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(54) **Title**: SYSTEM AND METHODS FOR INTIMATING A TERMINATING PARTY OF A COMMUNICATION FAILURE

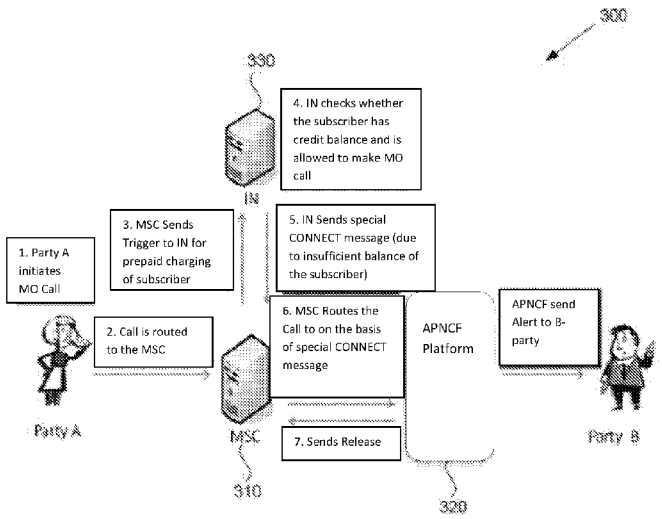

Figure 3

(57) **Abstract**: A method for intimating a terminating party of a communication failure is disclosed. The method comprises the steps of receiving a communication request from an origination party. The communication request corresponds to any of voice call request, a video call request, a SMS request, a MMS request, or a Rich Communications Suite (RCS) request. The method further comprises of sending a trigger to an Intelligent Network (IN) or a Service Control Point (SCP) to validate whether request can he serviced and receiving, by a platform, "request not serviced indication", said "request not serviced indication" being generated only if the request was not serviced for reasons not attributable to terminating party availability and said "request not serviced indication" including data indicative of originating party and terminating party. The method further comprises of sending, by the platform, an alert to terminating party, said alert including data indicative of the originating party.

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SYSTEM AND METHODS FOR INTIMATING A TERMINATING PARTY OF A COMMUNICATION FAILURE

FIELD OF THE INVENTION

The invention relates to systems and methods for intimating a terminating party of a communication failure due to reasons not attributable to terminating party's availability.

BACKGROUND OF THE INVENTION

The following background discussion includes information that may be useful in understanding the present invention. It is not an admission that any of the information provided herein is prior art or relevant to the presently claimed invention, or that any publication specifically or implicitly referenced is prior art.

There are various circumstances in a network or with an originating or terminating party which can result in a call failing to mature or complete. Calls fail to mature due to circumstances attributable to the terminating party are well handled today with a variety of products that broadly fall under the Missed Call Alert definition. These function by intimating a terminating party that a caller trying to reach him was unsuccessful if the terminating party was busy, not reachable, did not answer a call and so on. These complement the classical voice mail service which in addition to notifying the terminating party of an unsuccessful attempt to reach him, also allows leaving a message in the originating party's own voice.

However, there are many circumstances either related to an originating party or the network itself which may also result in a failure to mature or complete a call. Examples of such circumstances are:

1) The originating party, when a pre-paid user, is having insufficient or no credit in his/her accounts to make a call.
2) The originating party, when a post-paid user, is overdue on payment.
3) The originating party is trying to make a call when she/he is roaming and has not subscribed to a roaming service.
4) Other Call failures reasons due to Protocol errors, Network failures like Route select failure, network connection failure, internal software failure (other than standard errors such as switched off/ not-reachable/busy/no answer conditions)

There are many more such scenarios all characterized by the fact that the call is failing to mature or complete due to circumstances related to either the originating party or the network and not due to those of the terminating party.

In each of the cases identified above relating to the call falling, the terminating party remains unaware that an attempt at reaching him was being made as the call flow never even attempts to reach him or his mobile terminal. Either the originating party's mobile terminal or the network aborts or otherwise disposes of the call attempt leaving the originating party with a service request or attempt that has remained unmet or un-serviced. Thus, there is a well felt need to devise a system and method to obviate the above mentioned problems.

SUMMARY OF THE INVENTION

A method for intimating a terminating party of a communication failure is disclosed. The method comprises the steps of receiving a communication request from an origination party. The communication request corresponds to any of voice call request, a video call request, a SMS request, a MMS request, or a Rich Communications Suite (RCS) request. The method further comprises of sending a trigger to an Intelligent Network (IN) or a Service Control Point (SCP) to validate whether request can be serviced and receiving, by a platform,

"request not serviced indication", said "request not serviced indication" being generated only if the request was not serviced for reasons not attributable to terminating party availability and said "request not serviced indication" including data indicative of originating party and terminating party. The method further comprises of sending, by the platform, an alert to terminating party, said alert including data indicative of the originating party.

A system for intimating a terminating party of a communication failure is also disclosed. The system is being selectively in operative communication with an Intelligent Network (IN) via a communication channel. The system comprises of a Mobile Switching Centre (MSC) configured for receiving a communication request from an origination party and sending a trigger to the Intelligent Network to validate whether the communication request can be serviced. A Platform is provided, in operative communication with the Mobile Switching Centre, configured for receiving a "request not serviced indication" and sending an alert to a terminating party, including data indicative of the originating party.

A method for intimating a terminating party of a communication failure is disclosed. The method comprises the steps of receiving a communication request from an origination party. The communication request corresponds to any of a voice call request, a video call request, a SMS request, a MMS request, or a Rich Communications Suite (RCS) request. The method further comprises of sending a trigger to an Intelligent Network (IN) or a Service Control Point (SCP) to validate whether request can be serviced and receiving "a special CONNECT message" including a special digit pattern being added to Terminating party Number by the IN , said "special CONNECT message" being generated only if the communication request cannot be serviced for reasons not attributable to terminating party availability. The method further comprises of automatically translating the " special CONNECT message" into a "communication request forwarding command" based on the special digit pattern and redirecting the communication request to a platform, in accordance with the "communication

request forwarding command" and sending, by the platform, an alert to the terminating party, said alert including data indicative of the originating party.

A system for intimating a terminating party of a communication failure is also disclosed. The system is being selectively in operative communication with an Intelligent Network (IN) via a communication channel. The system comprises of a Mobile Switching Centre (MSC) configured for receiving a communication request from an origination party and sending a trigger to the Intelligent Network to validate whether the communication request can be serviced; the Mobile Switching Centre further configured for receiving " special CONNECT message" including a special digit pattern added to terminating party number and automatically translating the "special CONNECT message" into a "communication request forwarding command" based on the special digit pattern. A Platform is provided, in operative communication with the Mobile Switching Centre, configured for receiving the "communication request forwarding command" and sending an alert to a terminating party, including data indicative of the originating party.

A method for intimating a terminating party of a communication failure is disclosed. The method comprises the steps of receiving a communication request from an origination party. The communication request corresponds to any of voice call request, a video call request, a SMS request, a MMS request, or a Rich Communications Suite (RCS) request. The method further comprises of sending a trigger to an Intelligent Network (IN) or a Service Control Point (SCP) to validate whether request can be serviced and generating and transmitting a "request not serviced indication", said "request not serviced indication" being generated only if the request was not serviced for reasons not attributable to terminating party availability. The method further comprises of passively monitoring by a platform to receive the trigger and the "request not serviced indication" and in response to passively receiving the "request not serviced indication", sending, by the platform, an alert to the terminating party.

A system for intimating a terminating party of a communication failure is also disclosed. The system is being selectively in operative communication with an Intelligent Network (IN) via a communication channel. The system comprises of a Mobile Switching Centre (MSC) configured for receiving a communication request from an origination party and sending a trigger to the Intelligent Network to validate whether the communication request can be serviced. A Platform is provided, selectively in operative communication with the Mobile Switching Centre and Intelligent Network, configured for passively monitoring the communication between the Mobile Switching Centre and the Intelligent Network and sending an alert to a terminating party, including data indicative of the originating party.

A method for intimating a terminating party of a communication failure is disclosed. The method comprises the steps of receiving a communication request from an origination party. The communication request corresponds to any of voice call request, a video call request, a SMS request, a MMS request, or a Rich Communications Suite (RCS) request. The method further comprises of sending a trigger to an Intelligent Network (IN) or a Service Control Point (SCP) to validate whether request can be serviced and generating and transmitting a call detail record (CDR). The call detail record including data indicative of originating party and a terminating party, wherein the CDR is generated in response to a failure to service the request, wherein the failure to service the request being attributed to a reason other than terminating party availability. The method further comprises of sending, by the platform, an alert to the terminating party, said alert including data indicative of the originating party.

A system for intimating a terminating party of a communication failure is also disclosed. The system is being selectively in operative communication with an Intelligent Network (IN) via a communication channel. The system comprises of a Mobile Switching Centre (MSC) configured for receiving a communication request from an origination party

and sending a trigger to the Intelligent Network to validate whether the communication request can be serviced. A Platform is provided, selectively in operative communication with the Intelligent Network, configured for receiving a call detail record and sending an alert to a terminating party, including data indicative of the originating party.

BRIEF DESCRIPTION OF THE DRAWINGS

To further clarify advantages and features of the present invention, a more particular description of the invention will be rendered by reference to specific embodiments thereof, which is illustrated in the appended drawings. It is appreciated that these drawings depict only typical embodiments of the invention and are therefore not to be considered limiting of its scope. The invention will be described and explained with additional specificity and detail with the accompanying drawings in which:

Figure 1 illustrates a schematic diagram of a system for intimating a terminating party of a communication failure in accordance with an embodiment of the invention;

Figure 2 illustrates a flowchart of a method for intimating a terminating party of a communication failure in accordance with an embodiment of the invention;

Figure 3 illustrates a flow diagram of a system for intimating a terminating party of a communication failure in accordance with a first embodiment of the invention;

Figure 4 illustrates a flow diagram of a system for intimating a terminating party of a communication failure in accordance with a third embodiment of the invention;

Figure 5 illustrates a flow diagram of a system for intimating a terminating party of a communication failure in accordance with a fourth embodiment of the invention; and

Figure 6 illustrates a typical hardware configuration of a computer system, which is representative of a hardware environment for practicing the present invention.

DETAILED DESCRIPTION OF THE INVENTION

For the purpose of promoting an understanding of the principles of the invention, reference will now be made to the embodiment illustrated in the drawings and specific language will be used to describe the same. It will nevertheless be understood that no limitation of the scope of the invention is thereby intended, such alterations and further modifications in the illustrated system, and such further applications of the principles of the invention as illustrated therein being contemplated as would normally occur to one skilled in the art to which the invention relates.

It will be understood by those skilled in the art that the foregoing general description and the following detailed description are exemplary and explanatory of the invention and are not intended to be restrictive thereof. Throughout the patent specification, a convention employed is that in the appended drawings, like numerals denote like components.

Many of the functional units described in this specification have been labeled as modules, in order to more particularly emphasize their implementation independence. For example, a module may be implemented as a hardware circuit comprising custom very large scale integration circuits or gate arrays, off-the-shelf semiconductors such as logic, chips, transistors, or the other discrete components. A module may also be implemented in programmable hardware devices such as field programmable gate arrays, programmable array logic, programmable logic devices or the like.

Modules may also be implemented in software for execution by various types of processors. An identified module of executable code may, for instance, comprise one or more

physical or logical blocks of computer instructions which may, for instance, be organized as an object, procedure, or function. Nevertheless, the executable of an identified module need not be physically located together, but may comprise disparate instructions stored in different locations which, when joined together, comprise the module and achieve the stated purpose for the module.

Indeed, a module of executable code could be a single instruction, or many instructions, and may even be distributed over several different code segments, among different programs, and across several memory devices. Similarly, operational data may be identified and illustrated herein within modules, and may be embodied in any suitable form and organized within any suitable type of data structure. The operational data maybe collected as a single data set, or may be distributed over different locations including over different member disks, and may exist, at least partially, merely as electronic signals on a system or network.

Reference throughout this specification to “an embodiment”, “another embodiment” or similar language means that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment of the present invention. Thus, appearances of the phrase “in an embodiment”, “in another embodiment” and similar language throughout this specification may, but do not necessarily, all refer to the same embodiment.

The terms "comprises", "comprising", or any other variations thereof, are intended to cover a non-exclusive inclusion, such that a process or method that comprises a list of steps does not include only those steps but may include other steps not expressly listed or inherent to such process or method. Similarly, one or more devices or sub-systems or elements or structures proceeded by "comprises... a" does not, without more constraints, preclude the

existence of other devices or other sub-systems or other elements or other structures or additional devices or additional sub-systems or additional elements or additional structures.

Unless otherwise defined, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this invention belongs. The system, methods, and examples provided herein are illustrative only and not intended to be limiting.

Embodiments of the present invention will be described below in detail with reference to the accompanying drawings.

A system and methods for intimating a terminating party of a communication failure is disclosed. In accordance with a specific embodiment, the intimation to the terminating party may be due to reasons not attributable to terminating party's availability.

Figure 1 illustrates a schematic diagram of a system 100 for intimating a terminating party of a communication failure in accordance with an embodiment of the invention. The system 100 comprises of a Mobile Switching Centre (MSC) 110 and a Platform 160. The system 100 is selectively in operative communication with an Intelligent Network (IN) or a Service Control Point (SCP) via a communication channel (not shown). The communication channels may be analog or digital channels, simplex or duplex or half-duplex channel, uplink or downlink channels, or any other communication channels known in the art.

The Mobile Switching Centre (MSC) is the core of a Network Switching Subsystem (NSS). The MSC is mostly associated with communications switching functions, such as call set-up, release, and routing. However, it also performs a host of other duties, including routing SMS messages, conference calls, facsimile, and billing as well as interfacing with other networks, such as the public switched telephone network (PSTN).

The Mobile Switching Centre (MSC) 110 is configured for receiving a communication request from an origination party. According to an embodiment, the communication request corresponding to any of voice call request, a video call request, a SMS request, a MMS request, or a Rich Communications Suite (RCS) request. The MSC 110 is further configured to generate and send a trigger to an Intelligent Network (IN) 150 to validate whether the communication request can be serviced. According to an embodiment, the MSC 110 may be selectively in operative communication with the IN 150. The MSC 110 may be further configured to receive a "request not serviced indication" from the IN 150. The "request not serviced indication" may be generated only if the communication request is not serviced for reasons not attributable to terminating party availability. The MSc 110 may be further configured to send the "request not serviced indication" to the platform 160.

The Mobile Switching Centre may comprise of a processor for generating the trigger; and a data repository for being selectively in operative communication with the processor for storing the details communication request such as sender and receiver details, request type, etc.

The Intelligent Network (IN) is the standard network architecture intended for fixed as well as mobile telecom networks. It allows operators to differentiate themselves by providing value-added services in addition to the standard telecom services such as PSTN, ISDN and GSM services on mobile phones.

The Intelligent Network (IN) 150 is configured to receive the communication request from the Mobile Switching Centre 110 and generates a "request not serviced indication" only if the request was not serviced for reasons not attributable to a terminating party availability. According to another embodiment, the reasons corresponds to any of insufficient credits in the account of the originating party to comply with the communication request or the

originating party not subscribed for the requested communication request. According to an embodiment, the "request not serviced indication" includes data indicative of originating party 140 and terminating party 170. The IN 150 may be configured for checking the credentials/ credit availability of the originating party to proceed with the communication request.

The Platform 160 is in operative communication with the MSC 110 and configured for receiving a "request not serviced indication". The Platform 160 may be further configured to send an alert to a terminating party, including data indicative of the originating party such that the terminating party is aware that the originating party tried to contact via a communication request. According to an embodiment, the alert may be Short Messaging Service (SMS), a Multimedia Messaging Service MMS or a Rich Communications Suite (RCS). According to another embodiment, the platform 160 is a mobile platform or a mobile interface.

According to an embodiment, the originating party and the terminating party may be mobile users having a mobile communication device. The mobile communication device may be any device used directly by an end-user to communicate such as handheld computers, UMTS mobile phones, GSM mobile phones, etc.

The mobile communication device is a wireless phone that operates in a wide service area and is supported by a cellular network. The term "mobile communication device" includes Internet connectable mobile phones and devices with mobile phone capabilities, such as mobile phone-equipped Personal Digital Assistants (PDAs) e.g. Blackberry and iPhone.

The mobile communication device may be associated with a Mobile Subscriber Integrated Services Digital Network-Number (MSISDN). According to an embodiment, the

MSISDN is a number uniquely identifying a subscription in a GSM (Global System for Mobile Communication) or UMTS (Universal Mobile Telecommunications System) mobile network.

According to another embodiment, the alert may contain the MSISDN of the mobile communication device of the originating party.

Figure 2 illustrates a flow chart of a method 200 for intimating a terminating party of a communication failure in accordance with an embodiment of the invention. The method comprises of steps of initiating a communication request by the originating party as shown in step 202. The method further comprise of receiving a communication request from an origination party at the MSC 110 and sending a trigger to an Intelligent Network (IN) or a Service Control Point (SCP) to validate whether request can be serviced, as shown in step 204 and 206. According to a specific embodiment, validate the communication request comprising checking the credentials/ credit availability of the originating party to proceed with the communication request. The method further comprises of receiving, by a platform, "request not serviced indication", said "request not serviced indication" being generated only if the request was not serviced for reasons not attributable to terminating party availability and said "request not serviced indication" including data indicative of originating party and terminating party, as shown in step 207. The method further comprise of step of sending, by the platform, an alert to terminating party, said alert including data indicative of the originating party.

According to an embodiment, the method further comprises the step of generating a trigger at the MSC from the received communication request and forwarding the trigger to the IN or SCP.

According to another embodiment, the method further comprises the step of directing to the MSC the "request not serviced indication".

According to another embodiment, the method further comprises the step of forwarding to the platform the "request not serviced indication" from the MSC.

Figure 3 illustrates a flow diagram of a system 300 for intimating a terminating party of a communication failure in accordance with a first embodiment of the invention.

The system 300 is configured for intimating a terminating party of a communication failure. The system 300 is being selectively in operative communication with an Intelligent Network (IN) 330 via a communication channel. The system 300 comprises of a Mobile Switching Centre (MSC) 310 configured for receiving a communication request from an origination party (Party A) and sending a trigger to the Intelligent Network 330 to validate whether the communication request can be serviced. The Mobile Switching Centre is further configured for receiving a "special CONNECT message" including a special digit pattern added to the terminating party number and automatically translating the "special CONNECT message" into a "communication request forwarding command" based on the special digit pattern.

The system 300 further comprises of a Platform 320 in operative communication with the Mobile Switching Centre 310 configured for receiving the "communication request forwarding command" and sending an alert to a terminating party (Party B), including data indicative of the originating party.

The Mobile Switching Centre may comprise of a processor for generating the trigger and automatically translating the "special CONNECT message" into the "communication request forwarding command" and a data repository for being selectively in operative

communication with the processor for storing the details of the originating and terminating party and the details of the communication request.

The Intelligent Network 330 may be configured to generate the "special CONNECT message" including a special digit pattern, only if the communication request cannot be serviced for reasons not attributable to terminating party availability.

A method for intimating a terminating party of a communication failure is also disclosed. The method comprises the steps of initiating a communication request by the Party A (Originating Party), as shown in step 1 of Figure 3. The method further comprises of receiving the communication request at the MSC 310, as shown by step 2. The communication request corresponds to any of a voice call request, a video call request, a SMS request, a MMS request, or a Rich Communications Suite (RCS) request. The method further comprises the step of sending a trigger to an Intelligent Network (IN) or a Service Control Point (SCP) to validate whether request can be serviced, as shown by step 3 wherein the IN validates the communication request by checking the credentials/ credit availability of the originating party to proceed with the communication request, as shown in step 4. Further, the method further comprises of IN generating disconnect by generating a "special CONNECT message" having a special digit pattern added to the terminating party number and sends the "special CONNECT message" to the MSC 310, as shown in step 5. According to an embodiment, the "special CONNECT message" is generated by the IN for routing the communication request to the platform The ""special CONNECT message" " is being generated only if the communication request cannot be serviced for reasons not attributable to terminating party availability. According to an embodiment, the reasons corresponds to any of insufficient credits in the account of the originating party to comply with the communication request or the originating party not subscribed for the requested communication request.

The method further comprises of the step of automatically translating the "a special CONNECT message" into a "communication request forwarding command" based on the special digit pattern and redirecting the communication request to a platform, in accordance with the "communication request forwarding command", as shown in step 6. The method further comprises of releasing the communication request at the platform, as shown in step 7 and sending, by the platform, an alert to the terminating party (Party B), said alert including data indicative of the originating party, as shown in step 8. According to another embodiment, the alert to the terminating party (Party B) is in the form of a SMS or MMS or RCS.

According to an embodiment, the method further comprises the step of generating at the MSC a trigger from the received communication request and forwarding the trigger to the IN or SCP.

Figure 4 illustrates a flow diagram of a system for intimating a terminating party of a communication failure in accordance with a third embodiment of the invention. The third embodiment of the invention illustrates a tapping based approach for implementing the system 500.

The system 500 is configured for intimating a terminating party of a communication failure. The system 500 is being selectively in operative communication with an Intelligent Network (IN) via a communication channel. The system comprises of a Mobile Switching Centre (MSC) 510 configured for receiving a communication request from an origination party (Party A) and sending a trigger to the Intelligent Network 530 to validate whether the communication request can be serviced.

The Mobile Switching Centre 510 may comprise of a processor for generating the trigger and a data repository for being selectively in operative communication with the

processor for storing the details of the originating and terminating party and the details of the communication request.

The system further comprises of a platform 520 selectively in operative communication with the Mobile Switching Centre 510 and Intelligent Network 530 configured for passively monitoring the communication between the Mobile Switching Centre 510 and the Intelligent Network 530 and sending an alert to a terminating party (Party B), including data indicative of the originating party.

The Intelligent Network 530 is configured for generating the "request not serviced indication" only if the request was not serviced for reasons not attributable to terminating party availability and the "request not serviced indication" including data indicative of originating party and terminating party.

A method for intimating a terminating party of a communication failure is also disclosed. The method comprises the steps of initiating a communication request by the Party A (Originating Party), as shown in step 1 of Figure 4. The method further comprises of receiving the communication request at the MSC 510, as shown by step 2. The communication request corresponds to any of a voice call request, a video call request, a SMS request, a MMS request, or a Rich Communications Suite (RCS) request. The method further comprises the step of sending a trigger to an Intelligent Network (IN) or a Service Control Point (SCP) to validate whether request can be serviced, as shown by step 3 wherein the IN validates the communication request by checking the credentials/ credit availability of the originating party to proceed with the communication request, as shown in step 4.

Further, the method further comprises of IN generating disconnect by generating a "request not serviced indication" and sends the "request not serviced indication" to the MSC 510, as shown in step 5.

The "request not serviced indication" being generated only if the communication request cannot be serviced for reasons not attributable to terminating party availability.

According to an embodiment, the reasons corresponds to any of insufficient credits in the account of the originating party to comply with the communication request or the originating party not subscribed for the requested communication request.

The method further comprises of the step of passively monitoring by a platform to receive the trigger and the "request not serviced indication", as shown in step 6. The method further comprises the step of, in response to passively receiving the "request not serviced indication", sending by the platform, an alert to the terminating party (Party B), said alert including data indicative of the originating party, as shown in step 7. According to another embodiment, the alert to the terminating party (Party B) is in the form of a SMS or MMS or RCS.

According to an embodiment, the method further comprises the step of generating at the MSC a trigger from the received communication request and forwarding the trigger to the IN or SCP.

Figure 5 illustrates a flow diagram of a system for intimating a terminating party of a communication failure in accordance with a fourth embodiment of the invention. The fourth embodiment of the invention illustrates a file based approach for implementing the system 600.

The system 600 is configured for intimating a terminating party of a communication failure. The system 600 is being selectively in operative communication with an Intelligent Network (IN) 630 via a communication channel. The system comprises of a Mobile Switching Centre (MSC) 610 configured for receiving a communication request from an

origination party (Party A) and sending a trigger to the Intelligent Network 630 to validate whether the communication request can be serviced.

The Mobile Switching Centre 610 may comprise of a processor for generating the trigger and a data repository for being selectively in operative communication with the processor for storing the details of the originating and terminating party and the details of the communication request.

The system 600 further comprises of a platform 620 selectively in operative communication with the Intelligent Network 630 configured for receiving a call detail record and sending an alert to a terminating party (Party B), including data indicative of the originating party.

The Intelligent Network 630 is configured for generating a call detail record (CDR), the call detail record including data indicative of originating party and a terminating party, wherein the CDR is generated in response to a failure to service the request, wherein the failure to service the request being attributed to a reason other than terminating party availability.

A method for intimating a terminating party of a communication failure is also disclosed. The method comprises the steps of initiating a communication request by the Party A (Originating Party), as shown in step 1 of Figure 5. The method further comprises of receiving the communication request at the MSC 610, as shown by step 2. The communication request corresponds to any of a voice call request, a video call request, a SMS request, a MMS request, or a Rich Communications Suite (RCS) request. The method further comprises the step of sending a trigger to an Intelligent Network (IN) or a Service Control Point (SCP) to validate whether request can be serviced, as shown by step 3 wherein

the IN validates the communication request by checking the credentials/ credit availability of the originating party to proceed with the communication request, as shown in step 4.

Further, the method further comprises of IN generating disconnect by generating a call detail record (CDR) and sends the call detail record to the MSC 610, as shown in step 5.

The call detail record includes the data indicative of originating party (Party A) and a terminating party (Party B), wherein the CDR is generated in response to a failure to service the request, wherein the failure to service the request being attributed to a reason other than terminating party availability.

According to an embodiment, the reasons corresponds to any of insufficient credits in the account of the originating party to comply with the communication request or the originating party not subscribed for the requested communication request.

The method further comprises of the step of parsing all the failure CDR in Intelligent Network 630 as shown in step 6. The method further comprises the step of sending by the platform, an alert to the terminating party (Party B), said alert including data indicative of the originating party, as shown in step 7. According to another embodiment, the alert to the terminating party (Party B) is in the form of a SMS or MMS or RCS.

According to an embodiment, the method further comprises the step of generating at the MSC a trigger from the received communication request and forwarding the trigger to the IN or SCP.

The steps of the illustrated method described above herein may be implemented or performed with a general-purpose processor, a digital signal processor (DSP), an application specific integrated circuit (ASIC), a field programmable gate array (FPGA) or other programmable logic device, discrete gate or transistor logic, discrete hardware components,

or any combination thereof designed to perform the functions described herein. A general-purpose processor may be a microprocessor, but in the alternative, the processor may be any conventional processor, controller, micro controller, or state machine. A processor may also be implemented as a combination of computing devices, e.g., a combination of a DSP and a microprocessor, a plurality of microprocessors, one or more microprocessors in conjunction with a DSP core, or any other such configuration.

Figure 6 illustrates a typical hardware configuration of a computer system, which is representative of a hardware environment for practicing the present invention. Any of the components such as system 100 may include a portion or all of the computer system 1000. The computer system 1000 can include a set of instructions that can be executed to cause the computer system 1000 to perform any one or more of the methods disclosed. The computer system 1000 may operate as a standalone device or may be connected, e.g., using a network, to other computer systems or peripheral devices.

In a networked deployment, the computer system 1000 may operate in the capacity of a server or as a client user computer in a server-client user network environment, or as a peer computer system in a peer-to-peer (or distributed) network environment. The computer system 1000 can also be implemented as or incorporated into various devices, such as a personal computer (PC), a tablet PC, a set-top box (STB), a personal digital assistant (PDA), a mobile device, a palmtop computer, a laptop computer, a desktop computer, a communications device, a wireless telephone, a land-line telephone, a control system, a camera, a scanner, a facsimile machine, a printer, a pager, a personal trusted device, a web appliance, a network router, switch or bridge, or any other machine capable of executing a set of instructions (sequential or otherwise) that specify actions to be taken by that machine. Further, while a single computer system 1000 is illustrated, the term "system" shall also be

taken to include any collection of systems or sub-systems that individually or jointly execute a set, or multiple sets, of instructions to perform one or more computer functions.

The computer system 1000 may include a processor 1002, e.g., a central processing unit (CPU), a graphics processing unit (GPU), or both. The processor 1002 may be a component in a variety of systems. For example, the processor 1002 may be part of a standard personal computer or a workstation. The processor 1002 may be one or more general processors, digital signal processors, application specific integrated circuits, field programmable gate arrays, servers, networks, digital circuits, analog circuits, combinations thereof, or other now known or later developed devices for analyzing and processing data The processor 1002 may implement a software program, such as code generated manually (i.e., programmed).

The term "module" may be defined to include a plurality of executable modules. As described herein, the modules are defined to include software, hardware or some combination thereof executable by a processor, such as processor 1002. Software modules may include instructions stored in memory, such as memory 1004, or another memory device, that are executable by the processor 1002 or other processor. Hardware modules may include various devices, components, circuits, gates, circuit boards, and the like that are executable, directed, or otherwise controlled for performance by the processor 1002.

The computer system 1000 may include a memory 1004, such as a memory 1004 that can communicate via a bus 1008. The memory 1004 may be a main memory, a static memory, or a dynamic memory. The memory 1004 may include, but is not limited to computer readable storage media such as various types of volatile and non-volatile storage media, including but not limited to random access memory, read-only memory, programmable read-only memory, electrically programmable read-only memory, electrically

erasable read-only memory, flash memory, magnetic tape or disk, optical media and the like. In one example, the memory 1004 includes a cache or random access memory for the processor 1002. In alternative examples, the memory 1004 is separate from the processor 1002, such as a cache memory of a processor, the system memory, or other memory. The memory 1004 may be an external storage device or database for storing data. Examples include a hard drive, compact disc ("CD"), digital video disc ("DVD"), memory card, memory stick, floppy disc, universal serial bus ("USB") memory device, or any other device operative to store data. The memory 1004 is operable to store instructions executable by the processor 1002. The functions, acts or tasks illustrated in the figures or described may be performed by the programmed processor 1002 executing the instructions stored in the memory 1004. The functions, acts or tasks are independent of the particular type of instructions set, storage media, processor or processing strategy and may be performed by software, hardware, integrated circuits, firm-ware, micro-code and the like, operating alone or in combination. Likewise, processing strategies may include multiprocessing, multitasking, parallel processing and the like.

As shown, the computer system 1000 may or may not further include a display unit 1010, such as a liquid crystal display (LCD), an organic light emitting diode (OLED), a flat panel display, a solid state display, a cathode ray tube (CRT), a projector, a printer or other now known or later developed display device for outputting determined information. The display 1010 may act as an interface for the user to see the functioning of the processor 1002, or specifically as an interface with the software stored in the memory 1004 or in the drive unit 1016.

Additionally, the computer system 1000 may include an input device 1012 configured to allow a user to interact with any of the components of system 1000. The input device 1012

may be a number pad, a keyboard, or a cursor control device, such as a mouse, or a joystick, touch screen display, remote control or any other device operative to interact with the computer system 1000.

The computer system 1000 may also include a disk or optical drive unit 1016. The disk drive unit 1016 may include a computer-readable medium 1022 in which one or more sets of instructions 1024, e.g. software, can be embedded. Further, the instructions 1024 may embody one or more of the methods or logic as described. In a particular example, the instructions 1024 may reside completely, or at least partially, within the memory 1004 or within the processor 1002 during execution by the computer system 1000. The memory 1004 and the processor 1002 also may include computer-readable media as discussed above.

The present invention contemplates a computer-readable medium that includes instructions 1024 or receives and executes instructions 1024 responsive to a propagated signal so that a device connected to a network 1026 can communicate voice, video, audio, images or any other data over the network 1026. Further, the instructions 1024 may be transmitted or received over the network 1026 via a communication port or interface 1020 or using a bus 1008. The communication port or interface 1020 may be a part of the processor 1002 or may be a separate component. The communication port 1020 may be created in software or may be a physical connection in hardware. The communication port 1020 may be configured to connect with a network 1026, external media, the display 1010, or any other components in system 1000, or combinations thereof. The connection with the network 1026 may be a physical connection, such as a wired Ethernet connection or may be established wirelessly as discussed later. Likewise, the additional connections with other components of the system 1000 may be physical connections or may be established wirelessly. The network 1026 may alternatively be directly connected to the bus 1008.

The network 1026 may include wired networks, wireless networks, Ethernet AVB networks, or combinations thereof. The wireless network may be a cellular telephone network, an 802.11, 802.16, 802.20, 802.1Q or WiMax network. Further, the network 1026 may be a public network, such as the Internet, a private network, such as an intranet, or combinations thereof, and may utilize a variety of networking protocols now available or later developed including, but not limited to TCP/IP based networking protocols.

While the computer-readable medium is shown to be a single medium, the term "computer-readable medium" may include a single medium or multiple media, such as a centralized or distributed database, and associated caches and servers that store one or more sets of instructions. The term "computer-readable medium" may also include any medium that is capable of storing, encoding or carrying a set of instructions for execution by a processor or that cause a computer system to perform any one or more of the methods or operations disclosed. The "computer-readable medium" may be non-transitory, and may be tangible.

In an example, the computer-readable medium can include a solid-state memory such as a memory card or other package that houses one or more nonvolatile read-only memories. Further, the computer-readable medium can be a random access memory or other volatile re-writable memory. Additionally, the computer-readable medium can include a magneto-optical or optical medium, such as a disk or tapes or other storage device to capture carrier wave signals such as a signal communicated over a transmission medium. A digital file attachment to an e-mail or other self-contained information archive or set of archives may be considered a distribution medium that is a tangible storage medium. Accordingly, the disclosure is considered to include any one or more of a computer-readable medium or a

distribution medium and other equivalents and successor media, in which data or instructions may be stored.

In an alternative example, dedicated hardware implementations, such as application specific integrated circuits, programmable logic arrays and other hardware devices, can be constructed to implement various parts of the system 1000.

Applications that may include the systems can broadly include a variety of electronic and computer systems. One or more examples described may implement functions using two or more specific interconnected hardware modules or devices with related control and data signals that can be communicated between and through the modules, or as portions of an application-specific integrated circuit. Accordingly, the present system encompasses software, firmware, and hardware implementations.

The system described may be implemented by software programs executable by a computer system. Further, in a non-limited example, implementations can include distributed processing, component/object distributed processing, and parallel processing. Alternatively, virtual computer system processing can be constructed to implement various parts of the system.

The system is not limited to operation with any particular standards and protocols. For example, standards for Internet and other packet switched network transmission (e.g., TCP/IP, UDP/IP, HTML, HTTP) may be used. Such standards are periodically superseded by faster or more efficient equivalents having essentially the same functions. Accordingly, replacement standards and protocols having the same or similar functions as those disclosed are considered equivalents thereof.

Benefits, other advantages, and solutions to problems have been described above with regard to specific embodiments. However, the benefits, advantages, solutions to problems, and any component(s) that may cause any benefit, advantage, or solution to occur or become more pronounced are not to be construed as a critical, required, or essential feature or component of any or all the claims.

While specific language has been used to describe the disclosure, any limitations arising on account of the same are not intended. As would be apparent to a person in the art, various working modifications may be made to the method in order to implement the inventive concept as taught herein.

We Claim:

1. A method for intimating a terminating party of a communication failure, said method comprising the steps of:

receiving a communication request from an origination party, the communication request corresponding to any of voice call request, a video call request, a SMS request, a MMS request, or a Rich Communications Suite (RCS) request;

sending a trigger to an Intelligent Network (IN) or a Service Control Point (SCP) to validate whether request can be serviced;

receiving, by a platform, "request not serviced indication", said "request not serviced indication" being generated only if the request was not serviced for reasons not attributable to terminating party availability and said "request not serviced indication" including data indicative of originating party and terminating party; and

sending, by the platform, an alert to terminating party, said alert including data indicative of the originating party.

2. The method as claimed in claim 1, wherein validating the communication request comprises checking the credentials/ credit availability of the originating party to proceed with the communication request.

3. The method as claimed in claim 1, further comprising directing to the MSC the "request not serviced indication".

4. The method as claimed in claim 1, further comprising forwarding to the platform the "request not serviced indication" from the MSC.

5. The method as claimed in claim 1, wherein the alert to the terminating party is in the form of a SMS or MMS or RCS.

6. A system for intimating a terminating party of a communication failure, the system being selectively in operative communication with an Intelligent Network (IN) via a communication channel; the system comprising:

a Mobile Switching Centre (MSC) configured for receiving a communication request from an origination party and sending a trigger to the Intelligent Network to validate whether the communication request can be serviced; and

a Platform in operative communication with the Mobile Switching Centre configured for receiving a "request not serviced indication" and sending an alert to a terminating party, including data indicative of the originating party, the "request not serviced indication" being received only if the request was not serviced for reasons not attributable to terminating party availability and the "request not serviced indication" including data indicative of originating party and terminating party.

7. The system as claimed in claim 6, wherein the Mobile Switching Centre comprising:

a processor for generating the trigger; and

a data repository for being selectively in operative communication with the processor for storing the details of the originating and terminating party.

8. The system as claimed in claim 6, wherein the Mobile Switching Centre being selectively in operative communication with the Intelligent Network for receiving the "request not serviced indication" and forwarding the "request not serviced indication" to the Platform.

9. A method for intimating a terminating party of a communication failure, said method comprising the steps of:

receiving a communication request from an origination party, the communication request corresponding to any of a voice call request, a video call request, a SMS request, a MMS request, or a Rich Communications Suite (RCS) request;

sending a trigger to an Intelligent Network (IN) or a Service Control Point (SCP) to validate whether request can be serviced;

receiving a "special CONNECT message" including a special digit pattern being added to Terminating party Number by the IN, the "special CONNECT message" being generated only if the communication request cannot be serviced for reasons not attributable to terminating party availability;

automatically translating the "special CONNECT message" into a "communication request forwarding command" based on the special digit pattern and redirecting the communication request to a platform, in accordance with the "communication request forwarding command"; and

sending, by the platform, an alert to the terminating party, said alert including data indicative of the originating party.

10. The method as claimed in claim 9, wherein validating the communication request comprises checking the credentials/ credit availability of the originating party to proceed with the communication request.

11. The method as claimed in claim 9, wherein the "special CONNECT message" is generated by the IN for routing the communication request to the platform.

12. The method as claimed in claim 9, wherein the reasons corresponds to any of insufficient credits in the account of the originating party to comply with the communication request or the originating party not subscribed for the requested communication request.

13. The method as claimed in claim 9, wherein automatically translating the "special CONNECT message" into the "communication request forwarding command" at the MSC by matching the special digit pattern with the pre-existing command at a data repository of the MSC.

14. The method as claimed in claim 9, further comprising releasing, at the platform, the communication request.

15. The method as claimed in claim 9, wherein the alert to the terminating party is in the form of a SMS or MMS or RCS.

16. A system for intimating a terminating party of a communication failure, the system being selectively in operative communication with an Intelligent Network (IN) via a communication channel; the system comprising:

a Mobile Switching Centre (MSC) configured for receiving a communication request from an origination party and sending a trigger to the Intelligent Network to validate whether the communication request can be serviced; the Mobile Switching Centre further configured for receiving a "special CONNECT message" including a special digit pattern added to terminating party number and automatically translating the "special CONNECT message" into a "communication request forwarding command" based on the special digit pattern; and

a Platform in operative communication with the Mobile Switching Centre configured for receiving the "communication request forwarding command" and sending an alert to a terminating party, including data indicative of the originating party, the "special CONNECT

message" including a special digit pattern being received only if the communication request cannot be serviced for reasons not attributable to terminating party availability.

17. The system as claimed in claim 16, wherein the Mobile Switching Centre comprising:

a processor for generating the trigger and automatically translating the "special CONNECT message" into the "communication request forwarding command"; and

a data repository for being selectively in operative communication with the processor for storing the details of the originating and terminating party.

18. A method for intimating a terminating party of a communication failure, said method comprising the steps of:

receiving a communication request from an origination party, the communication request corresponding to any of voice call request, a video call request, a SMS request, a MMS request, or a Rich Communications Suite (RCS) request;

sending a trigger to an Intelligent Network (IN) or a Service Control Point (SCP) to validate whether request can be serviced;

generating and transmitting a "request not serviced indication", said "request not serviced indication" being generated only if the request was not serviced for reasons not attributable to terminating party availability;

passively monitoring by a platform to receive the trigger and the "request not serviced indication"; and

in response to passively receiving the "request not serviced indication", sending, by the platform, an alert to the terminating party.

19. The method as claimed in claim 18, wherein validating the communication request comprises checking the credentials/ credit availability of the originating party to proceed with the communication request.

20. The method as claimed in claim 18, wherein the reasons corresponds to any of insufficient credits in the account of the originating party to comply with the communication request or the originating party not subscribed for the requested communication request.

21. The method as claimed in claim 18, wherein the alert to the terminating party is in the form of a SMS or MMS or RCS.

22. A system for intimating a terminating party of a communication failure, the system being selectively in operative communication with an Intelligent Network (IN) via a communication channel; the system comprising:

a Mobile Switching Centre (MSC) configured for receiving a communication request from an origination party and sending a trigger to the Intelligent Network to validate whether the communication request can be serviced; and

a Platform selectively in operative communication with the Mobile Switching Centre and Intelligent Network configured for passively monitoring the communication between the Mobile Switching Centre and the Intelligent Network and sending an alert to a terminating party, including data indicative of the originating party, the "request not serviced indication" being received only if the request was not serviced for reasons not attributable to terminating party availability and the "request not serviced indication" including data indicative of originating party and terminating party.

23. The system as claimed in claim 22, wherein the Mobile Switching Centre comprising:

a processor for generating the trigger; and

a data repository for being selectively in operative communication with the processor for storing the details of the originating and terminating party.

24. A method for intimating a terminating party of a communication failure, said method comprising the steps of:

receiving a communication request from an origination party, the communication request corresponding to any of voice call request, a video call request, a SMS request, a MMS request, or a Rich Communications Suite (RCS) request;

sending a trigger to an Intelligent Network (IN) or a Service Control Point (SCP) to validate whether request can be serviced;

generating and transmitting a call detail record (CDR), the call detail record including data indicative of originating party and a terminating party, wherein the CDR is generated in response to a failure to service the request, wherein the failure to service the request being attributed to a reason other than terminating party availability; and

sending, by the platform, an alert to the terminating party, said alert including data indicative of the originating party.

25. The method as claimed in claim 24, wherein validating the communication request comprises checking the credentials/ credit availability of the originating party to proceed with the communication request.

26. The method as claimed in claim 24, wherein the reasons corresponds to any of insufficient credits in the account of the originating party to comply with the communication request or the originating party not subscribed for the requested communication request.

27. The method as claimed in claim 24, wherein the alert to the terminating party is in the form of a SMS or MMS or RCS.

28. A system for intimating a terminating party of a communication failure, the system being selectively in operative communication with an Intelligent Network (IN) via a communication channel; the system comprising:

a Mobile Switching Centre (MSC) configured for receiving a communication request from an origination party and sending a trigger to the Intelligent Network to validate whether the communication request can be serviced; and

a Platform selectively in operative communication with the Intelligent Network configured for receiving a call detail record and sending an alert to a terminating party, including data indicative of the originating party, the CDR is generated in response to a failure to service the request, wherein the failure to service the request being attributed to a reason other than terminating party availability.

29. The system as claimed in claim 28, wherein the Mobile Switching Centre comprising:

a processor for generating the trigger; and

a data repository for being selectively in operative communication with the processor for storing the details of the originating and terminating party.

30. The system as claimed in claim 28, wherein the Intelligent Network generates a call detail record (CDR), the call detail record including data indicative of originating party and a terminating party.

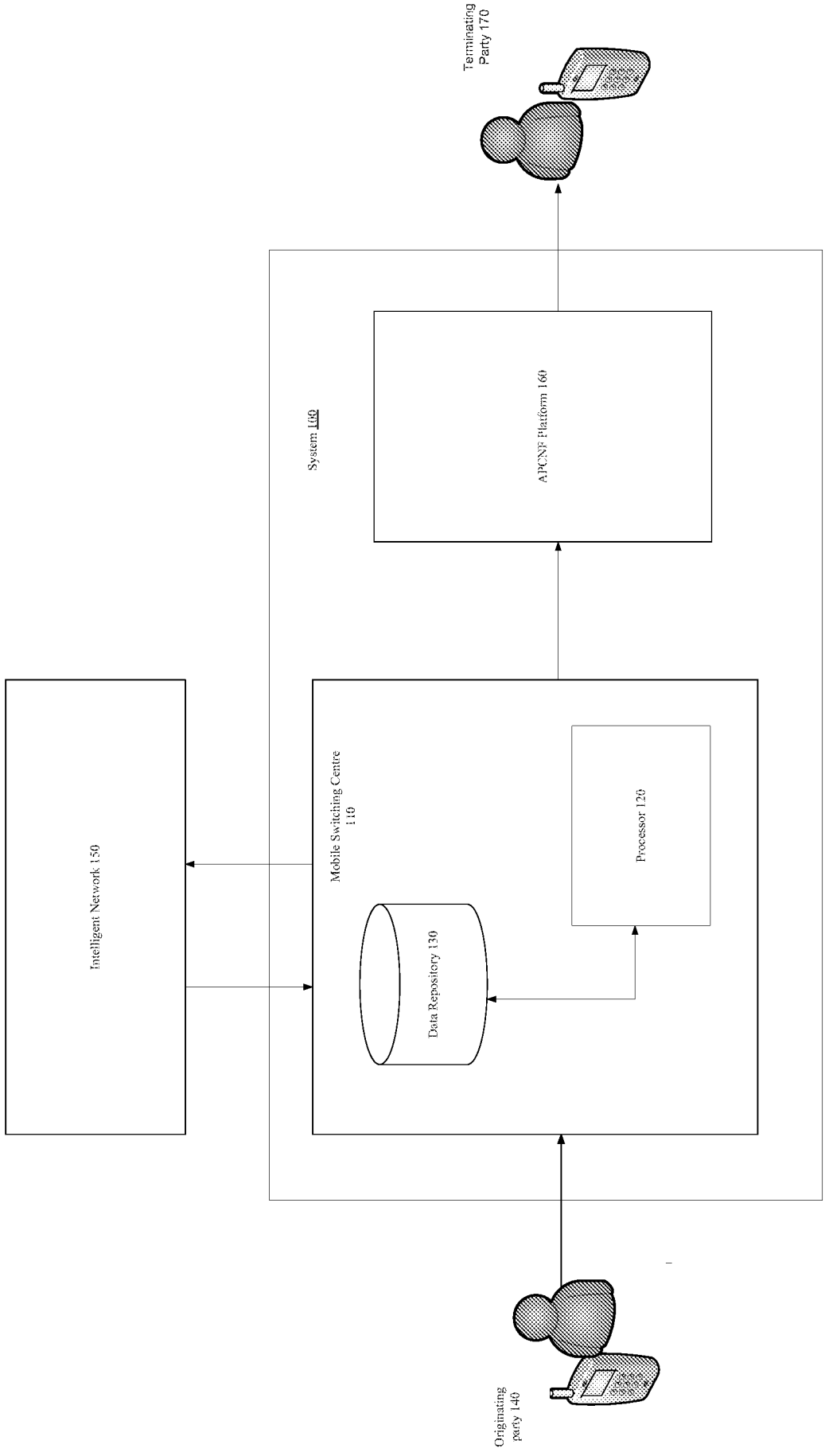
Terminating Party 170
System 100
APCNF Platform 160
Intelligent Network 150
Mobile Switching Centre 110
Processor 120
Data Repository 130
Originating party 140

Figure 1

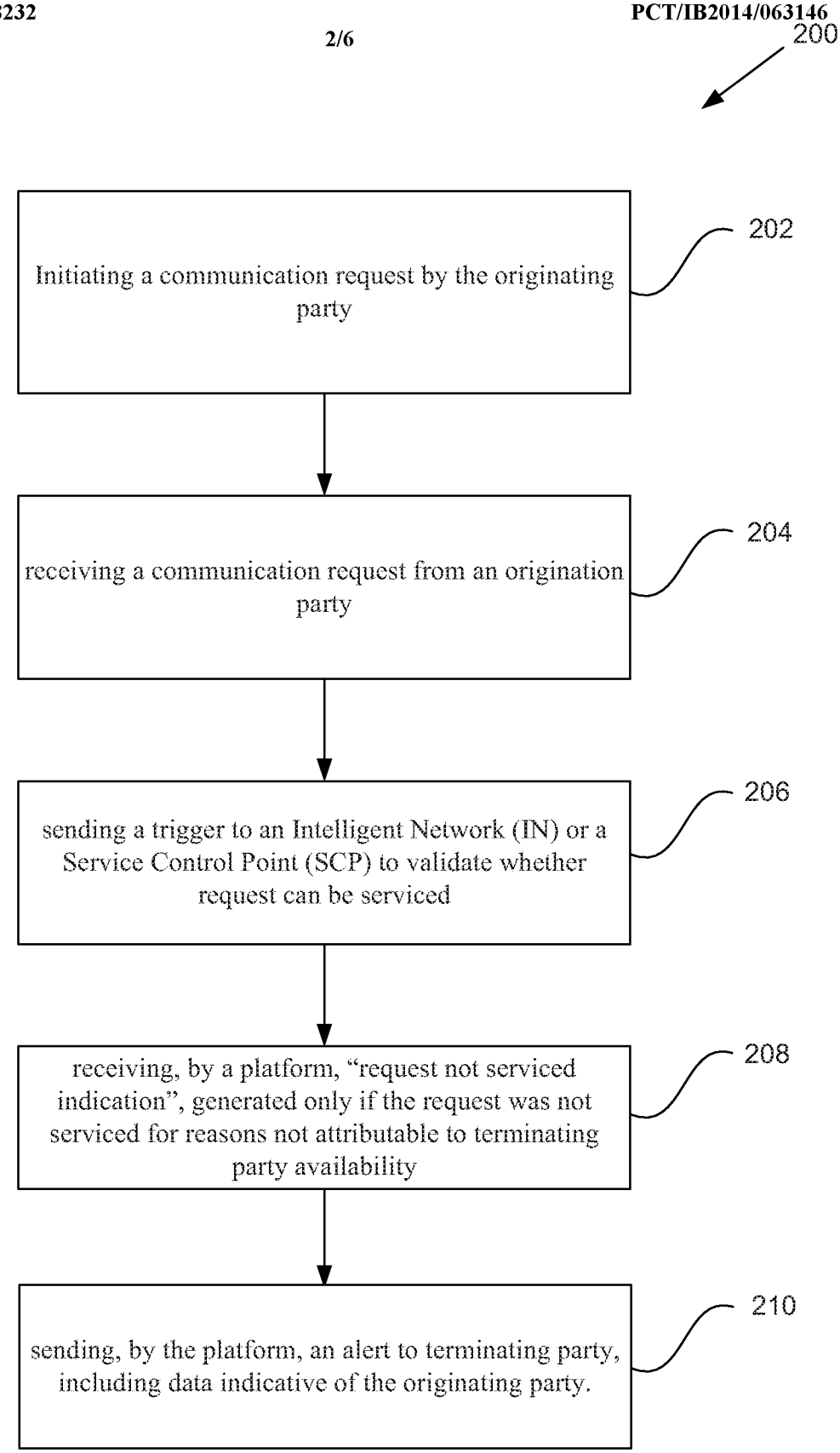
200
Initiating a communication request by the originating party
202
receiving a communication request from an origination party
204
sending a trigger to an Intelligent Network (IN) or a Service Control Point (SCP) to validate whether request can be serviced
206
receiving, by a platform, "request not serviced indication", generated only if the request was not serviced for reasons not attributable to terminating party availability
208
sending, by the platform, an alert to terminating party, including data indicative of the originating party.
210

Figure 2

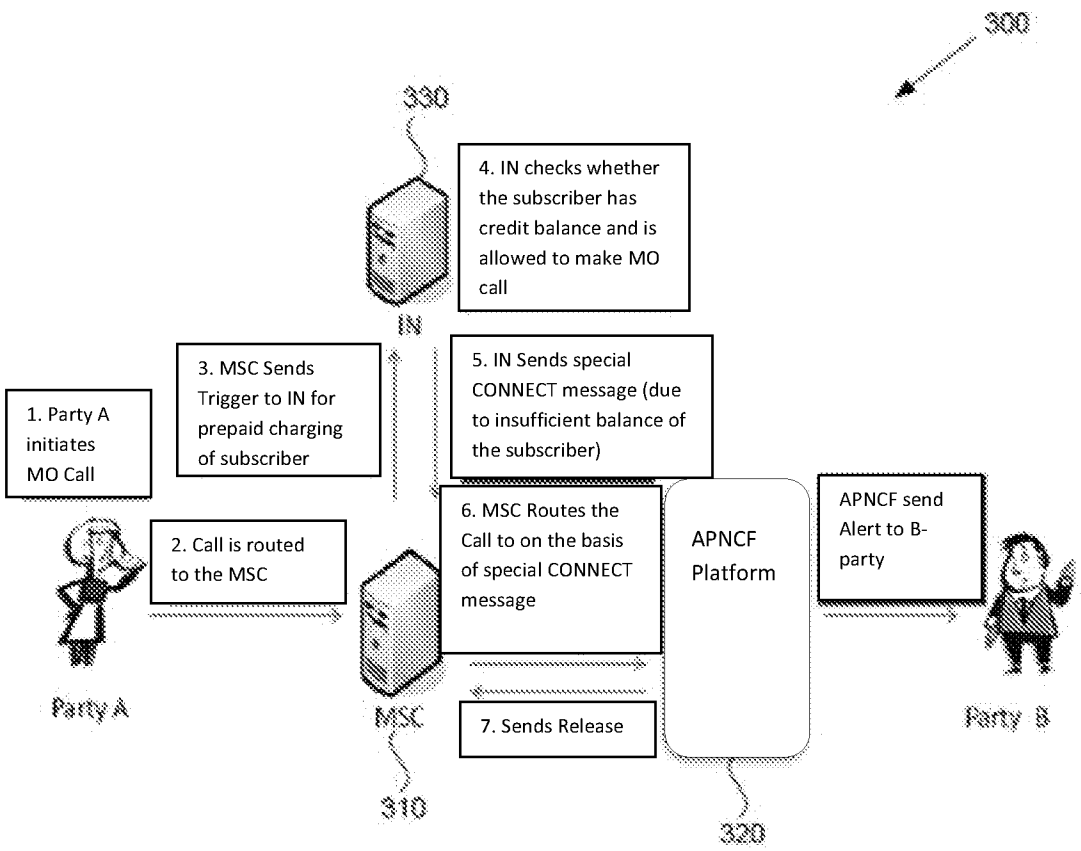
300
330
IN
4. IN checks whether the subscriber has credit balance and is allowed to make MO call
3. MSC Sends Trigger to IN for prepaid charging of subscriber
5. IN Sends special CONNECT message (due to insufficient balance of the subscriber)
1. Party A initiates MO Call
2. Call is routed to the MSC
6. MSC Routes the Call to on the basis of special CONNECT message
APNCF Platform
APNCF send Alert to B-party
Party A
MSC
7. Sends Release
Party B
310
320

Figure 3

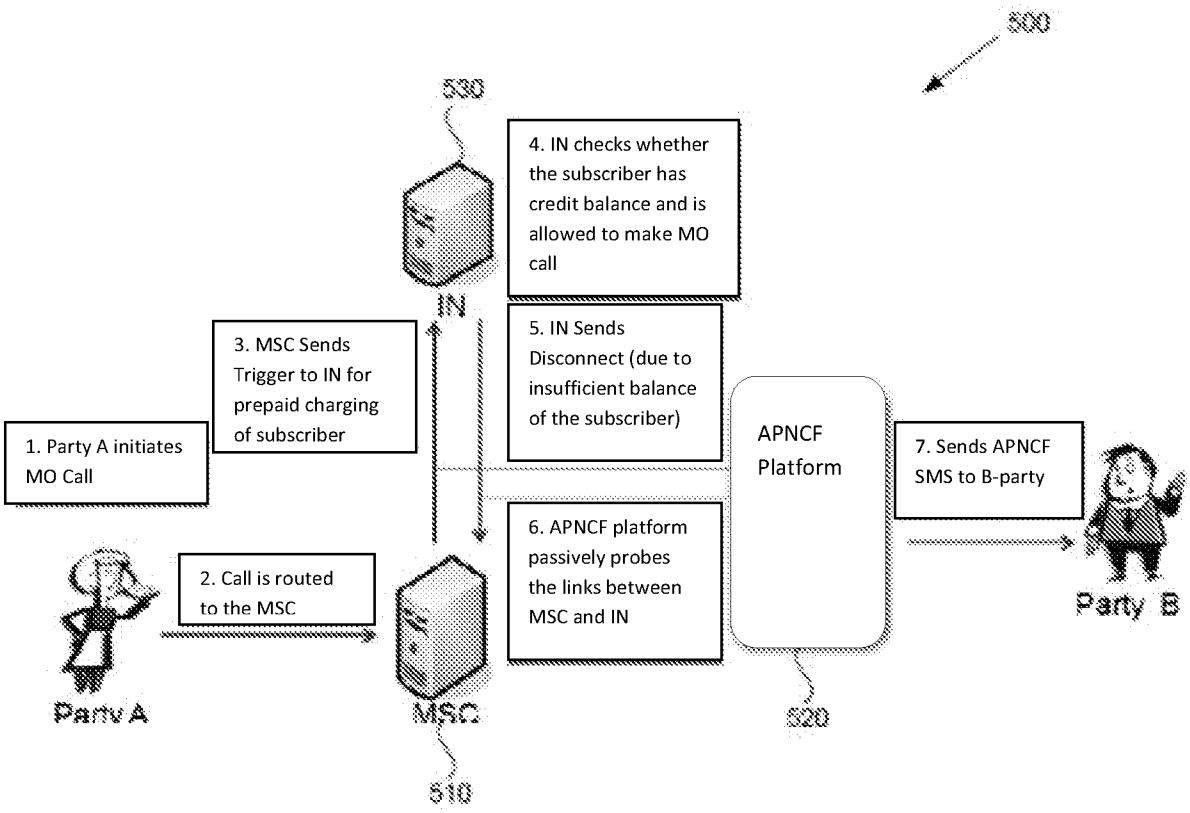
500
530
IN
4. IN checks whether the subscriber has credit balance and is allowed to make MO call
5. IN Sends Disconnect (due to insufficient balance of the subscriber)
3. MSC Sends Trigger to IN for prepaid charging of subscriber
1. Party A initiates MO Call
APNCF Platform
7. Sends APNCF SMS to B-party
6. APNCF platform passively probes the links between MSC and IN
2. Call is routed to the MSC
Party A
MSC
Party B
520
510

Figure 4

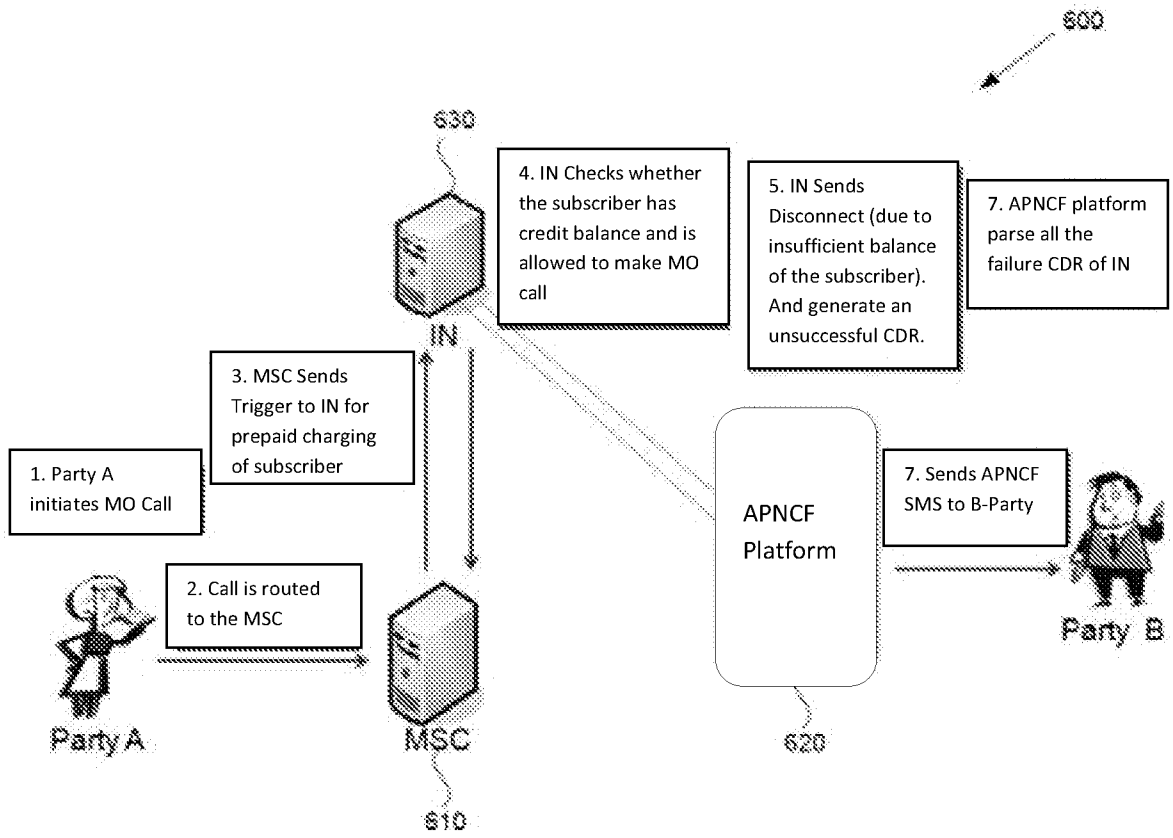
600
630
IN
4. IN Checks whether the subscriber has credit balance and is allowed to make MO call
5. IN Sends Disconnect (due to insufficient balance of the subscriber). And generate an unsuccessful CDR.
7. APNCF platform parse all the failure CDR of IN
3. MSC Sends Trigger to IN for prepaid charging of subscriber
1. Party A initiates MO Call
APNCF Platform
7. Sends APNCF SMS to B-Party
Party B
2. Call is routed to the MSC
Party A
MSC
620
610

Figure 5

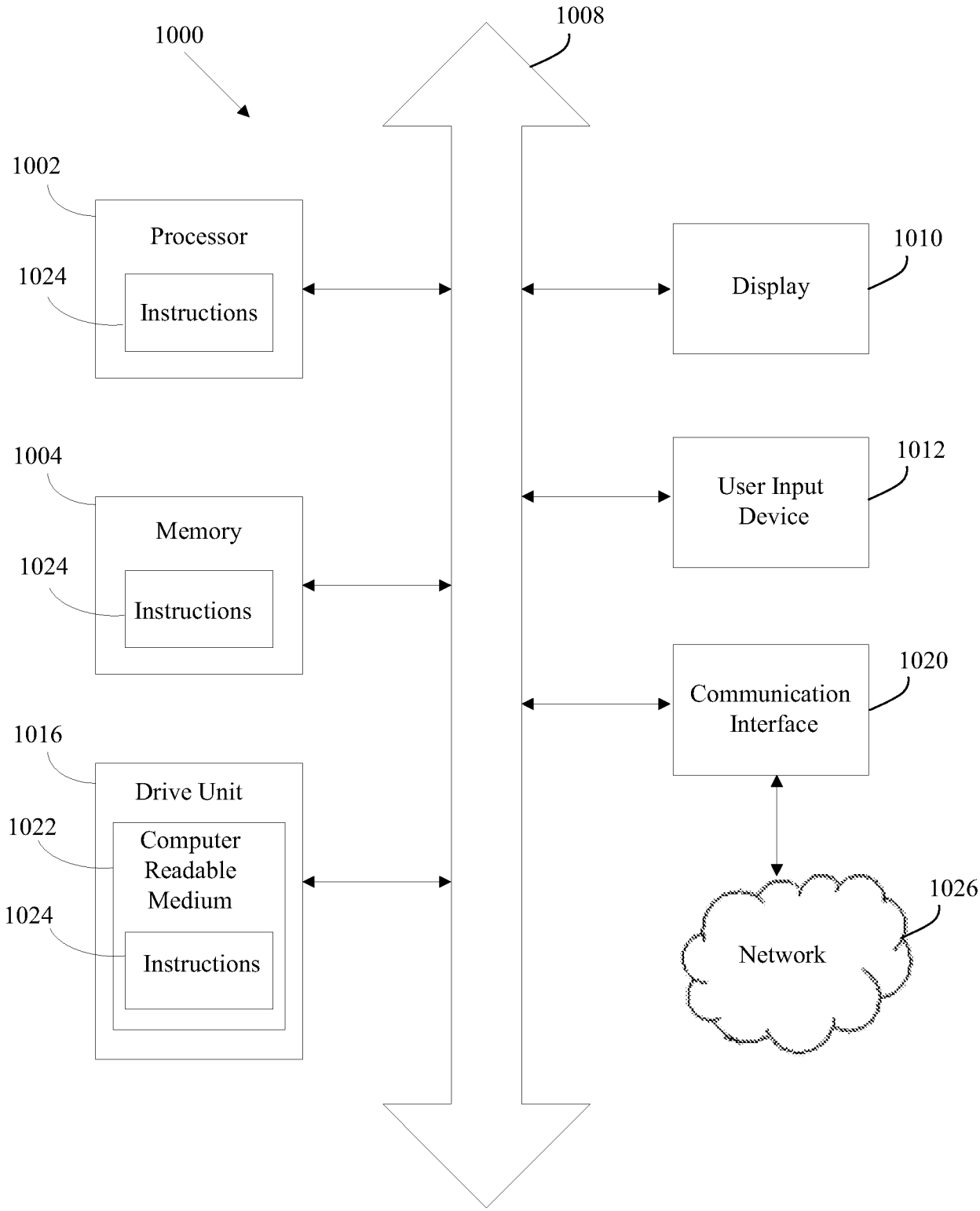
1000
1008
1002
Processor
1024
Instructions
1010
Display
1004
Memory
1024
Instructions
1012
User Input Device
1016
Drive Unit
1022
Computer Readable Medium
1024
Instructions
1020
Communication Interface
1026
Network

Figure 6

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2014/063146

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

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 practicable, 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	US 2008/075249 A1 (ZACH DANNY [IL] ET AL) 27 March 2008 (2008-03-27) abstract figures 1,3 paragraph [0001] paragraph [0018] paragraph [0028] paragraph [0030] paragraph [0039] - paragraph [0046] paragraph [0068] - paragraph [0069] paragraph [0075] - paragraph [0087] ----- -/--	1-30

[X] Further documents are listed in the continuation of Box C.

[X] 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 application or patent 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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
21 November 2014	02/12/2014

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Molinari, Fausto

1

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2014/063146

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2004/100521 A1 (KAHN ARI [ZA]) 18 November 2004 (2004-11-18) abstract page 1, line 14 - page 2, line 11 page 3, line 1 - page 3, line 3 page 3, line 15 - page 3, line 19 page 4, line 3 - page 4, line 5 page 4, line 25 - page 5, line 28 page 6, line 4 - page 6, line 9 figure 1 -----	1-30

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2014/063146

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		WO 2004100521 A1	18-11-2004
		ZA 200509020 A	27-02-2008