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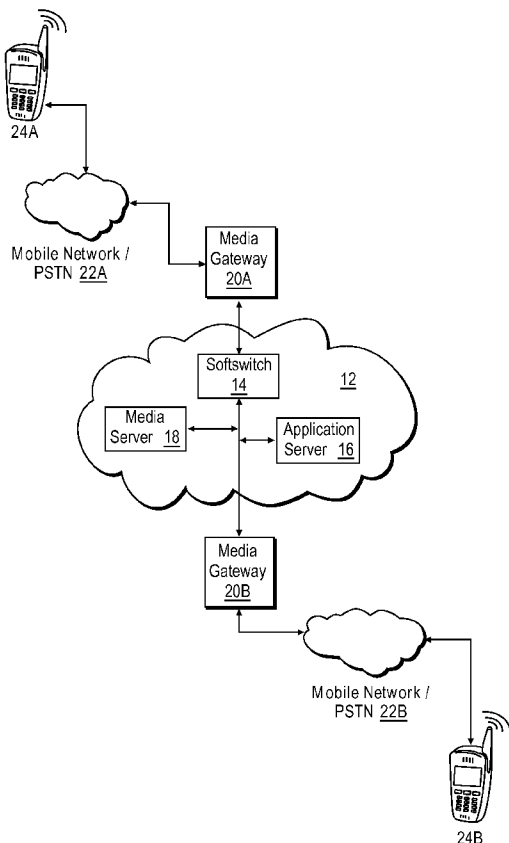
(57) Abstract: A calling party is permitted to determine a ring tone to be played by a calling party's mobile phone. Upon receiving an indication of the called party telephone number and a ring tone to be pushed to the called party's handset, the calling party is placed on hold on a conference bridge. The subject ring tone and a designated ANI are transmitted to the called party's handset. Thereafter, an outbound call is placed to the called party's handset such that a ringing signal transmitted to the called party's handset includes the designated ANI. When a connection is established with the called party's handset, the outbound call is bridged with the calling party's call on the conference bridge.

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SYSTEM FOR A CALLING PARTY TO SPECIFY A RING TONE USED AT THE CALLED PARTY'S MOBILE PHONE

RELATED APPLICATION

[0001] This application is a non-provisional of, claims priority to and incorporates by reference U.S. Provisional Patent Application Nos. 60/855,845, filed 2 November 2006, and 60/928,986, filed 14 May 2007, each of which is assigned to the assignee of the present invention.

FIELD OF THE INVENTION

[0002] The present invention relates to telecommunications systems and, more specifically, to methods and systems for a calling party to specify and/or control, for example on a per-call basis, a ring tone to be played by a mobile phone (or similar device) of a called party.

BACKGROUND

[0003] A ring tone (or ringtone (herein the bifurcated form of this term will be used)) is the sound made by a telephone to alert a called party to an incoming call. The term is most often associated with customizable sounds available on mobile phones that allow users to distinguish the ringing sound made by their own phones from those made by phones of others. Thus, a ring tone is distinguished from a ringing signal, which in the case of a mobile phone is a radio-frequency signal transmitted to a mobile phone handset over a call control channel. Upon receipt of a ringing signal, a mobile phone will play a ring tone (provided the mobile phone's ringer is not muted or otherwise disabled).

[0004] In recent years, mobile phone ring tones have become quite popular and entire businesses are now devoted to producing and selling such ring tones to mobile phone users. It is very common for mobile phone users to change their ring tones frequently and/or to assign unique ring tones to different callers. This individual association of a

ring tone to one or more unique callers relies on the use of calling party information that

is transmitted to the mobile phone prior to call establishment and information previously

stored on the subject mobile phone. By comparing the calling party's ANI with stored

records of phone numbers, the mobile phone is able to determine, and subsequently play,

the associated ring tone for that calling party. Note, this process requires that the

owner/user of the subject mobile phone handset program the mobile phone with

sufficient information to identify the calling party's ANI and with an associated ring

tone. It is also indeterminable from the calling party's point of view in that the calling

party cannot control or influence the ring tone to be played by the called party's mobile

hone handset.

[0005] Even more recently, Emotive Communications, Inc. has demonstrated "push ring

tones" or "flingtones" for users willing to download and install proprietary software

applications on their mobile phone handsets. For such users, a calling party can select

the ring tone to be played by the called party's mobile phone. The chosen ring tone is

transmitted to the called party's handset and temporarily overrides the called party's pre-

set ring tone.

[0006] As indicated, these push ring tones will only be available for use between users

that have installed Emotive's proprietary software. For many users this will be

untenable. For example, enterprises may prohibit their employees from installing such

applications on company-owned mobile phones and similar devices. Moreover, the

proprietary applications may be incompatible with the operating system of a particular

user's mobile phone, making the service inaccessible to that user. Hence, what is needed

is an alternative approach to the use of push ring tones.

SUMMARY OF THE INVENTION

[0007]   In one embodiment of the present invention, a calling party provides a called party telephone number and a ring tone to be pushed to that telephone number. The calling party is placed on hold on a conference bridge and the ring tone and an ANI are transmitted to the called party's telephone number in a format suitable for use by a mobile phone handset associated with the called party telephone number. Thereafter, an outbound call is placed to the called party's telephone number such that a ringing signal transmitted to the called party's telephone number includes the ANI. This causes the called party's mobile phone handset to play the pushed ring tone. Upon establishing a connection with the called party's telephone number, the outbound call is bridged with the call from the calling party on the conference bridge.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008]   The present invention is illustrated by way of example, and not limitation, in the figures of the accompanying drawings in which:

[0009]   **Figure 1** illustrates an example of a network architecture within which embodiments of the present invention are implemented; and

[0010]   **Figure 2** is a flow diagram illustrating one example of a call flow for pushing ring tones in accordance with embodiments of the present invention.

DETAILED DESCRIPTION

[0011] Embodiments of the present invention are directed to telecommunication systems and methods for allowing a calling party to specify a ring tone to be played by a called party's mobile phone handset (or similar device, e.g., a personal digital assistant that includes mobile phone capability). In one example, the calling party is permitted to specify the ring tone as part of the call process. This ring tone is not necessarily limited

to tones, but may also include music and/or recorded voice files. Thus, even if the called party already has programmed a distinctive ring tone for his/her mobile phone, including a unique ring tone associated with the specific calling party, the present invention enables the calling party to override or "trump" that currently programmed ring tone of the called party's mobile phone and have a calling party-specified ring tone played on that device to announce the call by the calling party.

[0012] For a given mobile phone or similar device, a microprocessor or similar unit acts as central controller. This processing unit executes computer-readable instructions (which are stored in memory accessible by the microprocessor) to carry out the operations of the mobile phone, including the playing of ring tones in response to the receipt of ringing signals. More specifically, in response to the receipt of a ringing signal, a sequence of computer-readable instructions that direct the microprocessor to control the vibration of the mobile phone's speaker unit are executed. By controlling the oscillation of the speaker in a given pattern, different musical notes (as experienced by the user) are played. Hence, a ring tone program may be regarded as a set of instructions for which of these notes to play, in which order and at what speed. By adjusting these variables, the mobile phone's microprocessor can control the playing of a virtually infinite number of ring tones. Of course, different mobile phone manufacturers use differing syntaxes for these ring tone programs, but such details are not critical for purposes of the present invention.

[0013] Ring tones (that is, ring tone programs) may be stored to a mobile phone's memory in any of a variety of ways, including by downloading the ring tone over the air. That is, the short programs that make up the ring tones when the computer-readable instructions are executed by the mobile phone's microprocessor may be transmitted to the mobile phone via the a wireless communication channel using the so-called short message service (SMS) or the related, enhanced messaging service (EMS). SMS was originally developed for transferring short text messages between mobile phone users, but has evolved to permit the transfer of ring tone programs.

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[0014] SMS messages do not travel directly between mobile phone handsets. Instead, messages transmitted by one mobile phone travel through an SMS center (SMSC) before being transmitted to the destination mobile phone. The SMS message protocol uses the same call control channel as is used by the ringing signal. Hence, the SMSC, which acts as a media gateway at the edge of the mobile phone RF network, can also be used to transfer ring tone programs to a target mobile phone. Indeed, the present invention makes use of such facilities to transfer calling party-specified ring tones (i.e., ring tone programs) to the called party's mobile phone.

[0015] In one embodiment of the present invention, a calling party dials a telephone number associated with a push ring tone service. The call is answered by an automated system (which may include an interactive voice response system) that allows the calling party to specify his/her desired to push a ring tone to a called party as part of a call set up process. For example, the automated system may prompt the user to select a desired push ring tone from a menu of available choices by entering a selection via a touch tone key sequence from the calling party's mobile phone. Alternatively, or in addition, the calling party may select a desired push ring tone and/or a called party from a pre-established account.

[0016] Once a desired ring tone has been specified, the calling party is prompted to provide the mobile phone number for the called party. Note, in some cases the called party's number may be collected before the push ring tone is selected. The order of such operations is not critical to the present invention. Again, this information may be provided via a touch tone key sequence from the calling party's mobile phone or selected from a pre-established account (e.g., from an electronic address book). For example, as part of a subscription process, a user (the calling party in this example) may create an account and store multiple telephone numbers of contacts for later use. Desired push ring tones may be associated with some or all of these telephone numbers/contacts at the time the account is created, at a later time, or on-the-fly during a call establishment process.

[0017] Once the desired push ring tone and the called party's telephone number have been provided, the calling party's call is connected to a conference bridge and placed on hold. In parallel, the automated system transmits an SMS (or similar) message to the called party's mobile phone (i.e., the telephone number specified by the calling party) via the call control channel of the called party's mobile phone service. The SMS message includes the calling party's specified ring tone (i.e., a program that will direct the called party's mobile phone to play the specified ring tone). The ring tone (i.e., the ring tone program) is stored to the called party's mobile phone upon receipt.

[0018] Following transmission of the SMS message containing the pushed ring tone, the automated system places an outbound call to the called party's mobile phone number. This causes a ringing signal to be transmitted to the called party's mobile phone. That ringing signal may be tagged in order to trigger playback of the pushed ring tone (i.e., execution of the pushed ring tone program by the microprocessor in the called party's mobile phone).

[0019] For example, the pushed ring tone may be transmitted to the called party's mobile phone in conjunction with an identifier (e.g., an ANI) of the automated service. Hence, when the automated service places the outbound call to the called party's mobile phone, the ringing signal transmitted to that mobile phone will include the ANI stored in conjunction with the pushed ring tone. When that ANI is recognized by the called party's mobile phone, the stored ring tone will be played.

[0020] Upon answering the call, the called party will be connected to the conference bridge where the calling party's call was parked. Thus, the two parties are connected via a voice channel and can now speak with one another. At the end of the call, a disconnect signal from one or both of the calling party's mobile phone and/or the called party's mobile phone will signal the automated system to tear down the conference bridge and terminate the call.

[0021] In the event the called party does not answer the call, the calling party may be so informed by the automated service. In such instances, the calling party may be presented

with the option to leave the called party a message for later retrieval by the called party (e.g., in response to a further SMS message advising the called party of the availability of the message and number to call to retrieve same) or to terminate the call.

[0022] To prevent abuse of pushed ring tones, in some embodiments of the invention a called party must "opt in" to the use of such pushed ring tones. That is, the automated system may be configured to first determine whether or not a called party has indicated his/her consent to receipt of same. This may entail a database lookup prior to transmission of the pushed ring tone to the called party's number.

[0023] For example, upon receipt of the called party's number from the calling party, the automated system may consult a database of telephone numbers to which push ring tones may be transmitted. If the called party's number appears in that list, the push ring tone will be transmitted. If not, the calling party may be advised that the push ring tone cannot be transmitted because the called party has not consented to receipt of same. In this latter case, an SMS message may be transmitted to the called party advising of the push ring tone service and allowing the called party to opt in to subsequent receipt of push ring tones by indicating his her consent to same.

[0024] In various embodiments of the present invention, the automated service described above may be associated with a social network system. Users participating in the social network system may opt in to the push ring tone service. As part of such a subscription, users may be asked to identify their individual mobile phone service and/or individual mobile phone handset type so that the push ring tone service can select and use appropriate ring tone programs for the service/handset.

[0025] In some cases, the push ring tone program may be fashioned from a recording of the calling party's voice. For example, during the call process instead of selecting an existing ring tone as the push ring tone the calling party may opt to use a voice ring tone. In such cases, the calling party is prompted to record a short (e.g., a few seconds) voice message, which the automated service will transform into a ring tone program. Services for transforming music and/or voice files to ring tones are already well know in the art

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and so will not be described further herein. Once the voice ring tone is ready, it is

pushed to the called party's phone in the manner discussed above and played out as a

ring tone upon receipt of the outbound call from the automated service. In some cases,

this may obviate the need for a linger call where the calling party simply wants to

transmit a brief message to the called party. In light of such capabilities, premium

service rates may apply for the use of such pushed voice message ring tones.

[0026] Subscription to the social network discussed above may be offered as a stand-

alone service or integrated with other calling plan packages by a mobile phone service

provider. Social networks may be defined by service provider, mobile phone

brand/model and/or mobile phone network communication protocol. Moreover, the

social network and/or the automated system may be made accessible via the Internet so

that users can customize their individual accounts. For example, a user may configure a

personal address book and associate one or more contacts with ring tones and or voice

messages to later be pushed to called parties via a personal computer communicatively

coupled (e.g., via the Internet) to a host platform operated by the push ring tone service

provider. This host platform may be accessed by the automated service that responds to

calling party calls as discussed above, or it may be periodically replicated on other

platforms accessible by same.

[0027]   One example of a network architecture for implementing embodiments of

the present invention is shown in Figure 1. System 10 includes an IP network 12

wherein a softswitch 14 resides. The IP network may be the Internet or may be a private

network. In some cases, IP network 12 will be a private network communicatively

coupled to the internet and accessible therethrough. Softswitch 14 is communicatively

coupled to one or more application servers 16 and to one or more media servers 18.

Note, in some embodiments, one or more of these functions may be combined in a single

server/softswitch, but are shown here as separate functional units for ease of description.

Likewise, although not shown in the illustration, a separate server may be used for caller

authentication purposes. Alternatively, caller verification functions may be performed by the softswitch 14 and/or an application server 16.

[0028]   Softswitch 14 is also communicatively coupled to media gateways 20a and 20b. These media gateways act as call termination points for calls made via mobile networks/PSTNs 22a and 22b, respectively. In practice there will be segregations between the mobile phone networks and PSTNs, however, for purposes of the present invention these distinctions are not critical. Hence, the details of each network are not illustrated and the multiple networks may be treated as a single netowrk for the present purposes. In some cases, the different mobile networks/PSTNs and media gateways will be located in the same calling area. Often, however, the respective pairs of PSTNs and media gateways will be located in different calling areas. Communicatively coupled to the mobile networks/PSTNs 22a and 22b are mobile phones 24a and 24b, respectively.

[0029]   In operation, a calling party may place a call from mobile phone 24a to a telephone number associated with a port on media gateway 20a. The call is transported via mobile network/PSTN 22a and terminated on media gateway 22a. As further discussed below, the number dialed by the calling party is associated with the push ring tone service. Hence, following optional user authentication (which may involve requesting and verifying a user's account number or other identifying information to allow for debiting of the user's prepaid account) the associated service is provisioned by softswitch 14 when the call is recognized as having been received on the port of media gateway 20a that is associated with the telephone number of the push ring tone service. Provisioning the call may require the softswitch to launch an application hosted at application server 16 and/or providing media from media server 18. For example, the softswitch 14 may connect the call with a push ring tone application running on application server 16.

[0030]   Further details of the call process are illustrated by process 30, shown in the flow diagram of Figure 2. Initially, step 32, the calling party's call is placed to the automated service associated with the push ring tone facilities. Upon receipt of the

calling party's call (step 34), the softswitch 14 obtains the calling party's telephone

number (ANI) (step 36) and determines whether or not the calling party is eligible to use

the push ring tone service (step 38). This may involve the calling party entering personal

identification information to access his/her previously established account or the calling

party providing credit card or other payment information for a one-time use, etc. if the

calling party is not authorized to use the service, the call is terminated (step 40).

[0031]   Assuming the calling party is authorized to use the service, the calling party

is connected to the appropriate application and is prompted to enter the called party

identification information and to select a push ring tone (or record a voice ring tone).

This may involve first determining whether the called party is already associated with a

push ring tone (step 42). If so, the call process skips to placing the calling party on hold

on the conference bridge. Otherwise, the calling party interacts with the automated

service as discussed above to select a ring tone to be pushed to the called party (step 44).

Optionally, the service may check to determine whether the called party has opted in to

receiving such push ring tones (step 46). If not, the call is terminated. Otherwise, the

call proceeds and the calling party is placed on hold on the conference bridge (step 48).

[0032]   The automated service then proceeds to transmit the push ring tone to the

called party as discussed above (step 50). This may involve the softswitch 14

transmitting the SMS message (e.g., encapsulated as an IP message for transport across

the IP network 12) to media gateway 20b associated with an outbound PSTN/mobile

network 22b. At the media gateway 20b, the SMS message is extracted from the IP

message and transmitted to the called party's mobile phone 24b using PSTN/mobile

network 22b. The softswitch 14 would have already formatted the SMS message to be

compatible with that service provider's network and with the called party's mobile phone

(e.g., as identified when the called party was verified as having opted in to receive push

ring tones).

[0033] After allowing sufficient time for the called party's mobile phone to receive and

store the push ring tone, the softswitch 14 places an outbound call to the called party.

This is an IP-to-PSTN call and the manner of making such calls is well known in the art. Importantly, the call is placed using an ANI with a number associated with the now stored push ring tone (step 52). Upon answer by the called party, the calls are bridged (step 54) and the telephone call between the parties proceeds until one or the other ends the call (step 56) and the call is finally terminated.

[0034] In other embodiments, the calling party may designate more than one called party to receive the push ring tone and the subsequent call. Thus, a personalized ring tone for a conference call may be pushed to all of the conference participants. Of course, the different participants may each receive unique push ring tones instead of the same ring tone.

[0035] Thus, systems and methods for allowing a calling party to specify a ring tone to be played by a called party's mobile phone handset have been described. Importantly, the embodiments described herein are intended to serve as non-limiting examples of the present invention. In other instances, for example, all future ring tones received by the called party from the calling party may make use of a selected push ring tone until the calling party changes same, but only so long as the calling party makes use of the automated service discussed above. Direct handset-to-handset calls that are not initiated via the automated service will not trigger the playback of the push ring tone because the ANI of the calling party will not be one associated with that push ring tone. Alternatively, when the automated service pushes the ring tone to called party's handset, the service may associate the push ring tone with the calling party's ANI and so future handset-to-handset calls would trigger the playing of the previously pushed ring tone.

[0036] As indicated above, it may be preferable to restrict the pushing of ring tones to only those mobile phones previously indicated as willing to accept same. This way, only content authorized by each member of the social network is allowed to become part of the group's library of content. This prevents socially unacceptable, unethical, inappropriate, or otherwise undesirable content to be received by a called party.

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CLAIMS

What is claimed is:

1. A method, comprising upon receiving an indication of a called party telephone number and a ring tone to be pushed to the called party telephone number, placing a call from a calling party on hold on a conference bridge; transmitting the ring tone and an ANI to the called party telephone number in a format suitable for use by a mobile phone handset associated with the called party telephone number; thereafter, placing an outbound call to the called party telephone number such that a ringing signal transmitted to the called party telephone number includes the ANI; and upon establishing a connection with the called party telephone number, bridging the outbound call with the call from the calling party on the conference bridge.

2. The method of claim 1, wherein the ring tone to be pushed to the called party's telephone number is selected by the calling party.

3. The method of claim 1, wherein the ring tone to be pushed to the called party's telephone number is associated with the called party's telephone number prior to the call by the calling party.

4. The method of claim 1, wherein the outbound call is placed after a time sufficient for the ring tone to be stored by a handset associated with the called party's telephone number.

5. A method, comprising transmitting a ring tone and an ANI associated with a telephone number from which a call will be placed to a mobile phone number associated with a called party identified by a calling party; and, thereafter, placing the call to the mobile

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phone number so as to cause a handset associated with the mobile phone number to play the ring tone.

6. The method of claim 5, wherein the calling party identifies the called party from a previously stored list.

7. The method of claim 5, wherein the calling party identifies the called party during a call to an automated service.

8. The method of claim 5, wherein the calling party identifies the called party by providing the mobile phone number during a call to an automated service and further selects the ring tone during the call to the automated service.

9. A method, comprising receiving from a calling party an indication of a called party to which a ring tone is to be pushed; transmitting the ring tone to a mobile phone telephone number associated with called party; and placing a call to the mobile phone telephone number after a time period sufficient to allow the ring tone to be stored by a handset associated with the mobile phone telephone number.

10. The method of claim 9, wherein the indication of the called party, comprises the mobile phone telephone number.
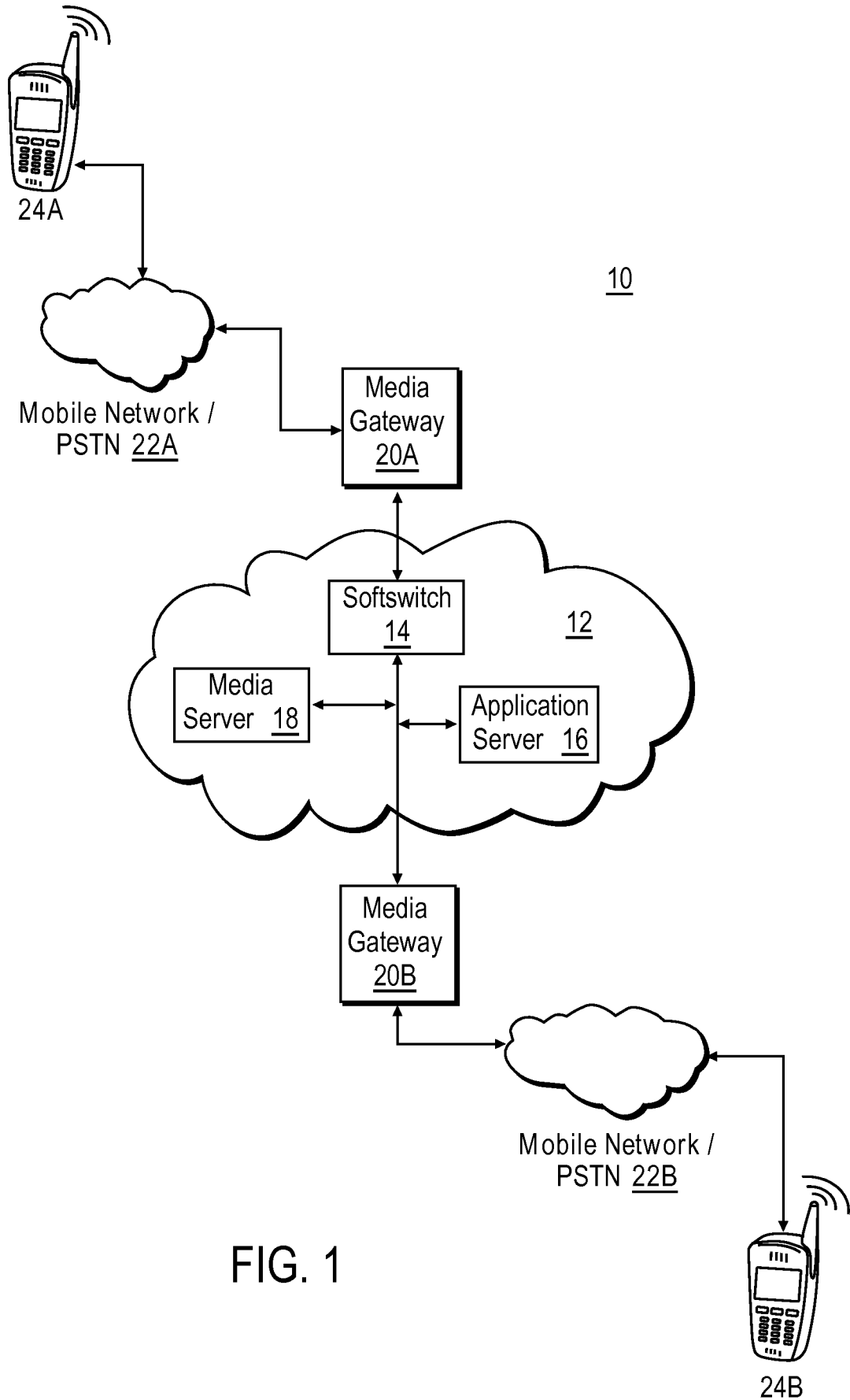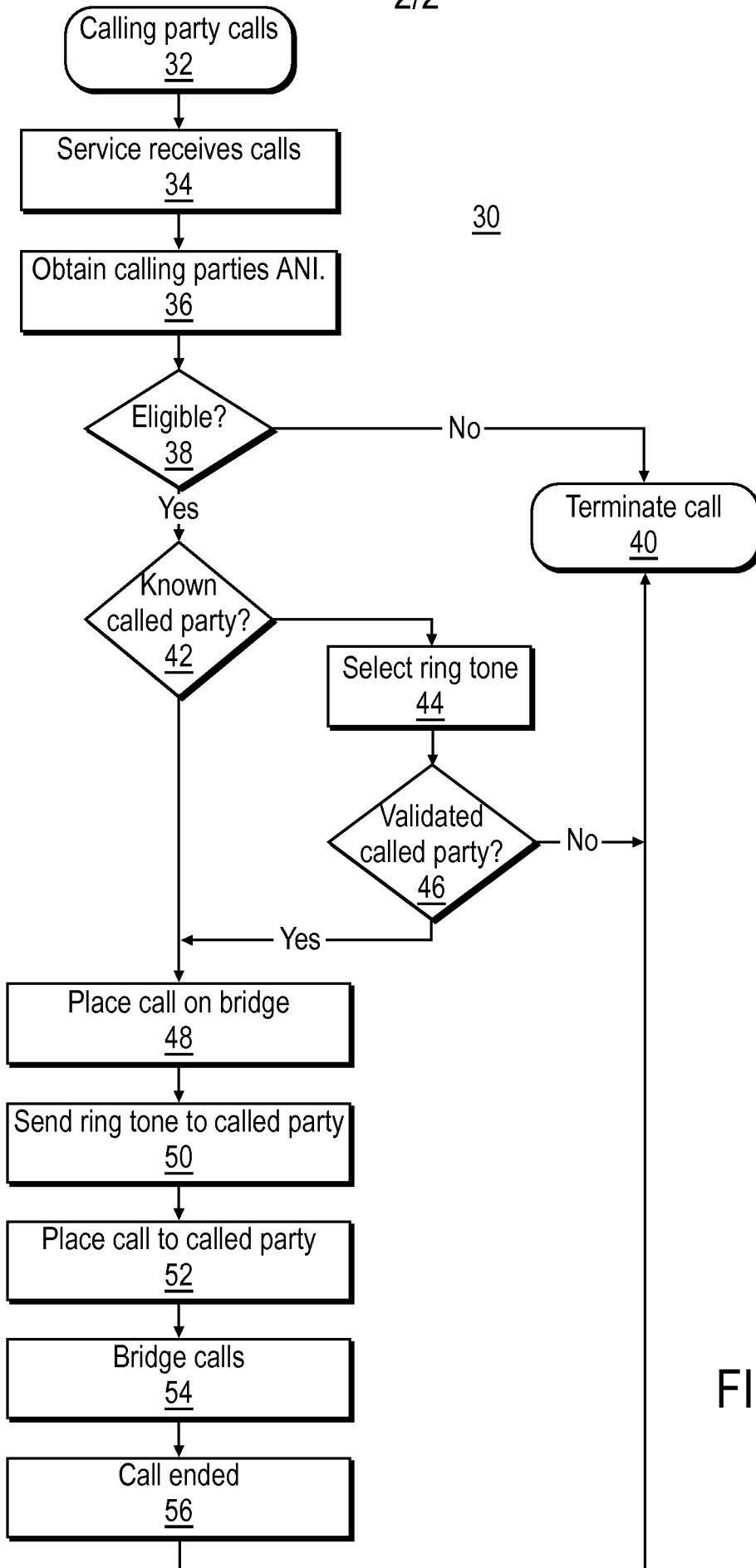
FIG. 1

2/2

Calling party calls
32

↓

Service receives calls
34

↓

Obtain calling parties ANI.
36

↓

30

Eligible?
38 ———No———→ Terminate call
40

Yes
↓

Known
called party?
42 ————→ Select ring tone
44

↓

Validated
called party?
46 ———No———→

Yes

←———————Yes———————

Place call on bridge
48

↓

Send ring tone to called party
50

↓

Place call to called party
52

↓

Bridge calls
54

↓

Call ended
56

FIG. 2

INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - H04M 1/00 (2008.01)
USPC - 379/352
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols) USPC: 379/352
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC: 379/352
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PubWEST(USPT,PGPB,EPAB,JPAB); DialogPRO; WIPO, EPO, CITESEER, Google patents, Google scholar Search Terms Used: ring tone ring-tone calling party sender caller receiver called party caller ID remote ring-tone selection API store mobile

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2006/0215827 A1 (PFLEGING et al.) 28 September 2006 (28.09.2006) entire document especially Fig 1-2, abstract, para [0014]-[0017], para [0019]-[0022], para [0025] and para [0029]-[0030].	1-10
A	US 2005/0143103 A1 (BJORGAN et al.) 30 June 2005 (30.06.2005) entire document	1-10
A	US 2006/0234687 A1 (PATEL et al.) 19 October 2006 (19.10.2006) entire document	1-10

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
11 February 2008 (11.02.2008)	11 MAR 2008
Name and mailing address of the ISA/US	Authorized officer:
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774