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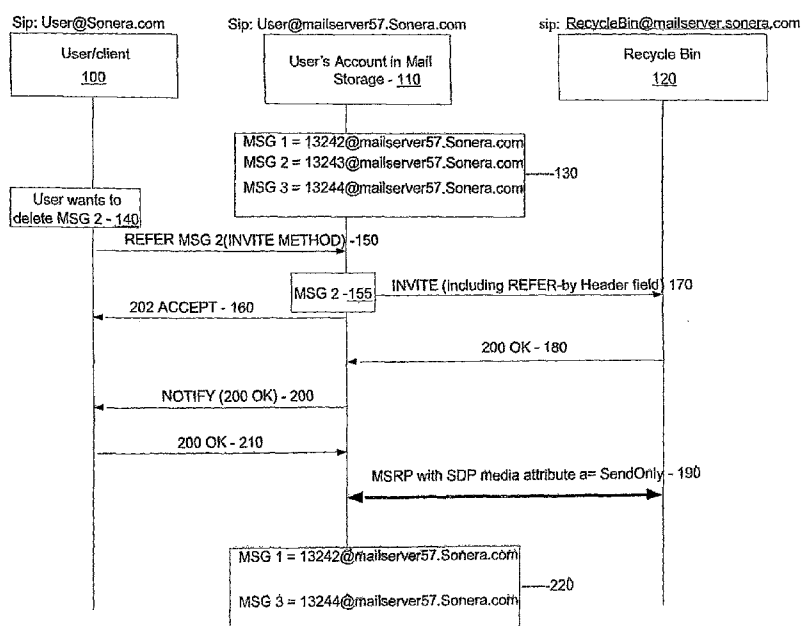
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(54) Title: DELETING MECHANISM IN SIP MULTIMEDIA SERVICES



(57) Abstract: A method of deleting an item from a user account in a SIP multimedia environment. When an item such as an instant message is to be deleted, a SIP REFER message is transmitted from a user device to delete the item from the user account, with the message including a unique identifier for the item. In response to the transmitted request, an SIP INVITE session is established between a virtual agent and a network-based deleted items location. After the SIP INVITE session is established, the item is transferred from the user account to the network-based deleted items location and is deleted from the user account.

DELETING MECHANISM IN SIP MULTIMEDIA SERVICES

FIELD OF THE INVENTION

[0001] The present invention relates generally to session initiation protocol (SIP) services and SIP for instant messaging and presence leveraging extensions (SIMPLE) services. More particularly, the present invention relates to SIP/SIMPLE based services such as instant messaging (IM) and push-to-talk (poC) services.

BACKGROUND OF THE INVENTION

[0002] This section is intended to provide a background or context to the invention that is recited in the claims. The description herein may include concepts that could be pursued, but are not necessarily ones that have been previously conceived or pursued. Therefore, unless otherwise indicated herein, what is described in this section is not prior art to the description and claims in this application and is not admitted to be prior art by inclusion in this section.

[0003] The Open Mobile Alliance (OMA) is a standards body which collectively develops open standards for use in the mobile industry. The OMA helps to create interoperable services enablers to work across countries, operators and mobile terminals and is driven by market requirements. To expand the mobile market, companies supporting the Open Mobile Alliance work to aid in the rapid and wide development and deployment of a variety of new, enhanced mobile information, communication and entertainment services.

[0004] The OMA is currently developing IM services based on SIP, Message Session Relay Protocol (MSRP) and Extensible Markup Language (XML) Configuration Access Protocol (XCAP) protocols developed by the International Engineering Task Force (IETF) SIMPLE working group. Instant Messaging service are already deployed using several proprietary technologies and Wireless Village specifications.

[0005] There is currently a need for a deleting Mechanism in the SIP multimedia service environment. In an http environment, if a document needs to be deleted, an

“http delete” command is simply issued. However, there is currently no corresponding deleting feature or function defined for the SIP environment. In fact, even SIP extensions for services have not defined such a feature. In current multimedia services, particularly OMA SIP/SIMPLE IM, there are several requirements about storing and retrieving messages. Although there is a need for deleting and selectively deleting stored messages, such a mechanism has yet to be defined.

SUMMARY OF THE INVENTION

[0006] The present invention comprises a novel deleting mechanism for use in SIP multimedia services. The present invention involves the use of various SIP multimedia service environment features for this purpose. In one embodiment, a “recycle bin” is defined in the network and is associated with a SIP uniform resource identifier. Messages that are stored within the network are assigned a unique identifier. If a user desires to delete the message, he or she requests that a SIP/MSRP function be set up between the message and the network-defined recycle bin. When processed, the message is transferred to the recycle bin, leaving the user’s account in the user’s mail storage server.

[0007] The system and method of the present invention is simple and easy to adopt, as already-existing defined tools such as the SIP REFER method, Virtual User Agent and SIP URI are used.

[0008] These and other advantages and features of the invention, together with the organization and manner of operation thereof, will become apparent from the following detailed description when taken in conjunction with the accompanying drawings, wherein like elements have like numerals throughout the several drawings described below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] Figure 1 is a flow chart showing the operation of a deleting mechanism for SIP multimedia services in accordance with one embodiment of the present invention;

[0010] Figure 2 is an overview diagram of a system within which the present invention may be implemented;

[0011] Figure 3 is a perspective view of a mobile telephone that can be used in the implementation of the present invention;

[0012] Figure 4 is a schematic representation of the telephone circuitry of the mobile telephone of Figure 2;

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0013] The present invention comprises a novel deleting mechanism for use in SIP multimedia services. The present invention involves the use of various SIP multimedia service environment features for this purpose. In one embodiment, a “recycle bin” or similar location for deleted items is defined in the network and is associated with a SIP uniform resource identifier. Messages that are stored within the network are assigned a unique identifier. If a user desires to delete the message, he or she requests that a SIP/MSRP session function be set up between the message and the network-defined recycle bin. When processed, the message is transferred to the recycle bin, leaving the user’s account in the user’s mail storage server.

[0014] Figure 1 is a flow chart showing the operation of a deleting mechanism for SIP multimedia services in accordance with one embodiment of the present invention. In particular, Figure 1 shows the interaction among a user/client device 100, a user’s account in mail storage 110 and a recycle bin 120 as defined herein. Both the user’s account 110 and the recycle bin 120 are located remote from the user/client device. In the embodiment shown in Figure 1, the SIP URI for the user/client device is “User@Sonera.com.” The SIP URI for the user’s account is “User@mailserver57.Sonera.com.” The SIP URI for the recycle bin is “RecycleBin@mailserver.sonera.com.”

[0015] As discussed above, stored messages in the network are assigned unique message identifiers. Three such messages are shown at 130 in Figure 1 with identifiers of “13242@mailserver57.Sonera.com” (MSG 1) “13243@mailserver57.Sonera.com” (MSG 2) and “13244@mailserver57.Sonera.com” (MSG 3).

[0016] At 140 in Figure 1, a user decides he or she wants to delete MSG 2. At this point, the user/client device 100 sends an SIP REFER with INVITE request 150 to the message identifier 13243@mailserver57.Sonera.com, which serves as a virtual user agent 155, at the user's account 110. The SIP REFER request has the network-based recycle bin address (RecycleBin@mailserver.sonera.com) in the Refer-to header. The SIP REFER with INVITE request 150 serves to request that a SIP Session be set up with the network-based recycle bin 120 (RecycleBin@mailserver.sonera.com). The virtual user agent 155 responds by accepting the SIP REFER request from the user/client device 100 with a "202 ACCEPT" message at 160. The virtual user agent 155 also sends an INVITE request to set up a SIP session with the recycle bin 120 at 170. The recycle bin 120 accepts this session at 180. At 190, an SIP session is officially set up with the virtual user agent 155 in the form of a message session relay protocol (MSRP), with the session description protocol (SDP) media attribute set to a=SendOnly. The virtual user agent 155 proceeds to notify the user/client 100 of the SIP session at 200, and the user/client device 100 acknowledges this notification at 210. In the SIP/MSRP session, MSG 2 is sent from the user's account 110 to the network-based recycle bin 120, causing MSG 2 to disappear from the user's account 110. After successful transmission of the message MSG2, the SIP session between the virtual user agent 155 and the recycle bin 120 is torn down. The end result, depicted at 220, is the presence of only MSG 1 and MSG 3 in the user's account 110 in the user's mail storage server.

[0017] In an alternative embodiment of the present invention, the functions of the user's account 110 and the recycle bin 120 are collocated. In this situation, the sending of an INVITE request to set up a SIP session 170, the acknowledgement of this request 180, and the setting up of the SIP session with MSRP 190 is not necessary.

[0018] Figure 2 shows a system 10 in which the present invention can be utilized, comprising multiple communication devices that can communicate through a network. The system 10 may comprise any combination of wired or wireless networks including, but not limited to, a mobile telephone network, a wireless Local Area Network (LAN), a Bluetooth personal area network, an Ethernet LAN, a token

ring LAN, a wide area network, the Internet, etc. The system 10 may include both wired and wireless communication devices.

[0019] For exemplification, the system 10 shown in Figure 2 includes a mobile telephone network 11 and the Internet 28. Connectivity to the Internet 28 may include, but is not limited to, long range wireless connections, short range wireless connections, and various wired connections including, but not limited to, telephone lines, cable lines, power lines, and the like.

[0020] The exemplary communication devices of the system 10 may include, but are not limited to, a mobile telephone 12, a combination PDA and mobile telephone 14, a PDA 16, an integrated messaging device (IMD) 18, a desktop computer 20, and a notebook computer 22. The communication devices may be stationary or mobile as when carried by an individual who is moving. The communication devices may also be located in a mode of transportation including, but not limited to, an automobile, a truck, a taxi, a bus, a boat, an airplane, a bicycle, a motorcycle, etc. Some or all of the communication devices may send and receive calls and messages and communicate with service providers through a wireless connection 25 to a base station 24. The base station 24 may be connected to a network server 26 that allows communication between the mobile telephone network 11 and the Internet 28. The system 10 may include additional communication devices and communication devices of different types.

[0021] Figures 3 and 4 show one representative mobile telephone 12 within which the present invention may be implemented. It should be understood, however, that the present invention is not intended to be limited to one particular type of mobile telephone 12 or other electronic device. Other types of electronic devices that may be used include, but are not limited to, a PDA 16, a combination PDA and mobile telephone 14, an IMD 18, a desktop computer 20, and a notebook computer 22. The communication devices may be stationary or mobile as when carried by an individual who is moving. The communication devices may also be located in a mode of transportation including, but not limited to, an automobile, a truck, a taxi, a bus, a boat, an airplane, a bicycle, a motorcycle, etc.

[0022] The mobile telephone 12 of Figures 2 and 3 includes a housing 30, a display 32 in the form of a liquid crystal display, a keypad 34, a microphone 36, an ear-piece 38, a battery 40, an infrared port 42, an antenna 44, a smart card 46 in the form of a UICC according to one embodiment of the invention, a card reader 48, radio interface circuitry 52, codec circuitry 54, a controller 56 and a memory 58. Individual circuits and elements are all of a type well known in the art, for example in the Nokia range of mobile telephones. For exemplification, the system 10 shown in FIG. 1 includes a mobile telephone network 11 and the Internet 28. Connectivity to the Internet 28 may include, but is not limited to, long range wireless connections, short range wireless connections, and various wired connections including, but not limited to, telephone lines, cable lines, power lines, and the like.

[0023] The present invention is described in the general context of method steps, which may be implemented in one embodiment by a program product including computer-executable instructions, such as program code, executed by computers in networked environments. Generally, program modules include routines, programs, objects, components, data structures, etc. that perform particular tasks or implement particular abstract data types. Computer-executable instructions, associated data structures, and program modules represent examples of program code for executing steps of the methods disclosed herein. The particular sequence of such executable instructions or associated data structures represents examples of corresponding acts for implementing the functions described in such steps.

[0024] Software and web implementations of the present invention could be accomplished with standard programming techniques with rule based logic and other logic to accomplish the various database searching steps, correlation steps, comparison steps and decision steps. It should also be noted that the words “component” and “module,” as used herein and in the claims, is intended to encompass implementations using one or more lines of software code, and/or hardware implementations, and/or equipment for receiving manual inputs.

[0025] The foregoing description of embodiments of the present invention have been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the present invention to the precise form disclosed, and

modifications and variations are possible in light of the above teachings or may be acquired from practice of the present invention. The embodiments were chosen and described in order to explain the principles of the present invention and its practical application to enable one skilled in the art to utilize the present invention in various embodiments and with various modifications as are suited to the particular use contemplated.

WHAT IS CLAIMED IS:

- 1 1. A method of deleting an item from a user account in a SIP multimedia
2 environment, comprising:
3 receiving a request from a user device to delete the item from the user
4 account;
5 establishing a SIP session with a network-based deleted items location;
6 after establishing the SIP session, transferring the item from the user
7 account to the network-based deleted items location; and
8 deleting the item from the user account.
- 1 2. The method of claim 1, wherein the request comprises an SIP REFER
2 request.
- 1 3. The method of claim 2, wherein the SIP REFER request includes an
2 address for the network-based deleted items location in its Refer-to header.
- 1 4. The method of claim 1, further comprising, in response to receiving the
2 request, transmitting an acknowledgment of the request to the user device.
- 1 5. The method of claim 1, wherein the SIP session is established with a
2 SDP directional attribute set to a=SendOnly.
- 1 6. The method of claim 1, wherein the item includes a unique message
2 identifier, and wherein the unique message identifier is included in the request from
3 the user device.
- 1 7. The method of claim 1, wherein the user device, the user's account and
2 the network-based deleted items location each possess a unique uniform resource
3 identifier.
- 1 8. The method of claim 1, wherein MSRP protocol is used to transfer the
2 item from the user account to the network-based deleted items location.

- 1 9. A computer program product, embodied in a computer-readable
2 medium, for deleting an item from a user account in a SIP multimedia environment,
3 comprising:
4 computer code for receiving a request from a user device to delete the
5 item from the user account;
6 computer code for establishing a SIP session with a network-based
7 deleted items location;
8 computer code for after establishing the SIP session, transferring the
9 item from the user account to the network-based deleted items location; and
10 computer code for deleting the item from the user account.
- 1 10. The computer program product of claim 9, wherein the request
2 comprises an SIP REFER request.
- 1 11. The computer program product of claim 10, wherein the SIP REFER
2 request includes an address for the network-based deleted items location in its Refer-
3 to header.
- 1 12. The computer program product of claim 9, wherein the SIP session is
2 established with a SDP directional attribute set to a=SendOnly.
- 1 13. The computer program product of claim 9, wherein the item includes a
2 unique message identifier, and wherein the unique message identifier is included in
3 the request from the user device.
- 1 14. The computer program product of claim 9, wherein the user device, the
2 user's account and the network-based deleted items location each possess a unique
3 uniform resource identifier.
- 1 15. The computer program product of claim 9, wherein MSRP protocol is
2 used to transfer the item from the user account to the network-based deleted items
3 location.
- 1 16. An electronic device, comprising:

2 a processor; and
3 a memory unit communicatively connected to the processor and
4 including:
5 computer code for receiving an SIP request from a user device
6 to delete an item from the user account;
7 computer code for establishing a SIP session with a network-
8 based deleted items location;
9 computer code for, after establishing the SIP session,
10 transferring the item from the user account to the network-based deleted items
11 location; and
12 computer code for deleting the item from the user account.

1 17. The electronic device of claim 16, wherein the request comprises an
2 SIP REFER request.

1 18. The electronic device of claim 17, wherein the SIP REFER request
2 includes an address for the network-based deleted items location in its Refer-to
3 header.

1 19. The electronic device of claim 16, wherein the SIP session is
2 established with a SDP directional attribute set to a=SendOnly.

1 20. The electronic device of claim 16, wherein the item includes a unique
2 message identifier, and wherein the unique message identifier is included in the
3 request from the user device.

1 21. The electronic device of claim 16, wherein MSRP protocol is used to
2 transfer the item from the user account to the network-based deleted items location.

1 22. A method of deleting an item from a user account in a SIP multimedia
2 environment, comprising:
3 transmitting a request from a user device to delete the item from the
4 user account;

5 in response to the transmitted request establishing a SIP session
6 between a virtual user agent and a network-based deleted items location;
7 after establishing the SIP session, transferring the item from the user
8 account to the network-based deleted items location; and
9 deleting the item from the user account.

1 23. The method of claim 22, wherein the SIP session is established with a
2 SDP directional attribute set to a=SendOnly.

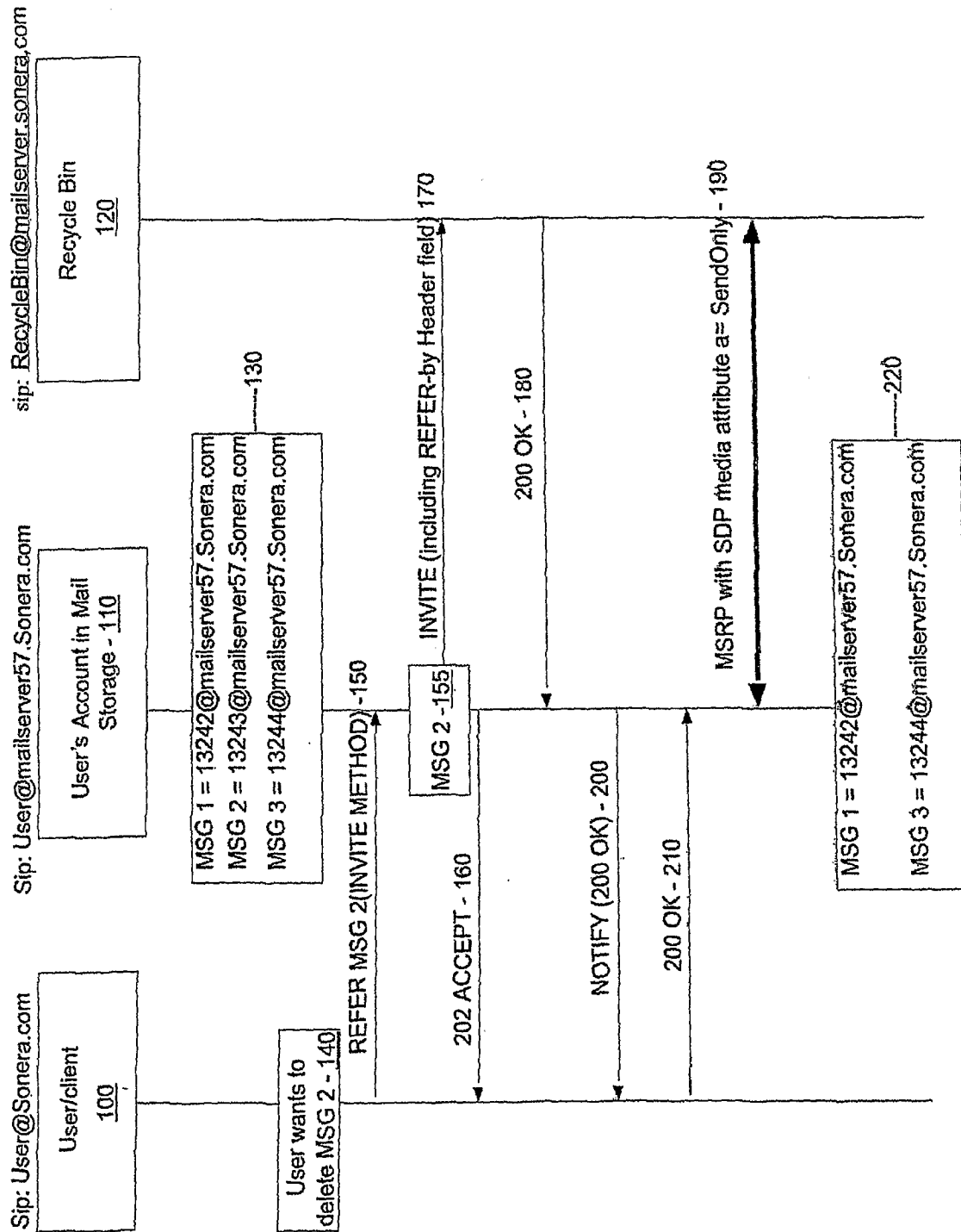
1 24. The method of claim 22, wherein the request comprises a SIP REFER
2 request including a unique identifier for the item to be deleted.

1 25. The method of claim 24, wherein the SIP REFER request includes an
2 address for the network-based deleted items location in its Refer-to header.

1 26. The method of claim 22, wherein MSRP protocol is used to transfer
2 the item from the user account to the network-based deleted items location.

1 27. A method of deleting an item from a user account in a SIP multimedia
2 environment, comprising:
3 transmitting a SIP REFER request from a user device to delete the item
4 from the user account, the SIP REFER request including an address for an network-
5 based deleted items location in its Refer-to header;
6 in response to receiving the SIP REFER request, transmitting an
7 acknowledgment of the request to the user device; and
8 deleting the item from the user account.

FIG. 1



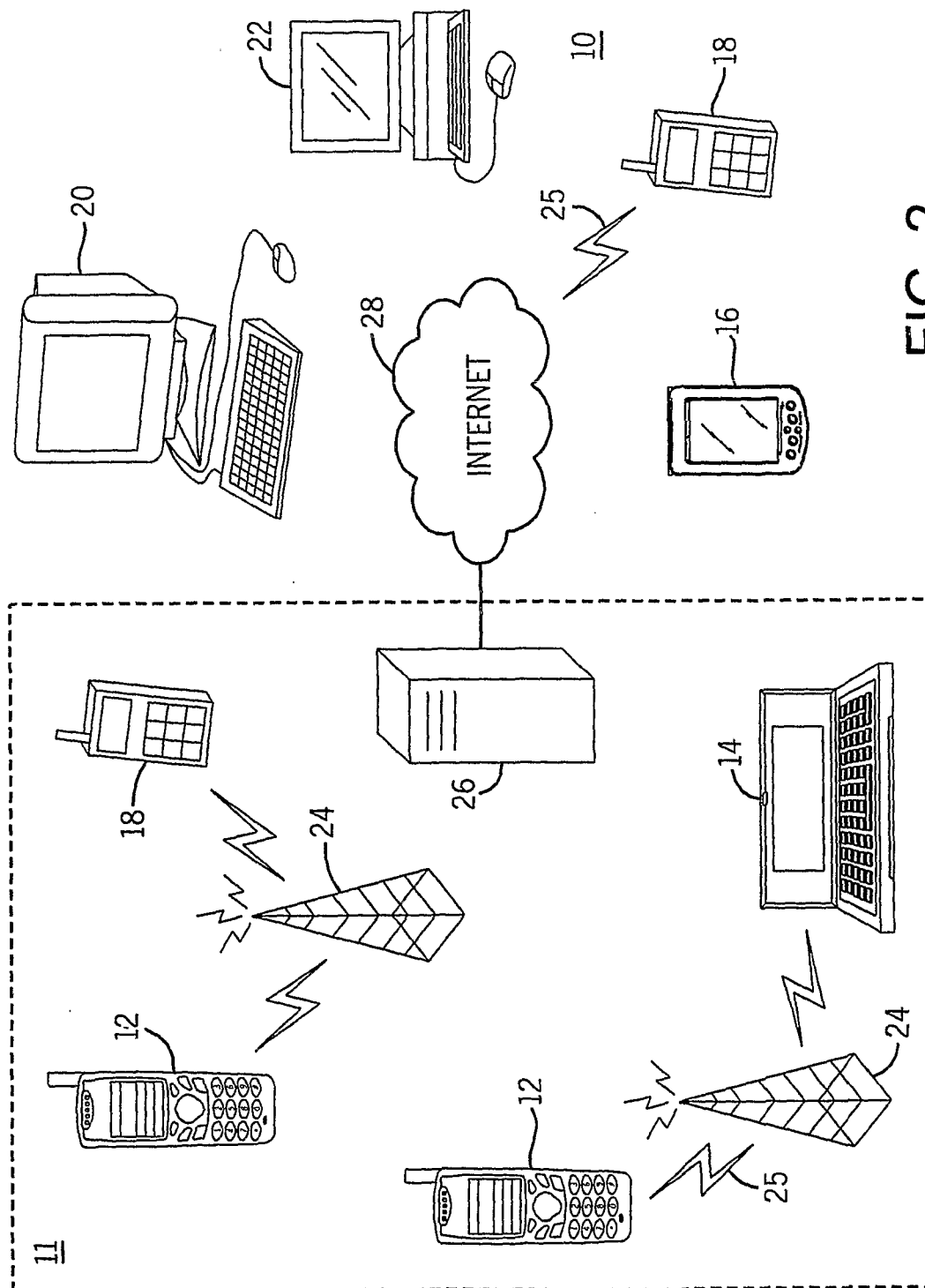


FIG. 2

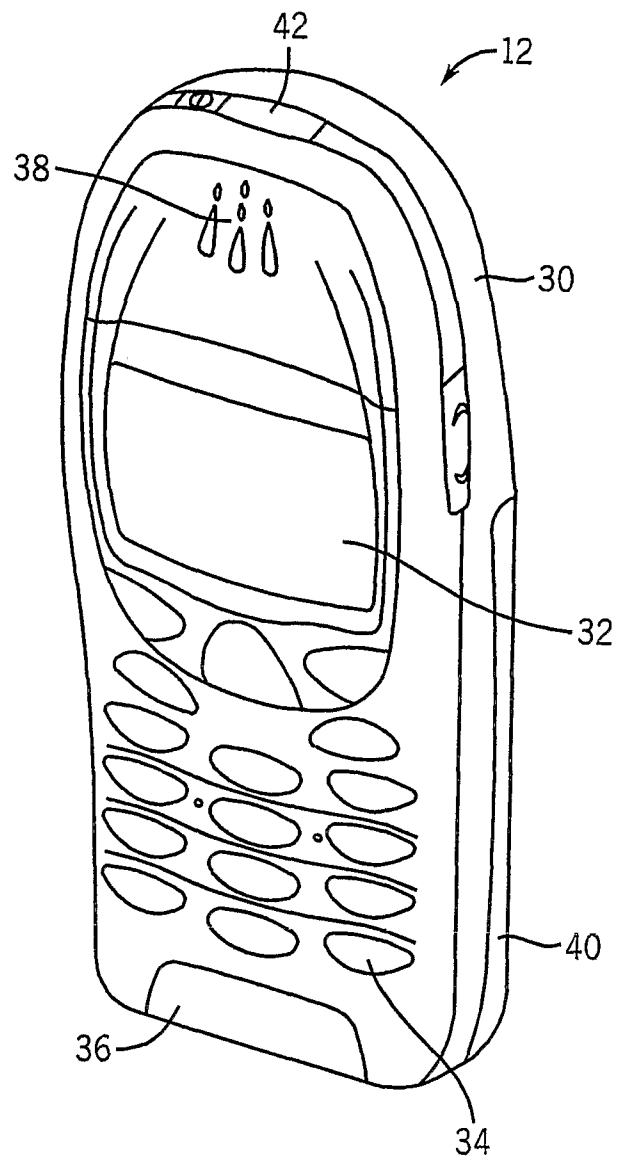


FIG. 3

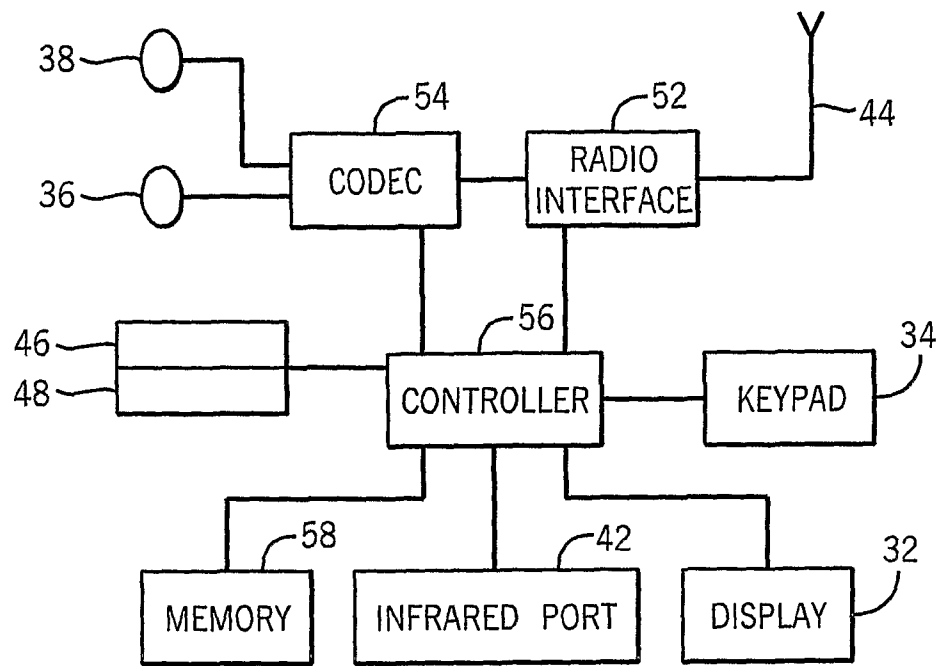


FIG. 4