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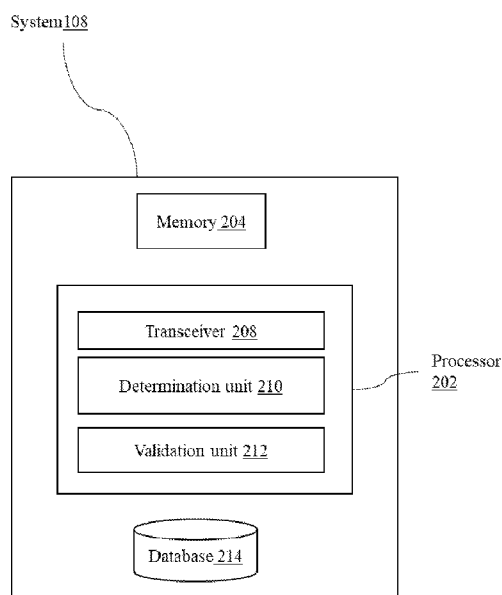


FIG. 2

(57) Abstract: The present invention relates to a system (108) and a method (400) for providing a communication service. The method (400) includes steps of, receiving a request from a user for accessing a telephonic feature. Further the method (400) includes the step of determining whether the user requesting access to the telephonic feature is a trusted user or a non-trusted user based on a pre-approved feature list. Based on determination, the method (400) includes the steps of enabling access to the telephonic feature requested by the trusted user and requesting an authentication code from the non-trusted user to access the telephonic feature. Further the method (400) includes the steps of, retrieving the authentication code from the non-trusted user to validate the authentication code and enabling access to the non-trusted user for the requested telephonic feature, in response to the validation of the authentication code.

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METHOD AND SYSTEM FOR PROVIDING A COMMUNICATION SERVICE

FIELD OF THE INVENTION

[0001] The present invention relates to the field of wireless communication systems, more particularly relates to a method and system for providing a communication service.

BACKGROUND OF THE INVENTION

[0002] The current enterprise telephone management system is a sophisticated telecommunications solution designed to handle the communication needs of businesses and organizations. It serves as the central platform for managing and facilitating voice-based communication within the enterprise, providing advanced features and functionality to improve productivity and efficiency.

[0003] Further the current enterprise telephone management system manages or control the access rights for each fixed telephone device within the telephone network. The access rights are usually pre-defined and set for each fixed telephone device. However, the drawback of the existing management system is the access rights for each fixed telephone device are fixed and cannot be changed in real-time.

[0004] Further the existing telephone networks are configured to deal with fixed telephone devices using a combination of hardware and software system. The fixed telephone device may connect with external number or extensions within the organization using conventional fiber optics or voice over internet protocol (VoIP).

[0005] Further the current enterprise telephone management system usually relies on Private Branch Exchange (PBX). The PBX is the core component responsible for call routing and handling within the organization. It connects internal extensions, manages call transfers, and facilitates other call management features. Further Unified Communications (UC) software integrates various communication channels,

including voice, video, instant messaging, and collaboration tools, into a single unified platform. It enables features like presence of information, voicemail, call recording, and integration with other business applications.

[0006] However, the major drawback of the current enterprise system is dynamic handling of access rights for the fixed telephone lines, capturing real-time information. The existing system also fails to adopt wireless communication devices like, mobiles phones or communication tablets.

SUMMARY OF THE INVENTION

[0007] One or more embodiments of the present disclosure provide a method and system for providing a communication service.

[0008] In one aspect of the present invention, a method for providing a communication service is disclosed. The method includes the step of receiving a request from a user for accessing a telephonic feature. The method further includes the step of determining whether the user requesting the access to the telephonic feature is a trusted user or a non-trusted user based on a pre-approved feature list. In response to determining the user requesting the access to the telephonic feature is the trusted user, the method further includes the step of enabling access to the telephonic feature requested by the trusted user. In response to determining the user requesting the access to the telephonic feature is the non-trusted user, the method further includes the step of requesting an authentication code from the non-trusted user to access the telephonic feature. The method further includes the step of retrieving the authentication code from the non-trusted user. The method further includes the step of validating the authentication code retrieved from the non-trusted user. The method further includes the step of enabling access to the non-trusted user for the requested telephonic feature, in response to the validation of the authentication code.

[0009] In one embodiment, the telephonic feature includes at least one of an international calling service.

[0010] In another embodiment, the pre-approved feature list includes at least one or more approved country codes for International Subscriber Dialing (ISD), blocked country codes for International Subscriber Dialing (ISD), information of the trusted user, approved Mobile Station Integrated Services Digital Network (MSISDN) for ISD, approved authentication code for ISD, and information associated with the telephonic feature.

[0011] In yet another embodiment, the step of, validating the authentication code retrieved from the non-trusted user includes the steps of parsing, the pre-approved feature list as defined for the user by an admin; retrieving, the authentication code as defined in the pre-approved feature list and comparing the authentication code retrieved from the pre-approved feature list with the authentication code retrieved from the user.

[0012] In yet another embodiment, the pre-approved feature list is stored in storage means such as at least one of a remote server, the remote server communicably coupled to the one or more processors.

[0013] In yet another embodiment, the trusted users and the non-trusted users interact with the one or more processors to access the telephonic feature and to provide user specific information via at least one of an Interactive Voice Response (IVR) unit.

[0014] In yet another embodiment, the step of determining whether the user requesting the access for the telephonic feature is a trusted user or a non-trusted user based on a pre-approved feature list includes the step of checking whether the pre-approved feature list includes the information of the user requesting the access for the telephonic feature.

[0015] In yet another embodiment, the method allows admin to update the pre-approved feature list that facilitates admin to enable or disable the telephonic features in real time.

[0016] In another aspect of the present invention, a system for providing a communication service is disclosed. The system includes a transceiver configured to receive a request from a user for accessing a telephonic feature. The system further includes a determination unit configured to determine whether the user requesting the access to the telephonic feature is a trusted user or a non-trusted user based on a pre-approved feature list. In response to determining the user requesting the access to the telephonic feature is the trusted user, the determination unit enables access to the telephonic feature requested by the trusted user. In response to determining the user requesting the access to the telephonic feature is the non-trusted user, the determination unit enables access to the telephonic feature requested by the non-trusted user. The determination unit is further configured to retrieve the authentication code from the non-trusted user. The system further includes a validation unit configured to validate the authentication code retrieved from the non-trusted user and enable access to the non-trusted user for the requested telephonic feature, in response to the validation of the authentication code.

[0017] In another aspect of the present invention, a User Equipment (UE) is disclosed. One or more primary processors communicatively coupled to one or more processors. The one or more primary processors coupled with a memory. The memory stores instructions which when executed by the one or more primary processors causes the UE to transmit a request to the one or more processors for accessing a telephonic feature. Further, the one or more processors are configured to perform the method for providing a communication service.

[0018] In yet another aspect of the present invention, a non-transitory computer-readable medium having stored thereon computer-readable instructions that, when executed by a processor. The processor is configured to receive a request from a user for accessing a telephonic feature. The processor is further configured to determine whether the user requesting the access to the telephonic feature is a trusted user or a non-trusted user based on a pre-approved feature list. In response to determining the user requesting the access to the telephonic feature is the trusted user, the processor

enables access to the telephonic feature requested by the trusted user. In response to determining the user requesting the access to the telephonic feature is the trusted user, the processor enables access to the telephonic feature requested by the trusted user. The processor is further configured to retrieve the authentication code from the non-trusted user. The processor is further configured to validate the authentication code retrieved from the non-trusted user. The processor is further configured to enable access to the non-trusted user for the requested telephonic feature, in response to the validation of the authentication code.

[0019] Other features and aspects of this invention will be apparent from the following description and the accompanying drawings. The features and advantages described in this summary and in the following detailed description are not all-inclusive, and particularly, many additional features and advantages will be apparent to one of ordinary skill in the relevant art, in view of the drawings, specification, and claims hereof. Moreover, it should be noted that the language used in the specification has been principally selected for readability and instructional purposes and may not have been selected to delineate or circumscribe the inventive subject matter, resort to the claims being necessary to determine such inventive subject matter.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] The accompanying drawings, which are incorporated herein, and constitute a part of this disclosure, illustrate exemplary embodiments of the disclosed methods and systems in which like reference numerals refer to the same parts throughout the different drawings. Components in the drawings are not necessarily to scale, emphasis instead being placed upon clearly illustrating the principles of the present disclosure. Some drawings may indicate the components using block diagrams and may not represent the internal circuitry of each component. It will be appreciated by those skilled in the art that disclosure of such drawings includes disclosure of electrical components, electronic components or circuitry commonly used to implement such components.

[0021] **FIG. 1** is an exemplary block diagram of a communication system for providing a communication service, according to one or more embodiments of the present invention;

[0022] **FIG. 2** is an exemplary block diagram of the system for providing a communication service, according to one or more embodiments of the present invention;

[0023] **FIG. 3** is an exemplary flow diagram of the system of **FIG. 2**, according to one or more embodiments of the present invention; and

[0024] **FIG. 4** is a flow diagram of a method for providing a communication service, according to one or more embodiments of the present invention

[0025] **FIG. 5a** and **FIG. 5b** are signal flow diagrams illustrating the system providing a communication service to at least one of, a trusted user and a non-trusted user, according to one or more embodiments of the present disclosure.

[0026] The foregoing shall be more apparent from the following detailed description of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0027] Some embodiments of the present disclosure, illustrating all its features, will now be discussed in detail. It must also be noted that as used herein and in the appended claims, the singular forms “a”, “an” and “the” include plural references unless the context clearly dictates otherwise.

[0028] Various modifications to the embodiment will be readily apparent to those skilled in the art and the generic principles herein may be applied to other embodiments. However, one of ordinary skill in the art will readily recognize that the present disclosure including the definitions listed here below are not intended to be limited to the embodiments illustrated but is to be accorded the widest scope consistent with the principles and features described herein.

[0029] A person of ordinary skill in the art will readily ascertain that the illustrated steps detailed in the figures and here below are set out to explain the exemplary embodiments shown, and it should be anticipated that ongoing technological development will change the manner in which particular functions are performed. These examples are presented herein for purposes of illustration, and not limitation. Further, the boundaries of the functional building blocks have been arbitrarily defined herein for the convenience of the description. Alternative boundaries can be defined so long as the specified functions and relationships thereof are appropriately performed. Alternatives (including equivalents, extensions, variations, deviations, etc., of those described herein) will be apparent to persons skilled in the relevant art(s) based on the teachings contained herein. Such alternatives fall within the scope and spirit of the disclosed embodiments.

[0030] The present invention relates to providing a communication service by accepting a request initiated by a user for accessing a telephonic feature such as an international calling service. The system determines a trusted user and a non-trusted user based on a pre-approved feature list that facilitates system to enable access to the trusted user and the non-trusted user for the telephonic feature. The trusted user is provided with the telephonic feature based on the pre-approved feature list and the non-trusted user is provided with the telephonic feature upon validation of an authentication code. Further the trusted users and the non-trusted users are able to access the requested telephone features by connecting to an Interactive Voice Module (IVR) and providing user specific information to the IVR. The invention provides easy access to the trusted users and the non-trusted users to the telephonic features in real-time when the telephonic features are not available to the trusted users and the non-trusted users by default.

[0031] Referring to **FIG. 1**, **FIG. 1** illustrates an exemplary block diagram of a communication system **100** providing a communication service, according to one or more embodiments of the present invention. The communication system **100** includes, a User Equipment (UE) **102**, a server **104**, a network **106** and a system **108**. The UE

102 aids a user to interact with the system **108** to transmit a request to the system **108** for accessing the telephonic feature.

[0032] For the purpose of description and explanation, the description will be explained with respect to one or more user equipment's (UEs) **102**, or to be more specific will be explained with respect to a first UE **102a**, a second UE **102b**, and a third UE **102c**, and should nowhere be construed as limiting the scope of the present disclosure. Each of the at least one UE **102** namely the first UE **102a**, the second UE **102b**, and the third UE **102c** is configured to connect to the server **104** via the network **106**.

[0033] In an embodiment, each of the first UE **102a**, the second UE **102b**, and the third UE **102c** is one of, but not limited to, any electrical, electronic, electro-mechanical or an equipment and a combination of one or more of the above devices such as virtual reality (VR) devices, augmented reality (AR) devices, laptop, a general-purpose computer, desktop, personal digital assistant, tablet computer, mainframe computer, or any other computing device.

[0034] The network **106** includes, by way of example but not limitation, one or more of a wireless network, a wired network, an internet, an intranet, a public network, a private network, a packet-switched network, a circuit-switched network, an ad hoc network, an infrastructure network, a Public-Switched Telephone Network (PSTN), a cable network, a cellular network, a satellite network, a fiber optic network, or some combination thereof. The network **106** may include, but is not limited to, a Third Generation (3G), a Fourth Generation (4G), a Fifth Generation (5G), a Sixth Generation (6G), a New Radio (NR), a Narrow Band Internet of Things (NB-IoT), an Open Radio Access Network (O-RAN), and the like.

[0035] The network **106** may also include, by way of example but not limitation, at least a portion of one or more networks having one or more nodes that transmit, receive, forward, generate, buffer, store, route, switch, process, or a combination

thereof, etc. one or more messages, packets, signals, waves, voltage or current levels, some combination thereof, or so forth. The network **106** may also include, by way of example but not limitation, one or more of a wireless network, a wired network, an internet, an intranet, a public network, a private network, a packet-switched network, a circuit-switched network, an ad hoc network, an infrastructure network, a Public-Switched Telephone Network (PSTN), a cable network, a cellular network, a satellite network, a fiber optic network, a Voice over Internet Protocol (VoIP) or some combination thereof.

[0036] The communication system **100** includes the server **104** accessible via the network **106**. The server **104** may include by way of example but not limitation, one or more of a standalone server, a server blade, a server rack, a bank of servers, a server farm, hardware supporting a part of a cloud service or system, a home server, hardware running a virtualized server, a processor executing code to function as a server, one or more machines performing server-side functionality as described herein, at least a portion of any of the above, some combination thereof. In an embodiment, the entity may include, but is not limited to, a vendor, a network operator, a company, an organization, a university, a lab facility, a business enterprise side, a defense facility side, or any other facility that provides service.

[0037] The communication system **100** further includes a system **108** communicably coupled to the server **104** and each of the first UE **102a**, the second UE **102b**, and the third UE **102c** via the network **106**. The system **108** is adapted to be embedded within the server **104** or is embedded as the individual entity. However, for the purpose of description, the system **108** is described as an integral part of the server **104**, without deviating from the scope of the present disclosure.

[0038] Operational and construction features of the system **108** will be explained in detail with respect to the following figures.

[0039] FIG. 2 is an exemplary block diagram of the system 108 for providing a communication service, according to one or more embodiments of the present invention.

[0040] As per the illustrated and preferred embodiment, the system 108 is adapted for providing the communication service in the network 106. In an embodiment, the system 108 may be a Business Telephony Application Server (BTAS). The system 108 includes one or more processors 202, a memory 204, and a database 216. The one or more processors 202 includes a transceiver 208, a determination unit 210, and a validation unit 212. The one or more processors 202, hereinafter referred to as the processor 202, may be implemented as one or more microprocessors, microcomputers, microcontrollers, digital signal processors, central processing units, state machines, logic circuitries, single board computers, and/or any devices that manipulate signals based on operational instructions. However, it is to be noted that the system 108 may include multiple processors as per the requirement and without deviating from the scope of the present disclosure. Among other capabilities, the processor 202 is configured to fetch and execute computer-readable instructions stored in the memory 204.

[0041] As per the illustrated embodiment, the processor 202 is configured to fetch and execute computer-readable instructions stored in the memory 204 as the memory 204 is communicably connected to the processor 202. The memory 204 is configured to store one or more computer-readable instructions or routines in a non-transitory computer-readable storage medium, which may be fetched and executed to provide the communication service in the network 106. The memory 204 may include any non-transitory storage device including, for example, volatile memory such as RAM, or non-volatile memory such as disk memory, EPROMs, FLASH memory, unalterable memory, and the like.

[0042] In an embodiment, the transceiver 208 of the processor 202 is configured to receive a dynamically initiated request from the user via one or more user equipment's

(UEs) **102** for accessing the telephonic feature. The telephonic feature includes at least one of, but not limited to, placing an international call. For e.g., if a specific extension/fixed telephony device or the user needs to make the international call in real time, and the telephonic feature has not been provided to the user or the user does not have right to access the telephonic feature, then the user can initiate the request to enable a temporary access for the telephonic feature. In an embodiment, the user requesting the telephonic feature includes at least one of the trusted user and the non-trusted user.

[0043] In an embodiment, the determination unit **210** of the processor **202** is configured to determine whether the user requesting the access to the telephonic feature is the trusted user or the non-trusted user based on a pre-approved feature list. The pre-approved feature list includes at least one of, but not limited to, one or more approved country codes for International Subscriber Dialing (ISD), blocked country codes for International Subscriber Dialing (ISD), information of the trusted user, approved Mobile Station Integrated Services Digital Network (MSISDN) for ISD, approved authentication code for ISD, and information associated with the telephonic feature. For e.g., the pre-approved feature list is a whitelist which includes data pertaining to multiple parameters of the telephonic feature.

[0044] The International Subscriber Dialing (ISD) is also known as an International Direct Dialing (IDD) which is an international telephone call that is dialed directly by a telephone subscriber or user, rather than depending on the phone operator. Each country is assigned a unique ISD code which is used to make international calls. For example, ISD code of India is +91.

[0045] The Mobile Station International Subscriber Directory Number (MSISDN) is a unique identifier assigned to each user equipment such as a mobile device in a (Global System for Mobile Communications) GSM network. An MSISDN is a phone number associated with a Subscriber Identity Module (SIM) card which is utilized to call or send a Short Messaging Service (SMS).

[0046] In order to determine whether the user requesting the access to the telephonic feature is the trusted user or the non-trusted user, the determination unit **210** checks the pre-approved feature list which includes the information of the trusted user requesting the access for the telephonic feature. In response to determining the user requesting the access to the telephonic feature is the trusted user based on the information of the trusted user included in the pre-approved feature list, the determination unit **210** enables access to the telephonic feature requested by the trusted user. In an alternate embodiment, the information of the UE **102** of the trusted user is included in the pre-approved feature list due to which the determination unit **210** enables access to the telephonic feature requested by the trusted user. The pre-approved feature list is stored in storage means such as at least one of a remote server, and the database **214** which is communicably coupled to the determination unit **210** of the one or more processors **202**. Further, when the information of the user or the UE **102** of the user requesting the access to the telephonic feature is not available in the pre-approved feature list stored in the database **214** then it is determined that the user is the non-trusted user. In response to determining the user requesting the access to the telephonic feature is the non-trusted user, the determination unit **210** requests an authentication code from the non-trusted user to access the telephonic feature. The determination unit **210** of the processor **202** is further configured to retrieve the authentication code from the non-trusted user.

[0047] In an embodiment, the database **214** is configured to store the pre-approved feature list. The database **214** is one of, but not limited to, a centralized database, a cloud-based database, a commercial database, an open-source database, a distributed database, an end-user database, a graphical database, a No-Structured Query Language (NoSQL) database, an object-oriented database, a personal database, an in-memory database, a document-based database, a time series database, a wide column database, a key value database, a search database, a cache databases, and so forth. The foregoing examples of database **212** types are non-limiting and may not be mutually exclusive

e.g., the database can be both commercial and cloud-based, or both relational and open-source, etc.

[0048] In an embodiment, the validation unit **212** of the processor **202** is configured to validate the authentication code retrieved by the determination unit **210** from the non-trusted user. The validation unit **212** authenticates code by parsing the pre-approved feature list as defined for the user by an admin. Further, the authentication code as defined in the pre-approved feature list is retrieved by the validation unit **212**. Further the authentication code retrieved from the pre-approved feature list is compared with the authentication code retrieved from the non-trusted user to validate the authentication code retrieved from the non-trusted user. In response to the validation of the authentication code retrieved from the non-trusted user, the requested telephonic feature is enabled for accessing by the non-trusted user.

[0049] In one embodiment, the system **108** allows the admin to update the pre-approved feature list that facilitates admin to enable or disable the telephonic features in real time. In an alternate embodiment, the admin can update the pre-approved feature list via an Interactive Voice Response (IVR). For example, the admin is allowed to update/create/delete multiple parameters of the telephonic features such as updating the approved country codes for international calling which gets reflected in real-time independent of the complexity of the network.

[0050] The Interactive Voice Response (IVR) is an automated technology that allows incoming callers or users interact with a computer-operated telephone system via a voice response as well as to utilize menu options via touch tone keypad selection or speech recognition. IVR responds with pre-recorded or dynamically generated audio to further direct users on how to proceed for accessing the telephonic features.

[0051] The IVR is integrated or hosted on the system **108** or the IVR is integrated or hosted on the server **104**. By integrating the IVR to the system **108**, the efficiency call flow of providing the communication service to the at least one of, the trusted and

the non-trusted is improved and delay pertaining to at least one of, updating the multiple parameters of the telephonic features by the admin in the system **108** and accessing the requested telephonic feature is reduced, leading to higher overall user satisfaction. The IVR is configured to render the information pertaining to the requested telephonic feature by the at least one of, the trusted and the non-trusted user to the admin.

[0052] The transceiver unit **208**, the determination unit **210**, and the validation unit **212**, in an exemplary embodiment, are implemented as a combination of hardware and programs (for example, programmable instructions) to implement one or more functionalities of the processor **202**. In the examples described herein, such combinations of hardware and programming may be implemented in several different ways. For example, the programming for the processor **202** may be processor-executable instructions stored on a non-transitory machine-readable storage medium and the hardware for the processor may comprise a processing resource (for example, one or more processors), to execute such instructions. In the present examples, the memory **204** may store instructions that, when executed by the processing resource, implement the processor **202**. In such examples, the system **108** may comprise the memory **204** storing the instructions and the processing resource to execute the instructions, or the memory **204** may be separate but accessible to the system **108** and the processing resource. In other examples, the processor **202** may be implemented by electronic circuitry.

[0053] **FIG. 3** illustrates an exemplary block diagram of an architecture for the system **108** of **FIG. 2**, according to one or more embodiments of the present invention. More specifically, **FIG. 3** illustrates the system **108** configured for providing a communication service. It is to be noted that the embodiment with respect to **FIG. 3** will be explained with respect to the UE **102** for the purpose of description and illustration and should nowhere be construed as limiting the scope of the present disclosure.

[0054] The FIG. 3 illustrates communication between the UE 102 and the system 108. For the purpose of description of the exemplary embodiment as illustrated in FIG. 3, the User Equipment (UE) 102 uses network protocol connection to communicate with the system 108. In an embodiment, the network protocol connection is the establishment and management of communication between the UE 102 and the system 108 over the network 106 using a specific protocol or set of protocols. The network protocol connection includes, but not limited to, Session Initiation Protocol (SIP), System Information Block (SIB) protocol, Transmission Control Protocol (TCP), User Datagram Protocol (UDP), File Transfer Protocol (FTP), Hypertext Transfer Protocol (HTTP), Simple Network Management Protocol (SNMP), Internet Control Message Protocol (ICMP), Hypertext Transfer Protocol Secure (HTTPS) and Terminal Network (TELNET).

[0055] In an embodiment, the UE 102 includes a primary processor 302, a memory 304, and a user interface 306. In alternate embodiments, the UE 102 may include more than one primary processor 302 as per the requirement of the network 106. The primary processor 302, may be implemented as one or more microprocessors, microcomputers, microcontrollers, digital signal processors, central processing units, state machines, logic circuitries, single board computers, and/or any devices that manipulate signals based on operational instructions.

[0056] In an embodiment, the primary processor 302 is configured to fetch and execute computer-readable instructions stored in the memory 304. The memory 304 may be configured to store one or more computer-readable instructions or routines in a non-transitory computer-readable storage medium, which may be fetched and executed to request for the telephonic feature. The memory 304 may include any non-transitory storage device including, for example, volatile memory such as RAM, or non-volatile memory such as disk memory, EPROMs, FLASH memory, unalterable memory, and the like.

[0057] In an embodiment, the user interface **306** of the UE **102** includes a variety of interfaces, for example, a graphical user interface, a web user interface, a Command Line Interface (CLI), and the like. The UE **102** transmit the request to the one or more processors **202** for accessing the telephonic feature via user interface **306**.

[0058] As a working example, initially an employee of an enterprise interacts with the user interface **306** of the UE **102** for accessing at least one of the telephonic feature. Here, the employee via the UE **102** is transmitting the request to the processor **202** for accessing the telephonic feature such as an international calling service. Further, the transceiver **208** of the processor **202** receives the request from the employee. Prior to providing the international calling service to the employee requesting the international calling service, the determination unit **210** of the of the processor **202** determines whether the employee requesting the access for the international calling service is the trusted user or the non-trusted user based on the pre-approved feature list. The pre-approved feature list is updated or modified by the admin of the enterprise. The pre-approved feature list includes at least one of the one or more approved country codes for international calling service, blocked country codes for calling service, information of the trusted user, approved Mobile Station Integrated Services Digital Network (MSISDN) for international calling service, approved authentication code for international calling service, and information associated with the international calling service.

[0059] The determination unit **210** checks whether the information of the employee requesting the international calling service is available in the pre-approved feature list. For example, let us consider the admin of the enterprise has pre-stored information of some of the employees in the pre-approved feature list in order to easily avail the international calling service. The determination unit **210** identifies that the information pertaining to the employee requesting the access to the international calling service is available in the pre-approved feature list, then the determination unit **210** infers that employee as the trusted user and enables access to the international calling service. In other words, let us consider that if an employee A is requesting for accessing the

international calling service and the information of the employee A is available in the pre-approved feature list, then the employee A is determined as the trusted user.

[0060] On the contrary, if the determination unit **210** identifies that the information pertaining to the employee requesting the access to the international calling service is not available in the pre-approved feature list, then the determination unit **210** infers that the employee is the non-trusted user and requests an authentication code from the employee to access the international calling service. In particular, if the employee A is requesting for accessing the international calling service and the information of the employee A is not available in the pre-approved feature list, then the employee A is determined as the non-trusted user. Thereafter, the determination unit **210** retrieves the authentication code from the employee.

[0061] Further, the authentication code retrieved from the employee is validated by the validation unit **214** by analyzing the pre-approved feature list as defined for the employees by an admin and retrieving the authentication code as defined in the pre-approved feature list. Further, the validation unit **214** compares the authentication code retrieved from the pre-approved feature list with the authentication code retrieved from the employee in order to validate the authentication code retrieved from the employee requesting for accessing the international calling service. Subsequent to validation of the authentication code, the validation unit **214** enables the employee to access the international calling service.

[0062] **FIG. 4** is a flow diagram of a method **400** for providing a communication service in a network **106**, according to one or more embodiments of the present invention. For the purpose of description, the method is described with the embodiments as illustrated in **FIG. 2** and should nowhere be construed as limiting the scope of the present disclosure.

[0063] At step **402**, the method **400** includes the step of receiving a request from a user for accessing a telephonic feature. In one embodiment, the transceiver **208** of the processor **202** is configured to receive a dynamic request from the user via the UE **102**

for accessing the telephonic feature. The telephonic feature is at least one of an international calling service. For example, the dynamic request is a request from the user for enabling access to international call or enabling access to bridging service for the international call.

[0064] At step **404**, the method **400** includes the step of determining whether the user requesting the access to the telephonic feature is the trusted user or the non-trusted user based on the pre-approved feature list. In one embodiment, the determination unit **210** of the processor **202** is configured to determining whether the user requesting the access to the telephonic feature is the trusted user or the non-trusted user based on the pre-approved feature list. The pre-approved feature list is stored at the database **214** which includes at least one or more approved country codes for International Subscriber Dialing (ISD), blocked country codes for International Subscriber Dialing (ISD), information of the trusted user, approved Mobile Station Integrated Services Digital Network (MSISDN) for ISD, approved authentication code for ISD, and information associated with the telephonic feature. The pre-approved feature list is updated by the admin in which the information of multiple users is pre stored by the admin. The information of multiple users which are pre stored in the pre-approved feature list are that of the trusted users. The determination unit **210** checks whether the pre-approved feature list includes the information of the user requesting the access for the telephonic feature. If the information of the user requesting access for the telephonic feature is available in the pre-approved feature list, then the determination unit **210** infers that user as the trusted user. For example, an employee of an enterprise requesting the international calling service is the trusted user when the information of that employee is prestored in the pre-approved feature list. If the information of the user requesting access for the telephonic feature is not available in the pre-approved feature list, then the determination unit **210** infers that the user as the non-trusted user.

[0065] At **406**, the method **400** includes the step of in response to determining, the user requesting the access to the telephonic feature is the trusted user, enabling access to the telephonic feature requested by the trusted user. In one embodiment, subsequent

to determination of the trusted user is requesting the access to the telephonic feature, the determination unit **210** enables access to the telephonic feature requested by the trusted user.

[0066] At **408**, the method **400** includes the step of in response to determining, the user requesting the access to the telephonic feature is the non-trusted user, requesting an authentication code from the non-trusted user to access the telephonic feature. In one embodiment, subsequent to determination of the non-trusted user requesting the access to the telephonic feature, the determination unit **210** requests an authentication code from the non-trusted user to access the telephonic feature. In an alternate embodiment, in case a verification process related to the authentication code is not available in the system **108** then an alternate verification process is employed to enable the telephonic feature such as the international call for the non-trusted user.

[0067] At **410**, the method **400** includes the step of retrieving the authentication code from the non-trusted user. In response to requesting an authentication code from the non-trusted user to access the telephonic feature, the determination unit **210** retrieves the authentication code from the non-trusted user.

[0068] At **412**, the method **400** includes the step of validating the authentication code retrieved from the non-trusted user. In one embodiment, validation unit **212** of the processor **202** is configured to validate the authentication code retrieved from the non-trusted user. The validation unit **212** analyses the pre-approved feature list as defined for the non-trusted user by the admin. Further the validation unit **212** retrieves the authentication code as defined in the pre-approved feature list. Thereafter, the validation unit **212** compares the authentication code retrieved from the pre-approved feature list with the authentication code retrieved from the user in order to validate the authentication code retrieved from the non-trusted user.

[0069] At **414**, the method **400** includes the step of enabling access to the non-trusted user for the requested telephonic feature, in response to the validation of the

authentication code. In one embodiment, subsequent to validating the authentication code retrieved from the non-trusted user, the validation unit **212** enables access to the non-trusted user for the requested telephonic feature. For example, subsequent to validating the authentication code retrieved from the employee, which is a non-trusted user of the enterprise, the validation unit **212** enables that employee to access the international calling service.

[0070] **FIG. 5a** is a signal flow diagram illustrating the system providing a communication service to a trusted user, according to one or more embodiments of the present disclosure.

[0071] At step **502**, the user transmits the request to transceiver **208** of the processors **202** via the UE **102** for accessing the telephonic feature such as international calling.

[0072] At step **504**, the transceiver **208** receives the request and forwards the received request to the determination unit **210**.

[0073] At step **506**, the determination unit **210** determines the user requesting the telephonic feature is a trusted user based on the pre-approved feature list and transmits a signal related to enabling access for the telephonic feature via the transceiver **208** on the UE **102** of the trusted user.

[0074] **FIG. 5b** is a signal flow diagram illustrating the system providing a communication service to a non-trusted user, according to one or more embodiments of the present disclosure.

[0075] At step **510**, the user transmits the request to transceiver **208** of the processors **202** via the UE **102** for accessing the telephonic feature such as international calling.

[0076] At step **512**, the transceiver **208** receives the request and forwards the received request to the determination unit **210**.

[0077] At step **514**, the determination unit **210** determines the user requesting the telephonic feature is a non-trusted user based on the pre-approved feature list and request for the authentication code from the non-trusted user.

[0078] At step **516**, the determination unit **210** receives the authentication code from the UE **102**.

[0079] At step **518**, the determination unit **210** forwards the received authentication code from the UE **102** to the validation unit **212**.

[0080] At step **520**, the validation unit **212** transmits a signal related to enabling access for the telephonic feature via the transceiver **208** on the UE **102** of the non-trusted user subsequent to the validation of the authentication code.

[0081] The present invention further discloses a non-transitory computer-readable medium having stored thereon computer-readable instructions. The computer-readable instructions are executed by the processor **202**. The processor **202** is configured to receive a request from a user for accessing a telephonic feature. The processor **202** is further configured to determine whether the user requesting the access to the telephonic feature is a trusted user or a non-trusted user based on a pre-approved feature list. In response to determining the user requesting the access to the telephonic feature is the trusted user, the processor **202** is further configured to enable access to the telephonic feature requested by the trusted user. In response to determining the user requesting the access to the telephonic feature is the non-trusted user, the processor **202** is further configured to request an authentication code from the non-trusted user to access the telephonic feature. The processor **202** is further configured to retrieve the authentication code from the non-trusted user. The processor **202** is further configured to validate the authentication code retrieved from the non-trusted user. The processor **202** is further configured to enable, access to the non-trusted user for the requested telephonic feature in response to the validation of the authentication code.

[0082] A person of ordinary skill in the art will readily ascertain that the illustrated embodiments and steps in description and drawings (FIG.1-5) are set out to explain the exemplary embodiments shown, and it should be anticipated that ongoing technological development will change the manner in which particular functions are performed. These examples are presented herein for purposes of illustration, and not limitation. Further, the boundaries of the functional building blocks have been arbitrarily defined herein for the convenience of the description. Alternative boundaries can be defined so long as the specified functions and relationships thereof are appropriately performed. Alternatives (including equivalents, extensions, variations, deviations, etc., of those described herein) will be apparent to persons skilled in the relevant art(s) based on the teachings contained herein. Such alternatives fall within the scope and spirit of the disclosed embodiments.

[0083] The present disclosure provides technical advancement for providing the communication service which ensures easy access to the trusted as well as non-trusted user pertaining to the telephone features in real-time when the telephone features are not available to at least one of the trusted and the non-trusted user by default. The call flow of providing the communication service is improved and delays are reduced in the present invention.

[0084] The present invention offers multiple advantages over the prior art and the above listed are a few examples to emphasize on some of the advantageous features. The listed advantages are to be read in a non-limiting manner.

REFERENCE NUMERALS

[0085] Communication system - 100;

[0086] User Equipment (UE) - 102;

[0087] Server - 104;

[0088] Network- 106;

- [0089]** System -108;
- [0090]** Processor - 202;
- [0091]** Memory - 204;
- [0092]** Transceiver– 208;
- [0093]** Determination unit – 210;
- [0094]** Validation unit – 212;
- [0095]** Database – 214;
- [0096]** Primary processor- 302;
- [0097]** Memory- 304;
- [0098]** User Interface – 306.

We Claim:

1. A method (400) for providing a communication service, the method (400) comprises the steps of:
 - receiving, by one or more processors (202), a request from a user for accessing a telephonic feature;
 - determining, by the one or more processors (202), whether the user requesting the access to the telephonic feature is a trusted user or a non-trusted user based on a pre-approved feature list;
 - in response to determining, the user requesting the access to the telephonic feature is the trusted user, enabling, by the one or more processors (202), access to the telephonic feature requested by the trusted user;
 - in response to determining, the user requesting the access to the telephonic feature is the non-trusted user, requesting, by the one or more processors (202), an authentication code from the non-trusted user to access the telephonic feature;
 - retrieving, by the one or more processors (202), the authentication code from the non-trusted user;
 - validating, by the one or more processors (202), the authentication code retrieved from the non-trusted user; and
 - enabling, by the one or more processors (202), access to the non-trusted user for the requested telephonic feature, in response to the validation of the authentication code.
2. The method (400) as claimed in claim 1, wherein the telephonic feature includes at least one of an international calling service.
3. The method (400) as claimed in claim 1, wherein the pre-approved feature list includes at least one or more approved country codes for International Subscriber Dialling (ISD), blocked country codes for International Subscriber

Dialling (ISD), information of the trusted user, approved Mobile Station Integrated Services Digital Network (MSISDN) for ISD, approved authentication code for ISD, and information associated with the telephonic feature.

4. The method (400) as claimed in claim 1, wherein the step of validating, the authentication code retrieved from the non-trusted user, includes the steps of:
 - parsing, the pre-approved feature list as defined for the user by an admin;
 - retrieving, the authentication code as defined in the pre-approved feature list; and
 - comparing, the authentication code retrieved from the pre-approved feature list, with the authentication code retrieved from the user.
5. The method (400) as claimed in claim 1, wherein the pre-approved feature list is stored in storage means such as at least one of a remote server, and a database (214), the storage means communicably coupled to the one or more processors (202).
6. The method (400) as claimed in claim 1, wherein the trusted users and the non-trusted users interact with the one or more processors (202) to access the telephonic feature and to provide user specific information via at least one of an Interactive Voice Response (IVR) unit.
7. The method (400) as claimed in claim 1, wherein the step of determining, whether the user requesting the access for the telephonic feature is a trusted user or a non-trusted user based on a pre-approved feature list, includes the step of:
 - checking, by the one or more processors (202), whether the pre-approved feature list includes the information of the user requesting the access for the telephonic feature.

8. The method (400) as claimed in claim 7, wherein the one or more processors (202) allows admin to update the pre-approved feature list that facilitates admin to enable or disable the telephonic features in real time.
9. A system (108) for providing a communication service, the system (108) comprises:
 - a transceiver (208), configured to, receive, a request from a user for accessing a telephonic feature;
 - a determination unit (210) configured to:
 - determine, whether the user requesting the access to the telephonic feature is a trusted user or a non-trusted user based on a pre-approved feature list;
 - in response to determining, the user requesting the access to the telephonic feature is the trusted user, enable, access to the telephonic feature requested by the trusted user;
 - in response to determining, the user requesting the access to the telephonic feature is the non-trusted user, request, an authentication code from the non-trusted user to access the telephonic feature;
 - retrieving, the authentication code from the non-trusted user;
 - a validation unit (212), configured to:
 - validate, the authentication code retrieved from the non-trusted user; and
 - enable, access to the non-trusted user for the requested telephonic feature, in response to the validation of the authentication code.
10. The system (108) as claimed in claim 9, wherein the telephonic feature includes at least one of an international calling service.

11. The system (108) as claimed in claim 9, wherein the pre-approved feature list includes at least one or more approved country codes for International Subscriber Dialling (ISD), blocked country codes for International Subscriber Dialling (ISD), information of the trusted user, approved Mobile Station Integrated Services Digital Network (MSISDN) for ISD, approved authentication code for ISD, and information associated with the telephonic feature.
12. The system (108) as claimed in claim 9, wherein the validation unit (212) validates, the authentication code retrieved from the non-trusted user, by:
 - parsing, the pre-approved feature list as defined for the user by an admin;
 - retrieving, the authentication code as defined in the pre-approved feature list; and
 - comparing, the authentication code retrieved from the pre-approved feature list, with the authentication code retrieved from the user.
13. The system (108) as claimed in claim 9, wherein the pre-approved feature list is stored in storage means such as at least one of a remote server, and a database (214), the storage means communicably coupled to the determination unit (210).
14. The system (108) as claimed in claim 9, wherein the trusted users and the non-trusted users interact with the system (108) to access the telephonic feature and to provide user specific information via at least one of an Interactive Voice Response (IVR) unit.
15. The system (108) as claimed in claim 9, wherein the determination unit (210) determines, whether the user requesting the access for the telephonic feature is a trusted user or a non-trusted user based on a pre-approved feature list, by:

checking, whether the pre-approved feature list includes the information of the user requesting the access for the telephonic feature.

16. The system (108) as claimed in claim 15, wherein the determination unit (210) allows admin to update the pre-approved feature list that facilitates admin to enable or disable the telephonic features in real time.

17. A User Equipment (UE) (102), comprising:

one or more primary processors (302) coupled with a memory (304), communicatively coupled to one or more processors (202), wherein said memory (304) stores instructions which when executed by the one or more primary processors (302) causes the UE (102) to:

transmit, a request to the one or more processors (202) for accessing a telephonic feature; and

wherein the one or more processors (202) is further configured to perform the method as claimed in claim 1.

18. A non-transitory computer-readable medium having stored thereon computer-readable instructions that, when executed by a processor (502), causes the processor (502) to:

receive, a request from a user for accessing a telephonic feature;

determine, whether the user requesting the access to the telephonic feature is a trusted user or a non-trusted user based on a pre-approved feature list;

in response to determining, the user requesting the access to the telephonic feature is the trusted user, enable, access to the telephonic feature requested by the trusted user;

in response to determining, the user requesting the access to the telephonic feature is the non-trusted user, request, an authentication code from the non-trusted user to access the telephonic feature;

retrieve, the authentication code from the non-trusted user;
validate, the authentication code retrieved from the non-trusted user;
and
enable, access to the non-trusted user for the requested telephonic
feature, in response to the validation of the authentication code.

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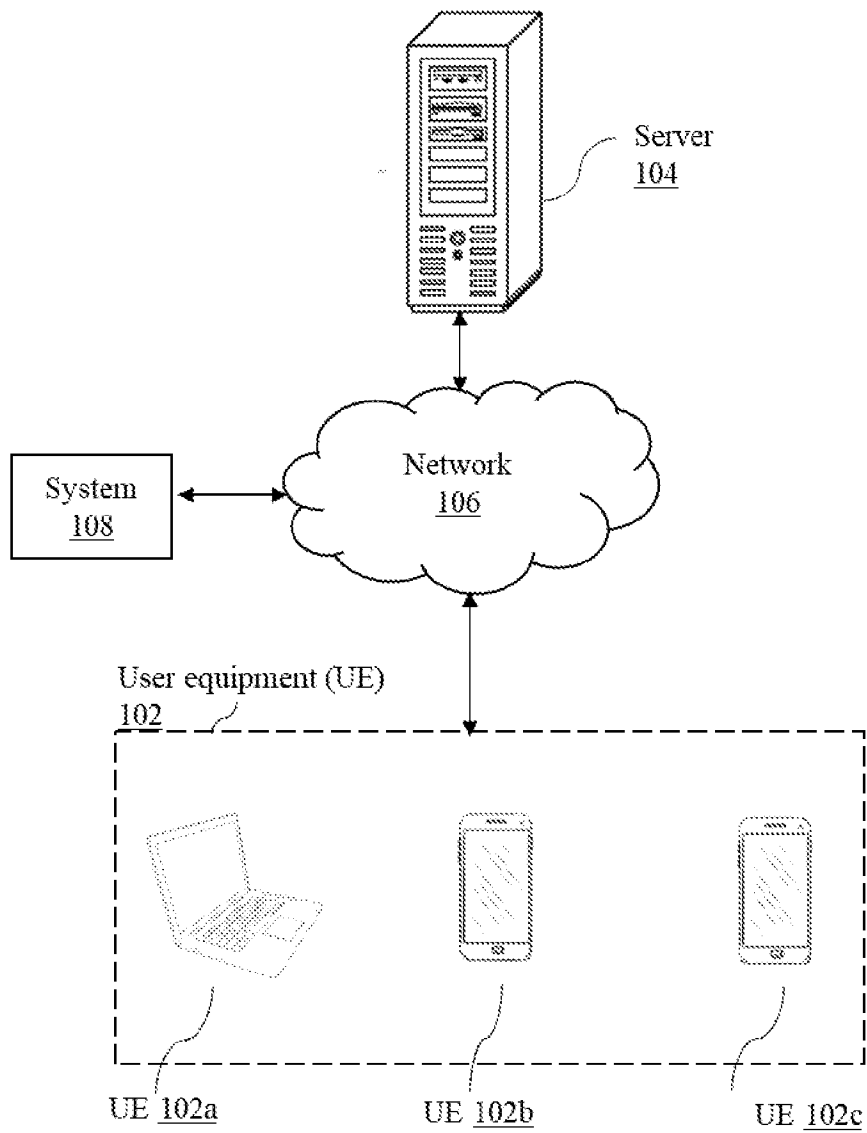


FIG. 1

100

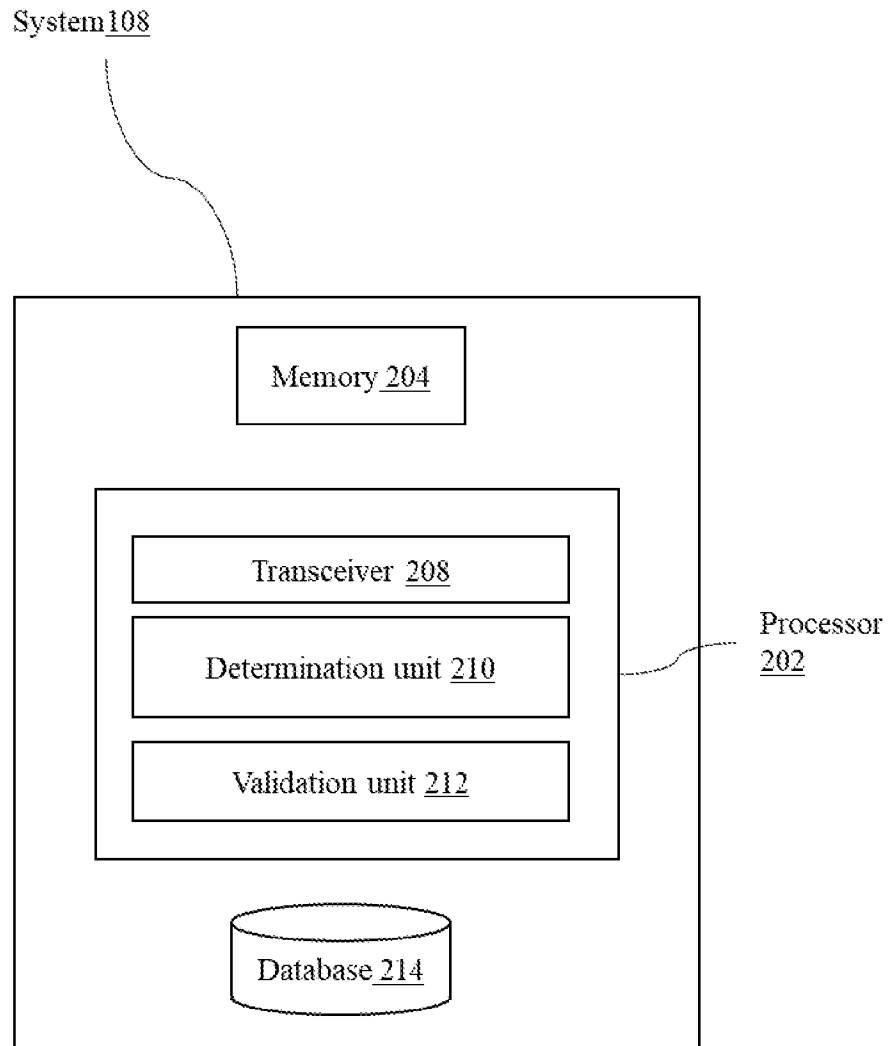


FIG. 2

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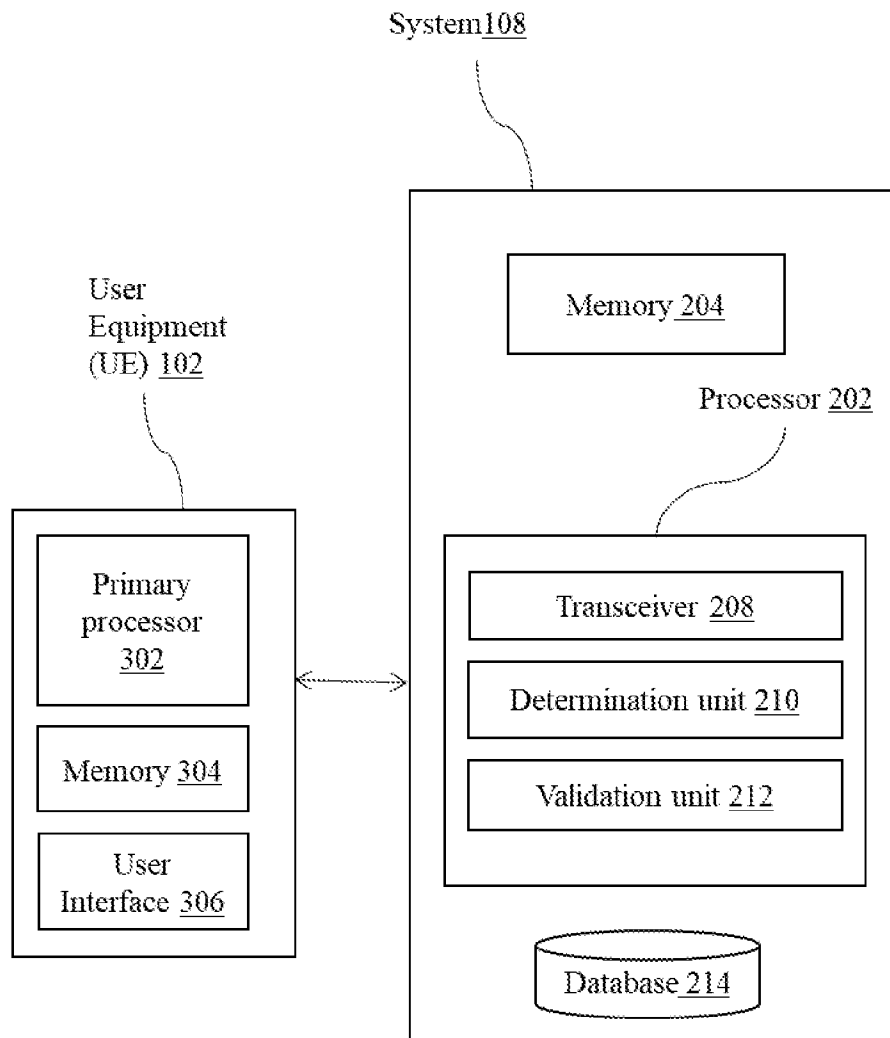


FIG. 3

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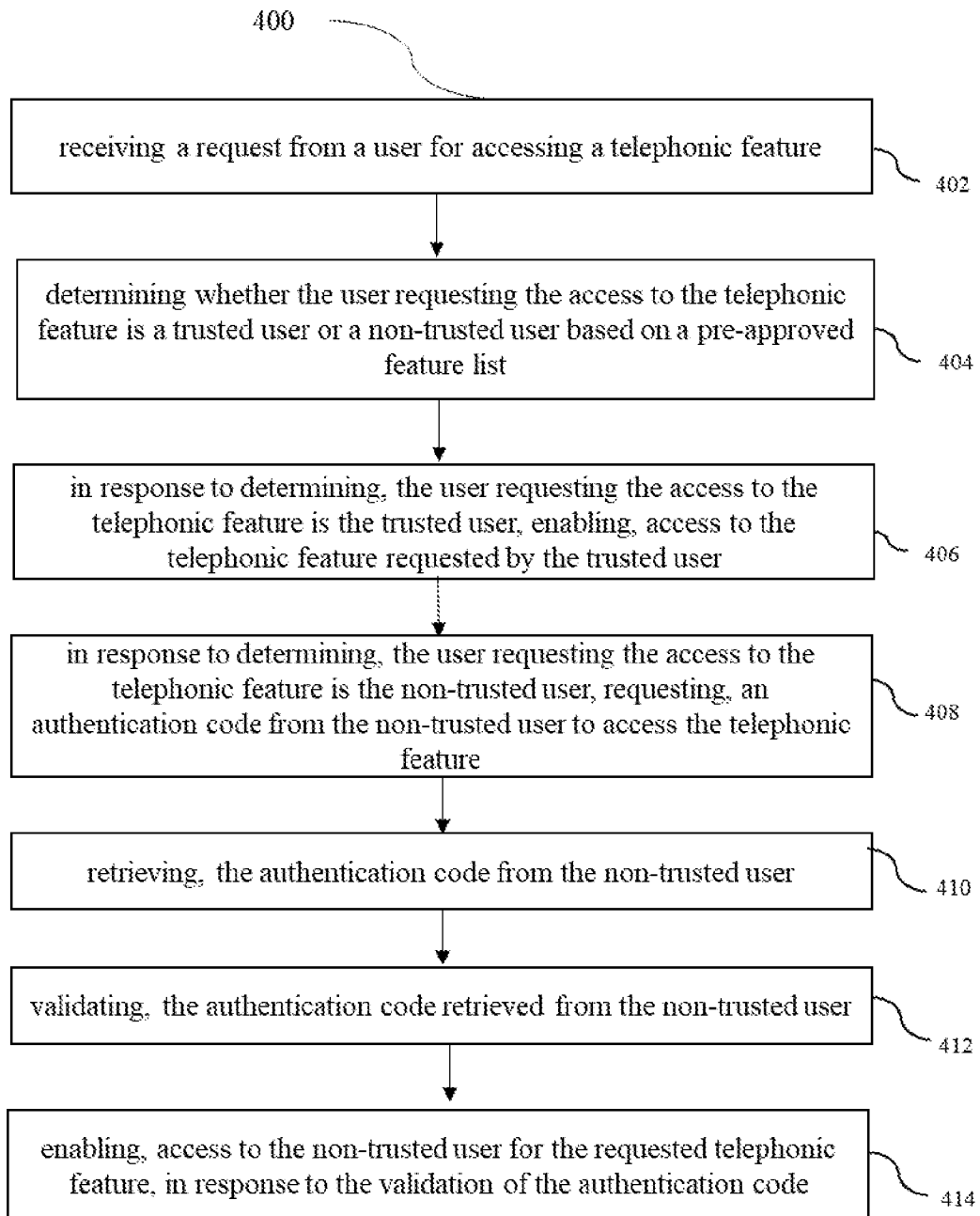


FIG. 4

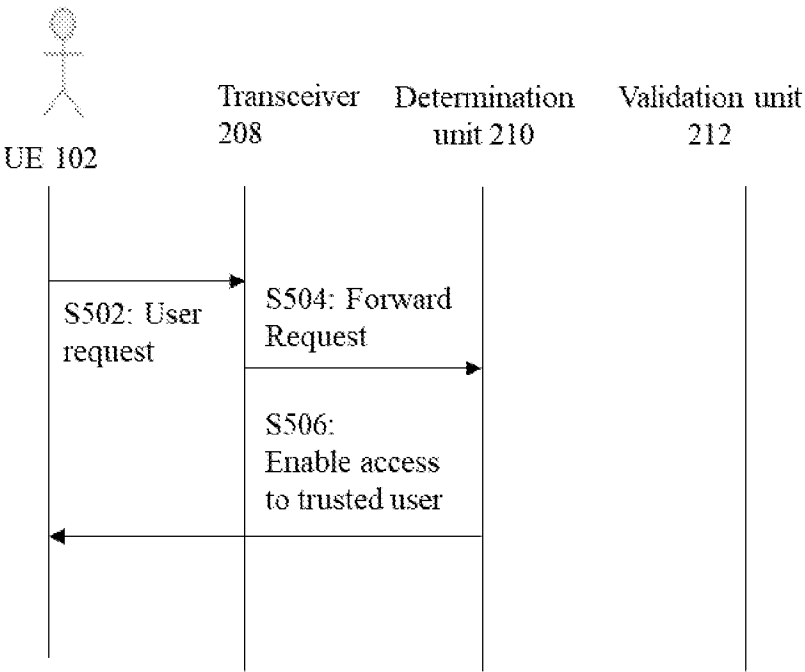


FIG. 5a

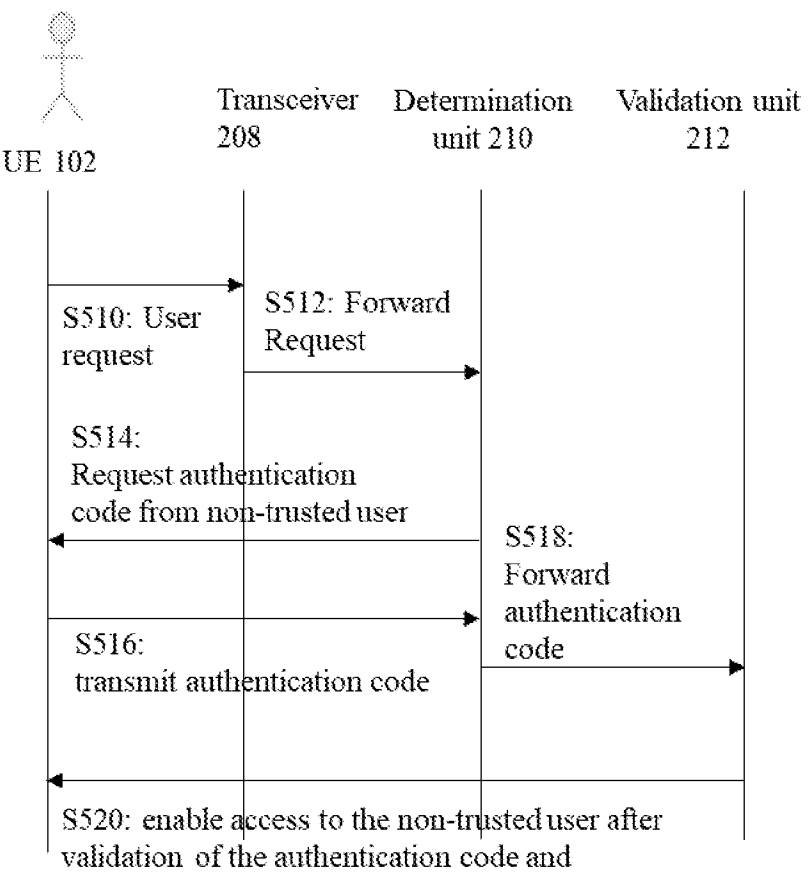


FIG. 5b

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IN2024/050967

A. CLASSIFICATION OF SUBJECT MATTER
H04M3/42, H04L9/32, H04W12/06 Version=2024.01

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, H04L, H04W

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

Electronic database consulted during the international search (name of database and, where practicable, search terms used)

PatSeer, IPO Internal Database

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US20210306453A1 (LEVEL 3 COMMUNICATIONS LLC) (30 September 2021) (2021-09-30) Abstract; Paragraph-[0013], [0014], [0015], [0022], [0050], [0052]; Figures: 1-6; Claims: 1-18.	1-18
X	US20150103991A1 (AT&T INTELLECTUAL PROPERTY I LP) (16 April 2015) (2015-04-16) Abstract; Paragraph-[0019], [0063]; Figures: 1-8; Claims: 1-20.	1-18
A	US20200366719A1 (LEVEL 3 COMMUNICATIONS LLC) (19 November 2020) (2020-11-19) Abstract; Paragraph-[0015]; Figures: 1-6; Claims: 1-20.	1-18

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:

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"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

"I" 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

15-10-2024

Date of mailing of the international search report

15-10-2024

Name and mailing address of the ISA/

Indian Patent Office
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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/IN2024/050967

Citation	Pub.Date	Family	Pub.Date
US 20210306453 A1	30-09-2021	US 11277510 B2	15-03-2022
		US 10931818 B1	23-02-2021
US 20200366719 A1	19-11-2020	US 11206289 B2	21-12-2021
		US 11695805 B2	04-07-2023
		US 20230344875 A1	26-10-2023