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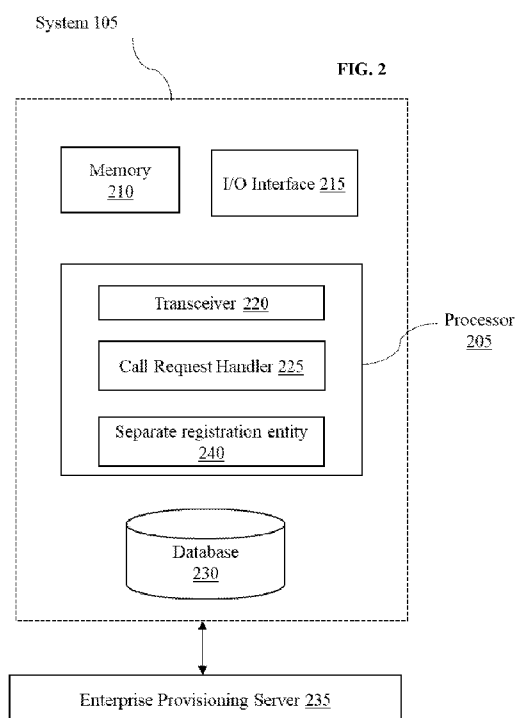
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(54) Title: SYSTEM AND METHOD FOR HANDLING A CALL REQUEST



(57) Abstract: The present disclosure relates to a system (105) and a method (500) for handling a call request. The system (105) and the method (500) more particularly relates to the call request processing in a business telephony environment of an enterprise unit (110) based on parameters and service defined by the system (105) when the enterprise unit is registered in to the system (105). The system (105) is configured to process the call request based on the defined parameters and service. The system (105) includes a transceiver module (220) and a call request handler module (225) for receiving and processing the call request received from a User Equipment (120) of the enterprise unit (110). The method (500) includes various steps for handling the call request which are to be executed by the system (105).

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SYSTEM AND METHOD FOR HANDLING A CALL REQUEST

FIELD OF THE INVENTION

[0001] The present disclosure relates to network communication technology and more particularly relates to a system and a method for handling call requests in a network.

BACKGROUND OF THE INVENTION

[0002] In a business or enterprise, there is a requirement of specialized communication that may cater to the needs of the business or enterprise, such as internal and external call routing, voicemail, call forwarding, conferencing, and more. Therefore, there is a need for specialized servers which can provide such features to the business or enterprise. Such servers are commonly known as telephonic servers, or telephony servers or PBX (Private Branch Exchange) servers, which are configured to manage voice communication within a business or enterprise and to provide a gateway for external calls. Using a telephonic server in business addresses the fundamental need for effective and efficient communication, both internally and externally to improve productivity, customer service, and collaboration while offering flexibility and scalability to adapt to the changing needs of the business.

[0003] Business Telephony Application Server (BTAS) is a software-based solution designed to provide telephony services and features for businesses. It serves as a central server that manages various telephony applications, such as call routing, voicemail, call recording, and conferencing. By leveraging the BTAS, organizations can enhance their communication capabilities, streamline call management, and customize telephony services to meet their specific needs.

[0004] Enterprise onboarding on the BTAS involves the process of integrating the BTAS solution into an organization's telephony infrastructure and configuring it

according to their requirements. This includes assessing the existing telephony setup, selecting a suitable BTAS solution, and deploying it on dedicated servers or in the cloud. The BTAS is then customized to align with the organization's telephony workflows, incorporating call routing rules, voicemail systems, IVR menus, and integration with other enterprise systems.

[0005] As is known, a service vendor implementing the BTAS may onboard multiple enterprises on a single BTAS instance to render the services. Typically, enterprises of similar type involving similar calls may be clubbed onto one BTAS, for ease of operation. Accordingly, a static call processing technique may be implemented in the BTAS. In this technique, call routing decisions are predetermined based on predefined rules or configurations set within the BTAS system. These rules define how incoming calls are processed and directed to specific endpoints or telephony features. The static call processing approach offers a predictable and consistent call flow, allowing organizations to define and control call handling based on their specific requirements.

[0006] However, the static call processing approach employed by the BTAS solutions may pose limitations when multiple enterprises are utilizing the same BTAS system, and one enterprise wishes to introduce new call processing mechanisms specific to their needs. Since the static approach relies on predefined rules and configurations, it leaves little room for individual enterprises to introduce customized call processing features without affecting other entities sharing the same BTAS infrastructure.

[0007] Therefore, there is a need for a system and method which can overcome the aforementioned drawbacks.

SUMMARY OF THE INVENTION

[0008] One or more embodiments of the present disclosure provide a system and a method for handling a call request as per requirement of a business/enterprise.

[0009] In one aspect of the present invention, the system of handling the call request is disclosed. The system includes a transceiver configured to receive, the call request from at least one User Equipment (UE). The system further includes a call request handler. The call request handler is configured to query a database to identify an enterprise ID and a Closed User Group (CUG) ID associated with the at least one UE. The call request handler of the system is configured to utilize the identified enterprise ID and the CUG ID to retrieve at least one parameter and at least one service specific for the at least one UE, from the database. Subsequent to retrieving, the call request handler of the system is further configured to handle the received call request based on the at least one parameter and at least one service specific for the at least one UE.

[0010] In an embodiment, the call request from at least one UE includes the enterprise ID and the CUG ID. The at least one UE is associated with at least one CUG hosted by an enterprise unit. The enterprise ID corresponds to the enterprise unit associated with the UE. The enterprise ID facilitates the one or more processors in routing and handling of the call request within a telephony environment of the enterprise unit. The CUG corresponds to a defined group of one or more UEs provided with one of, privileges and restrictions in terms of making and processing one or more call requests. The CUG ID pertains to the at least one CUG associated with the UE and aids the one or more processors in identifying the CUG associated to the UE.

[0011] In another embodiment, the enterprise unit is configured to be registered with the system. The call request handler is configured to register the enterprise unit with the system. The call request handler of the system is configured to receive a registration request from the enterprise unit. The registration request includes information pertaining to the enterprise unit including at least one of, name, contact details, preferred services, expected call volumes, specific requirements and customizations required for a telephony setup. In response to receipt of the registration request, the call request handler is configured to query the enterprise

unit, with a plurality of inputs. The plurality of inputs aids in defining the at least one parameter and at least one service specific to the enterprise unit. The call request handler of the system is further configured to generate the enterprise ID for the enterprise unit. The enterprise ID maps to the at least one parameter and at least one service specific of the enterprise unit. The call request handler of the system is further configured to register the at least one CUG hosted by the enterprise unit by assigning the CUG ID to the at least one CUG.

[0012] In yet another embodiment, the call request handler is further configured to enable the enterprise unit to define at least one parameter and at least one service for at least one CUG, during the registration. The at least one parameter includes at least one or more call routing preferences, and one or more call handling rules including maximum call duration, voicemail settings, Interactive Voice Response (IVR) configurations, call recording options, and relevant telephony-related settings including preferred conferencing capabilities, based on requirements of the enterprise unit. The at least one service includes service availability, response time for troubleshooting or assistance, escalation procedures, and additional service-level agreements (SLAs), based on requirements of the enterprise unit. The at least one parameter and at least one service are further configured by the enterprise unit based on at least one of an originating leg and a terminating leg. The call request handler is further configured to validate a provisioning request from the enterprise unit, by querying the database.

[0013] In another aspect of the present invention, a method of handling a call request is disclosed. The method includes the step of receiving by one or more processors, the call request from at least one UE. The method further includes the step of querying by the one or more processors, a database, to identify an enterprise ID and a CUG ID associated with the at least one UE. The method further includes the step of utilizing by the one or more processors, the identified enterprise ID and the CUG ID to retrieve, at least one parameter and at least one service specific for the at least one UE, from the database. Subsequent to retrieving, the method further

includes the step of handling by the one or more processors, the received call request based on the at least one parameter and at least one service specific for the at least one UE.

[0014] In an embodiment, the call request which is received from the at least one UE, includes the enterprise ID and the CUG ID. The at least one UE is associated with at least one CUG hosted by an enterprise unit. The enterprise ID corresponds to the enterprise unit associated with the at least one UE. The enterprise ID facilitates the one or more processors in routing and handling of the call request within a telephony environment of the enterprise unit. The CUG corresponds to a defined group of one or more UEs provided with one of, privileges and restrictions in terms of making and processing one or more call requests. The CUG ID pertains to the at least one CUG associated with the UE, and the CUG ID aids the one or more processors in identifying the CUG associated to the UE.

[0015] In another embodiment, the enterprise unit is configured to be registered with the one or more processors. The method further includes the step of receiving by the one or more processors, a registration request from the enterprise unit, in order to register the enterprise unit with the one or more processors. The registration request includes information pertaining to the enterprise unit including at least one of, name, contact details, preferred services, expected call volumes, specific requirements and customizations required for a telephony setup. Upon receiving the registration request, the method further includes the step of querying by the one or more processors, the enterprise unit, with a plurality of inputs in response to receipt of the registration request. The plurality of inputs aids in defining the at least one parameter and at least one service specific to the enterprise unit. For registration of the enterprise unit, the method further includes the step of generating by the one or more processors, the enterprise ID for the enterprise unit. The enterprise ID maps to the at least one parameter and at least one service specific to the enterprise unit.

[0016] In yet another embodiment, the at least one CUG hosted by the enterprise unit is registered by the one or more processors, by assigning the CUG ID to the at least one CUG. The one or more processors are further configured to enable the enterprise unit to define at least one parameter and at least one service for at least one CUG, during the registration. The at least one parameter includes at least one or more call routing preferences, and one or more call handling rules including maximum call duration, voicemail settings, Interactive Voice Response (IVR) configurations, call recording options, and relevant telephony-related settings including preferred conferencing capabilities, based on requirements of the enterprise unit. The at least one service includes service availability, response time for troubleshooting or assistance, escalation procedures, and additional service-level agreements (SLAs), based on requirements of the enterprise unit. The at least one parameter and at least one service are further configured by the enterprise unit based on at least one of an originating leg and a terminating leg.

[0017] In yet another embodiment, the one or more processors are further configured to validate a provisioning request from the enterprise unit by querying the database.

[0018] In another aspect of the present invention, a non-transitory computer-readable medium having stored thereon computer-readable instructions that, when executed by a processor, causes the processor to receive a call request from the at least one User Equipment (UE). The processor is configured to query a database to identify an enterprise ID and a Closed User Group (CUG) ID associated with at least one UE. The processor is further configured to utilize the identified enterprise ID and CUG ID to retrieve at least one parameter and at least one service specific for the at least one UE, from the database. The processor is further configured to handle the received call request based on the at least one parameter and the at least one service specific for the at least one UE.

[0019] In another aspect of the present invention, a User Equipment (UE) includes one or more primary processors and a memory. The one or more primary processors is communicatively coupled to one or more processors and the memory. The memory stores instructions which when executed by the one or more primary processors cause the UE to transmit a call request to the one or more processors.

[0020] 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

[0021] 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.

[0022] FIG. 1 is an exemplary environment of a system for handling a call request, according to various embodiments of the present invention;

[0023] FIG. 2 is an exemplary block diagram of the system of FIG. 1 for handling the call request, according to various embodiments of the present invention;

[0024] FIG. 3 is a schematic representation of the system of FIG. 1 for handling the call request, according to various embodiments of the present invention;

[0025] FIG. 4 illustrates an architecture of the system of handling the call request, according to various embodiments of the present invention;

[0026] FIG. 5 illustrates an exemplary embodiment of the system in FIG. 1 with a Business and Telephony Application Server (BTAS) as a part of the system, according to various embodiments of the present invention;

[0027] FIG. 6 illustrates a flow diagram of a method for handling a call request, according to various embodiments of the present invention;

[0028] FIG. 7 illustrates a flow diagram of a method for registering an enterprise unit with the system of FIG. 1, according to various embodiments of the present invention;

[0029] FIG. 8 illustrates a flowchart for modifying a Closed User Group (CUG) of the enterprise unit, according to various embodiments of the present invention; and

[0030] FIG. 9 illustrates a flowchart of a method for modifying parameters and services specific to a User Equipment (UE), according to various embodiments of the present invention.

[0031] The foregoing shall be more apparent from the following detailed description of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0032] 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.

[0033] 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.

[0034] 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.

[0035] As per various embodiments depicted, the present invention discloses a system and a method for handling a call request. More particularly, the present invention discloses a system and a method for handling a call request as per requirements of an enterprise unit. The system and method are further configured for

on-boarding and catering to one or more enterprise units while ensuring the segregation of parameters and service data for each of the one or more enterprise units. The system and method are further configured to enable the implementation of distinct call handling approaches that are tailored to meet the specific requirements of individual enterprise unit.

[0036] As per various embodiments, the system and method are further configured to create separate profiles for each of the one or more on-boarded enterprise units, encompassing unique parameter configurations and service settings that are specific to particular needs and requirements of each of the one or more on-boarded enterprise units. By maintaining dedicated data for each of the one or more on-boarded enterprise units, the system and method are configured to ensure that calls originating from each of the one or more on-boarded enterprise units are handled, as per parameters and services preferred by each of the one or more on-boarded enterprise units.

[0037] As per various embodiments, the system and method of the present invention are further configured to provide flexibility for each of the one or more on-boarded enterprise units to update parameters in run-time and apply the changes independent of the complexity of the network.

[0038] FIG. 1 illustrates an exemplary environment 100 of a system 105 for handling the call request for one or more enterprise units 110, according to various embodiments of the present invention. The exemplary environment 100 as illustrated in FIG. 1, includes the one or more enterprise units 110 including an enterprise unit 110a, and an enterprise unit 110b. Each of the enterprise unit 110a and the enterprise unit 110b includes one or more Close User Group (CUG) 115. For example, the enterprise unit 110a includes a CUG 115a and a CUG 115b. Similarly, the enterprise unit 110b includes a CUG 115c, and a CUG 115d respectively. Each of the CUG 115a, the CUG 115b, the CUG 115c, and the CUG 115d includes a plurality of User Equipment's (UEs) 120 such as the CUG 115a includes a UE 120a and a UE 120b.

Similarly, the CUG 115b includes a UE 120c and a UE 120d. Similarly, the CUG 115c includes a UE 120e and a UE 120f. Similarly, the CUG 115d includes a UE 120g and a UE 120h. However, it is to be understood that the number of one or more enterprise units 110, the one or more CUGs 115 and the plurality of UEs 120 should not be construed to only the aforementioned examples. Further, for description purpose the one or more enterprise units 110, the one or more CUGs 115 and the plurality of UEs 120 may be referred as the enterprise unit 110, the CUG 115 and the UE 120 hereinafter.

[0039] As per the illustration of the exemplary environment 100 in FIG. 1, the system 105 is communicably connected to the enterprise unit 110 over a network 125. The system 105 is also communicably connected to the CUG 115 and the UE 120 over the network 125. In an embodiment, the system 105 is configured to receive one or more requests from an enterprise user of the enterprise unit 110 utilizing the UE 120. The one or more requests include one of a call request, a provisioning request, an update provisioning request, and a registration request. The enterprise user refers to a working professional of the enterprise unit 110.

[0040] In an embodiment, the system 105 of the exemplary environment 100, may further include one or more standalone server, a server blade, a server rack, a bank of servers, a server farm, a hardware supporting a part of a cloud service or system, a home server, hardware running a virtualized server, one or more processors 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 order to handle the one or more requests from the UE 120.

[0041] In various embodiment, the system 105 may be integrated with an external application server including a Business Telephony Application Server (BTAS), a Converged Telephony Application Server (CTAS), a System Management Facility (SMF), an Access and Mobility Management Function (AMF), any SIP (Session Initiation Protocol) Application Server which interacts with core Internet Protocol

Multimedia Subsystem (IMS) on Industrial Control System (ISC) interface as defined by 3GPP to host a wide array of cloud telephony enterprise services, a System Information Blocks (SIB) and a Mobility Management Entity (MME).

[0042] The system 105 is adapted to be embedded within the BTAS 130 or embedded as an individual entity. However, for the purpose of description, the system 105 is described as an integral part of the BTAS 130, without deviating from the scope of the present disclosure.

[0043] In various embodiments, the system 105 is further configured to employ various protocols compatible with the network 125, such as Transmission Control Protocol (TCP) connection to identify any connection loss in the network 125 and thereby improving overall efficiency. The TCP connection is a communications standard enabling the UE 120 and the system 105 to exchange information over the network 125.

[0044] In an embodiment, the enterprise unit 110 pertains to one of a business, a company, and an organization with an internal telephony environment.

[0045] In an embodiment the CUG 115 pertains to a defined group of one or more UEs from the plurality of UEs 120 which is provided with one of, privileges and restrictions in terms of making and processing the one or more call requests.

[0046] In an embodiment, the UE 120 is one of, but not limited to, a wired device, a wireless device including, by the way of example not limitation, a handheld wireless communication device (such as a mobile phone, a smart phone, and a phablet device), an electrical, an electronic, an electro-mechanical or an equipment or 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, any other computing device, any type of portable computer, a media playing device, a portable computer system, and/or any other type of computer device with wireless

communication capabilities. The computer device may include one or more in-built or externally coupled accessories including, but not limited to, a visual aid device such as camera, audio aid, a microphone, a keyboard, input devices for receiving input from a user such as touch pad, touch enabled screen, electronic pen and the like. It would be appreciated if the UE 120 may not be restricted to the mentioned devices and various other devices may be used.

[0047] In an embodiment, each of the plurality of the UEs 120 is assigned an enterprise ID and a CUG ID which corresponds to specific enterprise unit from the one or more enterprise units 110 and specific CUG from the one or more CUGs 115, to which the UE 120 belongs to.

[0048] In an embodiment, the network 125 is at least one 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 125 includes, but is not limited to, a Third Generation (3G), a Fourth Generation (4G), a Fifth Generation (5G), a Sixth Generation (6G), and the like, which are capable of relaying the request from the UE 120 to the system 105 for further processing.

[0049] The environment 100 further includes a separate entity 125. The separate entity 125 is configured to transmit the registration request, a provisioning request, and an update provisioning request from the UE 120 to the BTAS 130.

[0050] In various embodiments, the system 105 is further configured to employ various routing protocols such as Routing Information Protocol (RIP) and Enhanced Interior Gateway Routing Protocol (EIGRP), and link state protocols such as Open Shortest Path First (OSPF) and Intermediate System to Intermediate System (IS-IS) to adjust routes. The system 105 is further configured to employ various routing

techniques such as Interactive Voice Response (IVR), time-based routing, location-based routing, round robin routing, and load based routing.

[0051] Referring to FIG. 2, FIG. 2 illustrates a block diagram of the system 105 for handling the one or more requests, according to various embodiments of the present invention. In an embodiment, the one or more requests include at least one of the call requests and the registration request. As per the illustrated embodiment, the system 105 includes one or more processors 205, a memory 210, an input/output (I/O) interface unit 215, and a database 225. The one or more processors 205 of the system 105 is communicably connected to the UE 120 belonging to the CUG 115 of the enterprise unit 110.

[0052] The one or more processors 205, hereinafter referred to as the processor 205 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. As per the illustrated embodiment, among other capabilities, the processor 205 is configured to fetch and execute computer-readable instructions stored in the memory 210.

[0053] The memory 210 is configured to store one or more computer-readable instructions or routines in a non-transitory computer-readable storage medium, which is fetched and executed to create or share data packets over a network service. The memory 210 may include any non-transitory storage device including, for example, volatile memory such as RAM, or non-volatile memory such as EPROM, flash memory, and the like.

[0054] Further, the processor 205, in an embodiment, may be implemented as a combination of hardware and programming (for example, programmable instructions) to implement one or more functionalities of the processor 205. 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 205 may be processor-executable instructions stored on a non-transitory machine-readable storage medium and the hardware for processor 205 may comprise a processing resource (for example, one or more processors), to execute such instructions. In the present examples, the memory 210 may store instructions that, when executed by the processing resource, implement the processor 205. In such examples, the system 105 may comprise the memory 210 storing the instructions and the processing resource to execute the instructions, or the memory 210 may be separate but accessible to the system 105 and the processing resource. In other examples, the processor 205 may be implemented by electronic circuitry.

[0055] In an embodiment, the I/O interface unit 215 facilitates communication between the system 105, and the UE 120. The I/O interface unit 215 also provides a communication pathway for one or more components of the system 105. Examples of such components include, but are not limited to, the processor 205 and the database 230.

[0056] The database 230 is one of, but is not limited to, one of 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 database and so forth. The given examples of database 230 types are non-limiting and may not be mutually exclusive e.g., a database can be both commercial and cloud-based, or both relational and open-source, etc.

[0057] In an embodiment, the system 105 is externally connected to an Enterprise Provisioning Server (EPS) 235. The EPS 235 is configured to manage and distribute resources of the system 105. The EPS 235 is further configured to copy data pertaining to the enterprise unit 110, the CUG 115 and the UE 120 associated with

the enterprise unit 110 and service data provisioned by the system 105 for validation of the subsequent one or more requests received from the UE 120. The operational, constructional and functional features of the system 105 and various components of the system 105, will be described in detail in paragraphs below.

[0058] In an embodiment, the processor 205 is configured to receive the registration request from the enterprise unit 110. The registration request corresponds to on-boarding of the enterprise unit 110 into the system 105. The registration request includes information pertaining to the enterprise unit 110 including at least one of, name, contact details, preferred services, expected call volumes, specific requirements and customizations required for a telephony setup. In response to receipt of the registration request, the processor 205 is configured to query the enterprise unit 110 with a plurality of inputs. The plurality of inputs aids the processor 205 in defining the at least one parameter and at least one service specific to the enterprise unit 110. The plurality of inputs pertains to a desired service provision and a desired call processing provision. The plurality of inputs is required to be configured by the enterprise unit 110. The desired service provision pertains to the at least one service which is required by the enterprise unit 110. The desired call processing provision pertains to various call routing techniques and the at least one parameter is required for call processing in the enterprise unit 110.

[0059] The at least one parameter includes at least one or more call routing preferences, and one or more call handling rules including at least one of, maximum call duration, voicemail settings, Interactive Voice Response (IVR) configurations, call recording options, and relevant telephony-related settings including preferred conferencing capabilities, based on requirements of the enterprise unit 110. The at least one service includes service availability, response time for troubleshooting or assistance, escalation procedures, and additional service-level agreements (SLAs), based on requirements of the enterprise unit 110.

[0060] The processor 205 is configured to receive a response pertaining to querying the enterprise unit 110 with the plurality of inputs. Based on the received response pertaining to the plurality of inputs from the enterprise unit 110, the processor 205 is configured to generate the enterprise ID for the enterprise unit 110. The enterprise ID maps to the at least one parameter and the at least one service specific to the enterprise unit 110.

[0061] Upon registering the enterprise unit 110 into the system 105, the processor 205 is further configured to register the at least one CUG from one or more CUGs 115 hosted by the enterprise unit 110 by assigning the CUG ID to the at least one CUG. By registering the CUG 115 into the system 105, the processor 205 is communicably connected to the plurality of the UEs 120 grouped under the registered CUG 115 of the enterprise unit 110. The processor 205 is further configured to enable the enterprise unit 110 to define different parameters and different service provisions for each of the one or more CUGs 115 registered with the system 105.

[0062] In an embodiment, the processor 205 is configured to receive the provisioning request from the enterprise unit 110. The provisioning request pertains to information on the desired service provisions, and the desired call processing provisions. The processor 205 is configured to retrieve the desired service provisions and desired call processing provisions from the EPS 225 of the system 105. The processor 205 is further configured to store the retrieved desired service provisions and desired call processing provisions in the database 220 of the system 105. The processor 205 is further configured to validate the received provisioning request, by querying the database 220.

[0063] Upon validation of the provisioning request, the processor 205 is configured to include the desired service provisions and desired call processing provisions requested in the received provisioning request, in defining at least one parameter and at least one service specific to the enterprise unit 110. Thereafter, the

processor 205 is configured to process any forthcoming call requests based on the defined at least one parameter and the at least one service specific to the enterprise unit 110.

[0064] In an embodiment, the processor 205 is further configured to modify the at least one parameter and at least one service specific for the at least one UE 120 based on receiving the update provisioning request from the enterprise unit 110. The update provisioning request includes information pertaining to a desired modification criterion, the at least one parameter and the at least one service which are required to be modified. The desired modification criteria pertain to the details of a desired parameter change and a desired service change. The desired parameter change includes one of, inclusion of new parameter and deletion of existing parameter. The desired service change includes one of inclusion of new service provision and deletion of existing service provision.

[0065] The processor 205 is further configured to retrieve the desired modification criteria, from the EPS 235 based on the information of the update provisioning request. The processor 205 is further configured to integrate the retrieved desired modification criteria into the previously defined at least one parameter and the at least one service specific to the enterprise unit 110, thereby modifying the at least one parameter and the at least one service specific to the enterprise unit 110.

[0066] In an embodiment, the processor 205 includes a transceiver module 220, a call request handler module 225, and a separate registration entity 240 for processing the call requests received from the UE 120. The transceiver module 220, the call request handler module 225, and the separate registration entity 240 are communicably connected to each other as well as to the UE 120, the I/O interface 215, and the database 230.

[0067] In an embodiment, the processor 205 of the transceiver 220 communicably connected to the plurality of UEs 120, is configured to receive the call request from

the at least one UE 120 via the I/O interface 215. Upon receiving the call request, the processor 205 of the call request handler 225 is configured to identify the enterprise ID and the CUG ID by querying the database 230. The call request includes the enterprise ID and the CUG ID of the at least one UE 120. The enterprise ID which corresponds to the enterprise unit 110 associated with the at least one UE from the plurality of UEs 120 and the CUG ID which pertains to the at least one CUG associated with the at least one UE from the plurality of UEs 120.

[0068] Upon identification of the enterprise ID and the CUG ID for the UE 120 from which the call request is received, the processor 205 is configured to utilize the identified enterprise ID and the CUG ID to retrieve the at least one parameter and the at least one service specific for the UE 120, from the database 230.

[0069] In an embodiment, the at least one parameter includes at least one or more call routing preferences, and one or more call handling rules including at least one of, maximum call duration, voicemail settings, Interactive Voice Response (IVR) configurations, call recording options, and relevant telephony-related settings including preferred conferencing capabilities, based on requirements of the enterprise unit 110. The at least one service includes service availability, response time for troubleshooting or assistance, escalation procedures, and additional service-level agreements (SLAs), based on requirements of the enterprise unit 110. The at least one parameter and the at least one service are further configured by the enterprise unit 110 based on at least one of an originating leg and a terminating leg.

[0070] In an embodiment, the originating leg and the terminating leg pertain to different segments of a communication link. The originating leg corresponds to the part of the communication link where the call or message originates. As an example, in the context of a telephone call, the originating leg is the portion of the call path that begins at the caller's phone and extends through the various network segments to the point where the call enters the network 125. Similarly, the terminating leg corresponds to the part of the communication link where the call or message

terminates. Considering the previous example in the context of the telephone call, the terminating leg starts from the point where the call enters the network 125 and extends to the recipient's phone. In simpler terms, when a telephone user makes a telephone call, the part of the call from the user's telephone to a local telephone exchange facility is defined as the originating leg, while the part from the local telephone exchange facility to the recipient's telephone is defined as the terminating leg.

[0071] Subsequent to retrieving the at least one parameter and the at least one service specific for the UE 120, the processor 205 of the call request handler 225 is configured to handle the received call request based on the at least one parameter and the at least one service specific for the at least one UE 120 from the plurality of UEs.

[0072] In an embodiment, upon identifying the enterprise ID and the CUG ID the processor 205 is further configured to route the call request within the telephony environment of the enterprise unit 110.

[0073] For example, let us consider that the enterprise unit 110a has two CUGs 115, such as the CUG 115a and the CUG 115b, each having the plurality of UEs 120. At the time of registration with the system 105, the enterprise unit 110a is enabled by the system 105 to provide an information on the desired service provision and the desired call processing provision. Based on which the system 105 is configured to define the at least one parameter and the at least one service specific for each of the CUG 115a and CUG 115b and each of the UEs 120 of the enterprise unit 110a.

[0074] In context of the above example, during the registration, the enterprise unit 110a has opted that any incoming call request to the CUG 115a has to be routed based on time of origin of the incoming call request. Similarly, the enterprise unit 110a has opted that any incoming call request to the CUG 115b has to be routed based on the availability of enterprise users operating the plurality of UEs 120 at the CUG 115b.

[0075] Further to the above example, the system 105 enables the enterprise unit 110a to make real time modification to the at least one parameter and the at least one service which are previously defined during the time of the registration. The enterprise unit 110a can request the processor 205 to re-define the at least one parameter and the at least one service based on a new desired routing technique selected by the enterprise unit 110a which is to be applied to the incoming call request to either of CUG 115a or CUG 115b. The system 105 is configured to re-define the at least one parameter and the at least one service based on the selected new desired routing technique upon receiving the update provisioning request from the enterprise unit 110a.

[0076] Further to the above example, after re-defining the at least one parameter and the at least one service based on the selected new desired routing technique, the system 105 is configured to forward/process/route the incoming call request to either of the CUG 115a or the CUG 115b, based on the selected new desired routing technique. By doing so, the system 105 allows the BTAS 130 to handle multiple enterprises simultaneously and easily adapts to accommodate new enterprises and their evolving requirements. This scalability ensures that the BTAS 130 remains adaptable in a dynamic business environment. Owing to this, the system 105 provides efficient onboarding, customized call handling, enhanced service offerings, scalability, flexibility, and an improved telephony experience for enterprises, thereby reducing memory space requirement, and improving processing speed of the processor 205. FIG. 3 shows a schematic representation of the system of FIG. 1 for handling the call request, according to various embodiments of the present invention.

[0077] In an embodiment, the UE 120 includes one or more primary processors 305 communicatively coupled to the processor 205. The one or more primary processors 305 are coupled with a memory 310, wherein the memory 310 stores instructions which when executed by the one or more primary processors 305 causes the UE 120 to transmit, the call request, to the processors 205.

[0078] In an embodiment, the transceiver module 220 is configured to receive the call request from the UE 120 via the I/O interface 215. The call request includes information pertaining to the enterprise ID and the CUG ID of the UE 120. The transceiver module 220 is configured to forward the call request to the call request handler module 225.

[0079] Upon receiving the call request forwarded by the transceiver module 220, the call request handler module 225 is configured to query the database 220 to identify the enterprise ID and the CUG ID associated with the UE 120. The call request handler module 225 is configured to utilize the identified enterprise ID and CUG ID to retrieve the at least one parameter and the at least one service specific for the at least one UE, from the database 220. The at least one parameter includes at least one or more call routing preferences, and one or more call handling rules including maximum call duration, voicemail settings, Interactive Voice Response (IVR) configurations, call recording options, and relevant telephony-related settings including preferred conferencing capabilities, based on requirements of the enterprise unit 110. The at least one service includes service availability, response time for troubleshooting or assistance, escalation procedures, and additional service-level agreements (SLAs), based on requirements of the enterprise unit 110. The at least one parameter and at least one service are further configured by the enterprise unit 110 based on at least one of the originating leg and the terminating leg.

[0080] Subsequent to retrieving, the call request handler module 225 is configured to handle the received call request based on the at least one parameter and at least one service specific for the UE 120.

[0081] In an embodiment, the registration entity 240 in the system 105 is configured to register the enterprise unit 110 with the system 105 upon receiving the registration request from the said enterprise unit 110. In an embodiment, the registration entity 240 is configured to update the enterprise unit 110 upon receiving the registration request from the said enterprise unit 110. In another embodiment, the

registration entity 240 is configured to modify the enterprise unit 110 upon receiving the registration request from the said enterprise unit 110. In yet another embodiment, the registration entity 240 is configured to validate the enterprise unit 110 upon receiving the registration request from the said enterprise unit 110. Upon registering the enterprise unit 110, the registration entity 240, is configured to query the said enterprise unit 110 with the plurality of inputs in response to receipt of the registration request. The plurality of inputs pertains to the desired service provision and the desired call processing provision. The plurality of inputs is required to be configured by the enterprise unit 110. The plurality of inputs is sent by the call request handler module 225 to the enterprise unit 110. Based on the response to the plurality of inputs received from the enterprise unit 110, the call request handler module 225 is configured to define the at least one parameter and the at least one service specific to the said enterprise unit 120.

[0082] After defining the at least one parameter and the at least one service, the call request handler module 225 is configured to generate the enterprise ID for the enterprise unit 110. The enterprise ID maps to the at least one parameter and the at least one service specific of the enterprise unit 110.

[0083] Upon registration of the said enterprise unit 120, the call request handler module 225 is further configured to register the one or more CUGs 115 of the enterprise unit 120 into the system 105, by assigning the CUG ID to each of the CUG 115. The enterprise ID and the CUG ID aid the call request handler module 225 to identify the UE 120 when the call request is received from the UE 120 and also aids in processing the call request based on the at least one parameter and at least on service applicable to the UE 120.

[0084] For example, let us consider the call request handler module 225 receives the call requests from the UE 120a and the UE 120e at the same time. The UE 120a belongs to the CUG 115a of the enterprise unit 110a. Similarly, the UE 120e belongs to the CUG 115c of the enterprise unit 110b. Both the enterprise unit 110a and

enterprise unit 110b have different parameters and services defined for each of them. In this situation, the call request handler module 225 identifies the call request from the UE 120a and the UE 120e based on the enterprise ID and the CUG ID associated with the UE 120a and the UE 120e and then processes the call requests based on the parameters and the service corresponding to the identified enterprise IDs and CUG IDs.

[0085] FIG. 4 illustrates an architecture 400 of the system 105 of handling the call request, according to various embodiments of the present invention. The system 105 is implemented as a Session initiation protocol (SIP) application server for enterprise/business solutions, which would be integrated with an IMS Core 406. The system 105 enables a network-based telephony and a web communication from and to a client of a customer. The system 105 provides services like SIP trunking and an IP Centrex service for business customers, which are integrated with the IMS core 406 and other application servers to provide a supplementary service like a CUG, a short code dialing, and the conferencing refers to the ability to connect multiple participants into a single call or meeting etc.

[0086] In particular, the system 105 includes a (SIP) zone, a representational state transfer (REST) zone, and a diameter zone. The SIP zone enables the client of the customer, such as the customer A or B, to send and receive calls over the network 125 using SIP requests and responses. The web zone integrates telephony data with the application server to enable telephony-based traffic access to software services run by the application server.

[0087] In one embodiment, the REST zone includes an Operations and Business Support Systems (OSS/BSS) 408, a load balancer 412 for handling call load balancing, an Evolved Packet System (EPS) 410, and an Element Management System (EMS) 404. The system 105 interacts with a Media Resource Function (MRF) 414, a Caller Ring Back Tone (CRBT) 416, and a Diameter Routing Agent (DRA) 418 which is connected to an Online Charging System (OCS) 420 via a

diameter interface, and a Mobile Number Portability (MNP) 422 using the SIP. Through an IP Multimedia System (IMS) core 406, a VoLTE service 402 is completed.

[0088] In particular, the OSS/BSS 408 is the combination of Business and Operations Support Systems. The OSS manages the network 125 and the BSS refers to a set of software programs that allows at least one BTAS 130 to manage and streamline all call services provided to the user. The load balancer 412 refers to efficiently receiving the call request transmitted by one of an ILD-SBC and an ILD-MGCF depending on the inbound or the outbound origination of the call request via an interface.

[0089] The EPS 410 manages the transfer of data packets related to call requests between the UE 120 and the external packet data networks 125, such as the internet. The EMS 404 refers to Element Management System which manages a network element such as at least one BTAS 130 in the network 125. The MRF 414 is responsible for carrying out a variety of processing tasks on media streams associated with one or more services. These tasks may include coordination and distribution of voice traffic associated with a conference service, playing of announcements to the user, etc.

[0090] The EPS 410 is configured for facilitating enterprises to provision the ITFS number at the BTAS 130 with all additional parameters required to render ITFS. The parameters may include, but may not be limited to, routing algorithms, end point numbers behind ITFS number, announcement files, and the like. Particularly, the EPS 410 provides restful API for the user to receive data requests, such as create, update, and delete, and send the same to required BTAS 130 for data provisioning.

[0091] In particular, the DRA 418 provides a real-time routing capability to ensure that the service request initiated by the users are routed to the server 130. The CRBT 416 platform is an advanced telecommunications service that allows the UE 120

users to personalize the ring-back tone heard by a caller. The OCS 420 is responsible for facilitating real-time interactions with users, ensuring that the users are charged accurately for the consumed one or more services. The MNP 422 is a service that allows a cellphone or smartphone user to change telecom carrier and keep the same phone number. The IMS 406 is a standardized architectural framework for delivering an IP multimedia communication service such as voice, video and text.

[0092] Overall, the present invention significantly improves the integration of the BTAS 130 with the system 105 for various telephony services. By leveraging multiple protocols and intelligent traffic management, the invention enhances flexibility, load balancing, and service continuity. These advantages result in an efficient onboarding, customized call handling, enhanced service offerings, scalability, flexibility, and an improved telephony experience for enterprises. These benefits contribute to streamlined operations, increased efficiency, and better communication capabilities for businesses utilizing the BTAS 130.

[0093] FIG. 5 illustrates an exemplary embodiment of the system 105 with the BTAS 130 as a part of the system 105, according to various embodiments of the present invention. According to the illustrated exemplary embodiment, the BTAS 130 further includes a dedicated interface and a dedicated processor in order to communicate with the UE 120 belonging to the CUG 115 of the enterprise unit 110. The BTAS 130 is configured to receive the one or more requests such as the call request and the registration request, from the UE 120.

[0094] In an embodiment, the BTAS 130 and the UE 120 are communicably coupled to each other via the dedicated interface of the BTAS 130. The UE 120 includes a first processor 510, a first memory 515 storing executable instructions, and a first communication interface 420. Similarly, The BTAS 130 includes a second processor 525 which is the dedicated processor of the BTAS 130 for performing various activities pertaining to the handling of the one or more requests received from the UE 120, a second memory 530 storing executable instructions, and a second

communication interface 535 which is the dedicated interface of the BTAS 130 for communicating with the UE 120.

[0095] The first communication interface 520 and the second communication interface 535 are coupled to facilitate the communication between the UE 120 and the BTAS 130.

[0096] The first processor 510 of the UE 120 is configured to execute the instructions stored in the first memory 515 to communicate with the second processor 525 of the BTAS 130. The first processor 505 of the UE 120 is further configured to transmit at least one of the call request, from the UE 120 via the first communication interface 520 over the network 125. An admin of the separate entity 125 is configured to transmit the registration request, the provisioning request, and the update provision request from the UE 120.

[0097] The second processor 520 of the BTAS 130 is configured to execute the instructions stored in the second memory 525. The second processor 520 of the BTAS 130 is configured to receive at least one of the call request from the first processor of the UE 120. The second processor 520 of the BTAS 130 is configured to receive at least one of the registration request, the provisioning request, and the update provision request from the admin of the separate entity 125. The second processor 520 of the BTAS 130 is further configured to handle at least one of the call request. The second processor 520 of the BTAS 130 is configured to handle the registration request, the provisioning request, and the update provision request based on the at least one parameter and the at least one service specific for the UE 120.

[0098] In an embodiment, the BTAS 130 is configured to utilize the I/O interface 215 to interact with the database 230 in order to process the received one or more requests from the UE 120.

[0099] According to the above embodiment, the system 105 is configured to integrate the BTAS 130 which may be previously working with the enterprise unit

110, into the system 105 thereby advantageously ensuring that dynamic service provisioning is maintained while catering to the requirements of the enterprise unit 110.

[00100] FIG. 6 illustrates a flow chart of the method 600 for handling the call request, according to various embodiments of the present invention. The method 600 which is for processing the call request received from the UE 120 is performed based on the at least one parameter and the at least one service defined for the enterprise unit 110 and the CUG 115 to which the UE 120 belongs to. Specifically, the method 600 is described with respect to the system 105 described under FIG. 2-3.

[00101] At step 605, the method 600 is configured to include the step of receiving by one or more processors 205, the call request from at least one UE 120 of the plurality of UEs associated with the CUG 115 of the enterprise unit 110.

[00102] At step 610, the method 600 includes the step of querying by the one or more processors 205, the database 220, to identify the enterprise ID and the CUG ID associated with the at least one UE 120.

[00103] The enterprise ID corresponds to the enterprise unit associated with the UE 120. The enterprise ID facilitates the one or more processors 205 in routing and handling of the call request within the telephony environment of the enterprise unit 110. The CUG ID pertains to the at least one CUG 115 associated with the at least one UE 120, and the CUG ID aids the one or more processors 205 in identifying the CUG 115 associated to the at least one UE 120 sending the call request.

[00104] The database 230 stores details of the enterprise ID of the enterprise unit 110, the CUG IDs of the CUG 115 of the said enterprise unit 110 as well as information pertaining to parameters and services defined for the said CUG 115 and the said enterprise unit 110. The one or more processors 205 is configured to store information pertaining to the details of the enterprise ID of the enterprise unit 110, the CUG IDs of the CUG 115 of the said enterprise unit 110, the at least one

parameter and the at least one service defined for the said CUG 115 and the said enterprise unit 110, at the time of registering the enterprise unit with the system 105.

[00105] Therefore, upon receiving the call request, the one or more processors 205 queries the database 230 to obtain the information pertaining to the details of the enterprise ID of the enterprise unit 110, the CUG IDs of the CUG 115 of the said enterprise unit 110, the at least one parameters and the at least one service defined for the said CUG 115 and the said enterprise unit 110 and to identify the UE 120 as in the sense that the UE 120 belongs to the CUG 115 of the enterprise unit 110. Identifying the UE 120 crucial in order to determine how the received call request is to be processed.

[00106] At step 615, the method 600 includes the step of retrieving by the one or more processors 205, the at least one parameter and the at least one service specific for the at least one UE 120, from the database 220. Prior to the step 515 of the method, the one or more processor 205 is configured to determine the at least one parameter and the at least one service specific for the at least one UE 120 based on the identified enterprise ID and the CUG ID. As the enterprise ID and the CUG ID are unique and specific to the enterprise unit 110 and the CUG 115, the one or more processor 205 is configured to determine from the enterprise ID and CUG ID which parameters and services are associated to the UE 120 which belongs to the CUG 115 of the enterprise unit 110.

[00107] The at least one parameter includes at least one or more call routing preferences, and one or more call handling rules including maximum call duration, voicemail settings, Interactive Voice Response (IVR) configurations, call recording options, and relevant telephony-related settings including preferred conferencing capabilities, based on requirements of the enterprise unit 110. The at least one service includes service availability, response time for troubleshooting or assistance, escalation procedures, and additional service-level agreements (SLAs), based on requirements of the enterprise unit 110. The one or more processor 205 is further

configured to update/modify the at least one parameter and the at least one service specific for the at least one UE 120, in real time, upon receiving the update provisioning request from the enterprise unit 110.

[00108] At step 620, the method 600 includes the step of handling by the one or more processors 205 the received call request based on the at least one parameter and at least one service specific for the at least one UE 120.

[00109] FIG. 7 illustrates a flow diagram of a method 700 for registering the enterprise unit 110 with the system of FIG. 1, according to various embodiments of the present invention. The method 700 is executed when the enterprise unit 110 is on-boarded for the first time into the system 105.

[00110] At step 705, the method 700 includes the step of receiving, by the one or more processors 205, the registration request from the enterprise unit 110 utilizing the UE 120 hosted by the separate entity 125. The registration request received from the enterprise unit 110 includes information pertaining to the enterprise unit 110 including at least one of, name, contact details, preferred services, expected call volumes, specific requirements and customizations required for the telephony setup of the enterprise unit 110. The one or more processors 205 is configured to retrieve the information pertaining to the enterprise unit 110 from the received registration request.

[00111] At step 710, the method 700 includes the step of querying by the one or more processors 205, the enterprise unit 110, with the plurality of inputs in response to receipt of the registration request. The plurality of inputs aids the one or more processor 205 in determining requirements of the enterprise unit 110, thereby facilitating the one or more processor 205 in defining the at least one parameter and the at least one service specific to the enterprise unit 110. The requirements of the enterprise unit 110 correspond to at least one of service provisions and call processing provisions desired by the enterprise unit 110. Upon receiving the

response to the plurality of inputs from the enterprise unit 110, the one or more processor 205 is configured to define the at least one parameter and the at least one service specific to the enterprise unit 110.

[00112] At step 715, the method 700 includes the step of generating by the one or more processors 205, the enterprise ID for the enterprise unit 110. The enterprise ID maps to the at least one parameter and at least one service specific to the enterprise unit 110. Therefore, since the one or processors 205 knows the enterprise ID, enables the one or more processors 205 to determine the desired service provision and the desired call processing provision opted by the enterprise unit 110.

[00113] Upon generating the enterprise ID for the registered enterprise unit 110, at step 720, the method 700 includes the step of registering by the one or more processors 205 the one or more CUG 115 of the enterprise unit 110 with the system 105. Each of the one or more CUG 115 of the enterprise unit 110 includes plurality of UEs 120. Registering the one or more CUG 115 with the system 105, thereby allows the one or more processors 205 to establish a connection with each of the plurality of the UEs 120. During registration of the one or more CUG 115, the one or more processors 205 are further configured to define at least one parameter and at least one service for the registered CUG, based on the requirements of the enterprise unit 110.

[00114] At step 725, the method 700 includes the step of assigning by the one or more processor 205 the CUG ID to each of the one or more CUG 115 of the enterprise unit 110. The CUG ID of each of the one or more CUG 115 is specific to that particular CUG. The CUG ID corresponds to the at least one parameter and at least one service for each of the one or more CUG 115 and the plurality of UEs 120 therein.

[00115] In an embodiment, the system 105 is configured to register or deregister the CUG 115 based on requirements of the enterprise unit 110.

[00116] FIG. 8 illustrates a flowchart of the method 800 for modifying the CUG 115 of the enterprise unit 110, according to various embodiments of the present invention. The modification of CUG 115 pertains to at least one of inclusion of a new UE 120 into the CUG 115, deletion of an existing UE 120 from the CUG 115, creation of a new CUG and deletion of the new CUG in the enterprise unit 110.

[00117] At step 805, the method 800 includes the step of receiving by the one or more processors 205, a CUG modification request from the enterprise unit 110 which is initiated by an enterprise user utilizing the at least one UE 120 hosted by the enterprise unit 110.

[00118] At step 810, the method 800 includes the step of analyzing by the one or more processors 205 information in the received CUG modification request. The information in the received CUG modification request corresponds to one of inclusion of the new UE 120 into the CUG 115, deletion of the existing UE 120 from the CUG 115, creation of the new CUG and deletion of the existing CUG in the enterprise unit 110.

[00119] At step 815, the method 800 includes the step of determining by the one or more processors 205 a modification type based on the information in the received CUG modification request. The modification type is one of inclusion of UE 120, deletion of UE 120, creation of CUG and deletion of CUG.

[00120] At step 820, the method 800 includes the step of modifying by the one or more processors 205 the CUG 115 architecture based on the determined modification type.

[00121] FIG. 9 illustrates a flowchart of a method 900 for modifying parameters and services specific to the UE 120, according to various embodiments of the present invention. The modification of the parameters pertains to at least one of addition, deletion and updating of at least one or more call routing preferences, and one or more call handling rules including maximum call duration, voicemail settings,

Interactive Voice Response (IVR) configurations, call recording options, and relevant telephony-related settings including preferred conferencing capabilities. The modification of the at least one service pertains to at least one of addition, deletion and updating of at least one of service availability, response time for troubleshooting or assistance, escalation procedures, and additional service-level agreements (SLAs).

[00122] At step 905, the method 900 includes the step of receiving by the one or more processors 205, the update provisioning request from the enterprise unit 110 initiated by the UE 120 of the separate entity 125. The update provisioning request includes information pertaining to the desired modification criteria, the at least one parameter and the at least one service which are required to be modified based on the desired modification criteria.

[00123] At step 910, the method 900 includes the step of identifying by the one or more processors 205 the information pertaining to the desired modification criteria, the at least one parameter and the at least one service which are required to be modified based on the desired modification criteria from the received update provisioning request. The desired modification criteria pertain to the details of the desired parameter change and the desired service change. The desired parameter change includes one of inclusion of new parameter and deletion of existing parameter. The desired service change includes one of, inclusion of new service provision and deletion of existing service provision.

[00124] At step 915, the method 900 includes the step of retrieving by the one or more processors 205 the desired modification criteria from the EPS 225 based on the identified information from the update provisioning request.

[00125] At step 920, the method 900 includes the step of integrating the one or more processors 205 the desired modification criteria into the previously defined at least one parameter and the at least one service specific to the enterprise unit 110,

thereby modifying the at least one parameter and the at least one service specific to the enterprise unit 110.

[00126] The system 105 is configured to provide flexibility to the enterprise unit 110 to manage the call processing of the enterprise unit 110 in real time using enhanced provisioning architecture of the system 105. The system 105 is configured to a dynamic call processing service where call requests from different UEs 120 is managed according to different service provisions set by the enterprise unit 110 based on the CUG 115 created by grouping the plurality of UEs 120. Among other provision and dynamic call processing service features, the system 105 is configured to integrate different standard call processing parameters customized as per the requirements of the enterprise unit 110, for example, a maximum call duration value can be customized as per enterprise unit's requirement.

[00127] In an embodiment, the present invention further discloses a non-transitory computer-readable medium having stored thereon computer-readable instructions. The computer-readable instructions are executed by a processor 205. The processor 205 is configured to receive the call request from at least one UE 120. The processor 205 is further configured to query, the database 220 to identify the enterprise ID and the CUG ID associated with the at least one UE 120. The processor 205 is further configured to utilize the identified enterprise ID and CUG ID to retrieve, the at least one parameter and the at least one service specific for the at least one UE 120 from the database 120. Subsequent to retrieving, the processor 205 is further configured to handle the received call request based on the at least one parameter and at least one service specific for the at least one UE 120.

[00128] A person of ordinary skill in the art will readily ascertain that the illustrated embodiments and steps in description and drawings (FIG. 1-8) 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 function is 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.

[00129] The present invention offers technical advancement of the enterprises utilizing the BTAS, as described above. The proposed invention allows calls from different enterprises to be treated differently based on their specific requirements. By maintaining distinct parameter configurations and service settings, the BTAS ensures that each enterprise receives a tailored telephony experience. This customization enhances the efficiency and effectiveness of call routing, management, and overall communication within the enterprise.

[00130] The present invention offers several advantages of the BTAS, which enhances service offerings. By storing separate service data for each enterprise, the system provides access to a range of features and functionalities, enabling enterprises to optimize their communication capabilities and meet their specific business needs. Furthermore, the segregated parameter and service data architecture allow the BTAS to handle multiple enterprises simultaneously. The system can easily adapt to accommodate new enterprises and their evolving requirements. This scalability ensures that the BTAS remains adaptable in a dynamic business environment. Thus, the invention provides advantages such as efficient onboarding, customized call handling, enhanced service offerings, scalability, flexibility, and an improved telephony experience for enterprises. These benefits contribute to streamlined operations, increased efficiency, and better communication capabilities for businesses utilizing the BTAS.

[00131] 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

- [00132] Environment- 100;
- [00133] Enterprise unit- 110;
- [00134] User Equipment-120;
- [00135] Network - 125;
- [00136] System - 105;
- [00137] Server- 130;
- [00138] One or more processor -205;
- [00139] Memory - 210;
- [00140] I/O interface -215;
- [00141] Transceiver- 220;
- [00142] Call Request Handler-225;
- [00143] Database - 230;
- [00144] Enterprise provisioning server- 235;
- [00145] Separate registration entity- 240;
- [00146] Primary processor- 305;
- [00147] Memory- 310;
- [00148] Volte Service- 402;
- [00149] EMS- 404;
- [00150] IMS- 406;
- [00151] OSS/BSS- 408;
- [00152] EPS- 410;
- [00153] Load Balancer- 412;

- [00154]** MRF- 414;
- [00155]** CRBT- 416;
- [00156]** DRA- 418;
- [00157]** OCS- 420;
- [00158]** MNP-422;
- [00159]** First Processor- 510;
- [00160]** First Memory-515;
- [00161]** First Interface-520;
- [00162]** Second processor- 525;
- [00163]** Second Memory-530;
- [00164]** Second Interface- 535.

CLAIMS

We Claim:

1. A method (600) of handling a call request, the method (600) comprising the steps of:
 - receiving, by one or more processors (205), a call request from at least one User Equipment (UE) (120),
 - querying, by the one or more processors (205), a database (220), to identify an enterprise ID and a Closed User Group (CUG) ID associated with the at least one UE (120);
 - utilizing, by the one or more processors (205), the identified enterprise ID and CUG ID to retrieve, at least one parameter and at least one service specific for the at least one UE (120), from the database (220);
 - subsequent to retrieving, handling, by the one or more processors (205), the received call request based on the at least one parameter and at least one service specific for the at least one UE (120).
2. The method (600) as claimed in claim 1, wherein the call request includes the enterprise ID and the Closed User Group (CUG) ID.
3. The method (600) as claimed in claim 1, wherein the at least one UE (120) is associated with at least one CUG hosted by an enterprise unit (110).
4. The method (600) as claimed in claim 1, wherein the enterprise ID corresponds to the enterprise unit (110) associated with the UE (120), wherein the enterprise ID facilitates the one or more processors (205) in routing and handling of the call request within a telephony environment of the enterprise unit (110).
5. The method (600) as claimed in claim 1, wherein the CUG (115) corresponds to a defined group of one or more UEs (120) provided with one of, privileges and restrictions in terms of making and processing one or more call requests, wherein the CUG ID pertains to the at least one CUG (115) associated with the UE, and wherein

the CUG ID aids the one or more processors in identifying the CUG associated to the UE (120).

6. The method (600) as claimed in claim 1, wherein the enterprise unit (110) is configured to be registered with the one or more processors, wherein registration of the enterprise unit (110) with the one or more processors (205) includes the steps of:
 - receiving, by the one or more processors (205), a registration request from the enterprise unit;
 - querying, by the one or more processors (205), the enterprise unit, with a plurality of inputs in response to receipt of the registration request, wherein the plurality of inputs aid in defining the at least one parameter and at least one service specific to the enterprise unit; and
 - generating, by the one or more processors (205), the enterprise ID for the enterprise unit (110), wherein the enterprise ID maps to the at least one parameter and at least one service specific to the enterprise unit (110).
7. The method (600) as claimed in claim 4, wherein the registration request includes information pertaining to the enterprise unit (110) including at least one of, name, contact details, preferred services, expected call volumes, specific requirements and customizations required for a telephony setup.
8. The method (600) as claimed in claim 1, wherein the one or more processors (205) are further configured to register the at least one CUG hosted by the enterprise unit (110) by assigning the CUG ID to the at least one CUG.
9. The method (600) as claimed in claim 1, wherein the one or more processors (205) are further configured to enable the enterprise unit (110) to define at least one parameter and at least one service for at least one CUG (115), during the registration.

10. The method (600) as claimed in claim 1, wherein the one or more processors (205) are further configured to validate a provisioning request from the enterprise unit (110), by querying the database (220).
11. The method (600) as claimed in claim 1, wherein the at least one parameter includes at least one or more call routing preferences, and one or more call handling rules including maximum call duration, voicemail settings, Interactive Voice Response (IVR) configurations, call recording options, and relevant telephony-related settings including preferred conferencing capabilities, based on requirements of the enterprise unit (110).
12. The method (600) as claimed in claim 1, wherein the at least one service includes service availability, response time for troubleshooting or assistance, escalation procedures, and additional service-level agreements (SLAs), based on requirements of the enterprise unit (110).
13. The method (600) as claimed in claim 1, wherein the at least one parameter and at least one service are further configured by the enterprise unit (110) based on at least one of an originating leg and a terminating leg.
14. A system (105) of handling a call request, the system (105) comprising:
 - a transceiver (220) configured to, receive, a call request from at least one User Equipment (UE) (120); and
 - a call request handler (225), configured to:
 - query, a database (220), to identify an enterprise ID and a Closed User Group (CUG) ID associated with the at least one UE (120);
 - utilize, the identified enterprise ID and CUG ID to retrieve, at least one parameter and at least one service specific for the at least one UE, from the database (220); and

subsequent to retrieving, handle, the received call request based on the at least one parameter and at least one service specific for the at least one UE (120).

15. The system (105) as claimed in claim 14, wherein the call request includes the enterprise ID and the Closed User Group (CUG) ID.
16. The system (105) as claimed in claim 14, wherein the at least one UE is associated with at least one CUG hosted by an enterprise unit (110).
17. The system (105) as claimed in claim 14, wherein the enterprise ID corresponds to the enterprise unit (110) associated with the UE, wherein the enterprise ID facilitates the one or more processors (205) in routing and handling of the call request within a telephony environment of the enterprise unit (110).
18. The system (105) as claimed in claim 14, wherein the CUG (115) corresponds to a defined group of one or more UEs (120) provided with one of, privileges and restrictions in terms of making and processing one or more call requests, wherein the CUG ID pertains to the at least one CUG associated with the UE (120), and wherein the CUG ID aids the one or more processors (205) in identifying the CUG associated to the UE (120).
19. The system (105) as claimed in claim 14, wherein the enterprise unit (110) is configured to be registered with the system (105), wherein the call request handler registers the enterprise unit with the system by:
 - receiving, a registration request from the enterprise unit (110);
 - querying, the enterprise unit (110), with a plurality of inputs in response to receipt of the registration request, wherein the plurality of inputs aid in defining the at least one parameter and at least one service specific to the enterprise unit (110); and

generating, the enterprise ID for the enterprise unit (110), wherein the enterprise ID maps to the at least one parameter and at least one service specific of the enterprise unit (110).

20. The system (105) as claimed in claim 19, wherein the registration request includes information pertaining to the enterprise unit (110) including at least one of, name, contact details, preferred services, expected call volumes, specific requirements and customizations required for a telephony setup.
21. The system (105) as claimed in claim 14, wherein the call request handler (225) of the system is further configured to register the at least one CUG hosted by the enterprise unit (110) by assigning the CUG ID to the at least one CUG.
22. The system (105) as claimed in claim 14, wherein the call request handler (225) is further configured to enable the enterprise unit (110) to define at least one parameter and at least one service for at least one CUG, during the registration.
23. The system (105) as claimed in claim 14, wherein the call request handler (225) is further configured to validate a provisioning request from the enterprise unit (110), by querying the database (220).
24. The system (105) as claimed in claim 14, wherein the at least one parameter includes at least one or more call routing preferences, and one or more call handling rules including maximum call duration, voicemail settings, Interactive Voice Response (IVR) configurations, call recording options, and relevant telephony-related settings including preferred conferencing capabilities, based on requirements of the enterprise unit (110).
25. The system (105) as claimed in claim 14, wherein the at least one service includes service availability, response time for troubleshooting or assistance, escalation

procedures, and additional service-level agreements (SLAs), based on requirements of the enterprise unit (110).

26. The system (105) as claimed in claim 14, wherein the at least one parameter and at least one service are further configured by the enterprise unit (110) based on at least one of an originating leg and a terminating leg.
27. A User Equipment (UE) (120), comprising:
 - one or more primary processors (305) communicatively coupled to one or more processors (205), the one or more primary processors (305) coupled with a memory (310), wherein said memory stores instructions which when executed by the one or more primary processors (305) causes the UE (120) to:
 - transmit, a call request to the one or more processors (205),
 - wherein the one or more processors (205) are configured to perform the steps as claimed in claim 1.
28. A non-transitory computer-readable medium having stored thereon computer-readable instructions that, when executed by a processor (205), causes the processor (205) to:
 - receive, a call request from at least one User Equipment (UE) (120);
 - query, a database, to identify an enterprise ID and a Closed User Group (CUG) ID associated with the at least one UE (120);
 - utilize, the identified enterprise ID and CUG ID to retrieve, at least one parameter and at least one service specific for the at least one UE (120), from the database (220); and
 - subsequent to retrieving, handle, the received call request based on the at least one parameter and at least one service specific for the at least one UE (120).

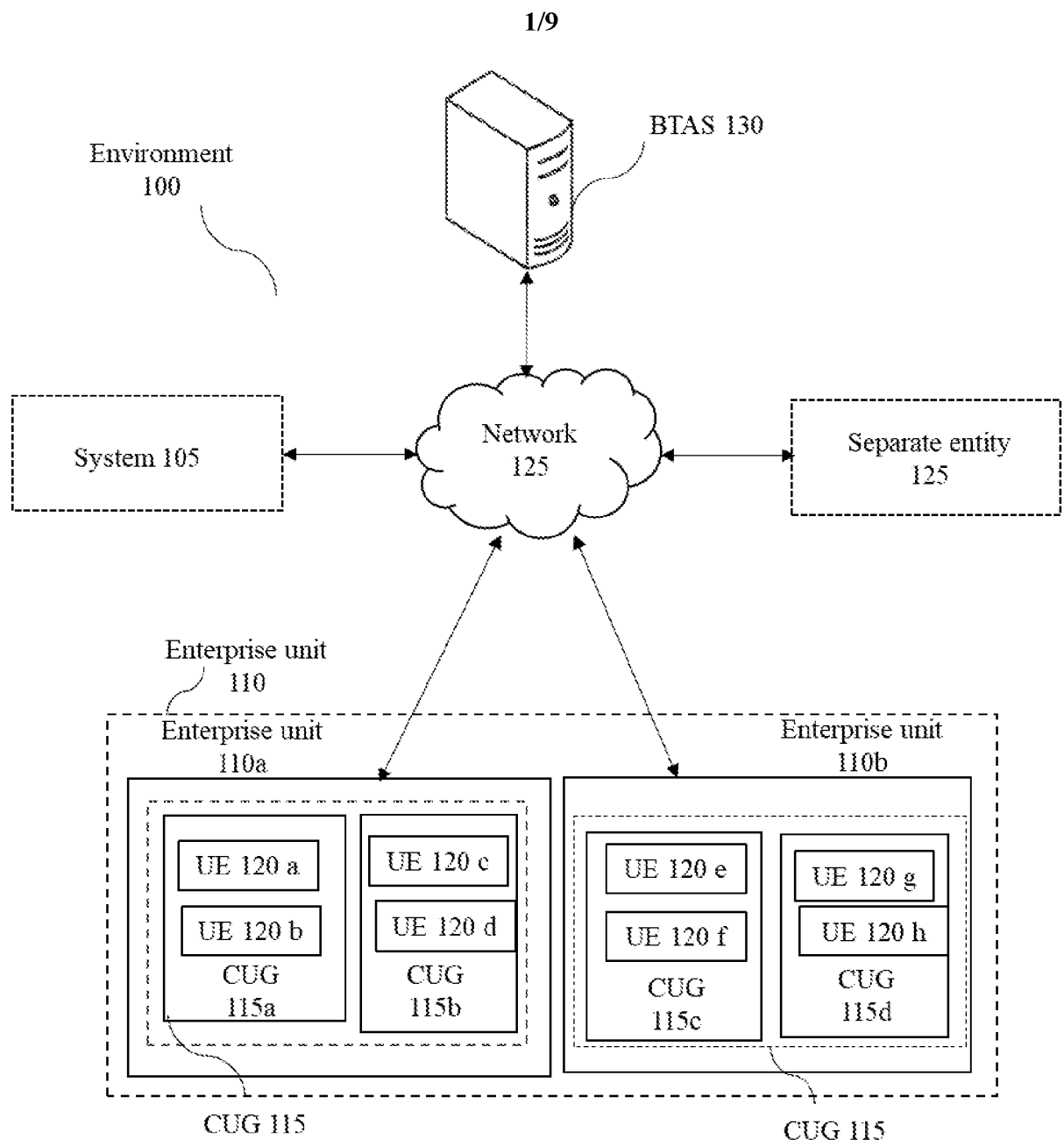


FIG. 1

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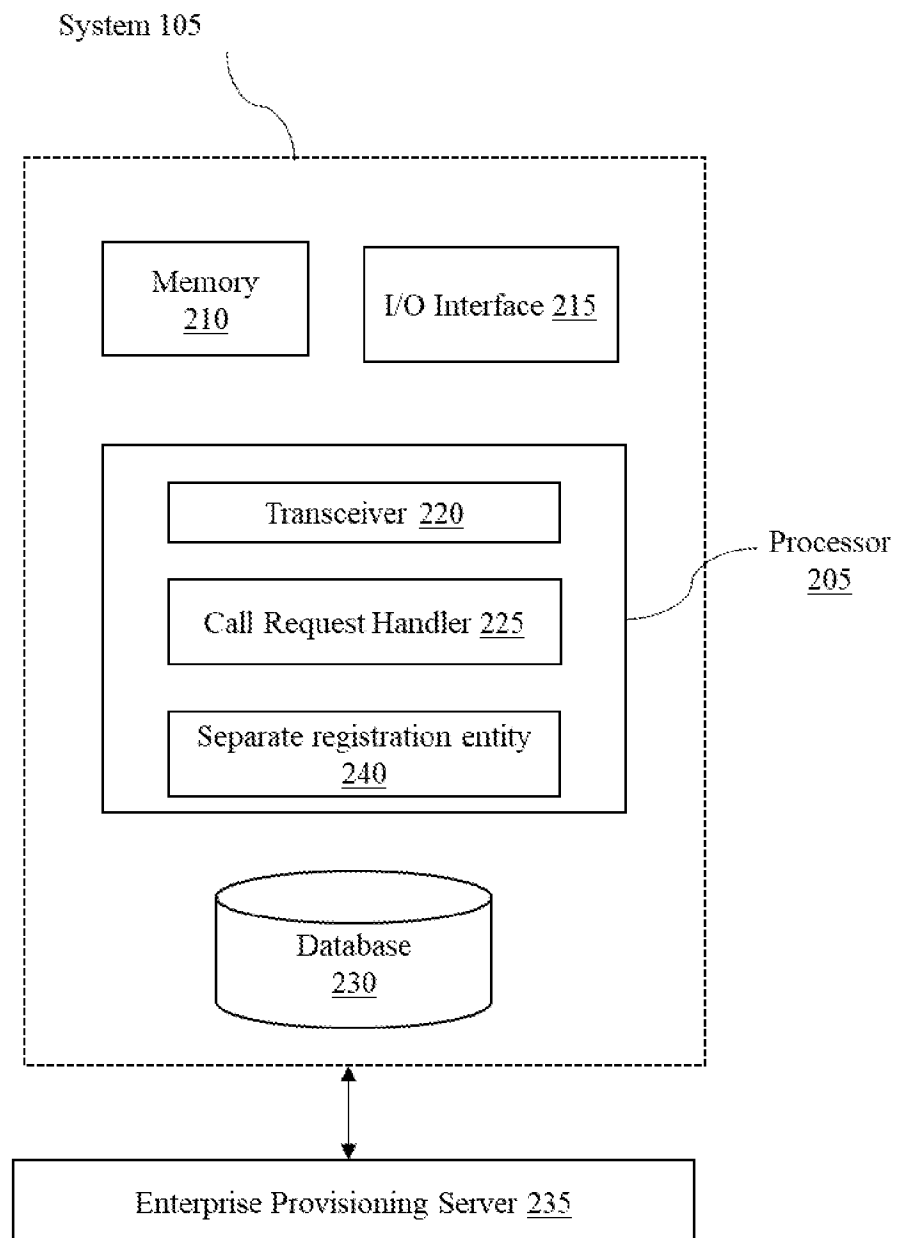


FIG. 2

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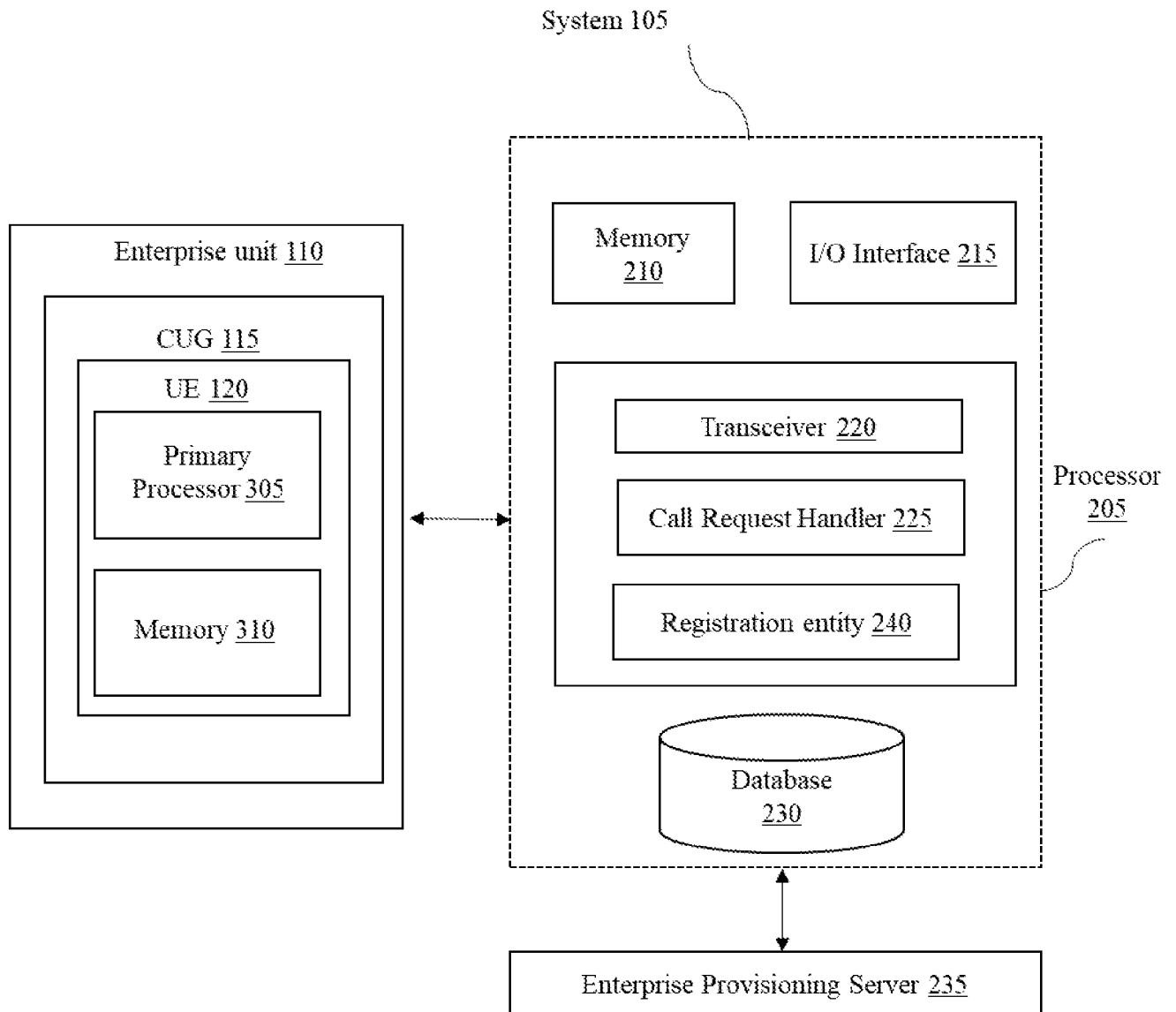


FIG. 3

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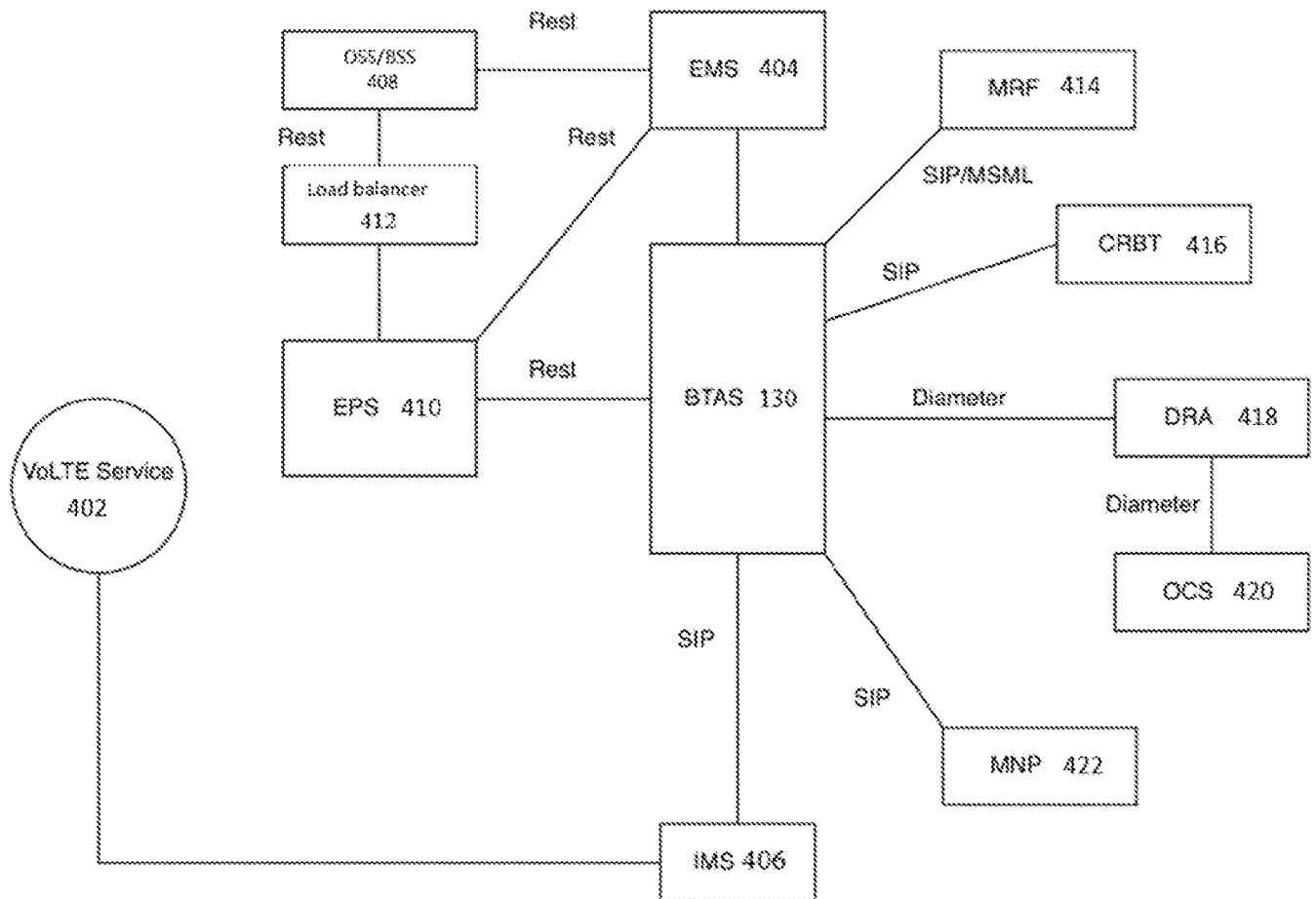


FIG. 4

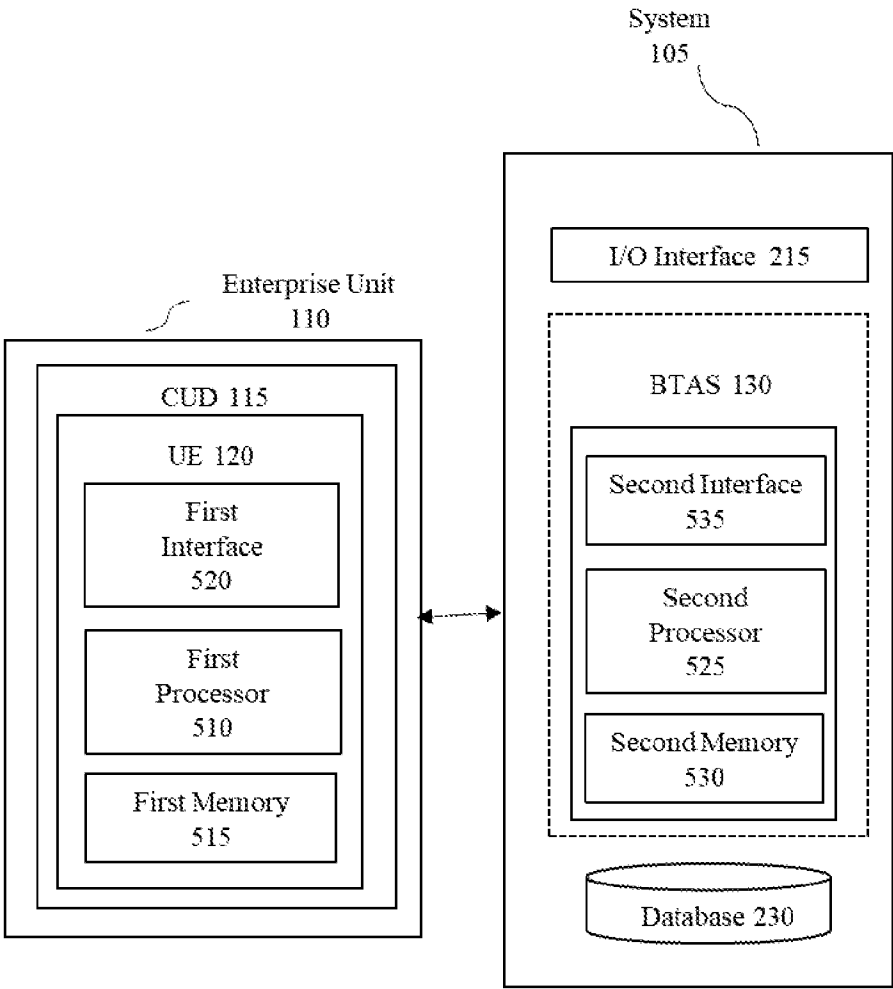


FIG. 5

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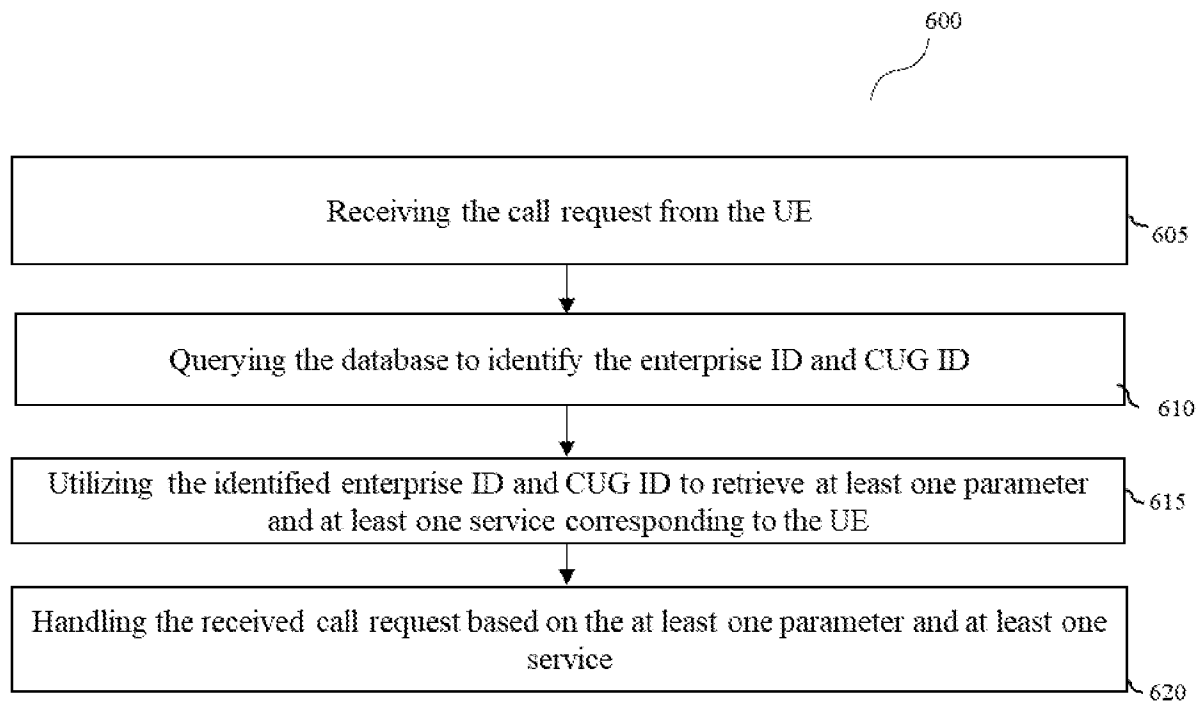


FIG. 6

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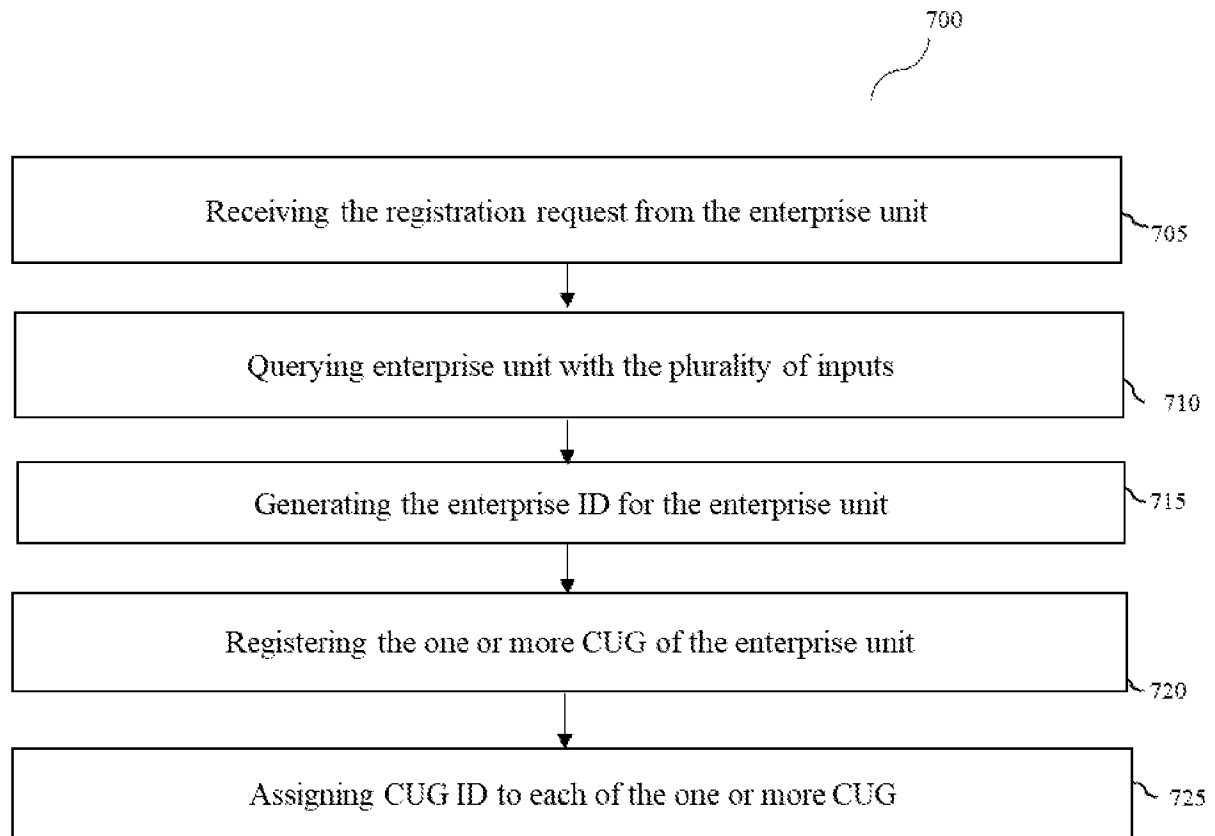


FIG. 7

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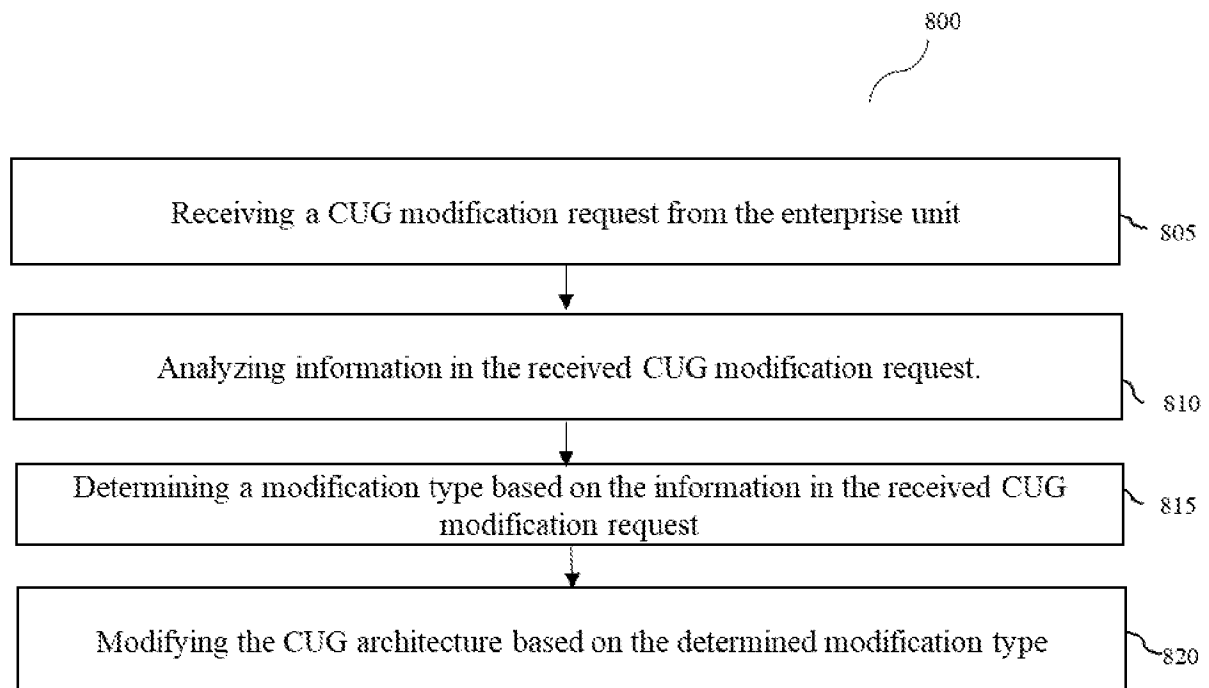


FIG. 8

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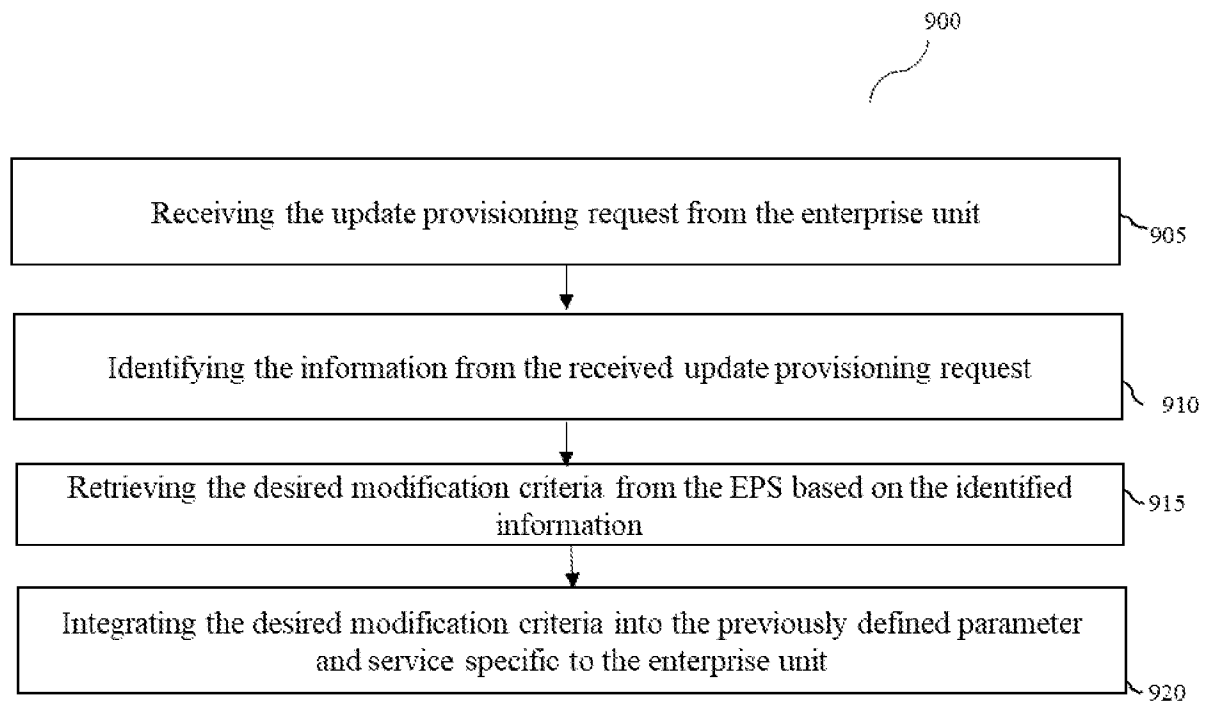


FIG. 9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IN2024/050954

A. CLASSIFICATION OF SUBJECT MATTER

H04W4/16, H04M3/436, H04M3/51, H04W76/10, H04M3/42 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)

H04W, H04M

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)

Databases:- PatSeer, IPO Internal Database

Keywords:- call request, enterprise ID, Closed user group

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	IN202221018956 A (JIO PLATFORMS LTD) 19 MAY 2023 (19-05-2023) PARAGRAPHS [0016]-[0034], [0047]-[0087], FIGURE 1B	1-28
Y	JPH09130484 A (AT & T CORP.) 16 MAY 1997 (16-05-1997) PARAGRAPHS [0002]-[0037]	1-28
Y	US11647087 B1 (8x8, INC.) 09 MAY 2023 (09-05-2023) COLUMN 2 to 21	1-28
Y	IN202221018944 A (JIO PLATFORMS LTD) 26 MAY 2023 (26-05-2023) PARAGRAPHS [0029]-[0105]	2-13 and 15-26
Y	US6611867 B1 (ACCENTURE LLP) 26 AUGUST 2003 (26-08-2003) COLUMN 7 to 117	2-13 and 15-26



Further documents are listed in the continuation of Box C.



See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search

16-10-2024

Date of mailing of the international search report

16-10-2024

Name and mailing address of the ISA/

Indian Patent Office

Plot No.32, Sector 14, Dwarka, New Delhi-110075

Facsimile No.

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/IN2024/050954

Citation	Pub.Date	Family	Pub.Date
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		KR 20230141733 A	10-10-2023
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