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(54) Title: A METHOD AND SYSTEM FOR COMMUNICATING A DATA FILE OVER A NETWORK AND TELECONFERENCING OVER A TELEPHONY NETWORK

(57) Abstract: A method and system for forwarding information such as data files to a recipient across disparate or incompatible communication networks, which are not constrained by incompatible user devices. The sender sends information such as a data file to an intended recipient via a messaging server. The messaging server communicates with the intended recipient using basic communication tools that are generally compatible regardless of the network that the recipient is subscribed to. The messaging server stores the information, creates and sends a notification message to the intended recipient that she has information to be retrieved. The notification message includes a unique access address associated with the message, at which the recipient can retrieve the information. Different unique access addresses are associated with different messages. In another aspect of the present invention, a teleconference system and method in which an initiator of a teleconference sends a request or instructions to the teleconference server. The teleconference server communicates with the intended participants using basic communication tools that are generally compatible regardless of the network that the participant is subscribed to. The teleconference server stores the information, creates and sends a teleconference notification message to the intended participant that she has been invited to a teleconference. The notification message includes a unique access address associated with the teleconference, at which the participant can access to join the teleconference at the prescribed time. Different unique access addresses are associated with different teleconferences.

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A Method and System for Communicating a Data File Over a Network and Teleconferencing Over a Telephony Network

RELATED PATENT APPLICATIONS & INCORPORATION BY REFERENCE

This application is a utility application claiming the priority of the following U.S. provisional patent applications: Serial No. 60/472,989, filed 05/23/2003; Serial No. 60/472,990, filed 05/23/2003; Serial No. 60/472,994, filed 05/23/2003; Serial No. 60/510,214, filed 10/9/2003; and Serial No. 60/520,471, filed 11/13/2003. These related application are incorporated herein by reference and made a part of this application as if fully set forth herein.

BACKGROUND OF INVENTION

1. Field of the Invention

The present invention relates to messaging, particularly to transmitting data files over a communication network. The present invention also relates to teleconferencing, particularly to establishing a teleconference over a telephony network.

2. Description of Related Art

In telecommunication networks, such as cellular wireless networks, various messaging services are available to the subscriber/users, as alternative means of communicating short of calling one another, at times when the initiating party and the intended recipient may not be simultaneously available for or may not desire real time voice communication to take place between them. Such messaging services include voicemail messaging, short message service (SMS) text messaging, multi-media messaging service (MMS), etc. Some of these services are carrier, provider, network or platform dependent (collectively referred hereinafter as network

dependent, as opposed to network independent), and some are user device dependent. Network dependent refers to messaging services that would work in one network (e.g., carrier, provider, platform or physical network) but not another, because of differences in operating parameters, specification, limitations, and other characteristics among the different carriers, providers, platforms or physical networks. Such differences may include incompatibilities arising from underlying technologies, communication frequencies, communication platform which may be viewed as the underlying hardware and software that handles communication over a network, communication protocol which may be viewed as the way data is exchanged among user devices, or simply the physical or operational restrictions network providers and carriers imposed to distinguish their services.

For example, in cellular carrier networks, voicemail messaging has been network dependent. Each network may be associated with a different provider that implements a different hardware and/or software platform, and/or utilizes a different set of communication and/or data protocols. For voicemails, each cellular carrier (e.g., AT&T, Verizon, Cingular, etc.) maintains a proprietary voicemail system within its own carrier network. While a person in one cellular carrier network may call another person in another cellular carrier network to leave a voicemail message, voicemails cannot be transferred from one cellular carrier network to another by messaging. However, within the same cellular carrier network, a sender can record a message and forward the message to a designated recipient. Heretofore, voicemail messaging is not available across dissimilar cellular carrier networks and dissimilar platforms within the same network.

SMS text messaging is typically not network dependent. As long as a carrier offers SMS text messaging as a service to its customers, SMS text messaging is compatible over disparate cellular carrier networks. A sender in one network can send an SMS text message to a recipient in another network. Most cellular handsets are enabled with SMS text messaging function. However, SMS text messages have character limitations (typically 160 characters), and a sender may need to send multiple text messages to fully communicate his message. Furthermore, a sender is required to use the awkward text entry interface of a cellular phone to input his message. Voicemail messaging would be the more desirable option in some situations, subject to its network and platform dependency.

MMS offers additional functionalities to support messaging of multi-media files, such as audio, video, graphics, photos, images, music, and other types of digital data. MMS is user device and network dependent. However, while some of the modern cellular handsets may

have the capabilities to handle MMS functions, not all handsets are enabled to do so. For a sender of a MMS message, he cannot be certain that the intended recipient has the appropriate handset on the appropriate network that is enabled to receive MMS message.

The above-mentioned incompatibility issues relating to the various messaging services are exacerbated when a sender wishes to send text messages, voice messages and/or multimedia files across disparate networks to disparate devices. The incompatibility issues are further exacerbated for messaging between different categories of communication networks, e.g., voicemail messaging cannot be conducted between a landline phone operating in a public switched telephone network (PSTN) and a cellular phone operating in a cellular network; a landline telephone cannot receive a text message. The differences between providers and devices can create incompatibilities that prevent the receipt of, for example, text messages, voice messages, and multimedia files, across disparate networks.

United Kingdom Patent Application Number 2,387,737 to Munnariz purportedly discloses a telephone message network that stores a voice message from a sender to a recipient. According to its abstract, the sender is prompted by the network to supply, with the voice message, information identifying the recipient, and the network sends a text message to the recipient announcing the existence of the voice message. When the recipient calls to retrieve her voice message, the network selects the appropriate voice message using calling line identity (CLI) to identify the calling device of the intended recipient of the message. The number called by the recipient to retrieve voice message is not uniquely associated with the voice message. Since any person may call the same number to retrieve their own messages, the system can only distinguish between the callers by the callers' CLI. This system does not actually authenticate the caller, as anyone calling with the correct calling device would be presumed to be the intended recipient of the message. Further, this system does not support other types of messaging, such as MMS.

Accordingly, it is desirable to provide an improved messaging system that will enable a sender to send information including data files, such as SMS text messages, voice messages, multimedia files, image files, text files and executable files to a recipient who is not in the same carrier network as the sender.

Teleconferencing involves multiple users connected to the same communication channel, allowing each user to simultaneously talk to each other. A typical teleconference involves multiple participants who each speak on their own communication device such as a phone. In this situation, a teleconference is initiated by a first user establishing a first communication

channel, such as a phone call, with a second user. Once the first communication channel is established between the first and second users, the first user then establishes a second communication channel with a third user. Once the second communication channel is established, the first and second communication channels are bridged, whereby all three users can talk to each other.

A teleconference can also be established using a teleconferencing service. The teleconferencing service establishes a central communication channel. Participants call a number and are directly connected to the central communication channel. The central communication channel is pre-scheduled and each participant to the teleconference is notified prior to the teleconference as to the time of the teleconference and what phone number to dial to join.

U.S. Patent Number 6,377,560 purportedly discloses a wireless network with a group call capability. According to its abstract, the wireless network includes a mobile switching center connected to a plurality of base stations each serving a portion of the wireless network and communicating with mobile stations on a plurality of channels. Each base station allocates one of the channels for the group call. Each mobile station in the group sends an acknowledgement of the group call to the base station serving the area where the mobile station is located. Each base station that did not receive an acknowledgement frees the allocated channel for use in other calls. This patent is primarily directed to the underlying technology for overcoming the drawbacks of prior art systems with respect message traffic and system resources. It does not significantly improve user experience in connection with establishing a group call.

U.S. Patent Application Publication No. 2003/0068029 purportedly discloses a user invoked directed outdial method and apparatus. According to a representative flow diagram its disclosure, the process purportedly includes steps wherein a caller calls into a directed outdial system, the caller identifies third parties to be called, the outdial system makes multiple outbound calls to third parties, the outdial system detects which called parties answer their call, the outdial system can further obtain specific information associated with each called party by asking questions and requesting each called party to answer the questions, the outdial system can obtain specific information associated with each called party from the caller or from a database, the outdial system can treat each called party individually based on the information associated with each called party, and connects the initial caller and the called parties in a conference call. A problem with this method is that a phone call invitation to a real time

teleconference can be intrusive, particularly if the targeted participant is busy, or does not want to be disturbed at the time the invitation was received.

Accordingly, it is desirable to provide an improved teleconferencing process that invites participants in non-intrusive manner, via a single point.

SUMMARY OF INVENTION

The present invention is directed to an improved method and system for forwarding information such as data files to a recipient across disparate or incompatible communication networks, which are not constrained by incompatible user devices. The sender sends a message to an intended recipient via a messaging server. The sender is a subscriber of the messaging server, thus the sender device is compatible with the messaging server. In accordance with the present invention, the messaging server communicates with the intended recipient using basic communication tools that are generally compatible regardless of the network that the recipient is subscribed to.

In one aspect of the present invention, a sender using a sender device such as a cellular phone, personal digital assistant (PDA), portable computer, personal computer or landline phone sends a message or information to a messaging server. The information may include a data file. Examples of a data file include a voice message, text document, a musical file, a picture file, an executable file and a multimedia file. The messaging server stores the information, creates and sends a notification message to the intended recipient that she has information to be retrieved. The notification message may be in the form of a SMS text message, voice call, or other means of notification that are network independent, or compatible over disparate networks.

The notification message includes a unique access address associated with the message. Different unique access addresses are associated with different messages. In one embodiment, the unique access address may contain a phone number the recipient can call to retrieve her message. The messaging server authenticates the caller to be the intended recipient based on the called number and/or the Caller ID of the caller, and presents the message that had been associated with the unique access address. In another embodiment, the notification message may contain a link to a specific location such as a website where a data file such as a picture file or text document can be downloaded by the recipient. A recipient may use message retrieval devices that may be different from the user device that received the

notification message, particularly where the user device may not be compatible with or enabled to retrieve the type of message at the specified location.

The present invention is particularly suitable for use in cellular communication systems.

In another aspect of the present invention, it is also directed to an improved method and system for establishing a teleconference or group call with a plurality of participants.

A user initiates a teleconference by communicating with a teleconference server and identifying the intended participants of the teleconference, e.g., including the addresses of the participant communication devices. Addresses may include a phone number, fax number, or email address. Communication devices may include a cellular phone, landline phone, PDA or a computer. The teleconference server sends a teleconference notification message to each participant, which may be in the form of a voice message, text message and/or an email, depending on the targeted participant device. The notification message may include a unique access address to which the participants may call to join the teleconference immediately, or at a prescribed deferred time.

The initiating party is a subscriber of the teleconference server, thus the initiating device is compatible with the teleconference server. In accordance with the present invention, the teleconference server communicates with the intended participants using basic communication tools that are generally compatible regardless of the network that the recipient is subscribed to.

In one aspect of the present invention, a teleconference/group call initiator using an initiator device such as a cellular phone, personal digital assistant (PDA), portable computer, personal computer or landline phone instructs the teleconference server to initiate the teleconference call. The instruction may include the identification and contact information concerning the group call participants. The teleconference server stores the information, creates and sends a notification message to the intended participant that she is invited to a teleconference. The notification message may be in the form of a SMS text message, voice call, or other means of notification that are network independent, or compatible over disparate networks.

The notification message includes a unique access address associated with the group call. Different unique access addresses are associated with different group calls. In one embodiment, the unique access address may contain a phone number the participant can call to join the group call. The teleconference server authenticates the caller to be the intended participant based on the called number and/or the Caller ID of the caller, and permits the caller to join the group call that had been associated with the unique access address. In another

embodiment, the notification message may contain a link to a specific location such as a website where a conference call may be conducted based on Voice over IP (VoIP). A participant may use devices (e.g., a phone) to join into the conference call, which may be different from the device (e.g., a pager) that received the notification message, particularly where the notification-receiving device may not be compatible with telephony.

The present invention is particularly suitable for use in cellular communication systems.

In one embodiment, the notification message may be in the form of a prompt, which asks a participant if he would like to join the teleconference. If the participant affirms he wishes to join the teleconference, he is automatically connected to the teleconference. An affirmation can include saying "yes" into his phone, or pressing a specified button on his phone that corresponds to the prompt.

In another embodiment, the teleconference server implements presence management to determine if a participant is present at a particular participant device at the time of initiating the teleconference. If a participant is not present, a teleconference notification message will not be sent to that particular participant device. This embodiment is also useful when establishing a teleconference that is to be conducted the time of initiation.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic representation of a messaging network through which a sender transmits a data file from a sender device to a recipient device according to one embodiment of the present invention.

FIG. 2 is a schematic representation of a messaging network through which a sender transmits a data file from a sender cellular phone to a recipient cellular phone according to one embodiment of the present invention.

FIG. 3 is a schematic representation of one embodiment of a communications network through which the messaging method and system of the present invention may be implemented.

FIG. 4 is a schematic representation of one embodiment of a computer system that facilitates the messaging method, and system of the present invention.

FIG. 5 is a schematic representation of a messaging server and a voice recognition device according to one embodiment of the present invention.

FIG. 6 is a schematic representation of a messaging server that associates a data file with an address of a recipient device according to one embodiment of the present invention.

FIG. 7 is a flowchart illustrating a method for transmitting a data file from a sender device to a recipient device according to one embodiment of the present invention.

FIG. 8 is a schematic representation of a messaging server according to one embodiment of the present invention.

FIG. 9 is a schematic representation of a teleconference network through which an initiator and participants communicate according to one embodiment of the present invention.

FIG. 10 is a schematic representation of a prompt according to one embodiment of the present invention.

FIG. 11 is a schematic representation of one embodiment of a teleconference network through which an initiator and participants communicate where a participant device includes a cellular phone, landline phone and a computer, according to one embodiment of the present invention.

FIG. 12 is a schematic representation of a participant interface according to one embodiment of the present invention.

FIG. 13 is a schematic representation of a teleconference server and a voice recognition device according to one embodiment of the present invention.

FIG. 14 is a schematic representation of one embodiment of a computer network through which teleconference server of the present invention may be implemented.

FIG. 15 is a schematic representation illustrating the configuration of different teleconferences with different teleconference groups and unique access addresses.

DESCRIPTION OF THE ILLUSTRATED EMBODIMENTS

The present description is of the best presently contemplated modes of carrying out the invention. This description is made for the purpose of illustrating the general principles of the invention and should not be taken in a limiting sense. The scope of the invention is best determined by reference to the appended claims.

Data File Transfer

The present invention is directed to a method and a system for communicating data files across a single or multiple communication networks. To facilitate an understanding of the principles and features of the present invention, they are explained herein below with reference to its deployments and implementations in illustrative embodiments. By way of example and not

limitation, the present invention is described herein-below in reference to examples of communicating messages containing information or data file over cellular networks, such as voice messages and multimedia data files.

The present invention can find utility in a variety of implementations without departing from the scope and spirit of the invention, as will be apparent from an understanding of the principles that underlie the invention. It is understood that the messaging concepts of the present invention may be applied to business and personal communications, and may be implemented by commercial as well as private communication networks.

Fig. 1 is a diagram illustrating an embodiment of the present invention where a sender device 40 transmits a data file 50 to a recipient device 80, 82. FIG. 7 is a flow diagram 102 illustrating the steps in this embodiment. The sender 40 transmits (at step 104) via communications network 58 the data file 50 to a messaging server 60, along with the intended recipient's notification address (e.g., cellular phone number, landline phone number, email address, instant message ID, etc.). The network 58 may include cellular network, telephony network (e.g., landline or PSTN), data network, Internet, or other types of communications networks. The sender 40 may specify more than one recipient of the same data file. The messaging server 60 stores (at step 106) the data file 50 in a database 64 and sends (at step 108) a notification message 70, 72 to the recipient 80, 82, respectively, based on the recipient's notification address. Depending on the network the recipient is subscribed to, the recipient 80, 82 may be sent the notification message 70, 72 through the same network 58 as the sender 40, or through a different network 76, respectively. The notification message 70, 72 contains a unique access address 66, which is assigned to be associated with the data file 50. The notification message 70, 72 may also include message ID, name of data file, sender's identification, size of message, date and time of message, and other relevant information, which may be provided by the sender or the system (e.g., time and date). The notification message 70, 72 usually do not include any substantive part of the content of the message or data file, to avoid exceeding the notification messaging limitation. Although in one embodiment of the present invention, content of the message or data file is sent as an attachment to the notification to the recipient device, depending on the capabilities of the device. The recipient 80, 82 receives (at step 110) the notification message 70, 72 and using the unique access address 66 retrieves (at step 112) the data file 50. The unique access address may be an access address to contact the messaging server 60. The unique access address may include a phone number and/or web address. The network through which the notification message is sent to the

recipient may be different from the network through which the message is retrieved by the recipient.

Fig. 2 is a diagram illustrating an embodiment of the present invention where a sender device is a cellular phone 42 that transmits a voice message 52 to a recipient device 84 that is also a cellular phone. (Other embodiments, not shown, may include sending data files over the Internet network, to recipient devices such as PDAs and PCs.) The sender cellular phone 42 transmits the voice message 52 to a messaging server 60. The messaging server 60 stores the voice message 52 in a database 64 and sends a notification text message 78 to recipient cellular phone 84. The recipient cellular phone 84 may be sent the notification text message 78 through the same network 48 as the sender cellular phone, or through a different network 74 depending on the recipient's network. In one embodiment, the recipient network may be different than the network of the sender, with respect to, for example, communication protocol, operating frequency, operating platform or other operational and/or functional aspects that render the sender and recipient networks incompatible for direct messaging of the sender's data file.

The notification text message 78 contains a unique access phone number 54 that is assigned to be associated with the voice message 52. The recipient cellular phone 84 receives the notification text message 78 and calls the unique access phone number 54 to retrieve her voice message 52. In one embodiment, the access phone number may not be visible to the recipient, but rather, is associated with a menu prompt. The access phone number is dialed if the recipient responds by pressing a specified button on the menu prompt on the recipient cellular phone.

In one embodiment, the messaging server 60 identifies the unique access address used by the recipient device through a dialed number identification service (DNIS). The DNIS may be provided by the telephony network used by the recipient to retrieve her data file. The network may also provide the access phone number by transmitting DTMF tones to the messaging server 60 from a local central office. The messaging server 60 selects the data file from the mass storage device that is associated with the unique access address and then transmits such corresponding data file to the recipient.

In addition or in the alternate, the caller to the messaging server may be requested to authenticate herself as the intended recipient upon access to the messaging server 60. This is to provide additional security in case a person who is not the intended recipient was to intentionally impersonate the recipient by dialing the unique access number associate with data

file from the sender, or was to accidentally dial such unique access number. The authentication process may involve the caller having to input the intended recipient's notification address (e.g., the recipient's cell phone number) and/or personal identifying information such as one or more of name, user ID, unique personal identification number code (PIN code). The messaging server 60 authenticates the caller as the intended recipient upon matching the unique access number to the callers authenticating information (e.g., recipient's cell phone number, PIN, etc.). In another embodiment, the messaging server 60 may be configured to authenticate the caller as the intended recipient if the caller's Caller ID (or Automated Number Identification "ANI") matches the recipient notification address. In such embodiment, the recipient must be calling from the same device as the notification address. In another embodiment, the recipient may use a different device to retrieve a data file sent by the sender. For example, the data file is a relatively large multi-media file, and the recipient's cellular device notified by the messaging server 60 is not compatible to download a file of that size and/or a multimedia file. The recipient can well use a PDA or PC to contact the messaging server 60 at the assigned unique access address to download the large multimedia file.

Fig. 6 illustrates the situation in which one or more senders send different message data files to more than one intended recipients. In this embodiment, a database 64 associates a data file 94, 96, 98, 100, 101 with the addresses of 86, 88, 90, 92, 93 of different recipients, respectively. A plurality of data files 94, 96, 98, 100, 101 are associated with a plurality of recipient notification addresses 86, 88, 90, 92, 93 and each recipient notification address 86, 88, 90, 92, 93 is associated with a single unique access address (e.g., access phone numbers 67a, ..., 67n), respectively. Specifically, recipient one's data file 94, recipient two's data file 96, recipient three's data file 98, recipient four's data file 100 and recipient n's data file 101 are also associated with recipient one's notification address 86, recipient two's notification address 88, recipient three's notification address 90, recipient four's notification address 92, and recipient n's notification address 93, respectively. In addition, recipient one's data file 94, recipient two's data file 96, recipient three's data file 98, recipient four's data file 100 and recipient n's data file 101 are also associated with recipient one's unique access address 67a, recipient two's unique access address 67b, recipient three's unique access address 67c, recipient four's unique access address 67d, and recipient n's unique access address 67n, respectively.

When a recipient retrieves her data file (one of 94, 96, 98, 100, 101) using one of the unique access addresses 67a to 67n, the recipient notification address 86, 88, 90, 92, 93 and the unique access address dialed are identified by the messaging server 60, and the messaging

server 60 offers the corresponding recipient data file 94, 96, 98, 100, 101, respectively, to the recipient. In this embodiment, it is contemplated that the recipient device receiving the notification message is the same device that retrieves the data file, so the recipient's device address can be automatically determined by Caller ID or ANI. If the recipient uses a different device to retrieve the data file, the messaging server 60 may require additional authentication procedure as describe above.

In the event the sender wishes to send the same data file to more than one recipients (e.g., sending the data file to a distribution list of recipients), the messaging system 60 can be configured to send the same notification message with the same unique access address associated with the same data file to the multiple recipients. In this case, to send the same data file to n recipients, the unique addresses 67a-67n would be the same, and the recipient data files 94, 96, 98, 100 and 101 would be the same. Only one copy of the data file is required to be maintained by the messaging server 60, which may be accessed by multiple recipients. Alternatively, each recipient may be assigned a unique access address even for the same data file.

The messaging server may resend the notification message if the data file is not retrieved within a predetermined period of time. In one embodiment, a notification message is not sent while the sender is accessing the messaging server, but rather, is queued for later delivery, depending on a number of factors, such as (a) available bandwidth; (b) priority of the message designated by the sender; (c) whether the recipient address involves a long distance call; (d) whether recipient is in the same network as the sender; and any other relevant factors. In another embodiment, the notification message is sent immediately once the recipient's contact information is known, and the message completed.

The notification message may comprise in addition to, or alternatively to, a text message, a voice message and/or an electronic mail. A voice notification message is typically used where the recipient is to be notified through a landline phone that cannot receive a text message. The messaging server 60 dials the recipient's landline phone through a PSTN and transmits an audible voice notification message that provides an access phone number with which the recipient can dial to hear her voice message. In addition, the messaging server 60 may auto-connect the recipient to the access phone number, as explained elsewhere herein. The recipient device 40 may comprise a cellular phone, a PDA and/or portable computer, a landline phone and a personal computer. The unique access address may comprise a phone number and/or a website address. In one embodiment, the notification message provides a website

address where the data file can be downloaded, and in one embodiment, the website address may appear in a text notification message and/or a voice notification message.

In another embodiment, if the sender wishes to provide redundancy, and if the intended recipient has more than one device to which notification messages may be sent, the sender may elect to have the messaging server 60 send a notification message to more than one recipient device. After the recipient retrieved the message associated with the notification message, a cancellation message is sent by the messaging server 60 to all the recipient devices that earlier received message notification, to avoid the recipient the inconvenience of attempting to retrieve a message that has already been retrieved.

Referring to Fig. 8, the messaging server 60 may comprise a data file receiver 202 for receiving the data file from the sender device, a notification message transmitter 204 for transmitting the notification message to the recipient, and a data file transmitter 206 for transmitting the data file to the recipient upon the recipient access of the messaging server 60. Example of a notification message transmitter 204 include a module or an interface to short message service center (SMSC) gateway server or short message peer to peer (SMPP) gateway server, interfaces to email servers using standard protocols such as POP3/IMAP4, SMTP as well as proprietary protocols such as MAPI/CDO, and interfaces to voice mail systems or direct dialing over PSTN or IP network. An example of a data file receiver includes a module that accommodates sending data file from the sender device to the messaging server over circuit-switched or packet switched network, over protocols such as HTTP, SMS, MMS, etc. An example of a data file transmitter includes a module that accommodates sending data file from the message server to the recipient device over circuit-switched or packet-switched network over protocols such as HTTP, SMS, MMS, etc. The messaging server 60 is illustrated as being in communication with a network, but may also be integrated with a network, for example the cellular network of the sender.

Referring to Fig. 5, in an embodiment, the messaging server 60 is configured with a voice-recognition unit 68 implementing voice-recognition processing. An example of voice-recognition processing includes a suite of Voice Manager Products developed by HeyAnita Inc. of Burbank, CA and is herein incorporated by reference. Reference is also made to U.S. Patent Publication No. US 20030078779A1, assigned to the assignee of the present invention, which discloses an interactive voice response system, and is fully incorporated by reference herein. Another example of voice-recognition programming is disclosed in U.S. Patent No. 6,501,966 to Bareis et. al. and is herein incorporated by reference as well. In this embodiment, the sender

may pre-program contact information including a recipient's name and phone number, and associate the phone number with a recipient's name. When sending a message, the sender may speak the name of the recipient and the messaging server 60 will identify the recipient's contact information using the voice-recognition unit 68. If the recipient's phone number has not been pre-programmed, the sender may speak the recipient's phone number, and the messaging server will identify the recipient's phone number using the voice-recognition unit 68. Examples of commands that may be implemented by DTMF recognition and/or voice-recognition include, but are not limited to, dialing, web browsing, calling, bringing up a contact list, adding a contact, removing a contact, stopping a call, entering additional recipient phone numbers, etc.

The sender may indicate the recipient or recipients of the data file using the sender device. In one embodiment, the sender inputs the recipient device address into a sender device, such as a cellular or landline phone. The messaging server detects the recipient device address using dual tone multi frequency DTMF recognition, voice recognition, and/or over IP-based network. DTMF and voice recognition may also be used to navigate a menu to interact with the messaging server and to select a recipient device address that has been pre-programmed into the messaging server.

Further, the sender may have access to an address book stored on the messaging server 60 or on a sender device. In one embodiment, a global address book lists the names and contact information of all subscribers to the messaging server. The contact information can include, but is not limited to, phone numbers and electronic mail addresses. A sender may also choose to create his own personal address book which lists only the contact information of people the sender has placed in the address book. Often a sender may send a data file to a new recipient who is not listed in an address book. When the sender sends the new recipient a data file the messaging server detects whether the contact information of the new recipient is contained within an address book. If the new recipient's contact information is not present in an address book, the messaging server prompts the sender to add the new recipient's contact information.

A sender may also group recipients into a distribution list where the sender need only select the distribution list as the recipient to send a data file to each member of the distribution list. Each member of the list may have different types of recipient devices. Also, a distribution list may be created that sends a data file to multiple devices of a single recipient.

In another embodiment the present invention, the messaging server 60 communicates with the sender device, and downloads the contact information of recipients stored in the sender

device. The contact information is then placed within an address book. For example, a cellular phone may have a memory card (such as a SIM card) that functions as a memory device for storing contact information. The SIM card allows the user of the cellular phone to add and delete contact information. The messaging server may download the contact information contained in the SIM card. In this embodiment of the invention, a user of the cellular phone may make changes to the contact information on the SIM card, and these changes would be reflected on the address book contained at the messaging server and vice versa. To keep the contact information of the sender updated, the messaging server may periodically query the cellular phone or the cellular phone may transmit changes in its SIM card to the messaging server each time changes are made to the stored contact information.

Referring again to FIG. 1, the sender device 40 may comprise in addition to a cellular phone, a PDA and/or portable computer, a fixed device such as a landline phone and a personal computer. Each sender device 40 may transmit different types of data files 50 over different types of networks, collectively represented by network 58. A data file 50 can include, but is not limited to, analog and digital voice messages, text files, image files, executable files, music files, audio files, video files, multimedia files, and voice over Internet protocol (VOIP) transmissions. Different types of networks (58, 76) include cellular networks, wide area networks such as the Internet, local area networks, telephony networks and PSTN's. Examples of different sender devices using different networks include a portable computer transmitting a voice message over a cellular network to the messaging server 60. The personal computer may transmit a text message and/or a voice message over a data network such as the Internet. The personal computer may use a voice over Internet protocol (VOIP) to transmit the voice message. The landline phone may transmit a voice message to the messaging server through a PSTN.

Similarly, the recipient's device 82 may comprise in addition to a cellular phone, similar devices as the sender device 40 noted above.

In one embodiment, the sender device may be enabled to capture audio, video and/or multimedia files, and transmitting them over IP or PSTN network to the message server. This transmission can occur using store-and-forward or streaming. This can occur over variety of protocols such as SMS, HTTP, MMS etc. Similarly, the files may be sent to the recipient device from the message server over IP or PSTN network. This transmission can occur using store-and-forward or streaming. This can occur over variety of protocols such as SMS, HTTP, MMS etc.

In one embodiment, a data file such as a voice message may be created by converting a text message to a voice message. A text message is provided to the messaging server 60 via the sender device 40 and the text message is converted to a voice message using a text-to-speech conversion process known in the art. With text-to-speech conversion, the text message is converted to audible sounds, allowing the recipient to hear the text message as a voice message. The text message may be converted to a voice message by the sender device 40 or may be converted by the messaging server 60. In one exemplary embodiment, a sender using a cellular phone wishes to send a text message to a recipient, but the recipient only has access to a landline phone that is not able to receive the text message. The sender sends a text message to the messaging server 60. The text message is converted to a voice message using a text-to-speech conversion process, so that the recipient can retrieve the voice message converted from the text message using the landline phone.

In another embodiment, a sender may send a data file in the form of a text message to a recipient using the messaging server 60. However, the sender wishes to dictate the text message. A speech-to-text processing may be used to convert the sender's speech into a text message. The speech-to-text processing may be enabled at the sender device or may be performed by the messaging server.

Referring to Fig. 3, in one embodiment, the messaging server 60 comprises many servers 10 that are inter-connected via a communication network 14, such as a landline telephone network or an IP network, with each server 10 having the full functionality of a messaging server as described above, however each serving a different geographical region, for example. Details of various hardware and software components comprising the communication network 14 are not shown (such as servers, routers, gateways, etc.) as they are well known in the art. Further, it is understood that access to the communication network 14 by the servers 10 may be via suitable transmission medium, such as coaxial cable, telephone wire, wireless RF links, or the like. Communication between the servers 10 takes place by means of an established protocol. Depending on the recipient's device location, the messaging server 60 may provide a unique access address in the message notification to the recipient, which is directed to retrieve the sender's message from a server 10 located in the same region as the recipient's device. For example, a sender can forward a voice message to a recipient in another country. The message server 60 would determine the country based on the recipient address specified by the sender, and route the sender's voice message to a server 10 that serves that country. Upon notification, the recipient could simply retrieve the sender's voice message from

the server 10 that is located in his local region, instead of making a long distant call to a messaging server located in another country or region. In one embodiment, if the connectivity is IP-based, the message is retained on the originating server and is retrieved over IP by the destination server at runtime. This ensures that only one copy of the message is maintained on a server when the same message is sent to multiple recipients. The sender's voice message may be routed to the local server in another country via an IP network, telephony network, a broadband network, etc. The notification message to the recipient may be sent via a different network, such as a cellular network.

Teleconference Sever

The present invention is directed to a method and system for establishing a teleconference. To facilitate an understanding of the principles and features of the present invention, they are explained herein below with reference to its deployments and implementations in illustrative embodiments. By way of example and not limitation, the present invention is described herein-below in reference to examples of communication over a single or multiple networks and, more particularly, a method and system is disclosed for initiating a conference call via a cellular network.

The present invention can find utility in a variety of implementations without departing from the scope and spirit of the invention, as will be apparent from an understanding of the principles that underlie the invention. In particular, the present invention provides a system and process that works seamlessly across different incompatible telephony networks. Some of the telephone services are carrier, provider, network or platform dependent (collectively referred hereinafter as network dependent, as opposed to network independent), and some are user device dependent. Network dependent refers to telephony services that would work in one network (e.g., carrier, provider, platform or physical network) but not another, because of differences in operating parameters, specification, limitations, and other characteristics among the different carriers, providers, platforms or physical networks. Such differences may include incompatibilities arising from underlying technologies, communication frequencies, communication platform which may be viewed as the underlying hardware and software that handles communication over a network, communication protocol which may be viewed as the way data is exchanged among user devices, or simply the physical or operational restrictions network providers and carriers imposed to distinguish their services.

It is understood that the teleconferencing concepts of the present invention may be applied to business and personal communications, and may be implemented by commercial as well as private communication networks.

The teleconferencing aspect of the present invention shares some basic architecture and functionality as the system and method disclosed above in connection with data file transfer. For the present invention, the teleconference server essentially parallels many of the functions of the messaging server in the copending application. Generally, an initiator of a teleconference sends a request or instructions to the teleconference server (e.g., participant identification). The teleconference server communicates with the intended participants using basic communication tools that are generally compatible regardless of the network that the participants is subscribed to. The teleconference server stores the information, creates and sends a teleconference notification message to the intended participant that she has been invited to a teleconference. The notification message includes a unique access address associated with the teleconference, at which the participants can access to join the teleconference at the prescribed time. Different unique access addresses are associated with different teleconferences. Accordingly, instead of handling the transfer of data files from a sender to a recipient using a messaging server, the teleconferencing aspect of the present invention uses a teleconference server to handle the establishment of a teleconference, using a similar notification messaging function to facilitate the intended participants'/recipients' access to participate in the teleconference. Further similarities and distinctions are disclosed below.

Fig. 9 is a diagram illustrating an embodiment of the present invention where an initiator 50 communicates with a teleconference server 952 over a network 954 to establish a teleconference with multiple participants 956, 958, 960, 962. The network 954 may include cellular network, telephony network (e.g., landline or PSTN), data network, Internet, or other types of communications networks. The initiator 950 identifies to the teleconference server 952 which participants 956, 958, 960, 962 he wishes to invite as part of the teleconference, along with the intended participant's notification address (e.g., cellular phone number, landline phone number, email address, etc.) The initiator 950 may identify a participant by using the name to retrieve the corresponding address of the participant stored in a database at the teleconference server 952. A teleconference notification message, for example, a prompt 9156, 9158, 9160, 9162 is transmitted to each participant 956, 958, 960, 962 by the teleconference server 952 over a network 970 whereby each participant 956, 958, 960, 962 may join the teleconference by accepting the prompt 9156, 9158, 9160, 9162. Depending on the networks the participants are

subscribed to, the participants may be sent the notification message through the same network 954 as the initiator 950, or through a different network 970 (which may comprise different types of communications networks; see also Fig. 11), respectively. The notification message contains a unique access address, which is assigned to be associated with the specific teleconference. The notification message may also include teleconference ID, initiator's identification, date and time of teleconference, expected duration of the teleconference, other participants, agenda, and other relevant information, which information may be provided by the initiator, or by the system (e.g., time and date). The participants read the notification message and using the unique access address assigned to access to join into the teleconference at the prescribed time. The unique access address may be an access address to contact the teleconference server 60. The unique access address may include a phone number and/or web address for VoIP telephony. The network through which the notification message is sent to a participant may be different from the network through which the participant accesses the teleconference.

In one embodiment, the communication channel between the initiator and the teleconference server is terminated after the initiator identifies the participants. Once a participant accepts a prompt, a teleconference channel is established between the participant and the teleconference server. The teleconference server then communicates with an initiator device and the initiator device is joined on the teleconference channel with the participant. In another aspect of this embodiment, the communication channel between the initiator and the teleconference server remains active after the initiator identifies the participants. This communication channel becomes the teleconference channel, and participants who join the teleconference join the teleconference channel upon acceptance of the prompt.

Fig. 11 is a diagram illustrating an embodiment of the present invention where initiator device is a cellular phone 9100 that transmits instructions to the teleconference server 952 to notify the participant devices, including participant cellular device 9182. The teleconference server 952 sends a notification text message 982 to participant cellular phone 9182. The participant cellular phone 9182 may be sent the notification text message 982 through the same network 9102 as the initiator cellular phone, or through a different network 9104 depending on the participant's network. In one embodiment, the participant network may be different than the network of the initiator, with respect to, for example, communication protocol, operating frequency, operating platform or other operational and/or functional aspects that render the initiator and participant networks incompatible for direct messaging of the initiator's teleconference notification.

The notification text message 982 contains a unique access phone number that is assigned to be associated with the teleconference. The participant cellular phone 9182 receives the notification text message 982 and calls the unique access phone number to participate in the scheduled teleconference. In one embodiment, the access phone number may not be visible to the participant, but rather, is associated with a menu prompt. The access phone number is dialed if the participant responds by pressing a specified button on the menu prompt on the participant cellular phone, as further explained below.

Referring to FIG. 10, in one embodiment, a prompt 9156 contains an address 972 to a communication channel used by the teleconference. The prompt also contains an executable command 974 that queues a participant's device to communicatively connect with the teleconference channel. The prompt 9156 may also contain a message 976 that contains a teleconference description including information such as the identity of the teleconference participants and the topic of the teleconference. The prompt 9156 may be communicated in different formats including a text message, an audible message, instant message and electronic mail. An example of an instant message system is America Online Instant Messenger. The participants may use a plurality of devices to engage in the teleconference. Devices may include a cellular phone, a personal digital assistant (PDA), a landline phone and a personal computer. Each participant device may receive a prompt in a different format, depending on the capability of the device.

In addition or in the alternate, participants may communicate commands to the teleconference server using, but not limited to, voice commands, dual tone multi frequency (DTMF) inputs via a phone handset, such as a cellular phone or landline phone, or via a web based interface, using input devices such as a keyboard and mouse.

Referring again to FIG. 11, in one embodiment, a prompt is sent to communication devices of each invited participants to the teleconference. In one aspect of this embodiment, the prompt is a text message 982 transmitted to a cellular phone 9182 over a cellular network 9104. The text message contains an executable queue, that if accepted, instructs the cellular phone to dial the address of the teleconference, whereby the cellular phone joins the communication channel of the teleconference. In this embodiment, the initiator device is a cellular phone 100 that communicates with the teleconference server 952 over a cellular network 9102. FIG. 12 illustrates a display screen 991 on cellular phone 9182 that has a message 990 that asks the participant if she would like to join a teleconference. The participant can select yes 992 to join the teleconference, or no 994, to abstain from the teleconference. The menu also allows a

participant to view a list of the invited participants 996. The exact format of this display will vary depending on the device capabilities.

Still referring to FIG. 11, in another aspect of this embodiment, the prompt sent to a participant is a voice message 984. A voice message 984 is typically used where the participant cannot receive a text message, for example, a landline phone 9184, but may also be an alternate means of notification even if the participant can receive a text message. The teleconference server 952 dials a participant's landline phone 9184 through a public-switched telephone network (PSTN) 9106, establishes a voice communication channel with the landline phone 9184, and transmits an audible voice notification message 984 that the participant has been invited to join a teleconference. A voice menu is offered to the participant, whereby she can use voice commands (discussed infra) or DTMF responses to interact with the menu. To join the teleconference, the participant responds affirmatively to a voice prompt which asks whether the participant wishes to join the teleconference. When the participant affirms she wishes to join the teleconference, her affirmation activates a queue stored on the teleconference server to bridge the voice communication channel between the landline phone and the teleconference server, with the teleconference communication channel.

In yet another embodiment, the prompt is an electronic mail or instant message 986 that is sent over a data network 9108 such as the Internet to a participant's computer 9186. The electronic mail or instant message 986 contains an executable command that the participant can use to join the teleconference. The executable command contains an address that may be a web address through which the participant can join teleconference using a VoIP connection. Alternatively, the address may be a phone number that the participant can call to connect through a PSTN or cellular network.

In one embodiment, the teleconference server 952 identifies the unique access address used by the participant device through a dialed number identification service (DNIS). The DNIS may be provided by the telephony network used by the participant to join in the teleconference. The network may provide the access phone number by transmitting DTMF tones to the teleconference server 952 from a local central office. The teleconference server 952 connects the caller to the conference call that is associated with the unique access address.

In addition or in the alternate, the caller to the teleconference server 952 may be requested to authenticate herself as the intended participant upon access to the teleconference server 952. This is to provide additional security in case a person who is not the intended participant was to intentionally impersonate the participant by dialing the unique access number

associate with the teleconference all initiated by the initiator 950, or was to accidentally dial such unique access number. The authentication process may involve the caller having to input the intended participant's notification address (e.g., the participant's cell phone number) and/or personal information such as a unique personal identification number (PIN) code. The teleconference server 952 authenticates the caller as the intended participant upon matching the unique access number to the callers authenticating information (e.g., participant's cell phone number, PIN, etc.). In another embodiment, the teleconference server 952 may be configured to authenticate the caller as the intended participant if the caller's Caller ID (or Automated Number Identification "ANI") matches the participant's notification address. In such embodiment, the participant must be calling from the same device as the notification address. In another embodiment, the participant may use a different device to participate in the conference call. For example, the notification address is the email address or the pager number of the participant, and the participant wishes to use participant's cellular device to participate in the conference call, where the pager or the user device that retrieved the email notification are not compatible with telephony.

Fig. 15 illustrates the situation in which one or more initiators initiate different teleconferences to more than one group of intended participants. In this embodiment, the teleconference server 952 associates each of teleconferences 989a to 989n with a unique access address (e.g., access phone numbers 67a to 67n), respectively. The plurality of participant groups 965a to 965n are each associated with the respective conference groups 989a to 89n and each participant group is associated with a single unique access address (967a, ..., 967n), respectively. The participant groups 967a to 967n are each defined by a plurality of teleconference notification addresses corresponding to the participants in the group.

When a participant in a group accesses using the corresponding assigned unique access address 967a to 967n to join the teleconference, the unique access address dialed and/or the participant's notification address are identified by the teleconference server 952 to determine the corresponding teleconference 989a to 989n, and the teleconference server 952 directs the participant to the corresponding teleconference 989a to 989n. In this embodiment, it is contemplated that the participant device receiving the notification message is the same device that is used to participate in the teleconference, so the participant's device address can be automatically determined by Caller ID or ANI. If the participant uses a different device to participate in the teleconference, the teleconference server 952 may require additional authentication procedure as describe above.

The teleconference server 952 can be configured to send the same notification message with the same unique access address associated with the same teleconference to the multiple participants as in the embodiment above, or assign a different unique access address for different participants of the same teleconference.

The notification message may comprise in addition to, or alternatively to, a text message, a voice message and/or an electronic mail. A voice notification message is typically used where the participant is to be notified through a landline phone that cannot receive a text message. The teleconference server 952 dials the participant's landline phone through a PSTN and transmits an audible voice notification message that provides an access phone number with which the recipient can dial to join the teleconference. The teleconference server may also offer the recipient to be auto-connected to the conference. The participant receiving device may comprise a cellular phone, a PDA and/or portable computer, a landline phone and a personal computer. The unique access address may comprise a phone number and/or a website address for VoIP teleconferencing. In one embodiment, the website address may appear in a text notification message and/or a voice notification message.

In another embodiment, if the teleconference initiator wishes to provide redundancy, and if an intended participant has more than one device to which notification messages may be sent, the initiator may elect to have the teleconference server 952 send a notification message to more than one participant device. After the participant joined into the teleconference associated with the notification message and/or once the teleconference has concluded, a cancellation message is sent by the teleconference server 952 to all the participant devices that earlier received teleconference notifications, to avoid the participant the inconvenience of attempting to access a teleconference that has already concluded.

Referring to FIG. 13, in an embodiment, the teleconference server 952 is configured with a voice-recognition unit 969 implementing voice-recognition processing. An example of voice-recognition processing includes a suite of Voice Manager Products produced by HeyAnita, Inc. of Burbank, CA and is herein incorporated by reference. Another example of voice-recognition programming is disclosed in U.S. Patent No. 6,501,966 to Bareis et al. and is herein incorporated by reference as well. Other examples of voice-recognition applications include Voice extensible markup language (VXML) compliant products. In this embodiment, the initiator may pre-program contact information including a participant's name and device address, and associate the device address with a participant's name. When initiating the teleconference, the initiator may speak the name of a participant and the teleconference server 952 will identify the

participant's contact information using the voice-recognition unit 969. If the participant's device address has not been pre-programmed, the initiator may speak the participant's address, and the teleconference server 952 will identify the participant's device address using the voice-recognition unit 69. Examples of commands that may be implemented by DTMF recognition and/or voice-recognition include, but are not limited to, dialing, web browsing, calling, bringing up a contact list, adding a contact, removing a contact, stopping a call, entering additional participant addresses, putting one or more participants on hold during a teleconference, adding or removing participants during a teleconference.

In one embodiment, the teleconference server 952 implements presence management to analyze whether an invited participant is present with a participant communication device. Depending on the nature of the participant's presence, a participant device may be excluded from receiving a prompt. In one embodiment, presence management may determine if the participant is present at the participant device, and if the participant is not present, the participant device is excluded from being sent a prompt. For example, if the participant device is a computer, and presence management detects that the participant computer is not on, or the participant has not touched her keyboard for a period of time, then the participant is determined to not be present, and the computer will be excluded as a participant device. In another embodiment, the nature of the presence of the participant may be evaluated. For example, if the participant device is a cellular phone, and presence management detects that the cellular phone is moving, then it will be determined that the participant is present with the cellular phone as she is the one causing the cellular phone to move. However, the cellular phone may be excluded as a participant device, if for example, the participant prefers that she not be contacted by cellular phone while she is traveling. Example of presence management products include the Oz Instant Messaging and Presence Services Server, and the Oz Instant Messaging and Presence Services J2ME Client produced by OZ Communications, Inc of Montreal, Canada, presence solution products including Odigo Express and Odigo Messenger produced by Odigo Inc. and dynamicsoft Presence Engine produced by dynamicsoft Inc.of Parsippany, NJ and each of these products is herein incorporated by reference.

The teleconference server may be a remote server that communicates with, or is integral with, a PSTN central office or a cellular network mobile switching center (MSC). The teleconference server may have a short message service centers (SMSC) gateway server and/or a short message peer to peer (SMPP) gateway server.

Referring to Fig. 14, in one embodiment, the teleconference server 952 comprises several servers 910 that are inter-connected via a communication network 914, such as a landline telephone network or an IP network, with each server 910 having the full functionality of a teleconference server as described above, however each serving a different geographical region, for example. Details of various hardware and software components comprising the communication network 914 are not shown (such as servers, routers, gateways, etc.) as they are well known in the art. Further, it is understood that access to the communication network 914 by the servers 910 may be via suitable transmission medium, such as coaxial cable, telephone wire, wireless RF links, or the like. Communication between the servers 910 takes place by means of an established protocol. Depending on the participant's device location, the teleconference server 952 may provide a unique access address in the teleconference notification to the recipient/participant, which is directed to participate in the conference call by accessing a server 910 located in the same region as the participant's device. For example, an initiator can initiate a conference call with notification of a participant in another country. The teleconference server 952 would determine the country based on the participant address specified by the initiator, and route the teleconference notification message to a local server 910 that serves that country to be sent to the participant, and/or the access point to the conference call to the local server 910. Upon notification, the participant could simply join the conference call at the prescribed time via that server 910 that is located in his local region, instead of making a long distant call to a server located in another country or region. The notification message may be routed to the local server in another country via an IP network, telephony network including a cellular, a broadband network, etc.

In an alternate embodiment, an initiator may establish a teleconference using a web interface such as a web browser. Using the web interface the initiator may select participants for the teleconference. The selected participants are communicated to the teleconference server, which then sends a prompt or notification to the intended participants to join the teleconference. The teleconference may be monitored by a participant using the web interface including the status of which participant has joined the conference call.

Similar to the sender for the data file transfer aspect of the present invention described above, the initiator has access to an address book stored on the teleconference server 952 or on an initiator device. Similar disclosure is applicable here for using the address book to establish teleconference. An initiator may also group participants into a distribution list where

the initiator need only select the distribution list as the participant to send a prompt to each member of the distribution list. Each member of the list may have different types of participant devices. Also, a distribution list may be created that sends a prompt to multiple devices of a single participant.

* * *

Turning now to Fig. 4, there is schematically illustrated one embodiment of a computer system 20 which may be configured as the messaging server 60 and/or teleconference server 952 for receiving, storing and/or transmitting messages. The computer system 20 communicates with the communication network 14, which may include IP networks, cellular networks and PSTN's. The computer system 20 includes a processor 22, internal random-access memory ("RAM") 23 and read-only memory ("ROM") 25, and data bus architecture 26 for coupling the processor 22 to various internal and external components. The computer system 20 further includes a communication device 36 which, in turn, is coupled to a communication channel 38 for effecting communication with the network 14. A mass storage device 34, such as a hard disk drive or floppy disk drive or CD-ROM drive, is coupled to the processor 22 for storing utility and application software (including a suitable web browser for navigating the Internet network) and other data. The application software is executed or performed by the processor 22.

Input devices controlled by the user are also coupled to the processor 22, including a cursor positioning device 30 and a keyboard 32 in accordance with the present invention. The cursor positioning device 30 is representative of any number of input devices that produce signals corresponding to a cursor location on a display 24, and may include by way of example, a mouse, a trackball, an electronic pen, or a touch-pad, which may be an integral part of the keyboard 32. The display 24 is coupled to the processor 22 through a video controller 28. The video controller 28 coordinates the presentation of information on the display 24 in one or more windows.

The messaging server 60 and the teleconference server 952 herein described may be coupled to, without limitation, distributed information exchange networks, such as PSTN, cellular network, public and private computer networks (e.g., Internet, Intranet, WAN, LAN, etc.), value-added networks, communications networks (e.g., wired or wireless networks), broadcast networks, and a homogeneous or heterogeneous combination of such networks. The notification message to the recipient may be sent via one or a combination of such networks.

The recipient may retrieve the data file via one or a combination of such networks. As will be appreciated by those skilled in the art, the networks may include both hardware and software and can be viewed as either, or both, according to which description is most helpful for a particular purpose. For example, the messaging server 60 and the teleconference server 952 can be described as a set of hardware nodes that can be interconnected by a communications facility, or alternatively, as the communications facility, or alternatively, as the communications facility itself with or without the nodes. It will be further appreciated that the line between hardware and software is not always sharp, it being understood by those skilled in the art that such mediums and communications facility involve both software and hardware aspects.

Cross-reference is made to copending U.S. patent application ser. no. _____ (attorney docket no. 1004/213), entitled "A Method And System For Selecting A Communication Channel With A Recipient Device Over a Communication Network", which is concurrently filed on May 24, 2004, and commonly assigned to the assignee of the present invention. This copending applications is incorporated by reference herein as if fully set forth herein. The notification aspect of the present invention may be one of the available options for selection to be the best available mode or channel of communicating with a recipient.

* * *

A method or process is here, and generally, conceived to be a self-consistent sequence of steps leading to a desired result. These steps require physical manipulations of physical quantities. Usually, though not necessarily, these quantities take the form of electrical or magnetic signals capable of being stored, transferred, combined, compared, and otherwise manipulated. It proves convenient at times, principally for reasons of common usage, to refer to these signals as bits, values, elements, symbols, characters, terms, numbers, or the like. It should be borne in mind, however, that all of these and similar terms are to be associated with the appropriate physical quantities and are merely convenient labels applied to these quantities.

Useful devices for performing the operations of the present invention include, but are not limited to, general or specific purpose communication, digital processing and/or computing devices, which devices may be standalone devices or part of a larger system. For example, the messaging server 60 and/or the teleconference server 952 each may be implemented as a unitary physical device, or a combination of several separate discrete physical devices operationally coupled together to form a functional messaging server, each with one or more dedicated functions. The devices may be selectively activated or reconfigured by a program,

routine and/or a sequence of instructions and/or logic stored in the devices. In short, use of the methods described and suggested herein is not limited to a particular processing configuration.

It is appreciated that detailed discussion of the actual implementation of the messaging server 60 and/or teleconference sever 952, and other functional components disclosed herein is not necessary for an enabling understanding of the invention. The actual implementation is well within the routine skill of a programmer and system engineer, given the disclosure herein of the system attributes, functionality and inter-relationship of the various functional modules in the system. A person skilled in the art, applying ordinary skill can practice the present invention without undue experimentation.

Accordingly, it is to be understood that the invention is not to be limited by the specific illustrated embodiments, but only by the scope of the appended claims.

CLAIMS

1. A method for transmitting a data file from a sender to a recipient comprising the steps of:

sender sending said data file to a messaging server;

said messaging server associating said data file with a unique access address;

said messaging server associating said unique access address with a notification message;

said messaging server sending said notification message to said recipient;

said recipient accessing said unique access address to retrieve said data file;

said messaging server identifying the unique access address used by the recipient; and

said messaging server sending said data file corresponding to the unique access address to said recipient.

2. The method of Claim 1 wherein said unique access address comprises at least one of a phone number and a web address.

3. The method of Claim 1 wherein said notification message is sent within at least one of a text message, a voice message and an electronic mail.

4. The method of Claim 1 wherein said data file comprises at least one of a text message, a voice message, an audio file, a video file, a text file, an image file, an executable file, and a multimedia file.

5. The method of Claim 1 wherein said step of said sender sending said data file comprises the steps of:

speaking a voice message into a sender device; and

converting said voice message to text using speech-to-text processing.

6. The method of Claim 1 wherein said step of said sender sending said data file comprises the steps of:

inputting a text message into a sender device; and

converting said text message to a voice message using text-to-speech processing.

7. The method of Claim 1 wherein the sender sends said data file over a communication network subscribed by the sender, and the messaging server sends the notification message to the recipient over a different network subscribed by the recipient.

8. The method of Claim 1 wherein more than one data file is sent, and wherein a different unique access address is associated with a different data file.

9. The method of Claim 1 wherein said step of said messaging server identifying the unique access address comprises the steps of:

messaging server determining a dialed access phone number with a dialed number identification service (DNIS); and

messaging server determining a data file associated with said dialed access phone number.

10. The method of Claim 9 wherein said step of said recipient accessing said unique access address to retrieve said data file further comprises the step of authenticating the recipient.

11. The method of Claim 10 further comprising the step of the sender designating a recipient device address to which the notification message is to be sent to the recipient, and the step of authenticating the recipient includes the step of determining the recipient device address.

12. The method of Claim 1 wherein the data file is transmitted over a cellular network, wherein the sender has a sender cellular device and the recipient has a recipient cellular device, and wherein the sender sends the data file using the sender cellular device, and the recipient access the unique access address to retrieve the data file using the recipient cellular device.

13. The method of Claim 12, wherein the notification message is sent via text messaging to the recipient cellular device.

14. The method of Claim 13, wherein the sender cellular device communicates with a first cellular network to which the sender subscribes, and the recipient cellular device communicates with a second cellular network to which the recipient subscribes.

15. A messaging server for transmitting a data file from a sender device to a recipient device comprising:

a data receiver receiving said data file from said sender device;

a notification message transmitter associating said data file with a unique access address and associating said unique access address with a notification message, and sending said notification message to said recipient device; and

a data file transmitter providing access to the recipient using said unique access address, and sending said data file from said messaging server to said recipient device.

16. A network system for transmitting a data file from a sender device to a recipient device comprising:

one or more nodes to provide access for said sender device;

one or more nodes to provide access for said recipient device;

one or more nodes to provide access by a messaging server as in Claim 15.

17. The network system of Claim 16 wherein said network comprises at least one of a cellular network, a wide area network, a telephony network, an IP network and a data network.

18. A machine-readable medium for programming a computer to forward a data file from a sender to a recipient, said medium including processor executable instructions comprising:

a program module receiving said data file from said sender device;

a program module associating said data file with a unique access address and associating said unique access address with a notification message, and sending said notification message to said recipient device; and

a data file transmitter module providing access to the recipient using said unique access address, and sending said data file from said messaging server to said recipient device.

19. The method of claim 4, wherein at least one of the audio file, video file and multimedia file is captured using a sender device, and said data is sent to the messaging server using at least one of store-and forward and streaming.

20. The method of claim 19, wherein said at least one of the audio file, video file and multimedia file is send by the messaging server to the recipient using at least one of store-and-forward and streaming.

21. A method for an initiator to establish a teleconference for a plurality of participants comprising the steps:

said initiator contacting the teleconference server to establish the teleconference with the plurality of participants;

said teleconference server associating said teleconference with a unique access address and associating said unique access address with a notification message;

said teleconference server sending the notification message to the plurality of participants;

said plurality of participants accessing said unique access address to participate in said teleconference;

said teleconference server identifying the unique access address used by each participant; and

said teleconference server routing each participant to the teleconference corresponding to the unique access address identified.

22. The method of Claim 21 where said step of said teleconference server sending the notification message comprises of:

determining if a participant is present with a particular participant device; and

sending the notification message to the participant device if said participant is present with said participant device.

23. The method of Claim 21 wherein said unique access address comprises at least one of a phone number and a web address.

24. The method of Claim 21 wherein said notification message is sent within at least one of a text message, a voice message and an electronic mail.

25. The method of Claim 21 wherein at least one of the participants access the unique access address using a different device used to receive the notification message.

26. The method of Claim 21 wherein said step of said initiator contacting said teleconference server comprises the steps of:

speaking a voice message into an initiator device; and

converting said voice message to text using speech-to-text processing.

27. The method of Claim 21 wherein said step of said initiator contacting said teleconference server comprises the steps of:

inputting a text message into a sender device; and

converting said text message to a voice message using text-to-speech processing.

28. The method of Claim 21 wherein the initiator contacts the teleconference server over a communication network subscribed by the initiator, and the teleconference server sends the notification message to the plurality of participants over at least one different network subscribed by at least one of the participants.

29. The method of Claim 21 wherein more than one teleconference are established by the teleconference server, and wherein a different unique access address is associated with a different teleconference.

30. The method of Claim 21 wherein said step of said teleconference server identifying the unique access address comprises the steps of:

teleconference server determining a dialed access phone number with a dialed number identification service (DNIS); and

teleconference server determining a teleconference associated with said dialed access phone number.

31. The method of Claim 30 wherein said step of said plurality of participants accessing said unique access address comprises the step of authenticating each participant.

32. The method of Claim 31 further comprising the step of the initiator designating a device address for each participant to which the notification message, and the step of authenticating each participant includes the step of determining the respective participant's device address.

33. The method of Claim 31 wherein the initiator has an initiator cellular device and at least one of the participants has a participant cellular device, and wherein the initiator contacts said teleconference server using the initiator cellular device, and said at least one of the participants accesses the unique access address to participate in the teleconference using the participant cellular device.

34. The method of Claim 33, wherein the notification message is sent via text messaging to the participant cellular device.

35. The method of Claim 34, wherein the initiator cellular device communicates with a first cellular network to which the initiator subscribes, and the participant cellular device communicates with a second cellular network to which the participant subscribes.

36. A system for establishing a teleconference requested by an initiator with respect to a plurality of participants, comprising the steps of:

providing a teleconference server;

said teleconference server receiving the initiator request, associating said teleconference with a unique access address, and associating said unique access address with a notification message;

said teleconference server sending the notification message to the plurality of participants;

said teleconference server providing access by said plurality of participants using said unique access address to participate in said teleconference;

said teleconference server identifying the unique access address used by each participant; and

said teleconference server routing each participant to the teleconference corresponding to the unique access address identified.

37. A network system for teleconferencing initiated by an initiator with respect to a plurality of participants, comprising the steps of:

one or more nodes to provide access for said initiator;

one or more nodes to provide access for said plurality of participants;

one or more nodes to provide access by a teleconference server as in Claim 16.

38. The network system of Claim 37 wherein said network comprises at least one of a cellular network, a wide area network, a telephony network, an IP network and a data network.

39. A machine-readable medium for programming a computer to establish a teleconference requested by an initiator with respect to a plurality of participants, comprising the steps of:

a program module receiving the initiator request,

a program module associating said teleconference with a unique access address, and associating said unique access address with a notification message;

a program module sending the notification message to the plurality of participants;

a program module providing access to said plurality of participants using said unique access address to participate in said teleconference;

a program module identifying the unique access address used by each participant; and

a program module routing each participant to the teleconference corresponding to the unique access address identified.

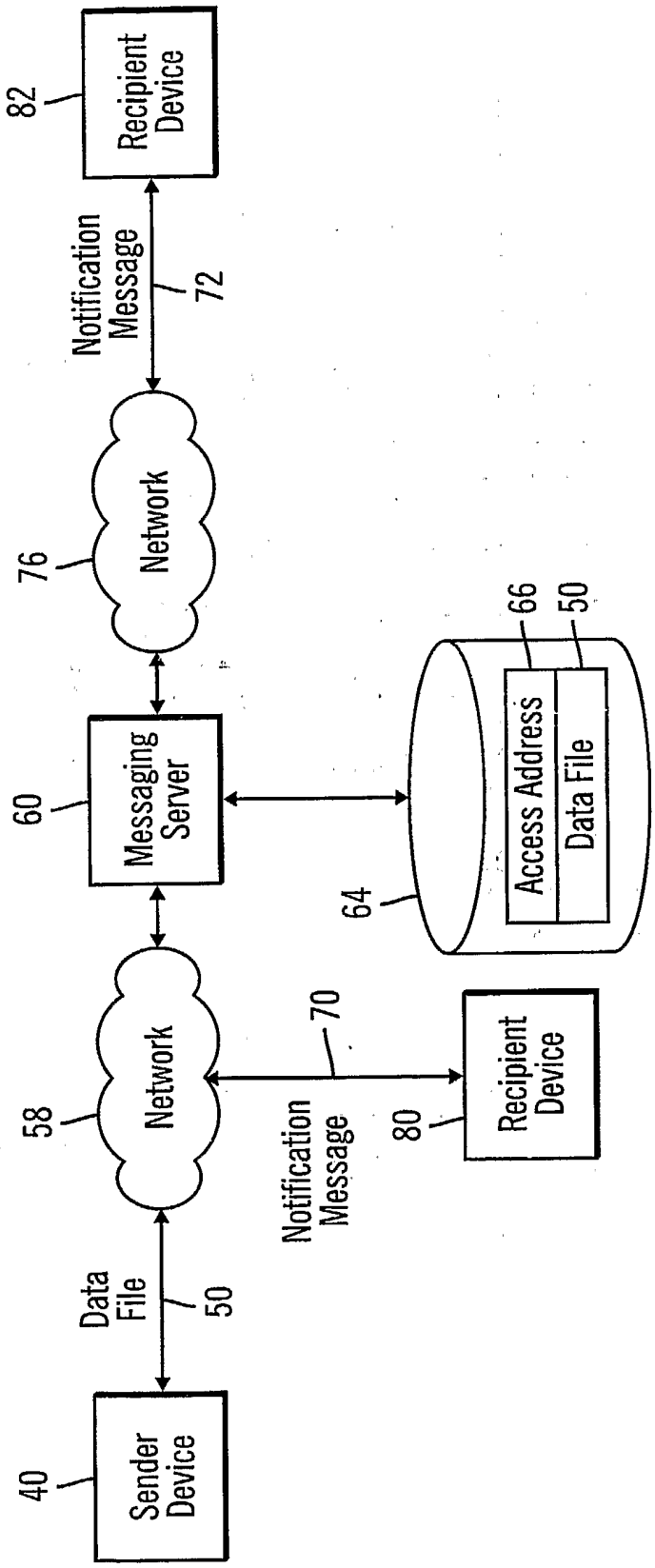
Recipient Device
82
Notification Message
72
Network
76
Messaging Server
60
66
50
Access Address
Data File
64
Network
58
70
Notification Message
Recipient Device
80
Data File
50
Sender Device
40

FIG. 1

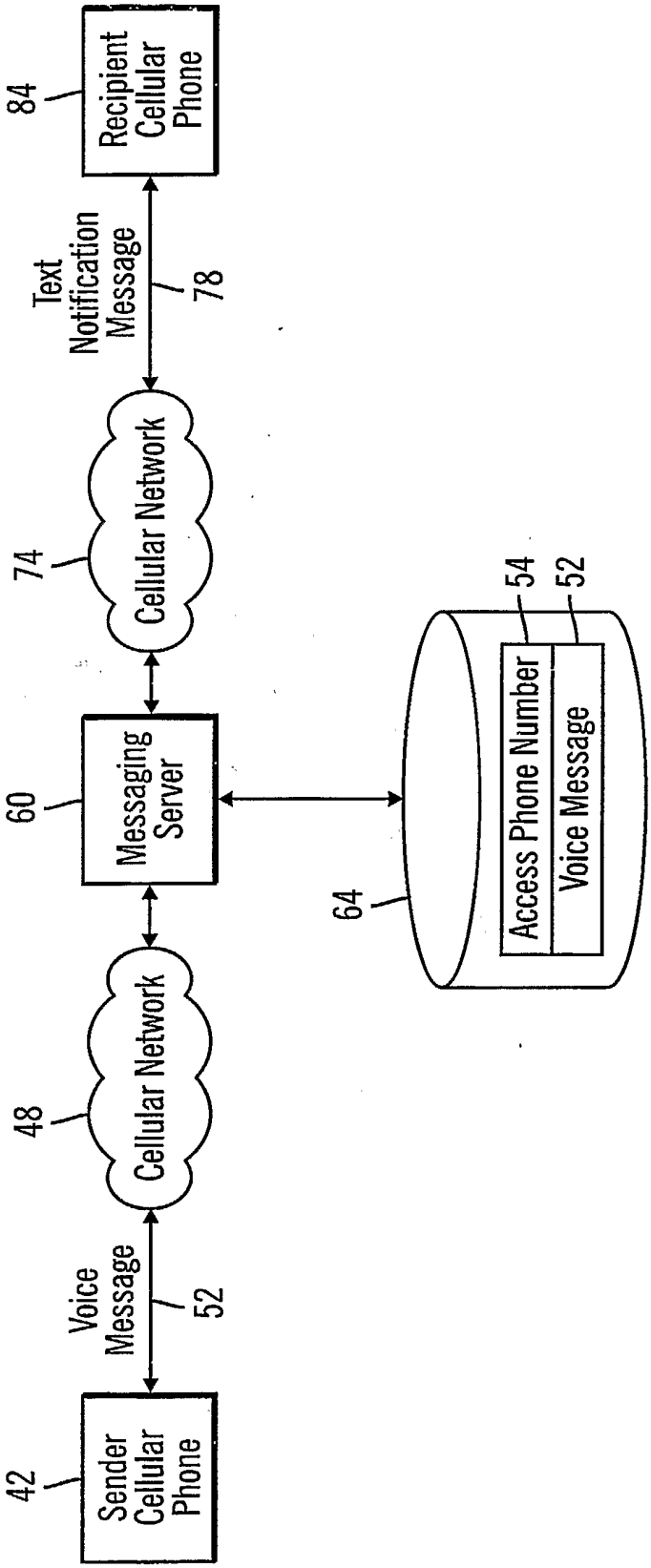
Recipient Cellular Phone
84
Text Notification Message
78
Cellular Network
74
Messaging Server
60
Cellular Network
48
Voice Message
52
Sender Cellular Phone
42
54
52
Access Phone Number
Voice Message
64

FIG. 2

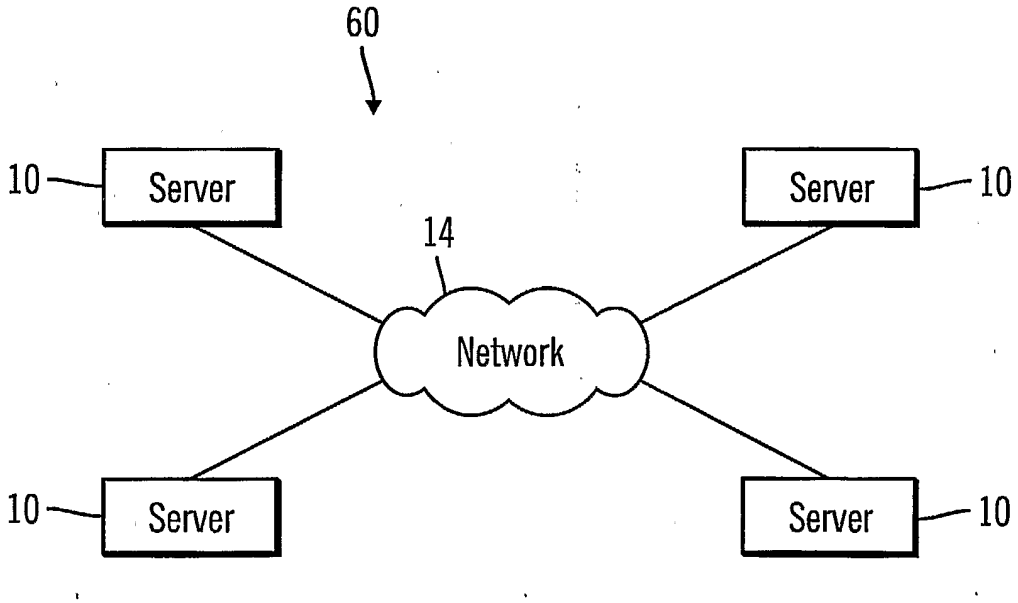

FIG. 3

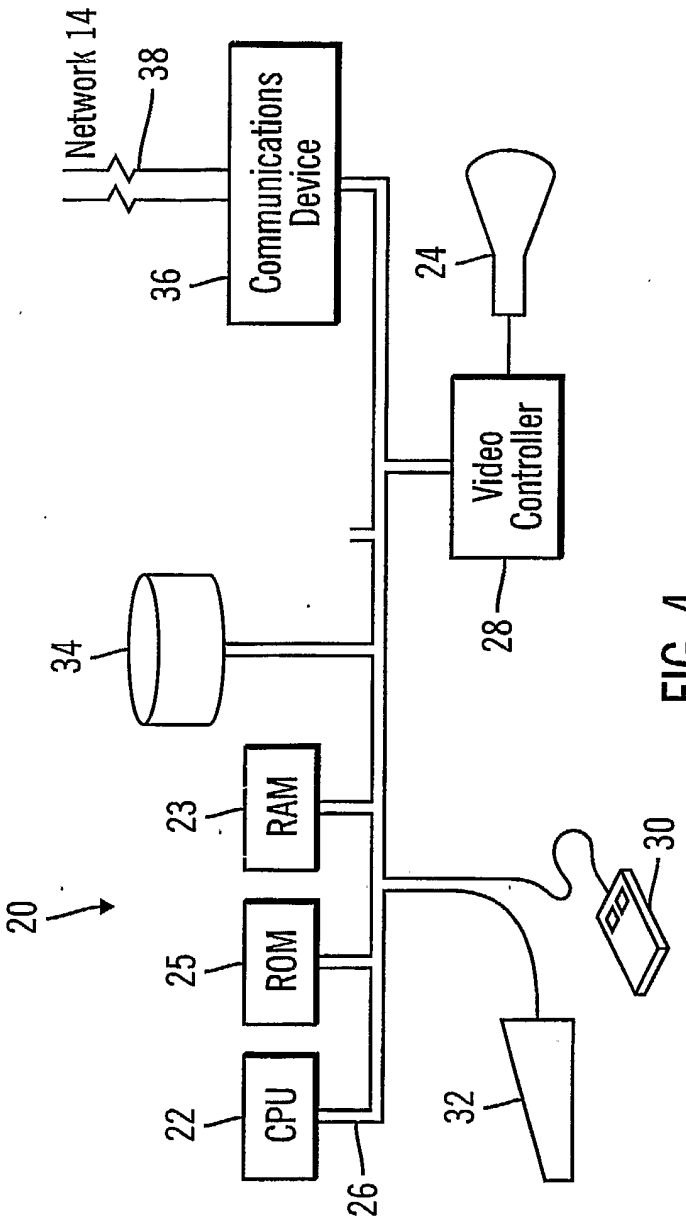
Network 14
38
Communications Device
36
24
Video Controller
28
34
23
RAM
20
25
ROM
22
CPU
26
32
30

FIG. 4

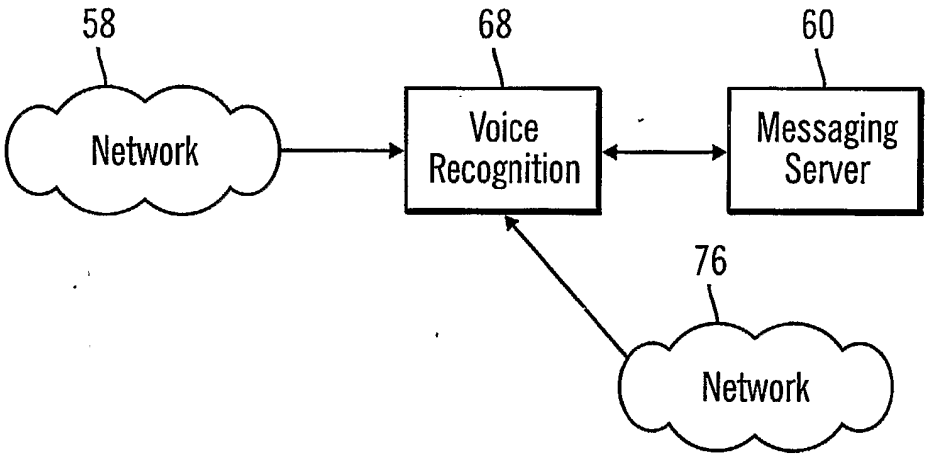
58
68
60
Network
Voice Recognition
Messaging Server
76
Network

FIG. 5

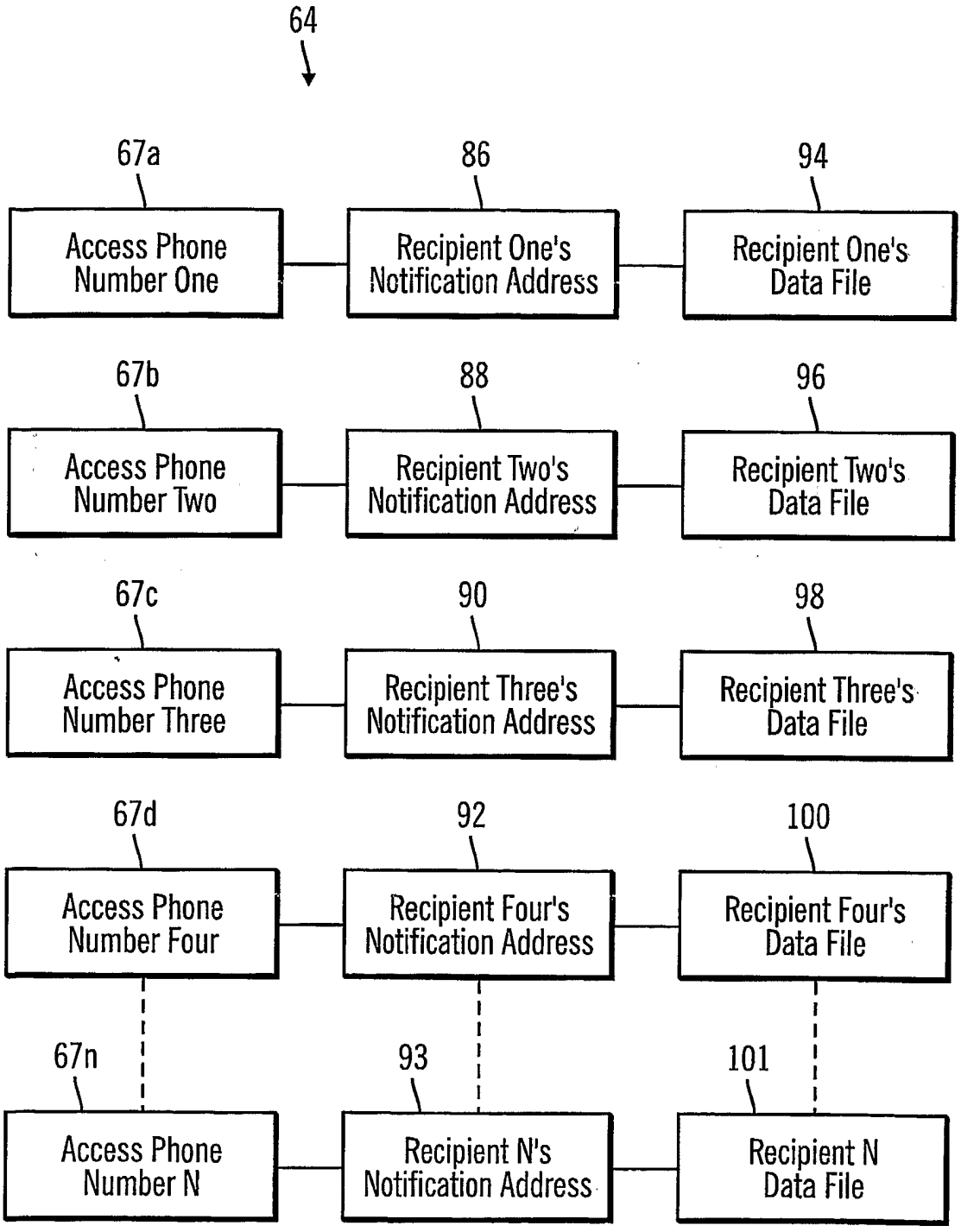
64
67a
86
94
Access Phone Number One
Recipient One's Notification Address
Recipient One's Data File
67b
88
96
Access Phone Number Two
Recipient Two's Notification Address
Recipient Two's Data File
67c
90
98
Access Phone Number Three
Recipient Three's Notification Address
Recipient Three's Data File
67d
92
100
Access Phone Number Four
Recipient Four's Notification Address
Recipient Four's Data File
67n
93
101
Access Phone Number N
Recipient N's Notification Address
Recipient N Data File

FIG. 6

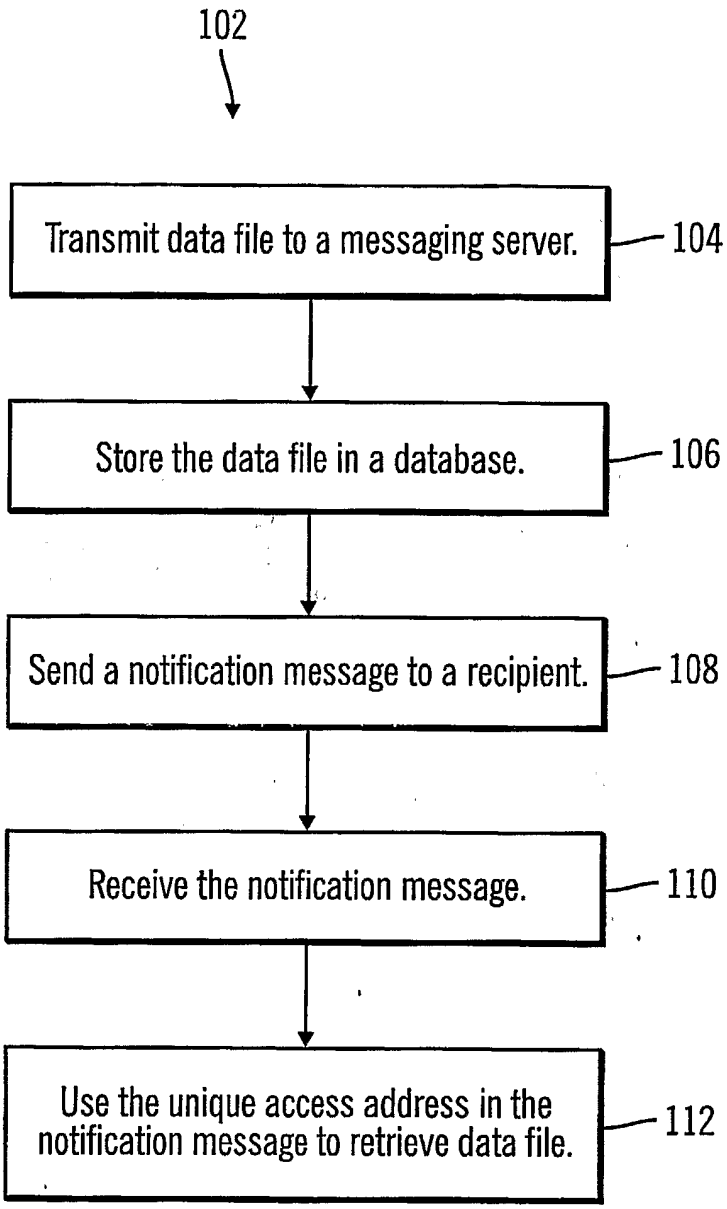
102
Transmit data file to a messaging server.
104
Store the data file in a database.
106
Send a notification message to a recipient.
108
Receive the notification message.
110
Use the unique access address in the notification message to retrieve data file.
112

FIG. 7

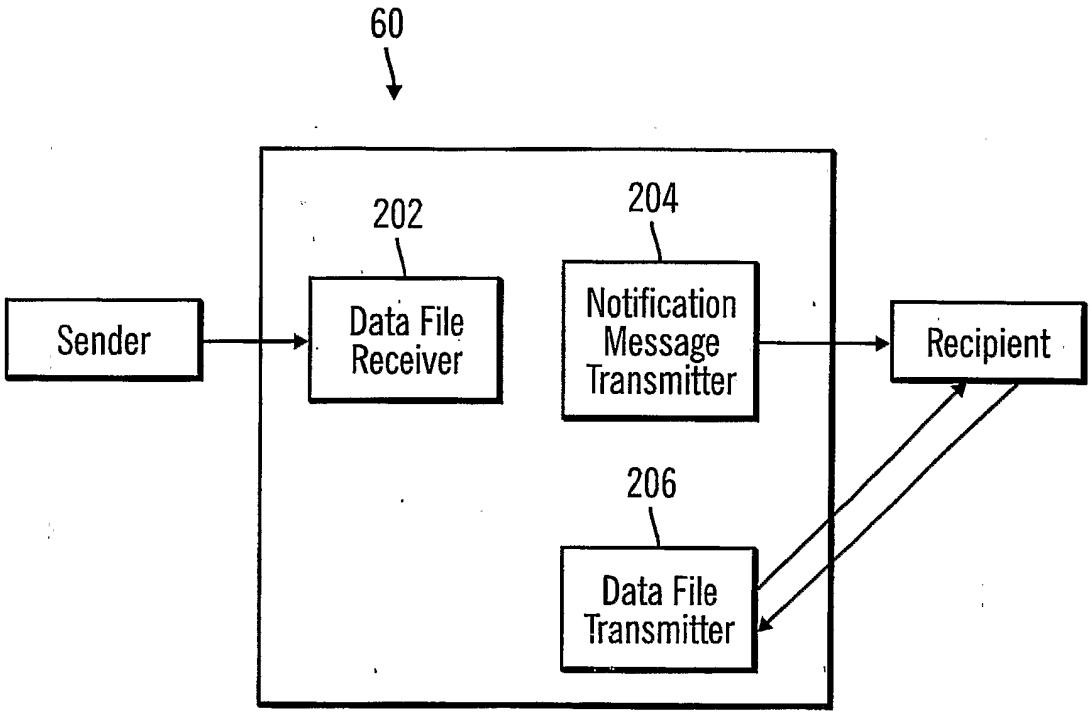
60
202
204
Sender
Data File Receiver
Notification Message Transmitter
Recipient
206
Data File Transmitter

FIG. 8

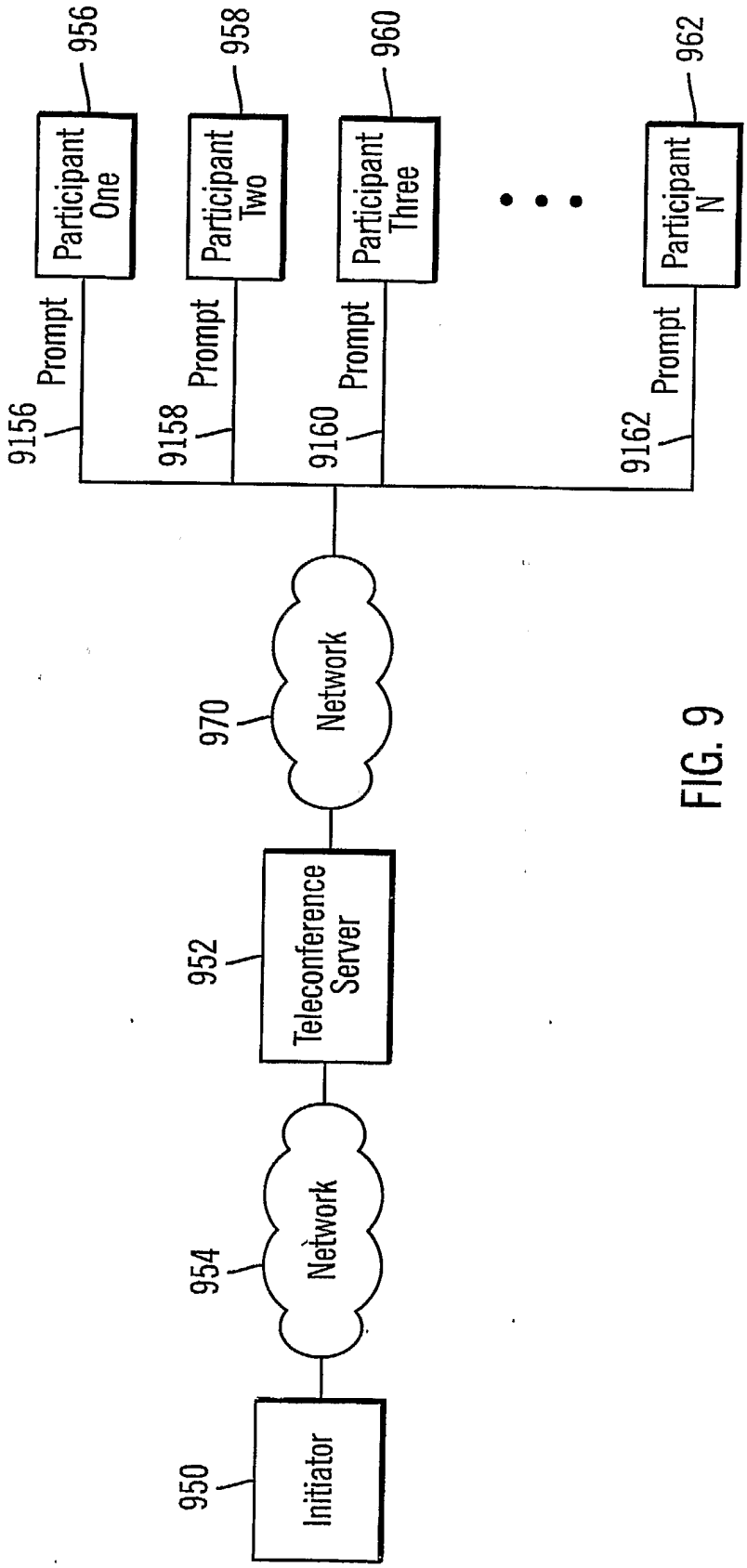
956
958
960
962
Participant One
Participant Two
Participant Three
Participant N
Prompt
Prompt
Prompt
Prompt
9156
9158
9160
9162
970
Network
952
Teleconference Server
954
Network
950
Initiator

FIG. 9

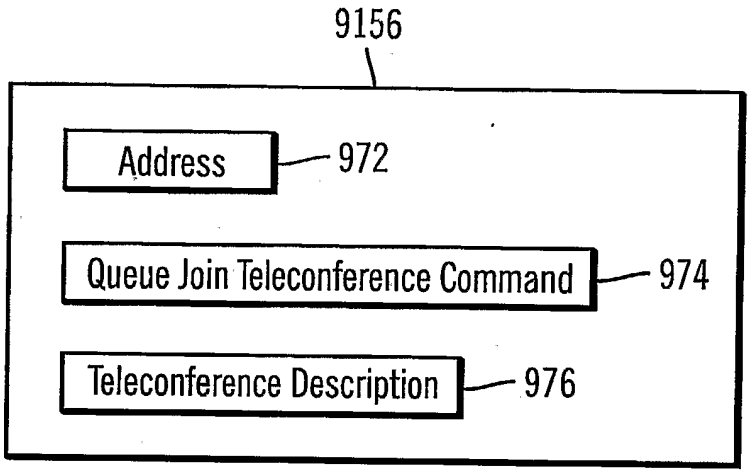
9156
Address
972
Queue Join Teleconference Command
974
Teleconference Description
976

FIG. 10

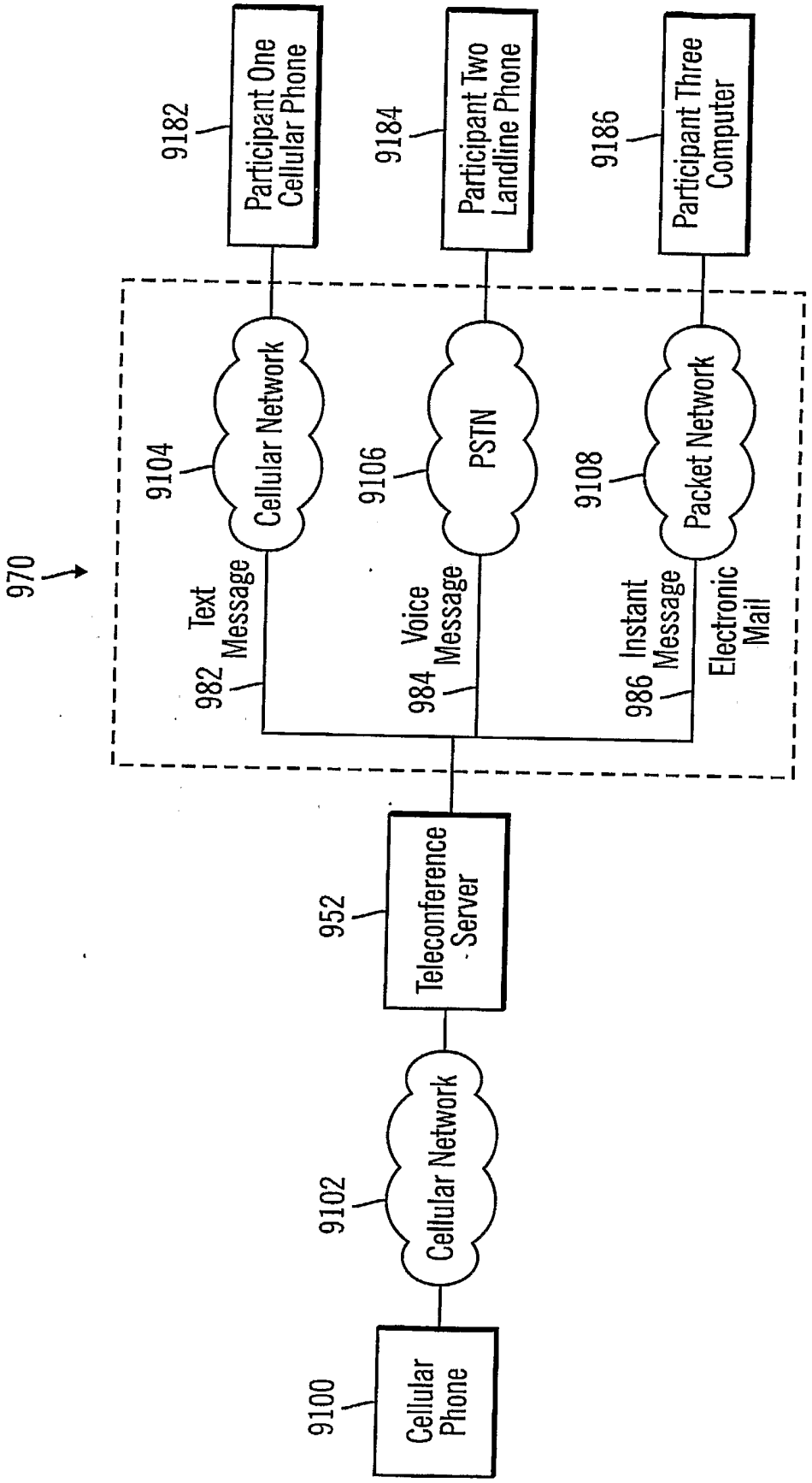
970
9182
Participant One Cellular Phone
9184
Participant Two Landline Phone
9186
Participant Three Computer
9104
Cellular Network
9106
PSTN
9108
Packet Network
982 Text Message
984 Voice Message
986 Instant Message
Electronic Mail
952
Teleconference Server
9102
Cellular Network
9100
Cellular Phone

FIG. 11

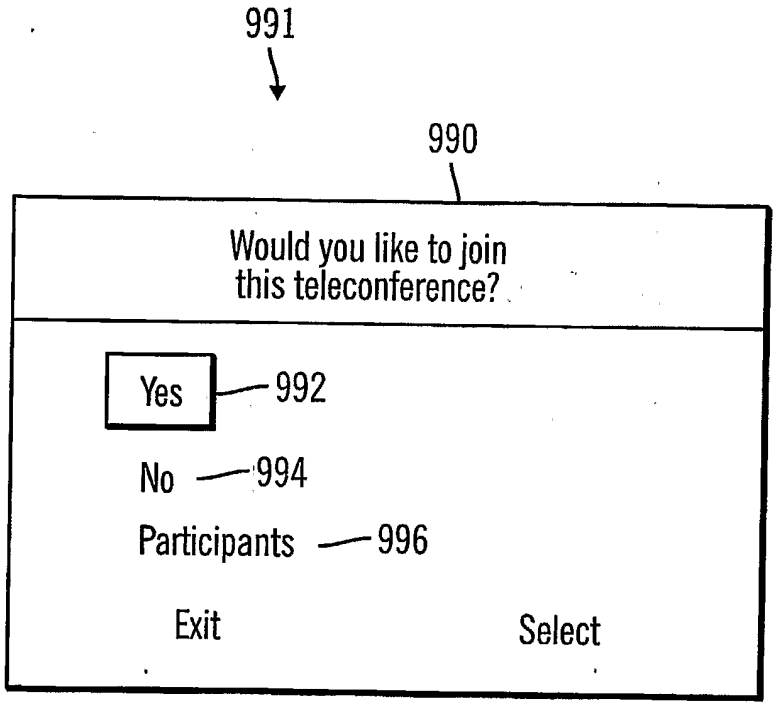
991
990
Would you like to join this teleconference?
Yes
992
No
994
Participants
996
Exit
Select

FIG. 12

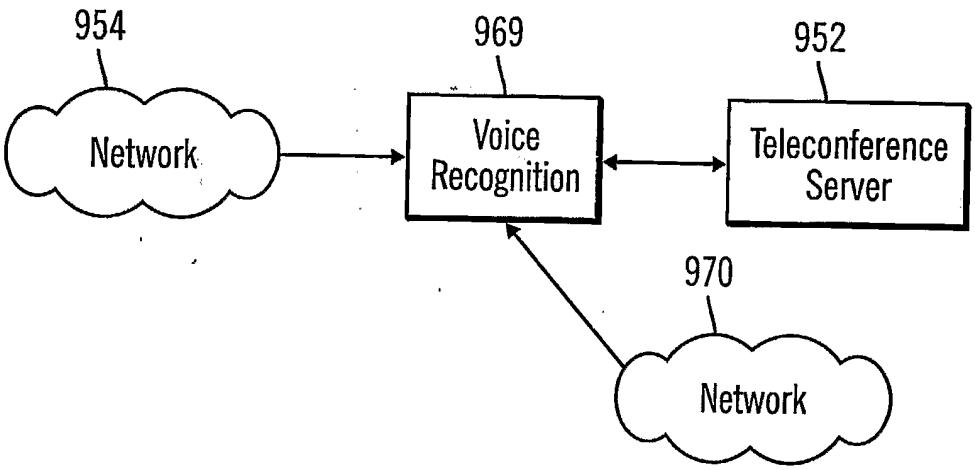
954
969
952
Network
Voice Recognition
Teleconference Server
970
Network

FIG. 13

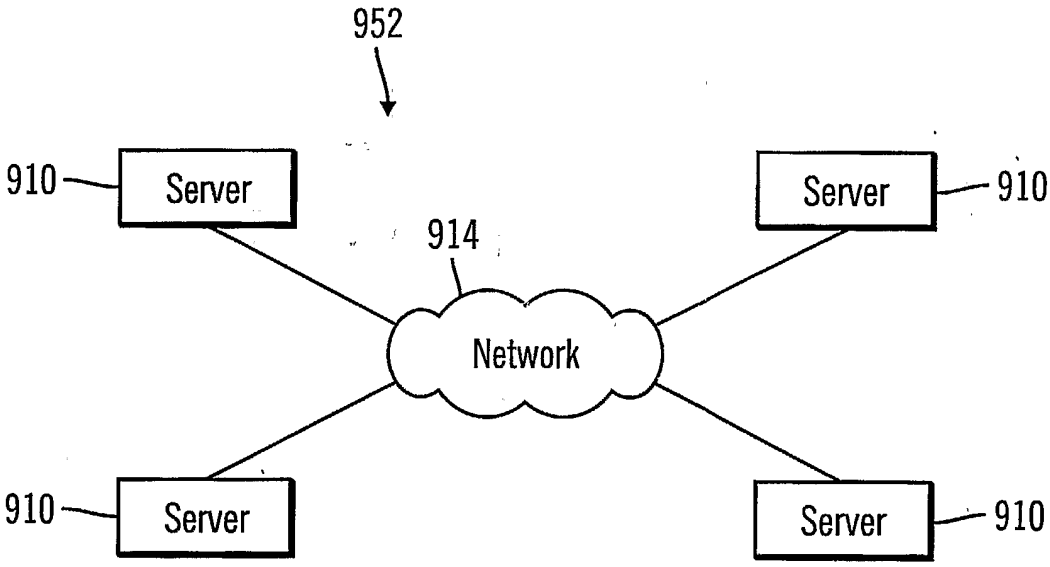

FIG. 14

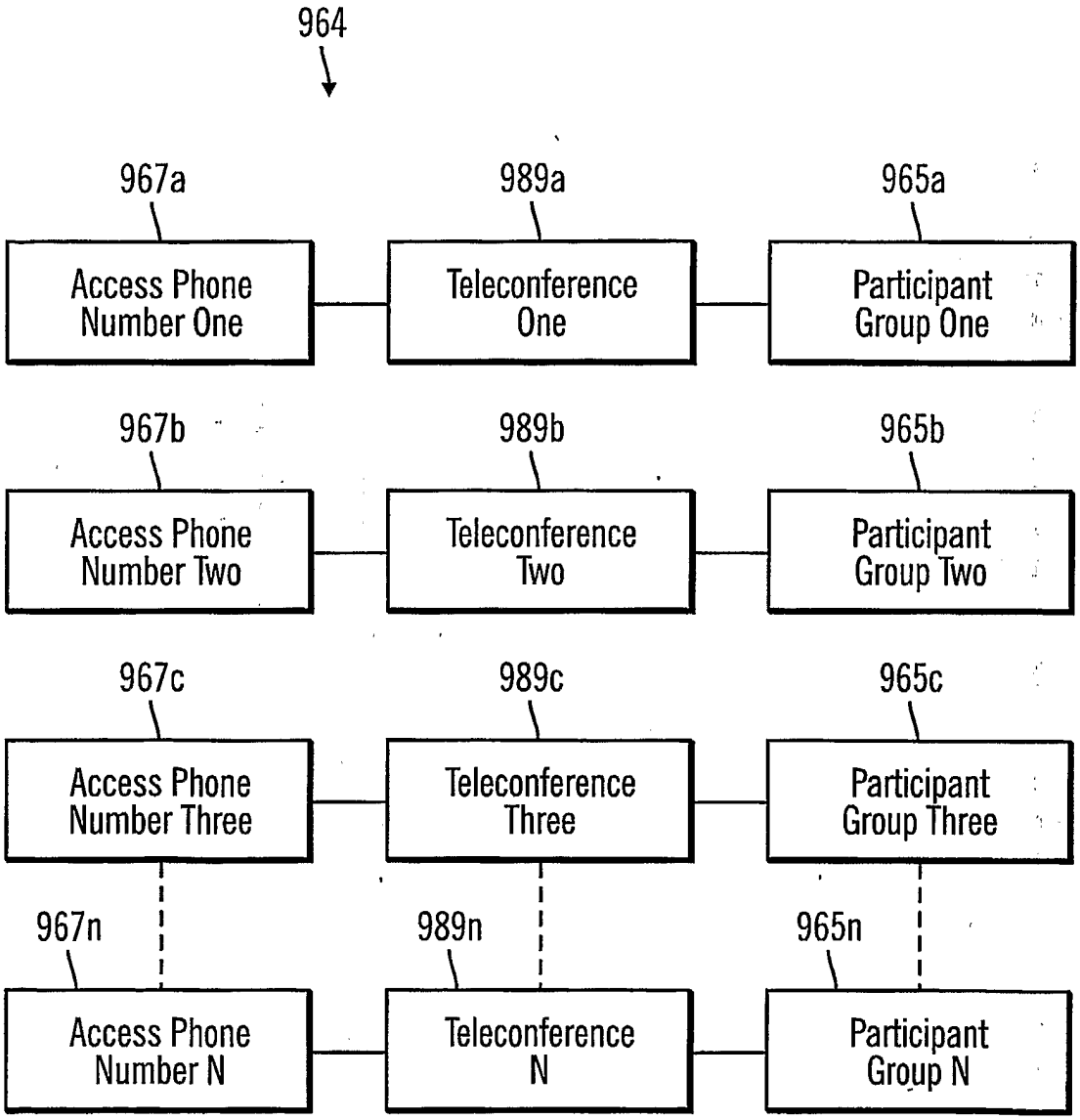
964
967a
989a
965a
Access Phone Number One
Teleconference One
Participant Group One
967b
989b
965b
Access Phone Number Two
Teleconference Two
Participant Group Two
967c
989c
965c
Access Phone Number Three
Teleconference Three
Participant Group Three
967n
989n
965n
Access Phone Number N
Teleconference N
Participant Group N

FIG. 15