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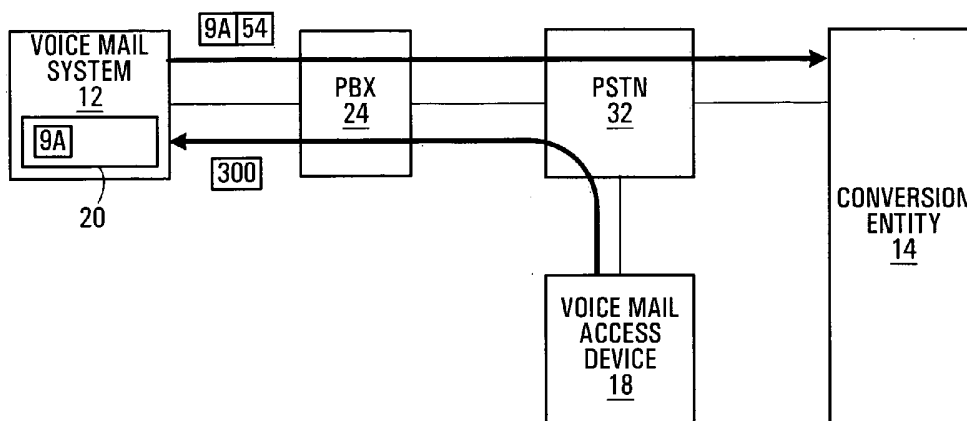
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(54) Title: METHODS AND SYSTEMS FOR RENDERING VOICE MAIL MESSAGES AMENABLE TO ELECTRONIC PROCESSING BY MAILBOX OWNERS



(57) Abstract: A method for execution by an owner of a mailbox in a voice mail system. The method comprises using an access device to access a voicemail message contained in the mailbox and entering a command instrumental in causing the voicemail message to be forwarded over a telephone network to a conversion entity. At the conversion entity, an electronic representation of the voicemail message is created and then the electronic representation of the voicemail message is rendered accessible to the owner of the mailbox, e.g., by sending an email message to a predetermined address. In this way, electronic representations of voicemail messages in a mailbox can be accessed by the owner of the mailbox using a device of choice, not necessarily the access device used initially to enter the command. Also, this functionality is achieved while allowing the voice mail system to remain a legacy voice mail system.

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1 **METHODS AND SYSTEMS FOR RENDERING VOICE MAIL MESSAGES**
2 **AMENABLE TO ELECTRONIC PROCESSING BY MAILBOX OWNERS**

3

4

5 **CROSS-REFERENCE TO RELATED APPLICATION**

6

7 This application claims the benefit under 35 U.S.C. 119(e) of U.S. Provisional
8 Patent Application Serial No. 60/638,390 to Crago et al., filed December 27,
9 2004, hereby incorporated by reference herein.

10

11

12 **FIELD OF THE INVENTION**

13

14 The present invention relates generally to electronic communications and,
15 more particularly, to methods and systems for rendering voice mail messages
16 contained in mailboxes amenable to electronic processing by owners of those
17 mailboxes.

18

19

20 **BACKGROUND**

21

22 Voice mail systems provide a convenient way for a calling party to leave a
23 message for an intended recipient who is unavailable to answer an incoming
24 call. Specifically, a conventional voice mail system detects when the intended
25 recipient is busy or unresponsive to the call, and consequently answers the
26 call by playing the intended recipient's audio greeting. Following this, the
27 calling party is prompted to record a voice mail message, which is stored as
28 an audio recording in a voice mailbox associated with the intended recipient.

29

30 When the owner of the mailbox (i.e., the intended recipient) wishes to retrieve
31 the contents of the mailbox at a later time, the owner of the mailbox dials into
32 the voice mail system. The voice mail system authenticates the owner of the
33 mailbox, and subsequently allows the owner of the mailbox to navigate

1 through his or her mailbox in order to perform various basic functions, such as
2 playback, deletion and forwarding of individual voice mail messages.

3

4 With the decreasing cost of memory, voice mail systems now permit a calling
5 party to leave increasingly lengthy voice mail messages. In view of the large
6 amount of information that can be conveyed in a voice mail message, the
7 owner of the mailbox may desire to do more than merely listen to each
8 message. Instead, the owner of the mailbox may wish to perform a more
9 sophisticated processing function on the contents of one or more voice mail
10 messages. For example, the mailbox owner may wish to use his or her
11 personal digital assistant (PDA) to extract, save and/or distribute specific
12 information conveyed in a given voice mail message. In other cases, the
13 mailbox owner may wish to use his or her desktop computer to transfer the
14 voice mail message to a computer-readable storage medium for archiving.

15

16 However, the basic voice mail systems which exist in many of today's
17 businesses do not allow the aforementioned functionality to be achieved.
18 Specifically, conventional voice mail systems do not render voice mail
19 messages electronically processable by mailbox owners using a device of
20 their choice. Rather, mailbox owners who wish to extract information from
21 their voice mail messages are restricted to hastily transcribing their messages
22 on paper while listening to them. Clearly, therefore, a need exists in the
23 industry to alleviate this difficulty, while recognizing that businesses may be
24 reluctant to overhaul their existing voice mail systems.

25

26

27 **SUMMARY OF THE INVENTION**

28

29 In accordance with a first broad aspect, the present invention seeks to provide
30 a method for execution by an owner of a mailbox in a voice mail system. The
31 method comprises accessing a voice mail message contained in the mailbox;
32 and entering a command instrumental in causing the voice mail message to
33 be forwarded over a telephone network to a conversion entity operative to

1 render an electronic representation of the voice mail message accessible to
2 the owner of the mailbox.

3

4 In accordance with a second broad aspect, the present invention seeks to
5 provide a voice mail system, which comprises a plurality of mailboxes
6 associated with respective owners, each of the mailboxes having a capacity to
7 hold one or more voice mail messages; and a processing entity adapted to
8 receive a command indicative of a desire to forward a particular voice mail
9 message held in a particular one of the mailboxes to a conversion entity
10 reachable at a designated telephone number. The processing entity is
11 responsive to said command to forward the particular voice mail message to
12 the conversion entity and to cause the conversion entity to render an
13 electronic representation of the particular voice mail message accessible to
14 the owner of the particular mailbox.

15

16 In accordance with a third broad aspect, the present invention seeks to
17 provide a method for execution by a conversion entity reachable over a
18 telephone network at a designated telephone number. The method comprises
19 receiving a particular voice mail message forwarded by a voice mail system
20 over the telephone network, the voice mail system comprising a plurality of
21 mailboxes respectively associated with owners, a particular one of the
22 mailboxes holding the particular voice mail message; creating an electronic
23 representation of the particular voice mail message; and rendering the
24 electronic representation of the particular voice mail message accessible to
25 the owner of the particular mailbox.

26

27 In accordance with a fourth broad aspect, the present invention seeks to
28 provide a system that comprises at least one conversion entity reachable over
29 a telephone network at a respective designated telephone number. Each of
30 the at least one conversion entity has a processing entity adapted for (a)
31 receiving a particular voice mail message forwarded by a voice mail system
32 over the telephone network, the voice mail system comprising a plurality of

1 mailboxes respectively associated with owners, a particular one of the
2 mailboxes holding the particular voice mail message; (b) creating an
3 electronic representation of the particular voice mail message; and (c)
4 rendering the electronic representation of the particular voice mail message
5 accessible to the owner of the particular mailbox.

6

7 These and other aspects and features of the present invention will now
8 become apparent to those of ordinary skill in the art upon review of the
9 following description of specific embodiments of the invention in conjunction
10 with the accompanying drawings.

11

12

13 **BRIEF DESCRIPTION OF THE DRAWINGS**

14

15 In the accompanying drawings:

16

17 Figs. 1A and 1B illustrate deposit of a voice mail message into a mailbox of a
18 voice mail system;

19

20 Figs. 2A and 2B illustrate retrieval of the voice mail message from the
21 mailbox;

22

23 Figs. 3A and 3B illustrate forwarding of the voice mail message to a
24 conversion entity in accordance with two non-limiting embodiments of the
25 present invention;

26

27 Fig. 3C is a schematic block diagram of the conversion entity, in accordance
28 with a non-limiting embodiment of the present invention;

29

30 Figs. 4-6 show various ways of rendering an electronic representation of the
31 voice mail message accessible to the owner of the mailbox;

32

1 Fig. 7 is a schematic block diagram showing an alternative non-limiting
2 embodiment of the present invention.

3

4

5 **DETAILED DESCRIPTION OF EMBODIMENTS**

6

7 Depositing a Voice Mail Message

8

9 With reference to Figs. 1A and 1B, a voice mail system 12 comprises a set of
10 mailboxes. Each of the mailboxes, including mailbox 20, has the capability of
11 holding one or more voice mail messages. Each of the mailboxes, including
12 mailbox 20, is associated with a party that is hereinafter referred to as the
13 "owner" of the respective mailbox.

14

15 In Figs. 1A and 1B, a given caller 16 attempts to reach the owner of mailbox
16 20 over a telephone network such as the public switched telephone network
17 (PSTN) 32. For example, in Fig. 1A, the caller 16 directly dials the telephone
18 number of the owner of mailbox 20, whereas in Fig. 1B, the caller 16 passes
19 through a private branch exchange (PBX) 24.

20

21 In the event that the owner of mailbox 20 is busy or not responding, the voice
22 mail system 12 begins an interaction with the caller 16 and prompts the caller
23 16 to begin recording a voice mail message 9A for the owner of mailbox 20.
24 Upon termination of the recording, the voice mail system 12 holds voice mail
25 message 9A in mailbox 20 for subsequent retrieval by the owner of mailbox
26 20. Commonly, the voice mail message 9A may be stored as an audio
27 recording, which may be in a format such as ".wav" or ".au", for example.

28

29 Retrieving a Voice Mail Message from the Voice Mail System

30

31 With reference to Figs. 2A and 2B, the owner of mailbox 20 uses a voice mail
32 access device 18 to interact with the voice mail system 12 in order to retrieve
33 voice mail messages held in mailbox 20, including voice mail message 9A. In
34 examples of specific non-limiting embodiments, the voice mail access device

1 18 may be a conventional telephone which is connected to the PSTN 32 via a
2 digital switch, or a Voice over Internet Protocol (VoIP) telephone that is
3 connected to the PSTN 32 via a data network and a gateway therebetween,
4 or a software application running on a computer that is connected to the
5 PSTN 32 via a data network and a gateway, etc.

6

7 The actions of the owner of mailbox 20 which lead to retrieval of the voice mail
8 message 9A can take on many forms. In the case where the voice mail
9 system 12 is a legacy voice mail system, the owner of mailbox 20 uses the
10 voice mail access device 18 to cause a sequence of digits to be dialed via the
11 PSTN 32, which is recognized by a switch (e.g., in the PSTN 32 in Fig. 2A, or
12 the PBX 24 in Fig. 2B) as a command to redirect the call to the voice mail
13 system 12. Once in communication with the voice mail system 12, the owner
14 of mailbox 20 is authenticated in a conventional manner and is then given
15 access to the contents of mailbox 20 (which, it is recalled, includes voice mail
16 message 9A).

17

18 The owner of mailbox 20 may dispose of the current or most recently played
19 message by entering a command. For example, should the owner of mailbox
20 20 choose to listen to voice mail message 9A, the owner of mailbox 20 enters
21 a "playback command" (e.g., a sequence of digits) via the voice mail access
22 device 18. The playback command is recognized by the voice mail system
23 12, which subsequently begins audio playback of voice mail message 9A. On
24 the other hand, should the owner of mailbox 20 choose to delete voice mail
25 message 9A, the owner of mailbox 20 enters a "delete command" (e.g., a
26 different sequence of digits) via the voice mail access device 18. The delete
27 command is recognized by the voice mail system 12, which subsequently
28 deletes the voice mail message 9A from mailbox 20.

29

30 Alternatively, the owner of mailbox 20 may choose to forward voice mail
31 message 9A to a particular destination. In accordance with an embodiment of
32 the present invention, and as shown in Figs. 3A-3C, an example of a
33 destination to which voice mail message 9A may be forwarded is a

1 "conversion entity" 14. The conversion entity 14 may be operated by the
2 owner of the PSTN 32 or it may be operated by an independent third party.

3

4 As shown in Fig. 3A, the conversion entity 14 may be connected directly to the
5 PSTN 32. Specifically, the conversion entity 14 is reachable at a designated
6 telephone number (e.g., local, long-distance, toll-free, etc). When a call is
7 placed from the PSTN 32 to that designated telephone number, the call
8 travels through the PSTN 32 and is routed to the conversion entity 14.

9

10 Alternatively, as shown in Fig. 3B, the conversion entity 14 may be connected
11 to the PSTN 32 via a data network 34, such as the Internet for example. The
12 data network 34 is connected to the PSTN 32 via a gateway 36. As in Fig.
13 3A, the conversion entity 14 is associated with a designated telephone
14 number. However, in this case, when a call is placed from the PSTN 32 to
15 that designated telephone number, it is intercepted by the gateway 36. The
16 gateway 36 recognizes the designated telephone number and thus interprets
17 the call as being destined for the conversion entity 14. The gateway 36 then
18 consults a table (not shown) which maps the designated telephone number of
19 the conversion entity 14 to an address (e.g., an IP address in the data network
20 34) at which the conversion entity 14 can actually be reached. The gateway
21 36 then ensures transparent communication between the caller in the PSTN
22 32 and the conversion entity 14 (connected to the data network 34).

23

24 In either of the above-described scenarios, a PBX 24 or equivalent may or
25 may not be present. For example, when voice mail system 12 is operated by
26 the owner of the PSTN 32, then there is typically no PBX 24. Alternatively, in
27 a corporate voice mail system 12, the voice mail system 12 is owned by a
28 third party and hence a PBX 24 is likely to be present.

29

30 Forwarding a Voice Mail Message

31

32 In either of the above-described scenarios, and with continued reference to
33 Figs. 3A and 3B, the owner of mailbox 20 enters a "forwarding command" 300
34 (e.g., a sequence of digits) via the voice mail access device 18 in order to

1 initiate forwarding of the current or most recently played voice mail message
2 (which may in fact be voice mail message 9A) to the conversion entity 14.
3 The forwarding command 300 identifies the conversion entity 14, either
4 explicitly or implicitly. For example, the forwarding command 300 may include
5 a first portion which is indicative of a standard forwarding function followed by
6 a second portion that includes either the digits of the designated telephone
7 number of the conversion entity 14 or a code that is translated by the voice
8 mail system 12 into the digits of the designated telephone number of the
9 conversion entity 14. Alternatively, the forwarding command 300 may be a
10 customized forwarding function that implicitly signals an intent to forward the
11 current or most recently played voice mail message to the conversion entity
12 14.

13

14 Upon receipt of the forwarding command 300 which either explicitly or
15 implicitly identifies the conversion entity 14, the voice mail system 12 initiates
16 a forward of voice mail message 9A to the conversion entity 14. In addition,
17 "ancillary data" 54 is sent to the conversion entity 14. The ancillary data 54
18 specifies various parameters associated with voice mail message 9A, such as
19 the identity of mailbox 20 where voice mail message 9A was stored.

20

21 The ability to forward a voice mail message along with ancillary data
22 associated therewith to a chosen telephone number is a feature of most
23 legacy voice mail systems, hence no change is required to existing voice mail
24 systems. For example, network-layer protocols such as AMIS A or D, or
25 VPIM, can be used to forward voice mail message 9A and ancillary data 54 to
26 the conversion entity 14. In other embodiments, an outcall can be placed by
27 the voice mail system 12 to the conversion entity 14. Still other ways of
28 forwarding voice mail message 9A and ancillary data 54 to the conversion
29 entity 14 will be known to those of ordinary skill in the art.

30

31 It is noted that where multiple voice mail systems 12, each with a similar
32 mailbox structure, are in use and are capable of reaching the same
33 conversion entity 14 via the PSTN 32, ambiguity may arise in the ancillary
34 data that identifies like-numbered mailboxes originating from different voice

1 mail systems 12. To resolve this potential ambiguity, the ancillary data 54 can
2 be augmented to additionally include the identity of the specific voice mail
3 system from which voice mail message 9A originated.

4

5 Conversion Entity 14

6

7 A specific non-limiting embodiment of the conversion entity 14 is now
8 described in greater detail with reference to Fig. 3C. The conversion entity 14
9 comprises an interface 48 connected to a processing entity 46. It is recalled
10 that under one scenario being contemplated herein (Fig. 3B), the conversion
11 entity 14 is connected to the data network 34 (such as the Internet) and thus it
12 should be understood that the interface 48 will be adapted for communication
13 over the data network 34. Under another scenario being contemplated herein
14 (Fig. 3A), the conversion entity 14 is reachable via the PSTN 32;
15 nevertheless, as shown in Fig. 3C, the conversion entity 14 will still be
16 connected to the data network 34, although in this case the interface 48 will
17 be adapted for communication over both the PSTN 32 and the data network
18 34.

19

20 The processing entity 46 is connected to a memory 50, which comprises a
21 plurality of records. Each record in the memory 50 stores information
22 forwarded from the voice mail system 12, such as voice mail messages and
23 ancillary data associated therewith. One such record 52 stores voice mail
24 message 9A and ancillary data 54 which specifies mailbox 20. Thus, when
25 the conversion entity 14 is contacted by the voice mail system 12 wishing to
26 transfer voice mail message 9A and ancillary data 54, the processing entity 46
27 in the conversion entity 14 ensures that voice mail message 9A and ancillary
28 data 54 are properly received and placed into record 52 in the memory 50.

29

30 The processing entity 46 is also connected to a database 38, which maps an
31 "originating mailbox" field 40 to an "associated address" field 42. The entries
32 in the database 38 may be populated during a preliminary registration phase.
33 For example, the conversion entity 14 may be accessible via the Internet, thus
34 allowing the owner of mailbox 20 to enter his or her mailbox (i.e., mailbox 20)

1 in the "originating mailbox" field 40 of a given entry as well as a desired
2 address in the "associated address" field of the given entry. The "associated
3 address" field 42 represents one or more address(es) to which the owner of
4 the mailbox in the corresponding "originating mailbox" field 40 wishes to have
5 electronic representations of his or her voice mail messages delivered for
6 eventual processing or retrieval. The "associated address" field 42 may be an
7 electronic mail address, an instant messaging address, an SMS address, an
8 IP address, etc.

9
10 Several non-limiting examples of ways in which the processing entity 46
11 renders an electronic representation of voice mail message 9A accessible to
12 the owner of mailbox 20 will now be described with reference to Figs. 4, 5 and
13 6, respectively.

14
15 With reference to Fig. 4, the processing entity 46 runs an electronic mail
16 (email) application 400, which reformats voice mail message 9A in record 52
17 into a file 9B suitable for attachment to an email message 410. Non-limiting
18 examples of reformatting include changing the format from speech to text, or
19 from .wav or .au to MP3 audio, etc. The email application 400 also consults
20 the database 38 to extract the contents of the "associated address" field 42
21 associated with the "originating mailbox" field 40 that corresponds to the
22 mailbox specified in record 52. In this example, the extracted "associated
23 address" is an email address associated with the owner of mailbox 20. Of
24 course, the extracted "associated address" may include a set of more than
25 one email address.

26
27 The extracted email address implicitly specifies the address of a mail server
28 420 that is hosted by a service provider with which the owner of mailbox 20
29 has an account. The email application 400 proceeds to deliver the email
30 message 410 (which includes the attachment 9B representative of voice mail
31 message 9A) to the mail server 420 over the data network 34. When more
32 than one email address is extracted from the database 38, then a
33 corresponding number of email messages is sent in similar fashion. The mail
34 server 420 stores the email message 410 for the benefit of its intended

1 recipient, i.e., the owner of mailbox 20. Once at the mail server 420, the email
2 message 410 can be pushed to an email-capable device 430, such as a
3 desktop computer, personal digital assistant, smart phone, etc., that the owner
4 of mailbox 20 may be using. Alternatively, the owner of mailbox 20 may
5 employ the email-capable device 430 to pull the email message 410 from the
6 email server 420. It should be noted that the email-capable device 430 can
7 be different from the voice mail access device 18 used by the owner of
8 mailbox 20 to enter the forwarding command 300.

9

10 With reference now to Fig. 5, the processing entity 46 runs an SMS
11 application 500, which reformats voice mail message 9A into a text message
12 9C suitable for transmittal within an SMS message 510. The SMS application
13 500 also consults the database 38 to extract the contents of the "associated
14 address" field 42 associated with the "originating mailbox" field 40 that
15 corresponds to the mailbox specified in record 52. In this example, the
16 extracted "associated address" is an SMS address associated with the owner
17 of mailbox 20, such as an IP address of an SMS-capable communication
18 device 520. The SMS application 500 proceeds to deliver the SMS message
19 510 (which includes the text message 9C representative of voice mail
20 message 9A) to the SMS-capable communication device 520 over the data
21 network 34. It should be noted that the SMS-capable device 520 can be
22 different from the voice mail access device 18 used by the owner of mailbox
23 20 to enter the forwarding command 300.

24

25 With reference to Fig. 6, the processing entity 46 runs both an electronic mail
26 (email) application 600 and an instant messaging (IM) application 610. The
27 email application 600 reformats voice mail message 9A into a file 9B suitable
28 for attachment to an email message 620. Non-limiting examples of
29 reformatting include changing the format from speech to text, or from .wav or
30 .au to MP3 audio, etc. The email application 600 also consults the database
31 38 to extract an email address from the "associated address" field 42
32 associated with the "originating mailbox" field 40 that corresponds to the
33 mailbox specified in record 52. The extracted email address implicitly
34 specifies the address of a mail server 630 that is hosted by a service provider

1 with which the owner of mailbox 20 has an account. In addition, the IM
2 application 610 also consults the database 38 to extract an IM address from
3 the "associated address" field 42 associated with the "originating mailbox" field
4 40 that corresponds to the mailbox specified in record 52. An example of an
5 IM address is an IP address of an IM-capable device 650 such as a smart
6 phone.

7
8 The email application 600 proceeds to deliver the email message 620 (which
9 includes the attachment 9B representative of voice mail message 9A) to the
10 mail server 630 over the data network 34. The mail server 630 stores the
11 email message 610 for the benefit of its intended recipient, i.e., the owner of
12 mailbox 20. Meanwhile, an instant message (IM) 640 is delivered over the
13 data network 34 to the IM-capable device 650. The IM 640 serves to notify
14 the owner of mailbox 20 that an email message 620 containing an electronic
15 representation of voice mail message 9A has been transmitted. The use of an
16 IM is beneficial when the email-capable device 660 is different from the IM-
17 capable device 650 (e.g., desktop computer vs. smart phone). Upon receiving
18 notification by way of the IM 640, the owner of mailbox 20 may use his or her
19 email-capable device 660 to retrieve the email message 620 from the mail
20 server 630 at his or her leisure. It should be noted that the email-capable
21 device 660 and the IM-capable device 650 can be different from the voice mail
22 access device 18 used by the owner of mailbox 20 to enter the forwarding
23 command 300.

24
25 From the above description, it will be apparent that the owner of mailbox 20
26 can access electronic representations of voice mail messages stored therein
27 using his or her preferred device (e.g., personal digital assistant, desktop
28 computer, smart phone, etc.) to effect any desired processing or archiving
29 functions. This preferred device may be different from the voice mail access
30 device 18 used to enter the forwarding command 300. All this can be
31 achieved while allowing the voice mail system 12 to remain a legacy voice
32 mail system, which can translate into a significant cost savings for the owner /
33 operator of the voice mail system 12.

34

1 Variants

2

3 Reference is now made to Fig. 7, which shows a plurality of conversion
4 entities 14A, 14B, ..., 14N, each of which is reachable over the PSTN 32
5 using a different designated telephone number. In addition, the conversion
6 entities 14A, 14B, ..., 14N are connected to the data network 34. In some
7 cases, the conversion entities 14A, 14B, ..., 14N will be connected directly to
8 the PSTN 32 and in others, they may be connected thereto via a gateway 36
9 that links the PSTN 32 and a data network 34. Thus, the gateway 36 and the
10 direct links between the PSTN 32 and the conversion entities 14A, 14B, ...,
11 14N are shown in dashed outline. Moreover, a PBX 24 may or may not be
12 present between the voice mail system and the PSTN 32, and thus the PBX
13 24 is also shown in dashed outline.

14

15 Conversion entity 14A maintains a database 38A, while conversion entity 14B
16 maintains a similar database 38B, and so on. The structure of the databases
17 38A, 38B, ..., 38N is identical to that of database 38 in Fig. 4. That is to say,
18 each of the databases 38A, 38B, ..., 38N maps an "originating mailbox" field
19 40 to an "associated address" field 42. In fact, the same mailbox (say,
20 mailbox 20) will be found in the "originating mailbox" field 40 in each of
21 databases 38A, 38B, ..., 38N. However, it is the corresponding entry in the
22 "associated address" field 42 that varies from one database to the next.

23

24 In other words, each of the databases 38A, 38B, ..., 38N maintains a different
25 address corresponding to the same originating mailbox (e.g., mailbox 20),
26 thus allowing the owner of mailbox 20 to select a particular address to which
27 to forward a particular voice mail message (in this case, voice mail message
28 9A). For example, to trigger forwarding of an electronic representation of
29 voice mail message 9A to the address to which database 38A maps, the
30 owner of mailbox 20 enters a forwarding command to cause voice mail
31 message 9A to be forwarded to conversion entity 14A. Analogously, to trigger
32 forwarding of an electronic representation of voice mail message 9A to the
33 address to which database 38B maps, the owner of mailbox 20 forwards voice
34 mail message 9A to conversion entity 14B, and so on.

1

2 A variety of techniques can be used to trigger forwarding of an electronic
3 representation of a voice mail message to the address that is the outcome of
4 the mapping stored in the database maintained by the desired conversion
5 entity (one of 14A, 14B, ..., 14N). These techniques include those based on
6 the previously described notion of a forwarding command, which either
7 explicitly or implicitly identifies the desired conversion entity 14A, 14B, ...,
8 14N. For example, the forwarding command may include a first portion which
9 is indicative of a standard forwarding function followed by a second portion
10 that includes either the digits of the designated telephone number of the
11 desired conversion entity 14A, 14B, ..., 14N or a code that is translated by the
12 voice mail system 12 into the digits of the designated telephone number of the
13 desired conversion entity 14A, 14B, ..., 14N. Alternatively, the forwarding
14 command may be a customized forwarding function that implicitly signals an
15 intent to forward the current or most recently played voice mail message to
16 the desired conversion entity 14A, 14B, ..., 14N.

17

18 Control of message disposition in the above-described manner may be useful
19 in cases where, for example, a mobile professional desires to access an
20 electronic representation of a first voice mail message via his or her wireless
21 email-capable device, while desiring to render an electronic representation of
22 a second voice mail message accessible to his or her administrative assistant
23 who is currently in the office. Other circumstances are of course envisaged.
24 Generally speaking, the owner of mailbox 20 is at liberty of selecting which of
25 a plurality of intended recipients (or sets of intended recipients) is the
26 appropriate one for a particular voice mail message.

27

28 In a specific case of the embodiment shown in Fig. 7, consider the case where
29 the number of conversion entities 14A, 14B, ..., 14N corresponds to the
30 number of mailboxes in the voice mail system 12. Each of the conversion
31 entities 14A, 14B, ..., 14N continues to be reachable over the PSTN 32 (either
32 directly or via the gateway 36 and the data network 34) at a unique
33 designated telephone number. However, in this specific case, each of the
34 conversion entities 14A, 14B, ..., 14N is uniquely associated with a respective

1 mailbox in the voice mail system 12. Thus, the mere fact that a particular
2 conversion entity is at the receiving end of a forwarded voice mail message
3 signifies that there is an intent to render an electronic representation of that
4 voice mail message accessible to the owner of the mailbox that is associated
5 with the particular conversion entity. Since each conversion entity knows the
6 address of the intended recipient *a priori*, there is no need for the conversion
7 entity to store a database that maps originating mailboxes to associated
8 addresses.

9
10 Those skilled in the art will appreciate that in some embodiments, the
11 functionality of the conversion entities 14, 14A, 14B, ..., 14N may comprise
12 pre-programmed hardware or firmware elements (e.g., application specific
13 integrated circuits (ASICs), electrically erasable programmable read-only
14 memories (EEPROMs), etc.), or other related components. In other
15 embodiments, the conversion entities 14, 14A, 14B, ..., 14N may comprise an
16 arithmetic and logic unit (ALU) having access to a code memory (not shown)
17 which stores program instructions for the operation of the ALU. The program
18 instructions could be stored on a medium which is fixed, tangible and readable
19 directly by the conversion entities 14, 14A, 14B, ..., 14N (e.g., removable
20 diskette, CD-ROM, ROM, or fixed disk), or the program instructions could be
21 stored remotely but transmittable to the conversion entities 14, 14A, 14B, ...,
22 14N via a modem or other interface device (e.g., a communications adapter)
23 connected to a network over a transmission medium. The transmission
24 medium may be either a tangible medium (e.g., optical or analog
25 communications lines) or a medium implemented using wireless techniques

26
27 While specific embodiments of the present invention have been described and
28 illustrated, it will be apparent to those skilled in the art that numerous
29 modifications and variations can be made without departing from the scope of
30 the invention as defined in the appended claims.

1 **WHAT IS CLAIMED IS:**

2

3 1. A method for execution by an owner of a mailbox in a voice mail system,
4 comprising:

5 accessing a voice mail message contained in the mailbox;

6 entering a command instrumental in causing the voice mail message to be
7 forwarded over a telephone network to a conversion entity operative to
8 render an electronic representation of the voice mail message
9 accessible to the owner of the mailbox.

10

11 2. The method defined in claim 1, wherein the conversion entity is
12 reachable over the telephone network at a designated telephone
13 number, and wherein the command comprises:

14 a first portion indicative of an intent to effect a forwarding operation on the
15 voice mail message; and

16 a second portion indicative of the designated telephone number.

17

18 3. The method defined in claim 2, wherein said entering a command
19 comprises entering the first portion followed by entering the second
20 portion.

21

22 4. The method defined in claim 3, wherein the second portion is the
23 designated telephone number.

24

25 5. The method defined in claim 3, wherein the second portion is a code that
26 is not the designated telephone number.

27

28 6. The method defined in claim 1, further comprising:

1 receiving an electronic message containing the electronic representation of
2 the voice mail message.

3

4 7. The method defined in claim 6, wherein said accessing and said entering
5 is effected using a first device and wherein said receiving is effected
6 using a second device different from the first device.

7

8 8. The method defined in claim 1, further comprising:

9 receiving a first electronic message notifying the owner of the mailbox of
10 delivery of a second electronic message to an address associated with
11 the owner of the mailbox, the second electronic message containing the
12 electronic representation of the voice mail message.

13

14 9. The method defined in claim 1, wherein the electronic representation of
15 the voice mail message is a file attached to an electronic message.

16

17 10. The method defined in claim 9, wherein the file is at least one of a text
18 file and an audio file.

19

20 11. A voice mail system, comprising:

21 a plurality of mailboxes associated with respective owners, each of the
22 mailboxes having a capacity to hold at least one voice mail message;

23 a processing entity adapted to receive a command indicative of an intent to
24 forward a particular voice mail message held in a particular one of the
25 mailboxes to a conversion entity reachable at a designated telephone
26 number;

27 the processing entity being responsive to said command to forward the
28 particular voice mail message to the conversion entity and to cause the

1 conversion entity to render an electronic representation of the particular
2 voice mail message accessible to the owner of the particular mailbox.

3

4 12. A method for execution by a conversion entity reachable over a
5 telephone network at a designated telephone number, the method
6 comprising:

7 receiving a particular voice mail message forwarded by a voice mail system
8 over the telephone network, the voice mail system comprising a plurality
9 of mailboxes associated with respective owners, a particular one of the
10 mailboxes holding the particular voice mail message;

11 creating an electronic representation of the particular voice mail message;

12 rendering the electronic representation of the particular voice mail message
13 accessible to the owner of the particular mailbox.

14

15 13. The method defined in claim 12, wherein when forwarded by the voice
16 mail system, the particular voice mail message is accompanied by
17 ancillary data identifying the particular mailbox.

18

19 14. The method defined in claim 13, further comprising:

20 determining an address associated with the owner of the particular mailbox;

21 sending a message containing the electronic representation of the
22 particular voice mail message to the address associated with the owner
23 of the particular mailbox.

24

25 15. The method defined in claim 14, wherein the address associated with
26 the owner of the particular mailbox is hosted by a service provider with
27 which the owner of the particular mailbox has an account.

28

- 1 16. The method defined in claim 14, wherein the address associated with
2 the owner of the particular mailbox identifies a device associated with
3 the owner of the particular mailbox.
4
- 5 17. The method defined in claim 14, wherein said determining an address
6 comprises consulting a database populated with entries each specifying
7 an originating mailbox and at least one associated address in an attempt
8 to find an entry specifying the particular mailbox, thereby to obtain the
9 address associated with the owner of the particular mailbox.
10
- 11 18. The method defined in claim 17, wherein the database is populated
12 during a registration phase that precedes receiving the particular voice
13 mail message.
14
- 15 19. The method defined in claim 13, further comprising:
16 determining a first address associated with the owner of the particular
17 mailbox;
18 determining a second address associated with the owner of the particular
19 mailbox;
20 sending a first message to the first address;
21 sending a second message to the second address;
22 wherein the second message contains the electronic representation of the
23 particular voice mail message;
24 wherein the first message notifies of transmission of the second message.
25
- 26 20. The method defined in claim 19, wherein the second address is hosted
27 by a service provider with which the owner of the particular mailbox has
28 an account.
29

- 1 21. The method defined in claim 20, wherein the first address identifies a
2 device associated with the owner of the particular mailbox.
3
- 4 22. The method defined in claim 19, wherein said sending a first message is
5 done over a wireless network.
6
- 7 23. The method defined in claim 22, wherein said sending a second
8 message is done over the Internet.
9
- 10 24. The method defined in claim 19, wherein said determining a first address
11 and said determining a second address comprises consulting a
12 database populated with entries each specifying an originating mailbox
13 and at least two associated addresses in an attempt to find an entry
14 specifying the particular mailbox, thereby to obtain the first address and
15 the second address associated with the owner of the particular mailbox.
16
- 17 25. The method defined in claim 24, wherein the database is populated
18 during a registration phase that precedes receiving the particular voice
19 mail message.
20
- 21 26. Computer-readable media tangibly embodying a program of instructions
22 executable by a computer to perform the method defined in claim 12.
23
- 24 27. The method defined in claim 13, wherein the ancillary data further
25 identifies the voice mail system that contains the particular mailbox.
26
- 27 28. The method defined in claim 12, wherein the electronic representation of
28 the particular voice mail message comprises a file for attachment to an
29 electronic message.

1

2 29. The method defined in claim 28, wherein the file is at least one of a text
3 file and an audio file.

4

5 30. The method defined in claim 12, wherein said creating an electronic
6 representation of the particular voice mail message comprises
7 converting the particular voice mail message from a first format into a
8 second format different from the first format.

9

10 31. The method defined in claim 30, wherein the first format is an audio
11 format and the second format is a text format.

12

13 32. The method defined in claim 30, wherein the first format and the second
14 format are both audio formats.

15

16 33. The method defined in claim 12, further comprising:

17 sending a message containing the electronic representation of the
18 particular voice mail message to an address uniquely associated with
19 the designated telephone number.

20

21 34. The method defined in claim 12, further comprising:

22 sending a first message to a first address associated with the owner of the
23 particular mailbox;

24 sending a second message to a second address associated with the owner
25 of the particular mailbox;

26 wherein the second message contains the electronic representation of the
27 particular voice mail message;

28 wherein the first message notifies of transmission of the second message;

1 wherein the combination of the first and second addresses is uniquely
2 associated with the designated telephone number.

3

4 35. A system comprising:

5 at least one conversion entity reachable over a telephone network at a
6 respective designated telephone number, each of the at least one
7 conversion entity having a processing entity adapted for:

8 (a) receiving a particular voice mail message forwarded by a voice mail
9 system over the telephone network, the voice mail system
10 comprising a plurality of mailboxes associated with respective
11 owners, a particular one of the mailboxes holding the particular voice
12 mail message;

13 (b) creating an electronic representation of the particular voice mail
14 message; and

15 (c) rendering the electronic representation of the particular voice mail
16 message accessible to the owner of the particular mailbox.

17

18 36. The system defined in claim 35, wherein when forwarded by the voice
19 mail system, the particular voice mail message is accompanied by
20 ancillary data identifying the particular mailbox.

21

22 37. The system defined in claim 36, wherein the processing entity of each of
23 the at least one conversion entity is further adapted for:

24 (d) attaching the electronic representation of the particular voice mail
25 message to an electronic message;

26 (e) sending the electronic message to an address associated with the
27 owner of the particular mailbox.

28

- 1 38. The system defined in claim 36, wherein the processing entity of each of
2 the at least one conversion entity being is adapted for:
- 3 (d) sending a first electronic message to a first address associated with
4 the owner of the particular mailbox;
- 5 (e) attaching the electronic representation of the particular voice mail
6 message to a second electronic message;
- 7 (f) sending the second electronic message to a second address
8 associated with the owner of the particular mailbox;
- 9 wherein the first electronic message notifies of transmission of the
10 second electronic message.
- 11
- 12 39. The system defined in claim 36, wherein the processing entity of each of
13 the at least one conversion entity is further adapted for:
- 14 (d) determining an address associated with the owner of the particular
15 mailbox;
- 16 (e) sending a message containing the electronic representation of the
17 particular voice mail message to the address associated with the
18 owner of the particular mailbox.
- 19
- 20 40. The system defined in claim 39, wherein the address associated with the
21 owner of the particular mailbox is hosted by a service provider with
22 which the owner of the particular mailbox has an account.
- 23
- 24 41. The system defined in claim 39, wherein the address associated with the
25 owner of the particular mailbox identifies a device associated with the
26 owner of the particular mailbox.
- 27

- 1 42. The system defined in claim 39, wherein each of the at least one
2 conversion entity is connected to a data network and wherein said
3 sending a message is done over the data network.
4
- 5 43. The system defined in claim 39, wherein said determining an address
6 comprises consulting a database populated with entries each specifying
7 an originating mailbox and at least one associated address in an attempt
8 to find an entry specifying the particular mailbox, thereby to obtain the
9 address associated with the owner of the particular mailbox.
10
- 11 44. The system defined in claim 36, wherein the processing entity of each of
12 the at least one conversion entity is further adapted for:
13 (d) determining a first address associated with the owner of the
14 particular mailbox;
15 (e) determining a second address associated with the owner of the
16 particular mailbox;
17 (f) sending a first message to the first address;
18 (g) sending a second message to the second address;
19 wherein the second message contains the electronic representation of
20 the particular voice mail message;
21 wherein the first message notifies of transmission of the second
22 message.
23
- 24 45. The system defined in claim 44, wherein said determining a first address
25 and said determining a second address comprises consulting a
26 database populated with entries each specifying an originating mailbox
27 and at least two associated addresses in an attempt to find an entry
28 specifying the particular mailbox, thereby to obtain the first address and
29 the second address associated with the owner of the particular mailbox.
30

1 46. The system defined in claim 36, wherein the at least one conversion
2 entity comprises a plurality of conversion entities.

3

4 47. The system defined in claim 46, wherein the processing entity of each
5 conversion entity in said plurality of conversion entities is further adapted
6 for:

7 (d) sending a message containing the electronic representation of the
8 particular voice mail message to an address associated with the
9 owner of the particular mailbox, the address associated with the
10 owner of the particular mailbox being uniquely associated with the
11 respective designated telephone number at which said conversion
12 entity is reachable.

13

14 48. The system defined in claim 46, the processing entity of each conversion
15 entity in said plurality of conversion entities being further adapted for:

16 (d) sending a first message to a first address associated with the owner
17 of the particular mailbox;

18 (e) sending a second message to a second address associated with the
19 owner of the particular mailbox;

20 wherein the second message contains the electronic representation of
21 the particular voice mail message;

22 wherein the first message notifies of transmission of the second
23 message;

24 wherein the combination of the first and second addresses associated
25 with the owner of the particular mailbox is uniquely associated with the
26 respective designated telephone number at which said conversion entity
27 is reachable.

28

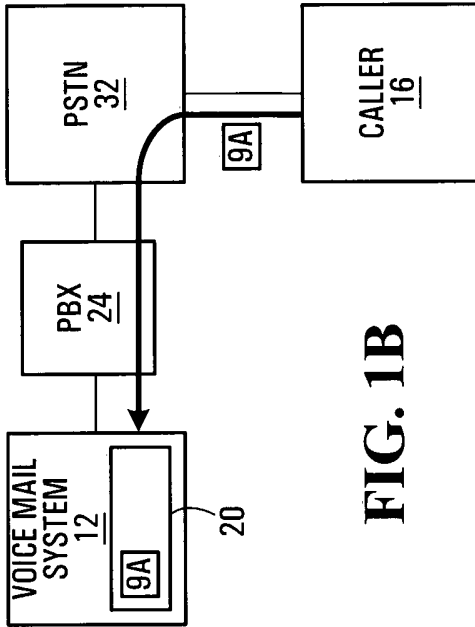


FIG. 1A

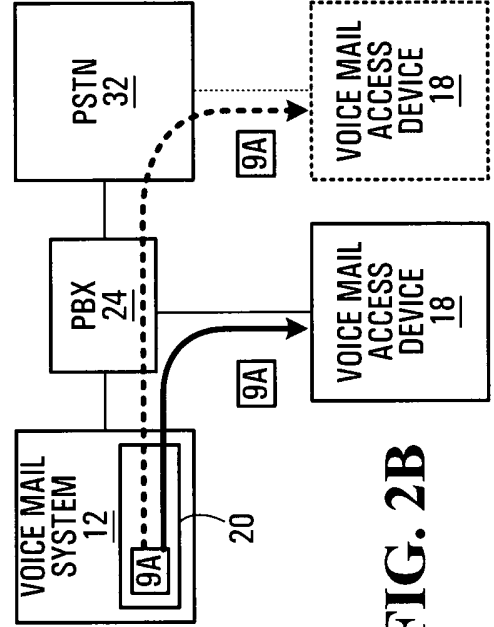


FIG. 1B

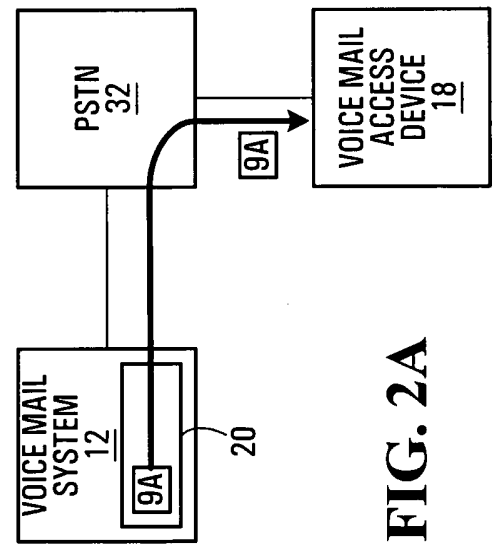


FIG. 2A

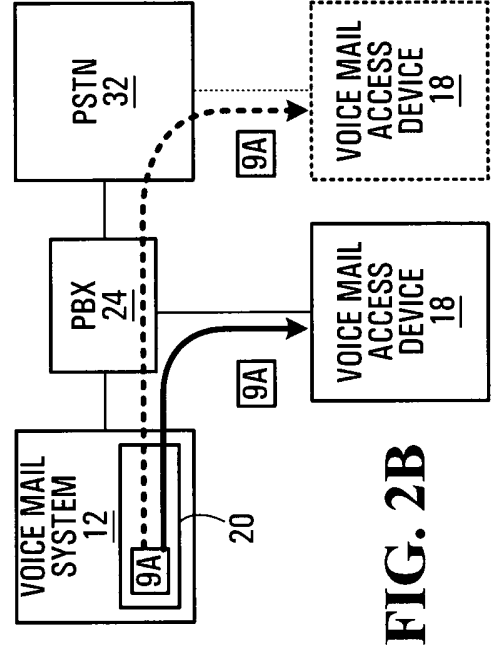


FIG. 2B

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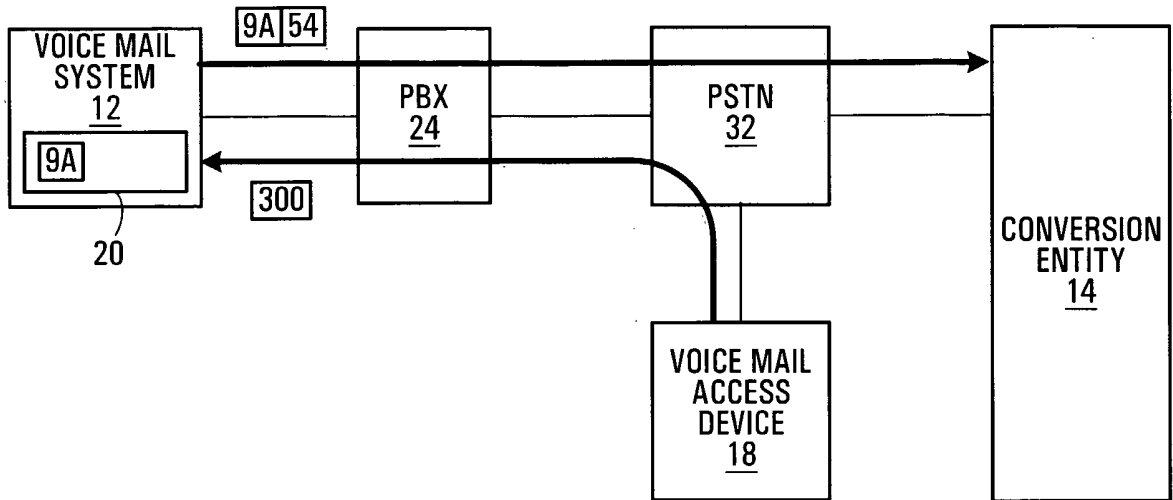


FIG. 3A

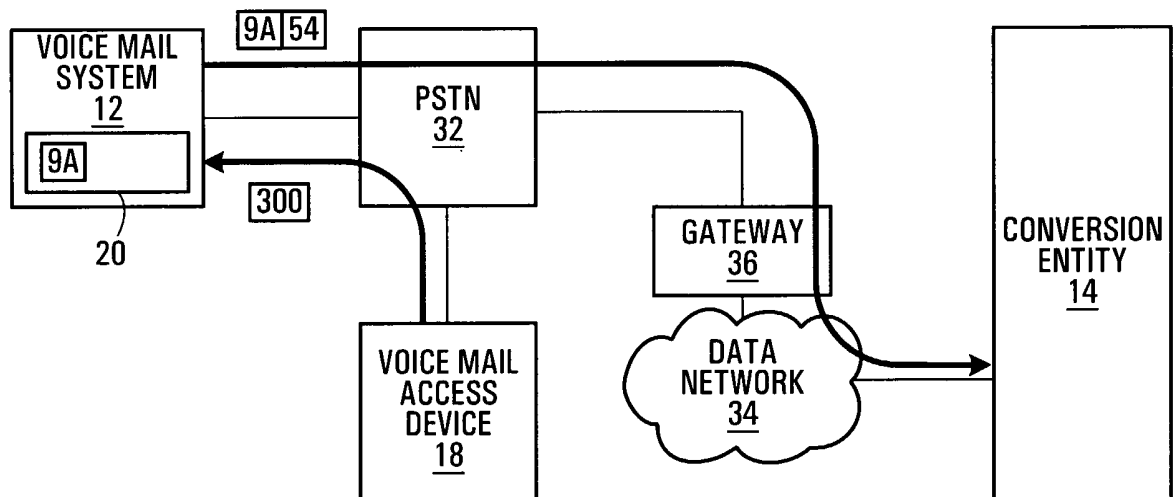


FIG. 3B

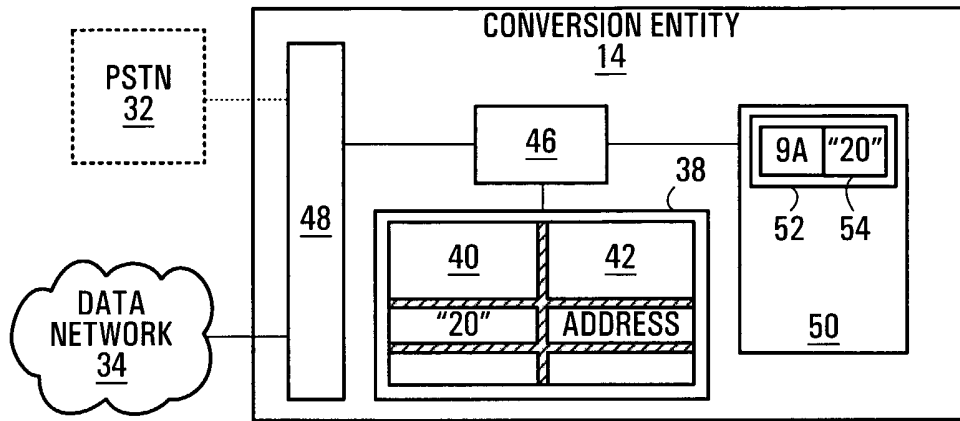


FIG. 3C

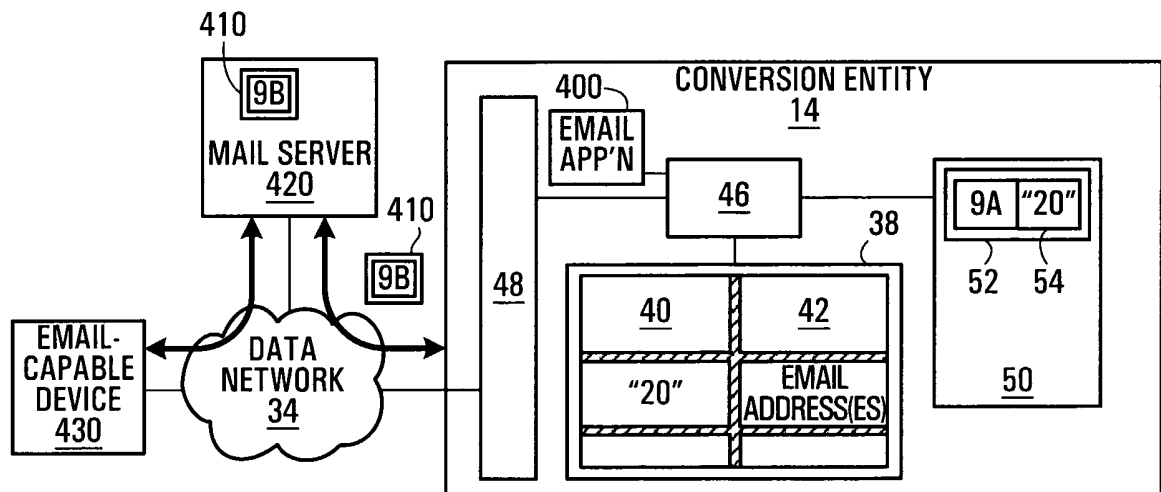


FIG. 4

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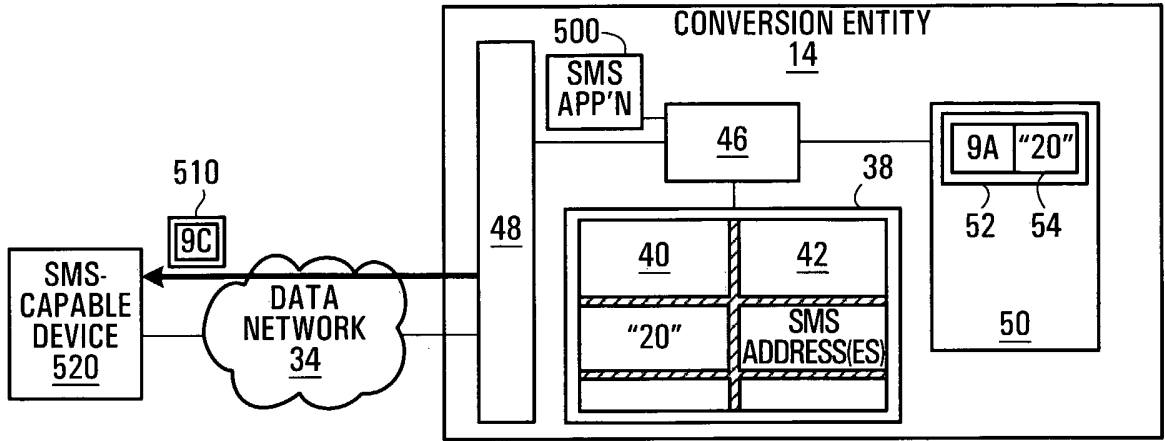


FIG. 5

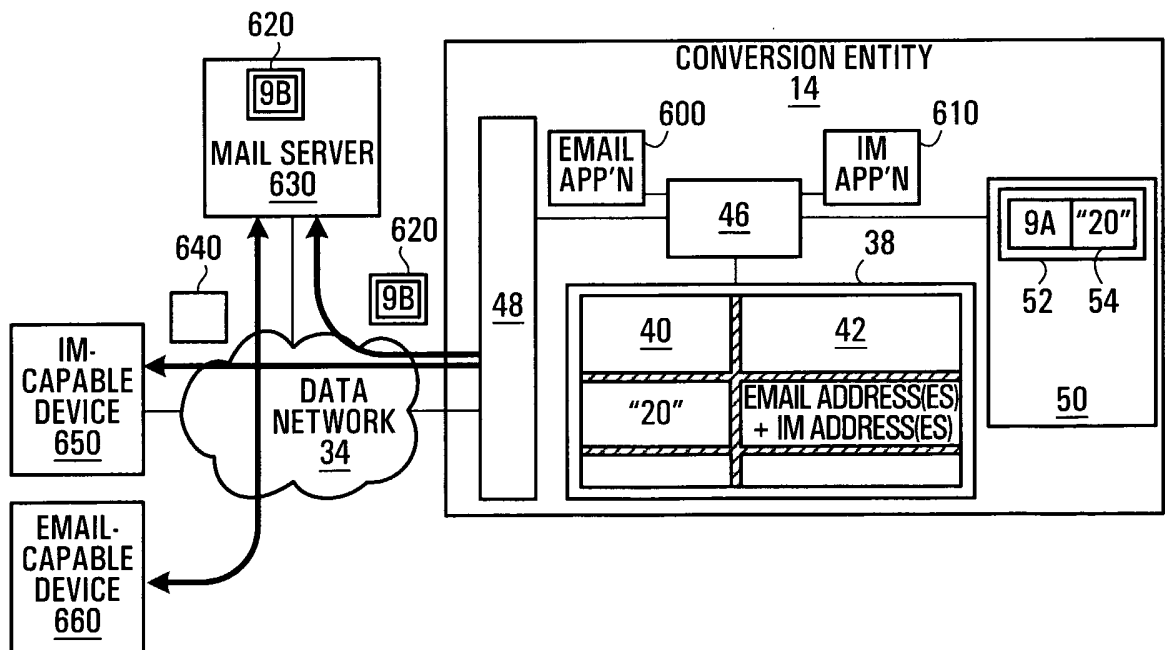


FIG. 6

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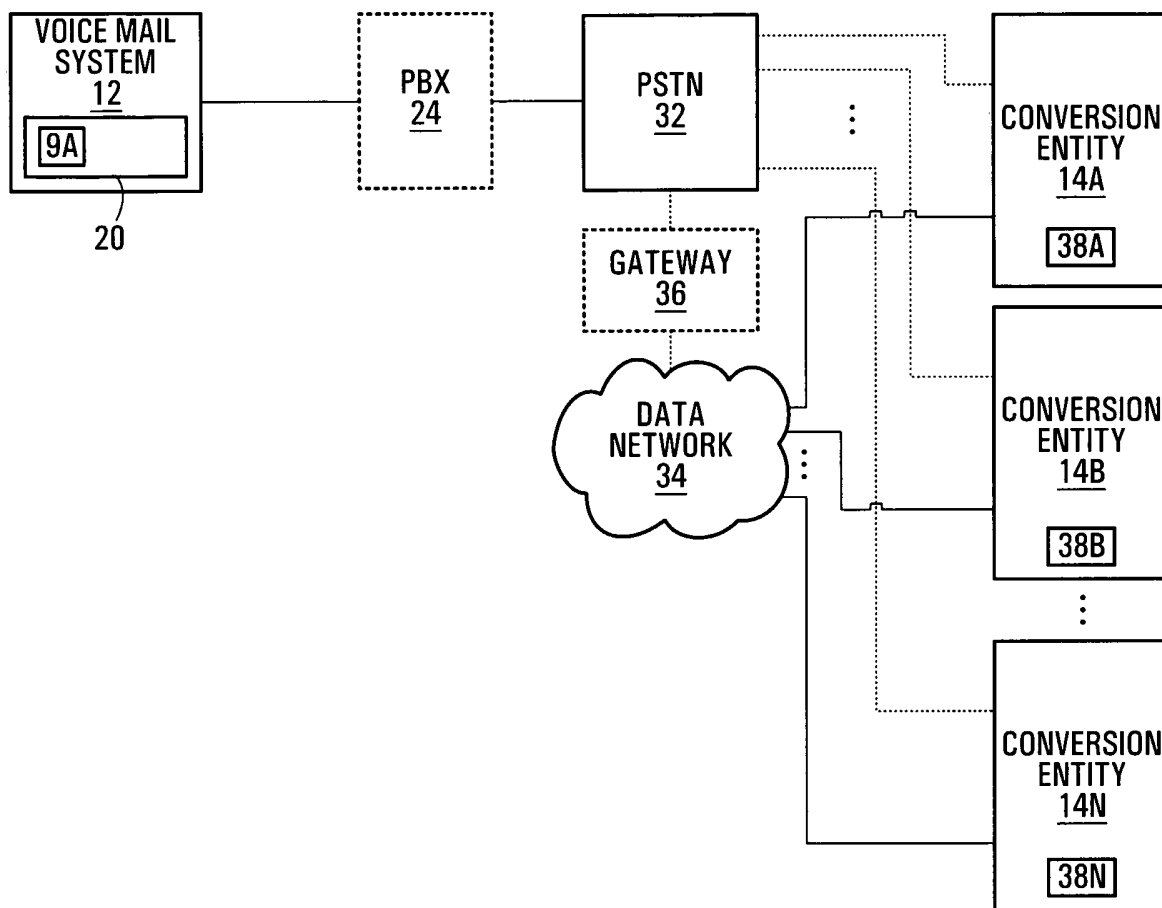


FIG. 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2005/001515

Information on patent family members

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
US6683940	27-01-2004	AU2002365348 A1 WO03047231 A1	10-06-2003 05-06-2003
US6671355	30-12-2003	NONE	
US6792082	14-09-2004	NONE	