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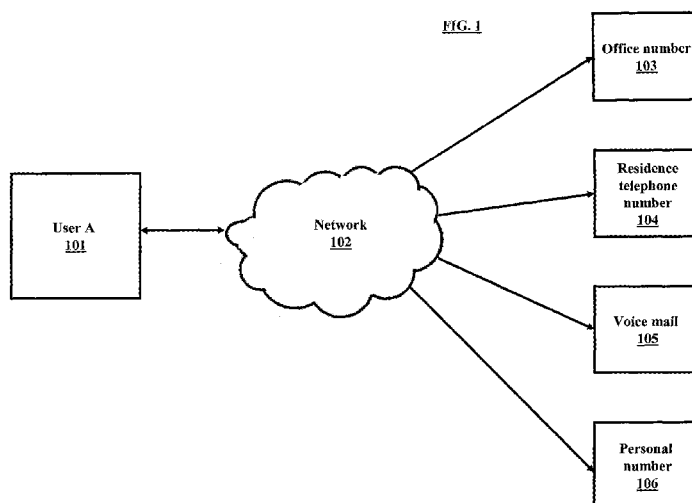
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(54) Title: ENHANCED INTERACTIVE CALL FORWARDING MECHANISM



(57) Abstract: A method for enhanced interactive call forwarding is disclosed. A subscriber has to register with the network for call forwarding service. On registration, the subscriber is activated with the service. Hereafter when the subscriber is busy, not able to attend a call or is out of coverage area of the network, the incoming calls to the subscriber are forwarded. The mechanism allows the subscriber to forward his calls based on the identity of the caller. At the time of registration, the subscriber provides numbers of his choice to the service provider. The numbers include the preferred destination where the subscriber would like to forward his call. The preferred numbers can include office telephone number, residence telephone number, voice mail number and the like. Depending on the identity of the caller the subscriber can forward his calls to any number of his choice.

Enhanced Interactive Call Forwarding Mechanism

FIELD OF INVENTION

[001] This invention relates to telecommunication systems and, more particularly
5 but not exclusively, to call forwarding in telecommunication systems.

BACKGROUND

[002] When a subscriber is engaged in telephonic conversations, or is out of the network coverage area or is busy, his callers are likely to face difficulty in reaching him.
10 Existing mechanisms offer solutions to manage the busy line by call waiting and call forwarding services. There are different call forwarding mechanisms which include call forward unconditionally (CFU), call forward busy (CFB), call forward no answer (CFNA) and call forwarding on no reply (CFNR). In different call forwarding mechanisms the subscriber directs his calls to a pre stored number. The subscriber has to
15 specify the number to which he would like to divert his calls at the time of subscribing for the service with the network. The options offered to the subscriber by the existing services are very limited. In case the subscriber wants to receive some calls and forward some calls, he must manually remember to activate and de-activate the call forwarding service at appropriate times.

20 [003] In case of CFU all the incoming calls to the subscriber are forwarded unconditionally to a pre defined number. The user has no option to selectively forward his calls. In CFB, subscriber's calls are forwarded when his line is busy. The line may be busy as the user may be on another call at the moment or may be out of the coverage area

of the network. In CFNA, the subscriber's calls are forwarded when there is no answer for the call i.e. the subscriber may be busy and may not be able to receive calls. In that case his calls will be diverted to a number as specified by the subscriber. In CFNR scheme, the subscriber's calls are diverted to a number, when the subscriber is not able to receive his calls. Different call forwarding schemes forward the calls of the subscriber who registers for the service and call forwarding happens to a number which is of preference to the subscriber. On the other hand, if the number to which the call is being forwarded is busy, there is no alternate mechanism available. The calls in such a case may be forwarded to a voice mail and the like. These services are not very effective as there is no guarantee that the called party will address the call later. As the subscriber may be busy and may not be able to check his voice mail. Thus, the very purpose of the call may not be served.

[004] In other telephone systems, the subscriber equipment itself may perform call forwarding, but this will require some modifications in the line circuits. The subscriber will store a number to which he would like to forward his calls. The number is stored in the equipment. When the subscriber's call has to be forwarded, the central office switch recognizes the feature code and the telephone line from which the subscriber equipment has dialed, and the central office switch thereafter redirects the subscriber's calls to the forwarding telephone number. The process is time consuming and expensive.

[005] This section introduces aspects that may be helpful in facilitating a better understanding of the invention. Accordingly, the statements of this section are to be read in this light and are not to be understood as admissions about what is in the prior art or what is not in the prior art.

SUMMARY

[006] A method for call forwarding in a network is disclosed. The method comprising user providing the network with a list of numbers, wherein the user desires to forward calls to the numbers. The user responds to network on receiving a call, the response indicating a number from the list for forwarding the call and network forwarding the call to the number on receiving response from the user. The user registers for the call forwarding, before providing the network with list of numbers. Each number present in list of numbers is mapped to unique keys on keypad of a device of user and the response from the user is initiated by user by selecting an assigned key on the keypad of the device of user. The network further checks if user is registered for the service, before forwarding the call. The network is one of a mobile communication network, a fixed line network, a Session Initiation Protocol (SIP) network, an Internet Protocol (IP) Multimedia Subsystem (IMS) network or a Voice over Internet Protocol (VoIP) network.

[007] A telecommunication network configured to forward calls based on incoming caller identification, the network comprising of storage means for storing a list of numbers provided by a user and a call forwarding means for forwarding a call to a number selected from the list of numbers by the user. The user sends a response indicating the number to the network on receiving a call. The telecommunication network further comprises a registration module to enable user to register for the service. The network comprises a means for network to check if the user is registered for the service before forwarding the call. The network is one of a mobile communication network, a fixed line network, a Session Initiation Protocol (SIP) network, an Internet Protocol (IP) Multimedia Subsystem (IMS) network or a Voice over Internet Protocol (VoIP) network.

[008] A network controller controlling a telecommunication network based on incoming caller identification, wherein the network is configured to forward calls. The network controller is configured to forward a call to a number selected from a list of numbers provided by a user, wherein the user sends a response indicating a number from the list of numbers to the network on receiving the call. The network controller is connected to a memory and stores a list of numbers. The network controller is configured to check if user has registered for the service before forwarding the call. The network controller is an application server.

[009] These and other aspects of the embodiments herein will be better appreciated and understood when considered in conjunction with the following description and the accompanying drawings.

BRIEF DESCRIPTION OF THE FIGURES

[0010] Some embodiments of apparatus and/or methods in accordance with embodiments of the present invention are now described, by way of example only, and with reference to the accompanying drawings, in which:

[0011] FIG. 1 is a system diagram illustrating the components of the call forwarding mechanism, in accordance with the embodiments herein;

[0012] FIG. 2 illustrates the elements of the mobile communication system in call forwarding, in accordance with the embodiments herein;

[0013] FIG. 3 illustrates the elements of the residence telephone communication system in call forwarding, in accordance with the embodiments herein;

[0014] FIG. 4 illustrates the elements of the SIP network in call forwarding, in accordance with the embodiments herein;

[0015] FIG. 5 is a flow diagram illustrating a process of call forwarding in a SIP network, in accordance with the embodiments herein;

5 [0016] FIG. 6a and FIG. 6b are flow charts depicting the process of call forwarding in a SIP network, in accordance with the embodiments herein;

[0017] FIG. 7 is a flow diagram illustrating a process of call forwarding in a SIP network, in accordance with the embodiments herein; and

[0018] FIG. 8a and FIG. 8b are flow charts depicting the process of call
10 forwarding in a SIP network, in accordance with the embodiments herein.

DESCRIPTION OF EMBODIMENTS

[0019] The embodiments herein and the various features and advantageous details thereof are explained more fully with reference to the non-limiting embodiments that are
15 illustrated in the accompanying drawings and detailed in the following description. Descriptions of well-known components and processing techniques are omitted so as to not unnecessarily obscure the embodiments herein. The examples used herein are intended merely to facilitate an understanding of ways in which the embodiments herein may be practiced and to further enable those of skill in the art to practice the
20 embodiments herein. Accordingly, the examples should not be construed as limiting the scope of the embodiments herein.

[0020] The embodiments herein achieve a method for adaptively forwarding calls in a communication system by facilitating selective call forwarding based on the

subscriber's identity in enhanced interactive call forwarding mechanism. Referring now to the drawings, and more particularly to FIGS. 1 through 8, where similar reference characters denote corresponding features consistently throughout the figures, there are shown embodiments.

5 [0021] The embodiments herein disclose a system and method for enhanced interactive call forwarding mechanism. The subscriber has to register with the network for call forwarding service. On registration, the subscriber is activated with the service. Hereafter when the subscriber is busy, not able to attend a call or is out of coverage area of the network, the incoming calls to the subscriber are forwarded. The mechanism
10 allows the subscriber to forward his calls based on the identity of the caller. At the time of registration, the subscriber provides the numbers of his choice to the service provider. The numbers include the preferred destinations such as numbers of his office phone, residence telephone number, personal cell phone number and the like, where the subscriber would like to forward his call. When the subscriber is on roaming or in a
15 meeting and does not desire to attend the call, the subscriber will forward the call to the preferred destination number. As an example, consider the incoming call is of a client, the subscriber can forward the call to his office number without picking the call. On the other hand if the caller is a relative, the call can be forwarded to the user's residence telephone number. In case the call is not important or the calling party id is unknown, the
20 subscriber can forward the call to his voice mail. On receiving a call, the user's device will display a list of numbers along with a key mapped to the number, wherein the numbers comprise of the numbers stored by the user at the time of registration with the network. The user can forward the number to a number of his choice by pressing specific

keys on his device. As an example press 1 to forward the call to office number and the like.

[0022] FIG. 1 is a system diagram illustrating the components of the call forwarding mechanism, in accordance with the embodiments herein. User A 101, who is the subscriber, will subscribe for the enhanced interactive call forwarding mechanism with the network service provider. The network 102 can include any type of the network such as global system for mobile communication (GSM), public switched telephone network (PSTN), Next generation network (NGN) and the like. At the time of subscription, user A 101 will specify a list of numbers to forward his calls. The Preferred numbers are stored in the database of the system. The numbers are compiled into a tabular format called as the forward table and stored. User A 101 can activate or deactivate the mechanism anytime, with the provision of also modifying the forward table when desired. The forward number details are maintained in the form of a database called user profile database, specific to every subscriber. In case of implementation of the service for a fixed telephone line, the numbers stored in the forward table can be limited so as to avoid a huge database. In a preferred embodiment a user A 101 subscribes for the call forwarding service. Suppose user A 101 is busy, or is out of the coverage area of the network 102. Since the user is a subscriber of the service his calls will be forwarded to his preferred destination. The preferred destinations can include the office number 103, residence telephone number 104, voice mail 105, personal number 106 and the like. Office number 103 includes the number of his work place wherein his client related calls and calls of colleagues can be forwarded. Residence telephone number 104 is the number of his dwelling place where he would like to forward his relatives and friends calls. The

user recognizes the calls manually based on the number displayed on his device. When the user recognizes the call is from an unknown number or the call is not important to be addressed at the moment, the call can press a key and forward the received call to his voice mail 105. Thus, user A 101 can forward his calls selectively i.e. depending on the identity of the calling party, user A 101 can decide the number among the list of numbers where he would like to forward the call. In case the calling party number is of a client, then user A 101 will forward the call to his office number 103 by activating a key on his telephone instrument. The system may be configured by the network 102 for activation of the desired number on the press of specific keys on his telephonic instrument. Each number on his telephonic instrument is assigned to a forwarding number. The user can press a particular key for forwarding the call and the network 102 will interpret the dual tone multi frequency (DTMF) generated by pressing the key. Accordingly, the user can forward his calls by pressing the button on his telephonic instrument to the desired destination. As an example the forward numbers can be assigned to specific keys on the telephonic instrument, like 1 is assigned to office number 103, 2 to residence telephone number 104, 3 to voicemail 105. When the user presses 1, the call can be forwarded to his office number 103. The network 102 then checks if the user is a registered subscriber for the call forwarding service. If the calling party is a relative of user A 101, he can forward the call to his residence telephone number 104 by pressing the assigned activation key on his telephonic instrument. In case identity of the caller is unknown or the call is not important, the user can forward the call to his voice mail 105 and if the caller is a family member, he can forward the call to his personal number 106. The number of forward numbers described in the above embodiment is for mere illustration of the mechanism.

Various alternatives to the same embody the principles of the method and are included within the scope of the method.

[0023] FIG. 2 illustrates the elements of the mobile communication system in call forwarding, in accordance with the embodiments herein. In a preferred embodiment the system comprises of but not limited to the base station system (BSS) 201, the BSS 201 in turn is provided with a base station controller (BSC) 202. A switching system 203 is provided with a mobile service switching center (MSC) 204 and a home location register (HLR) 205. All radio related operations are performed by the BSS 201 in association with BSC 202 and base transceiver station (BTS). The BSC 201 provides all the control functions and the physical links between the MSC 204 and the BTS. The BSC 202 is a high capacity switch that provides functions such as hand over, cell configuration data and control of radio frequency power levels. A number of BSC's are served by an MSC 204. The switching system 203 is responsible for performing all call processing and subscriber related functions. The HLR 205 sits in the switching system 203. The HLR 205 is a database used for storage and management of subscription related data. The HLR 205 stores information about subscribers including the subscriber's service profile, location information and activity status. When a user buys a subscription from one of the operators, he is registered in the HLR 205 of that operator. user A 101 registers for the enhanced interactive call forwarding mechanism, his subscription details are maintained in the HLR 205. The MSC 204 performs all the telephony switching functions of the system. The MSC 204 controls calls to and from other telephone network systems and data systems. In addition the MSC 204 performs functions such as toll ticketing, network interfacing, common channel signaling and others. All the call forwarding numbers are

handled by the MSC 204. The MSC 204 in integration with the visitor location register (VLR), services the visiting customers for the network 102. When the user is on roaming, the VLR connected to the MSC 204 will request data about the mobile station from the HLR 205. The originating MSC provides service to the originating side subscriber and
5 the terminating MSC provides services to the terminating side subscriber. When a user receives a call, the originating side MSC 204 sends a request message to the terminating side HLR. The message is aimed to acquire terminating subscriber related information. When user A 101 is busy and there is a call on his incoming line, the scheme will allow user A 101 to forward his calls to the preferred destination. The network 102 checks if
10 the subscriber is registered for the call forwarding service. In case the subscriber is not registered, the call forward is not further processed. Depending on the identity of the caller the user can forward his call. As an example if the caller is a client, the user will forward his call to his office number 103. On knowing the identity of the caller as a relative the user can forward his call to his residence telephone number 104. The scheme
15 facilitates selective call forwarding mechanism based on the identity of the caller.

[0024] FIG. 3 illustrates the elements of the residence telephone communication system in call forwarding, in accordance with the embodiments herein. The scheme can be implemented in residence telephone system by incorporating switching elements in the system. The system comprises but is not limited to a user agent device 301, switching
20 element 302, and a data center 303 that includes a database 304 and the different destinations to which the call can be forwarded such as the office number 103, residence telephone number 104, voice mail 105 and the like. The switching elements 302 perform switching functions in the network 102. The switching elements 302 allow switching the

call or forwarding the user's call to different destinations of subscriber's choice. The data center 303 performs service related functions for the subscribers. The data reception and transfer takes place via the data center 303. The data center 303 maintains subscription information for the residence telephone users. Data center 303 also sends information
5 about the call (e.g. the caller identification, call summary and the like) to the users. Data center 303 executes different applications and establishes connection from the residence telephone to different networks the user would like to forward his call. At the time of subscription of the service, the user has to define a set of preferred numbers, to which he would like to forward his calls, when he is busy or not able to receive a call. The numbers
10 are maintained in a forward table format in the subscription database 304 in the data center 303. The stored numbers include office number 103, where the user may want to forward his work related calls. Calls of clients, colleagues are likely to be forwarded to this number. In residence telephone number 104, home telephone number of the user is stored. Calls of relatives and family can be forwarded to the residence telephone number
15 104. Voice mail 105 stores voice message for the calls un-attended by the user. In instances where the user does not want to receive the call as the call may be unimportant or the caller's identity may not be known, calls are usually forwarded to his voice mail 105. Consider the user is out of the network 102 coverage area or is busy in a meeting and is not likely to receive his incoming calls. In such a case, depending on the identity of
20 the caller, the user can choose to forward his calls to a pre defined numbers. The preferred numbers are stored with the data center 303 of the network 102 in the form of subscription database 304 at the time of subscription of the user. Accordingly, the keys on the residence telephone 104 are configured to activate call forwarding mechanism.

Each number is assigned a specific key. When the user presses a particular key, the network 102 recognizes the DTMF tone and checks if the user is registered for the call forwarding service. In case the user is registered for the service the call forwarding service is activated and the call is forwarded to the number specified based on the key pressed by the user. The switching action is performed by the switching element 302. Depending on the preferences of the user, the switching elements will activate the switch to forward calls to desired destination numbers. The switching elements 302 are provided with different numbers by the user to forward his calls. Depending on the key pressed in the user's residence telephone the switching element will activate the contacts to connect to the desired number.

[0025] FIG. 4 illustrates the elements of the SIP network in call forwarding, in accordance with the embodiments herein. The enhanced interactive call forwarding mechanism can be implemented in the SIP network. In a preferred embodiment, the SIP network comprises of but not limited to user end devices, routers and servers. The user agent device 301 may be a cellular phone and the like. A set of routers 401, 404 are present which perform routing functions in the network 102. Routers filter the incoming or outgoing traffic based on the internet protocol (IP) address of the sending side or the receiver side. Application servers 402, 403 are intermediary entities that act both as servers and clients for handling request on behalf of other clients. The AS 402, 403 interpret the request, and if necessary re-write certain parts of a request before forwarding the request. A register inside each of the servers accepts the request and places the information received into the location service for the domain handled by the register. The AS 402, 403 handles all the call forwarding for the SIP. In an embodiment the AS 402,

403 is configured to handle enhanced call forwarding mechanism. The AS 402/403 specifies the destinations to where the call is desired to be forwarded by the user A 101. When a call is initiated to user A 101 and the user is busy and not able to receive the call, the network 102 checks if the call forwarding service is active for user A 101. If user A 101 has call forwarding active then, his call is forwarded to the pre stored number as defined by the user. user A 101 activates his call forwarding mechanism. The call is handled by the router-1 401 which routes the call to the AS-1 402 by managing the network traffic. The AS-1 402 further process the request for call forward. The AS-1 402 also identifies the destination number to forward the call. The request is received by the AS-2 403, which identifies the destination address and accordingly forwards the call to the desired number. Considering the caller is a client and user A 101 would like to forward the call to his office number 103. The router-1 403 routes the call to the preferred number depending on the instructions received from the AS-2 403. The call is then forwarded to the office number 103. In a similar manner the calls of the user can be forwarded to any number defined by the user.

[0026] FIG. 5 is a flow diagram illustrating a process of call forwarding, in a SIP network, in accordance with embodiments herein. The embodiments herein are implemented for a SIP network, however can be extended to various other networks. User A 101 subscribes for the call forwarding mechanism. User A 101 is activated with the enhanced call forwarding service. Considering user A 101 receives a call and the user would like to forward the call. User A 101 sends an invitation message to user B 405. The invitation message is sent (501) to the application server 402. The AS 402 processes the request and identifies the destination number to which the call is to be forwarded. The

call is forwarded (502) by the AS 402 to user B 405 number. The user may define the number to which he would like to forward his call or the number can be obtained from the forward table. Forward table contains a list of numbers the user may like to forward his calls when the user is busy. Meanwhile the AS 402 intimates (503) user A 101 that the number to which he would like to forward his call to is trying to be reached. The AS 402 receives (504) a response when user B's 405 phone starts ringing. The response message for the ringing is then sent (505) to user A 101 to intimate the user that his call is being forwarded. user B 405 generates a response message for enhanced interactive call forwarding mechanism. The response message is sent (506) to AS 402. The AS 402 sends (507) an acknowledgment message to user B 405. User A 101 receives (508) a message from AS 402 to intimate him that his call is being forwarded. Further the AS 402 sends (509) an invitation message to user C 516. The invitation message is for acceptance of the forwarded call. When user C's phone rings, a response message is generated and sent (510) to AS 402. The ringing response message is then sent (511) to user A 101 by the AS 402. User C 506 accepts the request for the forwarded call and sends (512) a response message to AS 402. Further the response message is sent (513) to user A 101. User A 101 sends (514) an acknowledgment to user C 516. RTP path is established (515) between user A 101 and user C 516. The response message can be a 200 OK response, 380 response, 180 ringing response and the like. And the acknowledgment message can be an ACK message, however not be limited to it.

[0027] FIG. 6a and FIG. 6b are flow charts depicting the process of call forwarding, in a SIP network, in accordance with the embodiments herein. The embodiments herein are implemented for a SIP network, however can be extended to

various other networks. User A 101 has call forward mechanism active. User A 101 sends (601) an invitation message to user B 405 for the call forwarding mechanism. The invitation message is sent to the AS 204. The AS 204 checks the destination number to forward the call and sends the invitation message accordingly. A response message is sent (602) to user A as an acknowledgment while the AS 402 tries to establish connection with user B 405. Further, when user B's phone starts ringing a response message is sent (603) to user A 101 via the AS 402. User B 405 generates a new response message for enhanced call forwarding mechanism and the response message is sent (604) to the AS 402. An acknowledgment message is then sent (605) to user B 405. The AS 402 makes a check (606) if the forwarded call is acceptable to user B 405. If the call is acceptable to user B 405 the RTP path is established (607) between user A 101 and user B 405. On the other hand if the call is not acceptable to user B 405 a response message is sent to user A 101 and the call is forwarded to user C 516. An invitation message is sent (608) to user C 516. User C 516 accepts the invitation, and a response message is generated when user C's 516 phone rings. The response message is sent (609) to user A 101 via the AS 402. User C 516 accepts the call and sends (610) a response message to user A 101. Further an acknowledgment message is sent (611) to user C 514. Finally real time transport protocol (RTP) path is established (612) between the user A 101 and user C 516. The response message can be a 200 OK response, 380 response, 180 ringing response and the like. And the acknowledgment message can be an ACK message, however not be limited to it. The various actions in method 600 may be performed in the order presented, in a different order or simultaneously. Further, in some embodiments, some actions listed in FIGs. 6a and 6b may be omitted.

[0028] FIG. 7 is a flow diagram illustrating a process of call forwarding, in SIP network, in accordance with the embodiments herein. The embodiments herein are illustrated for a SIP network, however the process is not limited to SIP and can be extended for any other network. user A 101 is a subscriber of the enhanced call forwarding mechanism. User A 101 would like to forward his incoming call to user B 405. User A 101 sends (701) an invite message to user B 405. The invitation message can be an INVITE or the like. The message is received by the AS 402. AS 402 forwards (702) the invitation message to user B 405. Meanwhile the AS 402 intimates (703) user A 101 that the number to which he would like to forward his call to is trying to be reached. The AS 402 receives (704) a response when user B's 405 phone starts ringing. The response message for the ringing is then sent (705) to user A 101 to intimate the user that his call is being forwarded. User B 405 generates a response message for the enhanced call forwarding feature. The response message is sent (706) to AS 402. In a preferred embodiment the response message can be a 188 response. User B 405 may be busy or may not be ready to accept the forwarded call. The AS 402 is informed the call is not acceptable to user B 405 in the response message. AS 402 in turn sends (707) a request message to user B 405 to cancel the forwarded call. The cancel message can include a message like CANCEL or the like. User B 405 then sends (708) a response message to AS 402 and a request termination message is sent (709) to AS 402. The call request is then terminated. AS 402 sends (710) an acknowledgment to user B 405 on termination of the call. Further AS 402 sends (711) a call forward message to user A 101 to forward the call to user C 516. Invitation message is sent (712) to user C by the AS 402. When user C's 516 phone starts ringing, a response message is sent (713) to AS 402. AS 402 sends

(714) the response message to user A 101. On receiving the response message user A 101 sends (715) an acknowledgment message to user C 516. Further real time transport protocol (RTP) path is established (716) between user A 101 and user C. The response message can be a 200 OK response, 380 response, 180 ringing response and the like. The call termination request can include 487 request termination message and the like. And the acknowledgment message can be an ACK message, however not be limited to it.

[0029] FIG. 8a and FIG. 8b are flow charts depicting the process of call forwarding, in SIP network, in accordance with the embodiments herein. The embodiments herein are illustrated for a SIP network, however the process is not limited to SIP and can be extended for any other network. User A 101 is a registered subscriber for the enhanced call forwarding service with the network. user A 101 is busy, and wants to forward his calls. User A 101 wishes to forward his call to user B 405 and sends (801) an invitation message to user B 405. The invitation message is sent to the AS 402, the AS 402 examines the request and then sends the message to the appropriate number. Meanwhile the AS 402 sends (802) a response message to user A 101. The AS 402 sends (803) a response message to user A 101 while the call is tried to user B, to intimate user A 101 when user B's 405 phone rings. User B 405 sends (804) a new response message to the AS 402. The new response message can be 188 response with a new enhance interactive call forwarding value. The AS 402 makes a check (805) if the call forward mechanism is acceptable to user B 405. In case the mechanism is acceptable to user B 405 a real time transport (RTP) path is established (806) between both the user B 405 and user A 101. The call is then handled by the RTP protocol. On the other hand if the forwarded call is not acceptable to user B 405, a request message is sent to cancel the

call. The request message is sent (807) to the AS 402. User B 405 sends (808) a request message to terminate the call. On termination of the message an acknowledgment is sent (809) to user C 516. User A 101 sends (810) a new invitation message to user C 516. When user C's 516 phone starts ringing, a response message for the ring is sent (811) to user A 101. User C 516 accepts the call and sends (812) an acknowledgment message to user A 101 for acceptance of his call. An RTP path is the established (813) between user C 516 and user A 101. The response message can be a 200 OK response, 380 response, 180 ringing response and the like. And the acknowledgment message can be an ACK message, however not be limited to it. The various actions in method 800 may be performed in the order presented, in a different order or simultaneously. Further, in some embodiments, some actions listed in FIGs. 8a and 8b may be omitted.

[0030] The functions of the various elements shown in the FIGs., including any functional blocks, may be provided through the use of dedicated hardware as well as hardware capable of executing software in association with appropriate software. When provided by a processor, the functions may be provided by a single dedicated processor, by a single shared processor, or by a plurality of individual processors, some of which may be shared. Moreover, explicit use of the term like "processor" or "controller" should not be construed to refer exclusively to hardware capable of executing software, and may implicitly include, without limitation, network processor, application specific integrated circuit (ASIC), field programmable gate array (FPGA), read only memory (ROM) for storing software, random access memory (RAM), and non volatile storage. Other hardware, conventional and/or custom, may also be included. Similarly, any switches shown in the FIGS. are conceptual only. Their function may be carried out through the

operation of program logic, through dedicated logic, through the interaction of program control and dedicated logic, or even manually, the particular technique being selectable by the implementer as more specifically understood from the context.

[0031] The description and drawings merely illustrate the principles of the invention. It will thus be appreciated that those skilled in the art will be able to devise
5 various arrangements that, although not explicitly described or shown herein, embody the principles of the invention and are included within its spirit and scope. Furthermore, all examples recited herein are principally intended expressly to be only for pedagogical purposes to aid the reader in understanding the principles of the invention and the
10 concepts contributed by the inventor(s) to furthering the art, and are to be construed as being without limitation to such specifically recited examples and conditions. Moreover, all statements herein reciting principles, aspects, and embodiments of the invention, as well as specific examples thereof, are intended to encompass equivalents thereof.

CLAIMS

What is claimed is:

1. A method for call forwarding in a network, said method comprising steps of
a user providing said network with a list of numbers, wherein said user desires to
5 forward calls to said numbers;

said user responding to said network on receiving a call, said response indicating a
number from said list for forwarding said call; and

said network forwarding said call to said number on receiving said response from said
user.

10

2. The method, as claimed in claim 1, wherein said user registers for said call
forwarding, before providing said network with said list of numbers.

3. The method, as claimed in claim 1, wherein each number in said list of numbers is
15 mapped to unique key on keypad of a device of said user.

4. The method, as claimed in claim 1, wherein said response from said user is initiated
by said user selecting an assigned key on said keypad of said device of said user.

20 5. The method, as claimed in claim 1, wherein said network checks if said user is
registered for said service, before forwarding said call.

6. The method, as claimed in claim 1, wherein said network is one of

a mobile communication network;

a fixed line network;

a Session Initiation Protocol (SIP) network;

an Internet Protocol (IP) Multimedia Subsystem (IMS) network; or

5 a Voice over Internet Protocol (VoIP) network.

7. A telecommunication network configured to forward calls based on incoming caller identification, said network comprising of

a storage means for storing a list of numbers provided by a user; and

10 a call forwarding means for forwarding a call to a number selected from said list of numbers by said user, wherein said user sends a response containing said number to said network on receiving said call.

8. The telecommunication network, as claimed in claim 7, wherein said network further

15 comprises of a registration module to enable said user to register for said service.

9. The telecommunication network, as claimed in claim 7, wherein said network further comprises a means for said network to check if said user is registered for said service, before forwarding said call.

20

10. The telecommunication network, as claimed in claim 7, wherein said network is one of

a mobile communication network;

a fixed line network;

a Session Initiation Protocol (SIP) network;

an Internet Protocol (IP) Multimedia Subsystem (IMS) network; or

a Voice over Internet Protocol (VoIP) network.

5

11. A network controller controlling a telecommunication network, wherein said network is configured to forward calls based on incoming caller identification, said network controller is configured to

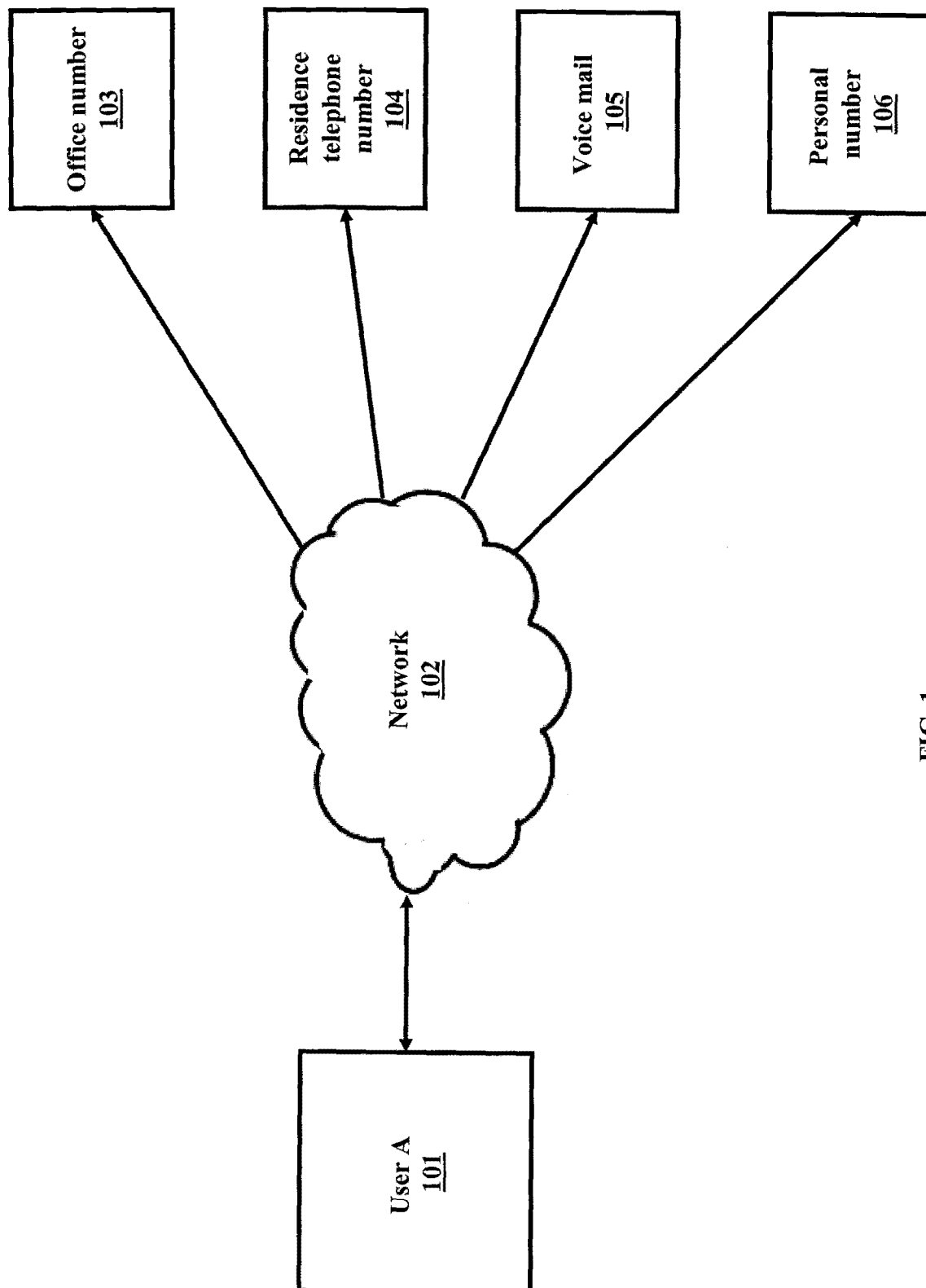
forward a call to a number selected from a list of numbers provided by a user,
10 wherein said user sends a response indicating a number from the said list of numbers to said network on receiving said call.

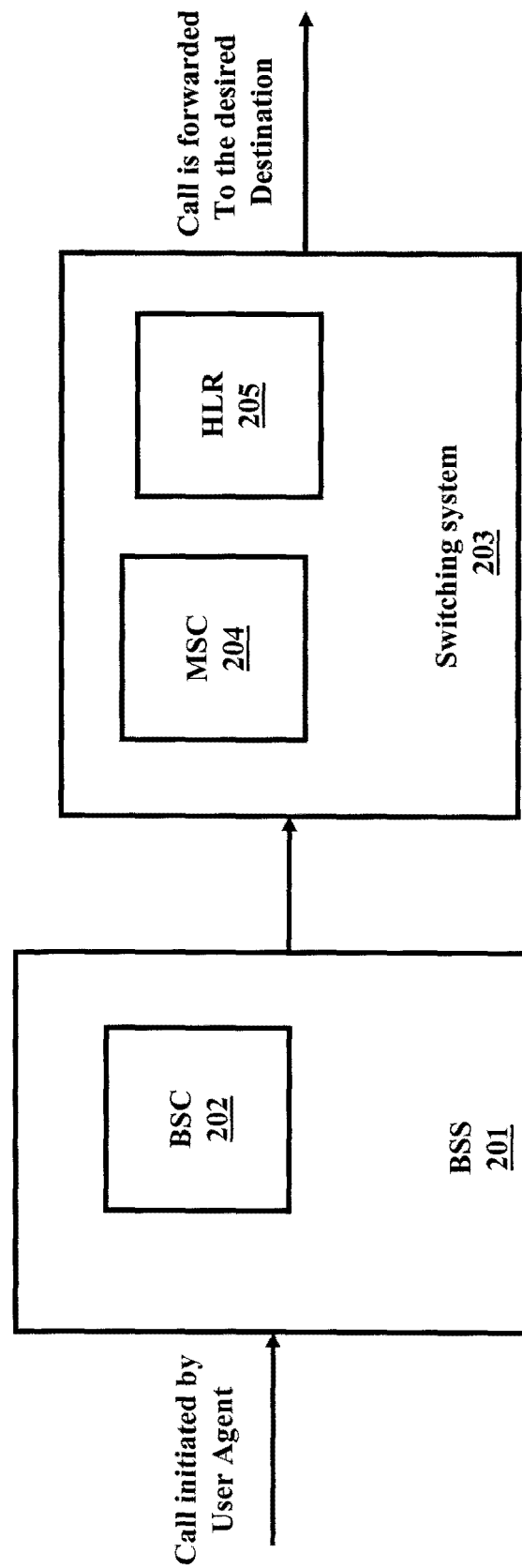
12. The network controller, as claimed in claim 11, wherein said network controller is connected to a memory wherein said user stores a list of numbers.

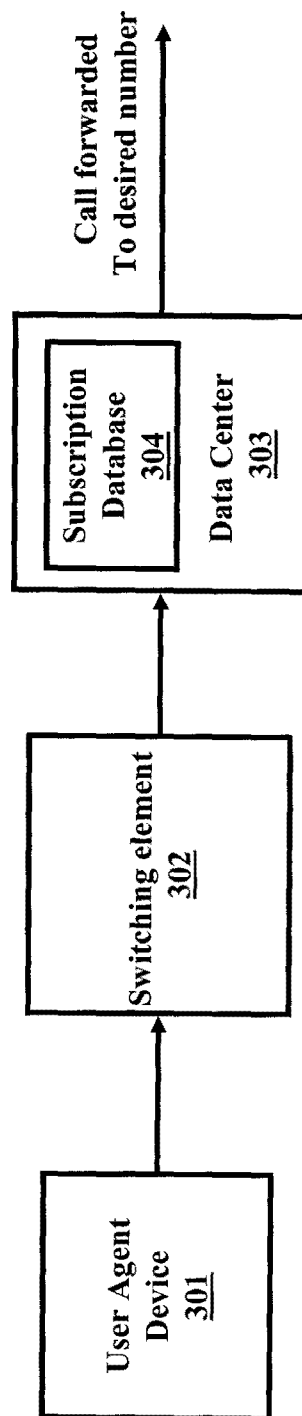
15

13. The network controller, as claimed in claim 11, wherein said network controller is configured to check if said user has registered for said service before forwarding said call.

20 14. The network controller, as claimed in claim 11, wherein said network controller is an application server.

FIG. 1

FIG. 2

**FIG. 3**

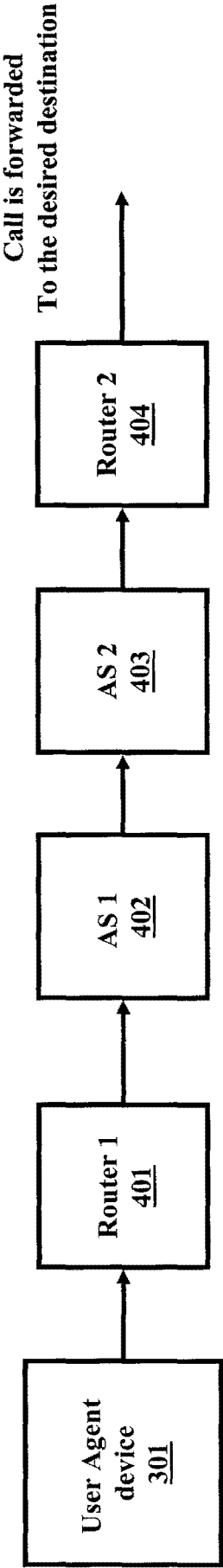
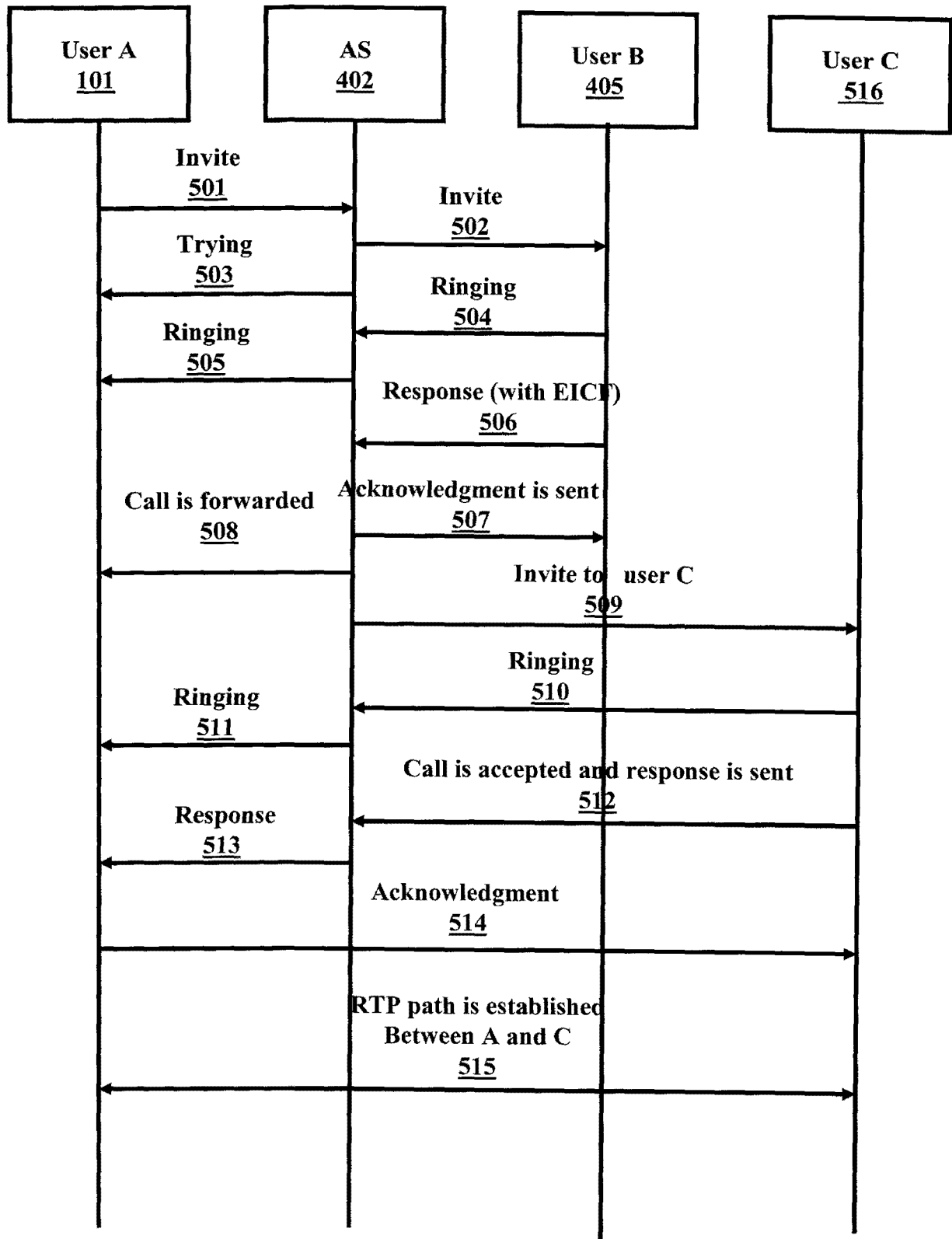


FIG. 4

**FIG. 5**

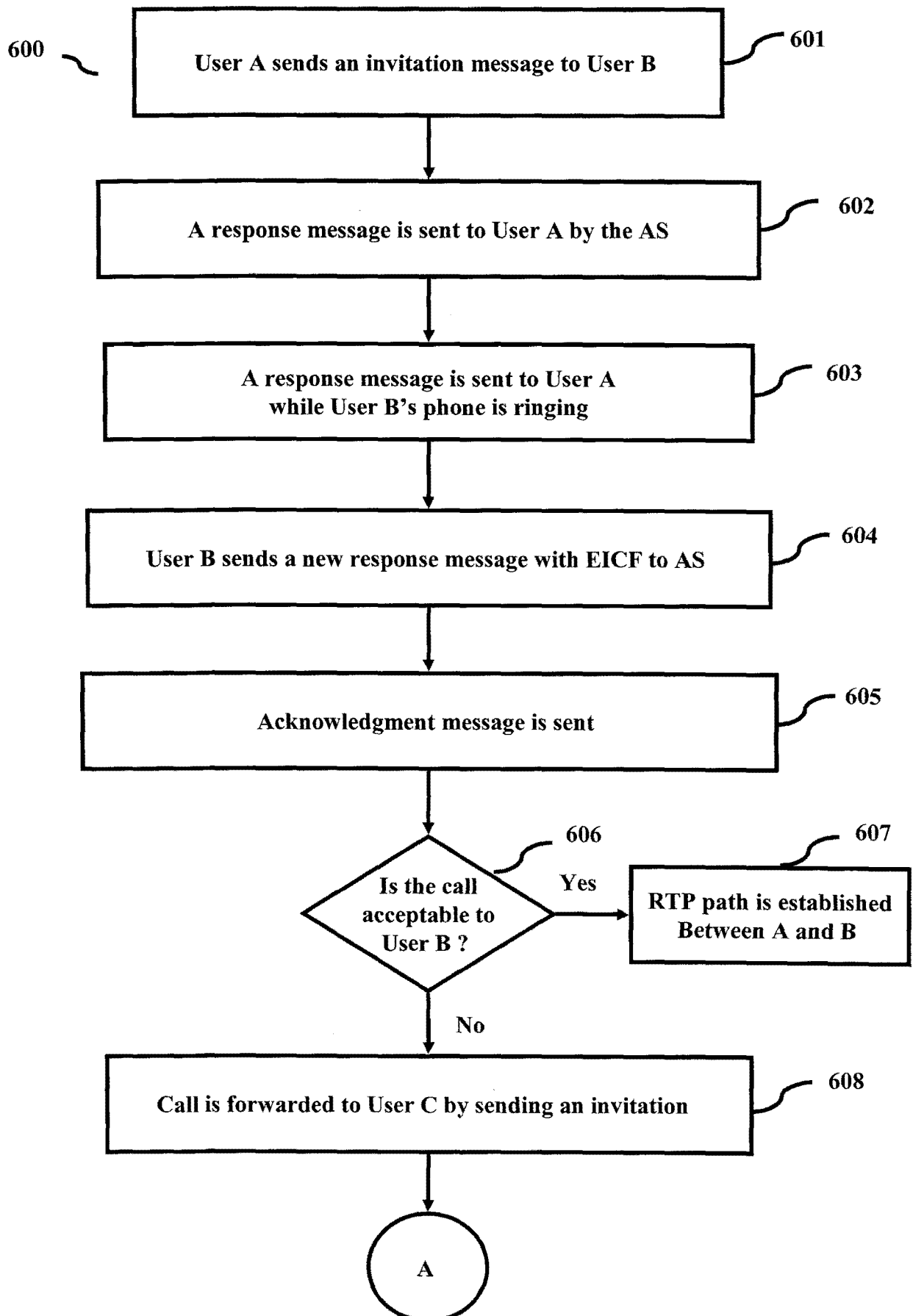
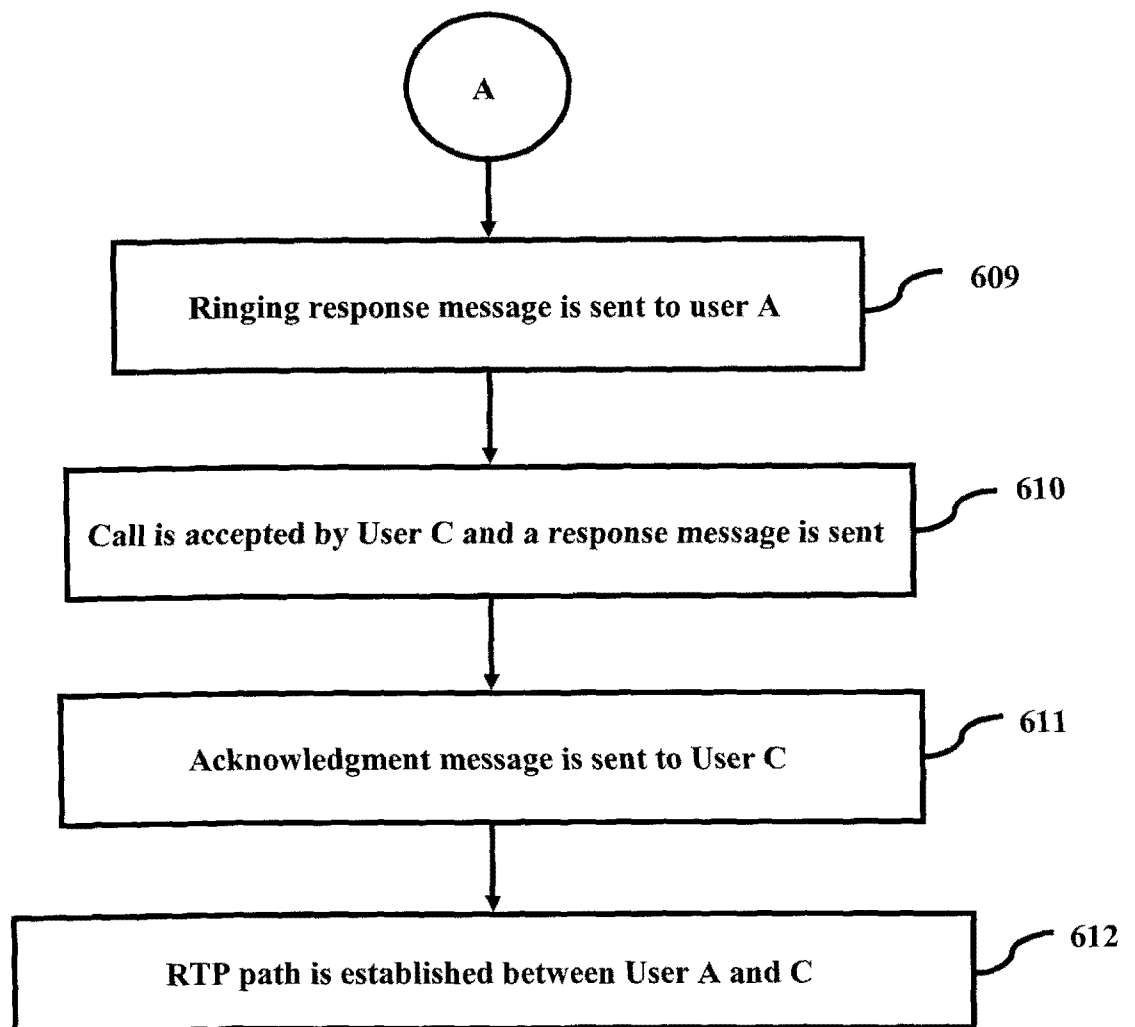


FIG. 6a

**FIG. 6b**

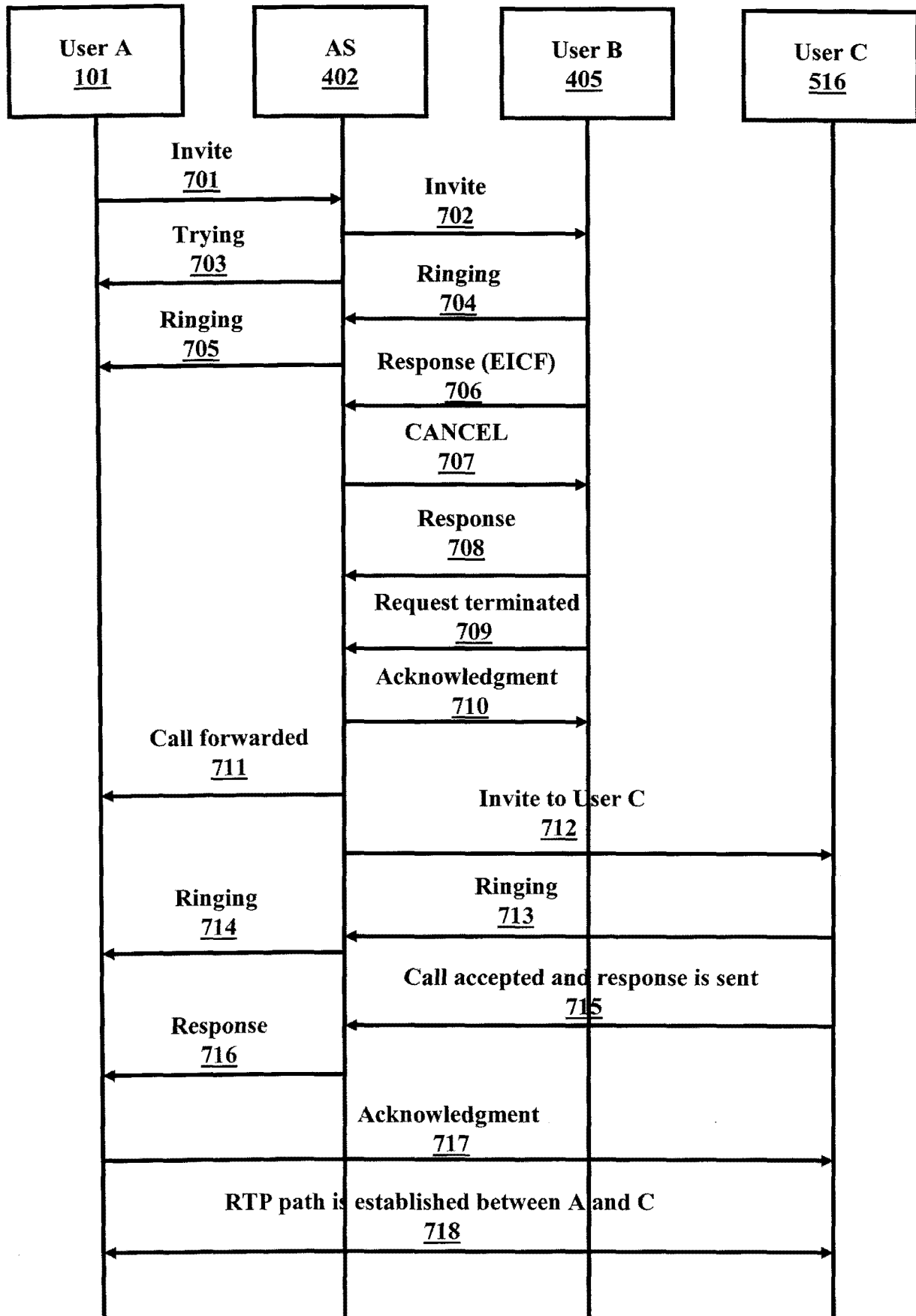


FIG. 7

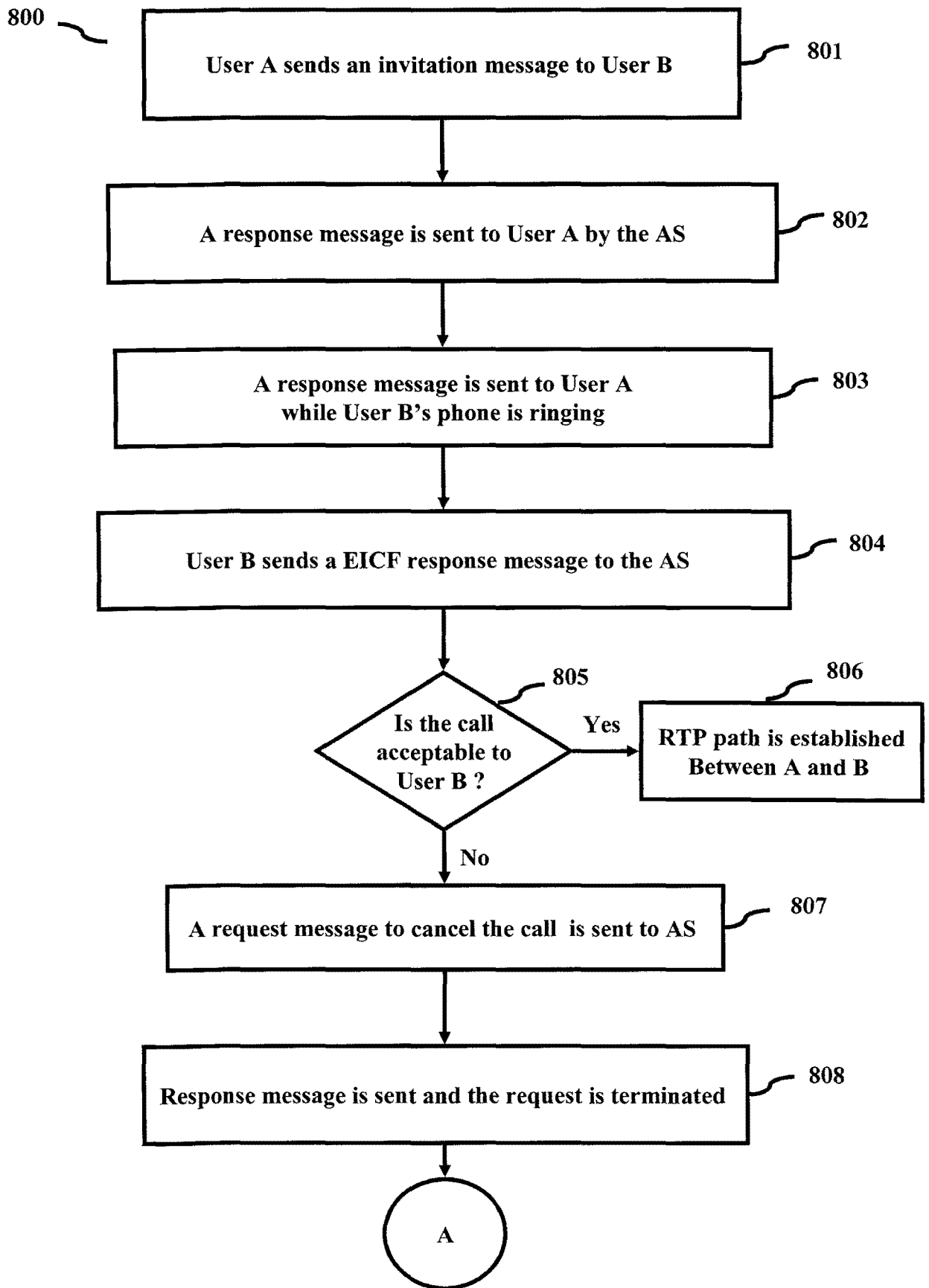
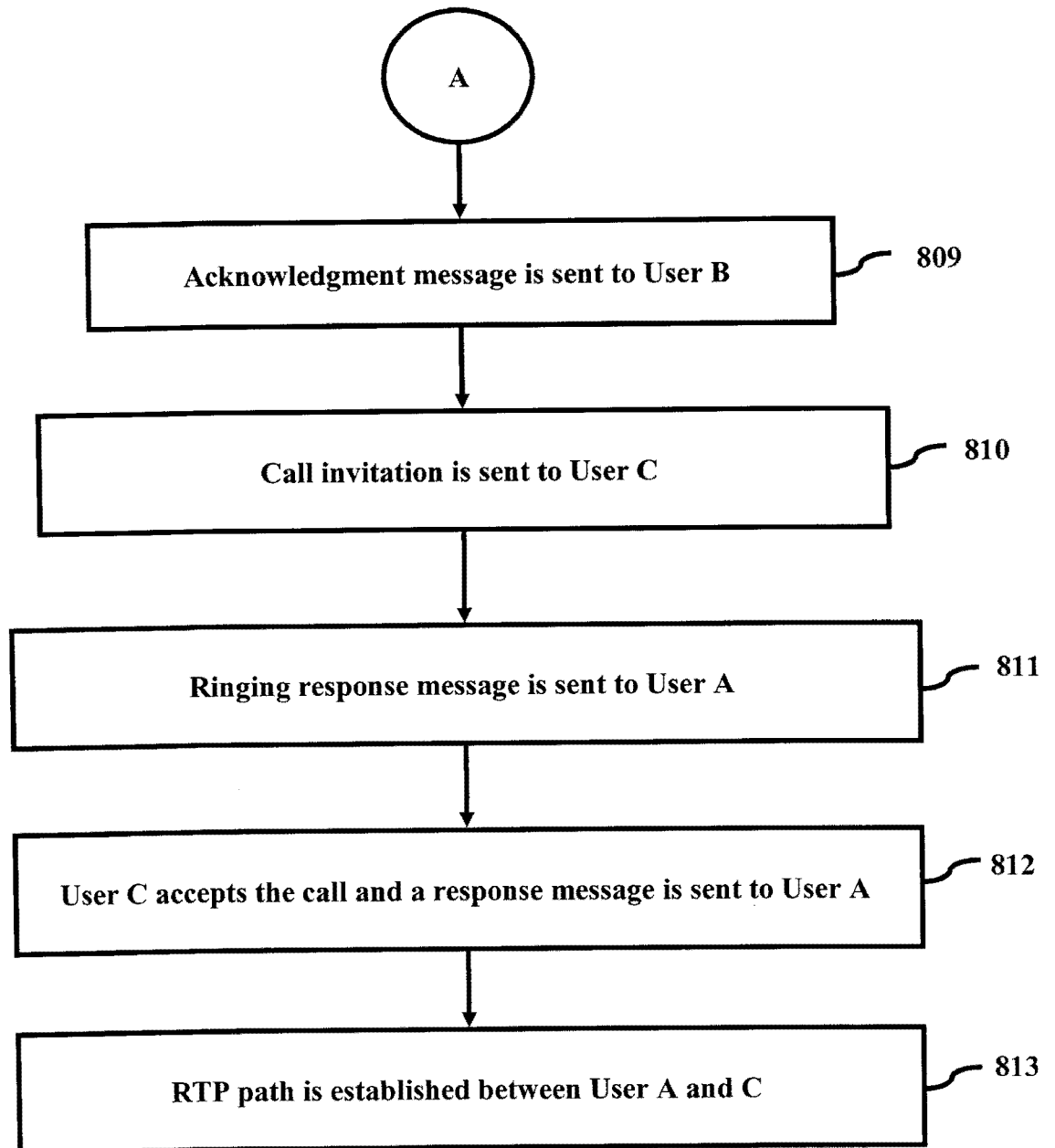


FIG. 8a

**FIG. 8b**

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2009/057297

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04M3/54 H04M3/42

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2007/041441 A1 (VERIZON DATA SERVICES INC [US]; OLSHANSKY ROBERT [US]; SPOREL ERIC R []) 12 April 2007 (2007-04-12) paragraph [0045] paragraph [0048] paragraph [0056] paragraph [0067] paragraph [0052] paragraph [0027] paragraph [0024] ----- -/--	1-10

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

☒ See patent family annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *Z* document member of the same patent family

Date of the actual completion of the international search

26 January 2010

Date of mailing of the international search report

03/02/2010

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Agante da Silva, P

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2009/057297

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2005/213740 A1 (WILLIAMS L L [CA] ET AL) 29 September 2005 (2005-09-29) paragraph [0041] paragraph [0042] paragraph [0057] - paragraph [0058] paragraph [0059] paragraph [0092] - paragraph [0093] paragraph [0094] paragraph [0094]	1-10
X	US 2008/260136 A1 (RAHMAN MOSHIUR [US]) 23 October 2008 (2008-10-23) paragraph [0026] paragraph [0029] paragraph [0031]	1-10
X	US 5 027 384 A (MORGANSTEIN SANFORD J [US]) 25 June 1991 (1991-06-25) column 2, lines 6-57 column 7, line 4 - column 9, line 40	1-10
X	WO 03/055082 A2 (BELLSOUTH INTELLECT PTY CORP [US]; KOCH ROBERT A [US]; HOLT SCOTT C [U]) 3 July 2003 (2003-07-03) paragraph [0010] paragraph [0022] - paragraph [0024] paragraph [0029] paragraph [0030] - paragraph [0033] paragraph [0050] - paragraph [0054]	11-14

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2009/057297

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-10

Call forwarding in a network with a user providing said network with a list of numbers, wherein said user desires to forward calls to said numbers;
said user responding to said network on receiving a call, said response indicating a number from said list for forwarding said call; and
said network forwarding said call to said number on receiving said response from said user.

2. claims: 11-14

A network controller controlling a telecommunication network, wherein said network is configured to forward calls based on incoming caller identification.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2009/057297

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2007041441 A1	12-04-2007	US 2007092073 A1	26-04-2007
US 2005213740 A1	29-09-2005	CA 2561013 A1	29-09-2005
		WO 2005091610 A1	29-09-2005
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US 5027384 A	25-06-1991	NONE	
WO 03055082 A2	03-07-2003	AU 2002360585 A1	09-07-2003
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		US 2009180604 A1	16-07-2009
		US 2004114730 A1	17-06-2004