Diego (UCSD).

5. I received a Bachelor of Science in Electrical Engineering and Computer Sciences from University of California, Berkeley in May 1985; a Master's of Science in Electrical Engineering and Computer Sciences from the University of California, Berkeley in May 1988; and a Ph.D. in Electrical Engineering and Computer Sciences from the University of California, Berkeley in May 1991.

6. I joined UCSD in 1997, and I have been a tenured professor since 1999. My teaching and research focus on computer architecture and computer network problems, including the design of high-performance switches and routers, high-speed packet processors, wireless networks, data networks, and various hardware accelerators for networking applications. I regularly teach a senior-level design course on the design of advanced processors, and I have taught graduate courses and advanced special topics in computer architecture and computer networks.

7. At UCSD, I am a Principal Investigator in the UCSD Center for Networked Systems (CNS). CNS brings together researchers to work on a range of challenges in the design of future networked systems. My contribution to CNS has been expertise in the design of computer architecture solutions for packet processing, computer networking, and network measurements. I am also a Principal Investigator in the UCSD Center for Wireless Communications (CWC). CWC brings together researchers to work on a range of challenges in the design of future wireless communications systems. My contribution to CWC has been expertise in the design of computer architecture solutions for wireless networking and mobile computing.

8. Prior to joining UCSD, I was the Head of the Systems and Communications Group at IMEC in Leuven, Belgium, where I led a team of researchers who worked on a range of computer design problems, including specialized processors for wireless communications and computer networking.

9. During my career, I have received or worked on research efforts that received millions of dollars in research funding from both government agencies and industry, including funding for research in packet processing, computer networks, network measurements, and wireless communications.

10. I have served as an Associate or Guest Editor for several journals published by the Association for Computing Machinery (“ACM”) and the Institute of Electrical and Electronics Engineers (“IEEE”). I have also served as General Chair of several ACM/IEEE conferences, and on the Organizing or Steering Committees of many ACM/IEEE conferences, and I have served on the Technical Program Committees of numerous ACM/IEEE conferences. I am the author of over 190 top-tier peer-reviewed publications in the field of computer engineering dating to the 1980s, including journal articles, conference papers, book chapters, technical reports, and invited papers. A number of these publications have received best paper awards or distinguished paper citations. I have also given numerous invited and keynote talks around the world.

11. I am a named inventor on five patents in the fields of computer design and computer networking: U.S. Patent Nos. 8,443,444, 7,860,004, 7,672,005, 5,870,588, and 5,748,487.

III. MATERIALS REVIEWED

12. The opinions contained in this Declaration are based on the documents I reviewed, my professional judgment, as well as my education, experience, and knowledge regarding systems and processes in the field of online advertising.

13. In forming my opinions expressed in this Declaration, I reviewed the following materials:

Ex. 1001	U.S. Patent No. 9,667,770 to Zhidov et al. (“the ’770 patent”)
Ex. 1003	Curriculum Vitae of Bill Lin, Ph.D.
Ex. 1004	Prosecution History of U.S. Patent No. 9,667,770
Ex. 1005	U.S. Patent Publication No. 2013/0295892 to Backhaus et al.
Ex. 1006	U.S. Pat. App. No. 61/660772 Backhaus Provisional
Ex. 1007	U.S. Patent Publication No. 2009/0052437A1 to Taylor
Ex. 1008	U.S. Patent Publication No. 2006/0077956A1 to Saksena
Ex. 1011	Signaling System No. 7 (SS7/C7) Protocol, Architecture, and Services (excerpts)
Ex. 1015	U.S. Patent Publication No. 2010/0128857 to Logan
Ex. 1017	U.S. Patent Publication No. 20090167509A1 to Fadell
Ex. 1018	U.S. Patent Publication No. 20080100693A1 to Jobs
Ex. 1019	U.S. Patent Publication No. 20080168361A1 to Forstall

I also considered any other documents and materials I refer to in this Declaration.

14. My opinions contained in this declaration are based on the documents I reviewed and my knowledge and professional judgment. My opinions have also been guided by my appreciation of how a person of ordinary skill in the art would have understood the state of the art, the prior art, and the claims and the specification of the '770 patent at the time of the alleged invention, which I discuss below.

15. I have been asked to initially consider that the time of the alleged invention of the '770 patent was around 2013 (including and up to July 17, 2013), which corresponds to the filing date of the earliest patent application associated with the '770 patent. (Ex. 1001, Cover.)

16. Based on my experience and expertise, it is my opinion that certain references disclose and/or suggest all the features recited in challenged claims of the '770 patent, as I discuss in detail below.

IV. PERSON OF ORDINARY SKILL IN THE ART AND THE TIME OF THE ALLEGED INVENTION

17. I am familiar with the level of ordinary skill in the art regarding the '770 patent as of what I understand to be around July 17, 2013, which is the filing date of the earliest patent application associated with the '770 patent. (Ex. 1001, Cover.) Considering the '770 patent, the technology, the educational level and experience of workers in the field relating to the patent, and problems and solutions in that field, and drawing on my own experience, I believe a person of ordinary skill in the art at the time of the alleged invention (around July 17, 2013) would have had an undergraduate degree in electrical engineering, computer engineering, computer science or a related field along with two years of work experience in the field of telecommunication. More education can supplement practical experience and vice versa. (*See* '770 patent (Ex. 1001) at 1:15-20 (“The present invention relates to systems and methods for setting up and connecting telephone calls, and delivering information related to such telephone calls using an Internet Protocol (IP) or other data channel while delivering the voice portion of the call in accordance with CDMA, GSM or like voice channel delivery standards.”).)

18. My opinions in this Declaration regarding the '770 patent and the prior art (including the state of the art) are from the perspective of one of ordinary

skill in the art as I defined above, during the relevant timeframe (e.g., the time of the alleged invention), which I discussed above as being around July 17, 2013.

V. TECHNICAL BACKGROUND

19. Below, I present a brief overview of certain aspects of systems and processes relating to telecommunication and associated features prior to and at the time of the alleged invention for the '770 patent. The functionalities and concepts I describe below in this technical background section reflect the state of the art that a person of ordinary skill in the art would have had knowledge of and understood prior to and at the time of the alleged invention of the '770 patent. I rely on, and incorporate as applicable (even if not expressly mentioned below in Section IX), the following disclosures and opinions to support my opinions in this Declaration, including those opinions relating to how the prior art discloses and/or suggests the challenged claims of the '770 patent and how and why a person of ordinary skill in the art would have been motivated to consider and combine the disclosures and suggestions from that prior art as I explain below in Section IX. The concepts below would have been within the knowledge and mindset of a person of ordinary skill in the art at the time.

A. Telecommunications Signaling

20. A telecommunication network is formed by a conglomerate of many different components (e.g., servers, switches, and terminal devices), and in order to efficiently provide telecommunication services (e.g., call routing and call forwarding

through these various components), the network components must indicate or signal information to each other so as to coordinate amongst the components to provide the intended services. (Ex. 1011, 6 (“In telecommunications, the network’s components must indicate (that is, signal) certain information to each other to coordinate themselves for providing services. As such, the signaling network can be considered the telecommunications network’s nervous system. It breathes life into the infrastructure.”).) In fact, it was generally known that:

Without signaling, networks would be inert and passive aggregates of components. Signaling is the bond that provides dynamism and animation, transforming inert components into a living, cohesive and powerful medium.

(Ex. 1011, 6.)

21. For instance, if a telecommunication service subscriber (e.g., a subscriber to AT&T’s telephone services) intends to place a telephone call, the call must be signaled to a switch, which provides an access point to the telecommunication network. (*Id.*, 6; Ex. 1007, [0004] (“[e]xternal digital communication systems typically communicate with the PSTN by interfacing with [local exchanges or switches 12].”)) Such a switch is also known as a local switch or a local exchange. (Ex. 1011, 6; *see also id.*, 6-7 (describing that calls are

established and routed by switches across the PSTN, including a calling party's local switch and a destination's local switch), 11, 15, 82 (disclosing that a local exchange/switch "provides network access for the subscriber".) Once the called party's number is received by the local switch, it begins signaling to other nodes/components of the network to establish a communication path, formed by the interconnected components, between the calling and called parties to provide a bi-directional communication. (*Id.*, 6-7.)

22. In addition to providing an access point to a network for a subscriber's device, a local switch may also be an access point to a network for a server. For example, Ex. 1007 shows a server 50 that communicates with the Public Switched Telephone Network (PSTN, discussed further below) through a local switch 12. (Ex. 1007, [0008]; *see also id.*, [0004] ("External digital communication systems typically communicate with the PSTN by interfacing with an exchange such as [local switch] 12"), FIG. 1A (showing a local switch 12 that is in communication with server 50).)

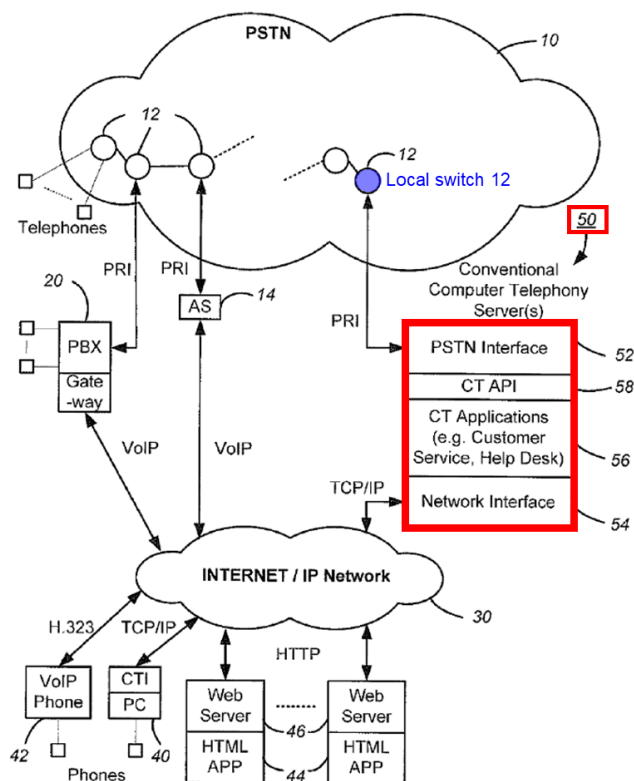


FIG. 1A (Prior Art)

(Ex. 1007, FIG. 1A (annotated).) In particular, as shown in Figure 1 above, server 50 may be configured to interface via a PSTN interface 52 with an exchange 12 to receive and process calls pertaining to a predefined set of telephone numbers on the PSTN, where the server “executes telephony applications that can provide custom services such as interactive voice response, customer service or help desk for an organization.” (*Id.*, [0008].)

23. While the main function of telecommunication signaling is to set up and clear calls, signaling may take place even when there is not a call in place, which is used to transfer data between network nodes. For example, telecommunication signaling may be used for “query and response with telecommunications databases to support cellular networks, intelligent networks, and supplementary services.” (Ex. 1011, 7.)

The main function of signaling is still that of circuit supervision: setting up and clearing down circuits (that is, trunks). Traditionally, once a circuit was set up, no other signaling was performed apart from releasing the call; therefore, all calls were simple, basic telephone service calls. **However, modern telephone networks can perform signaling while a call is in progress, especially for supplementary services—for example, to introduce another called party into the call, or to signal the arrival of another incoming call (call waiting) to one of the parties. In fact, since the 1980s, signaling can take place even when there is not a call in place.** This is known as non-circuit related signaling and is simply used to transfer data between networks nodes. It is primarily used for query and response with telecommunications databases to support cellular networks, intelligent

networks, and supplementary services. For example, in Public Land Mobile Networks (PLMNs), the visitor location register (VLR) that is in charge of the area into which the subscriber has roamed updates the home location register (HLR) of the subscriber's location. PLMNs make much use of non-circuit-related signaling, particularly to keep track of roaming subscribers. Chapter 13, "GSM and ANSI-41 Mobile Application Part (MAP)," covers this topic in more detail.

(Ex. 1011, 7.)

B. The Public Switched Telephone Network (PSTN)

24. One of the well-known telecommunication networks is the PSTN. Consistent with as discussed above (that a network is formed by many different components), the PSTN includes various equipment and interconnecting components that provide phone services to the public. (Ex. 1011, 81.) The PSTN began in the 19th century with a manual mechanical switchboard that connected different parties and allowed them to carry on a conversation. (*Id.*) In modern days, the PSTN is "a network of computers and other electronic equipment that converts speech into digital data and provides a multitude of sophisticated phone features, data services, and mobile wireless access," and the PSTN also transports speech or voice-band data, which is data that has been modulated to voice frequencies. (*Id.*)

25. The PSTN is known to be providing reliable communications to its subscribers and operates using the Signaling System No. 7 (SS7) protocol, which provides control signaling for the network (like I discussed above regarding network signaling to coordinate amongst the network components) and “is the most advanced and widely used signaling system for both cellular and fixed-line telecommunications networks.” (*Id.*, 5 (“Signaling System No. 7. Today, Signaling System No. 7 is the most advanced and widely used signaling system for both cellular and fixed-line telecommunications networks”), 81-82 (“SS7 provides control signaling for the PSTN”), 103-105 (discussing the use of SS7 protocol in the PSTN since the 1990s).)

SS7/C7 is the protocol suite that is employed globally, across telecommunications networks, to provide signaling; it is also a private, “behind the scenes,” packet-switched network, as well as a service platform. Being a signaling protocol, it provides the mechanisms to allow the telecommunication network elements to exchange control information.... SS7/C7 is the key enabler of the public switched telephone network (PSTN), the integrated services digital network (ISDN), intelligent networks (INs), and public land mobile networks (PLMNs).

(Ex. 1011, 43.)

26. The core of the PSTN are digital switches, which are also known as signal switching points (SSPs). (Ex. 1011, 81 (“At the core of the PSTN are digital switches”).) A SSP “is a voice switch” that “processes voice-band traffic.” (*Id.*, 62-63; *see also* Ex. 1007, [0004] (describing that “[t]elephone service is traditionally carried by the PSTN,” which “includes a network of interconnected local exchanges or switches 12;” “[v]oice or data is carried from a source node to a destination node on the network by establishing a circuit path along the PSTN effected by appropriately switching the interconnecting exchanges;” and “[e]xternal digital communication systems typically communicate with the PSTN by interfacing with an exchange such as 12.”).) As such, it has been known that a switch is responsible for connecting a voice channel to create a conversation path between the calling and the called parties. (Ex. 1011, 99 (“The switch is responsible for many tasks, but one of its primary function is connecting voice channel to create a bi-directional conversation path between two phone subscribers.... Once a circuit is set up between the two subscribers, the connection remains for the duration of the call.”).)

VI. THE '770 PATENT

A. Description

27. The '770 patent generally describes setting up and connecting phone calls using a data channel, and delivering voice portions of the call using a voice channel. (Ex. 1001, 1:15-20.) As an example, the '770 patent explains with reference to Figure 3 (reproduced below) communications between a handset 340 and a server 100 may utilize a data channel (e.g., the Internet 316). (*Id.*, 4:35-40.)

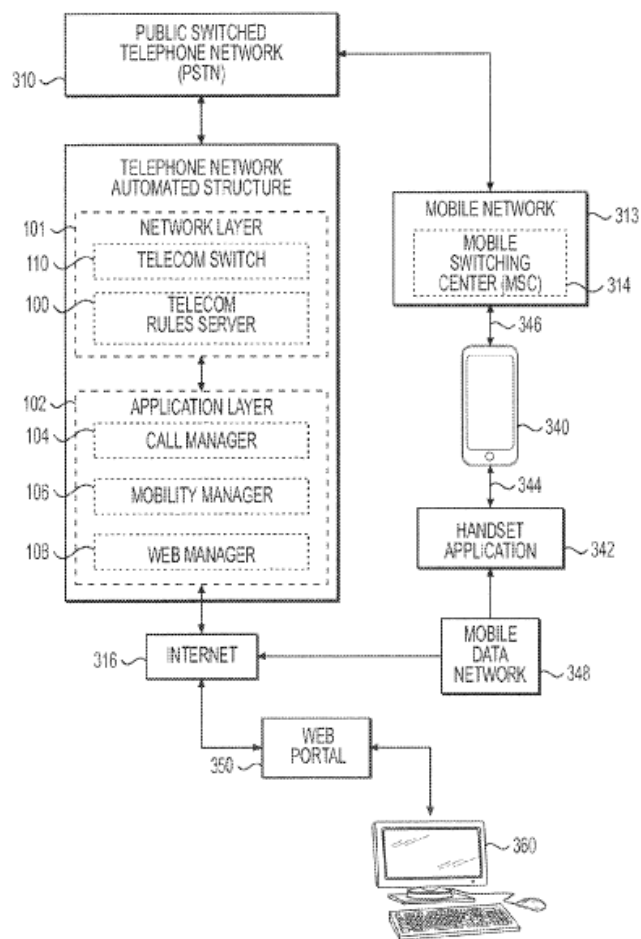


FIG. 3

(Ex. 1001, FIG. 3.) “Conversely, communications between the switch 110 and the handset over the PSTN 310 may be transmitted and received in accordance with CDMA, GSM or like standards as opposed to using IP. Such CDMA, GSM or like governed communications, when used to carry voice information, are referred to herein as being conducted over a ‘voice channel.’” (*Id.*, 4:40-46.)

28. For instance, a user may subscribe to a handset application 342 using the data channel connection between handset 340 and server 100, and a handset application 342 may be transmitted to the handset from the server 100 to be installed on the handset. (*Id.*, 4:52-63.) Through the handset application 342, a user may “select one or more secondary telephone numbers to be referenced to a primary telephone number for the handset.” (*Id.*, 4:64-5:2.)

29. Using the handset 340, a user may transmit call processing rules via the data channel to the server 100 by “select[ing] call processing rules for handling incoming and outgoing voice channel calls to and from the handset 340.” (*Id.*, 5:15-18.) Call processing rules may provide call routing based on locational information, caller ID, and temporal data. (*Id.*, 6:9-18 (“The call processing rules may govern how calls are handled and may provide automated call routing or call dropping based on location data of the calling and/or called party. The call processing rules may further govern handling calls based on incoming caller ID, which may identify a calling party as being on an accepted caller ID list or a non-accepted caller ID list. The call processing rules may further provide call routing based on weekday, weekend, holiday, time of day, biometrics data, and accelerometer data information.”).) Additionally, call processing rules may include preset responses for

incoming calls including custom voicemail or text message responses. (*Id.*, 5:31-39.)

30. Figure 3 of the '770 patent also depicts the call routing process for receiving an incoming call to or placing an outgoing call from a secondary telephone number. (*Id.*, 5:51-55, 7:20-23.) For incoming calls to a secondary telephone number, the call is routed over PSTN 310 to switch 110. (*Id.*, 5:55-66.) In response to the incoming call, applications (e.g., call manager 104 as shown in Figure 3) associated with server 100 may access certain call processing rules in database 120 to determine how to handle the incoming call. (*Id.*)

31. If the call processing rules allow receiving the incoming call, then call manager 104 may transmit pre-call notification information to handset 340 via the data channel, where such information includes a bridge telephone number and other information (e.g., calling party's number/name and the called secondary number to be displayed on handset 340). (*Id.*, 6:32-44.) If the user opts to accept the call, handset 340 calls the bridge number over the voice channel, which is then routed to switch 110. (*Id.*, 6:62-67.) Switch 110 then bridges the call directed to the bridge number (which is from handset 340) with the incoming call (that calls the secondary

number associated with handset 340) in order to connect the calling party to handset 340 via the voice channel. (*Id.*, 6:67-7:10; *see also id.*, FIG. 2, FIG. 4.)

32. The '770 patent also describes processes for placing outgoing calls, where a bridge number is used to connect the outgoing call, and the user may choose a secondary telephone number as the originating telephone number. (*Id.*, 7:20-8:53.)

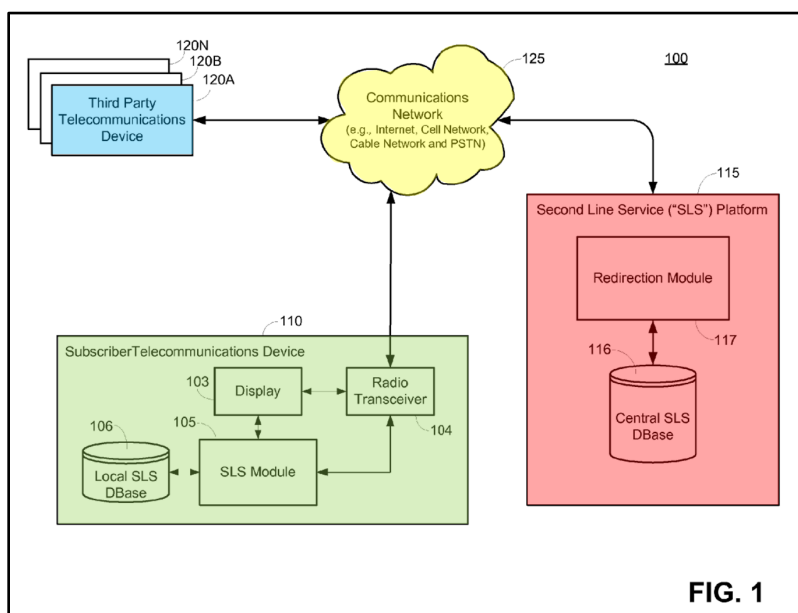
33. The alleged invention includes features that were well known to a person of ordinary skill in the art before the time of the alleged invention, such as using the PSTN as a voice channel, the Internet as a data channel, uses of primary and secondary telephone numbers, uses of a switch and a bridge telephone number to connect to calls. (*See generally* Ex. 1004.) As demonstrated below, the claimed features were either disclosed and/or suggested by the prior art or prior art combination.

VII. OVERVIEW OF THE PRIOR ART

A. Backhaus

34. Backhaus discloses a method for routing calls between a third party telecommunication device (“TD”) and a subscriber TD through a communication network. (Ex. 1005, Abstract, [0009].) Backhaus discloses a relationship number that may be used to, e.g., route calls to a service platform. (*Id.*, Abstract.)

35. Backhaus discloses with reference to Figure 1 a high-level diagram of an exemplary system 100 that includes a second line service (“SLS”) platform 115 (highlighted in red), which provides the SLS to a subscriber operating TD 110 (highlighted in green). (*Id.*, [0031].)



(Ex. 1005, FIG. 1 (annotated).) System 100 also includes a communication network 125 (highlighted in yellow), where calls directed from third party TD 120 (highlighted in blue) to subscriber TD 110 are transmitted via communication network 125. (*Id.*, [0032] (“any call[s]...are transmitted from a third party TD 120 to the subscriber TD 110 by way of communications network 125.”).)

36. Backhaus discloses that subscriber TD 110 is associated with a primary phone number that is assigned to it by a primary service provider. (*Id.*, [0031].) Subscriber TD 110 is also associated with a secondary phone number (or SLS number) provided by SLS platform 115. (*Id.*) A subscriber to the SLS “may receive calls at TD 110 that are directed to either of the primary phone...or the secondary phone number.” (*Id.* (“TD 110 is...associated with a primary phone number assigned to it by a primary service provider.... A subscriber to a [SLS]...may receive calls at TD 110 that are directed to either of the primary phone number...or the secondary phone number...provided, serviced and or facilitated by the SLS platform 115.”).) Backhaus explains that since subscriber TD 110 is associated with multiple phone numbers, e.g., primary and SLS phone numbers, it allows the subscriber to separately manage communications on each number, e.g., separating a personal number from a business number. (*Id.*, [0008] (“providing a plurality of

dedicated phone numbers to a single telecommunications device in such a manner that the user of the device can separate and manage communications on each”); *see also id.*, [0003]-[0007] (describing known use of multiple numbers with a telecommunication device to separate personal from business phone numbers).)

37. Consistent with Second Line Service Master ID Table 305 of Figure 3A (reproduced below and annotated), Backhaus discloses that “the primary number...assigned to the subscriber TD 110...is associated with [the subscriber] and his SLS number.” (*Id.*, [0044], FIG. 3A; *see also id.*, [0044] (“The SLS service provider...has a group of SLS numbers...and are provided to subscribers of the SLS service.”), [0050] (“The relationship between the subscriber’s primary number and the SLS number is reflected in Second Line Service Master ID Table 305 of FIG. 3A.”), [0060] (“SLS platform 115...may recognize that...subscriber’s primary number...(which is associated with the subscriber’s SLS number”).)

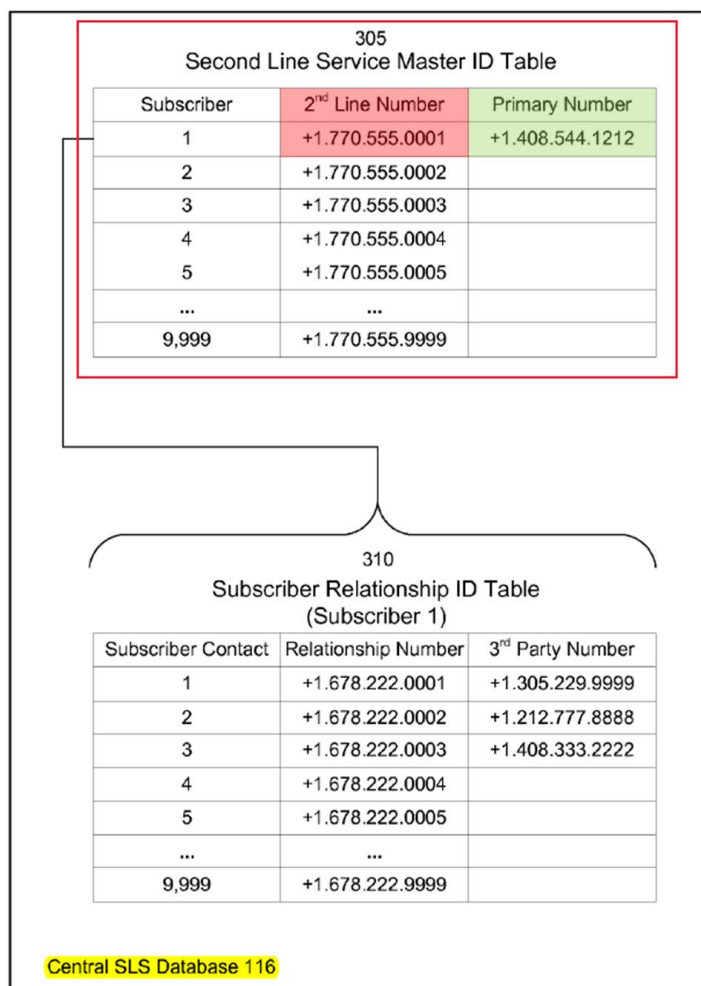


FIG. 3A

(Ex. 1005, FIG. 3A (annotated).) In particular, as indicated in Table 305 (top portion of Figure 3A), Subscriber #1, *e.g.*, the user of TD 110 (“handset”), is issued SLS number 1.770.555.0001 (highlighted in red). (*Id.*, [0044].) The SLS number is also associated with the primary number, 1.408.544.1212 (highlighted in green), which is assigned to TD 110. (*Id.*)

38. As to the call routing processes for different numbers called, Backhaus explains that a call from third party TD 120 to subscriber TD 110's primary number is routed via network 125 to TD 110 (*id.*, [0033]), while a call from third party TD 120 to subscriber TD 110's SLS number is first routed by network 125 to SLS platform 115, and then routed to TD 110 (*id.*, [0034]-[0035]). In addition to processes for routing calls to subscriber TD 110 (described above), Backhaus also discloses processes for routing calls that originate from subscriber TD 110 to the third party TD 120. (*Id.*, [0036] ("methods for receiving a call from a third party TD 120 and making a call to a third party TD 120 by way of the SLS platform 115 will be described below relative to FIGS. 4-7."); *see also id.*, [0009]-[0010] (describing processes for handling calls directed to subscriber TD 110), [0011] (describing processes for handling calls originated from subscriber TD 110).)

39. When a third party calls a subscriber's SLS number for the first time, SLS platform 115 creates a relationship between the subscriber's SLS number and the third party's number by assigning a relationship number to the combination of these two numbers (i.e., subscriber's SLS number and the third party's number). (*Id.*, [0052] ("SLS platform 115 accepts the call (without connecting the voice path to the third party TD 120A) and determines that the call is for SLS number...and

that [the SLS number] does not yet have a ‘relationship’ set up for the [third party calling number]), [0053].) The relationship information is stored in a database in each of SLS platform 115 and subscriber TD 110 (*id.*, [0053]-[0057]) and may be utilized when the subscriber calls the third party using his/her SLS number (*id.*, [0058]-[0061]).

40. For example, when the subscriber “dials the third party number,” subscriber’s TD 110 by using the stored relationship information “translates...[the] third party number...to relationship number” and “calls the relationship number”—even though TD 110 may display that it is calling the third party number. (Ex. 1005, [0059].)

To place calls from his SLS number, Subscriber #1 uses the SLS phone app of SLS module 105 [of subscriber TD 110] as his dialer, as a non-limiting example of one potential embodiment. In the SLS dialer (not depicted in the Figures), *Subscriber #1 dials the third party number...* which is reflected in the Private Relationship ID Tables 310, 315 as being associated with his Contact #1. The SLS module 105 queries Subscriber Relationship ID Table 315 in local SLS database 106 and *translates the called third party number...to relationship number....* The SLS module 105 may indicate to the subscriber via display

103 that it is calling [the third party number], but instead
it calls the relationship number....

(Ex. 1005, [0059].) “By calling the relationship number..., the network 125 routes the call to the SLS platform 115 instead of directly to third party TD 120A phone.” (*Id.*) SLS platform 115 then “modif[ies] the ‘calling number’ field in the signaling,” instead of populating the field with the actual number of the calling device (i.e., subscriber’s primary number), “populate it with the SLS number....” (*Id.*) Thus, it appears to the third party that “he is receiving a call originating from the SLS number of the subscriber instead of the primary number...associated with subscriber TD 110.” (*Id.*; *see also id.*, [0060]-[0061] (disclosing additional processes for handling a call originated from an SLS subscriber).)

41. Backhaus discloses that, when a subscriber elects not to answer a call to the SLS number, subscriber TD 110 “use[s] a voicemail service or message service in response to the unanswered call” or provides “automated responses.” (*Id.*, [0068] (“the SLS module 105 [of subscriber TD 110]...may use a voicemail service or message service in response to the unanswered call”), [0035] (“The SLS module 105 [of subscriber TD 110] is designed to...provide services uniquely associated with the second line number such as, but not limited to, dedicated voicemail, ringtones, caller ID, automated responses, etc.”).) Backhaus explains that “similar

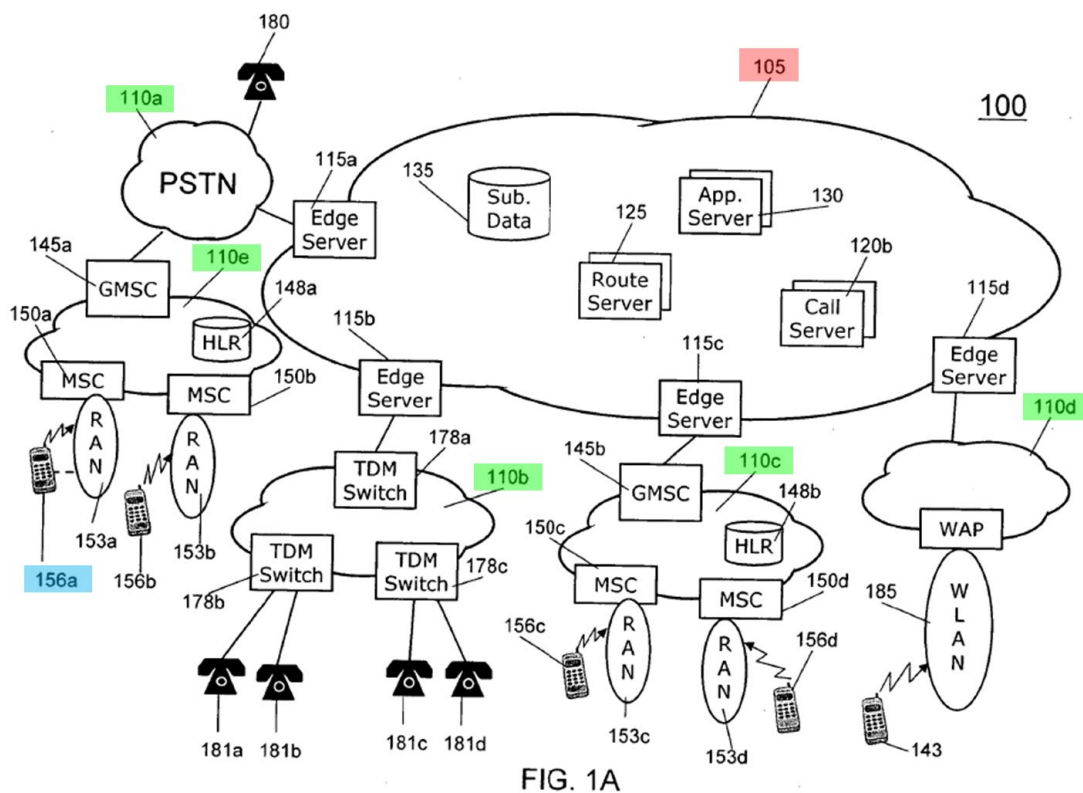
features and services associated with the subscriber's primary number" may be provided. (*Id.*, [0068]; *see also id.*, [0130] ("an SLS service may provide features and services dedicated to the SLS subscriber and separate from similar features and services associated with the subscriber's primary number").)

42. Backhaus discloses further details regarding processes for providing telephony services. For example, Figures 4A-4D describe various scenarios for processing calls originated either from an SLS subscriber or from a third party. (Ex. 1005, [0062].) Specifically, Figure 4A describes processes for handling calls originated from an *unrecognized* third party (i.e., who calls the SLS number for the first time) to an SLS subscriber. (*Id.*, [0062]-[0066].) Figure 4B describes processes for handling calls originated from a *recognized* third party (i.e., who has previously called the SLS number) to an SLS subscriber. (*Id.*, [0067]-[0068].) Figure 4C describes processes for handling calls originated from an *SLS subscriber* to a third party. (*Id.*, [0069]-[0070].) Figure 4D describes processes for handling calls originated from an SLS subscriber, where such calls were *data communications with SLS platform 115*, e.g., where subscriber TD 110 requests from SLS platform 115 a relationship number for a third party number the subscriber desires to call. (*Id.*, [0071]-[0074].)

43. Moreover, Backhaus discloses with references to Figures 5-7D additional processes for handling calls. For example, Figure 5 describes processes for handling calls from subscriber TD 110 to a third party TD 120A. (*Id.*, [0075]-[0076].) Figure 6 describes processes for handling calls from third party TD 120A to subscriber TD 110. (*Id.*, [0077]-[0078].) Figures 7A-7D describe processes for routing calls with a session initiated protocol (SIP). (*Id.*, [0079]-[0139].)

B. Saksena

44. Saksena describes providing telephony services to multiple subscriber devices. (Ex. 1008, Abstract; *see also id.*, [0057], [0072] (describing that the disclosed process allows, e.g., “[t]he user of four devices associated with four different networks [to] manage one set of universal telephony services for all of his different devices.”).) For example, Saksena discloses with reference to Figure 1A (reproduced below and annotated) a centralized network 105 (highlighted in red) that provides telephony services to multiple devices, e.g., cellular device 156a (highlighted in blue) and other devices, that are associated with different networks, e.g., 110a-110e (highlighted in green). (*Id.*, [0077].)



(Ex. 1008, FIG. 1A (annotated).) Saksena explains that calls made by a subscriber's mobile device 156a on cellular network 110e may be routed through both the PSTN 110a and network 105 to device 180, such that network 105 is involved in the calls and may provide services to which the subscriber subscribes. (*Id.*, [0119]-[0120]; *see also id.*, [0121]-[0129] (describing processes to connect a call between the caller and callee with network 105 involved in the call).)

45. Network 105 includes a call server 120, a route server 125, an application server 130, and a subscriber database 135, where each server handles

certain processes and the server can be implemented using multiple servers or all of the servers can be combined and implemented into a single server, or some partial combination. (*Id.*, [0078].)

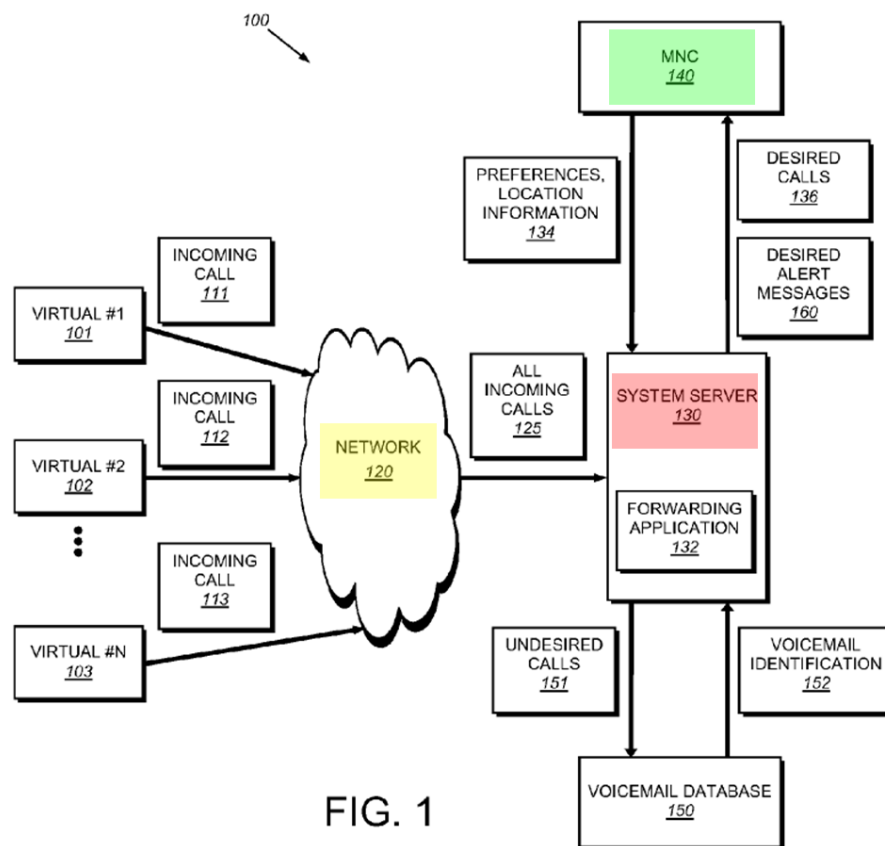
[T]he call server 120 handles the session management and signaling (e.g., calls, videos, gaming). The route server 125 provides the routing information to route a call. The application server 130 determines the services to which the subscriber has subscribed, and often remains in the call loop to provide additional services during the call. The subscriber database 135 includes information about the subscriber and the services to which the subscriber has subscribed and services specific data.

(*Id.*)

46. Saksena further discloses that mobile device 156a on cellular network 110e may operate using known standards, such as either the Global System for Mobile Communications (GSM) or Code-division multiple access (CDMA) standards. (*Id.*, [0053], [0082] (“For example, when a subscriber subscribes to cellular service with Verizon, they buy a cellular mobile device with CDMA technology. If a subscriber subscribes to cellular service with T-Mobile, they buy a cellular mobile device with GSM technology.”).)

C. Logan

47. Logan discloses with reference to Figure 1 (below) a server 130 (highlighted in red) that forwards calls received over network 120 (highlighted in yellow) to a user's multi-number cellphone (MNC) 140 (highlighted in green)—“but only when that user is in the appropriate location, or meets other user-specified preferences”—otherwise, the calls may be forwarded to a voicemail database. (Ex. 1015, [0026], [0027] (“In an illustrative embodiment...[i]f the user is not at the appropriate location, then the call is not forwarded and goes into the voicemail database.”), FIG. 1).



(Ex. 1015, FIG. 1 (annotated).) Logan discloses that MNC 140 can receive calls towards multiple numbers associated with the device, including, for example, a base number and virtual numbers. (*Id.*, [0011] (“a cellular telephone user, based upon his or her unique user preferences, can control the forwarding of calls from the caller to a series of virtual numbers, as well as the users cellular telephone ‘base’ or owned number (i.e. the number that is the user cellular telephone-specific number).”),

[0021] (“forwarding telephone calls to a plurality of ‘virtual’ numbers, associated with a user cellular telephone that has a single ‘base’ number”).)

48. Logan additionally discloses that “a user, via his [MNC] 140 can enter a set of preferences that are transmitted to the system server 130 via datastream 134” by using an internet-based application to “notify the system server of which calls a user desires to receive” based on preferences such as the location of the user, time of the day, and/or the identity of the caller for each of the numbers, e.g., the base and virtual numbers, associated with MNC 140. (*Id.*, [0029]; *see also id.*, [0011], [0046] (“a very important customer, identified via caller ID...might be routed to the MNC no matter the location.”), [0055] (“preferences submitted by the subscriber via a web interface”), claim 2 (“user preferences are provided through an interface including...an internet-based application”).)

This invention...provid[es] a system and method for call forwarding, employing virtual phone numbers associated with landline and other discrete telephone units, in which a cellular telephone user, based upon his or her unique user preferences, **can control the forwarding of calls from the caller to a series of virtual numbers, as well as the users cellular telephone “base” or owned number (i.e. the number that is the user cellular telephone-specific**

number). **The forwarding of calls to the owned number and virtual numbers can be based on a variety of factors.** In an illustrative embodiment, the forwarding factors can include the **location** of the cellular telephone, determined by GPS, triangulation or another mechanism, or the **time of day**. In this manner, the user can designate a virtual number as a home number, an office number, and a traveling number. Calls are received at each number when the user cellular telephone is located at the predetermined location, or it is the predetermined time of day. When calls are received to one of the virtual numbers, or to the base number, outside of the permitted receipt time, as provided by the user preferences, the call is routed to a voicemail database by the system server, which implements a call forwarding application.

(Ex. 1015, [0011].)

49. For instance, a user may designate a phone number as a home number or an office number, and calls may be routed by server 130 to the specific phone number when the phone is “located at the predetermined location, or it is the predetermined time of day.” (*Id.*, [0011].) Otherwise, the call is routed to a voicemail associated with server 130. (*Id.* (“When calls are received to one of the virtual numbers, or to the base number, outside of the permitted receipt time, as

provided by the user preferences, the call is routed to a voicemail database by the system server, which implements a call forwarding application.”); *see also id.*, [0027] (“If the user is not at the appropriate location, then the call is not forwarded and goes into the voicemail database.”), [0028] (“The forwarding application [of server 130] determines which virtual number was dialed by the calling party and then determines if the preferences set up by the called party indicate whether the call should be forwarded to the user.”), [0039] (“The single system server of the illustrative procedure 200 employs a forwarding application at step 220, which determines if the incoming call is a desired call at step 230 by verifying the user-specified preferences.”), [0043] (“only desires to receive business-related phone calls from, for example, 8 am to 5 pm, Monday through Friday”).)

50. Logan discloses location-based call processing rules to route a call to the personal number only when the MNC 140 is located at home, and to the business number only when the device is located in the office. (Ex. 1015, [0024] (“The MNC user can also behave largely as before, providing his or her contacts with home and office telephone numbers in the traditional manner, however receiving only ‘home’ calls while at home and only business-related calls while at the office”).) Time-based call processing rules can route calls to MNC 140 when it is within the time

period designated by the subscriber for the specific number(s). (*Id.*, [0024] (“The benefits to the user are multiple, and include having only one telephone, one consolidated voicemail message storage, and a lack of undesired calls reaching the user at an inopportune location or time-of-day”).)

51. Logan explains that features, like those described above, are “highly desirable” for mobile phone users as these features would have helped a subscriber to manage communications associated with multiple numbers that the subscriber uses based on the subscriber’s preferences. (*Id.*, [0040] (“when a person utilizes their cell phone for multiple business calls, it is highly desirable for the user to not receive personal and other household phone calls and inquiries during the course of business”), [0043] (“This is highly desirable, for example, for a person who works from home, but still desires to have a distinct home phone number and business phone number, and only desires to receive business-related phone calls from, for example, 8 am to 5 pm, Monday through Friday.”).)

VIII. CLAIM CONSTRUCTION

52. I understand that when considering the meaning of patent claims, one must consider the language of the claims, the specification, and the prosecution history of the patent. I also understand that claim terms are typically given their ordinary and customary meanings as would have been understood by a person of

ordinary skill in the art ordinary skill in the art at the time of the invention for the patent. For the '770 patent, as I explained above in Section IV, the relevant time that I have been asked to consider is around July 17, 2013. For purposes of my opinions in this declaration, I have been asked to consider the challenged claims under their plain and ordinary meanings as understood by a person of ordinary skill in the art at the time of the alleged invention, and I have applied such understandings in my analysis of the '770 patent and the prior art.

IX. THE PRIOR ART DISCLOSES AND/OR SUGGESTS ALL RECITED FEATURES OF CLAIMS 1-6 OF THE '770 PATENT

53. In my opinion, the prior art discussed below discloses and/or suggests the limitations of claims 1-6.²

A. Backhaus in View of Logan Discloses and/or Suggests the Limitations of Claims 1-5

1. Claim 1

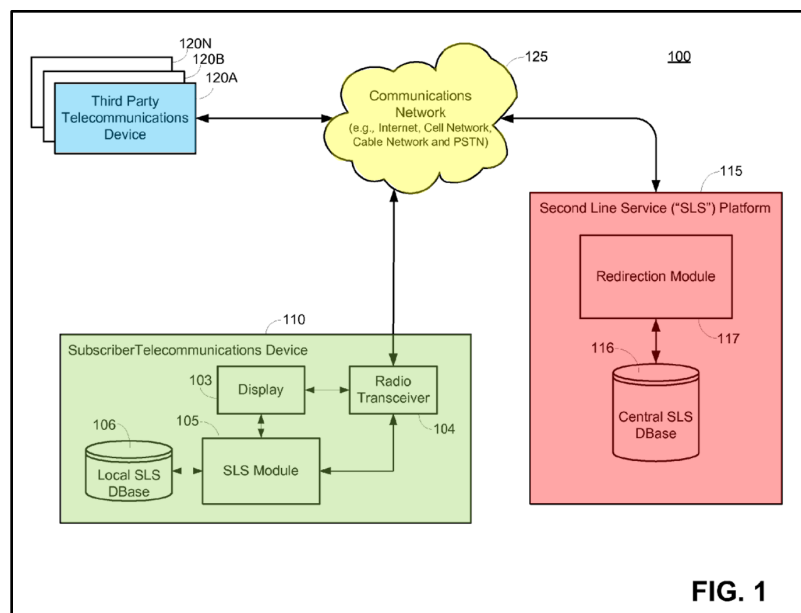
i) [1.pre] “A method of providing telephone service, the method comprising:”

54. I understand that this limitation is a preamble of the claim and I have been asked to assume that the preamble of claim 1 is limiting. Under such an assumption, Backhaus discloses the limitations therein. Backhaus discloses a method for routing calls between a third party telecommunication device (“TD”) and a subscriber TD, where the call routing is facilitated by using a relationship number. (Ex. 1005, Abstract, [0009], [0030] (“the terms ‘call’ and ‘communication,’ in their

² In this section (Section IX), I refer to exhibits other than those identified prior art reference(s) that disclose and/or suggest the claimed limitations. Such exhibits reflect the state of the art known to a person of ordinary skill in the art at the time of the alleged invention.

noun forms, envision any data transmission routed across a network from one device to another including, but not limited to, a voice transmission, a text message, a video message, a page, a data transmission, etc”)..)

55. Backhaus discloses with reference to Figure 1 a high-level diagram of an exemplary system 100 that includes a second line service (“SLS”) platform 115 (highlighted in red), which provides the SLS to a subscriber operating TD 110 (highlighted in green). (Ex. 1005, [0031].)



(Ex. 1005, FIG. 1 (annotated).) System 100 also includes a communication network 125 (highlighted in yellow), where calls directed from third party TD 120 (highlighted in blue) to subscriber TD 110 are transmitted via communication

network 125. (Ex. 1005, [0032] (“any call[s]...are transmitted from a third party TD 120 to the subscriber TD 110 by way of communications network 125.”).)

56. Backhaus discloses that subscriber TD 110 is associated with a primary phone number that is assigned to it by a primary service provider. (Ex. 1005, [0031].) Subscriber TD 110 is also associated with a secondary phone number (or SLS number) provided by SLS platform 115. (*Id.*) As such, a subscriber to the SLS “may receive calls at TD 110 that are directed to either of the primary phone...or the secondary phone number.” (*Id.* (“TD 110 is...associated with a primary phone number assigned to it by a primary service provider.... A subscriber to a [SLS]...may receive calls at TD 110 that are directed to either of the primary phone number...or the secondary phone number...provided, serviced and or facilitated by the SLS platform 115.”).) Backhaus explains that since subscriber TD 110 is associated with multiple phone numbers, e.g., primary and SLS phone numbers, it allows the subscriber to separately manage communications on each number, e.g., separating a personal number from a business number. (Ex. 1005, [0008] (“providing a plurality of dedicated phone numbers to a single telecommunications device in such a manner that the user of the device can separate and manage communications on each”); *see also id.*, [0003]-[0007] (describing known use of

multiple numbers with a telecommunication device to separate personal from business phone numbers); Ex. 1006, 43 (“Personal & Business Phone Numbers on a Single SIM/Device,” “Provide a public number for social communities: Privacy controls, Safe environment, Protect personal number”), 59 (“A social network subscriber can have a social (virtual) number to allow other connections to make contact [w]hile maintaining their ‘Prime Number’s Privacy’”).)

57. As to the call routing processes for different numbers called, Backhaus explains that a call from third party TD 120 to subscriber TD 110’s *primary number* is routed via network 125 to TD 110 (Ex. 1005, [0033]), while a call from third party TD 120 to subscriber TD 110’s *SLS number* is first routed by network 125 to SLS platform 115, and then routed to TD 110 (*id.*, [0034]-[0035]). In addition to processes for routing calls *to subscriber TD 110* (such as those described above), Backhaus also discloses processes for routing calls that originate from subscriber TD 110 *to the third party TD 120*. (*Id.*, [0036] (“methods for receiving a call from a third party TD 120 and making a call to a third party TD 120 by way of the SLS platform 115 will be described below relative to FIGS. 4-7.”); *see also id.*, [0009]-[0010] (describing processes for handling calls directed to subscriber TD 110), [0011] (describing processes for handling calls originated from subscriber TD 110).)

58. When a third party calls a subscriber's SLS number for the first time, SLS platform 115 creates a relationship between the subscriber's SLS number and the third party's number by assigning a relationship number to the combination of these two numbers (i.e., subscriber's SLS number and the third party's number). (Ex. 1005, [0052] ("SLS platform 115 accepts the call (without connecting the voice path to the third party TD 120A) and determines that the call is for SLS number...and that [the SLS number] does not yet have a 'relationship' set up for the [third party] calling number"), [0053].) The relationship information is stored in a database in each of SLS platform 115 and subscriber TD 110 (*id.*, [0053]-[0057]) and may be utilized when the subscriber calls the third party using his/her SLS number (*id.*, [0058]-[0061]).

59. For example, as the subscriber "dials the third party number," subscriber's TD 110 by using the stored relationship information "translates...[the] third party number...to relationship number" and "calls the relationship number"—even though TD 110 may display that it is calling the third party number. (Ex. 1005, [0059].)

To place calls from his SLS number, Subscriber #1 uses the SLS phone app of SLS module 105 [of subscriber TD 110] as his dialer, as a non-limiting example of one

potential embodiment. In the SLS dialer (not depicted in the Figures), **Subscriber #1 dials the third party number**...which is reflected in the Private Relationship ID Tables 310, 315 as being associated with his Contact #1. The SLS module 105 queries Subscriber Relationship ID Table 315 in local SLS database 106 and **translates the called third party number...to relationship number....** The SLS module 105 may indicate to the subscriber via display 103 that it is calling [the third party number], but instead it calls the relationship number....

(Ex. 1005, [0059].) “By calling the relationship number..., the network 125 routes the call to the SLS platform 115 instead of directly to third party TD 120A phone.” (*Id.*) SLS platform 115 then “modif[ies] the ‘calling number’ field in the signaling,” instead of populating the field with the actual number of the calling device (i.e., subscriber’s primary number), “populate it with the SLS number....” (*Id.*) As such, it appears to the third party that “he is receiving a call originating from the SLS number of the subscriber instead of the primary number...associated with subscriber TD 110.” (*Id.*; *see also id.*, [0060]-[0061] (disclosing additional processes for handling a call originated from an SLS subscriber).)

60. Backhaus discloses further details regarding processes for providing telephony services. For example, Figures 4A-4D describe various scenarios for

processing calls originated either from an SLS subscriber or from a third party. (Ex. 1005, [0062].) Specifically, Figure 4A describes processes for handling calls originated from an *unrecognized* third party (i.e., who calls the SLS number for the first time) to an SLS subscriber. (*Id.*, [0062]-[0066].) Figure 4B describes processes for handling calls originated from a *recognized* third party (i.e., who has previously called the SLS number) to an SLS subscriber. (*Id.*, [0067]-[0068].) Figure 4C describes processes for handling calls originated from an *SLS subscriber* to a third party. (*Id.*, [0069]-[0070].) Figure 4D describes processes for handling calls originated from an SLS subscriber, where such calls were *data communications with SLS platform 115*, e.g., where subscriber TD 110 requests from SLS platform 115 a relationship number for a third party number the subscriber desires to call. (*Id.*, [0071]-[0074].)

61. Moreover, Backhaus discloses with references to Figures 5-7D additional processes for handling calls. For example, Figure 5 describes processes for handling calls from subscriber TD 110 to a third party TD 120A. (Ex. 1005, [0075]-[0076].) Figure 6 describes processes for handling calls from third party TD 120A to subscriber TD 110. (*Id.*, [0077]-[0078].) Figures 7A-7D describe processes for routing calls with a session initiated protocol (SIP). (*Id.*, [0079]-[0139].)

62. Accordingly, Backhaus discloses a method of “providing telephone service.”

- ii) **[1.a] “associating a secondary telephone number with a primary telephone number in at least one computer memory device, the primary telephone number being assigned to a handset;”**

63. Backhaus discloses this limitation. To begin, Backhaus discloses that subscriber TD 110 is a “handset,” as claimed. Backhaus explains that the terms “telecommunications device” (TD) and “wireless *handset*” “are used interchangeably.” (Ex. 1005, [0029]; *see also id.*, [0031], [0033] (disclosing that TD 110 may be “a portable and wireless device”), [0050] (“subscriber TD 110...has mobile phone service...using mobile phone number”), [0081]-[0083] (“subscriber’s mobile device”).) Backhaus further discloses a “primary telephone number being assigned to a handset.” For example, Backhaus discloses that “TD 110 is...associated with a primary phone number assigned to it by a primary service provider.” (*Id.*, [0031].)

64. Additionally, Backhaus discloses that an SLS number (the claimed “secondary telephone number”) is associated with the primary number of subscriber TD 110 (“primary telephone number”). For example, consistent with Second Line Service Master ID Table 305 of Figure 3A (reproduced below and annotated),

Backhaus discloses that “*the primary number...assigned to the subscriber TD 110...is associated with [the subscriber] and his SLS number.*” (*Id.*, [0044], FIG. 3A; *see also id.*, [0044] (“The SLS service provider...has a group of SLS numbers...and are provided to subscribers of the SLS service.”), [0050] (“The relationship between the subscriber’s primary number and the SLS number is reflected in Second Line Service Master ID Table 305 of FIG. 3A.”), [0060] (“SLS platform 115...may recognize that...subscriber’s primary number...(which is associated with the subscriber’s SLS number”))).³

³ While the precise bounds of the claimed “primary telephone number” and “secondary telephone number” are unclear, they would at least encompass Backhaus’s disclosures associated with the claimed features as discussed above. Indeed, like the ’770 patent disclosing that a primary telephone number may be a number assigned to the handset at the time of activation (Ex. 1001, 5:2-4), Backhaus discloses that the subscriber’s device is “associated with a primary phone number assigned to it by a primary service provider” (Ex. 1005, [0031]).

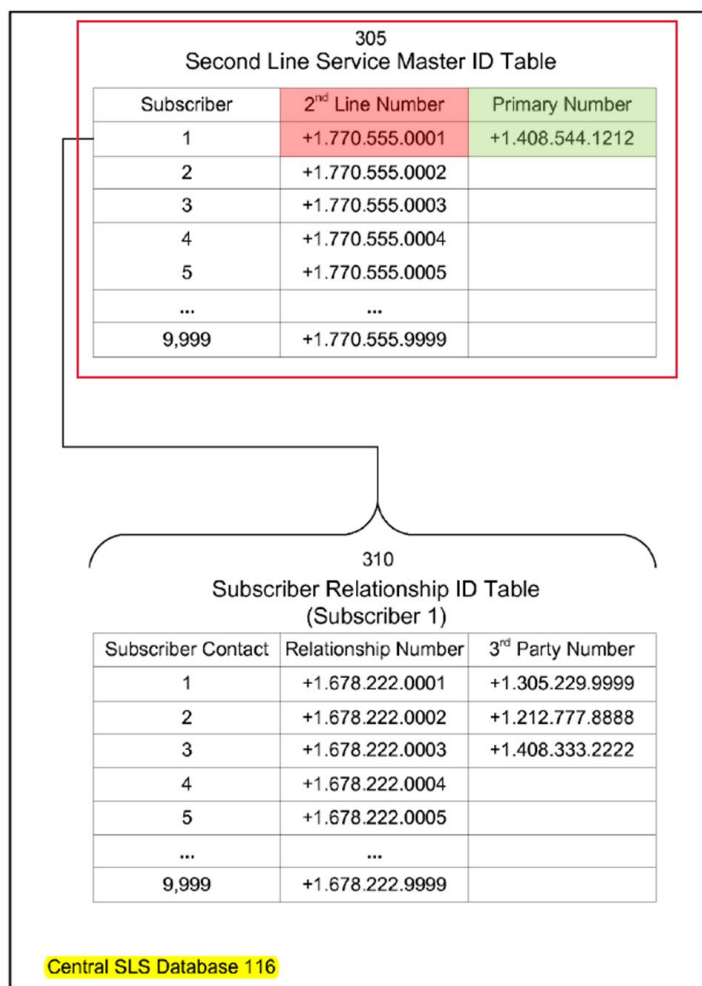


FIG. 3A

(Ex. 1005, FIG. 3A (annotated).) In particular, as indicated in Table 305 (top portion of Figure 3A), Subscriber #1, *e.g.*, the user of TD 110 (“handset”), is issued SLS number 1.770.555.0001 (highlighted in red). (Ex. 1005, [0044].) The SLS number is also associated with the primary number, 1.408.544.1212 (highlighted in green), which is assigned to TD 110. (*Id.*)

65. Moreover, Backhaus discloses that Table 305 (which includes the association of “a secondary telephone number” and “a primary telephone number,” as discussed above) may be stored in a central SLS database 116 (the claimed “computer memory device”), which is a part of SLS platform 115. For example, Backhaus discloses that “[t]he [SLS] Master ID Table 305...may be stored in a central SLS database 116.” (Ex. 1005, [0042]; *see also id.*, [0039]-[0040], [0043] (“The SLS platform 115 maintains a master list of SLS phone numbers that are in service.”).)

66. Accordingly, Backhaus discloses “associating a secondary telephone number with a primary telephone number in at least one computer memory device, the primary telephone number being assigned to a handset,” as claimed.

iii) [1.b] “acquiring first digital information from the handset over at least one data channel, the first digital information indicating primary call processing rules for handling calls directed to the primary telephone number;”

67. Backhaus in view of Logan discloses and/or suggests this limitation. To begin, Backhaus discloses that, when a subscriber elects not to answer a call to the SLS number, subscriber TD 110 “use[s] a voicemail service or message service in response to the unanswered call” or provides “automated responses.” (Ex. 1005, [0068] (“the SLS module 105 [of subscriber TD 110]...may use a voicemail service

or message service in response to the unanswered call”), [0035] (“The SLS module 105 [of subscriber TD 110] is designed to...provide services uniquely associated with the second line number such as, but not limited to, dedicated voicemail, ringtones, caller ID, automated responses, etc.”).) Backhaus explains that “similar features and services associated with the subscriber’s primary number” may be provided. (*Id.*, [0068] (“an SLS service may provide features and services dedicated to the SLS subscriber and separate from similar features and services associated with the subscriber’s primary number”).) Thus, Backhaus at least suggests features associated with voicemail/message services and automated responses are also available for calls directed to subscriber’s primary number on subscriber TD 110.

68. Such voicemail/message and automated response services for calls directed to the primary number correspond to “primary call processing rules for handling calls directed to the primary telephone number” because these services process unanswered calls directed to the primary number by providing voicemail/message services or automated responses. Indeed, the ’770 patent acknowledges that call processing rules include “preset responses for incoming calls, such as custom stored voice message(s) and/or custom stored text message(s) to be associated with the primary and/or one or more secondary telephone numbers” or

“stock rules used for all telephone numbers, such as an option to accept or not accept (i.e., drop) an incoming call.” (Ex. 1001, 5:31-45.)

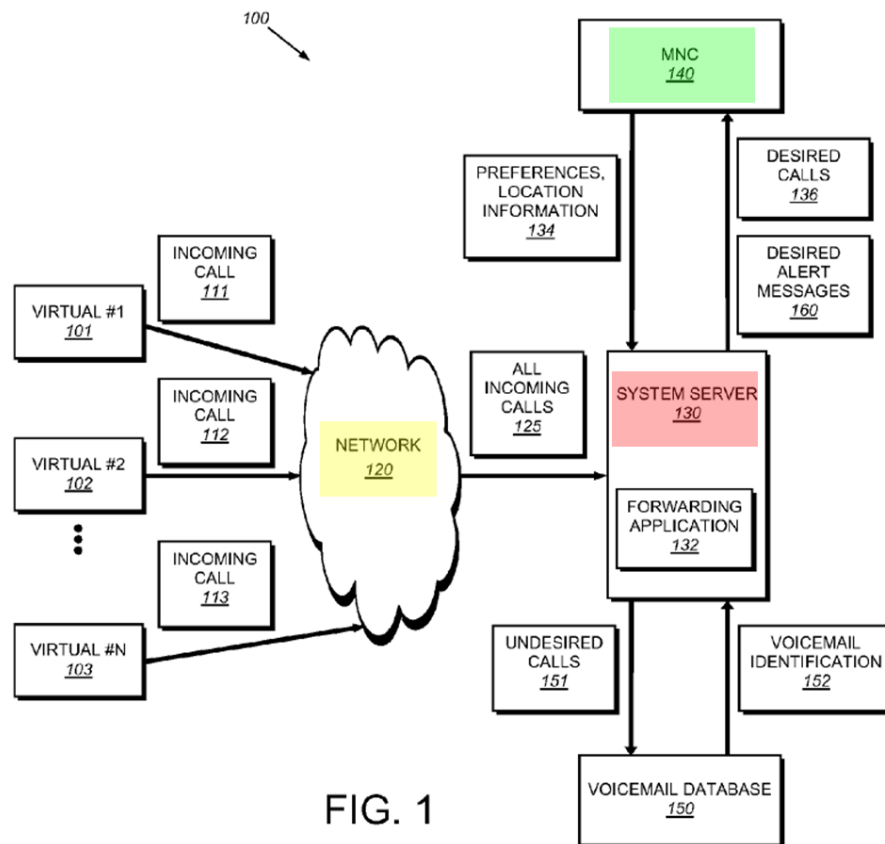
The call processing rules may include *preset responses* for incoming calls, such as custom stored *voice message(s)* and/or custom stored *text message(s)* to be associated with the primary and/or one or more secondary telephone numbers. The call processing rules may further permit the handset 340 to be used to control the availability of the secondary telephone numbers as well as activation of additional secondary telephone numbers and deactivation of existing secondary telephone numbers. Information indicating the call processing rules for the primary telephone number and secondary telephone numbers may be stored automatically in memory associated with the handset 340. The call processing rules may further include stock rules used for all telephone numbers, such as an option to accept or not accept (i.e., drop) an incoming call.

(Ex. 1001, 5:31-45.) Accordingly, Backhaus at least suggests “primary call processing rules for handling calls directed to the primary telephone number.”

69. I have been asked to consider a scenario where Backhaus does not explicitly disclose “acquiring first digital information from the handset over at least one data channel, the first digital information indicating primary call processing

rules for handling calls directed to the primary telephone number.” Under that scenario, a person of ordinary skill in the art would have been motivated to implement this feature in view of Logan.

70. Like Backhaus, Logan is directed to providing telephone services through communication networks. (Ex. 1015, [0026], FIG. 1.) For example, as shown in FIG. 1 below, Logan discloses a server 130 (highlighted in red) that forwards calls received over network 120 (highlighted in yellow) to a user’s multi-number cellphone (MNC) 140 (highlighted in green)—“but only when that user is in the appropriate location, or meets other user-specified preferences”—otherwise, the calls may be forwarded to a voicemail database. (*id.*, [0026], [0027] (“In an illustrative embodiment...[i]f the user is not at the appropriate location, then the call is not forwarded and goes into the voicemail database.”), FIG. 1) Thus, Logan is similar to Backhaus, which discloses routing calls to a service platform/network, such that the service platform/network may provide services to which the subscriber subscribes.



(Ex. 1015, FIG. 1 (annotated).) Furthermore, similar to Backhaus that discloses subscriber TD 110 being capable of receiving calls towards multiple numbers associated with the device (e.g., the primary and SLS numbers), Logan discloses that MNC 140 can likewise receive calls towards multiple numbers associated with the device (e.g., a base number and virtual numbers). (Ex. 1015, [0011] (“a cellular telephone user, based upon his or her unique user preferences, can control the forwarding of calls from the caller to a series of virtual numbers, as well as the users

cellular telephone ‘base’ or owned number (i.e. the number that is the user cellular telephone-specific number).”), [0021] (“forwarding telephone calls to a plurality of ‘virtual’ numbers, associated with a user cellular telephone that has a single ‘base’ number”).) Thus, a person of ordinary skill in the art would have been motivated to consider the teachings of Logan when implementing Backhaus’s system/method.

71. Logan additionally discloses that “a user, via his [MNC] 140 can enter a set of preferences that are transmitted to the system server 130 via datastream 134” by using an internet-based application to “notify the system server of which calls a user desires to receive” based on preferences such as the location of the user, time of the day, and/or the identity of the caller for each of the numbers, e.g., the base and virtual numbers, associated with MNC 140. (Ex. 1015, [0029]; *see also id.*, [0005] (“cellphone [using] wireless Internet/network connectivity (WiFi)”), [0011] (disclosing that a user “based upon his or her unique user preferences, can control the forwarding of calls from the caller to a series of virtual numbers, as well as the user’s cellular telephone ‘base’ or owned number (i.e. the number that is the user cellular telephone-specific number)” and that “[t]he forwarding of calls to the owned number and virtual numbers can be based on a variety of factors,” including e.g., “the location of the cellular telephone...or the time of day.”), [0046] (“a very

important customer, identified via caller ID...might be routed to the MNC no matter the location.”), [0055] (“preferences submitted by the subscriber via a web interface”), claim 2 (“user preferences are provided through an interface including...an internet-based application”).)

72. For instance, a user may designate a phone number as a home number or an office number, and calls may be routed by server 130 to the specific phone number when the phone is “located at the predetermined location, or it is the predetermined time of day.” (Ex. 1015, [0011].) Otherwise, the call is routed to a voicemail associated with server 130. (*Id.* (“When calls are received to one of the virtual numbers, or to the base number, outside of the permitted receipt time, as provided by the user preferences, the call is routed to a voicemail database by the system server, which implements a call forwarding application.”); *see also id.*, [0027] (“If the user is not at the appropriate location, then the call is not forwarded and goes into the voicemail database.”), [0028] (“The forwarding application [of server 130] determines which virtual number was dialed by the calling party and then determines if the preferences set up by the called party indicate whether the call should be forwarded to the user.”), [0039] (“The single system server of the illustrative procedure 200 employs a forwarding application at step 220, which

determines if the incoming call is a desired call at step 230 by verifying the user-specified preferences.”), [0043] (“only desires to receive business-related phone calls from, for example, 8 am to 5 pm, Monday through Friday”).)

73. Given that Logan discloses acquiring from MNC 140 user preferences regarding call forwarding/processing configurations via an Internet-based application for handling calls directed to each of the base number and virtual number, Logan discloses “acquiring first digital information from the handset over at least one data channel, the first digital information indicating primary call processing rules for handling calls directed to the primary telephone number” (limitation [1.b]).⁴

⁴ For the same reason, Logan also discloses “acquiring second digital information from the handset over the at least one data channel, the second digital information indicating secondary call processing rules for handling calls directed to the secondary telephone number” (limitation [1.d]), and “based on the primary call processing rules or the secondary call processing rules” to initiate/connect calls (recited in limitation [1.g]), as discussed in the corresponding limitations below.

74. A person of ordinary skill in the art would have been motivated to implement the server-based call processing rules features (including their associated features, e.g., acquiring, storing, and application of the user-selected preferences/rules) similar to as discussed in Logan when implementing Backhaus's telephony service system. For instance, a person of ordinary skill in the art would have understood that there would be common situations where subscriber TD 110 is not able to provide voicemail/preset responses to the unanswered call, e.g., when it is turned off or out of battery. Thus, it would have been beneficial to implement voicemail/preset response capabilities in a server that is associated with subscriber TD 110, i.e., SLS server 205 in SLS platform 115, as it would have allowed the server to provide voicemail/preset responses to unanswered calls even when subscriber TD 110 is unable to provide the same. To implement voicemail/preset response capability in SLS server 205 as discussed above, a person of ordinary skill in the art would have likewise been motivated to acquire the voicemail/preset responses and associated configurations from the subscriber TD 110, and store the same in a database accessible to SLS server 205 (e.g., central SLS database 116) for responding to incoming calls when subscriber TD 110 is not available. (*Id.*)

75. Moreover, a person of ordinary skill in the art would have also found it beneficial to specify/select call forwarding/processing preferences for each of the multiple numbers associated with a handset, similar to as disclosed in Logan when implementing Backhaus. For example, Backhaus discloses providing multiple phone numbers (e.g., primary and SLS numbers) to a single telecommunications device for separating personal from business numbers. (*Supra* Section IX.A.1(i) (limitation [1.pre]); *see also* Ex. 1005, [0003]-[0008].) Logan's teaching would have allowed the subscriber in Backhaus to better manage incoming calls to each of the primary and SLS numbers by automatically processing these calls based on subscriber-specified preferences set for each number (e.g., location-based and/or time-based call processing/forwarding features). For instance, location-based call processing rules would have routed the call to the personal number only when the subscriber TD 110 is located at home, and to the business number only when the device is located in the office. (Ex. 1015, [0024] ("The MNC user can also behave largely as before, providing his or her contacts with home and office telephone numbers in the traditional manner, however receiving only 'home' calls while at home and only business-related calls while at the office").) Time-based call processing rules would have routed calls to subscriber TD 110 when it is within the

time period designated by the subscriber for the specific number(s). (*Id.*, [0024] (“The benefits to the user are multiple, and include having only one telephone, one consolidated voicemail message storage, and a lack of undesired calls reaching the user at an inopportune location or time-of-day”).) Indeed, Logan explains that features, like those described above, are “highly desirable” for mobile phone users. (*Id.*, [0040] (“when a person utilizes their cell phone for multiple business calls, it is highly desirable for the user to not receive personal and other household phone calls and inquiries during the course of business”), [0043] (“This is highly desirable, for example, for a person who works from home, but still desires to have a distinct home phone number and business phone number, and only desires to receive business-related phone calls from, for example, 8 am to 5 pm, Monday through Friday.”).) Accordingly, a person of ordinary skill in the art would have been motivated and found it beneficial to implement Logan’s teaching, when implementing Backhaus’s telephony service system, which would have included acquiring voicemail/preset responses and/or associated configurations (e.g., call forwarding preferences based on time/location) from the subscriber TD 110 over a data channel for calls directed to each of the primary and SLS numbers, and storing the same in a database

accessible to SLS server 205 for responding to incoming calls directed to either of the primary or SLS numbers when subscriber TD 110 is not available.

76. A person of ordinary skill in the art would have had the skill in implementing, and expectation of success in achieving, the above-discussed Backhaus-Logan combination. For example, it was well known to implement voicemail/preset response and call forwarding capabilities on a network server associated with a telecommunication device. (Ex. 1008, [0158]-[0159] (disclosing a web-based voicemail box), [0164] (describing a web-based call answering feature); Ex. 1015, claim 1 (“the user cellular telephone being interconnected by a network to the system server so as to send and receive telephone calls through the network”, where “a voicemail database operatively connected with the system server...stores messages...”), [0030] (describing custom voicemail greetings stored in a voicemail database that is associated with a server), [0025]-[0037] (describing with reference to FIG. 1 a server with an associated database that stores voicemail for responding to calls).) Moreover, Backhaus discloses that SLS platform 115 may also provide telephony services for the primary phone number, i.e., SLS platform 115 is not limited to providing the secondary line service. (Ex. 1005, [0031] (“Notably...the primary service provider and the SLS platform (i.e., the second line

service provider) may be the same provider....”); *see also id.*, [0038] (“TDs 110 and 120 may be associated with a common service provider”), [0050] (“SLS provider and the primary service provider 201 may be one and the same provider”), [0071] (“SLS platform 115 determines that the communication is a data communication over network 125 that originated from an SLS client of a subscriber TD.”).) Thus, a person of ordinary skill in the art would have understood that calls directed to subscriber’s primary number may be processed by SLS platform 115, e.g., for providing voicemail/preset responses and call forwarding features as discussed above.

77. Additionally, it was known to acquire information from a subscriber for configuring the voicemail/preset responses and associated features via a data channel (e.g., the Internet). (Ex. 1008, [0159] (disclosing that network 105 provides “a Web portal feature...that allows new customers to sign up for service, and existing customers to provision administrative options for various features such as...record outgoing announcements..., change the outgoing message for voicemail using a hyperlink to record...etc,” where “[t]he Web portal feature can be reached by subscribers by entering a designated URL into any web browser connected to the Internet.”); *see also id.*, [0096] (disclosing call routing preferences for, e.g., a spouse

and unrecognized calling parties), [0154] (“The common telephony services that the network 105 can offer are extensive and varied” and “can stay in the call path for all of the call and apply these services as applicable,” such as “providing a Web portal (e.g., using APIs)...providing customized routing preferences to the subscriber's devices, including to the subscriber's voice mail at certain times”), [0164] (a subscriber may “use the Web portal to configure the service” associated with “pre-recorded system greeting” and “a personalized message recorded by the subscriber”), [0160] (when the subscriber's device does not answer the call, “the caller is connected to the subscriber's voicemail that has been established with the network 105”).) Moreover, Backhaus's telecommunication device may be “a smartphone..., a tablet personal computer (‘PC’), or a hand-held computer with a wireless connection or link” (Ex. 1005, [0029]) that communicates via Internet Protocol (IP) (*id.*, claim 15, [0032]). Furthermore, Backhaus discloses the capability of acquiring “digital information from the handset over at least one data channel.” For example, Backhaus discloses that SLS platform 115 receives a request for a new relationship number from the subscriber TD 110 via network 125. (Ex. 1005, [0071] (disclosing that “SLS platform 115 determines that the communication is a *data communication* over network 125 that originated from an SLS client of a subscriber

TD” and that “[t]he SLS module 105 [of subscriber TD 110] has provided the request for the new relationship number, along with the third party number it desires to call, to the SLS platform 115 via the communication.”).) Additionally, Backhaus discloses that TD 110 may communicate with SLS platform 115 using various protocols/mechanisms, e.g., IP-based interaction, cellular data, WiFi, Bluetooth, proprietary wireless or wired technologies. (*Id.*, [0072]-[0073]). The above-described communication protocols/mechanisms/channels disclosed in Backhaus correspond to the claimed “data channel.” Indeed, these communication protocols/mechanisms/channels are consistent with the “data channel” described in the ’770 patent. (Ex. 1001, 4:6-12 (“A preferred data channel may be an Internet Protocol (IP) channel, which is not a conventional telephone voice channel. However, other data, non-conventional voice, channels over which information may be transmitted between a telephone handset and a server may be used in alternative embodiments of the invention.”), 4:38-40 (“Such IP governed communications are referred to herein as being conducted over a ‘data channel’”).)

78. Moreover, the combination of Backhaus and Logan would have involved applications of known technologies (e.g., known use of a network server for executing call processing rules to forward calls) according to known methods

(e.g., known techniques for obtaining user's call forwarding preferences from user's devices via a data channel) to yield the predictable result of acquiring from a handset digital information indicating primary and secondary call processing rules for handling calls to each of the primary and secondary numbers, storing the call processing rules, and applying the same.

79. Accordingly, Backhaus in view of Logan discloses and/or suggests this limitation.

iv) [1.c] “storing the primary call processing rules in the at least one computer memory device;”

80. Backhaus in view of Logan discloses and/or suggests this limitation. Logan discloses that the user-entered “preferences notify the system server of which calls a user desires to receive” (Ex. 1015, [0029]), and that the server “determines if the preferences set up by the called party indicate whether the call should be forwarded to the user” (*id.*, [0028]). Moreover, Logan explains that the “undesired phone calls are transmitted to a voicemail database 150,” which is associated with the server. (*Id.*, [0030], FIG. 1; *see also id.*, Abstract (“the call can be forwarded to a voicemail database where a voicemail message may be stored”), [0011] (“the call is routed to a voicemail database by the system server, which implements a call forwarding application”), [0039] (“The single system server...determines if the

incoming call is a desired call at step 230 by verifying the user-specified preferences.”)) Thus, a person of ordinary skill in the art would have understood that the user-entered preferences and associated configurations for each of the base and virtual numbers are at least temporarily stored at the server and/or at a database accessible by the server for later retrievals and application of the same.

81. As discussed in limitation [1.b], a person of ordinary skill in the art would have been motivated to implement voicemail/preset response capabilities and associated features (e.g., forwarding calls directed to the primary/SLS number to voicemail based on user-entered preferences, which may be based on location of the handset and time of the day) in SLS platform 115 of Backhaus in view of Logan’s teachings, including acquiring the voicemail/preset responses and configurations for call forwarding features from the subscriber TD 110, and storing the same for later applications of these features based on the user-entered preferences for calls directed to the each of the primary and SLS numbers. (*Supra* Section IX.A.1(iii) (limitation [1.b]).) Backhaus discloses a server and a database assessable to the server, i.e., central SLS database 116 (“at least one computer memory device”) that is accessible to SLS server 205/platform 115. (Ex. 1005, [0039]-[0040] (disclosing that “SLS platform 115 may include an SLS server 205,” which “include[s] a redirection

module 117 and a central SLS database 116.”).) Moreover, Backhaus already utilizes central SLS database 116 when applying call processing algorithm. (*Id.*, [0060] (“Querying the Subscriber Relationship ID Table 310 in central SLS database 116, the redirection module 117 may apply the following logic...”)).) Accordingly, consistent with as discussed in limitation [1.b], a person of ordinary skill in the art would have been motivated to store the preset responses and call forwarding configurations for calls directed to the each of the primary and SLS numbers acquired from the subscriber TD 110 in central SLS database 116, which is accessible to SLS server 205 of SLS platform 115, for later retrievals and application of the same when implementing Logan’s teaching in Backhaus’s system. Accordingly, Backhaus in view of Logan discloses and/or suggests “storing the primary call processing rules in the at least one computer memory device.”

- v) **[1.d] “acquiring second digital information from the handset over the at least one data channel, the second digital information indicating secondary call processing rules for handling calls directed to the secondary telephone number;”**

82. Backhaus in view of Logan discloses and/or suggests this limitation. To begin, Backhaus discloses “secondary call processing rules for handling calls directed to the secondary telephone number.” For example, as discussed in limitation [1.b], Backhaus discloses that, when a subscriber does not answer a call

to the SLS number, subscriber TD 110 “use[s] a voicemail service or message service in response to the unanswered call” and/or provides “automated responses.” (Ex. 1005, [0068]; *see also id.*, [0035]; Section IX.1(iii) (limitation [1.b]); Ex. 1001, 5:31-45 (acknowledging that a call processing rule may include “preset responses for incoming calls, such as custom stored voice message(s) and/or custom stored text message(s) to be associated with the primary and/or one or more secondary telephone numbers” or “stock rules used for all telephone numbers, such as an option to accept or not accept (i.e., drop) an incoming call.”).)

83. I have been asked to consider a scenario where Backhaus does not disclose “acquiring second digital information from the handset over the at least one data channel, the second digital information indicating secondary call processing rules for handling calls directed to the secondary telephone number.” Under that scenario, a person of ordinary skill in the art would have been motivated to implement this feature in view of Logan for similar reasons discussed in limitation [1.b]. (Section IX.1(iii) (limitation [1.b])). For example, Logan discloses acquiring from MNC 140 user preferences regarding call forwarding configurations via an internet-based application for handling calls directed to each of the base number (“primary telephone number”) and virtual number (“secondary telephone number”).

(*Id.*) A person of ordinary skill in the art would have found it beneficial to implement server-based call processing rule features as it would have (1) provided voicemail/preset responses and call forwarding features when subscriber TD 110 is not able to provide these features to the unanswered call directed to the SLS number, e.g., when TD 110 is turned off or out of battery; (2) provided capabilities to specify/select call forwarding preferences for each of the multiple numbers associated with subscriber TD 110, including the SLS number (“secondary telephone number”). Accordingly, a person of ordinary skill in the art would have been motivated and found it beneficial to implement Logan’s teachings, when implementing Backhaus’s telephony service system, which would have included acquiring the voicemail/preset responses and configurations for call forwarding features from the subscriber TD 110 over the data channel, e.g., Internet/IP-based interaction (“acquiring second digital information from the handset over the at least one data channel”) and storing the same in a database accessible to SLS server 205/platform 115 for handling incoming calls directed to the SLS numbers (“the second digital information indicating secondary call processing rules for handling calls directed to the secondary telephone number”) when subscriber TD 110 is not available.

84. Thus, Backhaus in view of Logan discloses and/or suggests “acquiring second digital information from the handset over the at least one data channel, the second digital information indicating secondary call processing rules for handling calls directed to the secondary telephone number.”

vi) [1.e] “storing the secondary call processing rules in the at least one computer memory device;”

85. Backhaus in view of Logan discloses and/or suggests this limitation. As discussed in limitation [1.d], a person of ordinary skill in the art would have been motivated to implement preset response and call forwarding features in SLS platform 115 of Backhaus in view of Logan’s teaching, including acquiring the configurations for these features for calls directed to the SLS number from the subscriber TD 110, and storing the same for later applications of these features based on the user-entered preferences. (*Supra* Section IX.A.1(v) (limitation [1.d]).) Moreover, for reasons similarly to those discussed in limitation [1.c], a person of ordinary skill in the art would have been motivated to store the preset responses and associated call forwarding configurations for calls directed to the SLS number acquired from the subscriber TD 110 in central SLS database 116, which is accessible to SLS server 205 of SLS platform 115, for later retrievals and application of the same when implementing Logan’s teaching in Backhaus’s system. (Section

IX.A.1(iv) (limitation [1.c]).) Accordingly, Backhaus discloses and/or suggests “storing the secondary call processing rules in the at least one computer memory device.”

- vii) **[1.f] “receiving an incoming call over at least one voice channel at a switch, the switch being associated with a bridge telephone number such that calls directed to the bridge telephone number are automatically routed to the switch, the incoming call being directed to a handset-associated telephone number, the handset-associated telephone number being the primary telephone number or the secondary telephone number, and;”**

86. Backhaus discloses this limitation. To begin, Backhaus discloses a “switch,” as claimed, for example, a local switch in network 125. Backhaus explains that network 125 “envisions *any and all* networks for transmitting and terminating communications between telecommunications devices such as, but not limited to, cellular networks, PSTNs, cable networks and the Internet.” (Ex. 1005, [0032], FIG. 1.) Network 125 may use, e.g., signaling system seven (SS7) for “effecting the transmission of data across communications network 125 from one device to another, including call setups, terminations and the like are understood by those of ordinary skill in the art of data transmission.” (*Id.*) A person of ordinary skill in the art would have understood that the disclosed PSTN has been known to operate using the SS7 protocol. (*Id.*, claim 10 (“the leg of the redirected call between the SLS

platform and the third party TD is conducted over the public switched telephone network ('PSTN') via SS7 protocol.”); Ex. 1011, 5-6 (SS7 is “the most advanced and widely used signaling system for both cellular and fixed-line telecommunication networks”), 43 (SS7 is “a protocol suite that is employed globally, across telecommunications networks,” “provid[ing] the mechanisms to allow the telecommunication network elements to exchange control information,” and “the key enabler of the public switched telephone network (PSTN)...”), 103-105 (discussing the use of SS7 protocol in the PSTN since the 1990s.).

87. A person of ordinary skill in the art would have understood that network 125 necessarily includes the claimed “switch,” such as the signal switching points (SSPs, which are known as “switches” or “exchanges”) included in the disclosed PSTN. Indeed, as a person of ordinary skill in the art would have understood, a SSP is a necessary part of the PSTN, and “a voice switch” that “processes voice-band traffic.” (Ex. 1011, 62-63, 81 (“At the core of the PSTN are digital switches”); *see also* Ex. 1007, [0004] (disclosing that “[t]elephone service is traditionally carried by the PSTN,” which “includes a network of interconnected local exchanges or switches 12;” “[v]oice or data is carried from a source node to a destination node on the network by establishing a circuit path along the PSTN effected by appropriately

switching the interconnecting exchanges;” and “[e]xternal digital communication systems typically communicate with the PSTN by interfacing with an exchange such as 12.”).).

88. A person of ordinary skill in the art would have also understood that calls are established and routed through the PSTN by SSPs in network 125, including the use of a local SSP. A local SSP is a switch that connects to a telecommunication device or server so as to allow the device/server to access the PSTN. (Ex. 1011, 6-7 (describing that calls are established and routed by switches across the PSTN, including a calling party’s local switch and a destination’s local switch), 82 (disclosing that a local exchange/switch “provides network access for the subscriber”).) For example and consistent with such a person’s knowledge, Ex. 1007 shows a local switch that communicates with a server 50. (Ex. 1007, [0004] (“External digital communication systems typically communicate with the PSTN by interfacing with an exchange such as [local switch] 12”), FIG. 1A (showing a local switch 12 that is in communication with server 50).)

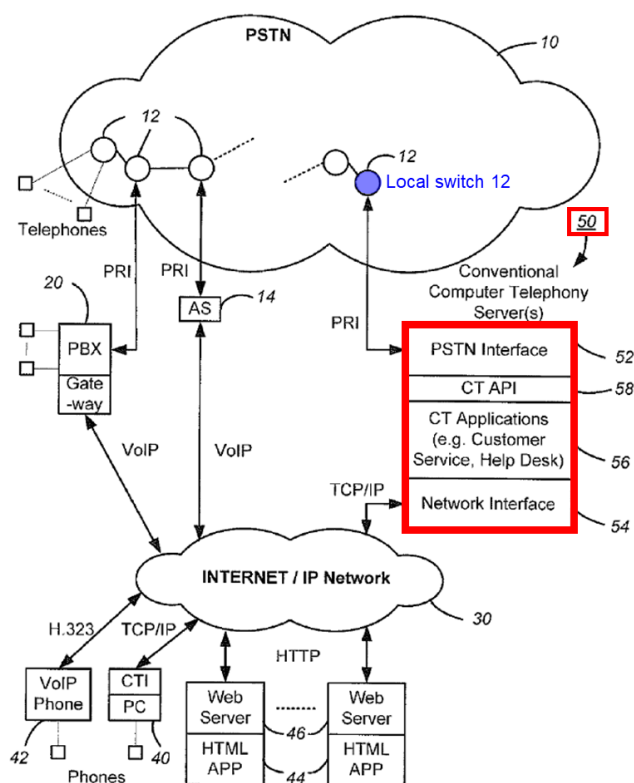


FIG. 1A (Prior Art)

(Ex. 1007, FIG. 1A (annotated).) Accordingly, Backhaus discloses a local switch in network 125 (the claimed “switch”).

89. Moreover, Backhaus discloses that the local switch is “associated with a bridge telephone number such that calls directed to the bridge telephone number are automatically routed to the switch.” Backhaus discloses that subscriber TD 110 “uses a relationship number to access the SLS platform 115 *over the telephone network 125.*” (Ex. 1005, [0049] (“The application run by the SLS module 105 on

subscriber TD 110 uses a relationship number to access the SLS platform 115 over the telephone network 125.”); *see also id.*, [0032] (“any call[s] directed to either of the primary phone number or the SLS phone number are transmitted from a third party TD 120 to the subscriber TD 110 by way of communications network 125.”), [0034] (“the network 125 recognizes where the call needs to be routed based on the called number”), [0059] (“[b]y calling the relationship number..., the network 125 routes the call to the SLS platform 115 instead of directly to third party TD 120A phone.”), [0060]-[0061].) Backhaus’s relationship number corresponds to the claimed “bridge telephone number.” For instance, Backhaus discloses that SLS module 105 of subscriber TD 110 “translate[s] any number calling the subscriber, or called by the subscriber, into the appropriate Relationship Number” and “*uses a relationship number to access the SLS platform 115 over the telephone network 125.*” (Ex. 1005, [0049]; *see also id.*, Abstract (“Calls directed from the subscriber TD to the third party use the relationship number to route the call to the SLS platform.”).) “[B]y leveraging the relationship numbers, an SLS service provider may insert itself into the middle of a call between a third party TD 120 and a subscriber TD 110.” (Ex. 1005, [0049]; *see also id.*, [0043] (“providing a second line service leverage intermediate phone numbers to ensure that calls meant for the

user of subscriber TD 110 route to the SLS platform 115”), [0057] (“the relationship...may also provide a mechanism by which the SLS platform may intercept calls originating from subscriber TD 110 via SLS number”).) Moreover, calls directed to the disclosed “bridge telephone number” are “automatically” routed to the switch because it is network 125 that routes the call directed to a relationship number, as opposed to being performed by a user manually. (*See supra*; Ex. 1005, [0032]-[0034], [0049].) Thus, a person of ordinary skill in the art would have understood that a local switch (the claimed “switch”) in network 125 necessarily and automatically receives calls directed to a relationship number (“bridge telephone number”) before routing the same to SLS platform 115. Accordingly, Backhaus discloses that the “switch” is “associated with a bridge telephone number such that calls directed to the bridge telephone number are automatically routed to the switch.”⁵

90. Backhaus also discloses “receiving an incoming call over at least one voice channel at a switch..., the incoming call being directed to a handset-associated

⁵ The ’770 patent appears to contrast a process that is performed *automatically* with one that is performed *manually*. (Ex. 1001, 9:32-35, 9:49-54.)

telephone number, the handset-associated telephone number being the primary telephone number or the secondary telephone number.” For example, as discussed in limitation [1.pre], Backhaus discloses that a call from third party TD 120 to subscriber TD 110’s *SLS number* (“the handset-associated telephone number”) is first routed by network 125 to SLS platform 115, and then routed to TD 110. (Section IX.A.1(i) (limitation [1.pre]); Ex. 1005, [0034]-[0035]; *see also id.*, [0032] (“any call[s] directed to either of the primary phone number or the SLS phone number are transmitted from a third party TD 120 to the subscriber TD 110 by way of communications network 125.”).) Given that the call is routed by network 125 to SLS platform 115, consistent with as discussed above regarding the local switch (the claimed “switch”) in network 125, the switch necessarily receives the incoming call directed to the SLS number before routing the same to SLS platform 115. (*See supra.*)

91. The ’770 patent indicates that communications over the PSTN are an exemplary voice channel. (Ex. 1001, 4:35-46 (“The communications between the server 100 and the handset 340 over the Internet 316 may utilize IP as a protocol opposed to protocols used to establish communications according to CDMA, GSM, or like standards. Such IP governed communications are referred to herein as being

conducted over a ‘data channel.’ Conversely, communications between the switch 110 and the handset over the PSTN 310 may be transmitted and received in accordance with CDMA, GSM or like standards as opposed to using IP. Such CDMA, GSM or like governed communications, when used to carry voice information, are referred to herein as being conducted over a ‘voice channel.’”), 5:58-59 (“call may be routed over the PSTN 310 to the switch 110”), 6:65-67 (“The return call from the handset 340 to the bridge telephone number may be routed over the PSTN 310 to the switch 110 using a voice channel connection.”).) Moreover, as a person of ordinary skill in the art would have understood the disclosed switch is responsible for connecting a voice channel to create a conversation path between the calling and the called parties. (Ex. 1011, 99 (“The switch is responsible for many tasks, but one of its primary function is connecting voice channel to create a bi-directional conversation path between two phone subscribers.... Once a circuit is set up between the two subscribers, the connection remains for the duration of the call.”).) As such, because calls are routed through network 125, where the disclosed switch establishes a voice channel through the disclosed PSTN in network 125, to facilitate voice communication in the connected call, Backhaus discloses “receiving an incoming call over at least one voice channel at a switch..., the incoming call

being directed to a handset-associated telephone number, the handset-associated telephone number being the primary telephone number or the secondary telephone number.” Accordingly, Backhaus discloses this limitation.

viii) **[1.g] “based on the primary call processing rules or the secondary call processing rules: transmitting pre-call information to the handset over the at least one data channel the pre-call information including the bridge telephone number and the handset-associated telephone number, such that the handset is capable of displaying the handset-associated telephone number to a user and, based on user input, accepting the incoming call by connecting with the switch over the at least one voice channel using the bridge telephone number.”**

92. Backhaus in view of Logan discloses and/or suggests this limitation.

93. First, Backhaus discloses “transmitting pre-call information to the handset over the at least one data channel the pre-call information including the bridge telephone number and the handset-associated telephone number, such that the handset is capable of displaying the handset-associated telephone number to a user.” Backhaus discloses this limitation in **a first way**. To begin, Backhaus discloses that a relationship number (“bridge telephone number”) may be assigned when third party TD 120A calls subscriber’s SLS number *for the first time*. In particular, when SLS platform 115 accepts the call and determines that the subscriber’s SLS number “does not yet have a ‘relationship’ set up” for the third party TD 120’s number (Ex.

1005, [0052]), SLS platform 115 then “creates the following relationship in Subscriber Relationship ID Table 310:

When [subscriber’s SLS number] receives (or places) a call from/to [third party’s number], the interaction with the subscriber’s phone [that is associated with its primary number] will use [a] dialable [relationship number].”

(Ex. 1005, [0053]; *see also id.*, [0053] (explaining that “a given relationship number...may be used...for many different SLS subscribers.”), [0054] (“the relationship number...established in connection with subscriber #1 and the calling third party”).)

94. The relationship number (“bridge telephone number”) may then be stored in central SLS database 116 of SLS platform 115 as shown in Subscriber Relationship ID Table 310 of FIG. 3A (reproduced below and annotated). (Ex. 1005, [0042], [0053]-[0054], FIG. 3A.)

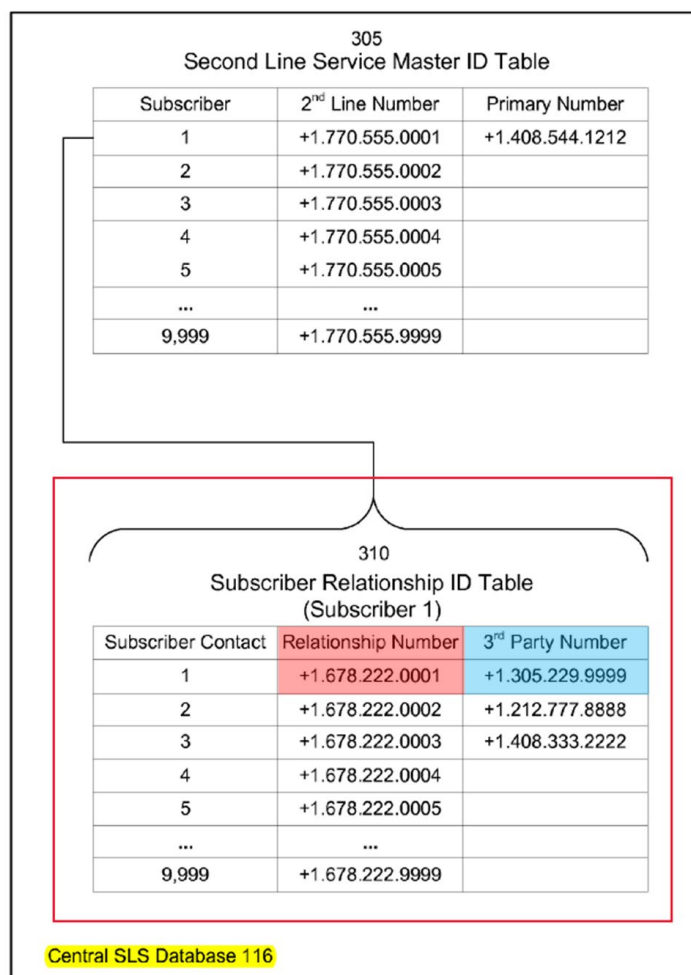


FIG. 3A

(Ex. 1005, FIG. 3A (annotated).)

95. With “the relationship number...ha[ving] been established in connection with subscriber #1 and the calling third party, the SLS platform 115 may proceed to establish the second half of the call—the call from the SLS platform 115 to the subscriber’s TD 110” by “plac[ing] the call to the primary number...that points to subscriber TD 110....” (Ex. 1005, [0054].) Backhaus discloses that the “**calling**

party field of the call placed from SLS platform 115 to subscriber TD 110 may contain a **specially encoded message for the SLS phone app running on SLS module 105** [of subscriber TD 110],” where the calling party field may “**contain the relationship number established by the SLS platform 115...**and the actual primary number of the calling third party.” (*Id.*, [0055]; *see also id.*, [0010] (“the relationship number and third party calling number combination may be forwarded to the subscriber TD, thus enabling an application on the subscriber TD to save the combination in a local database of the subscriber TD.”), [0064].) A person of ordinary skill in the art would have understood that the encoded message described above corresponds to the claimed “pre-call information” because the encoded message is transmitted before the voice call is connected between the calling third party and the called subscriber. (Ex. 1005, [0055] (disclosing transmission of the encoded message), [0056] (disclosing that SLS platform 115 connects the call once the subscriber answers the call).)

96. A person of ordinary skill in the art would have understood that the encoded message (the claimed “pre-call information”), containing the relationship number and the third party number (from SLS platform 115 to subscriber TD 110), is transmitted from SLS platform 115 to subscriber TD 110 via a “data channel”

rather than a voice channel because Backhaus discloses that that a voice path is not connected until the call is answered by the callee. (Ex. 1005, [0052] (“the third party uses TD 120A to place a call to the subscriber #1 SLS number.... As described above, the call is routed to the SLS platform 115. The SLS platform 115 accepts the call (*without connecting the voice path* to the third party TD 120A) and determines that the call is for SLS number”), [0056] (describing that the voice call is not connected until the call is answered, e.g., “[o]nce the subscriber #1 answers, the SLS platform 115 connects the two legs of the call”).)

97. I have been asked to consider a scenario where Backhaus does not disclose that the disclosed “pre-call information” is transmitted via an IP-based communication (“over the at least one data channel”). Under that scenario, a person of ordinary skill in the art would have been motivated to implement this feature in the Backhaus-Logan combination. Backhaus discloses that IP-based communications may be used for the process of establishing the relationship between various numbers and associated databases (as described above). (Ex. 1005, [0073] (“Such channels can be used in setting up the relationship databases, sharing information between the SLS module 105 and the SLS platform 115, initiating voice communication establishment from the TD 110 to the SLS platform 115”).) Moreover, Backhaus

explains that the IP-based communication “minimize[s] temporal delays in allocating and acquiring relationship numbers between an SLS module 105 and an SLS platform 115.” (*Id.*) Thus, a person of ordinary skill in the art would have found it beneficial to implement this feature. Furthermore, such a person would have had the skill in implementing, and expectation of success in achieving, the above implementation as Backhaus and Logan already use IP-based communications for transmitting data between TD 110 and SLS platform 115. (Section IX.A.1(iii) (limitation [1.b]); Ex. 1005, claim 15, [0029], [0032], [0073]; Ex. 1015, claim 2, [0005].) Thus, the Backhaus-Logan combination discloses and/or suggests using IP-based communications (“over the at least one data channel”) for transmitting the disclosed “pre-call information.”

98. Moreover, I have been asked to consider a scenario where the disclosed “pre-call information” does not include “the handset-associated telephone number,” which may be “the primary telephone number or the secondary telephone number.” Under that scenario, a person of ordinary skill in the art would have been motivated to include such information. Backhaus discloses that incoming call signal may include the calling line identification (CLID), which may be “displayed for the benefit of the subscriber on display component 103” of subscriber TD 110. (Ex.

1005, [0033].) Moreover, Backhaus explains that “any data uniquely associated with a call to a primary number or an SLS number may be displayed *for the benefit of a subscriber.*” (*Id.*) Consistent with Backhaus, a person of ordinary skill in the art would have been motivated and found it beneficial to include the primary number and/or an SLS number in its transmission of pre-call information because such information would have enabled subscriber TD 110 to display whether it is the primary number or SLS number(s) that the calling party intends to call, allowing the subscriber to determine whether the call is for a personal or business matter, for example, particularly when the subscriber has multiple SLS numbers. (Ex. 1005, [0055] (“populat[ing] the calling party field, or provide other metadata, that serves to trigger recognition of the incoming call as a call directed to the SLS number of the subscriber”), [0104] (“a subscriber may have multiple phone numbers associated with one device”), [0133] (“a subscriber TD may have multiple SLS numbers”).)

99. A person of ordinary skill in the art would have had the skill in implementing, and expectation of success in achieving, the above implementation. Moreover, a skilled person would have appreciated that the above-described combination would have merely involved a combination of known prior art technologies (e.g., known use of a data channel to transmit pre-call information to a

handset) according to known methods (e.g., known process of transmitting a telephone number, i.e., the relationship number) to yield the predictable result of a process of transmitting pre-call information including both the relationship number and the subscriber's primary/SLS number to be displayed for the benefit of the subscriber.

100. Backhaus discloses and/or suggests transmitting pre-call information to subscriber TD 110 ("handset"), where the pre-call information includes the relationship number ("bridge telephone number") and the primary/SLS number ("the handset-associated telephone number") "over the at least one data channel" **in a second way**. Backhaus discloses with reference to FIG. 4D processes for handling data communication between subscriber TD 110 and SLS platform 115 over network 125. (Ex. 1005, FIG. 4D, [0071]-[0074].) When, for example, the subscriber of TD 110 desires to call a third party but "no relationship number has been associated with the actual third party number," the SLS module 105 on subscriber TD 110 provides a "request for the new relationship number, along with the third party number it desires to call, to the SLS platform 115 via the communication." (*Id.*, [0071].) SLS platform 115 then return the next available relationship number to subscriber TD 110. (*Id.*, [0074] ("the determined next available relationship number is returned to

the SLS module 105 of the subscriber TD 110.”)) A person of ordinary skill in the art would have understood that the transmitted information (which includes a relationship number) described above corresponds to the claimed “pre-call information” because such information is transmitted before a call is connected between a third party and the subscriber (e.g., before a call is connected when the third party calls the subscriber as described in the context of Figure 4B). (Ex. 1005, [0071] (disclosing that subscriber TD 110 requests for “the new relationship number, along with the third party number it desires to call”), [0074] (“Consequently, using the newly acquired relationship number may essentially start over the method 400 with the SLS platform receiving a communication.”); *see also id.*, [0067]-[0068] (describing with reference to Figure 4B processes for handling calls originated from a recognized third party to an SLS subscriber).)

101. As discussed in limitation [1.b], Backhaus discloses that TD 110 may communicate with SLS platform 115 via a “data channel,” as claimed, such as IP-based communication, which “can be used in setting up the relationship databases, sharing information between the SLS module 105 [of subscriber TD 110] and the SLS platform 115, initiating voice communication establishment from the TD 110 to the SLS platform 115, the TD 110 requesting the SLS platform 115 to place a call

to a third party TD 120, etc.” (Section IX.A.1(iii) (limitation [1.b]); Ex. 1005, Ex. 1005, [0071]-[0073].) The above-described communication protocols/mechanisms/channels disclosed in Backhaus correspond to the claimed “data channel.” (Ex. 1005, [0071] (disclosing that “SLS platform 115 determines that the communication is a *data communication* over network 125 that originated from an SLS client of a subscriber TD”).) Indeed, these communication protocols/mechanisms/channels are consistent with the “data channel” described in the ’770 patent. (Ex. 1001, 4:6-12 (“A preferred data channel may be an Internet Protocol (IP) channel, which is not a conventional telephone voice channel. However, other data, non-conventional voice, channels over which information may be transmitted between a telephone handset and a server may be used in alternative embodiments of the invention.”), 4:38-40 (“Such IP governed communications are referred to herein as being conducted over a ‘data channel’”).)

102. Moreover, I have been asked to consider a scenario where the disclosed “pre-call information” does not include “the handset-associated telephone number,” which may be “the primary telephone number or the secondary telephone number.” Under that scenario, a person of ordinary skill in the art would have been motivated to include this information for reasons similar to as described above (e.g., such

information would have enabled subscriber TD 110 to display whether it is the primary number or an SLS number that the calling party intends to call, allowing the subscriber to determine whether the call is for a personal or business matter, for example, particularly when the subscriber has multiple SLS numbers).

103. Additionally, Backhaus discloses “based on user input, accepting the incoming call by connecting with the switch over the at least one voice channel using the bridge telephone number.” Backhaus discloses using the relationship number (“bridge telephone number”) to connect an incoming call from a third party. For example, Backhaus discloses that, when a known third party calls subscriber’s SLS number, SLS platform 115 “queries the central SLS database 116 for the relationship number that maps to the combination of the third party CLID and subscriber’s SLS number” and “the subscriber’s primary number.” (Ex. 1005, [0067].) SLS platform 115 then calls subscriber’s TD 110 using the relationship number for connecting the call. (*Id.*)

At block 424, the **subscriber’s primary number, as also identified from the query of block 422, is called by the SLS platform 115.** At block 426, the call is received at the subscriber’s TD 110 and the SLS module 105 [of subscriber TD 110] recognizes that it originated from the SLS platform 115. It is envisioned that some embodiments

of a SLS module 105 may recognize that an incoming **call is from the SLS platform 115 by virtue of the call originating from a relationship number**. At block 426, the relationship number in the calling party field of the call signaling causes the SLS module 105 [of subscriber TD 110] to handle the call and display the associated third party CLID for the benefit of the subscriber (the third party CLID may be queried from the local SLS database 106 by use of the relationship number).

(Ex. 1005, [0067]; *see also id.*, [0052]-[0055] (disclosing that, after setting up the relationship with a first-time third party caller, SLS platform 115 sets up the second half of the call where the “calling party field” includes “the relationship number”).)

104. Backhaus additionally discloses “based on user input, accepting the incoming call by connecting with the switch over the at least one voice channel” using the relationship number. For example, Backhaus discloses that “the subscriber is alerted to the incoming call” and that “the call is connected to the subscriber TD 110 by the SLS platform 115 when the subscriber answers the call” although the subscriber may “elect[] not to answer” the call. (Ex. 1005, [0068].) Thus, Backhaus discloses “accepting the incoming call” based on “user input.” Moreover, as discussed in limitation [1.f], the incoming call is connected via a local switch in

network 125 over at the least one voice channel. (*Supra* Section IX.A.1(vii) (limitation [1.f]).)

105. Furthermore, Backhaus in view of Logan discloses and/or suggests that the process of “transmitting pre-call information to the handset over the at least one data channel the pre-call information including the bridge telephone number and the handset-associated telephone number, such that the handset is capable of displaying the handset-associated telephone number to a user and, based on user input, accepting the incoming call by connecting with the switch over the at least one voice channel using the bridge telephone number” is “based on the primary call processing rules or the secondary call processing rules.” As discussed in limitations [1.b]-[1.d], a person of ordinary skill in the art would have been motivated to implement voicemail/preset response and associated call forwarding features (e.g., forwarding calls directed to the primary/SLS number to voicemail based on user-entered preferences, which may be based on location of the handset and/or time of the day) at SLS platform 115 as well as to store configurations of these features at a database of the platform. (Sections IX.A.1(iii)-(v) (limitations [1.b]-[1.d]).)

106. Also discussed in limitations [1.b] and [1.d], when the handset is at a location specified by the user and/or during a user-specified time period, calls

directed to either of the primary and SLS numbers may go to subscriber TD 110 (instead of being forwarded to voicemail). (Sections IX.A.1(iii) and (v) (limitations [1.b] and [1.d]).) A person of ordinary skill in the art would have understood that, under those scenarios (where calls could be answered by subscriber TD 110 and not forwarded to voicemail), calls would have been processed and connected in a way similar to as described above and disclosed in Backhaus, e.g., “transmitting pre-call information to the handset,” “displaying the handset-associated telephone number to a user,” and, “based on user input, accepting the incoming call by connecting with the switch over the at least one voice channel using the bridge telephone number.” A person of ordinary skill in the art would have also understood that these calls are nevertheless processed and connected “based on the primary call processing rules or the secondary call processing rules.” This is because these calls were processed and connected according to the user-specified preferences for calls directed to either the primary or the SLS number, e.g., when the handset is at a location specified by the user and/or during a user-specified time of the day. Indeed, this is consistent with the ’770 patent’s disclosure, where “the call processing rules permit completion of the call.” (Ex. 1001, 6:32-37 (“if the call processing rules permit completion of the

call,...the Call Manager 104 may transmit pre-call notification information to the handset 340”).)

107. Accordingly, Backhaus in view of Logan discloses and/or suggests “based on the primary call processing rules or the secondary call processing rules: transmitting pre-call information to the handset over the at least one data channel the pre-call information including the bridge telephone number and the handset-associated telephone number, such that the handset is capable of displaying the handset-associated telephone number to a user and, based on user input, accepting the incoming call by connecting with the switch over the at least one voice channel using the bridge telephone number.”

2. Claim 2: “The method of claim 1, wherein the handset-associated telephone number is the secondary telephone number, and the pre-call information is transmitted based on the secondary call processing rules.”

108. Backhaus in view of Logan discloses and/or suggests this limitation. As discussed in limitation [1.f], Backhaus discloses “receiving an incoming call over at least one voice channel at a switch..., the incoming call being directed to a handset-associated telephone number, the handset-associated telephone number being the primary telephone number or the secondary telephone number” (as recited in limitation [1.f]), because Backhaus discloses that a call from third party TD 120

to subscriber TD 110's *SLS number* ("the handset-associated telephone number") is first routed by network 125 to SLS platform 115 and thus necessarily received over a voice channel by the local switch in network 125. (Section IX.A.1(vii) (limitation [1.f]).) As discussed in limitation [1.a], subscriber TD 110's *SLS number* corresponds to the claimed "secondary telephone number." (Section IX.A.1(ii) (limitation [1.a]).) Thus, Backhaus discloses that "the handset-associated telephone number is the secondary telephone number."

109. Furthermore, as discussed in limitation [1.g], the Backhaus-Logan combination discloses "transmitting pre-call information" based on either of "the primary call processing rules" or "the secondary call processing rules" given that the Backhaus-Logan combination discloses and/or suggests that a user may specify/select call forwarding preferences for calls directed to each of the primary number and the SLS number. (Section IX.A.1(viii) (limitation [1.g]); *see also* Section IX.A.1(iii) (limitation [1.b]) (discussions showing that the Backhaus-Logan combination discloses and/or suggests "primary call processing rules for handling calls directed to the primary telephone number"), Section IX.A.1(v) (limitation [1.d]) (discussions showing that the Backhaus-Logan combination discloses and/or suggests "secondary call processing rules for handling calls directed to the secondary

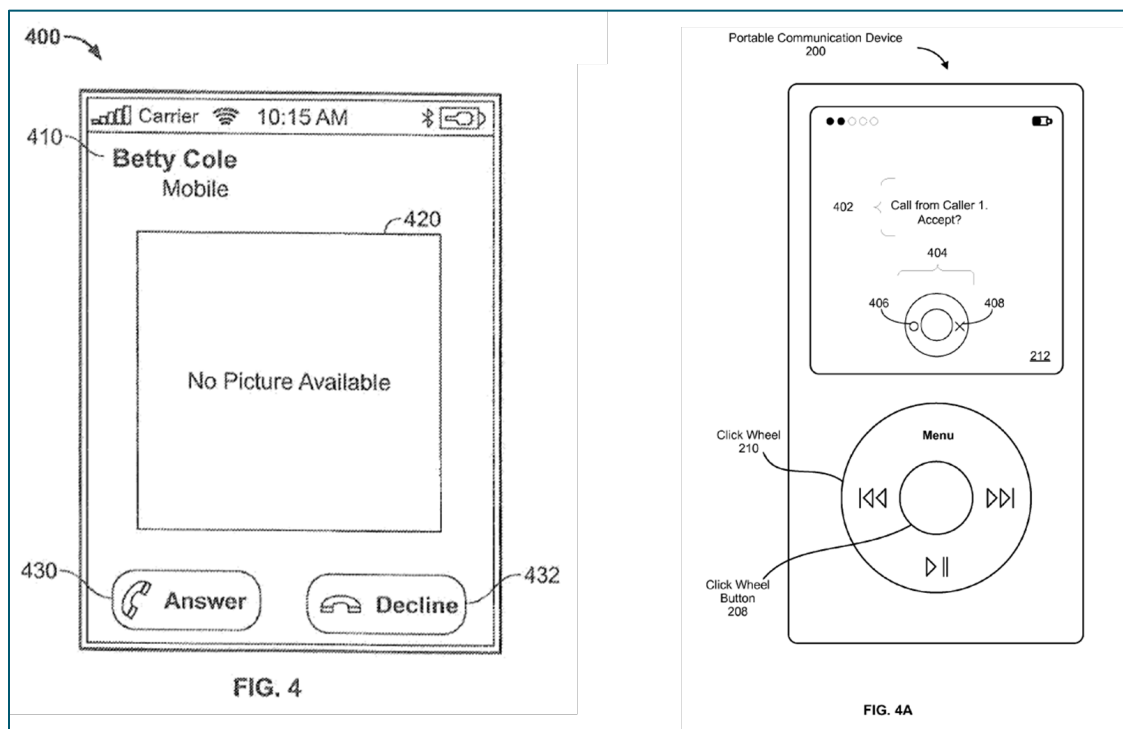
telephone number”).) Thus, the Backhaus-Logan combination discloses “the pre-call information is transmitted based on the *secondary call processing rules*.”

110. Accordingly, Backhaus in view of Logan discloses and/or suggests this limitation.

3. Claim 3: “The method of claim 1, wherein the pre-call information includes a plurality of call handling choices for display by the handset and selection via the user input.”

111. Backhaus in view of Logan discloses and/or suggests this limitation. As discussed in limitation [1.g], Backhaus discloses that “any data uniquely associated with a call to a primary number or an SLS number may be displayed” on display component 103 of subscriber TD 110 “for the benefit of a subscriber.” (Section IX.A.1(viii) (limitation [1.g]); Ex. 1005, [0033] (“the [calling line identification] may be displayed for the benefit of the subscriber on display component 103” and “any data uniquely associated with a call to a primary number or an SLS number may be displayed for the benefit of a subscriber to the system 100”).) Furthermore, consistent with Backhaus and a person of ordinary skill in the art’s knowledge, it was known that a subscriber would have had options to answer or not to answer the incoming call and such options were commonly displayed on the handset to be selected by the user (as shown in Figure 4 of Ex. 1017 and Figure 4A of Ex. 1018, both reproduced below), particularly for smartphones or PDAs, such

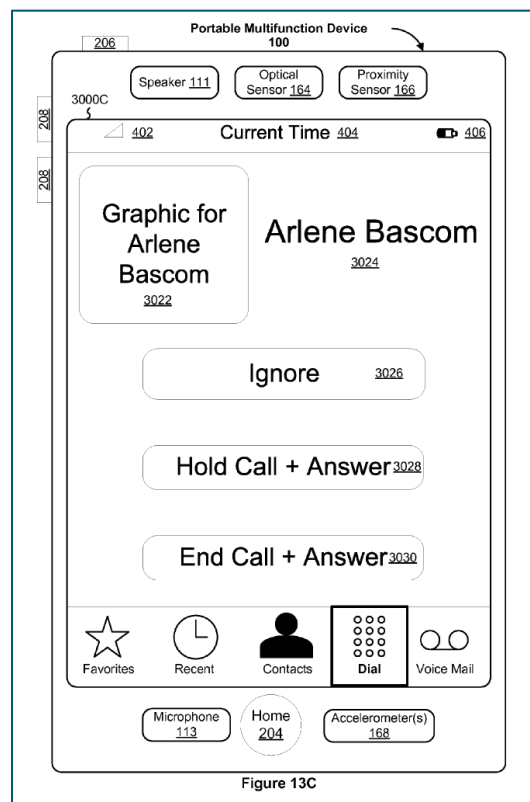
as subscriber's TD 110 disclosed in Backhaus. (Ex. 1005, [0029] (“a telecommunications device (‘TD’) may include...a PDA, a smartphone, a navigation device, a tablet personal computer (‘PC’), or a hand-held computer with a wireless connection or link.”), [0068] (“the subscriber is alerted to the incoming call and...the call is connected to the subscriber TD 110 by the SLS platform 115 when the subscriber answers the call” and “if the subscriber elects not to answer a call to the SLS number, the SLS module 105 [of subscriber TD 110] in some embodiments may use a voicemail service or message service in response to the unanswered call.”); Ex. 1017, [0056] (As shown in Figure 4, “[d]isplay 400 may include any suitable selectable options for responding to the incoming telephone call,” e.g., “answer option 430 and decline option 432.”); Ex. 1018, [0060] (As shown in Figure 4A, “[t]he GUI also includes an instructional image 404,” which “includes icons, such as an accept call icon 406 and a decline/end call icon 408.”).)



(Ex. 1017, FIG. 4 (left figure); Ex. 1018, FIG. 4A (right figure).) Thus, a person of ordinary skill in the art would have been motivated to provide various call handling choices for display by subscriber TD 110, including common options such as to answer or not to answer the call to be selected by the user.

112. Moreover, Backhaus discloses that “the SLS module 105 [of subscriber TD 110] in some embodiments *may* use a voicemail service or message service in response to the unanswered call.” (Ex. 1005, [0068].) This option of sending the incoming call to voicemail is not inconsistent with the server-based call processing features, e.g., using a server to forward calls to voicemail based on user-specified handset location and/or time, disclosed and/or suggested by the Backhaus-Logan

combination in claim 1. This is because, as a person of ordinary skill in the art would have understood, there would be scenarios where a user may nonetheless desire sending the incoming calls (that are not forwarded to voicemail by a server) to voicemail, e.g., when the user is already on another call. (Ex. 1019, [0160] (“if the device receives an incoming call while the user is on another call..., then an incoming call UI is displayed, such as UI 3000C (FIG. 13C) for a known caller (e.g., Arlene Brown 3024, an entry in the user’s contact list).... the incoming call UI includes icons which, when activated by a user tap or other gesture, cause the device to: (1) terminate the incoming call or send the caller to voice mail (e.g., ignore icon 3026); (2) place the current call on hold and answer the incoming call (e.g., hold+answer icon 3028); and/or (3) end the current call and answer the incoming call (e.g., end+answer icon 3030).”).)



(Ex. 1019, FIG. 13C.) Thus, in addition to displaying the options to answer/not answer the call, a person of ordinary skill in the art would have found it beneficial to also display on the handset an option to send the incoming call to voicemail for the user to select. Accordingly, Backhaus in view of Logan discloses and/or suggests that “the pre-call information includes a plurality of call handling choices for display by the handset and selection via the user input.”

4. Claim 4

- i) [4.a] “The method of claim 1, further comprising: receiving an outgoing call request from the handset over the at least one data channel, the outgoing call request including an originating telephone number and a contact telephone number to be called, the originating telephone number being the primary telephone number or the secondary telephone number;”**

113. Backhaus in view of Logan discloses and/or suggests this limitation. For example, Backhaus discloses that subscriber TD 110 (“handset”) makes an outgoing call request over the data channel, where the request is received by redirection module 117 of SLS platform 115 and the request includes subscriber’s SLS number (“the originating telephone number being the primary telephone number or the secondary telephone number”) and the third party number (“contact telephone number”) to be called. In particular, when the subscriber wants to call the third party using the subscriber’s SLS number, the subscriber dials the third party number, and then “[t]he SLS module 105 [on subscriber’s TD 110]...translates the called third party number...to relationship number.” (Ex. 1005, [0059].) While the SLS module 105 indicates to the subscriber that it is calling the third party number, “instead it calls the relationship number.” (*Id.*) “By calling the relationship number associated with [the third party contact], the network 125 routes the call to the SLS

platform 115 instead of directly to third party TD 120A phone.” (*Id.*; *see also id.*, [0049] (“The application run by the SLS module 105 on subscriber TD 110 uses a relationship number to access the SLS platform 115 over the telephone network 125. The SLS number is used by the redirection module 117 of the SLS platform 115 to complete calls with any external party calling the subscriber's SLS number or being called by the SLS subscriber using SLS module 105 of subscriber TD 110.”).)

114. When SLS platform 115 process this (first) leg of the call, it “recognize[s] that the calling number is the subscriber’s primary number...and the called number is the relationship number.” (Ex. 1005, [0060].) Based on the established relationship information associated with the subscriber’s primary number and relationship number, redirection module 117 of the platform determines that the subscriber intends to use the SLS number to call the third party number. (Ex. 1005, [0060] (disclosing that redirection module 117 determines that “it is actually SLS number...calling [the third party number]”), [0070] (“the SLS redirection module 117 may deduce that the subscriber desires to [call the] actual third party number.”).)

When the SLS platform 115 processes this first leg of the call, it may recognize that the calling number is the subscriber’s primary number...(which is associated with

the subscriber's SLS number...) and the called number is the relationship number.... Querying the Subscriber Relationship ID Table 310 in central SLS database 116, the redirection module 117 may apply the following logic: “when primary number...calls relationship number..., it is actually SLS number...calling [the third party number].”

(Ex. 1005, [0060].)

115. “SLS platform 115...then...complete[s] the subscriber’s call by calling the [third party number]” and “cause[s] the calling number to be reflected as the SLS number.” (*Id.*, [0060].) Given that redirection module 117 of SLS platform 115 determines the call signal from subscriber TD 110 indicating that (1) the calling number is the SLS number (“originating telephone number”) and (2) the number to be called by SLS platform 115 is the third party number (“contact telephone number to be called”), redirection module 117 receives an outgoing call request from subscriber TD 110 including the calling number being the SLS number and the number to be called being the third party number. Thus, Backhaus discloses “receiving an outgoing call request from the handset..., the outgoing call request including an originating telephone number and a contact telephone number to be

called, the originating telephone number being the primary telephone number or the secondary telephone number.”

116. A person of ordinary skill in the art would have understood that such a request from subscriber TD 110 is received “over the at least one data channel” because the transmission of the request occurs before the call is answered by the third party, i.e., before the voice call is connected. (Ex. 1005, [0052] (“The SLS platform 115 accepts the call (without connecting the voice path to the third party TD 120A)”), [0056] (“Once the subscriber #1 answers, the SLS platform 115 connects the two legs of the call (leg 1 represented by third party TD 120A to SLS platform 115 and leg 2 represented by SLS platform 115 to subscriber TD 110) by methods known and understood by those of ordinary skill in the art of telecommunications.”), [0070] (disclosing that “[a]t block 436...the SLS redirection module 117 may deduce that the subscriber desires to [call the] actual third party number” and “[a]t block 440, the call is connected to the third party TD 120”).)

117. I have been asked to consider a scenario where Backhaus does not disclose that the disclosed “outgoing call request” is received from the handset via an IP-based communication (“over the at least one data channel”). Under that scenario, a person of ordinary skill in the art would have been motivated to implement

this feature in the Backhaus-Logan combination. Indeed, Backhaus explains that IP-based communications may be used in scenarios described above (i.e., when making an outgoing call to a third party), such as “initiating voice communication establishment from the TD 110 to the SLS platform 115” and “the TD 110 requesting the SLS platform 115 to place a call to a third party TD 120, etc.” (Ex. 1005, [0073].) Additionally, consistent with Backhaus’s disclosure, a person of ordinary skill in the art would have understood that the IP-based communication may “minimize temporal delays” in data communications between TD 110 and SLS platform 115. (Ex. 1005, [0073].) Such a person would have had the skill in implementing, and expectation of success in achieving, the above implementation as Backhaus and Logan already use IP-based communications for transmitting data between TD 110 and SLS platform 115 (Section IX.A.1(iii) (limitation [1.b]); Ex. 1005, claim 15, [0029], [0032], [0073]; Ex. 1015, claim 2, [0005]) as well as TD 110 using IP-based communications to request a relationship number before calling the third party. (Ex. 1005, [0071] (“the subscriber...desires...to call a third party with which no relationship number has been associated with the actual third party number” and “[t]he SLS module 105 [of TD 110] has provided the request for the new relationship number, along with the third party number it desires to call, to the SLS platform 115

via the communication.”), [0072]-[0073] (disclosing the data communication may be “an IP-based interaction”).) Accordingly, the Backhaus-Logan combination discloses and/or suggests this limitation.

ii) [4.b] “connecting with the handset at the switch over the at least one voice channel using the bridge telephone number; and”

118. Backhaus discloses this limitation. As discussed in limitation [4.a], by using the relationship number, the call from subscriber TD 110 directed to the third party is routed by network 125 to SLS platform 115, which then connects the call with the third party. (Section IX.A.4(i) (limitation [4.a]); *see also* Ex. 1005, [0049] (“The application run by the SLS module 105 on subscriber TD 110 uses a relationship number to access the SLS platform 115 over the telephone network 125.”), [0059] (“By calling the relationship number associated with [the third party contact], the network 125 routes the call to the SLS platform 115 instead of directly to third party TD 120A phone.”), [0060] (“The SLS platform 115...complete[s] the subscriber’s call by calling the [third party number].”).)

119. Moreover, as discussed in limitation [1.f], the local switch of network 125 establishes and routes voice-band traffic, and necessarily receives calls directed to a relationship number before routing the same to SLS platform 115. (Section IX.A.1(vii) (limitation [1.f]).) Accordingly, Backhaus discloses “connecting with

the handset at the switch over the at least one voice channel using the bridge telephone number.”

- iii) **[4.c] “transmitting an outgoing call over the at least one voice channel from the switch, the outgoing call being directed to the contact telephone number and indicating the originating telephone number.”**

120. Backhaus discloses this limitation. As discussed in limitation [4.b], the outgoing call is routed from the local switch of network 125 via a voice channel to SLS platform 115, which then calls the third party number to connect the call between the subscriber and the third party. (Section IX.A.4(ii) (limitation [4.b]; *see also* Section IX.A.4(i) (limitation [4.a]; Ex. 1005, [0060] (“SLS platform 115...then...complete[s] the subscriber’s call by calling the [third party number]”).)

121. Moreover, Backhaus discloses that “in completing the second leg of the call from Subscriber #1 to [the third party], the SLS platform 115 may cause the calling number to be reflected as the SLS number” (“originating telephone number”). (Ex. 1005, [0060], [0070] (“The calling party field of the call is populated with the subscriber's SLS number...”).) Accordingly, Backhaus discloses “transmitting an outgoing call over the at least one voice channel from the switch, the outgoing call being directed to the contact telephone number and indicating the originating telephone number.”

5. Claim 5: “The method of claim 1, wherein the at least one data channel includes an Internet protocol (IP) channel.”

122. Backhaus discloses this limitation. Consistent as discussed in limitation [1.b], Backhaus discloses that TD 110 may communicate with SLS platform 115 using various protocols/mechanisms, e.g., an unstructured supplementary services data (USSD) protocol (*id.*, [0072]), short message service (SMS) protocol, multimedia messaging service (MMS) protocol, IP-based interaction, cellular data, WiFi, Bluetooth, proprietary wireless or wired technologies (*id.*, [0073]; Section IX.A.1(iii) (limitation [1.b])). “Such channels can be used in setting up the relationship databases, sharing information between the SLS module 105 [of subscriber TD 110] and the SLS platform 115, initiating voice communication establishment from the TD 110 to the SLS platform 115, the TD 110 requesting the SLS platform 115 to place a call to a third party TD 120, etc.” (Ex. 1005, [0073].) The above-described communication protocols/mechanisms/channels disclosed in Backhaus correspond to the claimed “data channel.” Indeed, these communication protocols/mechanisms/channels are consistent with the “data channel” described in the ’770 patent. (Ex. 1001, 4:6-12 (“A preferred data channel may be an Internet Protocol (IP) channel, which is not a conventional telephone voice channel. However, other data, non-conventional voice,

channels over which information may be transmitted between a telephone handset and a server may be used in alternative embodiments of the invention.”), 4:38-40 (“Such IP governed communications are referred to herein as being conducted over a ‘data channel’”).) Thus, Backhaus discloses that “the at least one data channel includes an Internet protocol (IP) channel.”

B. Backhaus in View of Logan and Saksena Discloses and/or Suggests the Limitations of Claim 6

1. Claim 6: “The method of claim 5, wherein the at least one voice channel is established in accordance with at least one of a Code Division Multiple Access (CDMA) standard and a Global System for Mobiles (GSM) standard.”

123. Backhaus in view of Saksena discloses and/or suggests this limitation. As discussed in limitation [1.f], Backhaus discloses communications over a voice channel of the PSTN in network 125 (the claimed “voice channel”). (*Supra* Section IX.A.1(vii) (limitation [1.f]).) While Backhaus does not expressly disclose that “the at least one voice channel is established in accordance with at least one of a Code Division Multiple Access (CDMA) standard and a Global System for Mobiles (GSM) standard,” a person of ordinary skill in the art would have been motivated to implement this feature in view of Saksena.

124. Like Backhaus, Saksena describes providing telephony services to different subscriber devices. (Ex. 1008, Abstract; *see also id.*, [0057], [0072]

(describing that the disclosed process allows, e.g., “[t]he user of four devices associated with four different networks [to] manage one set of universal telephony services for all of his different devices.”.) For example, Saksena discloses with reference to Figure 1A (reproduced below and annotated) a centralized network 105 (highlighted in red) that provides telephony services to multiple devices, e.g., cellular device 156a (highlighted in blue) and other devices, that are associated with different networks, e.g., 110a-110e (highlighted in green). (*Id.*, [0077].)

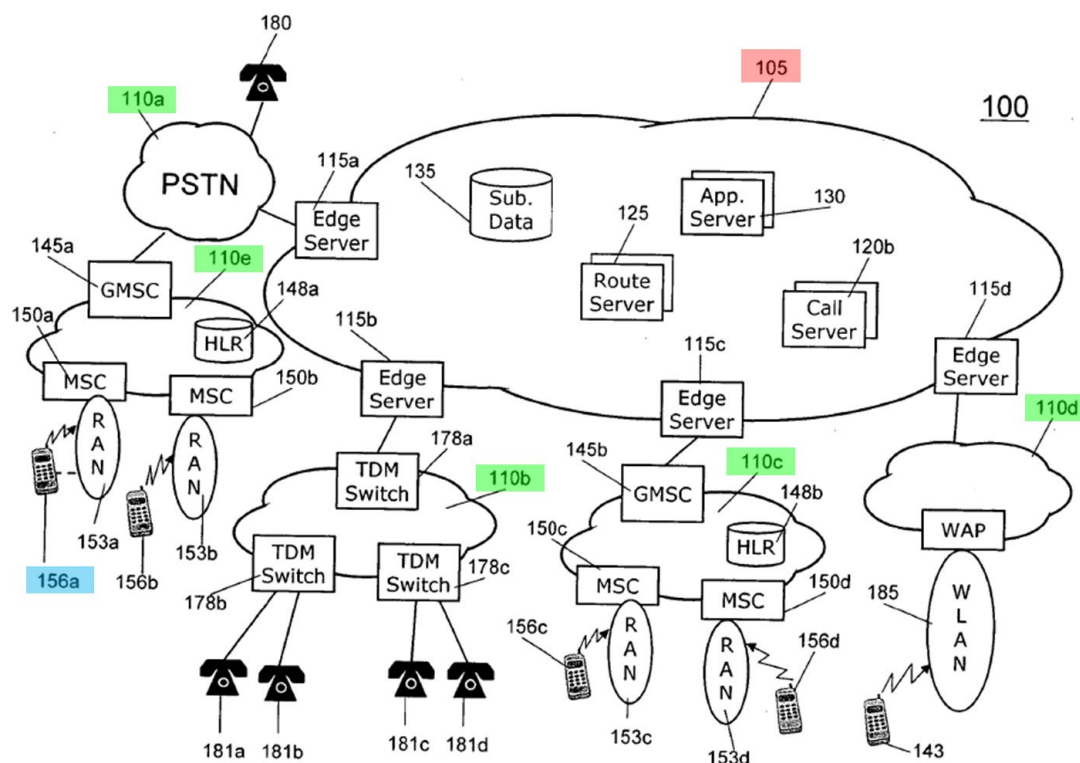


FIG. 1A

(Ex. 1008, FIG. 1A (annotated).) Specifically, calls made by a subscriber's mobile device 156a on cellular network 110e may be routed through both the PSTN 110a and network 105 to device 180, such that network 105 is involved in the calls and may provide services to which the subscriber subscribes. (*Id.*, [0119]-[0120]; *see also id.*, [0121]-[0129] (describing processes to connect a call between the caller and callee with network 105 involved in the call).) Thus, Saksena is similar to Backhaus, which discloses connecting calls through both network 125 (including the PSTN) and SLS platform 115, such that SLS platform 115 may provide services to which the subscriber subscribes. (*Supra* IX.A.1 (claim 1).) Therefore, a person of ordinary skill in the art would have been motivated to consider the teachings of Saksena.

125. Saksena further discloses that mobile device 156a on cellular network 110e may operate using either the Global System for Mobile Communications (GSM) or Code-division multiple access (CDMA) standards. (Ex. 1008, [0053], [0082].) Saksena therefore discloses establishing a voice channel in accordance with a CDMA or GSM standard for calls associated with a mobile device. Backhaus discloses processing a call from a mobile device (e.g., TD 110) via a voice channel (*supra* Section IX.A.1(vii) (limitation [1.f])), but Backhaus does not expressly disclose that the voice channel is established “in accordance with at least one of a

Code Division Multiple Access (CDMA) standard and a Global System for Mobiles (GSM) standard.” (*Supra* Section IX.A.1(ii) (limitation [1.a]); Section IX.A.1(vii) (limitation [1.f]).) Nevertheless, a person of ordinary skill in the art would have been motivated to implement such a feature.

126. A person of ordinary skill in the art would have been motivated to establish a voice channel based on CDMA or GSM protocols because CDMA and GSM were the mobile telecommunication standards at the time of the alleged invention and Backhaus is silent with respect to the cellular network standard used for the disclosed mobile devices. (Ex. 1001, 4:35-38 (acknowledging that GSM and CDMA are telecommunication standards at the time of the alleged invention).) Indeed, as discussed in Saksena, cellular networks “can be based on a global system for mobile communications (GSM) standard, a time division multiple access (TDMA) standard, or a code division multiple access (CDMA) standard.” (Ex. 1008, [0053].) Moreover, consistent with a person of ordinary skill in the art’s knowledge, commercially available mobile devices were implemented with the GSM or CDMA communication standard. (*Id.*, [0082] (“For example, when a subscriber subscribes to cellular service with Verizon, they buy a cellular mobile device with CDMA technology. If a subscriber subscribes to cellular service with T-

Mobile, they buy a cellular mobile device with GSM technology.”).) Accordingly, a person of ordinary skill in the art would have been motivated to implement the CDMA or GSM standard for the cellular network where Backhaus’s mobile devices operate for voice communications.

127. A person of ordinary skill in the art would have had the skill in implementing, and expectation of success in achieving, the above implementation. Moreover, a skilled person would have appreciated that the above-described combination would have merely involved a combination of known prior art technologies (e.g., known telecommunication protocols for mobile device networks) according to known methods (e.g., known process of implementing a voice channel based on CDMA or GSM protocols) to yield the predictable result of a telecommunication system including a voice channel that is implemented using CDMA or GSM standard for mobile communication.

C. Each of the Above Prior Art Combinations in view of Taylor Discloses and/or Suggests the Challenged Claims

128. As I discussed above, Sections IX.A-B demonstrate how combinations of prior art stemming from Backhaus discloses and/or suggests claims 1-6. (Sections IX.A-IX.B.) I have been asked to consider a scenario where the claimed “switch” is interpreted as requiring it being a device separate from the PSTN. Under that

scenario, a person of ordinary skill in the art would have been motivated to implement the claimed “switch” in light of Taylor.

129. Like Backhaus, Logan, and Saksena, Taylor is directed to providing telephone services through communication networks. (Ex. 1007, [0004].) Taylor discloses a computer telephony (CT) server 50 that provides “added features to an end user’s phone” and may be implemented with the PSTN and/or an IP telephony network system as shown in FIG. 1A below. (*Id.*, [0008], FIG. 1A; *see also id.*, [0004] (“FIG. 1A illustrates a typical configuration of a conventional computer telephony server operating with a Public Switched Telephone Network (PSTN) and/or the Internet.”).) Thus, Taylor is also similar to Backhaus and Saksena, which discloses routing calls through both the PSTN and a service provider platform/network, such that the service provider platform/network may provide services to which the subscriber subscribes. (*Supra* IX.A.1 (claim 1); IX.B.1 (claim 3).) As such, a person of ordinary skill in the art would have been motivated to consider the teachings of Taylor.

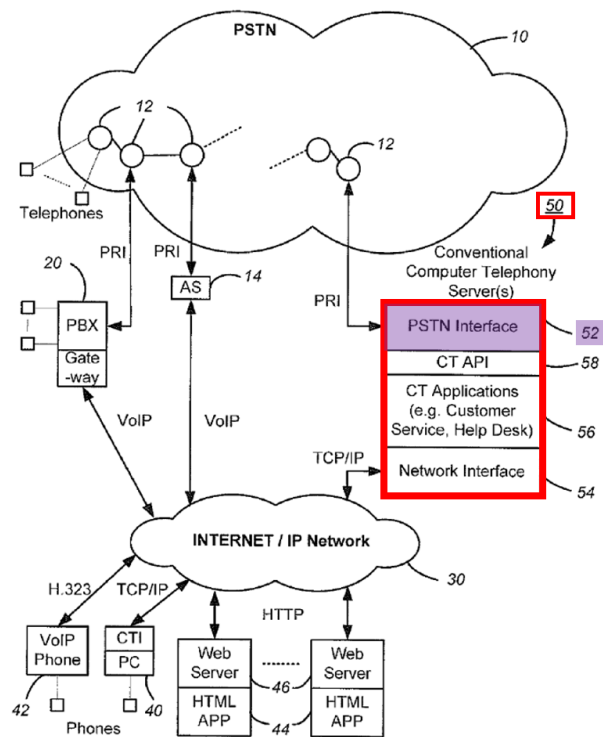


FIG. 1A (Prior Art)

(Ex. 1007, FIG. 1A (annotated).)

130. Taylor additionally discloses that when CT server 50 connects to other networks, e.g., the PSTN or the Internet, an interface is used in order to receive/process calls. For example, as shown in Figure 1A, “CT server 50 can be configured to interface via a PSTN interface 52 with an exchange 12 to receive and process calls pertaining to a predefined set of telephone numbers on the PSTN.” (Ex. 1007, [0008] (also disclosing that CT server 50 “can also be configured to interface via an IP network interface 54 with the Internet to receive and process calls

pertaining to a predefined set of telephone numbers or IP addresses.”.) A person of ordinary skill in the art would have understood that PSTN interface 52 disclosed in Taylor is similar to the switch described in the ’770 patent’s examples that likewise receives calls and processes calls associated with a specific number, e.g., a bridge number. (Ex. 1001, 2:5-7 (“connecting the handset to the incoming call at the switch”), 5:58-60 (“the incoming call may be routed over the PSTN 310 to the switch 110 [r]esponsive to receipt of the incoming call at the switch 110”), 6:2-4 (“The bridge telephone number may be associated with the switch 110, and calls to the bridge telephone number may be automatically routed to this switch.”).)

131. A person of ordinary skill in the art would have been motivated to include a PSTN interface similar to as discussed in Taylor when implementing Backhaus’s telephony service system. For example, Backhaus discloses that there are several different telecommunication networks that may be used for connecting the calls through network 125, e.g., cellular networks, PSTNs, cable networks and the Internet. (Ex. 1005, [0032] (“communications network 125 envisions any and all networks for transmitting and terminating communications between telecommunications devices such as, but not limited to, cellular networks, PSTNs, cable networks and the Internet.”).) A person of ordinary skill in the art would have

understood that the PSTN is well known for providing reliable communications to a large number of landline and wireless devices/users as well as providing sophisticated phone and data services. (Ex. 1011, 81 (“Today, the PSTN is a network of computers and other electronic equipment that converts speech into digital data and provides a multitude of sophisticated phone features, data services, and mobile wireless access.... The PSTN is well known for providing reliable communications to its subscribers.”).) Thus, a person of ordinary skill in the art would have been motivated to connect SLS platform 115 with the PSTN and to also include a PSTN interface in order to facilitate such a connection when implementing Backhaus’s system and processes—such that SLS platform 115 could provide the disclosed second line services to many device users connected to the PSTN that is known to provide reliability communications.

132. A person of ordinary skill in the art would have had the skill to implement, and expectation of success in achieving, the use of a PSTN interface, since it would have involved applications of known technologies (e.g., known PSTN and PSTN interface) according to known methods (e.g., known techniques for facilitate communication between a server and the PSTN) to yield the predictable

result of a telephony service system/process that provided telecommunication services.

133. Accordingly, for the reasons above, in the scenario where Backhaus is read not to disclose the claimed “switch,” a person of ordinary skill in the art would have been motivated to modify Backhaus and Backhaus-based combinations (including modifications with the additional features based on the prior art associated with claim 1 in Section IX.A (Logan) and claim 6 in Section IX.B (Saksena) given that modifications discussed in Section IX.A relating to “call processing rules” and modifications discussed in Section IX.B relating to the mobile phone’s wireless standard do not materially affect the claimed “switch” in the context of the claimed features) to implement a PSTN interface in light of Taylor and a person of ordinary skill in the art’s contemporaneous knowledge. Thus, the positions above demonstrate how the asserted prior art combinations in further view of Taylor disclose and/or suggest claims 1-6. (*See* Sections IX.A-IX.B.)

134. In my opinion, a person of ordinary skill in the art would have had the same motivations, capabilities, and expectations discussed above in Sections IX.A-B and knowledge of those discussed above regarding Taylor to modify each asserted combination to implement a PSTN switch (explained above.) Therefore, for the

same reasons discussed above and in the respective sections for Sections IX.A-B, the prior art combination discloses and/or suggests claims 1-6 (Sections IV, V, IX.A-IX.B.)

X. CONCLUSION

135. I declare that all statements made herein of my knowledge are true, and that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Declaration of Dr. Bill Lin
U.S. Patent No. 9,667,770



Dated: January 9, 2023

By: _____

Bill Lin