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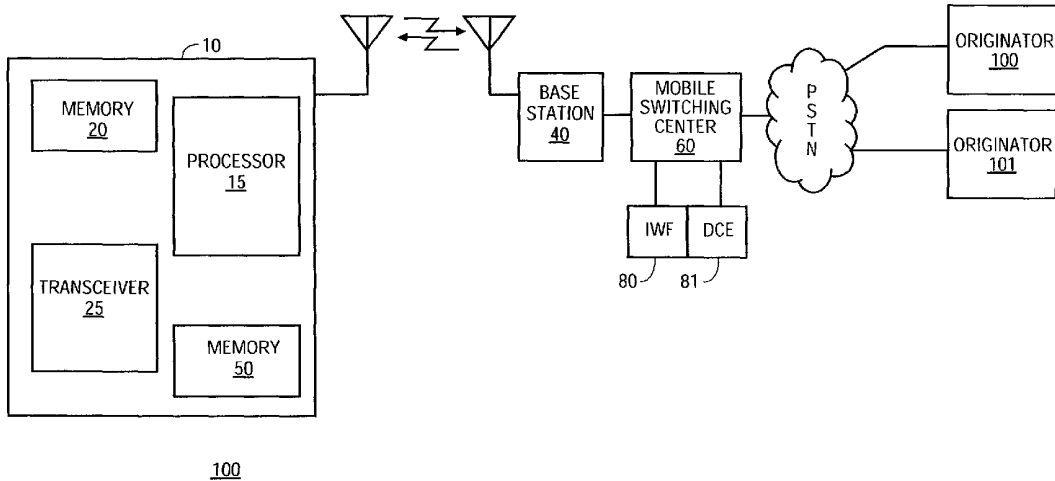
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(54) Title: COMMUNICATION DEVICE AND METHOD THEREFOR



(57) Abstract: Briefly, in accordance with one embodiment of the invention, a portable communication device may contain identification data associated with the origin or nature of an incoming communication. If the portable device recognizes the origin of the communication, a processor may adjust the receiving mode of the portable communication device.



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COMMUNICATION DEVICE AND METHOD THEREFOR

BACKGROUND

The Public Switched Telephone Network (PSTN) is designed such that
5 it is assumed that a communication from an originator to a terminator station
(e.g., receiver) is intended to be a voice communication. Consequently, extra
steps may be necessary to conduct other types of communications. For
example, to transmit a facsimile (e.g., fax) message or a digital file, the
operational mode of the receiver may be changed to a fax transmission or
10 data-only.

However, the standards that govern traditional telephone networks do
not typically provide for techniques to change the mode of a communication
device (e.g., a wired or wireless phone). Consequently, there is no universal
technique. One solution is to assign a separate phone number to each device.
15 However, the growth in the number of wired and wireless devices has nearly
exhausted the ten-digit number scheme. Another technique involves two-
stage dialing where the originator of a call dials one number to contact a
group of devices (e.g., a network), and then dials a second number to select
the device on the network. A similar technique involves tone-switching.
20 However, this is typically just available for fax communications

Yet another technique is referred to pre-arrangement calling. Here, a
first call is made to verbally notify the called-party that a non-voice-only call is
about to follow. Thereafter, a second call is made prior to which the

originator has arranged their system to switch the service for the next incoming call. However, such a technique is inconvenient for the originator and if another caller sends a voice-only call to the receiver, this technique may fail.

5 Thus, there is a continuing need for better ways to change the receiving mode of a communication device depending on the nature or type of calling being placed.

BRIEF DESCRIPTION OF THE DRAWINGS

10 The subject matter regarded as the invention is particularly pointed out and distinctly claimed in the concluding portion of the specification. The invention, however, both as to organization and method of operation, together with objects, features, and advantages thereof, may best be understood by reference to the following detailed description when read with the
15 accompanying drawings in which:

FIG. 1 is a block diagram representation of an embodiment of a system in accordance with the present invention; and

FIG. 2 is a flow chart illustrating a method in accordance with an embodiment of the present invention.

20

It will be appreciated that for simplicity and clarity of illustration, elements illustrated in the figures have not necessarily been drawn to scale.

For example, the dimensions of some of the elements are exaggerated relative to other elements for clarity. Further, where considered appropriate, reference numerals have been repeated among the figures to indicate corresponding or analogous elements.

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DETAILED DESCRIPTION

In the following detailed description, numerous specific details are set forth in order to provide a thorough understanding of the invention. However, it will be understood by those skilled in the art that the present invention may
10 be practiced without these specific details. In other instances, well-known methods, procedures, components and circuits have not been described in detail so as not to obscure the present invention.

Some portions of the detailed description which follow are presented in terms of algorithms and symbolic representations of operations on data bits or
15 binary digital signals within a computer memory. These algorithmic descriptions and representations may be the techniques used by those skilled in the data processing arts to convey the substance of their work to others skilled in the art.

An algorithm is here, and generally, considered to be a self-consistent
20 sequence of acts or operations leading to a desired result. These include physical manipulations of physical quantities. Usually, though not necessarily, these quantities take the form of electrical or magnetic signals capable of

being stored, transferred, combined, compared, and otherwise manipulated. It has proven convenient at times, principally for reasons of common usage, to refer to these signals as bits, values, elements, symbols, characters, terms, numbers or the like. It should be understood, however, that all of these and
5 similar terms are to be associated with the appropriate physical quantities and are merely convenient labels applied to these quantities.

Unless specifically stated otherwise, as apparent from the following discussions, it is appreciated that throughout the specification discussions utilizing terms such as "processing," "computing," "calculating,"
10 "determining," or the like, refer to the action and/or processes of a computer or computing system, or similar electronic computing device, that manipulate and/or transform data represented as physical, such as electronic, quantities within the computing system's registers and/or memories into other data similarly represented as physical quantities within the computing system's
15 memories, registers or other such information storage, transmission or display devices.

Embodiments of the present invention may include apparatuses for performing the operations herein. This apparatus may be specially constructed for the desired purposes, or it may comprise a general purpose
20 computing device selectively activated or reconfigured by a program stored in the device. Such a program may be stored on a storage medium, such as, but is not limited to, any type of disk including floppy disks, optical disks, CD-ROMs, magnetic-optical disks, read-only memories (ROMs), random access

memories (RAMs), electrically programmable read-only memories (EPROMs),
electrically erasable and programmable read only memories (EEPROMs),
magnetic or optical cards, or any other type of media suitable for storing
electronic instructions, and capable of being coupled to a system bus for a
5 computing device.

The processes and displays presented herein are not inherently related
to any particular computing device or other apparatus. Various general
purpose systems may be used with programs in accordance with the
teachings herein, or it may prove convenient to construct a more specialized
10 apparatus to perform the desired method. The desired structure for a variety
of these systems will appear from the description below. In addition,
embodiments of the present invention are not described with reference to any
particular programming language. It will be appreciated that a variety of
programming languages may be used to implement the teachings of the
15 invention as described herein.

In the following description and claims, the terms "coupled" and
"connected," along with their derivatives, may be used. It should be understood
that these terms are not intended as synonyms for each other. Rather, in
particular embodiments, "connected" may be used to indicate that two or more
20 elements are in direct physical or electrical contact with each other. "Coupled"
may also mean that two or more elements are in direct physical or electrical
contact. However, "coupled" may also mean that two or more elements are not in
direct contact with each other, but yet still co-operate or interact with each other.

Types of cellular radiotelephone communication systems intended to be within the scope of the present invention include, although not limited to, Direct Sequence - Code Division Multiple Access (DS-CDMA) cellular radiotelephone communication systems, Global System for Mobile Communications (GSM) cellular radiotelephone systems, North American Digital Cellular (NADC) cellular radiotelephone systems, Time Division Multiple Access (TDMA) systems, Extended-TDMA (E-TDMA) cellular radiotelephone systems, and the like.

Turning to FIG. 1, an embodiment 100 in accordance with the present invention is described. Embodiment 100 may comprise a communication device 10 such as a mobile communication device (e.g., cell phone), a two-way radio communication system, a one-way pager, a two-way pager, a personal communication system (PCS), a portable computer, another type of data terminating equipment (DTE), or the like. Although it should be understood that the scope and application of the present invention is in no way limited to these examples or to wireless applications in general. In alternative embodiments, device 10 may be a wired communication device such as a telephone, fax machine, printer, data storage device, etc. Additionally, embodiments of the present invention may be used with a terminating station. In such embodiments, communication device 10 may comprise one or more peripherals (e.g., fax machine, printer, etc.) that provide different types of originating and/or terminating services.

Communication device 10 here may include a processor 15, memory 20, and a transceiver 25. Processor 15 may comprise, for example, a microprocessor, a digital signal processor, a microcontroller, or the like, although

the scope of the present invention is not limited in this respect. As explained in more detail hereinafter, processor 15 may, among other things, adjust the communication receiving mode of communication device 10 based on the nature or identification data associated with an incoming communication. For example, 5 although the scope of the present invention is not limited in this respect, processor 15 may alter communication device 10 from a voice-only communication mode to a data-only communication mode. In particular embodiments, communication mode or receiving mode may refer to how a communication device may be arranged depending on the service type of an 10 incoming call. It should be understood that the scope of the present invention is not limited such that "receiving" means data flows only from the originator (e.g., calling party) to the terminating station (e.g., receiver). It may also be possible for data to flow from the receiver to the originator even though the receiver did not initiate the call.

15 Memory 20 may comprise a variety of different memory types including, but not limited to, volatile memory (e.g., such as static random access memory (SRAM), dynamic random access memory (DRAM), etc.) or non-volatile memory (e.g., flash memory, EEPROM, EPROM, etc.). Memory 20 may be used, among other things, to store identification data that indicates the receiving mode or 20 communication mode to be used by communication device 10 depending on the origin of an incoming communication. Although the scope of the present invention is not limited in this respect, memory 20 may comprise a table storing at least part of the identification data associated with the origin or originator of an incoming communication.

	Calling Party Number	Receiving mode
	800-555-1111	Data-only
	800-555-1112	Route to fax machine
5	800-555-1113	Route to printer
	800-555-1114	Route to voicemail
	800-555-1115	Duplex voice/data mode
	800-555-1116	Data-only
	800-555-1117	Data-only

10 TABLE 1

Table 1 is provided to illustrate one example of the data that may be stored in memory 20. As shown, the receiving mode of communication device 10 may be changed depending on the type or origin of the incoming call. Although the scope of the present invention is not limited to these examples, the receiving mode of communication device 10 may be data-only, video-only, voice-only, internet connection-only, or any combination thereof. Alternatively, communication device 10 may reroute the incoming call to another device. For example, communication device 10 may route the call to a fax machine, printer, storage medium, etc, although the scope of the present invention is not limited to these. In the embodiment shown in Table 1, the identification data stored in the calling party's number (CPN), which may be available on most wired or wireless communication systems.

It should also be understood that, alternatively, the table or data stored in

memory 20 may comprise only a portion of the identification data associated with the origin or type of incoming call. For example, memory 20 may store just the area code, prefix, or some other subset of the calling party's identification number. Alternatively, memory 20 may store other identification data (e.g.,
5 name, network identification numbers, IP address, etc.) that may suggest the origin, service type, or the nature of an incoming communication.

In an wireless embodiment, although the scope of the present invention is not limited in this respect, transceiver 25 may be used to receive and transmit messages during a communication using radio frequency (RF) techniques such
10 as CDMA, TDMA, GSM, etc. Transceiver 25 may also be adapted to decode or determine the identification data associated with the origin or type of call. For example, transceiver 25 may be adapted to determine the calling party's number (CPN). In this particular embodiment, communication device 10 may transmit and receive messages from a base station 40, which, in turn, receives and transmits
15 messages from a mobile switching center (MSC) 60.

MSC 60 may be used to control which base station(s) is used to communicate with communication device 10. MSC 60 may also permit communication device 10 to connect to the Public Switching Telephone Network (PTSN). This may allow communication device 10 to communication with
20 origination devices 100-101. Devices 100-101 may represent a wired or wireless device that originates a communication with communication device 10. For example, originating devices 100-101 may be a wired or wireless telephone, a network, a fax machine, a data storage device, an internet service provider, etc., although the scope of the present invention is not limited to these examples.

MSC 60 may also be coupled to an interworking function (IWF) 80 and data communications equipment (DCE) 81 (e.g., a modem), which may be employed by MSC 60 to conduct a communication depending on the type of communication.

Although the scope of the present invention is not limited in this respect,
5 communication device 10 may also comprise memory 50 that may be used to store the instructions to be executed by processor 15. Memory 50 may be any type of memory including any type of volatile or non-volatile memory.

Additionally, it should be understood that memory 50 may also be either external or internal with respect to processor 15 and communication device 10.

10 Referring now to FIG. 2, a method of adjusting the communication mode of communication device 10 in accordance with a particular embodiment of the present invention is provided. To begin, the user of communication device 10 may program the device by indicating what receiving mode is to be used should an incoming communication having a particular CPN is detected, block 200. For
15 example, the user may enter the phone number or other identification data associated with an originator and then indicate what receiving mode is to be used. In alternative embodiments, communication device 10 may be programmed at the manufacturer or may be programmed by loading data from the service provider. However, it should be understood that the scope of the present invention is not
20 limited by the particular technique used to program communication device 10.

Thereafter, communication device 10 may receive an indication that there is an incoming call, block 201. For example, MSC 60 may use base station 40 to notify communication device 10 that there is an incoming call from the PSTN. As part of the notification, communication device 10 may receive information that

may be used to indicate the origin or nature of the incoming communication.

Communication device 10 may then determine if the identification data matches any of the data stored, block 203. If the identification data (e.g., CPN) matches any of the data stored in memory 20, then processor 15 may adjust the receiving
5 mode of communication device 10 or reroute the call to another device coupled to communication device 10 (e.g., fax machine, printer, data storage device, etc.), block 204.

However, if the identification data associated with the incoming call does not match, the communication device 10 may be programmed to receive
10 in a default mode such as voice-only, block 205. Alternatively, if the incoming communication does not contain any calling party identification data, then communication device 10 may assume that there is no match and begin a voice-only communication. Once the communication receiving mode of communication device 10 has been set, communication with the originator
15 may be conducted.

In alternative embodiments, communication device 10 may also be adapted to be programmed to change the receiving mode regardless of the identification associated with an incoming call. For example, a user may desire to program communication device 10 so that it does not change its
20 communication mode based on the calling party's number even if all or a portion of the CPN matches data stored in communication device 10.

Communication device 10 may also be programmed to a "one-shot" mode where the mode of the device is set to a particular mode for the next call,

regardless of the nature of the call and regardless if the CPN matches data stored in memory 20. Additionally, communication device 10 may set a counter value that is decremented if a particular CPN matches. This may be used to program communication device 10 to use a particular receiving mode
5 for a predetermined number of calls.

An advantage of particular embodiments of the present invention is that the receiving mode of a communication device may be changed without requiring any changes to the communication network (e.g., PSTN). Since calling party identification data is available on many existing systems,
10 embodiments of the present invention may be implemented independently of the existing infrastructure. Additionally, particular embodiments may alleviate the burden upon the originator of a call to notify a communication device of the nature of an incoming communication.

While certain features of the invention have been illustrated and
15 described herein, many modifications, substitutions, changes, and equivalents will now occur to those skilled in the art. For example, the transmission mode of a communication device may be changed depending on the destination of an outgoing call from the communication device. It is, therefore, to be understood that the appended claims are intended to cover all such
20 modifications and changes as fall within the true spirit of the invention.

Claims:

1. A portable communication device comprising:
a non-volatile memory to store identification data indicative of the origin
of at least one communication source; and
5 a processor coupled to the non-volatile memory, wherein the processor
is adapted to change the communication mode of the portable communication
device based on, at least in part, a portion of the identification data.
2. The portable communication device of claim 1, wherein the
10 processor is adapted to change the portable communication device from a
voice-only communication mode to a data-only communication mode.
3. The portable communication device of claim 1, wherein the non-
volatile memory comprises flash memory.
15
4. The portable communication device of claim 1, wherein the
identification data includes at least a portion of a calling party number.
5. The portable communication device of claim 4, wherein the portable
20 communication device is further adapted to determine the calling party
identification number.

6. The portable communication device of claim 5, wherein the processor is adapted to determine if the calling party identification number corresponds to data stored in the non-volatile memory.

5 7. The portable communication device of claim 1, wherein the identification data is indicative of a communication from the public switched telephone network.

8. An apparatus comprising:

 a memory to store at least a portion of at least two calling party
10 identification numbers; and

 a processor adapted to determine if a portion of a calling party identification number corresponds to at least one of the two calling party identification numbers.

15 9. The apparatus of claim 8, wherein the processor is further adapted to change the receiving mode of the apparatus based at least in part on a calling party number of a communication.

 10. The apparatus of claim 8, wherein the memory is adapted to store
20 user data indicative of the receiving mode for the apparatus for the at least two calling-party identification numbers.

11. An apparatus comprising a processor, wherein the processor is adapted to change a communication receiving mode of the apparatus based on origination data associated with an incoming communication.

5 12. The apparatus of claim 11, further comprising a memory to store user data indicative of the communication receiving mode for at least one origination data.

10 13. The apparatus of claim 12, wherein the origination data includes at least a portion of a calling-party number.

 14. A method comprising:
 storing data in a communication device, wherein the data indicates a receiving mode to be used for at least one in-coming communication.

15 15. The method of claim 14, further comprising:
 receiving an incoming communication, the incoming communication comprising data indicating the nature of the communication; and
 adjusting the receiving mode of the communication device.

20 16. The method of claim 15 further comprising comparing the data indicating the nature of the communication to data stored in the communication device.

17. The method of claim 15, wherein receiving an incoming communication includes receiving a communication with a wireless communication device.

5 18. The method of claim 15, wherein receiving an incoming communication includes receiving a communication with a wired communication device.

19. The method of claim 15, wherein receiving an incoming
10 communication includes receiving a calling-party number associated with the communication.

20. The method of claim 15, wherein adjusting the receiving mode of the communication device includes changing the receiving mode to a data-
15 only mode.

21. The method of claim 15, wherein adjusting the receiving mode of the communication device includes routing the incoming communication to another communication device.

20

22. The method of claim 21, wherein routing the incoming communication includes routing the in-coming communication device to a fax machine.

23. The method of claim 21, wherein routing the in-coming communication includes routing the incoming communication device to a printer.

5

24. The method of claim 21, wherein routing the incoming communication includes routing the incoming communication device to a voicemail system.

25. An article comprising: a storage medium having stored thereon instructions, that, when executed by a computing platform, results in:
adjusting a receive mode of a communication device based on origination data provided to the communication device.

26. The article of claim 25, wherein the instructions further result in a communication device changing from a voice-only mode to a data-only mode.

27. The article of claim 25, wherein the instructions further result in:
changing the receiving mode of the communication device from a first mode to a second mode; and
changing the receiving mode of the communication device from the second mode to the first mode after termination of an in-coming communication.

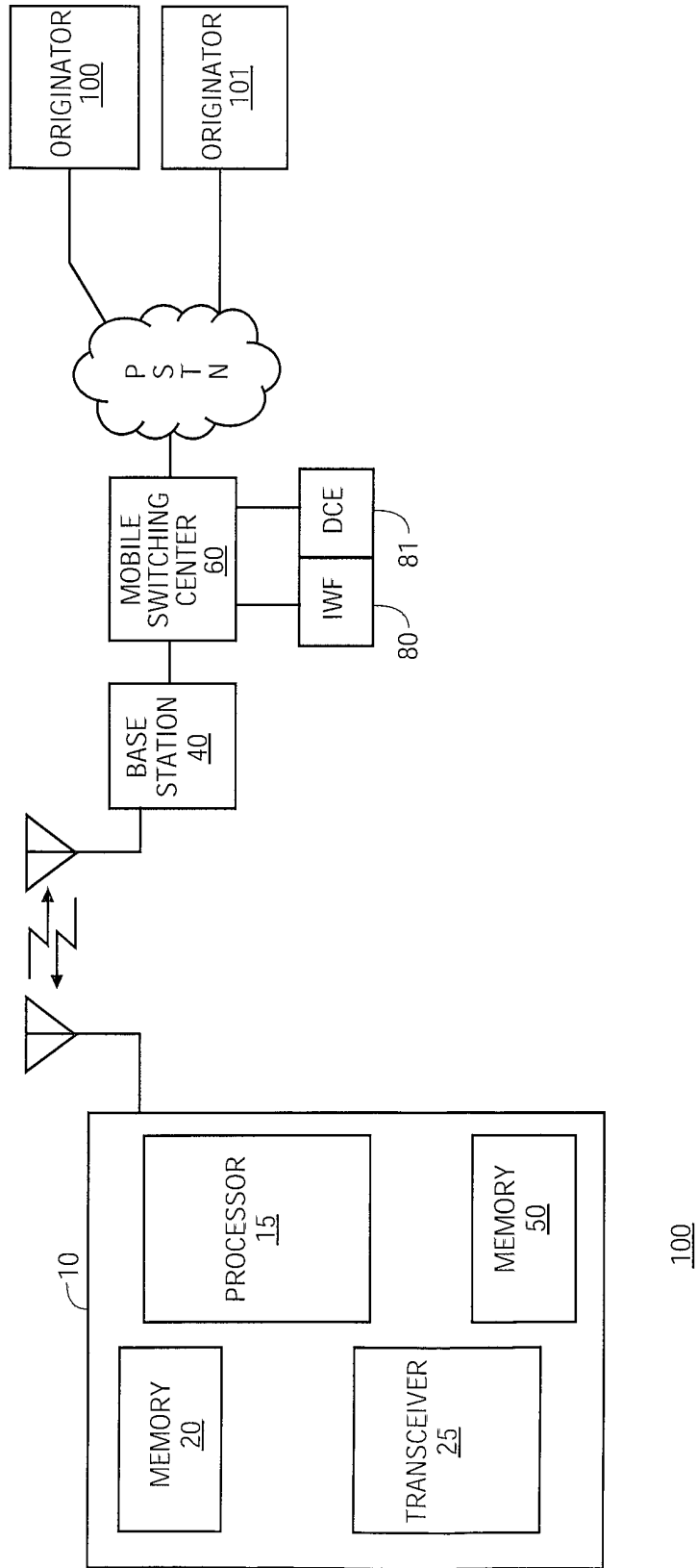


FIG. 1

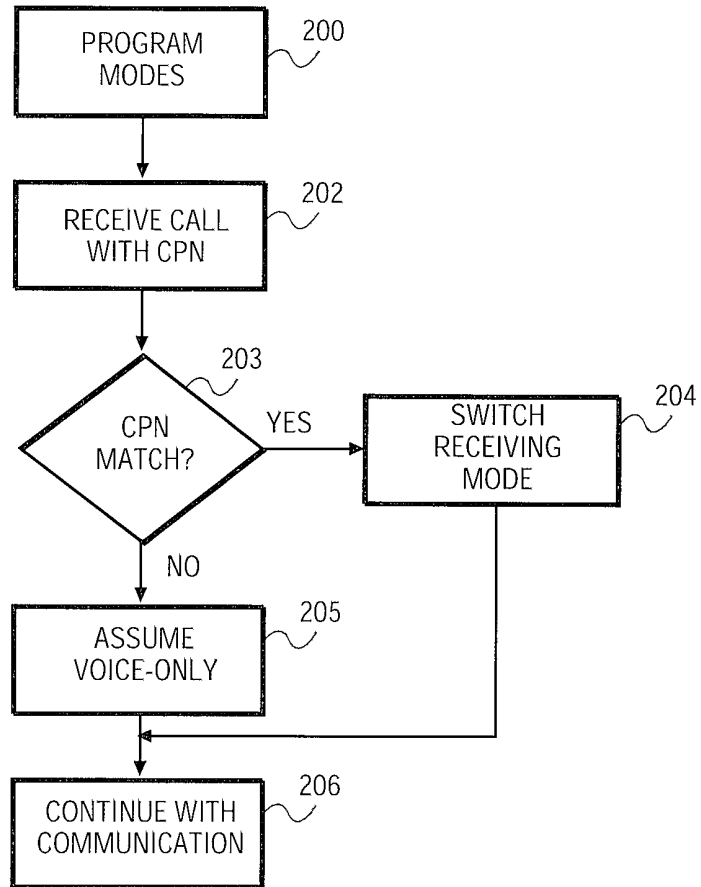


FIG. 2