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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	40595.0002US01
		Application Number	
Title of Invention	ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE		
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☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

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	David		Aldworth			
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Application Information:

Title of the Invention	ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE		
Attorney Docket Number	40595.0002US01	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	6	Suggested Figure for Publication (if any)	4
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Title of Invention	ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE		

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For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

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☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	40595.0002US01
		Application Number	
Title of Invention	ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE		

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

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Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013. ☐ NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.
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Authorization to Permit Access:

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	40595.0002US01
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	40595.0002US01
		Application Number	
Title of Invention	ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE		

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ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE**INTRODUCTION**

[0001] Toll-free telephone systems provide originating callers with the ability to place free telephone calls. More particularly, toll-free telephone numbers are set up such that the called party, also referred to as the subscriber of the toll-free number, pays for each call received rather than the calling/originating party. In the United States, toll-free numbers typically begin with a '1' followed by a three-digit code such as 800, 888, 877, 866, 855, or 844.

[0002] Typically, toll-free numbers are assigned by "Responsible Organizations," or "RESPORGs." RESPORGs maintain the registration and routing of individual toll-free numbers that are stored in the SMS-800 database. Accordingly, each RESPORG has access to the SMS-800 database, which is a central registry of all toll-free numbers. In particular, SMS-800 is an administrative entity responsible for assigning RESPORG IDs to RESPORGs and storing toll-free numbers and routing information related to each toll-free number. Routing information may include the individual or company that subscribes to each toll-free number and the carrier associated with handling direct routing of each toll-free call.

[0003] Typically, toll-free calls are routed from the service provider of the originating caller, wherein the service provider does a look up of the carrier identification code (CIC) associated with ultimately handling the toll-free number. A CIC is a unique code that identifies a telephone service provider. The call is thereafter connected to the identified service provider, which routes the call to the toll-free subscriber (sometimes also referred to as the terminating client). Toll-free subscribers are generally assessed a per minute fee

based on a Local Exchange Carrier (LEC) tariff plus a margin for each network and service provider that carries the call to the subscriber.

ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE

[0004] In general terms, this disclosure is directed to a method of toll-free routing using a toll-free exchange. By using a toll-free exchange instead of normal call routing, the method minimizes the number of hand-offs and reduces the ultimate cost of the toll-free call. Toll-free subscribers are generally assessed a per minute fee based on a LEC tariff plus a margin for each network and service provider that carries the call to the subscriber

[0005] In a first embodiment, aspects of the present disclosure are directed to a method for routing toll-free calls through a toll-free exchange, the method, performed by a policy router, comprising: receiving, from an originating responsible organization (RESPORG), a toll-free call, wherein the toll-free call is directed to a toll-free subscriber that is served by a terminating RESPORG; querying a database to determine a RESPORG identification associated with the terminating RESPORG; and routing, to the terminating RESPORG, the toll-free call based in part on the RESPORG identification.

[0006] In a second embodiment, aspects of the present disclosure are directed to a method for routing toll-free calls without using a carrier identification code (CIC), comprising: receiving, from an originating responsible organization (RESPORG), a toll-free call, wherein the toll-free call is directed to a toll-free subscriber that is served by a terminating RESPORG; querying a database to determine a RESPORG identification associated with the terminating RESPORG; and routing, to the terminating RESPORG,

the toll-free call through a protected network based in part on the RESPORG identification.

[0007] In a third embodiment, aspects of the present disclosure are directed to a system for routing a toll-free call using a toll-free exchange, the system comprising: at least one session border controller for routing a data portion of the toll-free call within the toll-free exchange; a policy router for determining, based at least on data included within the data portion, a responsible organization (RESPORG) identification (ID) associated with a terminating RESPORG; a service control point for storing the RESPORG ID of the terminating RESPORG; a database for storing enrollment information associated with the terminating RESPORG; and a media gateway server farm having one or more server computing devices for routing a media portion of the toll-free call.

[0008] These and various other features as well as advantages which characterize the systems and methods described herein will be apparent from a reading of the following detailed description and a review of the associated drawings. Additional features are set forth in the description which follows, and in part will be apparent from the description, or may be learned by practice of the technology. The benefits and features of the technology will be realized and attained by the structure particularly pointed out in the written description and claims hereof as well as the appended drawings.

[0009] It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory and are intended to provide further explanation of the novel aspects of the technology as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] FIG. 1 is a block diagram illustrating a traditional call connection of a toll-free call.

[0011] FIG. 2 is a block diagram illustrating an alternative embodiment of a traditional call hand-off of a toll-free call.

[0012] FIG. 3 is a block diagram illustrating a call hand-off based on principles of the present disclosure.

[0013] FIG. 4 is a block diagram illustrating an example environment with which a toll-free exchange interacts according to principles of the present disclosure.

[0014] FIG. 5 is a flow chart illustrating an example method performed by the policy router of the toll-free exchange.

[0015] FIG. 6 illustrates an exemplary architecture of a computing device that can be used to implement aspects of the toll-free exchange.

DETAILED DESCRIPTION

[0016] Various embodiments will be described in detail with reference to the drawings, wherein like reference numerals represent like parts and assemblies throughout the several views. Reference to various embodiments does not limit the scope of the claims attached hereto. Additionally, any examples set forth in this specification are not intended to be limiting and merely set forth some of the many possible embodiments for the appended claims.

[0017] In general terms, this disclosure is directed to a method of routing toll-free telephone calls using a toll-free exchange, thereby minimizing the number of hand-offs and reducing the ultimate cost of the toll-free call. As described herein, toll-free

subscribers are generally assessed a per minute fee based on a LEC tariff plus a margin for each network and service provider that carries the call to the subscriber. It is therefore a benefit of the present disclosure to minimize the number of networks and simplify the process of directing a toll-free telephone call by providing a toll-free exchange, details of which are further provided herein.

[0018] FIG. 1 is a block diagram illustrating a traditional call connection of a toll-free call or, indeed, any long distance call. As illustrated, a caller places a call by dialing a desired toll-free number using a telephone such as a telephone connected to a landline or a cellular phone. The call is routed to the user's service provider 102 that manages each of the incoming and outgoing calls of the user. In some embodiments, the service provider 102 is a RESPORG. The service provider 102, using the toll-free number, performs a look up of the Carrier Identification Code (CIC) for the dialed toll-free number. As shown in FIG. 1, in this example, the service provider 102 sends the call to a tandem switch 104 used to exchange traffic between multiple service providers. In some example embodiments, the tandem switch 104 is owned by the incumbent local exchange carrier (ILEC) of the originating caller's service provider 102. The service provider 102 provides the tandem switch 104 with the call and the identified CIC code. The tandem switch 104 thereafter connects the call to the LEC identified by the CIC 106, who may or may not also act as the RESPORG of the toll-free subscriber. The service provider 106 thereafter accepts the call and carries the call to the toll-free subscriber. Accordingly, the toll-free call is 'terminated' to the toll-free subscriber and a call is established.

[0019] FIG. 2 is a block diagram illustrating an alternative embodiment of a traditional call hand-off of a toll-free call. As illustrated, a caller places a call by dialing a

desired toll-free number using a telephone such as a telephone connected to a landline or a cellular phone. The call is routed to the user's service provider 102a that handles each of the incoming and outgoing calls of the user. As illustrated in FIG. 2, there may be multiple service providers 102a – 102n that are used to connect the call to the tandem 104. In this embodiment, service provider 102n, using the toll-free number, performs a look up of the CIC for the dialed toll-free number. In this example, the service provider 102n then sends the call and the CIC to a tandem switch 104 used to exchange traffic between multiple service providers. The tandem switch 104 thereafter connects the call to the LEC identified by the CIC 106. In this example, the toll-free number is not provided to the toll-free subscriber via the LEC 106, but rather through a service provider and RESPORG 202a. As illustrated in FIG. 2, there may be multiple service providers or RESPORGs 202a – 202n that are used to connect the call to the terminating RESPORG 202n. In such an embodiment, the LEC 106 connects the call to the service provider or RESPORG 202a, which thereafter routes the call to service provider or RESPORG 202n. The service provider or RESPORG 202n thereafter routes the call to the toll-free subscriber. As illustrated in this alternative embodiment, additional entities (e.g., service provider / RESPORGs) are used to connect the call from the originating caller to the toll-free subscriber, thereby adding additional costs to the toll-free subscriber and additional complexity to the call exchange process.

[0020] The cost structure of toll-free systems is based on a reverse long distance billing process. As described herein, toll-free systems provide originating callers with the ability to place free telephone calls. In other words, it is the called party—in this case the subscriber of the toll-free number—who pays for each call received rather than the

calling/originating party. Accordingly, because service provider 102 is owed compensation – known as the “End Office”– from the CIC holder for the use of its network to connect the call to the tandem, and the tandem provider is owed compensation from the CIC holder for the tandem function, service provider 102 and tandem provider 104 are paid by the service provider 106, which is paid by the RESPORG 202, which is paid by the toll-free subscriber. In some embodiments, each subsequent payment is of a decreasing value due to, in some examples, regulatory misinterpretation and rampant litigation such that service provider 102 may not recoup its costs for the use of its network. It is understood that although a limited number of service providers, RESPORGs, and tandems are illustrated, it is understood that there may be one or multiple such service providers, RESPORGs, or tandems involved in the call hand-off of a toll-free call. For example, there may be multiple other PSTN, SS7 and VoIP networks, RESPORGs, services providers, and tandems involved in the routing of a toll free call from the calling to the called party.

[0021] FIG. 3 is a block diagram illustrating a different and novel method of routing a toll-free call using a toll-free exchange 302, thus bypassing one or more exchanges in the traditional phone network. Generally, the toll-free exchange 302 is a system used to route calls based on the RESPORG ID of the RESPORG associated with the toll-free subscriber. More specifically, the toll-free exchange 302 allows service provider or RESPORG 102 and 202 to register with the toll-free exchange 302, thereby providing the necessary information for the toll-free exchange 302 to terminate the toll-free call between the two parties without going through any number of tandem switches, LECs, service providers, or RESPORGs. Although service provider 102 may not be listed as a

RESPORG, in embodiments in which the service provider 102 manages a toll-free number, the service provider 102 is also a RESPORG that is responsible for managing calls communicated to and from the toll-free number. Furthermore, the toll-free exchange 302 allows registered RESPORGs to set a buy rate, which is the rate at which that terminating RESPORG will pay the originating party, such as service provider 102, for routing a call to it.

[0022] As described in further detail herein, using the disclosed toll-free exchange 302, toll-free call routing is no longer based on looking up a CIC of the terminating service provider or RESPORG, but rather, routing is performed based simply on looking up the RESPORG ID associated with the terminating RESPORG. Still further, the toll-free exchange 302 allows registered RESPORGs to set a buy rate at which it may pay an originating RESPORG or service provider for connecting a call. Accordingly, the toll-free exchange 302 provides terminating RESPORGs with the ability to set its own rate it is willing to pay an originating service provider or RESPORG. Aspects of the present disclosure further allow originating RESPORGs to set a floor rate, which indicates a minimum rate it will accept in order to route the call through the toll-free exchange 302 and to the terminating RESPORG. Accordingly, aspects of the present disclosure provide RESPORGs with the option to participate on the toll-free exchange 302 and receive payment at the terminating provider's predetermined buy rate while simultaneously reducing the number of exchanges involved in terminating the call to the toll-free subscriber, thus reducing the cost of the call. Although it is noted that the floor rate is associated with the originating RESPORG and the buy rate is associated with the terminating RESPORG, it is understood that any RESPORG may function as an

originating RESPORG and a terminating RESPORG. Accordingly, any one RESPORG may have both a floor rate and a buy rate associated therewith.

[0023] As described in further detail herein, the toll-free exchange 302 monitors call traffic to calculate and provide an accounting of such payments as based on each RESPORG's set buy rate. In some embodiments, the buy rate or the floor rate is a "per second" rate, and in other embodiments, it is a "per minute" rate, a fixed fee rate, or a negotiated fee rate specific to the parties. Thus, in an embodiment the total payment owed to an originating service provider or RESPORG may be calculated based on the duration of the toll-free call multiplied by the buy rate.

[0024] FIG. 4 is a block diagram illustrating an example environment 400 with which a toll-free exchange 302 interacts according to principles of the present disclosure. As illustrated, the toll-free exchange 302 communicates with the originating service provider 102 and the terminating service provider 202 as well as the SMS 800 Database 402. As illustrated in these examples, both the originating service provider 102 and the terminating service provider 202 are RESPORGs having RESPORG IDs that are registered with the toll-free exchange. It is understood, however, that in other examples, one or more of the originating service provider 102 and the terminating service provider 202 are not enrolled with the toll-free exchange 302.

[0025] As illustrated in this example, the toll-free exchange 302 includes an originating switch 404 and a terminating switch 406. In some examples the originating switch 404 and the terminating switch 406 are each session border controllers (SBCs) that function to route communication data packets and metadata. In this example, the toll-free exchange 302 further includes a policy router 408, which includes the routing logic

and decision-making of the toll-free exchange 302. The toll-free exchange 302 also includes a database 410 for storing RESPORG IDs, buy rates and other data of RESPORGs that participate in the toll-free exchange 302. The toll-free exchange 302 further includes a Service Control Point (SCP) 412 that interacts with the SMS-800 database to obtain RESPORG IDs of registered RESPORGs. In this example, the toll-free exchange 302 also includes a media gateway server farm 414, which is configured to process the media data, such as voice and video data of the calls routed through the exchange 302. Finally, in this example, the toll-free exchange 302 includes a thrasher 416 used to collect call detail records (CDRs) for accounting and administrative purposes. Although the listed elements are depicted as being part of the toll-free exchange 302, it is noted that this is merely an illustrative example and any combination of elements may be used to implement the toll-free exchange 302. For example, the exchange could be implemented as a unitary set of equipment housed at a single location or, alternatively, could be individual elements distributed over different locations but connected electronically.

[0026] As described herein, the originating caller places a toll-free call by dialing a toll-free number. As indicated by arrow 1, the call is routed to the user's service provider. It is understood that the user's service provider need not be a RESPORG, however, for purposes of this illustrative example, the user's service provider will be referred to herein as the originating RESPORG 102, which is the entity responsible for handling each of the incoming and outgoing calls of the originating caller. In some embodiments, the originating RESPORG 102 may be a communications company such as Verizon Wireless of Basking Ridge, New Jersey.

[0027] Upon receiving the call, the originating RESPORG 102 routes the call to the toll-free exchange 302, as illustrated by arrow 2. More specifically, the originating RESPORG 102 routes the call to the originating switch 404 of the toll-free exchange 302. In this example embodiment, the originating switch 404, or the SBC, includes control software that routes the data portion of the call to the policy router 408 (as indicated by arrow 3). As indicated by the dashed lines, the media (voice and video) portion of the call is routed directly to the media server gateway farm 414 using, for example, the Real-time Transport Protocol (RTP). The toll-free call includes a data portion, or for example, a header including various metadata relating to the call. Such metadata may include the IP address associated with the originating RESPORG 102 and the originating caller, the floor rate and buy rate associated with that RESPORG 102, etc. The originating switch 404 informs the policy router (as indicated by arrow 3) of the incoming call. In particular, the originating switch 404 queries the policy router 408 regarding whether an IP address associated with the toll-free number is allowed to access the toll-free exchange 302 as an initial authentication procedure.

[0028] The database 410 may store, among other items, an access control list (ACL) that lists each of the RESPORGs enrolled on the toll-free exchange 302. In some embodiments, the ACL includes a list of IP addresses associated with each enrolled RESPORG, yet in other embodiments, other identifying information is included on the ACL. As indicated by arrow 4a, the policy router 408, using the IP address of the originating RESPORG 102, queries the database 410 regarding whether the originating RESPORG 102 is listed on the ACL, and therefore granted access to the toll-free exchange 302. In an example embodiment, RESPORG's that wish to participate in the

toll-free exchange 302 register with the toll-free exchange 302. Registering with the toll-free exchange 302 may involve, for example, registering RESPORG information such as the RESPORG ID, IP information and setting appropriate floor and buy rates. In some embodiments, an administrator of a RESPORG seeking to register with the toll-free exchange 302 may register via an enrollment website. Such registration information is stored in the database 410.

[0029] In this example, the policy router 408, which is further described with reference to FIG. 5, includes the logic of the toll-free exchange 302. As described herein, the database 410 stores, among other information, data relating to each RESPORG registered with the exchange such as, for example, RESPORG IP addresses, and the predetermined floor and buy rates associated with each registered RESPORG. In order to determine whether the originating RESPORG 102 is enrolled with the toll-free exchange 302, the policy router 408 queries the database 410 to look up, on the stored ACL, the IP address associated with the originating RESPORG 102. In an example, the database 410 determines whether the originating RESPORG 102 is an identified IP address on the ACL. Determining whether the originating RESPORG 102 is enrolled with the toll-free exchange 302 also returns the floor rate set by the originating RESPORG 102. As described herein, the floor rate set by the originating RESPORG 102 indicates a minimum rate at which the originating RESPORG 102 will accept in order to route the call through the toll-free exchange 302, wherein the minimum rate is paid by the terminating RESPORG 202.

[0030] If, in this example, the originating RESPORG 102 is not registered with the toll-free exchange 302, the database 410 will return a response (as indicated by arrow 4b)

indicating the RESPORG is not enrolled with the toll-free exchange 302, or returns a null response. As such, the policy router 408 may signal to the originating switch 404 to reject the call. The RESPORG 102 then may access the traditional telephone network and the call is completed using one of the traditional methods as described with reference to FIGs. 1 and 2. If, however, the originating RESPORG 102 is registered with the toll-free exchange 302, the database 410 returns a response (as indicated by arrow 4b) to the policy router 408 specifying that the originating RESPORG 202 is enrolled with the toll-free exchange 302 as well as the floor rate associated therewith. In some embodiments, the database 410 further returns the RESPORG ID associated with the enrolled originating RESPORG 102.

[0031] The policy router 408 (as indicated by arrow 5a), using the dialed toll-free number, queries the SCP 412 for the RESPORG ID of the terminating RESPORG 202 that is associated with managing the toll-free number. As described herein, the toll-free exchange 302 uses the RESPORG ID of the terminating RESPORG 202 to route toll-free telephone calls to the toll-free subscriber. RESPORG IDs are assigned by and stored in a national SMS-800 database and accessible by the toll-free exchange 302 through the utilization of a Service Control Point (SCP) 412, or other methods. In this illustrative embodiment, the SCP 412 is a clone of the SMS-800 database. In other words, the SCP 412 stores each RESPORG ID that is registered with the SMS-800 database. In some embodiments, the SCP 412 updates its database daily, and in other embodiments the SCP 412 updates its database with RESPORG IDs on a lesser or more frequent basis. The SCP 412 may initiate a request, such as by a PUSH request, to the SMS-800 database to receive RESPORG ID updates. Alternatively or additionally, the SCP 412 may receive

updates, such as by a PULL request, from the SMS-800 database to receive RESPORG ID updates.

[0032] Accordingly, the policy router 408 provides the SCP 412 with the toll-free number (as indicated by arrow 5a) to look up the RESPORG ID of the terminating RESPORG 202. The SCP 412 returns a response (as indicated by arrow 5b) to the policy router 408 providing the RESPORG ID of the terminating RESPORG 202.

[0033] Using the RESPORG ID of the terminating RESPORG 202, the policy router 408 queries the database 410 (as indicated by arrow 6a) to determine whether the terminating RESPORG 202 is registered with the toll-free exchange 302. If, in an example, the terminating RESPORG 202 is not registered with the toll-free exchange 302, the database 410 returns a response (as indicated by arrow 6b) indicating the terminating RESPORG 202 is not registered with the toll-free exchange 302, or a null response. As such, the policy router 408 signals the originating switch to reject the call and the call is completed using one of the traditional methods as described with reference to FIGs. 1 and 2. Alternatively, if the terminating RESPORG 202 is registered with the toll-free exchange 302, the database 410 returns a response (as indicated by arrow 6b) to the policy router 408 specifying the terminating RESPORG 202 is registered with the toll-free exchange 302, the IP address of the terminating RESPORG 202, and the predetermined buy rate, and any additional information relating to the terminating RESPORG 202. Depending on the embodiment, any additional information needed by the exchange to complete the call may also be stored on the database 410 and sent to the policy router 408.

[0034] Although the above-described embodiments describe example scenarios in which a call is completed based on both the originating RESPORG 102 and terminating RESPORG 202 being enrolled with the toll-free exchange 302, registration of the terminating RESPORG 202 is not necessary for the registered originating RESPORG 102 to complete a call. Although calls are originated by a registered/enrolled RESPORG 102, calls may still be routed even though the terminating RESPORG 202 is not registered/enrolled with the toll-free exchange 302. If the terminating RESPORG 202 is not registered/enrolled, the toll-free exchange 302 may route the call to the PSTN instead of returning the call to the originating RESPORG 102. This decision, which is made by the policy router 408, is based on a pre-defined set of criteria configured by the registered originating RESPORG 102. In other words, the originating RESPORG 102 may specify whether it prefers to route a call through the toll-free exchange 302 regardless if the terminating RESPORG is registered with the toll-free exchange 302. Such an indication may be included in the meta information, stored in a header of the toll-free call.

[0035] As indicated by arrow 7, the policy router 408 informs the originating switch 404 to attach the IP address of the terminating RESPORG 202, and any additional information, if necessary, to a header of the signaling packet for the call, which is passed to the media gateway server farm 414. In example embodiments, the originating switch 404 attaches a Session Initiation Protocol (SIP) header including the IP address of the terminating RESPORG 202.

[0036] As described herein, the media gateway server farm 414 processes the media portion of the call, such as the voice or video data of the call. In some embodiments, the media gateway server farm 414 processes the media such as compressing and configuring

the media to be carried over a network to the terminating RESPORG 202. In an example embodiment, the toll-free call is placed over a voice over IP network (VoIP). In such an example, the media gateway server farm 414 configures the voice data of the call to be carried over a network to the terminating RESPORG 202 using the Real-time Transport Protocol (RTP).

[0037] In some embodiments, the media gateway server farm 414 also provides load balancing in order to process voice data. Toll-free calls typically occur more often during the day and gradually decrease during evening and early morning hours. Accordingly, the media gateway server farm 414 provides the necessary load balancing to distribute voice and video processing over one or more servers based on the time of day and call traffic experienced by the media gateway server farm 414. The media gateway server farm 414 will expand or contract in size automatically to provide sufficient computing resources to adapt to call volume.

[0038] In some embodiments, the media gateway server farm 414 includes a plurality of computing devices such as one or more servers, wherein the servers may be located in a single geographical area and in other embodiments, the servers may be located across several remote sites. In an embodiment, some or all of the media gateway server farm 414 may be leased on-demand from a third-party server provider, such as Amazon or Google, and implemented as a ‘cloud service.’

[0039] As described herein, once the identity of the terminating RESPORG 202 is determined, the originating switch 404 provides the call signaling to the terminating switch 406 (as indicated by arrow 7). The processed media data is also provided to the terminating RESPORG 202 directly by the media gateway server farm 414. The

terminating switch 406 reads the IP address included in the header of the media data packet and forwards the data packet to the identified terminating RESPORG 202 (as indicated by arrow 8). In the example of a VoIP call, the call is transmitted to the terminating RESPORG 202 over a communication network, such as the Internet. Finally, the terminating RESPORG 202 terminates the call to the toll-free subscriber (as indicated by arrow 9).

[0040] As described herein, the toll-free exchange 302 monitors each call sent through the toll-free exchange 302 and provides administrative and accounting services to the registered RESPORGs. As such, the toll-free exchange 302 includes a thrasher 416 that monitors each call and provides a call detail record. In particular, the call detail record includes, for example, the duration of the call, the parties involved, the buy rate of the terminating RESPORG 202, and the resulting cost associated with the call, to be paid by the terminating RESPORG 202 to the toll-free exchange 302 and in part to the originating RESPORG 102. In some embodiments, the thrasher saves the call records in a database 418. In embodiments, the database 418 is a cloud-based database, and in other embodiments, the database is hosted within the toll-free exchange 302. In an example, the database 418 is accessible by each registered RESPORG, which allows each RESPORG to view its call records. In some embodiments, the database 418 further provides each RESPORG with analytical data as well as data identifying each RESPORG participating on the toll-free exchange 302.

[0041] FIG. 5 is a flow chart illustrating an example method 500 performed by the policy router 408 of the toll-free exchange 302. As described herein, the policy router 408 includes the logic and decision-making of the toll-free exchange 302. Generally, the

policy router 408 is configured to route calls to terminating RESPORGs. As illustrated in the flow chart of FIG. 5, the policy router 408 begins at start block 500.

[0042] The method flows to the authentication step 504. In the authentication step 504, the policy router 408 determines whether the originating RESPORG 102 is an authorized RESPORG (for example, as being listed on an access control list). In some embodiments, the originating switch 404 communicates with the originating RESPORG 102 via the Session Initiation Protocol (SIP). In other embodiments, other protocols may be used. Accordingly, the policy router 408, using meta information (such as an IP address or other identifying information, depending on the connection protocol used) of the originating RESPORG 102, queries the database 410 to determine whether the originating RESPORG 102 is allowed to access the toll-free exchange 302 as determined by being listed on an access control list. In an example, the database 410 performs a look up of the meta information, such as the IP address of the originating RESPORG 102 to determine whether the originating RESPORG 102 is listed on a stored access control list. If the database 410 determines that the originating RESPORG 102 is not listed on the access control list, the database provides the policy router 408 with a negative response, such as a “no” response and the call is rejected, as indicated by step 506. If, however, the originating RESPORG 102 is listed on the access control list, the database 410 provides the policy router 408 with an affirmative response such as a “yes” response and the method 500 proceeds to the terminating RESPORG ID enrollment verification step 508.

[0043] In the terminating RESPORG ID enrollment verification step 508, the policy router 408 determines whether the terminating RESPORG 202 is enrolled with the toll-free exchange 302. As described with reference to FIG. 4, the policy router 408 uses the

ten digit toll-free number dialed or requested by the originating RESPORG 102 to query the SCP 412 for the terminating RESPORG ID. As described, the SCP 412 stores RESPORG IDs associated with all RESPORGs registered with the national SMS-800 database 402. Using the RESPORG ID result from the SCP 412 the policy router 408 then queries the database 410 to determine whether the RESPORG ID of the terminating RESPORG 202 is registered with the toll-free exchange 302. In the enrollment verification step 508, if the database 410 does not identify the terminating RESPORG 202 as being registered with the toll-free exchange 302, the database 410 returns, to the policy router 408, a “no” response and the method 500 proceeds to the request termination step 510.

[0044] In the request termination step 510, the policy router 408 determines whether the originating RESPORG 102 requested the toll-free exchange 302 to terminate calls to the terminating RESPORG 202 irrespective of the enrollment status of the terminating RESPORG 202. If, in the request termination step 510, the policy router 408 determines that the originating RESPORG 102 requested the toll-free exchange 302 to terminate calls irrespective of the enrollment status of the terminating RESPORG 202, the method proceeds to the connect call step 512. In some embodiments, this request is included in a message header of the toll-free call.

[0045] In the connect call step 512, because the terminating RESPORG 202 is not enrolled with the toll-free exchange 302, the policy router instead connects the call directly to the PSTN where traditional CIC based routing and termination will occur.

[0046] If, however, in the request termination step 510, the policy router 408 determines that the originating RESPORG 102 did not request to terminate calls to a non-

participating terminating RESPORG 202, the method 500 proceeds to step 506 and the call is rejected.

[0047] In the enrollment verification step 508, if the policy router 408 determines that the terminating RESPORG 202 is enrolled with the toll-free exchange 302, the method 500 flows to the rate comparison step 514. In the rate comparison step 514, the policy router 408 determines whether the floor rate of the originating RESPORG 102 is less than the buy-rate of the terminating RESPORG 202. Effectively, the policy router 408 determines whether it is cost beneficial for the originating RESPORG 102 to connect the call to the terminating RESPORG 202. If the policy router 408 determines that the floor rate of the originating RESPORG 102 is less than the buy-rate of the terminating RESPORG 202, the method 500 proceeds to the connect call step 516. In the connect call step 516, the policy router 408 uses the RESPORG ID of the terminating RESPORG 202 to connect the call.

[0048] If, however, the policy router 408 determines that the floor rate of the originating RESPORG 102 is greater than the buy-rate of the terminating RESPORG 202, the method 500 proceeds to step 506 and the call is rejected.

[0049] Thus, the method described in FIG. 5 routes a toll-free call using the RESPORG ID and without use or knowledge of the carrier identification code (CIC) associated with the terminating traditional public switched networks. The exchange also allows for modern innovations such as native video and high-definition voice calls that are not possible on traditional public switch networks. In addition, the method can connect calls using only one exchange and also maintains a single accounting of the cost associated with connecting the call. These features distinguish it over the prior art method

that may utilize multiple exchanges in which each exchange maintains its own switching infrastructure and accounting of the portion it handles.

[0050] FIG. 6 illustrates an exemplary architecture of a computing device that can be used to implement aspects of the toll-free exchange 302. In this disclosure, a laptop or personal computer 140, tablet computing device 140, phone 140, and servers 150 are example computing devices. FIG. 6 can be used to implement aspects of the present disclosure including any of the plurality computing devices, such as the policy router 408 as illustrated in and described with reference to FIG. 4. The computing device described in FIG. 6 can be used to execute the operating system, application programs, and software modules (including the software engines) described herein. By way of example, the computing device will be described below as the computing device 650. To avoid undue repetition, this description of the computing device will not be separately repeated herein for each of the other computing devices, including policy router 408, but such device can also be configured as illustrated and described with reference to FIG. 6.

[0051] The computing device 650 includes, in some embodiments, at least one processing device 602, such as a central processing unit (CPU). A variety of processing devices are available from a variety of manufacturers, for example, Intel or AMD. In this example, the computing device 650 also includes a system memory 604, and a system bus 606 that couples various system components including the system memory 604 to the processing device 602. The system bus 606 is one of any number of types of bus structures including a memory bus, or memory controller; a peripheral bus; and a local bus using any of a variety of bus architectures.

[0052] Examples of computing devices suitable for the computing device 650 include a server computer, a desktop computer, a laptop computer, a tablet computer, a mobile computing device (such as a smart phone, an iPod® or iPad® mobile digital device, or other mobile devices), or other devices configured to process digital instructions.

[0053] The system memory 604 includes read only memory 608 and random access memory 610. A basic input/output system 612 containing the basic routines that act to transfer information within computing device 650, such as during start up, is typically stored in the read only memory 608.

[0054] The computing device 650 also includes a secondary storage device 614 in some embodiments, such as a hard disk drive, for storing digital data. The secondary storage device 614 is connected to the system bus 606 by a secondary storage interface 616. The secondary storage devices 614 and their associated computer readable media provide nonvolatile storage of computer readable instructions (including application programs and program modules), data structures, and other data for the computing device 650.

[0055] Although the exemplary environment described herein employs a hard disk drive as a secondary storage device, other types of computer readable storage media are used in other embodiments. Examples of these other types of computer readable storage media include magnetic cassettes, flash memory cards, digital video disks, Bernoulli cartridges, compact disc read only memories, digital versatile disk read only memories, random access memories, or read only memories. Some embodiments include non-transitory media. Additionally, such computer readable storage media can include local storage or cloud-based storage.

[0056] A number of program modules, such as executable computer programs, can be stored in secondary storage device 616 or memory 604, including an operating system 618, one or more application programs 198, other program modules 622 (such as the software engines described herein, including one or more of the user accounts management engine 202, spending rules engine 204, merchant communication engine 206, transaction communication engine 208, and reporting engine 210), and program data 624. The computing device 650 can utilize any suitable operating system, such as Microsoft Windows™, Google Chrome™, Apple OS, and any other operating system suitable for a computing device.

[0057] In some embodiments, a user provides inputs to the computing device 650 through one or more input devices 626. Examples of input devices 626 include a keyboard 628, mouse 630, microphone 632, and touch sensor 634 (such as a touchpad or touch sensitive display). Other embodiments include other input devices 626. The input devices are often connected to the processing device 602 through an input/output interface 636 that is coupled to the system bus 606. These input devices 626 can be connected by any number of input/output interfaces, such as a parallel port, serial port, game port, or a universal serial bus. Wireless communication between input devices and the interface 636 is possible as well, and includes infrared, BLUETOOTH® wireless technology, 802.11a/b/g/n, cellular, or other radio frequency communication systems in some possible embodiments.

[0058] In this example embodiment, a display device 638, such as a monitor, liquid crystal display device, projector, or touch sensitive display device, is also connected to the system bus 606 via an interface, such as a video adapter 640. In addition to the

display device 638, the computing device 650 can include various other peripheral devices (not shown), such as speakers or a printer.

[0059] When used in a local area networking environment or a wide area networking environment (such as the Internet), the computing device 650 is typically connected to the network 644 through a network interface 642 as an Ethernet interface. Other possible embodiments use other communication devices. For example, some embodiments of the computing device 650 include a modem for communicating across the network.

[0060] The computing device 650 typically includes at least some form of computer readable media. Computer readable media includes any available media that can be accessed by the computing device 650. By way of example, computer readable media include computer readable storage media and computer readable communication media.

[0061] Computer readable storage media includes volatile and nonvolatile, removable and non-removable media implemented in any device configured to store information such as computer readable instructions, data structures, program modules or other data. Computer readable storage media includes, but is not limited to, random access memory, read only memory, electrically erasable programmable read only memory, flash memory or other memory technology, compact disc read only memory, digital versatile disks or other optical storage, magnetic cassettes, magnetic tape, magnetic disk storage or other magnetic storage devices, or any other medium that can be used to store the desired information and that can be accessed by the computing device 650. Computer readable storage media does not include computer readable communication media.

[0062] Computer readable communication media typically embodies computer readable instructions, data structures, program modules or other data in a modulated data

signal such as a carrier wave or other transport mechanism and includes any information delivery media. The term “modulated data signal” refers to a signal that has one or more of its characteristics set or changed in such a manner as to encode information in the signal. By way of example, computer readable communication media includes wired media such as a wired network or direct-wired connection, and wireless media such as acoustic, radio frequency, infrared, and other wireless media. Combinations of any of the above are also included within the scope of computer readable media.

[0063] The computing device illustrated in FIG. 6 is also an example of programmable electronics, which may include one or more such computing devices, and when multiple computing devices are included, such computing devices can be coupled together with a suitable data communication network so as to collectively perform the various functions, methods, or operations disclosed herein.

[0064] The various embodiments described above are provided by way of illustration only and should not be construed to limit the claims attached hereto. Those skilled in the art will readily recognize various modifications and changes that may be made without following the example embodiments and applications illustrated and described herein, and without departing from the true spirit and scope of the following claims. For example, rather using a general purpose processor with an operating system executing software programs, one of skill in the art will recognize that some or all of the functionality described above could be equally implemented on a purpose-built piece of hardware, in embedded systems in which the logic is stored on read only memory as firmware, or as an integrated circuit.

WHAT IS CLAIMED IS:

1. A method for routing toll-free calls through a toll-free exchange, the method, performed by a policy router, comprising:
 - receiving, from an originating responsible organization (RESPORG), a toll-free call, wherein the toll-free call is directed to a toll-free subscriber that is served by a terminating RESPORG;
 - querying a database to determine a RESPORG identification associated with the terminating RESPORG; and
 - routing, to the terminating RESPORG, the toll-free call based in part on the RESPORG identification.
2. The method of claim 1, wherein the originating RESPORG and the terminating RESPORG are enrolled in the toll-free exchange.
3. The method of claim 1, wherein the RESPORG identification is obtained by a service control point.
4. The method of claim 1, further comprising:
 - monitoring the toll-free call to generate a call detail record, wherein the call detail record includes at least one of: a time duration of the toll-free call, an identification of the originating RESPORG and the terminating RESPORG, buy-rate of the terminating RESPORG, a floor rate of the originating RESPORG, and a cost associated with the toll-free call.

5. The method of claim 4, wherein routing to the terminating RESPORG further comprises:

determining that the floor rate of the originating RESPORG is less than the buy rate of the terminating RESPORG.

6. The method of claim 1, further comprising:

determining whether the terminating RESPORG is enrolled with the exchange;

based on a determination that the terminating RESPORG is not enrolled with the exchange, rejecting the toll-free call; and

based on a determination that the terminating RESPORG is enrolled with the exchange, connecting the toll-free call to the terminating RESPORG.

7. The method of claim 6, wherein based on a determination that the terminating RESPORG is not enrolled with the exchange, further comprises:

determining whether the originating RESPORG requested to connect the toll-free call to a public switched telephone network.

8. The method of claim 1, wherein a carrier identification code (CIC) of the terminating RESPORG is not used by the method.

9. The method of claim 1, further comprising routing a media portion of the toll-free call through a media server farm, wherein the media server farm configures the media portion of the toll-free call for routing.

10. A method for routing toll-free calls without using a carrier identification code (CIC), comprising:

receiving, from an originating responsible organization (RESPORG), a toll-free call, wherein the toll-free call is directed to a toll-free subscriber that is served by a terminating RESPORG;

querying a database to determine a RESPORG identification associated with the terminating RESPORG; and

routing, to the terminating RESPORG, the toll-free call through a protected network based in part on the RESPORG identification.

11. The method of claim 10, further comprising:

determining whether the terminating RESPORG is enrolled with the exchange;

based on a determination that the terminating RESPORG is not enrolled with the exchange, rejecting the toll-free call; and

based on a determination that the terminating RESPORG is enrolled with the exchange, connecting the toll-free call to the terminating RESPORG.

12. The method of claim 10, further comprising:

monitoring the toll-free call to generate a call detail record, wherein the call detail record includes at least one of: a time duration of the toll-free call, an identification of the originating RESPORG and the terminating RESPORG, buy-rate of the terminating RESPORG, a floor rate of the originating RESPORG, and a cost associated with the toll-free call.

13. The method of claim 12, wherein routing to the terminating RESPORG further comprises:

determining that the floor rate of the originating RESPORG is less than the buy rate of the terminating RESPORG.

14. The method of claim 10, further comprising routing a media portion of the toll-free call through a media server farm, wherein the media server farm configures the media portion of the toll-free call for routing.

15. The method of claim 10, wherein receiving, from an originating RESPORG, a toll-free further comprises:

receiving, at a session border controller, a data portion of the toll-free call; and
receiving, at a media gateway server farm, a media portion of the call.

16. The method of claim 15, wherein routing, to the terminating RESPORG further comprises:

routing, from a second session border controller to the terminating RESPORG, the data portion of the toll-free call;

routing, from the media gateway server farm to the terminating RESPORG, the media portion of the call.

17. A system for routing a toll-free call using a toll-free exchange, the system comprising:

- at least one session border controller for routing a data portion of the toll-free call within the toll-free exchange;

- a policy router for determining, based at least on data included within the data portion, a responsible organization (RESPORG) identification (ID) associated with a terminating RESPORG;

- a service control point for storing the RESPORG ID of the terminating RESPORG;

- a database for storing enrollment information associated with the terminating RESPORG; and

- a media gateway server farm having one or more server computing devices for routing a media portion of the toll-free call.

18. The system of claim 17, further comprising a thrasher component for storing a call data record of the toll-free call.

19. The system of claim 17, further comprising

- a first session border controller for receiving the data portion of the toll-free call, wherein the first session border controller is further configured to read data from a header of the data portion of the toll-free call and to write data to the header of the data portion of the toll-free call; and

a second session border controller for routing the data portion of the toll-free call to the terminating RESPORG based in part on the data read from the data portion of the toll-free call.

20. The system of claim 17, wherein the database stores at least one of:
enrollment status information of one or more enrolled RESPORGs;
payment information of each of the one or more enrolled RESPORGs,
comprising:

a buy rate; and

a floor rate;

identification information of each of the one or more enrolled RESPORGs; and

an access control list for listing each enrolled RESPORG;

ABSTRACT

Aspects of this disclosure are directed to a method of routing toll-free telephone calls using a toll-free exchange, thereby minimizing the number of hand-offs, increasing the technological capability and reducing the ultimate cost of the toll-free call. Toll-free subscribers are generally assessed a cost based on each exchange plus the duration of the call. Subscribers are also limited to the decades old technological standards of PSTN switching. It is therefore an object of the present disclosure to minimize the number of exchanges, promote technological possibility and simplify the process of directing a toll-free telephone call by providing a toll-free exchange.

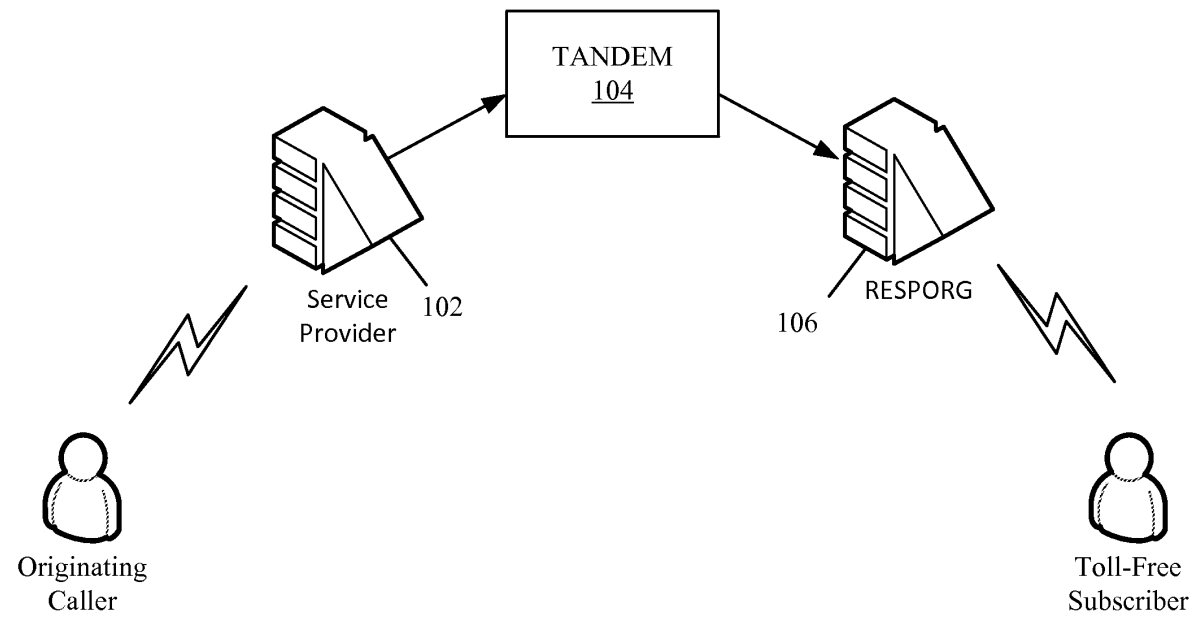


FIG. 1

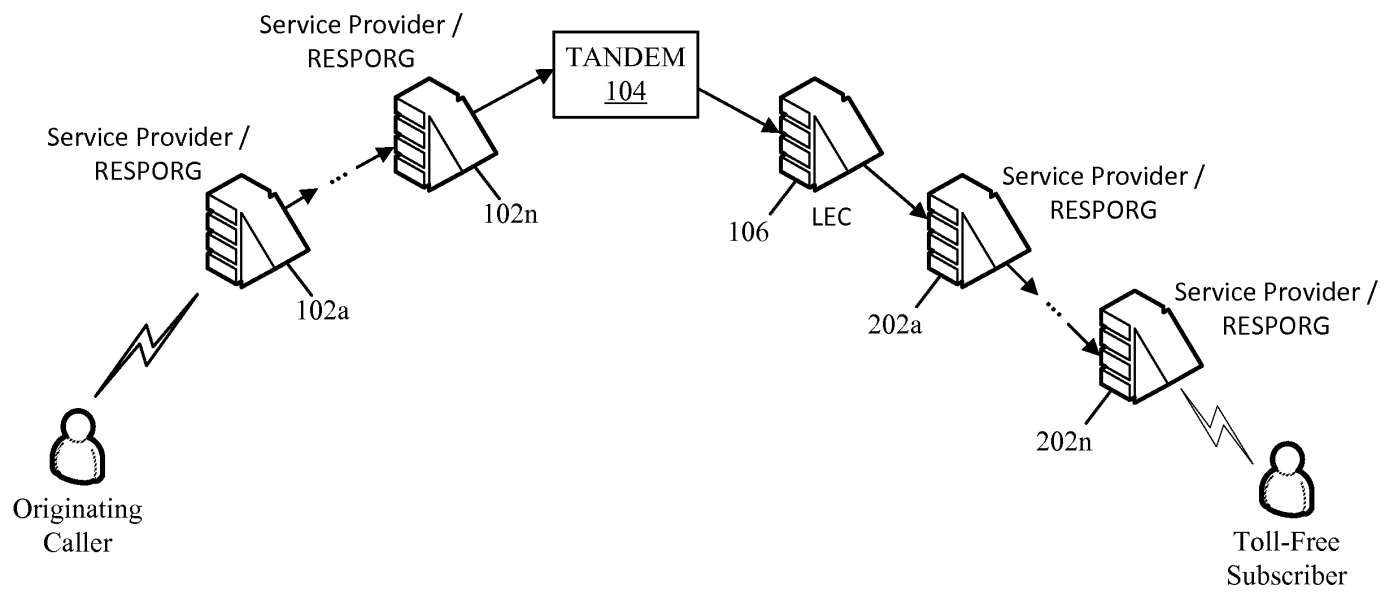


FIG. 2

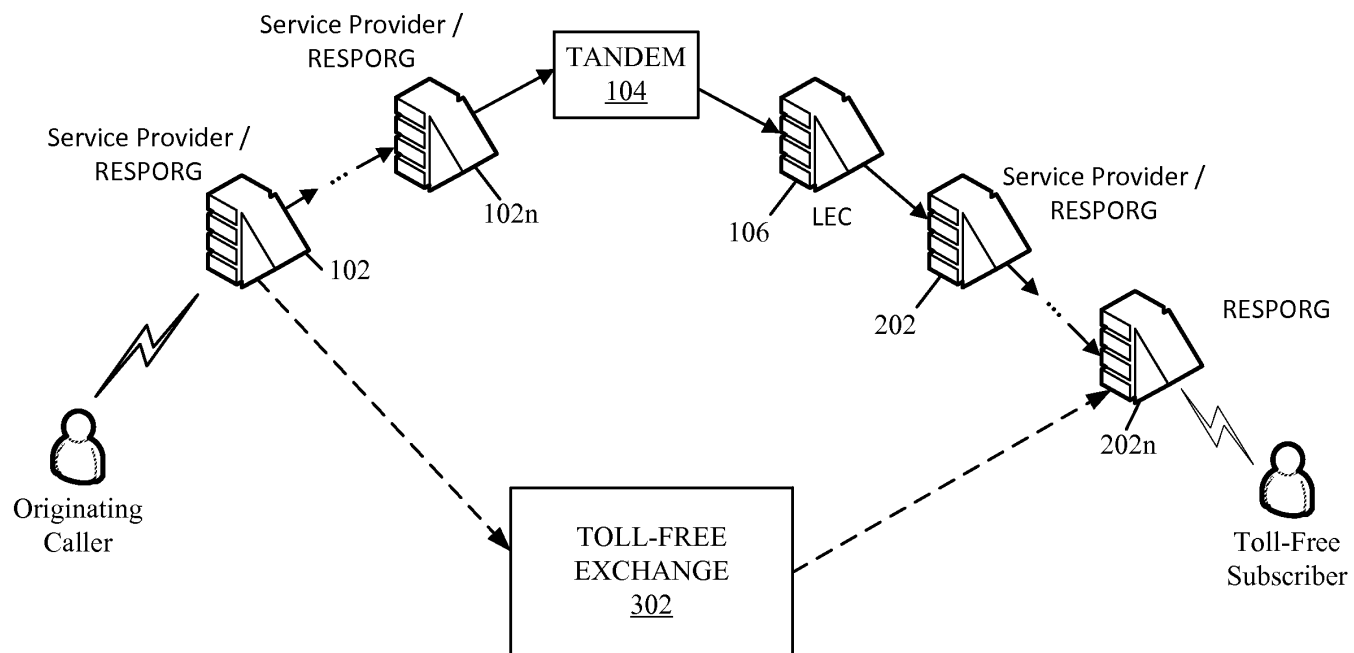
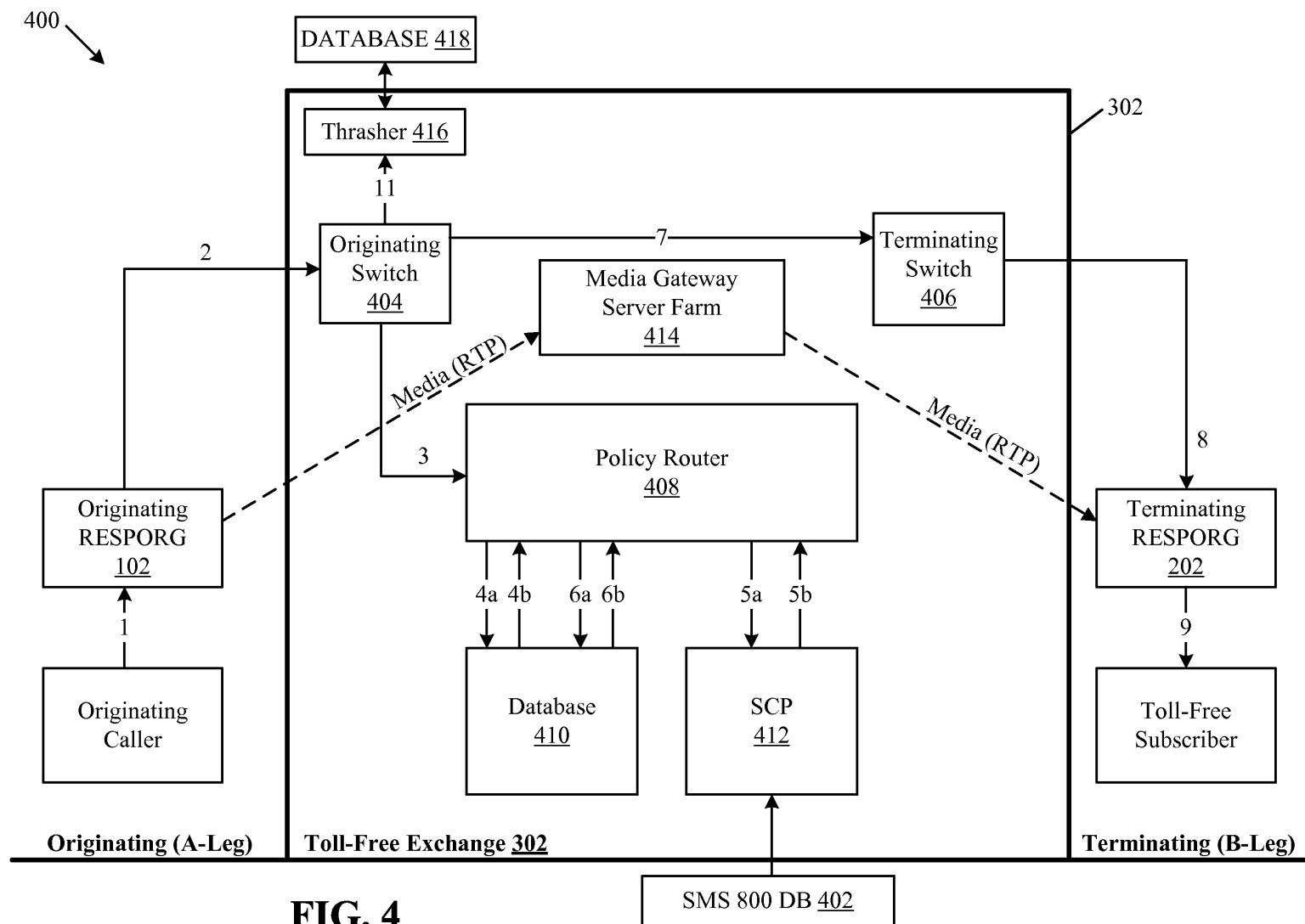


FIG. 3



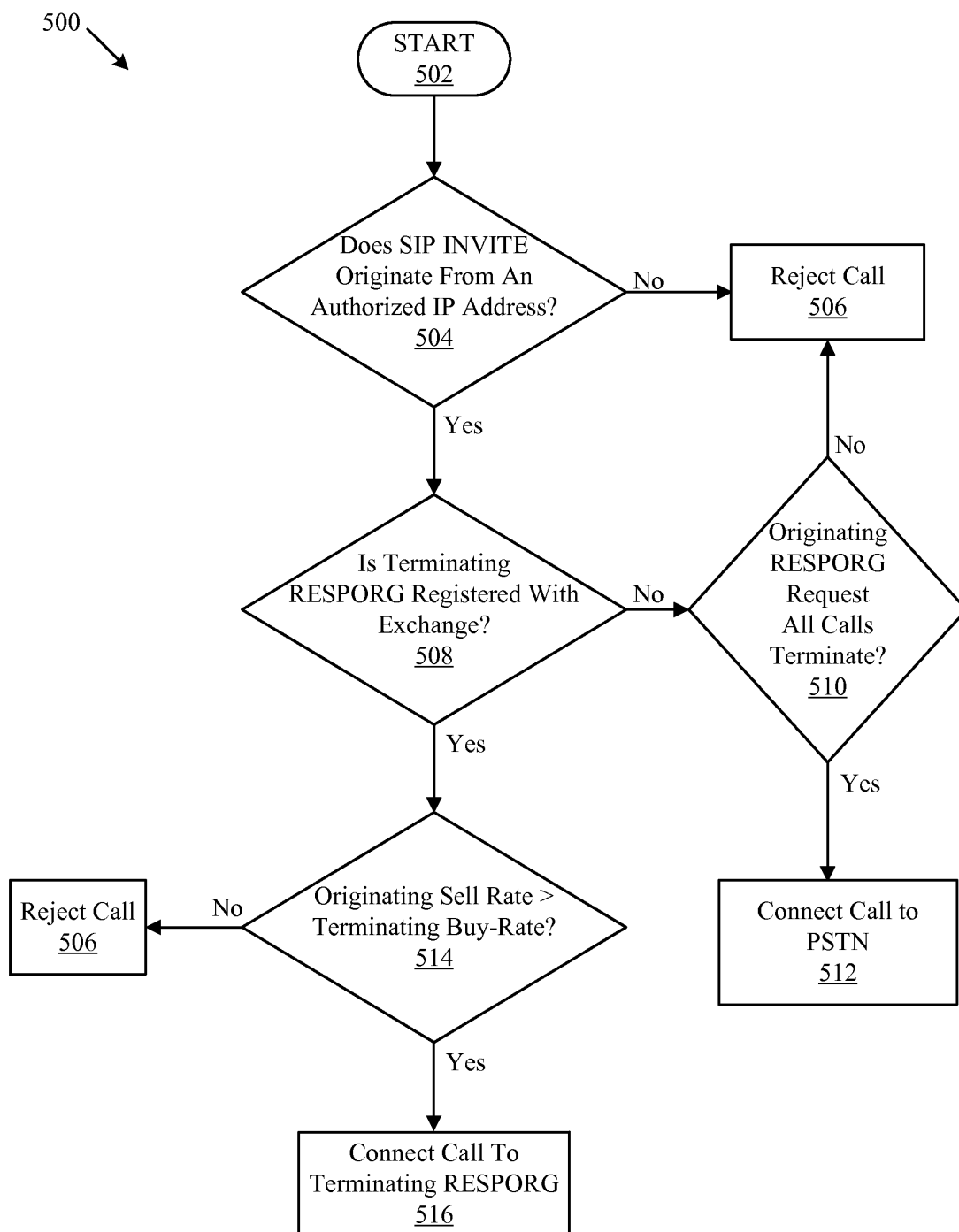


FIG. 5

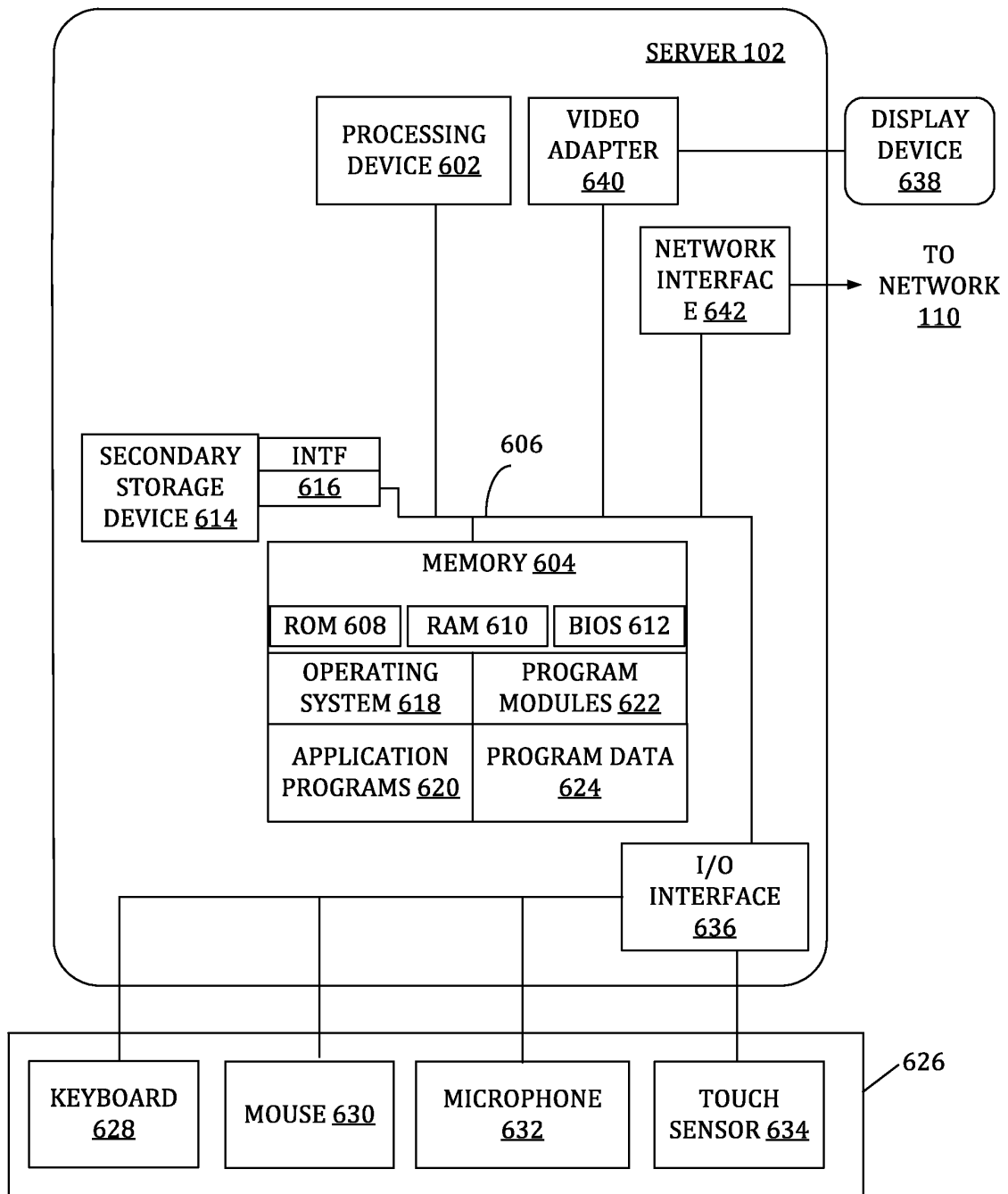


FIG. 6

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Application Number:				
Filing Date:				
Title of Invention:		ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE		
First Named Inventor/Applicant Name:		David Aldworth		
Filer:		George Cone Lewis/Aimee Stevens		
Attorney Docket Number:		40595.0002US01		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	70	70
Utility Search Fee	2111	1	300	300
Utility Examination Fee	2311	1	360	360
Pages:				
Claims:				
Miscellaneous-Filing:				
Late Filing Fee for Oath or Declaration	2051	1	70	70
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				800

Electronic Acknowledgement Receipt	
EFS ID:	23319727
Application Number:	14836396
International Application Number:	
Confirmation Number:	3541
Title of Invention:	ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE
First Named Inventor/Applicant Name:	David Aldworth
Customer Number:	23552
Filer:	George Cone Lewis/Aimee Stevens
Filer Authorized By:	George Cone Lewis
Attorney Docket Number:	40595.0002US01
Receipt Date:	26-AUG-2015
Filing Date:	
Time Stamp:	16:12:43
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$ 800
RAM confirmation Number	2702
Deposit Account	132725
Authorized User	LEWIS, GEORGE
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	2015-08-26- ADS-40595-0002US01.PDF	1818537	no	7
			36424d5119500b204d3d3920552bae55762d5ced		
Warnings:					
Information:					
2		2015-08-26- APPLICATION-40595-0002US01 .PDF	144704	yes	32
			ab732a0d0d5d5370b59fde0deb3ae32a5396dd84c		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	25	
	Claims		26	31	
	Abstract		32	32	
Warnings:					
Information:					
3	Drawings-only black and white line drawings	08-26-2015- DRAWINGS-40595-0002US01. PDF	212829	no	6
			fd05900a004b26c1d62e6067202014088c3f97cf		
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	36893	no	2
			3e2b13feb0b3cac43178542c94d8b4c9a57273d		
Warnings:					
Information:					
Total Files Size (in bytes):			221 2963		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 14/836,396				
APPLICATION AS FILED - PART I										
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY				
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)			
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	70		N/A				
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	300		N/A				
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	360		N/A				
TOTAL CLAIMS (37 CFR 1.16(i))	20	minus 20 = *	x 40 =	0.00	OR					
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 = *	x 210 =	0.00						
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00						
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00						
			TOTAL	730		TOTAL				
* If the difference in column 1 is less than zero, enter "0" in column 2.										
APPLICATION AS AMENDED - PART II										
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY		
AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x	=	OR	x	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=	OR	x	=
	Application Size Fee (37 CFR 1.16(s))							OR		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x	=	OR	x	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=	OR	x	=
	Application Size Fee (37 CFR 1.16(s))							OR		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.										



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/836,396	08/26/2015	David Aldworth	40595.0002US01

CONFIRMATION NO. 3541

INFORMAL NOTICE

23552
MERCHANT & GOULD P.C.
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903



Date Mailed: 09/10/2015

INFORMATIONAL NOTICE TO APPLICANT

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

The item(s) indicated below are also required and should be submitted with any reply to this notice to avoid further processing delays.

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
David Aldworth

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/mordonez/



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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
14/836,396	08/26/2015	2652	800	40595.0002US01	20	3

CONFIRMATION NO. 3541

FILING RECEIPT



23552
MERCHANT & GOULD P.C.
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903

Date Mailed: 09/10/2015

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

David Aldworth, Denver, CO;

Applicant(s)

David Aldworth, Denver, CO;

Power of Attorney: None

Domestic Applications for which benefit is claimed - None.

A proper domestic benefit claim must be provided in an Application Data Sheet in order to constitute a claim for domestic benefit. See 37 CFR 1.76 and 1.78.

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted: 09/09/2015

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/836,396**

Projected Publication Date: 03/02/2017

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE

Preliminary Class

379

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

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Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

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S/N 14/836,396

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor:	David Aldworth	Examiner:	Unassigned
Serial No.:	14/836,396	Group Art Unit:	2562
Filed:	August 26, 2015	Docket No.:	40595.0002US01
Title:	ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE		

Filed via EFS-Web

INFORMATION DISCLOSURE STATEMENT (37 C.F.R. § 1.97(b))

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Attention: Commissioner for Patents

With regard to the above-identified application, the items of information listed on the enclosed Form 1449 are brought to the attention of the Examiner.

This statement should be considered because it is submitted within three months of the filing date of the above-identified application, which is not an application under 37 C.F.R. § 1.53(d). Accordingly, no fee is due for consideration of the items listed on the enclosed Form 1449.

In accordance with 37 C.F.R. §1.98(a)(2), a copy of each foreign patent and/or a copy of each publication, other than U.S. patents and U.S. patent application publications, listed on the accompanying Form 1449 is enclosed.

No representation is made that a reference is “prior art” within the meaning of 35 U.S.C. §§ 102 and 103 and Applicants reserve the right, pursuant to 37 C.F.R. § 1.131 or otherwise, to establish that the reference(s) are not “prior art.”

Consideration of the items listed is respectfully requested. Pursuant to the provisions of M.P.E.P. 609, it is requested that the Examiner return a copy of the attached Form 1449, marked as being considered and initialed by the Examiner, to the undersigned with the next official communication.

Please charge any additional fees or credit any overpayment to Deposit Account No. 13-2725.



Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, MN 55402-0903
(612) 332-5300

Dated: 11/25/15

/George C. Lewis/
George C. Lewis
Reg. No. 53,214
GCL:RDP:ans

FORM 1449* INFORMATION DISCLOSURE STATEMENT IN AN APPLICATION (Use several sheets if necessary)	Docket Number: 40595.0002US01	Application Number: 14/836,396
	Inventor: David Aldworth	
	Filing Date: 08/262015	Group Art Unit: 2652

U.S. PATENT DOCUMENTS							
EXAMINER INITIAL	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
	7,953,218	05/31/2011	Sanchez et al.				
FOREIGN PATENT DOCUMENTS							
	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
	WO 00/59197	10/05/2000	PCT				
	WO 00/65850	11/02/2000	PCT				
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							

23552
PATENT TRADEMARK OFFICE

EXAMINER	DATE CONSIDERED
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form for next communication to the Applicant.	



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : H04Q 3/00, H04M 3/51, 7/00	A1	(11) International Publication Number: WO 00/65850 (43) International Publication Date: 2 November 2000 (02.11.00)
(21) International Application Number: PCT/US00/11454 (22) International Filing Date: 27 April 2000 (27.04.00) (30) Priority Data: 09/300,144 27 April 1999 (27.04.99) US (71) Applicant (for all designated States except US): TELERA [US/US]; 910 E. Hamilton Avenue, #200, Campbell, CA 95008 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): UPPALURU, Prem [US/US]; 11853 Shasta Spring Court, Cupertino, CA 95014 (US). SUNDARAM, Mukesh [US/US]; 5364 Gower Drive, San Jose, CA 95118 (US). (74) Agents: FAHMI, Tarek, N. et al.; Blakely, Sokoloff, Taylor & Zafman LLP, 7th floor, 12400 Wilshire Boulevard, Los Angeles, CA 90025 (US).		(81) Designated States: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>
(54) Title: METHOD AND APPARATUS FOR LOCAL ROUTING OF TOLL FREE CALLS 		
(57) Abstract A call is routed from a user location to a local call termination point by mapping a dialed toll free number to a POTS-routable number within a local rate calling area (LRCA) that includes the user location. Enhanced services (for example, protocol conversion, etc.) may take place at the local call termination point; and, subsequently, the call may be routed from the local call termination point to a remote call termination point by mapping the POTS-routable number to another number (e.g., a long distance number) associated with a long distance call termination point. The dialed toll free number is mapped to a POTS-routable number by determining an originating NPA-NXX for the user location, matching a routing NPA-NXX for the local call termination point associated therewith, and selecting a line number for the local call termination point according to routing NPA-NXX and the dialed toll free number. The routing NPA-NXX is selected from a first table and the line number is selected from a second table. These tables may be stored as part of an SMS/800 service management system database within a telephony network over which the scheme is deployed.		

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METHOD AND APPARATUS FOR LOCAL ROUTING OF TOLL FREE CALLS

RELATED APPLICATION

This application is related to, and hereby claims the priority benefit of and incorporates by reference, related Application No. 09/249,395 entitled "Point-of-Presence Call Center Management System", filed February 12, 1999, by Prem Uppaluru and Mukesh Sundaram, and assigned to the Assignee of the present invention.

FIELD OF THE INVENTION

The present invention relates to the field of telecommunication, and more particularly to the management of toll free telephone calls.

BACKGROUND

Local telephone companies (so-called local exchange carriers or LECs) provide users with local calling service within a service area known in the telecommunications industry as a Local Access Transport Area (LATA). When a user dials any number within his/her LATA, the LEC carries the call and charges the user at a specified local rate.

Many of the calls a user makes to other numbers in his/her LATA are "free" or subject only to a "local call" toll; that is, they are provided as part of the user's basic telephone service. These free calls are generally limited to calls within a certain radius of the user's phone. Calls dialed to numbers farther away, but still within the user's LATA, are known as "local toll calls" and like the "free" calls are carried by the user's LEC. Such calls are billed by the LEC at the prevailing local toll rate, which depends upon the distance and the time of day and are often subject to minimum one minute billing increments.

Calls outside of a LATA are not handled exclusively by a user's LEC. Instead, so-called interexchange carriers (IECs) route these long distance calls between LATAs and/or LECs. Each long distance telephone call made by a user includes fees that the IEC pays to the originating and terminating LECs over whose facilities that call also traveled. Those fees, which are designed to recover the costs to LECs for use of their facilities, are referred to as access charges. Generally, access charges are applied for both incoming and outgoing calls. Thus, they tend to apply even for businesses that use toll free (e.g., 800) service.

Under current government guidelines, these access charges are not incurred by so-called "enhanced services providers" (ESPs). In other words, although carriers (such as long distance telephone service providers) must pay local telephone companies for the use of their facilities, ESPs do not. So-called "enhanced" services are generally defined as services provided by telecommunications providers that involve subscriber interaction with stored data (i.e., database access), protocol conversion or a change in the form or content of the information sent or received by the caller. The tariff discrepancy comes about because the

Federal Communications Commission (FCC) classifies ESPs as "end users" rather than "carriers" for purposes of the access charge rules. Under current FCC rules, ESPs are considered end users when they purchase services from local telephone companies. Thus, ESPs pay the same rates as any other local phone service customer, and these rates are set separately in each state. By contrast, long-distance companies are considered carriers, and they pay interstate access charges regulated by the FCC. Examples of ESPs include Internet service providers (ISPs) and as recently as 1997, the FCC reaffirmed that the existing rate structure for ISPs should remain in place.

In the above-mentioned related application, a scheme for deploying local call centers in an effort to minimize long distance toll charges for call center service providers was described. According to that scheme, toll free long distance calls to a call center are redirected to a local call center. The local call center is configured to answer, service, queue and route the call at a local point of presence close to the point of call origination. The local call center may thus provide initial processing of incoming calls; holding and queuing the calls until live operators at the physical call center are available. Once the live operator becomes available, the local call center routes the locally queued calls to the physical call center.

The benefit of using a local call center in accordance with the above-described scheme is that the call center service provider will only incur long distance charges for the time that the caller is actually connected to a physical call center operator. Time spent in a hold queue or answering automated menu questions, etc., will not add to the long distance toll charges, because that portion of the call is treated as a local call, terminating at the local call center. Nevertheless, it would reduce costs even further if the call center service provider were able to leverage the access charge exemption currently enjoyed by ESPs.

SUMMARY OF THE INVENTION

In one embodiment, a scheme for routing a call from a user location to a local call termination point is provided. In general, such routing is accomplished by mapping a dialed toll free number to a POTS-routable number within a local rate calling area (LRCA) that includes the user location. Enhanced services (for example, computer processing and/or information access, etc.) may take place at the local call termination point; and, subsequently, the call may be routed from the local call termination point to a remote call termination point by mapping the POTS-routable number to another number (e.g., a long distance number) associated with a long distance call termination point. In some cases, the local call termination point may be a local call center configured to answer, service, queue and/or route the call. Where protocol conversion operations take place at the local call termination point, the call may be transported over a network configured to use the Internet protocol (IP).

It should be noted that the local call termination point may be located outside of the caller's LATA. Under current tariff structures, where enhanced services are provided such backhauling of calls across a LATA boundary will not incur long distance toll charges. Hence, in one embodiment the present scheme takes advantage of this tariff structure by deploying local call termination points only in selected LATAs and backhauling calls from other LATAs to those locations.

Mapping the dialed toll free number to a POTS-routable number generally includes determining an originating NPA-NXX for the user location, matching a routing NPA-NXX for the local call termination point associated therewith, and selecting a line number for the local call termination point according to routing NPA-NXX and the dialed toll free number. In one particular embodiment, the routing NPA-NXX is selected from a first table and the line number is selected from a second table. These tables may be stored as part of an SMS/800 service management system database within a telephony network over which the scheme is deployed. In other cases, the tables may make up a portion of a database that includes call routing information to provide the above-described functionality. Such a database may be stored, for example, at one or more regional service control points within the telephony network.

Thus, the present scheme provides for a telephony network configured to route a call to a dialed toll free number from a user location to a local call termination point by mapping an NPA-NXX of the user location to an NPA-NXX of the local call termination point and selecting a line number of the local call termination point using the NPA-NXX of the local call termination point and the dialed toll free number. Other features and advantages of the present scheme will be described further below.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention is illustrated by way of example and not limitation in the figures of the accompanying drawing in which like references indicate similar elements and in which:

Figure 1 illustrates portions of a conventional telephone network involved in routing a toll free call;

Figure 2 illustrates portions of a telephone network configured to route toll free calls in accordance with the methods of the present invention; and

Figure 3 illustrates one example of a local call center configured to perform a protocol conversion operation during the routing of a toll free call in accordance with an embodiment of the present invention.

DETAILED DESCRIPTION

Described herein is a scheme that allows for the identification of selected toll free numbers, conversion of these toll free numbers to POTS (plain old telephone service)-

routable numbers, and routing over local access trunks (e.g., to local call centers) for service. The scheme includes a call mapping process that interfaces with the SMS/800 database service management system for toll free call routing. This mapping enables systematic specification of the called number and the carrier identification code (CIC) fields in the SMS/800 system so that each originating call may be directed over the proper local trunk for termination to the correct port at a local call center. This mapping includes the extraction of information from both the calling and called number to compose the local routing number.

The present scheme thus enables a number of distinct nationwide toll free numbers to be intercepted for local routing and processing at local call centers and is described below by way of various embodiments that include specific structures and methods. Notwithstanding these particulars, however, it should be remembered that alternative embodiments that include alternative structures and methods may be employed without departing from the broader principles of the invention described herein.

Before describing the illustrated embodiments in detail, it may be helpful to discuss the overall operating environment in which the methods and apparatus of the present scheme may be deployed. The present scheme is particularly well suited for use with toll free service, which is a telecommunication service wherein subscribers are assigned a number (e.g., an 800 or 888 number, soon to be expanded to include other three-digit codes) that allows their customers to reach them without toll charges. American Telephone & Telegraph (AT&T) first introduced 800 "toll-free" service in 1967. At that time AT&T was the only IEC and all LECs automatically routed all 800 calls directly to AT&T points of presence (POP) without performing any translation from the dialed 800 number to the true terminating number. In practice, the LECs screened incoming calls, looking for a characteristic set of first three digits (e.g., 800). Upon recognizing this set of first three digits, the LEC would hand over the call routing responsibilities to AT&T, which would decode the rest of the toll free number being dialed. This included performing the number translations and service area validation screenings. In this scheme, every digit in the dialed number had significance for screening and call routing. Thus, it was limited in its capabilities and required users to have separate 800 numbers for in-state and out-of-state calls.

In 1981, AT&T introduced its common channel interoffice signaling (CCIS) network and the network services system (NSS) database for providing its own centralized facility for 800 number translation and service provisioning. The system required an LEC to screen the first three digits of the dialed number (e.g., 800) and deliver the area code for the call's point of origin. AT&T's database would then determine whether the call was from an area for which the subscriber had purchased service and, if so, would translate the called number (800 XXX-XXXX) into a standard ten-digit number which could be routed over

AT&T's network. The use of CCIS and the NSS database enabled AT&T to offer customized toll free numbers and other features that gave the service subscriber some control over how and where calls were routed through the network.

After divestiture, AT&T retained the rights to its CCIS network and the NSS database system. However, AT&T made provision for the regional Bell operating companies (RBOCs) to lease database capacity to offer their own intra-LATA toll free service. The plan did not allow the RBOCs to use the NSS to provide exchange access services to other IECs.

In 1983 the federal courts allowed the RBOCs to implement a modified version of a pre-existing serving arrangement for an interim period until the RBOCs could develop their own 800 database system. This interim service was commonly referred to as the "NXX plan" and used the first six digits of the toll free number (e.g., 800 NXX) to identify the appropriate carrier. The North American Numbering Plan Administrator (NANPA) assigned individual NXX codes to carriers that participated in this arrangement.

A major limitation of the six-digit screening technique was that subscribers had to change toll free numbers in order to change service providers. This limitation arose because specific NXX codes were assigned to individual carriers. Changing carriers thus entailed added costs for subscribers, including new advertising, changes to documentation and forms, and potential loss of business due to customer familiarity with current toll free numbers. The six-digit screening arrangement also limited the selection of toll free numbers that a carrier could offer its customers.

In response to complaints regarding the six digit screening process by the RBOCs, the Federal Communications Commission (FCC) determined that a national database system for toll free access would offer both advantages and disadvantages as compared with NXX access. Such a system would enable toll free number portability and thus facilitate competition, since a customer could change carriers without changing numbers. Although the benefit of such a system was recognized, it was not until 1991 that the FCC adopted a comprehensive order that mandated the implementation of nationwide toll free number database access.

Under these and subsequent FCC rulings the management and assignment of toll free numbers transitioned from the interim 800 NXX plan to ten digit management in a national 800 Service Management System (SMS/800) database. The SMS/800 is a computer system that provides an environment for entering call-processing data (e.g., routing information) regarding toll free numbers.

As shown in Figure 1, when a user 10 dials a toll free (e.g., an 800) number, the call is intercepted at a local service switching point (SSP) 12 so that a query can be directed to determine how the call should be routed. The SSP 12 obtains the routing information from a regional database known as a service control point (SCP) 14. There are ten regional SCP

databases in the United States, independently owned by some of the RBOCs and the long distance carriers. The SCPs each receive (periodically, e.g., every 15 min. or so) routing information that has been entered in the SMS/800 system 16. Thus, upon receiving a query from an SSP, an SCP is able to return the carrier identification code (CIC) of the carrier that will transport the call to its destination number along with appropriate routing information. The routing information may be a translated "plain old telephone service" (POTS) number or the dialed toll free number and routing may be based on special considerations such as the time of day, day of the week, percentage allocation, etc. Upon receiving the CIC (a four digit numeric code that forms part of a larger carrier access code or CAC) and routing information, the SSP 12 either routes the call using the LEC network or hands the call to an IEC at the IEC's POP, based on whether a POTS number or an 800 number is returned.

Against this backdrop refer now to Figure 2 and suppose a user 20 dials a toll free number to access a remote call center located in a distant LATA. Further suppose that the remote call center has arranged for the call to be routed to an appropriate local call center (LCC) in accordance with the methodologies described in the above-cited co-pending application. Initially, the call routes over the local loop to the serving central office SSP 22 of the LEC. At SSP 22 the call is recognized as a toll free call and, accordingly, the call is suspended while a query for routing instructions is made to the regional SCP 24. The SCP 24 gathers the associated carrier identification and routing instructions from a local replica of the SMS/800 system database and passes the information to SSP 22. The routing instructions returned to SSP 22 in accordance with the present scheme provide that for each designated called toll free number, the calling and called number will be mapped to a particular POTS-routable number and trunk assignment for a local call center within the user's local rate calling area. Along with these instructions, a special CIC having a value of "0110" is returned to SSP22. This CIC instructs the SSP22 to route the calls over its own network (i.e., that of the LEC). This ensures that the call remains on the LEC network.

The manner in which these database routing instructions are determined is described below, where all phone numbers are of the form NPA-NXX-XXXX, with NPA being a valid area code, N being any digit between 2-9 and X being any digit between 0-9. These numbers are associated with local rate centers. The origination and termination NPA-NXX determine the toll charge for a call. Usually, one or more NPA-NXXs fall into the same rate center and calls between such numbers are considered local calls and are referred to below as Local Rate Calling Areas (LRCA). An LCC may service multiple LRCAs through proper choice of call termination NPA-NXXs from each LRCA.

Suppose the toll-free call originated in an LRCA with NPA-NXX as its originating prefix and suppose further that the called toll-free number is 800-XXX-XXXX. For each LCC that services one or more LRCAs, two tables are constructed, one with two columns

and the other with three. In the first table (an example of which is shown in Table 1 below), one column (e.g., the left hand column) is a list of all valid originating NPA-NXXs for all LRCAs serviced by the LCC. In the second column (e.g., the right hand column) are the associated NPA-NXX numbers for local routing purposes. In the second table (an example of which is shown in Table 2 below), the left-most column lists all local routing NPA-NXX numbers serviced by LCC (these values corresponds to those in the second column of the first table noted above). The middle column lists all the valid called toll free numbers handled by the LCC. Finally, the right-most column provides the associated unique XXXX line numbers for each toll free number.

The routing instructions for calls originating in this LRCA are constructed from these two tables as follows. First, for each toll free call, the originating NPA-NXX is looked up in the left-most column of the first table and the matching routing NPA-NXX is selected from the right-most column of the first table. Second, the routing NPA-NXX and the called toll free number together are looked up in the appropriate columns of the second table and the matching unique XXXX line number is selected from the right-most column thereof. Third, the NPA-NXX selected during the first step is combined with the XXXX line number selected during the second step to form the POTS-routable number handled by the LCC for the original toll free number in that LRCA.

<u>Table 1</u>		<u>Table 2</u>		
<u>Column 1</u>	<u>Column 2</u>	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
408 223	408 660	408 660	800 999-7087	2400
408 224	408 660	408 660	888 483-0101	2401
408 225	408 660	408 660	877 663-3458	2402
408 226	408 660	408 660	800 225-9000	2403
408 227	408 660	408 660	800 543-1894	2404
408 229	408 660	408 660	800 629-7413	2405
408 238	408 660	408 660	888 358-1234	2406
408 239	408 660	408 660	888 439-7564	2407
408 251	408 660	408 660	877 510-1289	2408
408 252	408 660	408 660	888 555-1212	2409
408 253	408 660	415 651	800 999-7087	1980
408 256	408 660	415 651	888 483-0101	1981
408 257	408 660	415 651	877 663-3458	1982
408 258	408 660	415 651	800 225-9000	1983
408 268	408 660	415 651	800 543-1894	1984
408 270	408 660	415 651	800 629-7413	1985

LRCA

LRCA

LRCA	415 211	415 651	415 651	888 358-1234	1986
	415 214	415 651	415 651	888 439-7564	1987
	415 225	415 651	415 651	877 510-1289	1988
	415 241	415 651	415 651	888 555-1212	1989
	415 252	415 651	510 319	800 999-7087	8800
	415 268	415 651	510 319	888 483-0101	8801
	415 680	415 651	510 319	877 663-3458	8802
	510 236	510 319	510 319	800 225-9000	8803
	510 238	510 319	510 319	800 543-1894	8804
	510 241	510 319	510 319	800 629-7413	8805
	510 243	510 319	510 319	888 358-1234	8806
	510 245	510 319	510 319	888 439-7564	8807
	510 255	510 319	510 319	877 510-1289	8808
	510 257	510 319	510 319	888 555-1212	8809
	510 261	510 319			
	510 730	510 319			

As an example, consider a call originating at 408-223-1111 and suppose that user dials the toll-free number 800-999-7087, associated with a remote call center (e.g., a customer service call center for a business). The call is first intercepted at the SSP associated with the user's calling number and appropriate routing information is requested. The routing information provided is determined using Tables 1 and 2. From Table 1, the user's originating NPA-NXX (in this case 408-223) is determined to be in LRCA 1. This NPA-NXX is mapped to a serving NPA-NXX for the local call center established by the business in that LRCA. In this case, the local call center is identified by the NPA-NXX 408-660 (as is the case for all calls originating in LRCA 1).

Now, using the NPA-NXX of the local call center and the dialed toll free number (408-660 and 800-999-7087, respectively), a corresponding line number is obtained from Table 2. In this case, that line number is 2400. This line number extension is combined with the NPA-NXX of the local call center to produce the POTS-routable number 408-660-2400. Thus, the dialed toll free number would be routed to 408-660-2400. Similarly, a call originating at 415-211-1234 (a number originating in LRCA 2) but dialing the same toll-free number, would be routed to 415-651-1980. The LCC that receives the call on either of the above numbers may treat the calls in the same fashion, as the routing numbers are local aliases to the toll-free number 800-999-7087.

In summary, the routing NPA-NXX is determined by the calling number NPA-NXX. The called toll free number determines the routing XXXX line number. The appropriate

POTS-routable number (NPA-NXX-XXXX) and the special CIC (i.e., 0110) are each assigned, so that the call may be routed over a local access trunk to an LEC's local point of interconnection (POI). The SMS/800 database is programmed according to the above instructions for each LRCA serviced by an LCC. In the remaining LRCAs (i.e., those that are not serviced by an LCC), the SMS/800 database is programmed to route the toll free call without translation and with a CIC assigned to the desired IXC. This ensures that in each LRCA serviced by an LCC, the toll free calls are routed to it whereas in the remaining LRCAs, the calls are routed to the IXC network. Thus, any SMS/800 database query originated by a SSP is completed according to the routing instructions described above and call control returns to the serving central office. The call routes over local access trunk facilities extending from the serving central office to the LCC or routes to the IXC network if no such LCC exists for the LRCA.

At an LCC, each call may be processed by a computer telephony server as is common in the call center industry. Such a server is able to receive the POTS-routable number to which the toll free number was mapped by the SMS/800 database. For example, using a table similar to Table 3 below, the LCC can determine which toll free number was called and process the call accordingly.

Table 3

Dialed Toll Free #	Mapping Local #
800 999-7087	408 660-2400
	415 651-1980
	510 319-8800
\	\
\	\
\	\

Based on this unique number, the server may create instructions for acceptance, call control, and the corresponding voice response for that number (for example as described in the above-cited co-pending application). Note, a similar table (or at least the information contained therein) may be used within the SMS/800 system to provide mappings between dialed toll free numbers and local numbers (and vice versa).

The local routing of toll free calls described above enables several advanced telecommunications applications to be deployed in a highly cost-effective manner. One such application is a nationwide enhanced toll free voice communications service. This service may be implemented using computer telephony servers at the LCCs, which use the POTS-routable number obtained by the local routing of a toll free number and further maps it to a matching POTS-routable long distance number or another matching toll free number. The server may optionally interact with the caller and then route the call to the mapped

number using the public switched telephony network (PSTN). The service can also use the POTS-routable number obtained by the local routing of a toll free number and further map it to a matching Internet Protocol network address and route the call to that address over a local network and/or the Internet transporting the voice information over Internet protocol (IP).

An example of this operation is shown in Figure 3. Here a local call center 30 includes two modules 32 and 34. The modules 32 and 34 may be servers or other computer-based components coupled through a network that utilizes IP to transport information between the modules. Note, in some cases, modules 32 and 34 may be geographically distributed such that they are not physically co-located. In such cases, the two modules may be coupled through a private wide area network and/or the Internet. In other cases, the two modules 32 and 34 may be physically close to one another, coupled through a local area network or other network that utilizes IP or another data transmission protocol.

Regardless of how the modules are coupled in communication with one another, their basic functionality remains the same. Module 32 receives voice communications from the user over the local access trunk facilities extending from the serving central office as discussed above. That is, module 32 is coupled to receive the user-initiated call to the toll free number through a port coupled to a line corresponding to the POTS-routable number to which that call was mapped. At module 32, that POTS-routable number is mapped to an IP address corresponding to module 34. Such mapping may be done using a look-up table or other mapping arrangement common in the voice-over-IP arts.

Having so mapped the POTS-routable number to an IP address, module 32 is now able to transmit the voice data from the user to module 34 using IP. The voice-to-IP conversion may be performed using techniques common in the art. For example, the voice data may be sampled at an appropriate rate and the resulting digital information may be packetized according to the Internet protocol and transported accordingly across communication link 36 to module 34.

At module 34, the digital data may be reconstructed to voice data (if so desired), and the call mapped to a POTS (or even toll free) number associated with the called business. Such a mapping may be done using techniques common in the art, for example using a look-up table that associates the incoming IP address used by module 32 with an outgoing POTS number. Thus, the call from the user will have been first mapped to a local POTS-routable number to reach LCC 30, then mapped to an IP address for transport between modules 32 and 34, then finally mapped to a POTS (or other) number for final connection to the called party (e.g., the remote call center).

An example of such mapping may make use of tables having the following structures. Table 4 provides the structure for a mapping of a POTS number to any of an IP

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address (e.g., to reach module 34), a long distance number (e.g., a customer number) and/or a proxy toll free number (e.g., of the distant call center).

Table 4

Local POTS #	IP Address	Long distance #	800 #
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At module 34, a table having the structure of Table 5 may be used to map an IP address to any of a local POTS #, a long distance number or a proxy 800 number in a similar fashion.

Table 5

IP Address	Local POTS #	Long distance #	800 #
------------	--------------	-----------------	-------

Thus, such tables provide multiple translation mechanisms to complete and/or facilitate the required call routing.

By including an IP leg in the call in the above-described example, the call center provider qualifies for the enhanced services exception to the access charges that would otherwise apply to the long distance call between the LCC and the remote call center. In other words, the entire call from the user has now been made truly "toll free". Consider that the call from the user first terminates at the LCC, within the user's LRCA. Thus, this portion of the call is subject only to local rates and not long distance charges. Then, because of the enhanced services being provided at the LCC (e.g., the protocol conversion operations discussed above or other enhanced services such as voice response, computer processing, database lookups, and/or information accessess, the call from the LCC to the remote call center is exempt from access charges under the current FCC regulations. Thus, both legs of the call are free from access charges, and the call center service provider may pass these savings along to its customers.

Thus a scheme for local routing of toll free calls has been described. Although discussed with reference to specific exemplary embodiments thereof, it should be evident that various modifications and changes may be made to these embodiments without departing from the broader spirit and scope of the invention as set forth in the appended claims. Accordingly, the specification and drawings are to be regarded in an illustrative rather than a restrictive sense.

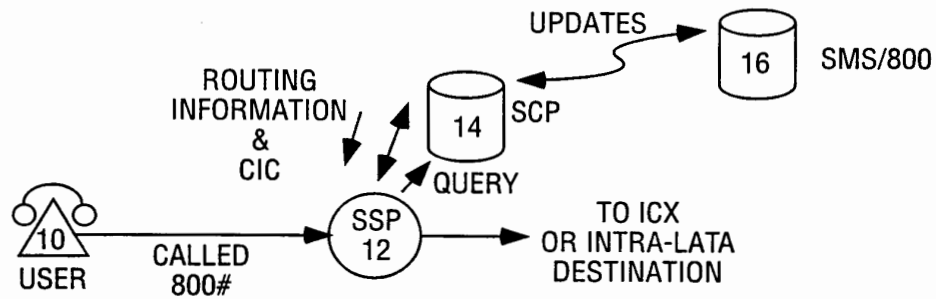
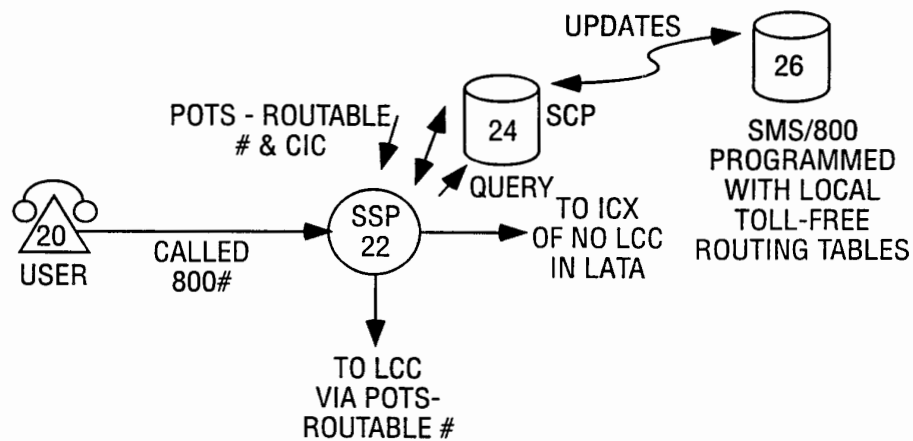
CLAIMS

What is claimed is:

1. A method comprising:
routing a call from a user location to a local call termination point by mapping a dialed toll free number to a POTS-routable number within a local rate calling area (LRCA) that includes the user location;
performing enhanced services at the local call termination point; and
routing the call from the local call termination point to a remote call termination point by mapping the POTS-routable number to another number associated with a long distance call termination point.
2. The method of claim 1 wherein the local call termination point comprises a local call center configured to answer, service, queue and/or route the call.
3. The method of claim 1 wherein the enhanced services include transporting the call over a network configured to use the Internet protocol (IP) for data transmissions.
4. The method of claim 1 wherein mapping the dialed toll free number to a POTS-routable number comprises determining an originating NPA-NXX for the user location, matching a routing NPA-NXX for the local call termination point associated therewith, and selecting a line number for the local call termination point according to routing NPA-NXX and the dialed toll free number.
5. The method of claim 4 wherein the routing NPA-NXX is selected from a first lookup table and the line number is selected from a second lookup table.
6. The method of claim 5 wherein information comprising the first and second lookup tables is stored as part of an SMS/800 service management system database.
7. The method of claim 6 wherein the number associated with the remote call termination point comprises a long distance telephone number.
8. A database comprising call routing information that includes an NPA-NXX and unique line number for a local call termination point, the NPA-NXX and line number being accessible by providing an NPA-NXX of a calling party and a dialed toll free number.

9. The database of claim 8 being organized as a pair of tables, a first of the tables associating the NPA-NXX of the calling party and the NPA-NXX of the local call termination point and a second of the tables associating the NPA-NXX of the local call termination point and the dialed toll free number with the unique line number.
10. An SMS/800 service management system comprising the database of claim 8.
11. A telephony network configured to route a call to a dialed toll free number from a user location to a local call termination point by mapping an NPA-NXX of the user location to an NPA-NXX of the local call termination point and selecting a line number of the local call termination point using the NPA-NXX of the local call termination point and the dialed toll free number.
12. The telephony network of claim 11 wherein the local call termination point is within a local rate calling area (LRCA) that includes the user location.
13. The telephony network of claim 12 wherein the local call termination point comprises a local call center configured to answer, service, queue and/or route the call.
14. The telephony network of claim 13 comprising an SMS/800 service management system including a database having stored therein routing information that allows for mapping the NPA-NXX of the user location to the NPA-NXX of the local call termination point and determining the line number of the local call termination point using the NPA-NXX of the local call termination point and the dialed toll free number.
15. The telephony network of claim 14 wherein routing information is stored in a pair of tables, a first of the tables associating the NPA-NXX of the user location to the NPA-NXX of the local call termination point and a second of the tables associating the line number of the local call termination point with the NPA-NXX of the local call termination point and the dialed toll free number.
16. The telephony network of claim 15 wherein the local call center is further configured to route the call over a network using Internet protocol.
17. The telephony network of claim 16 wherein the local call center is further configured to route the call to a remote call center after routing the call over the network.
18. The telephony network of claim 17 wherein the call is routed to a long distance number associated with the remote call center.

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**FIG. 1****FIG. 2****SUBSTITUTE SHEET (RULE 26)**

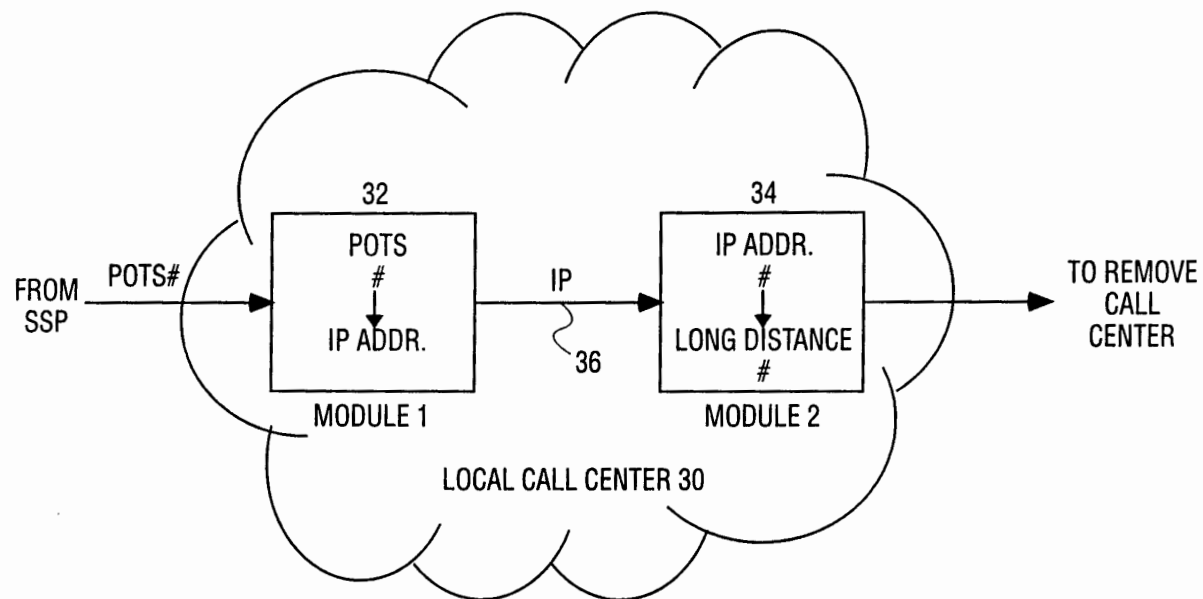


FIG. 3

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 00/11454

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 H04Q3/00 H04M3/51 H04M7/00		
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) IPC 7 H04Q H04M		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data, PAJ, INSPEC, COMPENDEX		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 191 860 A (WEBER ROY P) 4 March 1980 (1980-03-04) column 4, line 34 - line 63 figures 1,2 ---	1-18
A	US 4 757 267 A (RISKIN BERNARD N) 12 July 1988 (1988-07-12) column 2, line 37 -column 3, line 47 ---	1-18
A	EP 0 498 594 A (AMERICAN TELEPHONE & TELEGRAPH) 12 August 1992 (1992-08-12) column 3, line 25 -column 4, line 29 --- -/--	1-18
☒ Further documents are listed in the continuation of box C. ☒ Patent family members are listed in annex.		
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Date of the actual completion of the international search 23 August 2000		Date of mailing of the international search report 04/09/2000
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INTERNATIONAL SEARCH REPORT

International Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	HOLLEVOET F: "THE ANY-MEDIA CALL CENTRE" BRITISH TELECOMMUNICATIONS ENGINEERING, GB, BRITISH TELECOMMUNICATIONS ENGINEERING. LONDON, vol. 17, no. PART 02, 1 August 1998 (1998-08-01), pages 155-159, XP000777437 ISSN: 0262-401X the whole document -----	1-18

INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/US 00/11454

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4191860 A	04-03-1980	CA 1129054 A	03-08-1982
US 4757267 A	12-07-1988	CA 1294346 A	14-01-1992
EP 0498594 A	12-08-1992	US 5136636 A	04-08-1992
		CA 2054505 A,C	08-08-1992
		DE 69229069 D	10-06-1999
		DE 69229069 T	09-12-1999
		ES 2133302 T	16-09-1999
		JP 2705864 B	28-01-1998
		JP 4360448 A	14-12-1992

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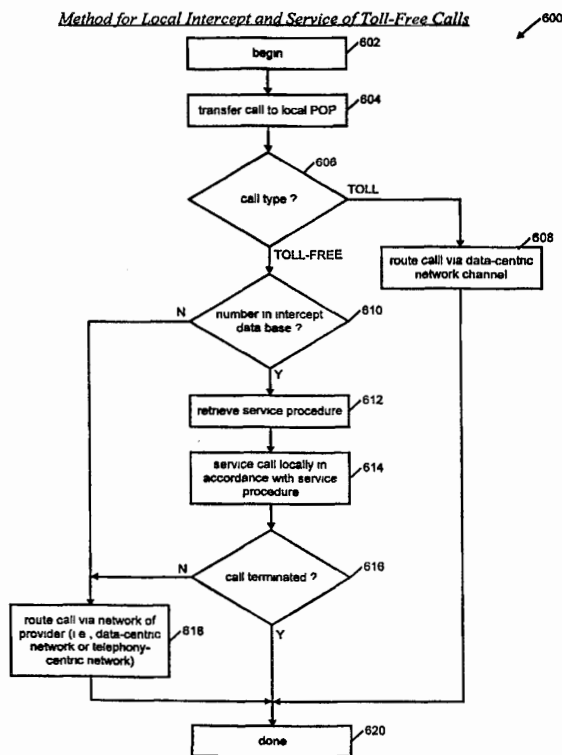
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(54) Title: APPARATUS AND METHOD FOR LOCAL INTERCEPT OF TOLL-FREE CALLS

(57) Abstract

An apparatus and method are provided for locally intercepting and servicing a toll-free call, prior to incurring charges associated with routing of the toll-free call over a corresponding long-distance carrier channel. The apparatus includes a telephony-centric network server (408) and a central call management server (402). The telephony-centric network server (408) detects initiation of the toll-free call (602-606), it intercepts the toll-free call (610), and it services the toll-free call prior to accessing the corresponding toll-free carrier channel (612-616). The toll-free call is serviced according to a corresponding service procedure (404) stored within the telephony-centric network server (408). The central call management server (402) is coupled to the telephony-centric network server (408) over a data-centric network (406). The central call management server (402) maintains service procedures (404) and provides the corresponding service procedure to the telephony-centric network server (408) over the data-centric network (406).



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**APPARATUS AND METHOD FOR
LOCAL INTERCEPT OF TOLL-FREE CALLS**

CROSS-REFERENCE TO RELATED APPLICATIONS

- 5 This application is related to the following co-pending u.s. patent applications which are hereby incorporated by reference:

APPLICATION NO.	FILING DATE	TITLE
09/239,560	1/29/99	INTEGRATED MESSAGE STORAGE AND RETRIEVAL SYSTEM DISTRIBUTED OVER A LARGE GEOGRAPHICAL AREA
09/240,367	1/29/99	A SYSTEM AND METHOD FOR PROVIDING UNIFIED MESSAGING TO A USER WITH A THIN WEB BROWSER
09/239,585	1/29/99	CENTRALIZED COMMUNICATION CONTROL CENTER AND METHODS THEREFOR
09/239,584	1/29/99	COMPUTER-IMPLEMENTED CALL FORWARDING OPTIONS AND METHODS THEREFOR IN A UNIFIED MESSAGING SYSTEM
09/240,893	1/29/99	INTERACTIVE BILLING SYSTEM UTILIZING A THIN WEB CLIENT INTERFACE
09/240,368	1/29/99	A SYSTEM AND METHOD TO MANAGE PHONE SOURCED MESSAGES
09/240,434	1/29/99	METHOD AND APPARATUS FOR NETWORK INDEPENDENT INITIATION OF TELEPHONY
09/240,435	1/29/99	APPARATUS AND METHOD FOR DEVICE INDEPENDENT MESSAGING NOTIFICATION
09/240,436	1/29/99	APPARATUS AND METHOD FOR CHANNEL-TRANSPARENT MULTIMEDIA BROADCAST MESSAGING
09/239,589	1/29/99	VOICE ACCESS THROUGH A DATA- CENTRIC NETWORK TO AN INTEGRATED MESSAGE STORAGE AND RETRIEVAL SYSTEM

DEFINITION OF TERMS

Data-centric network: a network that carries digital data, primarily to facilitate information exchange among computers and computer peripherals. Examples include distributed computer networks such as the Internet.

- 5 **Telephony-centric network:** a network that carries telephony information such as voice, fax, page messages, and the like, primarily to facilitate information exchange among telephony devices.

10 **Message:** a communication which may be transmitted via either the data-centric network or the telephony-centric network. Examples include voicemail, electronic mail (email), facsimile (fax), page, and the like.

Telecommunication device: POTS telephone, cellular telephone, satellite telephone, web telephone, PC (desktop and laptop), web surfer, personal digital assistant (PDAs), facsimile machine, teletype, modem, video telephone, set top telephone.

15 **Web telephone:** a telephone implemented via a computer that is coupled to the data-centric network. An example is a PC with microphone, speaker and internet connection.

Set top telephone: a telephone set coupled to a cable-based set top box, bypassing the local telco provider. The cable-based system may be provided by, for example, WebTV, TCI cablevision.

Web surfer: an Internet-ready PC with a network connection and pre-installed web browser.

20 **PDA:** personal digital assistant, e.g., Palm Pilot available from 3COM.

Thin Web Client: A commonly employed web browser such as Internet Explorer or Netscape Navigator – JAVA enabled.

PSTN: Public Service Telephony-centric network, e.g., AT&T, MCI, Sprint-owned telco.

GUI: graphic user interface

25 **POTS:** plain old telephone service

NOC: Network Operations Center

POP: point of presence, e.g., co-location at a local telco switch or at a company controlled area with T1 connections to a local switch.

WPOP: Web POP

VPOP: Voice POP

BACKGROUND OF THE INVENTION

1. Field of the Invention

5 This invention relates in general to the field of telephony, and more particularly to an apparatus and method for locally intercepting and servicing a toll-free call.

2. Description of the Related Art

10 The invention of the telephone at the turn of the century presented a new form of communication to the population at large. Whereas prior messages were delivered directly to a message recipient either by mail, telegraph, or personal courier, telephones introduced a new option for delivering a message. More urgent matters were treated immediately with a telephone call while less important matters were relegated to the mail.

15 Technological advances in the field of telephony have only served to intensify the sense of immediacy that so profoundly dictates the business models in use today. The provision of affordable long-distance services in particular has resulted in the creation of entire departments within certain businesses consisting exclusively of customer service representatives whose sole responsibility is to answer incoming calls provide fast-turn product support, account management, and answers to frequently asked questions (FAQs). Whereas businesses in
20 former times were afforded the luxury of time in dealing with customers' issues, businesses during the age of inexpensive long-distance were forced to adjust their practices to comply with their customers' desire for more immediate response to their concerns.

25 Deregulation within the communications industry has contributed extensively to the affordability of telecommunications services. In most parts of the United States today, a consumer is allowed to choose from hundreds of long-distance carriers for routing of his/her to its intended destination. It is common practice today for a consumer to specify a particular long-distance carrier who will by default be used to route the consumer's long-distance calls. This specification is known as direct provisioning. But a caller can also override direct provisioning to select another long-distance carrier to route a specific call or group of calls.

Routing logic within a particular local switch distributes calls to specified carrier equipment based upon direct provisioning or overriding commands provided by a caller.

But perhaps the most notable change in the way that businesses service their long-distance customers has come about as a consequence of the proliferation toll-free calling. In order to provide more competitive levels of customer service in the marketplace, many businesses have chosen to bear the long-distance charges associated with incoming calls. Consequently, callers to a particular company's toll-free, or 800, number no longer incur a charge for the call. Instead, the particular company itself incurs the cost of the call. Today, consumers insist upon toll-free service as an essential feature of a company's business practice.

In spite of the name, toll-free service is not toll-free. It is simply a reversing of charges for a long-distance call. Hence, when a caller places a call to a toll-free subscriber, routing logic within a local telephone switch sends the call to its destination over the particular carrier's channel who issued the corresponding toll-free number. As a result, the particular carrier notes the duration of the call and charges the subscriber for the cost of the call rather than the caller.

In recent times, consumers have become so fastidiousness about the time required to obtain toll-free customer service that today it is viewed as unacceptable to be met with a busy signal when placing a toll-free call. What most customers desire is to call a toll-free number and to have the call immediately picked up by a company's customer service representative. And while this is the expectation, it is not common practice, primarily because to provide such a level of service a business would have to maintain enough incoming telephone lines and associated human attendants to address peak traffic times of the day. Maintenance of telephone equipment and attendants is a significant business expense for any company. Accordingly, what most businesses do is provide a limited number of attendants and incoming toll-free lines—enough to deal with average incoming traffic levels. In addition, automatic answering equipment is provided to answer incoming toll-free lines when an attendant is not available. The incoming toll-free calls are thus immediately answered and placed into a queue until an attendant becomes available.

While a caller is on hold within the queue, the automatic answering equipment may perform certain tasks to service the call such as obtaining account information from the caller, or asking the caller to select from a series of voice mail menus so that the call can be more optimally routed to a free attendant. More advanced equipment attempts to completely service

the call by providing the caller with access to prerecorded answers to frequently asked questions.

It is not uncommon today for callers to experience some number of minutes of hold time each time they call into a toll-free subscriber facility. And whether the wait is short or intolerable, the toll-free subscriber is paying for the call. In fact, it is well established that during certain portions of the workday, some large toll-free subscribers simply inform callers that no attendants are available and then they automatically hang up—to save the costs associated with placing customers on hold. Thus, the subscribers incur charges even when they are informing customers that they are not going to service their calls.

Therefore, what is needed is a method that allows a toll-free subscriber to avoid the unnecessary charges associated with placing an incoming toll-free call on hold.

In addition, what is needed is an apparatus that provides on-hold service for a toll-free call prior without incurring toll-free carrier charges while such service is being provided.

Furthermore, what is needed is a toll-free call intercept and service mechanism that captures toll-free calls at a local switch prior to placing the calls over a toll-free carrier.

SUMMARY

To address the above-detailed deficiencies, it is a feature of the present invention to provide an apparatus and method for intercepting and servicing a toll-free call, prior to incurring charges associated with placing the toll-free call through a designated toll-free carrier.

Accordingly, the present invention provides a method for intercepting and managing a toll-free call. The method includes accessing a telephony-centric network server; detecting initiation of the toll-free call; prior to transferring the toll-free call to a corresponding toll-free carrier channel, servicing the toll-free call; and if required, utilizing the corresponding toll-free carrier channel to complete the toll-free call.

An benefit of the present invention is that a toll-free subscriber does not incur carrier charges while a toll-free call is being serviced.

In another aspect, the present invention provides an apparatus for locally managing a toll-free call. The apparatus has a telephony-centric network server and a central call management server. The telephony-centric network server detects initiation of the toll-free

call, it intercepts the toll-free call, and it services the toll-free call prior to accessing a corresponding toll-free carrier channel. The toll-free call is serviced according to a corresponding service procedure stored within the telephony-centric network server. The central call management server is coupled to the telephony-centric network server. The central
5 call management server maintains service procedures and provides the corresponding service procedure to the telephony-centric network server.

Another benefit of the present invention is that toll-free traffic bottlenecks at a subscriber facility are alleviated because more calls are serviced prior to being sent to the facility.

10 In a further aspect, the present invention provides a toll-free call management apparatus. The toll-free call management apparatus includes a telephony-centric network server and a central call management server. The telephony-centric network server intercepts and services a toll-free call prior to accessing a corresponding toll-free carrier channel. The telephony-centric network sever has intercept logic and a call manager. The intercept logic
15 monitors signaling commands provided from equipment that has accessed the telephony-centric network server and detects if the signaling commands direct placement of the toll-free call. The call manager is coupled to the intercept logic and services the toll-free call according to a corresponding service procedure. The central call management server is coupled to the telephony-centric network server and provides the corresponding service procedure to the
20 telephony-centric network server.

A further benefit of the present invention is that information obtained from servicing a toll-free call locally can be transmitted to a subscriber facility more efficiently than would be otherwise experienced through an interactive session with a caller.

In yet another aspect, the present invention provides an apparatus for locally servicing a
25 toll-free call. The apparatus has service procedure logic, intercept logic, a call manager, and a data-centric network. The service procedure logic prescribes a number identifying the toll-free call along with a corresponding service procedure. The intercept logic is coupled to the service procedure logic. The intercept logic monitors signaling commands provided from an originating line to determine if the number has been entered and accesses the service procedure
30 logic to retrieve the corresponding service procedure. The call manager is coupled to the intercept logic and services the toll-free call according to the corresponding service procedure. The data-centric network is coupled to the service procedure logic and provides the

corresponding service procedure to the service procedure logic from a network operations center.

Yet another benefit of the present invention is that large-volume toll-free subscribers achieve significant toll-free hold time savings during peak traffic hours.

5

BRIEF DESCRIPTION OF THE DRAWINGS

These and other objects, features, and advantages of the present invention will become better understood with regard to the following description, and accompanying drawings where:

FIGURE 1 is a block diagram illustrating the architecture of a related art telephony-centric network.

10

FIGURE 2 is a block diagram illustrating how toll calls are routed via interexchange carrier channels within the related art telephony-centric network.

FIGURE 3 is a diagram illustrating how toll-free calls are distributed from a destination local switch within the related art telephony-centric network to a high-volume toll-free subscriber facility.

15

FIGURE 4 is a block diagram illustrating an apparatus according to the present invention for locally intercepting and servicing a toll-free call.

FIGURE 5 is a block diagram illustrating details of a local telephony-centric network server according to the present invention.

20

FIGURE 6 is a flow chart illustrating a method according to the present invention for locally intercepting and managing a toll-free call.

FIGURE 7 is a flow chart illustrating a service procedure according to the present invention for allowing a caller to access answers to frequently asked questions.

FIGURE 8 is a flow chart illustrating a service procedure according to the present invention for determining optimum call routing.

25

DETAILED DESCRIPTION

In light of the above background on toll and toll-free call handling techniques, several related art examples will now be discussed with reference to FIGURES 1 through 3. These

examples illustrate how a subscriber to toll-free number services incurs unnecessary costs each time an incoming toll-free call is put on hold. For businesses having large numbers of incoming toll-free lines, such costs represent a significant overhead expense. Following this discussion, a detailed description of the present invention will be provided with reference to

5 FIGURES 4 through 6. The present invention provides the capability for a toll-free call to be intercepted and serviced at its local origination point, prior to incurring toll-free carrier charges.

Referring to FIGURE 1, a block diagram 100 is presented illustrating the architecture of a related art telephony-centric network. The block diagram 100 shows two local telephone network interfaces 112, one at POINT A and another at POINT B. The telephone network

10 interface 112 is also referred to as a local switch 112. The block diagram 100 additionally depicts two telephones 102 connected to the local telephone network interfaces 112. The block diagram 100 shows three types of channels for transmitting telecommunication signals: a hardwired channel 114, a radio frequency (RF) line-of-sight (LOS) channel 118, and a satellite communications (SATCOM) channel 122.

15 In operation, each of the telephones 102 are provided with a telephone number, so that they may be readily accessed by the local telephone network interface 112 for call transmission and receipt. The local switch 112 is the point where local telecommunication devices 102 interface to the telephony-centric network communication channels 114, 118, 122. A transmitting local device 102 at POINT A places a call to a compatible receiving device 102 at

20 POINT B by providing a telephone number assigned for the receiving device 102 at POINT B to the local switch 112 at POINT A. The local switch 112 at POINT A then routes the call to the local switch 112 at POINT B via the hardwired channel 114, the RF LOS channel 118, the SATCOM channel 122, or a combination thereof. The local switch 112 at POINT B provides final routing of the call to the receiving device 102. For a given call, routing logic (not shown)

25 within the local switch 112 at POINT A determines which telephony channel 114, 118, 122 or combination of channels 114, 118, 122 to use for the transmission. This determination is based upon a number of factors to include the geographic separation of POINT A and POINT B, the availability of a channel 114, 118, 122 at the time the given message is transmitted, and any preferences that are specified by a caller. For example, a call from San Francisco to San Jose,

30 because the two points are only a few miles apart, is most likely transmitted over the hardwired, or landline, channel 114. This channel 114 modulates electrical signals over wires or fiber-optic cables to communicate the call between San Francisco and San Jose. A second

call from San Francisco to Los Angeles, because the two points are separated by hundreds of miles, may be transmitted over the RF LOS channel 118. This channel type translates electrical signals provided by the local switch 112 in San Francisco to RF signals and transmits the second call between a number of RF LOS antennas 116 for delivery to Los Angeles. The RF signals are then translated back to electrical signals compatible with receiving devices in Los Angeles. A third call from San Francisco to Paris, because the two points are separated by thousands of miles, may be transmitted over the SATCOM channel 122. This channel translates electrical signals provided by the local switch 112 in San Francisco to RF signals and transmits the third call between a transmitting satellite antenna 120 to a satellite 124 above the Earth. The satellite 124 relays the third call to a receiving satellite antenna 120 near Paris. The RF signals are then translated back to electrical signals compatible with receiving devices in Los Angeles. One skilled in the art will appreciate that many factors influence the channel medium 114, 118, 122 chosen for transmission of a given call over the telephony-centric network and that the choice of medium 114, 118, 122 is transparent to both the call originator and the call recipient. A call between San Francisco and Paris could just as well be transmitted by landlines 114 as by a satellite 124—what the originator and recipient hear is words spoken over a telephone 102. Although FIGURE 1 depicts telephones 102 connected to the local switches 112, one skilled in the art will appreciate that various other devices may be used to place calls of differing types over the telephony-centric network. These devices include computers equipped with telecommunications apparatus, facsimile machines, cellular telephones, and the like.

Regardless of the channel 114, 118, 122 provided for transmission of a message, it is important to note that the local switch 112 is the point of interface to the telephony-centric network and that each telephone 102 connected to the network is accessed, or addressed, by a unique telephone number. To be accessed, that is, to place and receive calls, a device 102 must be connected to the telephony-centric network and must have an assigned telephone number. Use of the telephone number is the only way to address the telephone 102. Moreover, a telephone 102 connected to the telephony-centric network may not be accessed via any other network except through a corresponding local switch 112.

As is FIGURE 1 shows, there are different types of channels 114, 118, 122 for delivering telecommunications signals between local switches 112. Up through the early 1980's, all of the assets in the United States associated with the telephony-centric network were

managed by a single business entity. However, deregulation of telecommunications during the 1980's has allowed numerous service providers to compete for different aspects of the telecommunications business. For example, presently the government allows a local telephone company to exclusively provide local services within a specified geographic area, known as a local exchange. The local telephone company is also called a local exchange carrier. Typically, calls that are placed within the local exchange are serviced by the local exchange carrier and are called local calls. Calls that are placed between two local exchanges are known as interexchange calls, or long-distance calls. Long-distance, or long-haul, carriers provide for transmission of telecommunications signals between local exchanges by employing the types of channels 114, 118, 122 discussed above. Since local calls are handled by a single service provider, it has become customary for the service provider to charge a flat rate for unlimited local calls. A long-distance call, on the other hand, incurs cost based upon duration of the call, the duration typically being measured in minutes. For this reason, long-distance calls are also referred to as toll calls. FIGURE 2 more specifically describes how long-distance service providers are utilized to route toll calls.

Referring to FIGURE 2, a block diagram 200 is presented illustrating how toll calls are routed via interexchange carrier channels 216 within the related art telephony-centric network. The block diagram 200 shows two telephones 202 connected to two local switches 210, one at point A and another at point B. Each of the two local switches 210 contains routing logic 212. The two local switches 210 are connected by eight interexchange carrier channels 216, designated as CHANNEL A 216 through CHANNEL H 216. A specific carrier channel 216 may employ any or a combination of the channel media types 114, 118, 122 shown in FIGURE 1 for transmission of telecommunications signals between the two local switches 210. For the purposes of illustration, assume that each of the carrier channels 216 is provided by a different interexchange service provider. Although only eight carrier channels 216 are shown in the block diagram 200, one skilled in the art will appreciate that there are hundreds of interexchange service providers competing for business within the market. For simplicity, only eight interexchange carrier channels 216 are shown in the block diagram 200.

Operationally, when a caller from a telephone 202 or other like telephony-centric network device 202 accesses a corresponding local switch 210, routing logic 212 within the local switch 210 monitors signaling commands on a corresponding incoming line 203, or circuit. The signaling commands typically indicate a telephone number that the caller enters

from the telephone 202. If the signaling commands indicate that the caller desires to make a local call, then the local call is placed exclusively by equipment (not shown) provided by a local exchange carrier. However, if the signaling commands indicate that the caller desires to make a toll call, then the routing logic 212 must select a long-distance carrier channel 216 for transmission of the telecommunications signals from the local switch 210 at point A to the destination local switch 210 at point B.

Presently, three techniques are employed by the routing logic 212 to select, or access, long-distance transmission logic 214 for routing of an interexchange call. A first technique, direct provisioning, is the default technique used by local exchange carriers. When signaling commands indicate that the caller initially enters a "1" over the circuit, then the routing logic 212 directs the toll call to transmission logic 214 that has been previously designated (i.e., provisioned) by the caller for long-distance calls. For example, if the caller has provisioned long-distance services for his/her circuit 203 to Company A, then each time the caller dials a long-distance number using the conventional method, the toll call will be routed to Company A's transmission logic 214. The transmission logic 214, in turn, will route the toll call over Company A's carrier channel 216 to a destination switch 210. At the destination switch 210, Company A's transmission logic 214 will provide the call to destination routing logic 212. The routing logic 212 in the destination local switch will route the call to the destination telephone 202. Accordingly, the local switches 210 will route toll calls for lines 203 that have directly provisioned toll calls to Company B through Company B's equipment 214, 216. The technique operates similarly for Company C through Company H. If a particular long-distance service provider does not have a carrier channel 216 or equipment 214 connected to a given local switch 210, then that service provider generally leases another service provider's assets 214, 216 to provide toll service at the switch 210.

A second technique, access code entry, is used by a caller to override direct provisioning during a calling session. Rather than initiating a long-distance call in the conventional manner, that is, by dialing 1 plus an area code plus a local telephone number, the caller will first enter a 7-digit number to access a specific long-distance service provider's equipment 214. This 7-digit number is known as a presubscribed interexchange carrier (PIC) code. When a PIC code corresponding to a specific long-distance carrier, say Company F, is entered, then the local switch 210 will route the ensuing toll call via Company F's equipment

214, 216, overriding any previous direct provisioning decisions that the caller may have made. Each long-distance carrier has a corresponding PIC code.

A third technique that allows a caller to access a specific long-haul carrier's equipment 214, 216 to place a toll call is simply dialing a telephone number provided by the specific long haul carrier. When the caller dials the telephone number, routing logic 212 routes the connection to the specific carrier's equipment 214, 216 for placement of the toll call.

Direct provisioning, access code (PIC code) entry, and direct call entry are the three principal techniques that are used to route interexchange calls to long-distance carriers. In previous years, the direct provisioning technique prevailed in use. However, due to intense competition in more recent years for long-distance services, use of the two latter techniques by consumers has increased. In particular, callers now are using the two overriding techniques to take advantage of toll savings according to time of day. For example, a caller may use Company A's services during the morning hours, Company B's services during the afternoon hours, and Company D's services during the evening hours. In fact, large-volume consumers utilize specialized equipment (not shown) to automatically enter selected PIC codes or direct access numbers during certain times of the day. For this reason, callers in a large business may not even be aware of which long-distance carrier is being employed to place his/her call.

The provision of toll services has become so competitive that many businesses have chosen to bear the cost of long-distance services that would otherwise be charged to customers calling the businesses. This feature of long-haul telephony is known as toll-free calling, 800 calling, or free incoming call service. Toll-free calling is, however, somewhat of a misnomer because corresponding calls are not actually free of charges, the charges are simply borne by a recipient of the calls: a toll-free subscriber. The toll-free call is only free for a call originator.

Presently, there are two area codes within the United States that are used to indicate toll-free calls: 800 and 888. When a call originator dials a given toll-free number having 800 or 888 as an area code, the routing logic 212 within the local switch 210 sends the call to the long-distance service provider's equipment 214, 216 that corresponds to the given toll-free number. For example, suppose Company E has provided a subscriber with a toll-free number, say (888)222-4444, then all calls to that toll-free number are routed to the subscriber's facility over Company E's equipment 214, 216. Regardless of the long-distance service provider that an originating caller has selected (via provision, PIC code, or direct access) initially, the toll-

free call is routed by the routing logic 212 to Company E's equipment 214, 216 for completion. And the subscriber, rather than callers, bears the cost of all calls to that number.

Toll-free number use has proliferated in the marketplace to the extent that now consumers are demanding toll-free service—even from small businesses. Because of this, businesses are being forced to provide toll-free support to their customers as standard fare. In fact, not only have consumers insisted upon free telecommunications access to businesses, but they now also require immediate access, that is, they do not cooperatively tolerate busy signals or long wait times. In response, businesses are now utilizing toll-free call routing equipment on-site to automatically answer incoming toll-free lines, to attempt to mollify waiting callers, and to optimally route toll-free calls to attendants. Routing of incoming toll-free calls within a business is more specifically described with reference to FIGURE 3.

Referring to FIGURE 3, a diagram 300 is presented diagram illustrating how toll-free calls are distributed from a destination local switch 310 within a related art telephony-centric network to a high-volume toll-free subscriber facility 320. The diagram 300 shows a toll-free call 311 from an originating caller that has been placed over a toll-free carrier channel (not shown) from an originating local switch (not shown). The toll-free call 311 is routed to forward/busy logic 312 within the destination switch 310. The diagram 300 also depicts N circuits 314, or trunks 314, that connect the destination local switch 310 to a toll-free subscriber facility 320. Within the toll-free subscriber facility 320, the trunk lines 314 are connected to private branch exchange (PBX) equipment 322. PBX equipment 322 is merely telecommunications equipment used by a business to route calls to telephones 324 within a private facility 320. The PBX equipment 322, or PBX switch 322, is typically owned and operated by the business rather than a local exchange carrier.

In operation, the toll-free subscriber 320 will obtain a sufficient number of incoming toll-free lines 314 to support a prescribed number of simultaneous incoming toll-free calls 311. This prescribed number is typically specified based upon a tradeoff between the cost of providing a certain level of toll-free service balanced against some measure of customer satisfaction. For instance, as mentioned above, it is accepted in the marketplace that a consumer does not expect to receive a busy signal when dialing a toll-free number. In light of this expectation, the subscriber 320 may chose to obtain toll-free lines, to acquire toll-free routing equipment 322, and to provide telephones 324 and corresponding attendants (not shown) to insure that incoming calls are answered by an attendant within a specified number of

minutes. In other words, incoming toll-free calls are automatically answered by the PBX equipment 324, and then put on hold until an attendant is free to speak with the caller.

Although the subscriber 320 obtains a single toll-free number, in practice calls 311 to this number are routed by the forward/busy logic 212 in a local switch 210 to one of the N
5 incoming trunk lines 314. Optimally, the subscriber 320 obtains a sufficient number of incoming lines 314 so that callers to the toll-free number never receive a busy signal.

Trunk lines 314, however, are relatively inexpensive to maintain, particularly if they are sitting idle. Attendants, in contrast, are exceedingly expensive to maintain. Hence, to control cost, most toll-free subscribers 320 provide only a minimal number of attendants. Were they to
10 provide a sufficient number of attendants, then all incoming calls would be immediately answered by an attendant. As it stands, the general case is that an incoming call is immediately answered by the PBX switch 322, and thenceforth the caller is forced to listen to prerecorded messages about how important his/her call is to the business until an attendant is available to speak with the caller.

Because attendant labor is so costly, many high-volume toll-free subscribers 320 have
15 attempted to automate particular aspects of incoming call protocol. For example, it is not uncommon today for a caller to be prompted by special PBX equipment 322 to enter, say, an account number, prior to the call being routed to an attendant telephone 324. When the attendant telephone 324 picks up, the entered account number is presented to the attendant
20 along with, perhaps, pertinent account information. Alternatively, the special PBX equipment 322 will prompt a caller to select options from a sequence of prerecorded voice menus in order that the call may be routed to a specific group of attendants that provide support services for, say, product XYZ. More specifically, when a caller dials the subscriber's toll-free number, the call is immediately answered by the PBX switch 322 and put on hold. During the hold time,
25 the caller is prompted to "Press 1 if you are calling about product XYZ. Press 2 if you are calling about product ABC." And etc. The call is then routed based upon the caller's selection.

Yet another approach to handling toll-free calls involves providing automated response features. For example, some subscribers 320 provide a menu when a call is on hold to allow a
30 customer to select from several prerecorded messages that address frequently asked questions (FAQs). Other subscribers 320 prompt a caller to enter a facsimile contact number. Following entry of the contact number, the callers are allowed to select from a FAQ menu for automated

transmission of a facsimile answer to their question. In many instances, not only do automated response features appease a waiting caller, but they also provide sufficient services to the waiting caller that he/she chooses to accept the automated response and terminate to call—prior to being connected to an attendant.

5 Yet, in a scenario that is only exceeded by customers receiving a busy signal when they call, some subscribers 320 have begun the practice of automatically terminating incoming calls. More specifically, during peak traffic times, the PBX switch 322 automatically answers an incoming toll-free call and announces to the caller, “All of our attendants are busy. Please call back at a later time.” The call is then automatically terminated.

10 Why the above practice? Is it because the subscriber 320 holds that a customer would be less dissatisfied to be automatically terminated than they would to be placed on hold for, say, 30 minutes? Perhaps. But it is difficult at best to assign an immediate figure of merit to customer dissatisfaction. It is much more cost-effective in the near-term sense for the subscriber 320 to terminate the call simply to avoid paying excessive and unnecessary toll
15 charges for the time that the customer is on hold.

Indeed, a common thread that runs through all of the above-noted toll-free call handling techniques is that every single minute that a customer is on hold, regardless of how he/she is being appeased or serviced, the subscriber 320 is incurring the expense of the call. The expenses continue to accrue is because the toll-free carrier has already routed the call through a
20 toll-free channel and is actively providing toll-free service for the subscriber 320. It is the subscriber’s choice that the call was answered and put into an automated holding queue. Thus, computation of the hold-time expense associated with a given subscriber facility 320 comes in a straightforward manner.

Suppose that sufficient equipment 314, 322, 324 is provided at the facility 320 so that
25 each incoming line 314 experiences a 25-percent pickup delay rate, that is, each line 314, on average, is placed on hold for 25 percent of the time that the line 314 is active. Assuming that all lines 314 are always active during 10 hours of a workday, it follows that each line incurs 150 minutes of hold-time during the workday. If the subscriber pays, say, 10 cents per minute to a toll-free carrier for each incoming line 314, then the subscriber 320 incurs a \$15.00 hold
30 charge per line per day. This is a significant expense, even for a single-line subscriber. The problem is simply compounded in a high-volume facility 320. More specifically, a facility 320 with, say, 200 incoming toll-free trunks 314 would incur \$3000 per day of expenses tied

directly to placing customers on hold 25 percent of the time. In light of this cost, it is certainly conceivable that many subscribers 320 would choose to start automatically terminating incoming calls when pickup delay rate at their facility 320 exceeds some prescribed threshold. Because customers today expect their calls 311 to toll-free numbers to be immediately
5 answered, albeit by an automated system 322, the problem of hold-time expense has become a matter of great concern to many toll-free subscribers 320. One skilled in the art will appreciate that any means of reducing hold-time cost, without decreasing quality of service provided by a subscriber 320, is very desirable.

The present invention overcomes the problem of hold-time expense incurred by a
10 subscriber 320 by providing a apparatus to intercept and service a toll-free call at the local origination level, prior to incurring charges associated with a corresponding toll-free carrier. As a result, for calls that are completely serviced at the local level, the subscriber never incurs any toll-free expense at all. For calls that are serviced and then subsequently completed over a toll-free carrier channel, the present invention provides a means to control traffic flow by
15 reducing the number of simultaneous incoming calls at the subscriber's facility. The present invention is more specifically described with reference to FIGURES 4 through 6.

Now referring to FIGURE 4, a block diagram 400 is presented illustrating an apparatus according to the present invention for locally intercepting and servicing a toll-free call. The block diagram 400 includes a central call management server 402 located at a network
20 operations center. The central call management server 402 includes call service procedure logic 404. The central call management server 402 is connected to a data-centric network 406. In one embodiment, the data-centric network 406 is the Internet, also known as the World Wide Web. In an alternative embodiment, the data-centric network 406 is a private packet-switched network. The block diagram 400 also includes telephony-centric network servers 408
25 that interface to the data-centric network 406 and that communicate with corresponding local telephone network interfaces 454, or local switches 454. The block diagram 400 also depicts N conventional long-distance carrier channels 456 connecting the two local switches 454.

In contrast to a telephony-centric network, the data-centric network 406 is a network
that carries digital data, primarily to facilitate information exchange among computers and
30 computer peripherals. Initially, data-centric networks 406 were used chiefly for non-real-time applications such as electronic file transfer. However, in more recent years, data transfer technologies have improved to the extent that data-centric networks 406 are now being used to

transfer real-time data such as audio and video. Because internet protocol (IP) is used most often to transfer data over the internet, long-distance services provided over a data network 406 are sometimes known as IP telephony services.

Operationally, telecommunication services are provided according to the present invention by collocating telephony-centric network servers 408 with corresponding local telephone network interfaces 454, very much in architecture like the long-distance carrier equipment 214 depicted in FIGURE 2. The difference between conventional carrier equipment 214, 216 and data-centric carrier equipment 408, 406 according to the present invention lies in the fact that the data-centric network 406 is used as a transmission medium rather than conventional telephony-centric network channels 456. Access to the telephony-centric network server 408 is obtained, however, in the very same manner that a caller obtains access to conventional long-distance carrier equipment: either via direct provisioning, or by entry of a PIC code, or by direct dialing of a corresponding access number, or as a result of a toll-free call being routed. Henceforth, the ensuing discussion assumes that access to the telephony-centric network server 408 has been obtained by one of the four aforementioned access methods.

When a caller originates a conventional long-distance call from an originating telephone 401 at POINT A, the local switch 454 routes the call to the telephony-centric network server 408. The telephony-centric network server 408, or local point of presence (POP) 408 converts electrical signals that are modulated for communication over the telephony-centric network into data packets for communication over the data-centric network 406. The data packets are then sent by the local POP 408 over the data-centric network 406 to the central call management server 402 in the Network Operations Center. The central call management server 402 receives the data packets transmitted over the data-centric network 406 and routes them to a destination local POP 408 at POINT B. Thus the central call management server 402 provides network packet transmission and routing for conventional toll calls over the data-centric network 406. Local POPs 408 at call destinations convert the data packets back into signals compatible with the telephony-centric network and provide these signals to corresponding local switches 454 for delivery of calls to recipients.

But recall that the placement of toll-free calls overrides any specification or provision of long-distance carrier made by a calling device 401. Thus, when a toll-free call is placed, the local switch 454 routes the toll-free call over a designated toll-free carrier channel 406, 456 to a toll-free subscriber. Hence, if the toll-free subscriber has obtained a first toll-free number

through a carrier associated with telephony-centric channel 0 456, the all calls to the first toll-free number will be routed by the local switch 454 through channel 0 456. If, on the other hand, a different subscriber 401 obtains a second toll-free number from a carrier that employs the present invention, then all calls to the second toll-free number will be routed by the local switch 454 to a corresponding local POP 408.

The local POPs 408 according to the present invention possess the capability to monitor signaling commands provided from an originating device 401 for the express purpose of intercepting and servicing toll-free calls to designated toll-free numbers. Rather than immediately routing a toll-free call over the data-centric network channel 406, logic within the local POP 408 services the call in accordance with a locally-stored service procedure. In one embodiment, the service procedure directs the local POP 408 to answer the call and prompt the caller to enter data to be subsequently transferred to a corresponding toll-free subscriber 401. In another embodiment, the service procedure directs the local POP 408 to answer the call and prompt the caller to select options from a sequence of voice menus. The selected options are then used to optimally route the call to various locations associated with the subscriber. Based upon the selections made by the caller, the ensuing toll-free call may even be routed to a telephone number different from the one entered to initiate the call. In an alternative embodiment, the service procedure directs the local POP 408 to answer the call and to provide automated response features to include voice-activated FAQ and automated facsimile response. Following intercept and service of a toll-free call by a local POP 408, if the caller has not yet terminated the call, then the call routed to the subscriber 401 over the data-centric network 406 like any other long-distance call.

In addition to routing packets for long-distance calls, the central call management server 402 maintains a master data base 404 of all service procedures. To update the local POPs 408, the central call management server 402 downloads selected service procedures over the data-centric network 406.

Now referring to FIGURE 5, a block diagram 500 is presented illustrating details of a local telephony-centric network server 520 according to the present invention. The block diagram 500 shows a local POP 520 at POINT A, an origination point for a toll-free call, connected to a data-centric network 530 according to the present invention. The local POP is also coupled to a local switch 510. The local switch 510 includes routing logic 512 that

provides toll-free call requests to the local POP 520 via bus 516. The local POP 520 includes local intercept logic 521, service procedure logic 522, and a call manager 525.

Operationally, intercept and service of a toll-free call can be obtained in two different ways: a first way of intercept and service occurs when a caller has already accessed the local POP 520—through either direct provisioning, PIC code entry, or by dialing a direct access number—and the caller subsequently dials a toll-free number that has not been provided by a carrier employing the present invention. In this case, the local intercept logic 521, upon receiving signaling commands from an originating telephone, will scan entries 523 in the service procedure logic 522 to determine if the call is to be intercepted and serviced. If so, then a service procedure stored in a selected entry 522 is transferred to the call manager 525. The call manager subsequently conducts an automated call session with the caller in accordance with the selected service procedure. If the call has not terminated following completion of the service procedure, because the toll-free number is not provided by a carrier employing the present invention, the call is routed back to the local switch 454 for completion via the designated carrier's channel 456.

A second manner of intercept is provided in the case that a toll-free carrier according to the present invention has provided a toll-free number to a subscriber. In this case, when any caller dials the toll-free number, routing logic 512 within the local switch 510 will transfer the call to the local POP 520 for completion. Because the local POP 520 belongs to the carrier providing the toll-free number, once the call manager 525 completes a corresponding service procedure, if a caller has not terminated the call, then the call is sent to the subscriber facility over the data-centric network 530 for completion.

Because toll-free calls are intercepted and serviced locally by a local POP 520 according to the present invention, a corresponding toll-free subscriber does not incur any toll carrier charges while the call is being serviced. Only when the call, if required, is subsequently completed do charges begin to accrue. In many instances, because of the effectiveness of automated FAQ procedures, a subscriber will not ever receive a call because callers choose to terminate prior to the call being completed. Two benefits arise from this. First, the subscriber does not incur hold-time charges. Second, because the call is serviced at a local level, incoming trunks at the subscriber's facility are not accessed, thereby allowing other calls to progress without undue traffic.

Now referring to FIGURE 6, a flow chart 600 is presented illustrating a method according to the present invention for locally intercepting and managing a toll-free call. The method depicts one embodiment representing the case where a toll-free number has been issued by a carrier utilizing a data-centric network carrier channel according to the present invention.

5 Flow begins at block 602, where a call is placed by a caller utilizing an originating device that is connected to a local telephone network exchange. Flow then proceeds to block 604.

At block 604, the call is routed by the local telephone network exchange to a local telephone network server according to the present invention. The call is routed to the local
10 telephone network server because of 1) a carrier channel corresponding to the present invention has been prescribed either through direct provisioning, PIC code entry, or direct dial access to the local server; or 2) a toll-free number provided by a carrier according to the present invention has been entered by the caller. Local calls are executed exclusively by the local telephone network exchange and are thus never routed to the local telephone network server.
15 Flow then proceeds to decision block 606.

At decision block 606, the telephone number entered by the caller is evaluated to determine if a toll-free call has been prescribed. If so, then flow proceeds to decision block 610. If not, then it is determined that the caller has simply prescribed a toll call and has
20 specified that the toll call be routed over a data-centric network according to the present invention. Thus, flow proceeds to block 608.

At block 608, the toll call is converted into data packets and routed over the data network to a destination local telephone network server for completion. Flow then proceeds to block 620.

At decision block 610, because it has been determined that a toll-free call has been
25 prescribed, a data base resident in the local telephone network server is scanned to determine if the toll-free call should be intercepted and serviced locally. If so, then flow proceeds to block 612. If not, then flow proceeds to block 618.

At block 618, since the toll-free call is not specified to be intercepted and serviced locally, the telephone network server routes the call to its destination. If the corresponding toll-
30 free number has been provided by a carrier according to the current invention, then the toll-free call is routed to its destination via the data-centric network. If the toll-free number has been

provided by a different carrier, then the toll-free call is routed back to the local switch so that routing logic within the local switch can transfer the toll-free call to the different carrier's channel. Flow then proceeds to block 620.

5 At block 612, a service procedure corresponding to local service of the toll-free call is retrieved from logic within the local telephone network server. Flow then proceeds to block 614.

At block 614, the logic within the local telephone network server services the toll-free call in accordance with the retrieved service procedure. Flow then proceeds to decision block 616.

10 At decision block 616, following completion of the service procedure, the status of the toll-free call is evaluated to determine if the caller has terminated the call, or if the caller still desires to complete the call. If the call has been terminated, then flow proceeds to block 620. If completion of the call is required, then flow proceeds to block 618.

At block 620, the method completes.

15 Now referring to FIGURE 7, a flow chart 700 is presented illustrating a service procedure according to the present invention for allowing a caller to access answers to frequently asked questions.

Flow begins at block 702, where a toll-free call is intercepted for service by a local POP according to the present invention. Local intercept logic within the local POP extracts an FAQ service procedure from a local service procedure data base corresponding to the called toll-free number. The service procedure is passed to a call manager within the local POP. Flow then proceeds to block 704.

20 At block 704, the call manager plays a prerecorded audio message giving the caller the option to either listen to answers to frequently asked questions or to speak with a service representative. Flow then proceeds to decision block 706.

25 At decision block 706, signaling commands for the call are monitored to determine the caller's choice. If the caller chooses to listen to answers to frequently asked questions, then flow proceeds to block 710. If the caller chooses to speak with a service representative, then flow proceeds to block 722. If any other signaling command is provided, then flow proceeds to
30 block 708.

At block 708, an audio message is played informing the caller that an invalid response has been entered. Flow then proceeds to block 704, where the original message is repeated.

At block 710, a FAQ menu audio message is played directing the caller to select between a FAQ addressing installation of product XYZ and a FAQ addressing operation of product XYZ. Flow then proceeds to decision block 714.

At decision block 714, signaling commands for the call are monitored to determine the caller's choice. If the caller chooses to listen to a FAQ addressing installation of product XYZ, then flow proceeds to block 716. If the caller chooses to listen to a FAQ addressing operation of product XYZ, then flow proceeds to block 718. If any other signaling command is provided, then flow proceeds to block 712.

At block 712, an audio message is played informing the caller that an invalid response has been entered. Flow then proceeds to block 710, where the FAQ menu is repeated.

At block 716, an audio message addressing installation of product XYZ is played for the caller. Flow then proceeds to decision block 720.

At block 718, an audio message addressing operation of product XYZ is played for the caller. Flow then proceeds to decision block 720.

At decision block 720, the call is evaluated to determine if the caller has terminated the call. If so, then flow proceeds to block 724. If not, then flow proceeds to block 722.

At block 722, either the caller has initially selected to speak with a service representative or the caller has subsequently selected to speak with a service representative by staying connected after listening to a FAQ selection. In either event, the call is routed to a toll-free subscriber facility via a corresponding toll-free carrier network. Flow then proceeds to block 724.

At block 724, the service procedure completes.

Now referring to FIGURE 8, a flow chart 800 is presented illustrating a service procedure according to the present invention for determining optimum call routing.

Flow begins at block 802, where a toll-free call is intercepted for service by a local POP according to the present invention. Local intercept logic within the local POP extracts an FAQ service procedure from a local service procedure data base corresponding to the called toll-free

number. The service procedure is passed to a call manager within the local POP. Flow then proceeds to block 804.

At block 804, the call manager plays a prerecorded audio message giving the caller the option to select whether the call concerns a hardware problem or a software problem. Flow
5 then proceeds to decision block 808.

At decision block 808, signaling commands for the call are monitored to determine the caller's choice. If the caller indicates that a hardware problem exists, then flow proceeds to block 810. If the caller indicates that a software problem exists, then flow proceeds to block 812. If any other signaling command is provided, then flow proceeds to block 806.

10 At block 810, the call is routed over a corresponding toll-free carrier to a first toll-free number for addressing hardware problems. Flow then proceeds to block 814.

At block 812, the call is routed over a corresponding toll-free carrier to a second toll-free number for addressing software problems. Flow then proceeds to block 814.

At block 806, an audio message is played informing the caller that an invalid response
15 has been entered. Flow then proceeds to block 804, where the original routing menu is repeated.

At block 814, the optimum call routing service procedure completes.

Although the present invention and its objects, features, and advantages have been described in detail, other embodiments are encompassed by the invention. For example, the
20 present invention has been particularly characterized by completion of toll and toll-free calls over the Internet data-centric network. Although the Internet is widely used today for transmission of messages between communication devices, the present invention is not dependent upon such capability being provided. The data-centric network element according to the present invention can be embodied as a private network utilizing proprietary or leased
25 communication channel assets.

In addition, the present invention has been specifically discussed with reference to interception and service of toll-free calls where the corresponding toll-free numbers are provided either via a carrier utilizing equipment according to the present invention or by a different carrier. It is appreciated that it is not common business practice today to intercept and
30 service calls to numbers that are provided by another business entity. However, this model is

also applicable to situations in which a given toll-free number provider does not enjoy routing and carrier channel equipment at a particular local switch. In this case, the present invention can be employed as surrogate equipment for the given toll-free number provider.

5 Furthermore, the present invention has been characterized in terms the interception and service of calls to toll-free numbers that utilize real-time audio, i.e., voice, as a communication means. However, it is within the scope of the present invention to provide local intercept and service of other forms of communications such as facsimile or other electronic text forms. Utilizing the efficiency of a data-centric network for transfer of electronic information such as facsimile results is greater cost savings to a toll-free subscriber. In this case, a corresponding
10 service procedure may merely conduct an interactive session with a caller to obtain certain data in electronic form. Following this, the caller terminates the call and the obtained data is transferred as a burst over the data-centric network. Rather than incur the cost of the interactive session, a corresponding toll-free subscriber simply incurs the cost of the burst transfer.

15 Those skilled in the art should appreciate that they can readily use the disclosed conception and specific embodiments as a basis for designing or modifying other structures for carrying out the same purposes of the present invention without departing from the spirit and scope of the invention as defined by the appended claims.

What is claimed is:

1. A method for intercepting and managing a toll-free call, comprising:
 - a) accessing a telephony-centric network server;
 - b) detecting initiation of the toll-free call;
 - 5 c) prior to transferring the toll-free call to a corresponding toll-free carrier channel, servicing the toll-free call; and
 - d) if required, utilizing the corresponding toll-free carrier channel to complete the toll-free call.
- 10 2. The method as recited in claim 1, wherein said accessing comprises:
 - i) routing a connection from an originating device through its corresponding local telephone switch to the telephony-centric network server; and
 - ii) monitoring signaling commands provided by the originating device.
- 15 3. The method as recited in claim 2, wherein said routing is initiated automatically as a result of direct provisioning.
4. The method as recited in claim 2, wherein said routing is initiated as a result of a caller providing a PIC code to the corresponding local telephone switch.
- 20 5. The method as recited in claim 2, wherein said routing is initiated as a result of a caller dialing a telephone number.
6. The method as recited in claim 2, wherein the originating device is a telephone.
- 25 7. The method as recited in claim 2, wherein the originating device is a computer.

8. The method as recited in claim 2, wherein said detecting comprises evaluating the signaling commands to determine if the toll-free call is prescribed for intercept and service.

5 9. The method as recited in claim 8, wherein said servicing comprises interactively conducting a call session with a caller in accordance with service procedures for the toll-free call, the service procedures being maintained within the telephony-centric network server.

10 10. The method as recited in claim 9, wherein the service procedures comprise data entry procedures.

11. The method as recited in claim 10, wherein the data entry procedures prompt the caller from the originating device to enter information to be transmitted to a toll-free subscriber.

15 12. The method as recited in claim 9, wherein the service procedures comprise call routing procedures.

13. The method as recited in claim 12, wherein the call routing procedures prompt the caller from the originating device to select options from a menu that determine optimum routing for the toll-free call.

20 14. The method as recited in claim 13, wherein optimum routing for the toll-free call comprises routing the toll-free call to a telephone number that is different from the telephone number provided to initiate the toll-free call.

25 15. The method as recited in claim 9, wherein the service procedures comprise automated facsimile procedures.

16. The method as recited in claim 15, wherein the automated facsimile procedures prompt the caller from the originating device to select a topic from a menu, and wherein the local telephony-centric network server will subsequently initiate a call to deliver a fax to the caller addressing the selected topic.

5

17. The method as recited in claim 1, wherein said utilizing comprises:

- i) determining that a caller has not terminated the toll-free call following said servicing;
- and
- ii) completing the toll-free call via the corresponding toll-free carrier channel.

10

18. An apparatus for locally managing a toll-free call, the apparatus comprising:

a telephony-centric network server, configured to detect initiation of the toll-free call, to intercept the toll-free call, and to service the toll-free call prior to accessing a corresponding toll-free carrier channel, wherein the toll-free call is serviced according to a corresponding service procedure stored within said telephony-centric network server; and

15

a central call management server, coupled to said telephony-centric network server, configured to maintain service procedures, and configured to provide said corresponding service procedure to said telephony-centric network server.

20

19. The apparatus as recited in claim 18, wherein said telephony-centric network server is accessed from a local switch by direct provisioning of an originating line.

20. The apparatus as recited in claim 18, wherein said telephony-centric network server is accessed from a local switch as a result of a caller entering a PIC code via an originating line.

25

21. The apparatus as recited in claim 18, wherein said telephony-centric network server is accessed from a local switch as a result of a caller dialing a telephone number to access said telephony-centric network server from an originating line.

22. The apparatus as recited in claim 18, wherein the toll-free call is originated from a telephone.

5 23. The apparatus as recited in claim 18, wherein the toll-free call is originated from a computer.

24. The apparatus as recited in claim 18, wherein said telephony-centric network server evaluates signaling commands transmitted from an originating line to determine if the toll-free call is prescribed for intercept and service.

10

25. The apparatus as recited in claim 24, wherein said corresponding service procedure comprises a data entry procedure that prompts a caller to enter information to be transmitted to a toll-free subscriber.

15 26. The apparatus as recited in claim 24, wherein said corresponding service procedure comprises a call routing procedure that prompts a caller to select options from a menu that determine optimum routing for the toll-free call.

20 27. The apparatus as recited in claim 26, wherein the toll-free call is routed to a telephone number that is different from that provided by said caller to initiate the toll-free call.

28. The apparatus as recited in claim 24, wherein said corresponding service procedure comprises an automated facsimile procedure that prompts a caller to select a topic from a menu, and, in response, said telephony-centric network server initiates a call to deliver a fax to
25 said caller addressing said topic.

29. The apparatus as recited in claim 24, wherein said corresponding service procedure directs said telephony-centric network server to complete the toll-free call via said corresponding toll-free carrier channel.

5 30. The apparatus as recited in claim 29, wherein said central call management server provides said corresponding service procedure to said telephony-centric network server over a data-centric network.

31. The apparatus as recited in claim 30, wherein said data-centric network is the internet.

10

32. A toll-free call management apparatus, comprising:

a telephony-centric network server, for intercepting and servicing a toll-free call prior to accessing a corresponding toll-free carrier channel, said telephony-centric network sever comprising:

15 intercept logic, for monitoring signaling commands provided from equipment that has accessed said telephony-centric network server, and for detecting if said signaling commands direct placement of said toll-free call; and

a call manager, coupled to said intercept logic, for servicing said toll-free call according to a corresponding service procedure; and

20 a central call management server, coupled to said telephony-centric network server, configured to provide said corresponding service procedure to said telephony-centric network server.

33. The toll-free call management apparatus as recited in claim 32, wherein said telephony-
25 centric network server is accessed from a local switch by direct provisioning of said equipment.

34. The toll-free call management apparatus as recited in claim 32, wherein said telephony-centric network server is accessed from a local switch as a result of a caller entering a PIC code from said equipment.

5 35. The toll-free call management apparatus as recited in claim 32, wherein said telephony-centric network server is accessed from a local switch as a result of a caller dialing a telephone number to access said telephony-centric network server from said equipment.

36. The toll-free call management apparatus as recited in claim 32, wherein said equipment
10 comprises a telephone.

37. The toll-free call management apparatus as recited in claim 32, wherein said equipment comprises a computer.

15 38. The toll-free call management apparatus as recited in claim 32, wherein said corresponding service procedure directs said call manager to prompt a caller to enter information to be transmitted to a toll-free subscriber.

39. The toll-free call management apparatus as recited in claim 32, wherein said
20 corresponding service procedure directs said call manager to prompt a caller to select options from a menu that determine optimum routing for said toll-free call.

40. The toll-free call management apparatus as recited in claim 39, wherein said toll-free
25 call is routed to a telephone number that is different from that provided by said caller to initiate said toll-free call.

41. The toll-free call management apparatus as recited in claim 32, wherein said corresponding service procedure directs said call manager to prompt a caller to select a topic from a menu, thereby prescribing a fax for delivery to said caller that addresses said topic.

5 42. The toll-free call management apparatus as recited in claim 32, wherein said corresponding service procedure directs said call manager to complete said toll-free call via said corresponding toll-free carrier channel.

10 43. The toll-free call management apparatus as recited in claim 42, wherein said central call management server provides said corresponding service procedure to said telephony-centric network server over a data-centric network.

44. The toll-free call management apparatus as recited in claim 43, wherein said data-centric network is the internet.

15

45. An apparatus for locally servicing a toll-free call, the toll-free call being initiated over an originating line that has accessed a telephony-centric network server, comprising:

service procedure logic, for prescribing a number identifying the toll-free call along with a corresponding service procedure;

20 intercept logic, coupled to said service procedure logic, for monitoring signaling commands provided from the originating line to determine if said number has been entered, and for accessing said service procedure logic to retrieve said corresponding service procedure;

a call manager, coupled to said intercept logic, for servicing the toll-free call according to said corresponding service procedure; and

25 a data-centric network, coupled to service procedure logic, for providing said corresponding service procedure to said service procedure logic from a network operations center.

46. The apparatus as recited in claim 45, wherein said signaling commands are provided by a telephone.

47. The apparatus as recited in claim 45, wherein said signaling commands are provided by a computer.

48. The apparatus as recited in claim 45, wherein said corresponding service procedure directs said call manager to prompt a caller to enter information to be transmitted to a toll-free subscriber.

49. The apparatus as recited in claim 45, wherein said corresponding service procedure directs said call manager to prompt a caller to select options from a menu that determine optimum routing for the toll-free call.

50. The apparatus as recited in claim 45, wherein the toll-free call is routed to a telephone number that is different from that entered from the originating line to initiate the toll-free call.

51. The apparatus as recited in claim 45, wherein said corresponding service procedure directs said call manager to prompt a caller to select a topic from a menu, thereby prescribing a fax for delivery to said caller that addresses said topic.

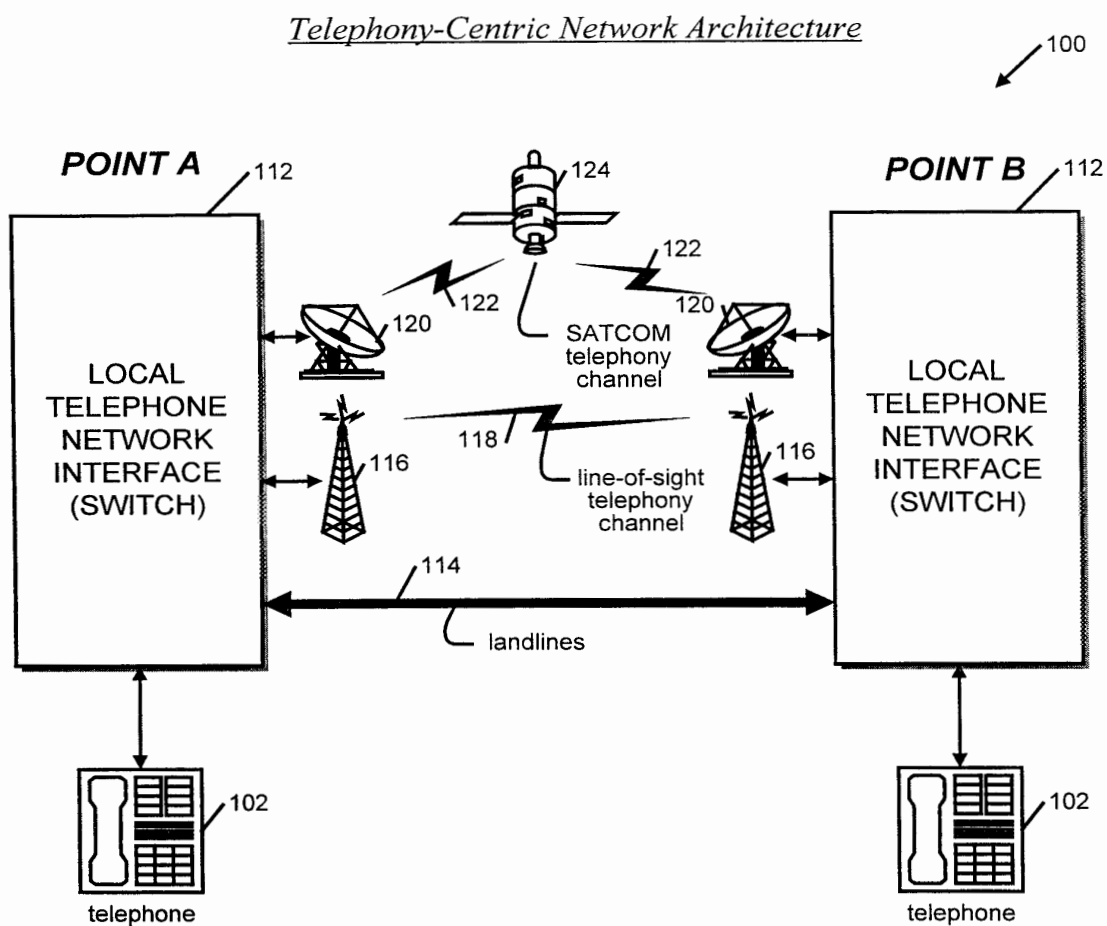
52. The apparatus as recited in claim 45, wherein said corresponding service procedure directs said call manager to complete the toll-free call via a corresponding toll-free carrier.

53. The apparatus as recited in claim 45, wherein said data-centric network is the internet.

54. The apparatus as recited in claim 45, wherein said service procedure logic comprises memory within a computer.

5 55. The apparatus as recited in claim 54, wherein said call manager comprises a software application program in a computer.

56. The apparatus as recited in claim 55, wherein said intercept logic comprises a software application program in a computer.

FIG. 1 (Related Art)

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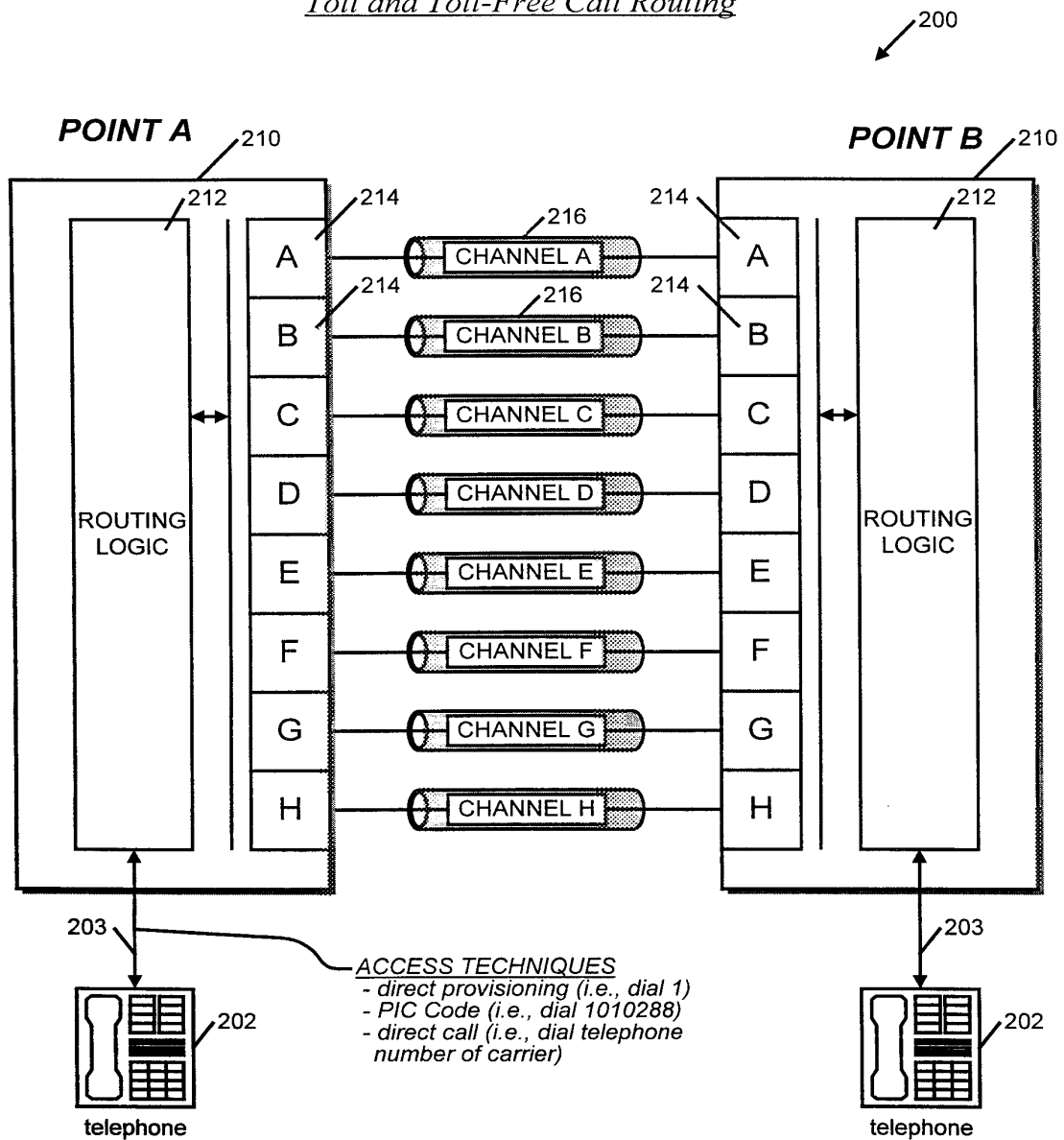
FIG. 2 (Related Art)*Toll and Toll-Free Call Routing*

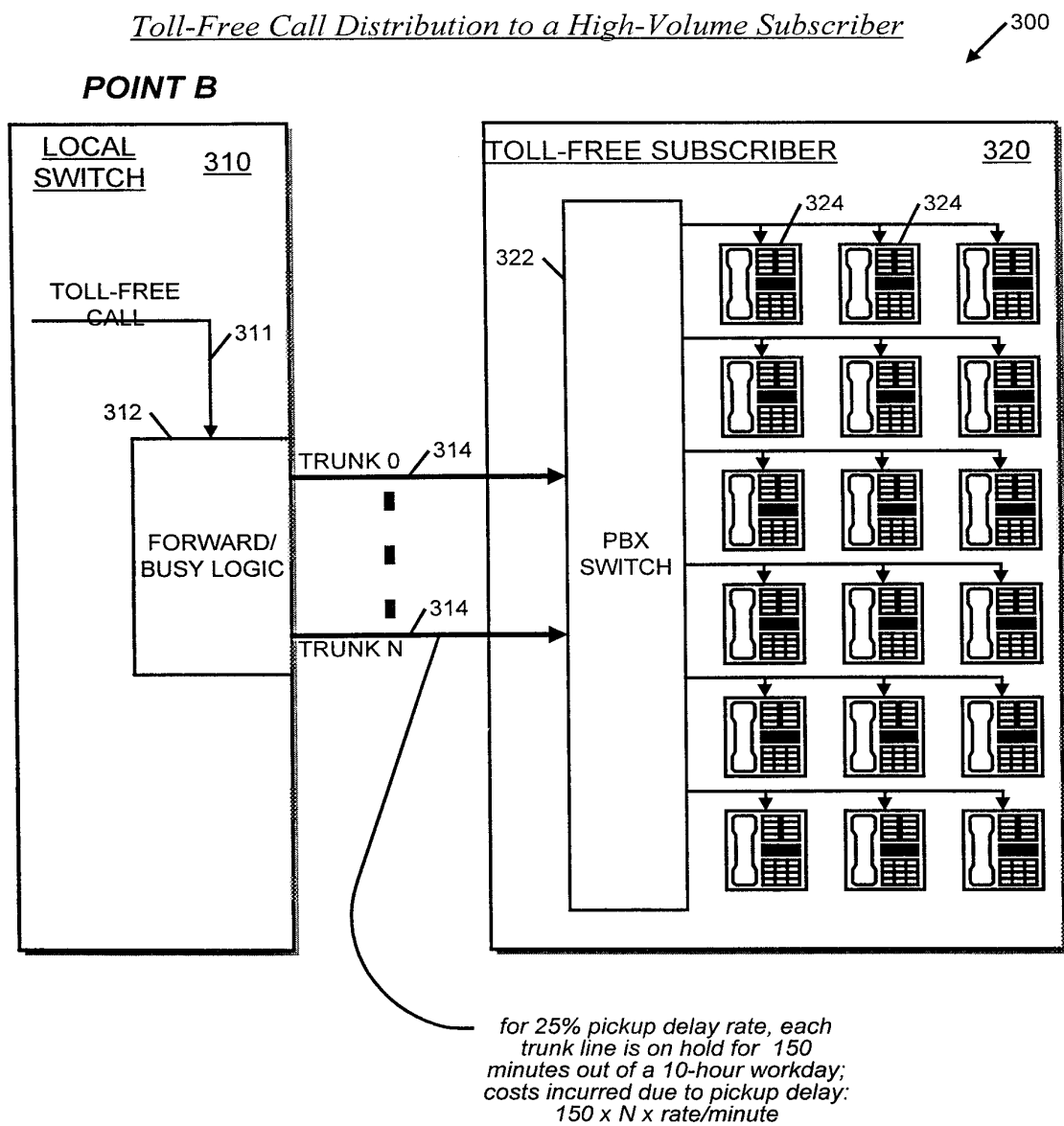
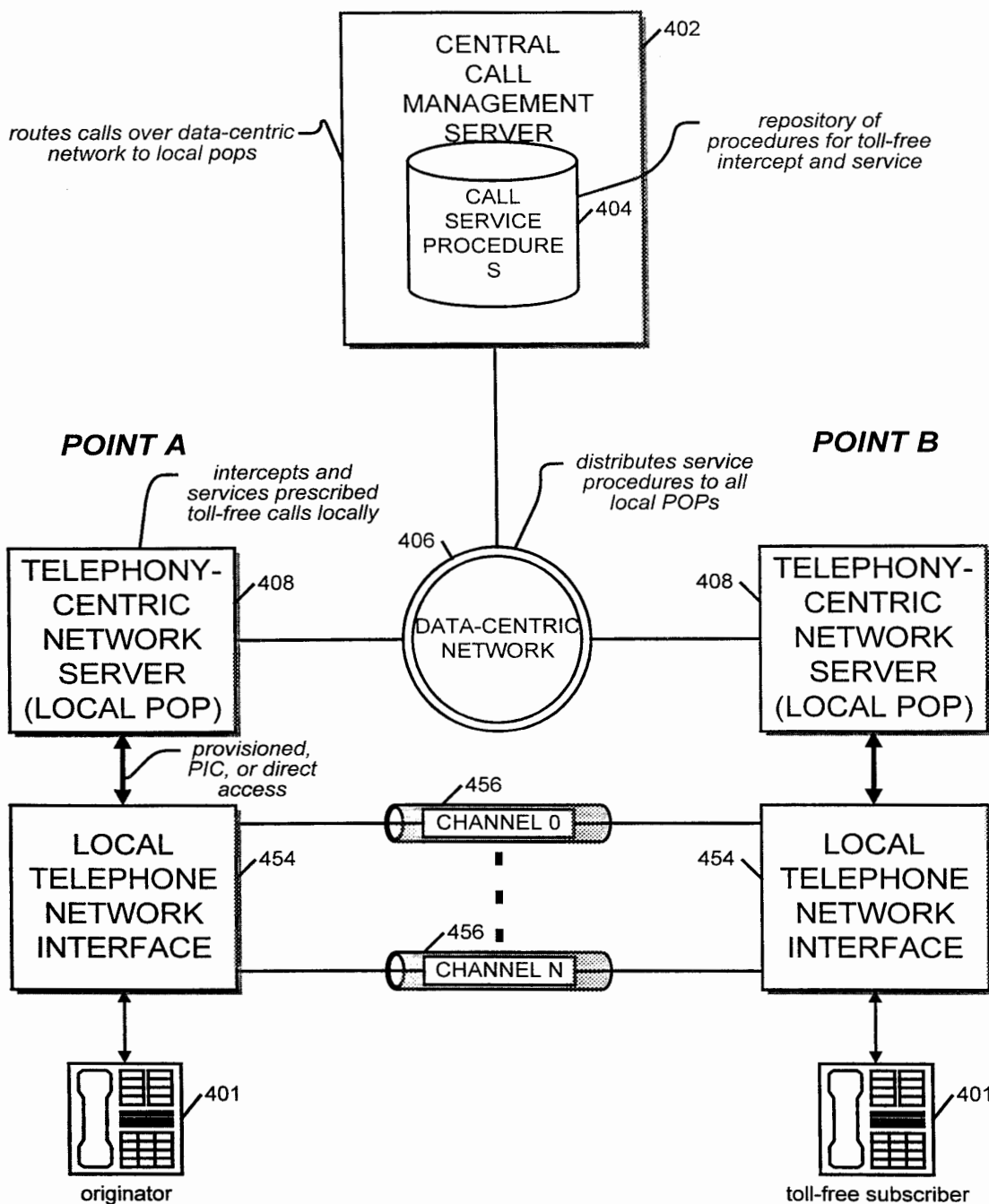
FIG. 3 (Related Art)

FIG. 4Local Toll-Free Intercept and Service

400

NETWORK OPERATIONS CENTER

5/8

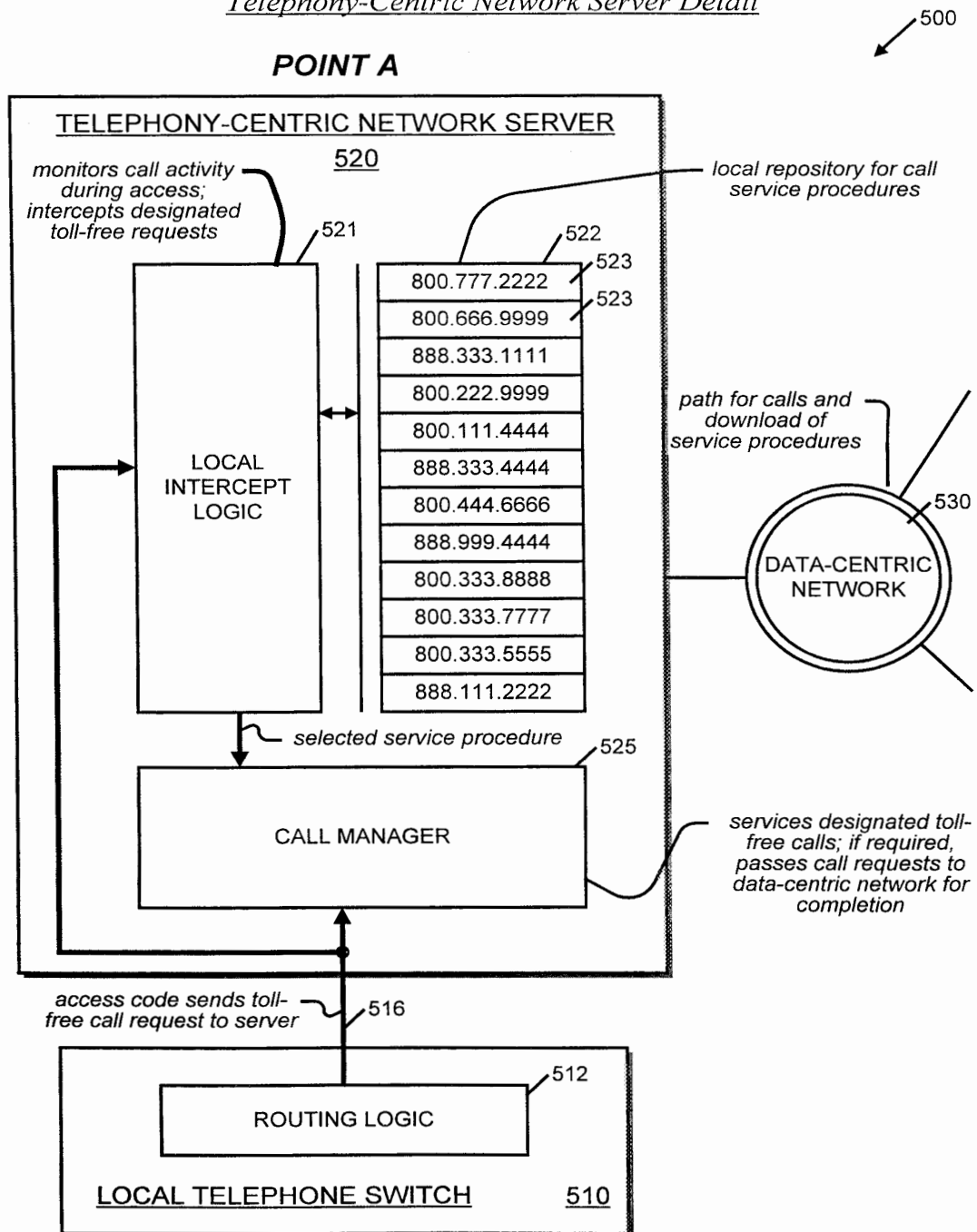
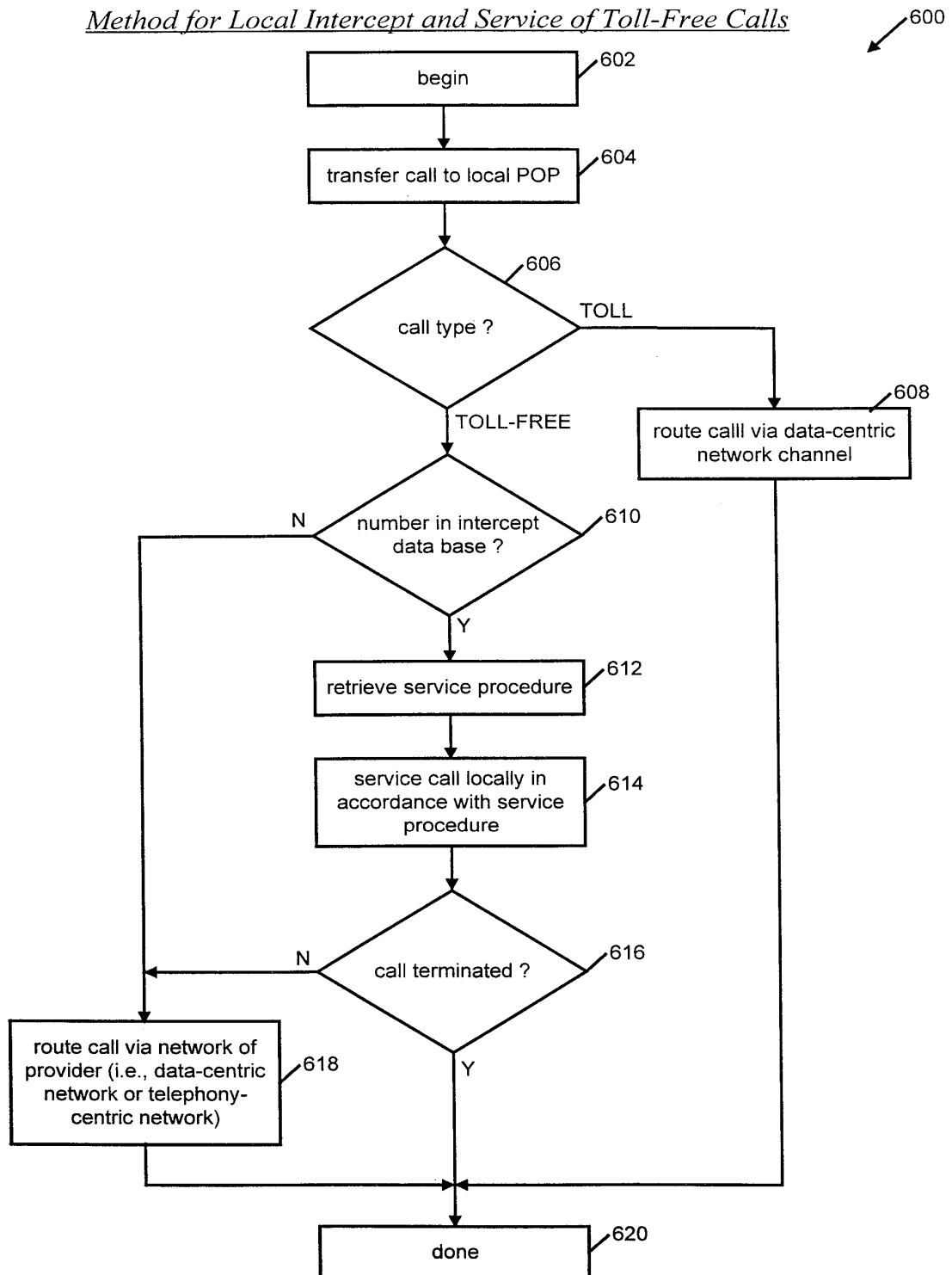
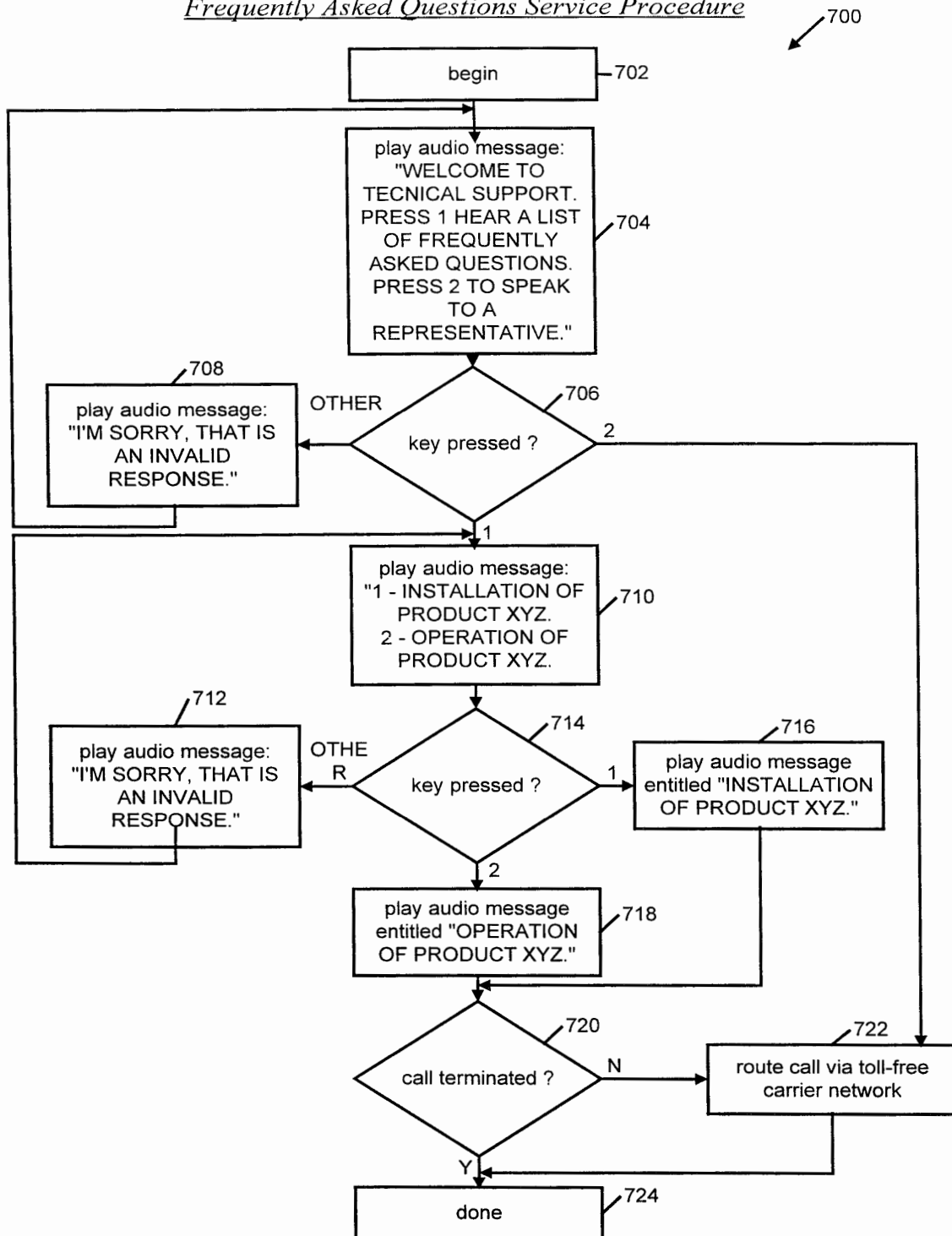
FIG. 5*Telephony-Centric Network Server Detail*

FIG. 6

6/8

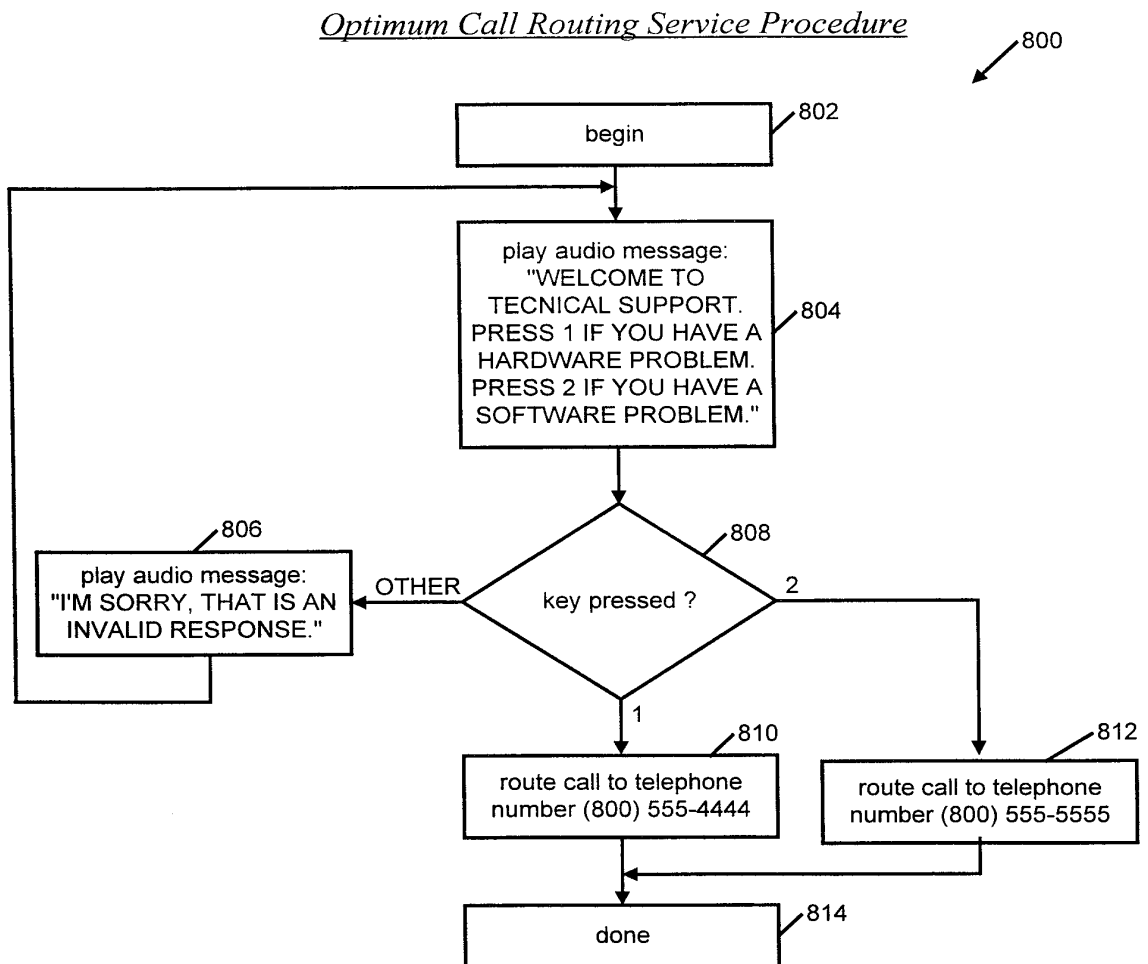
Method for Local Intercept and Service of Toll-Free Calls

7/8

FIG. 7*Frequently Asked Questions Service Procedure*

8/8

FIG. 8



INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/08193

A. CLASSIFICATION OF SUBJECT MATTER IPC(7) : H04M 7/00 US CL : 379/222 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) U.S. : 379/222, 219, 220, 221, 229, 230, 242 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) WEST		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,867,562 A (SCHERER) 02 February, 1999, see entire patent.	1-56
☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.		
* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed *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 01 JUNE 2000		Date of mailing of the international search report 05 JUL 2000
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230		Authorized officer <i>Fof Regina Zelen</i> KRISTA ZELEN Telephone No. (703) 305-4701

Form PCT/ISA/210 (second sheet) (July 1998) ★

Electronic Acknowledgement Receipt	
EFS ID:	24188356
Application Number:	14836396
International Application Number:	
Confirmation Number:	3541
Title of Invention:	ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE
First Named Inventor/Applicant Name:	David Aldworth
Customer Number:	23552
Filer:	George Cone Lewis/Aimee Stevens
Filer Authorized By:	George Cone Lewis
Attorney Docket Number:	40595.0002US01
Receipt Date:	25-NOV-2015
Filing Date:	26-AUG-2015
Time Stamp:	09:55:26
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no				
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	2015-11-25-IDS-40595-0002US01.PDF	178419 7c75d9a023f7ca1735d69fe00651bdd31937acae	no	3
Warnings:					
Information:					

This is not an USPTO supplied IDS fillable form

2	Foreign Reference	WO2000065850.PDF	907091	no	20
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Warnings:

Information:

3	Foreign Reference	WO2000059197.PDF	1999952	no	44
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Total Files Size (in bytes):			3085462		
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New Applications Under 35 U.S.C. 111

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National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date
14/836,396	08/26/2015

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

- ☒ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above:
- OR
- ☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

- ☒ The address associated with the above-mentioned Customer Number
- OR
- ☐ The address associated with Customer Number:
- OR

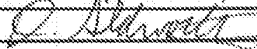
Firm or Individual Name			
Address			
City	State	Zip	
Country			
Telephone	Email		

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

- ☒ Inventor or Joint Inventor (title not required below)
- ☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)
- ☐ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)
- ☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature		Date (Optional)	11/28/15
Name	David Aldworth		
Title	President - Teliax Inc.		

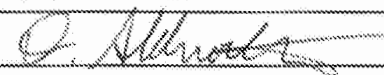
NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE
As the below named inventor, I hereby declare that: This declaration is directed to: ☐ The attached application, or ☒ United States application or PCT international application number <u>14/836,396</u> filed on <u>August 26, 2015</u> The above-identified application was made or authorized to be made by me. I believe that I am the original inventor or an original joint inventor of a claimed invention in the application. I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both. WARNING: Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available. LEGAL NAME OF INVENTOR Inventor: <u>David Aldworth</u> Date (Optional): <u>11/28/15</u> Signature: <u></u> Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.	

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt	
EFS ID:	25033822
Application Number:	14836396
International Application Number:	
Confirmation Number:	3541
Title of Invention:	ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE
First Named Inventor/Applicant Name:	David Aldworth
Customer Number:	23552
Filer:	George Cone Lewis/Aimee Stevens
Filer Authorized By:	George Cone Lewis
Attorney Docket Number:	40595.0002US01
Receipt Date:	26-FEB-2016
Filing Date:	26-AUG-2015
Time Stamp:	14:06:15
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no				
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	POA-SIGNED-40595-0002US01. PDF	1227735 330d33ce51a0aeb4a9ebb3da3e4d0c08fa32a675	no	1
Warnings:					
Information:					

2	Oath or Declaration filed	DEC-SIGNED-40595-0002US01. PDF	1053336 012fd5010d9b514a81dc8be7aa10d81ba0b1b30d	no	1
Warnings:					
Information:					
Total Files Size (in bytes):				2281071	
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

S/N 14/836,396

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor:	David Aldworth	Examiner:	Unassigned
Serial No.:	14/836,396	Group Art Unit:	2562
Filed:	August 26, 2015	Docket No.:	17005.0002US01
Title:	ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE		

Filed via EFS-Web

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT (37 C.F.R. § 1.97(b))

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Attention: Commissioner for Patents

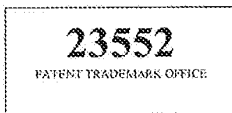
With regard to the above-identified application, the items of information listed on the enclosed Form 1449 are brought to the attention of the Examiner.

This statement should be considered because it is submitted before the mailing date of a first Office Action on-the-merits. Accordingly, no fee is due for consideration of the items listed on the enclosed Form 1449.

No representation is made that a reference is “prior art” within the meaning of 35 U.S.C. §§ 102 and 103 and Applicants reserve the right, pursuant to 37 C.F.R. § 1.131 or otherwise, to establish that the reference(s) are not “prior art.”

Consideration of the items listed is respectfully requested. Pursuant to the provisions of M.P.E.P. 609, it is requested that the Examiner return a copy of the attached Form 1449, marked as being considered and initialed by the Examiner, to the undersigned with the next official communication.

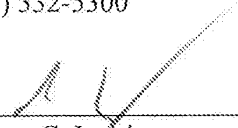
Please charge any additional fees or credit any overpayment to Deposit Account No. 13-2725.



Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, MN 55402-0903
(612) 332-5300

Dated: 3/1/16



George C. Lewis
Reg. No. 53,214
GCL:RDP:ans

Sheet 1 of 1

FORM 1449* INFORMATION DISCLOSURE STATEMENT IN AN APPLICATION (Use several sheets if necessary)	Docket Number: 40595.0002US01	Application Number: 14/836,396
	Inventor: David Aldworth	
	Filing Date: 08/26/2015	Group Art Unit: 2652

[illegible]

23552
PATENT TRADEMARK OFFICE

EXAMINER	DATE CONSIDERED
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form for next communication to the Applicant.	

Electronic Acknowledgement Receipt	
EFS ID:	25063051
Application Number:	14836396
International Application Number:	
Confirmation Number:	3541
Title of Invention:	ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE
First Named Inventor/Applicant Name:	David Aldworth
Customer Number:	23552
Filer:	George Cone Lewis/Aimee Stevens
Filer Authorized By:	George Cone Lewis
Attorney Docket Number:	40595.0002US01
Receipt Date:	01-MAR-2016
Filing Date:	26-AUG-2015
Time Stamp:	13:07:57
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no				
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	2016-03-01-IDS-17005-0002US01.PDF	1357045 213a5fb7e5eb40aaf208161b981dd0aa29a0426	no	3
Warnings:					
Information:					

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Total Files Size (in bytes):

1357045

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

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New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.



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www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/836,396	08/26/2015	David Aldworth	17005.0002US01

23552
MERCHANT & GOULD P.C.
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903

CONFIRMATION NO. 3541
POA ACCEPTANCE LETTER



Date Mailed: 03/09/2016

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 02/26/2016.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/sleutchit/



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/836,396	08/26/2015	David Aldworth	17005.0002US01	3541

23552	7590	09/12/2016
MERCHANT & GOULD P.C.		
P.O. BOX 2903		
MINNEAPOLIS, MN 55402-0903		

EXAMINER	
HO, HUY C	

ART UNIT	PAPER NUMBER
2644	

NOTIFICATION DATE	DELIVERY MODE
09/12/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTO23552@merchantgould.com

Office Action Summary	Application No. 14/836,396	Applicant(s) ALDWORTH, DAVID	
	Examiner HUY C. HO	Art Unit 2644	AIA (First Inventor to File) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08/26/2015.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

- 5) ☒ Claim(s) 1-20 is/are pending in the application.
5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-20 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☒ The drawing(s) filed on 08/26/2015 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

- a) ☐ All b) ☐ Some** c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) ☒ Notice of References Cited (PTO-892) | 3) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date ____. | 4) ☐ Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(a) (2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

3. Claim(s) 1-20 is/are rejected under 35 U.S.C. 102(a) (2) as being anticipated by BAJPAY et al. (U.S. Patent Publication No. 2010/0014651).

Regarding claim 1, BAJPAY teaches a method for routing toll-free calls through a toll-free exchange (BAJPAY, the Abstract), the method, performed by a policy router, comprising:

receiving, from an originating responsible organization (RESPORG), a toll-free call, wherein the toll-free call is directed to a toll-free subscriber that is served by a terminating RESPORG (BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: a toll-free call is serviced and routed by a network

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router/server);

querying a database to determine a RESPORG identification associated with the terminating RESPORG (*BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: database 115*); and

routing, to the terminating RESPORG, the toll-free call based in part on the RESPORG identification (*BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: routing a toll-free call from an endpoint device to another endpoint device*).

Regarding claim 10, *BAJPAY* teaches a method for routing toll-free calls without using a carrier identification code (CIC) (*BAJPAY, the Abstract*), comprising:

receiving, from an originating responsible organization (RESPORG), a toll-free call, wherein the toll-free call is directed to a toll-free subscriber that is served by a terminating RESPORG (*BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: a toll-free call is serviced and routed by a network router/server*);

querying a database to determine a RESPORG identification associated with the terminating RESPORG (*BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: database 115*); and

routing, to the terminating RESPORG, the toll-free call through a protected network based in part on the RESPORG identification (*BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-*

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[19]: routing a toll-free call from an endpoint device to another endpoint device).

Regarding claim 17, BAJPAY teaches a system for routing a toll-free call using a toll-free exchange (BAJPAY, the Abstract), the system comprising:

at least one session border controller for routing a data portion of the toll-free call within the toll-free exchange (BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: multiple edge control points for routing a toll-free call);

a policy router for determining, based at least on data included within the data portion, a responsible organization (RESPORG) identification (ID) associated with a terminating RESPORG (BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: a toll-free call is serviced and routed by a network router/server);

a service control point for storing the RESPORG ID of the terminating RESPORG (BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: a toll-free call is serviced and routed by a network router/server);

a database for storing enrollment information associated with the terminating RESPORG (BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: database 115); and

a media gateway server farm having one or more server

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computing devices for routing a media portion of the toll-free call (*BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: routing a toll-free call from an endpoint device to another endpoint device*).

Regarding claim 2, *BAJPAY* teaches the method of claim 1, wherein the originating RESPORG and the terminating RESPORG are enrolled in the toll-free exchange (*BAJPAY, Paragraph(s) [3], [46]-[47]*).

Regarding claim 3, *BAJPAY* teaches the method of claim 1, wherein the RESPORG identification is obtained by a service control point (*BAJPAY, Paragraph(s) [58], [60]-[61]*).

Regarding claim 4, *BAJPAY* teaches the method of claim 1, further comprising:

monitoring the toll-free call to generate a call detail record, wherein the call detail record includes at least one of:

a time duration of the toll-free call, an identification of the originating RESPORG and the terminating RESPORG, buy-rate of the terminating RESPORG, a floor rate of the originating RESPORG, and a cost associated with the toll-free call (*BAJPAY, Paragraph(s) [34], [58]*).

Regarding claim 5, *BAJPAY* teaches the method of claim 4, wherein routing to the terminating RESPORG further comprises:

determining that the floor rate of the originating RESPORG

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is less than the buy rate of the terminating RESPORG (*BAJPAY, Paragraph(s) [34], [58]*).

Regarding claim 6, *BAJPAY* teaches the method of claim 1, further comprising:

determining whether the terminating RESPORG is enrolled with the exchange (*BAJPAY, Paragraph(s) [12]-[15]*);

based on a determination that the terminating RESPORG is not enrolled with the exchange, rejecting the toll-free call (*BAJPAY, Paragraph(s) [12]-[15]*); and

based on a determination that the terminating RESPORG is enrolled with the exchange, connecting the toll-free call to the terminating RESPORG (*BAJPAY, Paragraph(s) [12]-[15]*).

Regarding claim 7, *BAJPAY* teaches the method of claim 6, wherein based on a determination that the terminating RESPORG is not enrolled with the exchange, further comprises:

determining whether the originating RESPORG requested to connect the toll-free call to a public switched telephone network (*BAJPAY, Paragraph(s) [12]-[15]*).

Regarding claim 8, *BAJPAY* teaches the method of claim 1, wherein a carrier identification code (CIC) of the terminating RESPORG is not used by the method (*BAJPAY, Paragraph(s) [48]*).

Regarding claim 9, *BAJPAY* teaches the method of claim 1, further comprising routing a media portion of the toll-free call

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through a media server farm, wherein the media server farm configures the media portion of the toll-free call for routing (BAJPAY, Paragraph(s) [18]-[19]).

Regarding claim 11, BAJPAY teaches the method of claim 10, further comprising:

determining whether the terminating RESPORG is enrolled with the exchange (BAJPAY, Paragraph(s) [12]-[15]);

based on a determination that the terminating RESPORG is not enrolled with the exchange, rejecting the toll-free call (BAJPAY, Paragraph(s) [12]-[15]); and

based on a determination that the terminating RESPORG is enrolled with the exchange, connecting the toll-free call to the terminating RESPORG (BAJPAY, Paragraph(s) [12]-[15]).

Regarding claim 12, BAJPAY teaches the method of claim 10, further comprising:

monitoring the toll-free call to generate a call detail record, wherein the call detail record includes at least one of:

a time duration of the toll-free call, an identification of the originating RESPORG and the terminating RESPORG, buy-rate of the terminating RESPORG, a floor rate of the originating RESPORG, and a cost associated with the toll-free call (BAJPAY, Paragraph(s) [34], [58]).

Regarding claim 13, BAJPAY teaches the method of claim 12,

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wherein routing to the terminating RESPORG further comprises:

determining that the floor rate of the originating RESPORG is less than the buy rate of the terminating RESPORG (*BAJPAY, Paragraph(s) [34], [58]*).

Regarding claim 14, *BAJPAY* teaches the method of claim 10, further comprising routing a media portion of the toll-free call through a media server farm, wherein the media server farm configures the media portion of the toll-free call for routing (*BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: routing a toll-free call from an endpoint device to another endpoint device*).

Regarding claim 15, *BAJPAY* teaches the method of claim 10, wherein receiving, from an originating RESPORG, a toll-free further comprises:

receiving, at a session border controller, a data portion of the toll-free call (*BAJPAY, Paragraph(s) [18]-[19]*); and receiving, at a media gateway server farm, a media portion of the call (*BAJPAY, Paragraph(s) [18]-[19]*).

Regarding claim 16, *BAJPAY* teaches the method of claim 15, wherein routing, to the terminating RESPORG further comprises:

routing, from a second session border controller to the terminating RESPORG, the data portion of the toll-free call (*BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]*);

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routing, from the media gateway server farm to the terminating RESPORG, the media portion of the call (*BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]*);

Regarding claim 18, *BAJPAY* teaches the system of claim 17, further comprising a thrasher component for storing a call data record of the toll-free call (*BAJPAY, Paragraph(s) [34], [58]*).

Regarding claim 19, *BAJPAY* teaches the system of claim 17, further comprising a first session border controller for receiving the data portion of the toll-free call, wherein the first session border controller is further configured to read data from a header of the data portion of the toll-free call and to write data to the header of the data portion of the toll-free call (*BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]*); and

a second session border controller for routing the data portion of the toll-free call to the terminating RESPORG based in part on the data read from the data portion of the toll-free call (*BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]*).

Regarding claim 20, *BAJPAY* teaches the system of claim 17, wherein the database stores at least one of:

enrollment status information of one or more enrolled RESPORGs (*BAJPAY, Paragraph(s) [79], [85]-[86]*);

payment information of each of the one or more enrolled RESPORGs, comprising:

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a buy rate; and a floor rate (*BAJPAY, Paragraph(s) [34], [58]*); identification information of each of the one or more enrolled RESPORGs (*BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]*); and an access control list for listing each enrolled RESPORG (*BAJPAY, Paragraph(s) [35]-[36], [58]*).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUY C. HO whose telephone number is (571)270-1108. The examiner can normally be reached on Monday - Friday, 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on 571-272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system,

Art Unit: 2644

see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HUY C HO/

Primary Examiner, Art Unit 2644

Notice of References Cited	Application/Control No. 14/836,396		Applicant(s)/Patent Under Reexamination ALDWORTH, DAVID	
	Examiner HUY C. HO		Art Unit 2644	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2010/0014651 A1	01-2010	BAJPAY; PARITOSH	H04M3/5166	379/114.24
	B	US-				
	C	US-				
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes 	Application/Control No. 14836396	Applicant(s)/Patent Under Reexamination ALDWORTH, DAVID
	Examiner HUY C HO	Art Unit 2644

CPC- SEARCHED		
Symbol	Date	Examiner
H04M15/00; 15/08; 15/90; H04M2215/62; H04W4/16.	9/5/2016	HH

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
379	114.24	9/3/2016	HH

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Database Search	9/3/2016	HH
Inventor Search	9/3/2016	HH

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
379	114.24-114.25; 222;223	9/3/2016	HH
455	406;445	9/10/2016	HH

	/HUY C HO/ Primary Examiner.Art Unit 2644
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S/N 14/836,396

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor:	David Aldworth	Examiner:	Unassigned
Serial No.:	14/836,396	Group Art Unit:	2562
Filed:	August 26, 2015	Docket No.:	40595.0002US01
Title:	ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE		

Filed via EFS-Web

INFORMATION DISCLOSURE STATEMENT (37 C.F.R. § 1.97(b))

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Attention: Commissioner for Patents

With regard to the above-identified application, the items of information listed on the enclosed Form 1449 are brought to the attention of the Examiner.

This statement should be considered because it is submitted within three months of the filing date of the above-identified application, which is not an application under 37 C.F.R. § 1.53(d). Accordingly, no fee is due for consideration of the items listed on the enclosed Form 1449.

In accordance with 37 C.F.R. §1.98(a)(2), a copy of each foreign patent and/or a copy of each publication, other than U.S. patents and U.S. patent application publications, listed on the accompanying Form 1449 is enclosed.

No representation is made that a reference is "prior art" within the meaning of 35 U.S.C. §§ 102 and 103 and Applicants reserve the right, pursuant to 37 C.F.R. § 1.131 or otherwise, to establish that the reference(s) are not "prior art."

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H.H./ (08/30/2016)

Consideration of the items listed is respectfully requested. Pursuant to the provisions of M.P.E.P. 609, it is requested that the Examiner return a copy of the attached Form 1449, marked as being considered and initialed by the Examiner, to the undersigned with the next official communication.

Please charge any additional fees or credit any overpayment to Deposit Account No. 13-2725.



Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, MN 55402-0903
(612) 332-5300

Dated: 11/25/15

/George C. Lewis/
George C. Lewis
Reg. No. 53,214
GCL:RDP:ans

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H.H./ (08/30/2016)

Receipt date: 11/25/2015
Sheet 1 of 1

Date Filed: November 25, 2015

FORM 1449* INFORMATION DISCLOSURE STATEMENT IN AN APPLICATION (Use several sheets if necessary)	Docket Number: 40595.0002US01	Application Number: 14/836,396
	Inventor: David Aldworth	
	Filing Date: 08/262015	Group Art Unit: 2652

[illegible]

23552
PATENT TRADEMARK OFFICE

EXAMINER	/Huy Ho/ (08/30/2016)	DATE CONSIDERED
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form for next communication to the Applicant.		

*Substitute Disclosure Statement Form (PTO-1449)

Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H.H./ (08/30/2016)

Petitioner Affinity Network, Inc. – Ex. 1002, 0151

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	22134	(h04m15/00 h04m15/08 h04m15/90 h04m2215/62).cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:04
L2	21562	1 and (@ad< "20150826" @rlad< "20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:05
L3	782	2 and (((toll near3 free) toll\$free) near6 (number call))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:05
L4	25	3 and ((origina\$4 termina\$4) near6 (responsible organization RESPORG))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:05
L5	13470	(h04w4/16).cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:18
L6	13348	5 and (@ad< "20150826" @rlad< "20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:19
L7	155	6 and (((toll near3 free) toll\$free) near6 (number call))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:19
L8	1	7 and ((origina\$4 termina\$4) near6 (responsible	US-PGPUB;	OR	OFF	2016/09/05

		organization RESPORG))	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			12:19
L9	5301	(455/406 379/114.24 379/114.25 379/222 379/223).ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:20
L10	250	9 and (((toll near3 free) toll\$free) near6 (number call))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:20
L11	5	10 and ((origina\$4 termina\$4) near6 (responsible organization RESPORG))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:20
S1	9	("7953218" "8792478" "8559614" "9036625").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/04/15 09:25
S2	28	resporg	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/04/15 09:36
S3	27	S2 and (toll near3 free)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/04/15 09:36
S4	27	S3 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/04/15 09:37
S5	0	((David) near2 (Aldworth)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/27 00:32
S6	5969	455/445.ccls.	US-PGPUB; USPAT; USOCR;	OR	OFF	2016/08/27 00:34

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S7	5964	S6 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:34
S8	95	S7 and ((toll near3 free) (toll\$free))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:34
S9	92	S8 and (subscriber customer client user)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:35
S10	85	S9 and (rout\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:35
S11	75	S10 and (id identifier identification)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:35
S12	52	S11 and ((origina\$4 termina\$4) near5 (caller organization subscriber customer client user))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:37
S13	46	S12 and (service near4 provider)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:39
S14	3869	((toll near3 free) (toll\$free)) near5 (call)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:48
S15	3847	S14 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB;	OR	OFF	2016/08/27

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			00:48
S16	3688	S15 and (subscriber customer client user)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:48
S17	1991	S16 and (service near4 provider)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:48
S18	1613	S17 and (rout\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:48
S19	34	S18 and ((origina\$4 termina\$4) near6 (responsible organization RESPORG))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:50
S20	9	("7953218" "8792478" "8559614" "9036625").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 19:41
S21	8	("6035028" "6055232" "6285749" "6442169" "6584178" "6584183").PN. OR ("7953218").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/30 19:53
S22	270	"5867562"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 19:57
S23	0	(toll\$free) with (router near4 policy)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:18
S24	0	(toll\$free) with (policy near4 router)	US-PGPUB; USPAT; USOCR;	OR	OFF	2016/08/30 20:19

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S25	2418	(policy near4 router)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:19
S26	1	S25 and (toll\$free near5 call)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:19
S27	1	S26 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:20
S28	9871	((toll near3 free) toll\$free) near6 (number call)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:22
S29	9838	S28 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:22
S31	16	S29 and (policy near4 router)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:23
S32	1954	(policy near3 router)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:41
S33	1946	S32 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:43
S34	15	S33 and (((toll near3 free) toll\$free) near6 (number call))	US-PGPUB;	OR	OFF	2016/08/30

EAST Search History

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB		20:43
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9/ 5/ 2016 12:21:55 PM

C:\ Users\ hho3\ Documents\ EAST\ Workspaces\ 14836396.wsp



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BIB DATA SHEET

CONFIRMATION NO. 3541

SERIAL NUMBER 14/836,396	FILING or 371(c) DATE 08/26/2015 RULE	CLASS 455	GROUP ART UNIT 2644	ATTORNEY DOCKET NO. 17005.0002US01		
APPLICANTS INVENTORS David Aldworth, Denver, CO; ** CONTINUING DATA ***** ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** * SMALL ENTITY ** 09/09/2015						
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☒ No Verified and /HUY C HO/ Acknowledged Examiner's Signature		☐ Met after Allowance HH Initials	STATE OR COUNTRY CO	SHEETS DRAWINGS 6	TOTAL CLAIMS 20	INDEPENDENT CLAIMS 3
ADDRESS MERCHANT & GOULD P.C. P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903 UNITED STATES						
TITLE ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE						
FILING FEE RECEIVED 800	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit			

<i>Index of Claims</i> 	Application/Control No. 14836396	Applicant(s)/Patent Under Reexamination ALDWORTH, DAVID
	Examiner HUY C HO	Art Unit 2644

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47										
CLAIM		DATE								
Final	Original	09/03/2016								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
	7	✓								
	8	✓								
	9	✓								
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	13	✓								
	14	✓								
	15	✓								
	16	✓								
	17	✓								
	18	✓								
	19	✓								
	20	✓								

S/N 14/836,396

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor:	David Aldworth	Examiner:	Huy C. Ho
Serial No.:	14/836,396	Group Art Unit:	2644
Filed:	August 26, 2015	Docket No.:	17005.0002US01
		Confirmation No.	3541
Title:	ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE		

Filed by EFS Web

AMENDMENT & RESPONSE

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Attention: Commissioner for Patents

In response to the Office Action dated September 12, 2016, please amend the above-identified application as follows:

Amendments to the Claims begin on page 1 of this paper.

Remarks/Arguments begin on page 8 of this paper.

Electronic Acknowledgement Receipt	
EFS ID:	27719104
Application Number:	14836396
International Application Number:	
Confirmation Number:	3541
Title of Invention:	ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE
First Named Inventor/Applicant Name:	David Aldworth
Customer Number:	23552
Filer:	George Cone Lewis/Aimee Stevens
Filer Authorized By:	George Cone Lewis
Attorney Docket Number:	17005.0002US01
Receipt Date:	07-DEC-2016
Filing Date:	26-AUG-2015
Time Stamp:	12:09:17
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2016-12-07-AMENDMENT-17005-0002US01.pdf	132013 5f7728b56a973ac48193e83f582bdfc772364c8c	yes	11

Multipart Description/PDF files in .zip description			
Document Description		Start	End
Applicant Arguments/Remarks Made in an Amendment		8	11
Claims		2	7
Amendment/Req. Reconsideration-After Non-Final Reject		1	1

Warnings:

Information:

Total Files Size (in bytes):	132013
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

REMARKS

The Office Action dated September 12, 2016 has been received and the Examiner's comments carefully reviewed. In the present response, claims 1, 10 and 20 are amended, no claims are added, and no claims are canceled. No new matter has been added by way of the present claim amendments. Accordingly, claims 1-20 remain pending. Favorable reconsideration of this application is requested in view of the above-identified amendments and the following remarks.

Claim Rejections - 35 USC § 102

In the Office Action, claims 1-20 were rejected under 35 U.S.C. 102(a)(2) as being anticipated by Bajpay et al. (U.S. 2010/0014651) (hereinafter "Bajpay"). Applicant respectfully traverses this rejection and does not accede to the characterizations of this reference or the claims as set forth in the Office Action.

In non-limiting and non-exclusive embodiments, aspects of the present application are directed toward the use of a toll-free exchange to more efficiently route toll free phone calls. As described with reference to at least FIGs. 3 and 4 of the Published Application, the toll-free exchange (e.g., toll free exchange 302) routes toll-free calls using a RESPORG ID of the terminating RESPORG. In a non-exclusive and non-limiting example, the toll-free exchange receives a toll-free call, looks up the RESPORG ID of the terminating RESPORG using the toll-free number, and routes the call using that RESPORG ID, instead of via the normal telephone network process of routing toll-free calls through a series of switches, service providers, and multiple RESPORGs using a carrier identification code (CIC).

A. Claims 1-9

Claim 1 is amended to recite, in part, "[a] method for routing toll-free calls through a toll-free exchange, the method, performed by a policy router of the toll-free exchange, comprising...querying a database to determine a RESPORG identification associated with the terminating RESPORG, wherein the database is associated with the toll-free exchange and stores the RESPORG identification associated with the terminating RESPORG; and routing, to the terminating RESPORG, the toll-free call based in part on the RESPORG identification."

Bajpay is directed to automatically processing 1-800 service alarms when a caller reports a problem with a 1-800 telephone number. Bajpay, ¶ [0043]. Bajpay fails entirely to disclose or suggest a method of routing toll-free calls through a toll-free exchange. Bajpay discloses, in FIG. 1, a switched network that connects callers and called parties using a series of telephone switches. Bajpay, ¶ [0012]. In fact, Bajpay is describing in FIG. 1 the same multi-provider traditional telephone system that is described in the Published Application in FIG. 1. Bajpay's disclosed switched network fails entirely to disclose or suggest the toll-free exchange claimed and described in the Published Application at least because the toll-free exchange replaces and improves upon the prior art switched network method of routing calls. No such toll-free exchange is disclosed or even suggested in Bajpay at least because Bajpay is merely directed to automatically processing problems with 1-800 telephone numbers and not with the way in which those toll-free numbers are routed. Bajpay therefore does not disclose or suggest "[a] method for routing toll-free calls through a toll-free exchange, the method, performed by a policy router of the toll-free exchange" as recited in claim 1. Accordingly, for at least these reasons, claim 1 is allowable over Bajpay.

Furthermore, Bajpay fails to disclose or suggest, "querying a database to determine a RESPORG identification associated with the terminating RESPORG, wherein the database is associated with the toll-free exchange and stores the RESPORG identification associated with the terminating RESPORG; and routing, to the terminating RESPORG, the toll-free call based in part on the RESPORG identification" as recited in claim 1. As described herein, Bajpay merely discloses the prior art method of routing 1-800 telephone calls using a switched network that uses a carrier identification code to route such calls. Bajpay, ¶ [0048]. Even more, Bajpay merely discloses a database (e.g., database 115) that is associated with an application server of a switched network (e.g., network 110). That database is not "associated with the toll-free exchange" nor does it store "the RESPORG identification associated with the terminating RESPORG" as recited in claim 1. Accordingly, for at least these reasons, Bajpay fails to disclose or suggest at least "querying a database to determine a RESPORG identification associated with the terminating RESPORG, wherein the database is associated with the toll-free exchange and stores the RESPORG identification associated with the terminating RESPORG" as recited in claim 1. Accordingly, for at least these additional reasons, claim 1 is further allowable over Bajpay.

Accordingly, for at least these reasons, Applicant respectfully requests reconsideration and withdrawal of the rejection to claim 1 and claims 2-9, which depend therefrom.

B. Claims 10-16

Independent claim 10 is amended to recite, in part, “[a] method for routing toll-free calls without using a carrier identification code (CIC), comprising...querying a database to determine a RESPORG identification associated with the terminating RESPORG, wherein the database is associated with the toll-free exchange and stores the RESPORG identification associated with the terminating RESPORG; and routing, to the terminating RESPORG, the toll-free call through a protected network based in part on the RESPORG identification.” Independent claim 10 is also allowable at least for similar reasons as described with reference to claim 1

Accordingly, for at least these reasons, Applicant respectfully requests reconsideration and withdrawal of the rejection to independent claim 10 and claims 11-16, which depend therefrom.

C. Claims 17-20

Independent claim 17 recites, in part, “[a] system for routing a toll-free call using a toll-free exchange, the system comprising...a policy router for determining, based at least on data included within the data portion, a responsible organization (RESPORG) identification (ID) associated with a terminating RESPORG; a service control point for storing the RESPORG ID of the terminating RESPORG; a database for storing enrollment information associated with the terminating RESPORG...” For at least similar reasons as described herein, independent claim 17 is also allowable over Bajpay.

Accordingly, for at least these reasons, Applicant respectfully requests reconsideration and withdrawal of the rejection to independent claim 17 and claims 18-20, which depend therefrom.

CONCLUSION

It is respectfully submitted that each of the presently pending claims is in condition for allowance and notification to that effect is requested. Although certain arguments regarding patentability are set forth herein, there may be other arguments and reasons why the claimed invention is patentably distinct. The Applicants reserve the right to raise these arguments in the future. The Examiner is invited to contact the Applicants' representative at the below-listed telephone number if it is believed that the prosecution of this application may be assisted thereby.

Please charge any additional fees or credit any overpayment to Deposit Account No. 13-2725.

Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, MN 55402-0903
(612) 332-5300

Dated: 12/7/2016

/George C. Lewis/
George C. Lewis
Reg. No. 53,214
GCL:RDP:ans

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) A method for routing toll-free calls through a toll-free exchange, the method, performed by a policy router of the toll-free exchange, comprising:

receiving, from an originating responsible organization (RESPORG), a toll-free call, wherein the toll-free call is directed to a toll-free subscriber that is served by a terminating RESPORG;

querying a database to determine a RESPORG identification associated with the terminating RESPORG, wherein the database is associated with the toll-free exchange and stores the RESPORG identification associated with the terminating RESPORG; and

routing, to the terminating RESPORG, the toll-free call based in part on the RESPORG identification.

2. (Original) The method of claim 1, wherein the originating RESPORG and the terminating RESPORG are enrolled in the toll-free exchange.

3. (Original) The method of claim 1, wherein the RESPORG identification is obtained by a service control point.

4. (Original) The method of claim 1, further comprising:

monitoring the toll-free call to generate a call detail record, wherein the call detail record includes at least one of: a time duration of the toll-free call, an identification of the originating RESPORG and the terminating RESPORG, buy-rate of the terminating RESPORG, a floor rate of the originating RESPORG, and a cost associated with the toll-free call.

5. (Original) The method of claim 4, wherein routing to the terminating RESPORG further comprises:

determining that the floor rate of the originating RESPORG is less than the buy rate of the terminating RESPORG.

6. (Original) The method of claim 1, further comprising:

determining whether the terminating RESPORG is enrolled with the exchange;

based on a determination that the terminating RESPORG is not enrolled with the exchange, rejecting the toll-free call; and

based on a determination that the terminating RESPORG is enrolled with the exchange, connecting the toll-free call to the terminating RESPORG.

7. (Original) The method of claim 6, wherein based on a determination that the terminating RESPORG is not enrolled with the exchange, further comprises:

determining whether the originating RESPORG requested to connect the toll-free call to a public switched telephone network.

8. (Original) The method of claim 1, wherein a carrier identification code (CIC) of the terminating RESPORG is not used by the method.

9. (Original) The method of claim 1, further comprising routing a media portion of the toll-free call through a media server farm, wherein the media server farm configures the media portion of the toll-free call for routing.

10. (Currently Amended) A method for routing toll-free calls without using a carrier identification code (CIC), comprising:

receiving, from an originating responsible organization (RESPORG), a toll-free call, wherein the toll-free call is directed to a toll-free subscriber that is served by a terminating RESPORG;

querying a database to determine a RESPORG identification associated with the terminating RESPORG, wherein the database is associated with the toll-free exchange and stores the RESPORG identification associated with the terminating RESPORG; and

routing, to the terminating RESPORG, the toll-free call through a protected network based in part on the RESPORG identification.

11. (Original) The method of claim 10, further comprising:

determining whether the terminating RESPORG is enrolled with the exchange;

based on a determination that the terminating RESPORG is not enrolled with the exchange, rejecting the toll-free call; and

based on a determination that the terminating RESPORG is enrolled with the exchange, connecting the toll-free call to the terminating RESPORG.

12. (Original) The method of claim 10, further comprising:

monitoring the toll-free call to generate a call detail record, wherein the call detail record includes at least one of: a time duration of the toll-free call, an identification of the originating RESPORG and the terminating RESPORG, buy-rate of the terminating RESPORG, a floor rate of the originating RESPORG, and a cost associated with the toll-free call.

13. (Original) The method of claim 12, wherein routing to the terminating RESPORG further comprises:

determining that the floor rate of the originating RESPORG is less than the buy rate of the terminating RESPORG.

14. (Original) The method of claim 10, further comprising routing a media portion of the toll-free call through a media server farm, wherein the media server farm configures the media portion of the toll-free call for routing.

15. (Original) The method of claim 10, wherein receiving, from an originating RESPORG, a toll-free further comprises:

receiving, at a session border controller, a data portion of the toll-free call; and

receiving, at a media gateway server farm, a media portion of the call.

16. (Original) The method of claim 15, wherein routing, to the terminating RESPORG further comprises:

routing, from a second session border controller to the terminating RESPORG, the data portion of the toll-free call;

routing, from the media gateway server farm to the terminating RESPORG, the media portion of the call.

17. (Original) A system for routing a toll-free call using a toll-free exchange, the system comprising:

at least one session border controller for routing a data portion of the toll-free call within the toll-free exchange;

a policy router for determining, based at least on data included within the data portion, a responsible organization (RESPORG) identification (ID) associated with a terminating RESPORG;

a service control point for storing the RESPORG ID of the terminating RESPORG;

a database for storing enrollment information associated with the terminating RESPORG;

and

a media gateway server farm having one or more server computing devices for routing a media portion of the toll-free call.

18. (Original) The system of claim 17, further comprising a thrasher component for storing a call data record of the toll-free call.

19. (Original) The system of claim 17, further comprising
- a first session border controller for receiving the data portion of the toll-free call, wherein the first session border controller is further configured to read data from a header of the data portion of the toll-free call and to write data to the header of the data portion of the toll-free call;
 - and
 - a second session border controller for routing the data portion of the toll-free call to the terminating RESPORG based in part on the data read from the data portion of the toll-free call.
20. (Currently Amended) The system of claim 17, wherein the database stores at least one of:
- enrollment status information of one or more enrolled RESPORGs;
 - payment information of each of the one or more enrolled RESPORGs, comprising:
 - a buy rate; and
 - a floor rate;
 - identification information of each of the one or more enrolled RESPORGs; and
 - an access control list for listing each enrolled RESPORG[[:]].

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875				Application or Docket Number 14/836,396		Filing Date 08/26/2015		☐ To be Mailed		
ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO										
APPLICATION AS FILED – PART I										
(Column 1)			(Column 2)							
FOR		NUMBER FILED	NUMBER EXTRA		RATE (\$)		FEE (\$)			
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))		N/A	N/A		N/A					
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))		N/A	N/A		N/A					
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))		N/A	N/A		N/A					
TOTAL CLAIMS (37 CFR 1.16(j))		minus 20 =	*		X \$ =					
INDEPENDENT CLAIMS (37 CFR 1.16(h))		minus 3 =	*		X \$ =					
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))		If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).								
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))										
* If the difference in column 1 is less than zero, enter "0" in column 2.						TOTAL				
APPLICATION AS AMENDED – PART II										
(Column 1)			(Column 2)			(Column 3)				
AMENDMENT	12/07/2016	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)		
	Total (37 CFR 1.16(j))	* 20	Minus	** 20	= 0	x \$40 =		0		
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0	x \$210 =		0		
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))									
						TOTAL ADD'L FEE		0		
(Column 1)			(Column 2)			(Column 3)				
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)		
	Total (37 CFR 1.16(j))	*	Minus	**	=	X \$ =				
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =				
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))									
						TOTAL ADD'L FEE				
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.										

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/836,396	08/26/2015	David Aldworth	17005.0002US01	3541

23552	7590	03/02/2017
MERCHANT & GOULD P.C.		
P.O. BOX 2903		
MINNEAPOLIS, MN 55402-0903		

EXAMINER	
HO, HUY C	

ART UNIT	PAPER NUMBER
2644	

NOTIFICATION DATE	DELIVERY MODE
03/02/2017	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTO23552@merchantgould.com

Office Action Summary	Application No. 14/836,396	Applicant(s) ALDWORTH, DAVID	
	Examiner HUY C. HO	Art Unit 2644	AIA (First Inventor to File) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/07/2016.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

- 5) ☒ Claim(s) 1-20 is/are pending in the application.
5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-20 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☒ The drawing(s) filed on 08/26/2015 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

- a) ☐ All b) ☐ Some** c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) ☒ Notice of References Cited (PTO-892) | 3) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date ____. | 4) ☐ Other: ____. |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1 and 10, have been considered but are moot because the claims have been amended with new limitations. Therefore, a new ground of rejection is provided as followings.

Claim Rejections - 35 USC § 102

2. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(a)(2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

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4. Claim(s) 17-20 is/are rejected under 35 U.S.C. 102(a)(2) as being anticipated by BAJPAY et al. (U.S. Patent Publication No. 2010/0014651)

Regarding claim 17, (Original) BAJPAY teaches a system for routing a toll-free call using a toll-free exchange (BAJPAY, the Abstract), the system comprising:

at least one session border controller for routing a data portion of the toll-free call within the toll-free exchange (BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: multiple edge control points for routing a toll-free call);

a policy router for determining, based at least on data included within the data portion, a responsible organization (RESPORG) identification (ID) associated with a terminating RESPORG (BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: a toll-free call is serviced and routed by a network router/server);

a service control point for storing the RESPORG ID of the terminating RESPORG (BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: a toll-free call is serviced and routed by a network router/server);

a database for storing enrollment information associated with the terminating RESPORG (BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: database 115); and

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a media gateway server farm having one or more server computing devices for routing a media portion of the toll-free call (*BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: routing a toll-free call from an endpoint device to another endpoint device*).

Regarding claim 18, (Original) *BAJPAY* teaches the system of claim 17, further comprising a thrasher component for storing a call data record of the toll-free call (*BAJPAY, Paragraph(s) [34], [58]*).

Regarding claim 19, (Original) *BAJPAY* teaches the system of claim 17, further comprising a first session border controller for receiving the data portion of the toll-free call, wherein the first session border controller is further configured to read data from a header of the data portion of the toll-free call and to write data to the header of the data portion of the toll-free call (*BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]*); and

a second session border controller for routing the data portion of the toll-free call to the terminating RESPORG based in part on the data read from the data portion of the toll-free call (*BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]*).

Regarding claim 20, (Currently Amended) *BAJPAY* teaches the system of claim 17, wherein the database stores at least one of:

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enrollment status information of one or more enrolled
RESPORGs (*BAJPAY, Paragraph(s) [79], [85]-[86]*);
payment information of each of the one or more enrolled
RESPORGs, comprising:
a buy rate; and a floor rate (*BAJPAY, Paragraph(s) [34],
[58]*); identification information of each of the one or more
enrolled RESPORGs (*BAJPAY, Figures 1 and 2, Paragraph(s) [3],
[15]-[19]*); and an access control list for listing each enrolled
RESPORG (*BAJPAY, Paragraph(s) [35]-[36], [58]*).

Claim Rejections - 35 USC § 103

5. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

6. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-16 is/are rejected under 35 U.S.C. 103 as being unpatentable over BAJPAY et al. (U.S. Patent Publication No. 2010/0014651) and further in view of Lehmacher et al. (U.S. Patent No. 6343123).

Regarding claim 1, (Currently Amended) BAJPAY teaches a method for routing toll-free calls through a toll-free exchange (BAJPAY, the Abstract), the method, performed by a policy router, comprising:

receiving, from an originating responsible organization (RESPORG), a toll-free call, wherein the toll-free call is directed to a toll-free subscriber that is served by a terminating RESPORG (BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: a toll-free call is serviced and routed by a network router/server);

querying a database to determine a RESPORG identification associated with the terminating RESPORG (BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: database 115); and

routing, to the terminating RESPORG, the toll-free call based in part on the RESPORG identification (BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: routing a toll-free call from an endpoint device to another endpoint device).

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BAJPAY does not teach "the database is associated with the toll-free exchange and stores the RESPORG identification associated with the terminating RESPORG".

Lehmacher teaches "the database is associated with the toll-free exchange and stores the RESPORG identification associated with the terminating RESPORG" (*Lehmacher, the Abstract, Col. 6 Lines 50-67, Col. 7 Lines 1-25, Lines 55-67, Col. 8 Lines 1-9*).

Therefore, it would have been obvious to a person of ordinary skill in the art before the effective filing date of the claimed invention was made to modify BAJPAY by incorporating the teachings of Lehmacher, method and system for establishing a toll-free communication connection, wherein the system provides interconnections of network devices including service unit in connection with toll-free exchange unit and database in order to provide signaling, connection links and routing for toll-free calls in the network, thus the network devices of the system provide efficient routing for toll-free calls.

Regarding claim 10, (Currently Amended) BAJPAY teaches a method for routing toll-free calls without using a carrier identification code (CIC) (*BAJPAY, the Abstract*), comprising:

receiving, from an originating responsible organization (RESPORG), a toll-free call, wherein the toll-free call is

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directed to a toll-free subscriber that is served by a terminating RESPORG (BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: a toll-free call is serviced and routed by a network router/server);

querying a database to determine a RESPORG identification associated with the terminating RESPORG (BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: database 115); and

routing, to the terminating RESPORG, the toll-free call through a protected network based in part on the RESPORG identification (BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: routing a toll-free call from an endpoint device to another endpoint device).

BAJPAY does not teach "the database is associated with the toll-free exchange and stores the RESPORG identification associated with the terminating RESPORG".

Lehmacher teaches "the database is associated with the toll-free exchange and stores the RESPORG identification associated with the terminating RESPORG" (Lehmacher, the Abstract, Col. 6 Lines 50-67, Col. 7 Lines 1-25, Lines 55-67, Col. 8 Lines 1-9).

Therefore, it would have been obvious to a person of ordinary skill in the art before the affective filing date of the claimed invention was made to modify BAJPAY by incorporating

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the teachings of Lehmacher, method and system for establishing a toll-free communication connection, wherein the system provides interconnections of network devices including service unit in connection with toll-free exchange unit and database in order to provide signaling, connection links and routing for toll-free calls in the network, thus the network devices of the system provide efficient routing for toll-free calls.

Regarding claim 2, (Original) BAJPAY, as modified by Lehmacher, teaches the method of claim 1, wherein the originating RESPORG and the terminating RESPORG are enrolled in the toll-free exchange (*BAJPAY, Paragraph(s) [3], [46]-[47]*).

Regarding claim 3, BAJPAY, as modified by Lehmacher, teaches the method of claim 1, wherein the RESPORG identification is obtained by a service control point (*BAJPAY, Paragraph(s) [58], [60]-[61]*).

Regarding claim 4, (Original) BAJPAY, as modified by Lehmacher, teaches the method of claim 1, further comprising:

monitoring the toll-free call to generate a call detail record, wherein the call detail record includes at least one of:

a time duration of the toll-free call, an identification of the originating RESPORG and the terminating RESPORG, buy-rate of the terminating RESPORG, a floor rate of the originating RESPORG, and a cost associated with the toll-free call (*BAJPAY,*

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Paragraph(s) [34], [58]).

Regarding claim 5, (Original) BAJPAY, as modified by Lehmacher, teaches the method of claim 4, wherein routing to the terminating RESPORG further comprises:

determining that the floor rate of the originating RESPORG is less than the buy rate of the terminating RESPORG (BAJPAY, *Paragraph(s) [34], [58]).*

Regarding claim 6, (Original) BAJPAY, as modified by Lehmacher, teaches the method of claim 1, further comprising:

determining whether the terminating RESPORG is enrolled with the exchange (BAJPAY, *Paragraph(s) [12]-[15]);*

based on a determination that the terminating RESPORG is not enrolled with the exchange, rejecting the toll-free call (BAJPAY, *Paragraph(s) [12]-[15]);* and

based on a determination that the terminating RESPORG is enrolled with the exchange, connecting the toll-free call to the terminating RESPORG (BAJPAY, *Paragraph(s) [12]-[15]).*

Regarding claim 7, (Original) BAJPAY, as modified by Lehmacher, teaches the method of claim 6, wherein based on a determination that the terminating RESPORG is not enrolled with the exchange, further comprises:

determining whether the originating RESPORG requested to connect the toll-free call to a public switched telephone

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network (*BAJPAY, Paragraph(s) [12]-[15]*).

Regarding claim 8, (Original) *BAJPAY*, as modified by Lehmaner, teaches the method of claim 1, wherein a carrier identification code (CIC) of the terminating RESPORG is not used by the method (*BAJPAY, Paragraph(s) [48]*).

Regarding claim 9, (Original) *BAJPAY*, as modified by Lehmaner, teaches the method of claim 1, further comprising routing a media portion of the toll-free call through a media server farm, wherein the media server farm configures the media portion of the toll-free call for routing (*BAJPAY, Paragraph(s) [18]-[19]*).

Regarding claim 11, (Original) *BAJPAY*, as modified by Lehmaner, teaches the method of claim 10, further comprising:

determining whether the terminating RESPORG is enrolled with the exchange (*BAJPAY, Paragraph(s) [12]-[15]*);

based on a determination that the terminating RESPORG is not enrolled with the exchange, rejecting the toll-free call (*BAJPAY, Paragraph(s) [12]-[15]*); and

based on a determination that the terminating RESPORG is enrolled with the exchange, connecting the toll-free call to the terminating RESPORG (*BAJPAY, Paragraph(s) [12]-[15]*).

Regarding claim 12, (Original) *BAJPAY*, as modified by Lehmaner, teaches the method of claim 10, further comprising:

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monitoring the toll-free call to generate a call detail record, wherein the call detail record includes at least one of:

a time duration of the toll-free call, an identification of the originating RESPORG and the terminating RESPORG, buy-rate of the terminating RESPORG, a floor rate of the originating RESPORG, and a cost associated with the toll-free call (*BAJPAY, Paragraph(s) [34], [58]*).

Regarding claim 13, (Original) *BAJPAY*, as modified by Lehmaner, teaches the method of claim 12, wherein routing to the terminating RESPORG further comprises:

determining that the floor rate of the originating RESPORG is less than the buy rate of the terminating RESPORG (*BAJPAY, Paragraph(s) [34], [58]*).

Regarding claim 14, (Original) *BAJPAY*, as modified by Lehmaner, teaches the method of claim 10, further comprising routing a media portion of the toll-free call through a media server farm, wherein the media server farm configures the media portion of the toll-free call for routing (*BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]: routing a toll-free call from an endpoint device to another endpoint device*).

Regarding claim 15, (Original) *BAJPAY*, as modified by Lehmaner, teaches the method of claim 10, wherein receiving, from an originating RESPORG, a toll-free further comprises:

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receiving, at a session border controller, a data portion of the toll-free call (*BAJPAY, Paragraph(s) [18]-[19]*); and receiving, at a media gateway server farm, a media portion of the call (*BAJPAY, Paragraph(s) [18]-[19]*).

Regarding claim 16, (Original) *BAJPAY*, as modified by *Lehmacher*, teaches the method of claim 15, wherein routing, to the terminating RESPORG further comprises:

routing, from a second session border controller to the terminating RESPORG, the data portion of the toll-free call (*BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]*);

routing, from the media gateway server farm to the terminating RESPORG, the media portion of the call (*BAJPAY, Figures 1 and 2, Paragraph(s) [3], [15]-[19]*).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this

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action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUY C. HO whose telephone number is (571)270-1108. The examiner can normally be reached on Monday - Friday, 8:00 a.m. - 5:00 p.m., EST.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathy Wang-Hurst can be reached on 571-270-5371. The fax phone number for the

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organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HUY C HO/
Primary Examiner, Art Unit 2644

Notice of References Cited	Application/Control No. 14/836,396	Applicant(s)/Patent Under Reexamination ALDORTH, DAVID	
	Examiner HUY C. HO	Art Unit 2644	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-6,343,123 B1	01-2002	Lehmacher; Markus	H04M15/00	379/220.01
	B	US-				
	C	US-				
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

<i>Index of Claims</i> 	Application/Control No. 14836396	Applicant(s)/Patent Under Reexamination ALDWORTH, DAVID
	Examiner HUY C HO	Art Unit 2644

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant		☐ CPA		☐ T.D.		☐ R.1.47			
CLAIM		DATE							
Final	Original	09/03/2016	02/25/2017						
	1	✓	✓						
	2	✓	✓						
	3	✓	✓						
	4	✓	✓						
	5	✓	✓						
	6	✓	✓						
	7	✓	✓						
	8	✓	✓						
	9	✓	✓						
	10	✓	✓						
	11	✓	✓						
	12	✓	✓						
	13	✓	✓						
	14	✓	✓						
	15	✓	✓						
	16	✓	✓						
	17	✓	✓						
	18	✓	✓						
	19	✓	✓						
	20	✓	✓						

Search Notes 	Application/Control No. 14836396	Applicant(s)/Patent Under Reexamination ALDWORTH, DAVID
	Examiner HUY C HO	Art Unit 2644

CPC- SEARCHED		
Symbol	Date	Examiner
H04M15/00; 15/08; 15/90; H04M2215/62; H04W4/16.	9/5/2016	HH

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
379	114.24	9/3/2016	HH

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Database Search	9/3/2016	HH
Inventor Search	9/3/2016	HH
Search update	2/25/2017	HH

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
379	114.24-114.25; 222;223	9/3/2016	HH
455	406;445	9/10/2016	HH

	/HUY C HO/ Primary Examiner.Art Unit 2644
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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	49	toll\$free near3 exchange	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/02/25 13:28
L3	49	2 and (@ad< "20150826" @rlad< "20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/25 13:28
L4	589	(379/222-223).ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/25 15:03
L5	189	4 and (@ad< "20150826" @rlad< "20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/25 15:03
L6	0	5 and (toll\$free near3 exchange)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/02/25 15:03
L7	16	5 and (toll\$free)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/02/25 15:04
L8	0	7 and (Resp\$Org RESPORG)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/25 15:05
L9	39	3 and (database)	US-PGPUB;	OR	ON	2017/02/25

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			15:31
L10	17	9 and ((termina\$4 end\$3 originat\$3) near4 (party subscriber caller organization))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/02/25 15:32
S1	9	("7953218" "8792478" "8559614" "9036625").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/04/15 09:25
S2	28	resporg	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/04/15 09:36
S3	27	S2 and (toll near3 free)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/04/15 09:36
S4	27	S3 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/04/15 09:37
S5	0	((David) near2 (Aldworth)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/27 00:32
S6	5969	455/445.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:34
S7	5964	S6 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:34
S8	95	S7 and ((toll near3 free) (toll\$free))	US-PGPUB; USPAT; USOCR;	OR	OFF	2016/08/27 00:34

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S9	92	S8 and (subscriber customer client user)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:35
S10	85	S9 and (rout\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:35
S11	75	S10 and (id identifier identification)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:35
S12	52	S11 and ((origina\$4 termina\$4) near5 (caller organization subscriber customer client user))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:37
S13	46	S12 and (service near4 provider)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:39
S14	3869	((toll near3 free) (toll\$free)) near5 (call)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:48
S15	3847	S14 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:48
S16	3688	S15 and (subscriber customer client user)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:48
S17	1991	S16 and (service near4 provider)	US-PGPUB;	OR	OFF	2016/08/27

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			00:48
S18	1613	S17 and (rout\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:48
S19	34	S18 and ((origina\$4 termina\$4) near6 (responsible organization RESPORG))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:50
S20	9	("7953218" "8792478" "8559614" "9036625").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 19:41
S21	8	("6035028" "6055232" "6285749" "6442169" "6584178" "6584183").PN. OR ("7953218").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/30 19:53
S22	270	"5867562"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 19:57
S23	0	(toll\$free) with (router near4 policy)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:18
S24	0	(toll\$free) with (policy near4 router)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:19
S25	2418	(policy near4 router)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:19
S26	1	S25 and (toll\$free near5 call)	US-PGPUB; USPAT; USOCR;	OR	OFF	2016/08/30 20:19

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S27	1	S26 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:20
S28	9871	((toll near3 free) toll\$free) near6 (number call)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:22
S29	9838	S28 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:22
S31	16	S29 and (policy near4 router)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:23
S32	1954	(policy near3 router)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:41
S33	1946	S32 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:43
S34	15	S33 and (((toll near3 free) toll\$free) near6 (number call))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:43
S35	22134	(h04m15/00 h04m15/08 h04m15/90 h04m2215/62).cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:04
S36	21562	S35 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB;	OR	OFF	2016/09/05

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			12:05
S37	782	S36 and (((toll near3 free) toll\$free) near6 (number call))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:05
S38	25	S37 and ((origina\$4 termina\$4) near6 (responsible organization RESPORG))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:05
S39	13470	(h04w4/16).cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:18
S40	13348	S39 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:19
S41	155	S40 and (((toll near3 free) toll\$free) near6 (number call))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:19
S42	1	S41 and ((origina\$4 termina\$4) near6 (responsible organization RESPORG))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:19
S43	5301	(455/406 379/114.24 379/114.25 379/222 379/223).ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:20
S44	250	S43 and (((toll near3 free) toll\$free) near6 (number call))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	OFF	2016/09/05 12:20

			IBM_TDB			
S45	5	S44 and ((origina\$4 termina\$4) near6 (responsible organization RESPORG))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:20
S46	0	((toll\$free) same (call) same (toll\$free near4 exchange) same (data\$base) same (router) same (originat\$3 terminat\$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:04
S47	0	((toll\$free) same (call) same (toll\$free near4 exchange)) and ((data\$base) same (router)) and ((originat\$3 terminat\$3) same (Resporg))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:05
S48	12	((toll\$free) same (call) same (toll\$free near4 exchange)) and ((data\$base) same (router)) and (originat\$3 terminat\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:05
S49	12	S48 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:05
S50	12	S49 and (policy)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:06
S51	0	S50 and ((responsible near4 organization) RESPORG)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:06
S52	0	S50 and (organization RESPORG)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:07
S53	10046	((toll near3 free) toll\$free) near6 (number call)	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2017/02/19 19:47

			EPO; JPO; DERWENT; IBM_TDB			
S54	10001	S53 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:47
S55	10001	S54	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:47
S56	128	S55 and ((origina\$4 termina\$4) near6 (responsible organization RESPORG))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:48
S57	36	S56 and (router)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:49
S58	9	S56 and (toll\$free near4 exchange)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:49
S59	4	S57 and (policy)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:49
S60	568	((toll\$free) near5 (call number telephone phone exchange)) and ((toll\$free Resp\$Org) near4 (data\$base system storage)) and (router) and (subscriber)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 20:05
S61	38	((toll\$free) near5 (call number telephone phone exchange)) and ((toll\$free Resp\$Org) near4 (data\$base system storage)) and (router) and (toll\$free near4 subscriber)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 20:05
S62	0	((toll\$free) near5 (call number telephone phone exchange)) and ((toll\$free Resp\$Org) near4 (data\$base system storage)) and (router) and (toll\$free near4 subscriber)	US-PGPUB; USPAT;	OR	OFF	2017/02/19 20:06

		system storage)) and (policy near4 router) and (toll\$free near4 subscriber)	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S63	0	((toll\$free) near5 (call number telephone phone exchange)) and ((toll\$free Resp\$Org) near4 (data\$base system storage)) and (policy near4 router)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 20:06
S64	190	((toll\$free) near5 (call number telephone phone exchange)) and ((toll\$free Resp\$Org) near4 (data\$base system storage)) and (policy) and (router)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 20:07
S65	1	S64 and ((origina\$4 termina\$4) near6 (responsible organization RESP\$ORG))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 20:07
S66	188	S64 and (origina\$4 termina\$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 20:07
S67	188	S64 and (originat\$3 terminat\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 20:08
S68	188	S67 and ((toll\$free Resp\$Org) near4 (exchange data\$base system storage))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 20:09
S69	18	S68 and (tandem)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 20:09
S70	28	("20050058270" "20120288078" "20130094640" "20130151314" "20130177142" "20140307730" "20160127539" "20160127540" "20160127541" "20160127548" "20160127549" "20160127552" "20160127562" "20160127566" "20160127569" "20160127808" "5528672" "6173279" "6236851" "6574661" "6654451" "6763376" "7099453"	US-PGPUB; USPAT; USOCR	OR	OFF	2017/02/19 20:13

EAST Search History

		"7542553" "7643627" "8379531" "8401161" "8619961").PN.				
S71	57	("4191860" "4757267" "4987587" "5095505" "5136636" "5185785" "5425090" "5430782" "5533107" "5533108" "5550910" "5563933" "5590186" "5590912" "5740237" "5771284" "5781620" "5796813" "5799072" "5812655" "5850432" "5878126" "5878127" "5887056" "5901213" "5905791" "5943411" "5956396" "5974133" "5987114" "6163597" "6188751" "6205214" "6327354" "6404876" "6411692" "6424702" "6445784").PN. OR ("6654451").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/02/19 20:18

2/ 25/ 2017 3:37:25 PM

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/836,396	08/26/2015	David Aldworth	17005.0002US01

CONFIRMATION NO. 3541

PUBLICATION NOTICE



23552
MERCHANT & GOULD P.C.
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903

Title:ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE

Publication No.US-2017-0064091-A1

Publication Date:03/02/2017

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publicly available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <http://pair.uspto.gov/>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



UNITED STATES PATENT AND TRADEMARK OFFICE

USPTO Automated Interview Request (AIR)

Jun 20 2017

This paper requesting to schedule and/or conduct an interview is appropriate because:

This submission is requested to be accepted as an authorization for this interview to communicate via the internet. Recognizing that Internet communications are not secure, I hereby authorize the USPTO to communicate with the undersigned concerning scheduling of the interview via video conference, instant messaging, or electronic mail, and to conduct the interview in accordance with office practice including video conferencing.

Name(s) :
George Lewis, Roshni Patel, David Aldworth

S-signature:
/George Lewis/

Registration Number:
53214

U.S. Application Number:
14836396

Confirmation Number:
3541

E-mail Address:
rchristensen@merchantgould.com

Phone Number:
3033571638

Proposed Time of Interview:
7-6-2017 2:00 PM ET

Preferred Interview Type:
In-person

I am the applicant or applicant's representative for this application.



UNITED STATES
PATENT AND TRADEMARK OFFICE

PALM-SILVER

S/N 14/836,396

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor:	David Aldworth	Examiner:	Huy C. Ho
Serial No.:	14/836,396	Group Art Unit:	2644
Filed:	August 26, 2015	Docket No.:	17005.0002US01
		Confirmation No.	3541
Title:	ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE		

Filed by EFS Web

AMENDMENT & RESPONSE

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Attention: Commissioner for Patents

In response to the Office Action dated March 2, 2017, please amend the above-identified application as follows:

Amendments to the Claims begin on page 2 of this paper.

Remarks/Arguments begin on page 8 of this paper.

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Previously Presented) A method for routing toll-free calls through a toll-free exchange, the method, performed by a policy router of the toll-free exchange, comprising:

receiving, from an originating responsible organization (RESPORG), a toll-free call, wherein the toll-free call is directed to a toll-free subscriber that is served by a terminating RESPORG;

querying a database to determine a RESPORG identification associated with the terminating RESPORG, wherein the database is associated with the toll-free exchange and stores the RESPORG identification associated with the terminating RESPORG; and

routing, to the terminating RESPORG, the toll-free call based in part on the RESPORG identification.

2. (Original) The method of claim 1, wherein the originating RESPORG and the terminating RESPORG are enrolled in the toll-free exchange.

3. (Original) The method of claim 1, wherein the RESPORG identification is obtained by a service control point.

4. (Original) The method of claim 1, further comprising:

monitoring the toll-free call to generate a call detail record, wherein the call detail record includes at least one of: a time duration of the toll-free call, an identification of the originating RESPORG and the terminating RESPORG, buy-rate of the terminating RESPORG, a floor rate of the originating RESPORG, and a cost associated with the toll-free call.

5. (Original) The method of claim 4, wherein routing to the terminating RESPORG further comprises:

determining that the floor rate of the originating RESPORG is less than the buy rate of the terminating RESPORG.

6. (Original) The method of claim 1, further comprising:

determining whether the terminating RESPORG is enrolled with the exchange;

based on a determination that the terminating RESPORG is not enrolled with the exchange, rejecting the toll-free call; and

based on a determination that the terminating RESPORG is enrolled with the exchange, connecting the toll-free call to the terminating RESPORG.

7. (Original) The method of claim 6, wherein based on a determination that the terminating RESPORG is not enrolled with the exchange, further comprises:

determining whether the originating RESPORG requested to connect the toll-free call to a public switched telephone network.

8. (Original) The method of claim 1, wherein a carrier identification code (CIC) of the terminating RESPORG is not used by the method.

9. (Original) The method of claim 1, further comprising routing a media portion of the toll-free call through a media server farm, wherein the media server farm configures the media portion of the toll-free call for routing.

10. (Previously Presented) A method for routing toll-free calls without using a carrier identification code (CIC), comprising:

receiving, from an originating responsible organization (RESPORG), a toll-free call, wherein the toll-free call is directed to a toll-free subscriber that is served by a terminating RESPORG;

querying a database to determine a RESPORG identification associated with the terminating RESPORG, wherein the database is associated with the toll-free exchange and stores the RESPORG identification associated with the terminating RESPORG; and

routing, to the terminating RESPORG, the toll-free call through a protected network based in part on the RESPORG identification.

11. (Original) The method of claim 10, further comprising:

determining whether the terminating RESPORG is enrolled with the exchange;

based on a determination that the terminating RESPORG is not enrolled with the exchange, rejecting the toll-free call; and

based on a determination that the terminating RESPORG is enrolled with the exchange, connecting the toll-free call to the terminating RESPORG.

12. (Original) The method of claim 10, further comprising:

monitoring the toll-free call to generate a call detail record, wherein the call detail record includes at least one of: a time duration of the toll-free call, an identification of the originating RESPORG and the terminating RESPORG, buy-rate of the terminating RESPORG, a floor rate of the originating RESPORG, and a cost associated with the toll-free call.

13. (Original) The method of claim 12, wherein routing to the terminating RESPORG further comprises:

determining that the floor rate of the originating RESPORG is less than the buy rate of the terminating RESPORG.

14. (Original) The method of claim 10, further comprising routing a media portion of the toll-free call through a media server farm, wherein the media server farm configures the media portion of the toll-free call for routing.

15. (Original) The method of claim 10, wherein receiving, from an originating RESPORG, a toll-free further comprises:

receiving, at a session border controller, a data portion of the toll-free call; and
receiving, at a media gateway server farm, a media portion of the call.

16. (Original) The method of claim 15, wherein routing, to the terminating RESPORG further comprises:

routing, from a second session border controller to the terminating RESPORG, the data portion of the toll-free call;

routing, from the media gateway server farm to the terminating RESPORG, the media portion of the call.

17. (Original) A system for routing a toll-free call using a toll-free exchange, the system comprising:

at least one session border controller for routing a data portion of the toll-free call within the toll-free exchange;

a policy router for determining, based at least on data included within the data portion, a responsible organization (RESPORG) identification (ID) associated with a terminating RESPORG;

a service control point for storing the RESPORG ID of the terminating RESPORG;

a database for storing enrollment information associated with the terminating RESPORG;

and

a media gateway server farm having one or more server computing devices for routing a media portion of the toll-free call based in part on the RESPORG ID of the terminating RESPORG.

18. (Original) The system of claim 17, further comprising a thrasher component for storing a call data record of the toll-free call.

19. (Original) The system of claim 17, further comprising
- a first session border controller for receiving the data portion of the toll-free call, wherein the first session border controller is further configured to read data from a header of the data portion of the toll-free call and to write data to the header of the data portion of the toll-free call; and
- a second session border controller for routing the data portion of the toll-free call to the terminating RESPORG based in part on the data read from the data portion of the toll-free call.
20. (Previously Presented) The system of claim 17, wherein the database stores at least one of:
- enrollment status information of one or more enrolled RESPORGs;
- payment information of each of the one or more enrolled RESPORGs, comprising:
- a buy rate; and
- a floor rate;
- identification information of each of the one or more enrolled RESPORGs; and
- an access control list for listing each enrolled RESPORG.

REMARKS

The Office Action dated March 2, 2017, has been received and the Examiner's comments carefully reviewed. In the present response, claim 17 is amended, no claims are added, and no claims are canceled. No new matter has been added by way of the present claim amendments. Accordingly, claims 1-20 remain pending. Favorable reconsideration of this application is requested in view of the above-identified amendments and the following remarks.

Interview Summary

Applicant thanks Examiner Ho for the courtesy of conducting an in-person interview on July 6, 2017 with attorney George Lewis (Reg. No. 53,214) and inventor David Aldworth. The Examiner and Applicant's Representative discussed the routing technology described in the Application, the wording of the pending claims, and the cited references. Applicant thanks the Examiner for his time and recommendations for advancing the present case to allowance. No agreement was reached.

Claim Rejections - 35 USC § 102

In the Office Action, claims 17-20 were rejected under 35 U.S.C. 102(a)(2) as being anticipated by Bajpay et al. (U.S. 2010/0014651) (hereinafter "Bajpay"). Applicant respectfully traverses this rejection and does not accede to the characterizations of this reference or the claims as set forth in the Office Action.

In non-limiting and non-exclusive embodiments, aspects of the present Application are directed toward the use of a toll-free exchange to more efficiently route toll free phone calls. As described with reference to at least FIGs. 3 and 4 of the Published Application, the toll-free exchange (e.g., toll free exchange 302) routes toll-free calls using a RESPORG ID of the terminating RESPORG. In a non-exclusive and non-limiting example, the toll-free exchange receives a toll-free call, looks up the RESPORG ID of the terminating RESPORG using the toll-free number, and routes the call using that RESPORG ID, instead of via the normal telephone network process of routing toll-free calls through a series of switches, service providers, and multiple RESPORGs using a carrier identification code (CIC).

Bajpay is directed to automatically processing 1-800 service alarms when a caller reports a problem with a 1-800 telephone number. Bajpay, ¶ [0043]. To the extent that Bajpay discloses

call routing, Bajpay describes the same multi-provider traditional telephone system that is described in the present Application in FIG. 1 that uses the telephone number to determine the destination of the call.

The claimed invention, on the other hand, requires *inter alia* “routing ... the toll-free call based in part on the RESPORG identification [of the terminating RESPORG]” (claim 17 as now amended). As discussed in the interview, until the Applicant’s innovation described in the present Application, RESPORG identifications have never before been used for call routing purposes, much less as a way to route calls directly to the termination RESPORG by skipping the traditional telephone system. Therefore, Applicant respectfully requests that the Examiner withdraw this rejection and issue a Notice of Allowance.

Claim Rejections - 35 U.S.C. § 103

Claims 1-16 are rejected under 35 U.S.C. § 103 as being unpatentable over Bajpay and further in view of Lehmacher et al. (U.S. 6,343,123) (hereinafter “Lehmacher”). Applicant respectfully traverses this rejection and does not concede to the characterization of these references or the pending application as cited in the Office Action.

As discussed above, Bajpay is directed to processing service alarms and, to the extent that Bajpay discloses call routing, Bajpay describes the same multi-provider traditional telephone system that is described in the Published Application in FIG. 1.

Lehmacher discloses a system for redirecting calls placed on a first network to a “universal toll-free number” to the appropriate local toll-free number on a second network. This system maintains a database of universal toll-free numbers and corresponding local toll-free numbers and networks. To the extent that Lehmacher discloses call routing, Lehmacher describes the same multi-provider traditional telephone system that is described in the Published Application in FIG. 1 with the only added feature of his system’s ability to recognize calls to the universal toll-free numbers and redirect them to the appropriate network and local toll-free number.

Neither Bajpay nor Lehmacher, together or separately, teach or suggest routing telephone calls by any way other than the traditional telephone system using the traditional telephone number.

The claimed invention, on the other hand, requires *inter alia* “routing ... the toll-free call based in part on the RESPORG identification [of the terminating RESPORG]” (claims 1 and 10). As discussed in the interview, until the Applicant’s innovation described in the present Application, RESPORG identifications have never before been used for call routing purposes, much less as a way to route calls directly to the termination RESPORG by skipping the traditional telephone system. Therefore, Applicant respectfully requests that the Examiner withdraw this rejection and issue a Notice of Allowance.

CONCLUSION

It is respectfully submitted that each of the presently pending claims is in condition for allowance and notification to that effect is requested. Although certain arguments regarding patentability are set forth herein, there may be other arguments and reasons why the claimed invention is patentably distinct. The Applicant reserves the right to raise these arguments in the future. The Examiner is invited to contact the Applicant’s representative at the below-listed telephone number if it is believed that the prosecution of this application may be assisted thereby.

Please charge any additional fees or credit any overpayment to Deposit Account No. 13-2725.

Respectfully submitted,

Date: July 11, 2017



/George C. Lewis/
George C. Lewis, Reg. No. 53,214
MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, Minnesota 55402-0903
(303) 357-1638

Electronic Patent Application Fee Transmittal				
Application Number:		14836396		
Filing Date:		26-Aug-2015		
Title of Invention:		ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE		
First Named Inventor/Applicant Name:		David Aldworth		
Filer:		George Cone Lewis/Rita Christensen		
Attorney Docket Number:		17005.0002US01		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension - 1 month with \$0 paid	2251	1	100	100
Miscellaneous:				
Total in USD (\$)				100

Electronic Acknowledgement Receipt	
EFS ID:	29753796
Application Number:	14836396
International Application Number:	
Confirmation Number:	3541
Title of Invention:	ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE
First Named Inventor/Applicant Name:	David Aldworth
Customer Number:	23552
Filer:	George Cone Lewis/Rita Christensen
Filer Authorized By:	George Cone Lewis
Attorney Docket Number:	17005.0002US01
Receipt Date:	11-JUL-2017
Filing Date:	26-AUG-2015
Time Stamp:	20:06:35
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$ 100
RAM confirmation Number	071217INTEFSW20070000
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Extension of Time	0002US01-aia0022.pdf	162839	no	2
			c43cbe6fddb009ce68dd66662c05585c6c086774		
Warnings:					
Information:					
2		0002US01-AMENDMENT-FOA2.pdf	149442	yes	10
			26ed37bcb61b576cc36cf3047dc59ff86245b9f0		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Response After Final Action		1	1	
	Claims		2	7	
	Applicant Arguments/Remarks Made in an Amendment		8	10	
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30780	no	2
			ffe03a04d130e630e88e508453fb1f0fd25e6a0		
Warnings:					
Information:					
Total Files Size (in bytes):			343061		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)		Docket Number (Optional) 17005.0002US01																																		
Application Number 14/836,396	Filed August 26, 2015																																			
For ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE																																				
Art Unit 2644	Examiner Ho																																			
This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above-identified application. The requested extension and fee are as follows (check time period desired and enter the appropriate fee below): <table style="width: 100%; border-collapse: collapse;"><thead><tr><th></th><th style="text-align: center;"><u>Fee</u></th><th style="text-align: center;"><u>Small Entity Fee</u></th><th style="text-align: center;"><u>Micro Entity Fee</u></th><th></th></tr></thead><tbody><tr><td>☒ One month (37 CFR 1.17(a)(1))</td><td style="text-align: right;">\$200</td><td style="text-align: right;">\$100</td><td style="text-align: right;">\$50</td><td style="text-align: right;">\$ <u>100</u></td></tr><tr><td>☐ Two months (37 CFR 1.17(a)(2))</td><td style="text-align: right;">\$600</td><td style="text-align: right;">\$300</td><td style="text-align: right;">\$150</td><td style="text-align: right;">\$ _____</td></tr><tr><td>☐ Three months (37 CFR 1.17(a)(3))</td><td style="text-align: right;">\$1,400</td><td style="text-align: right;">\$700</td><td style="text-align: right;">\$350</td><td style="text-align: right;">\$ _____</td></tr><tr><td>☐ Four months (37 CFR 1.17(a)(4))</td><td style="text-align: right;">\$2,200</td><td style="text-align: right;">\$1,100</td><td style="text-align: right;">\$550</td><td style="text-align: right;">\$ _____</td></tr><tr><td>☐ Five months (37 CFR 1.17(a)(5))</td><td style="text-align: right;">\$3,000</td><td style="text-align: right;">\$1,500</td><td style="text-align: right;">\$750</td><td style="text-align: right;">\$ _____</td></tr></tbody></table> ☐ Applicant asserts small entity status. See 37 CFR 1.27. ☐ Applicant certifies micro entity status. See 37 CFR 1.29. Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously. ☐ A check in the amount of the fee is enclosed. ☐ Payment by credit card. Form PTO-2038 is attached. ☐ The Director has already been authorized to charge fees in this application to a Deposit Account. ☒ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number <u>13-2725</u>. ☒ Payment made via EFS-Web. WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038. I am the ☐ applicant. ☒ attorney or agent of record. Registration number <u>53,214</u>. ☐ attorney or agent acting under 37 CFR 1.34. Registration number _____. <table style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%; padding: 5px;"><u>/George C. Lewis/</u> Signature</td><td style="width: 50%; padding: 5px;"><u>July 11, 2017</u> Date</td></tr><tr><td style="padding: 5px;"><u>George C. Lewis</u> Typed or printed name</td><td style="padding: 5px;"><u>303-357-1638</u> Telephone Number</td></tr></table> NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.				<u>Fee</u>	<u>Small Entity Fee</u>	<u>Micro Entity Fee</u>		☒ One month (37 CFR 1.17(a)(1))	\$200	\$100	\$50	\$ <u>100</u>	☐ Two months (37 CFR 1.17(a)(2))	\$600	\$300	\$150	\$ _____	☐ Three months (37 CFR 1.17(a)(3))	\$1,400	\$700	\$350	\$ _____	☐ Four months (37 CFR 1.17(a)(4))	\$2,200	\$1,100	\$550	\$ _____	☐ Five months (37 CFR 1.17(a)(5))	\$3,000	\$1,500	\$750	\$ _____	<u>/George C. Lewis/</u> Signature	<u>July 11, 2017</u> Date	<u>George C. Lewis</u> Typed or printed name	<u>303-357-1638</u> Telephone Number
	<u>Fee</u>	<u>Small Entity Fee</u>	<u>Micro Entity Fee</u>																																	
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<u>George C. Lewis</u> Typed or printed name	<u>303-357-1638</u> Telephone Number																																			

☐ * Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.136(a). The information is required to obtain or retain a benefit by the public, which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 6 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Document code: WFEE

United States Patent and Trademark Office
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/836,396	08/26/2015	David Aldworth	17005.0002US01	3541

23552	7590	07/12/2017
MERCHANT & GOULD P.C.		
P.O. BOX 2903		
MINNEAPOLIS, MN 55402-0903		

EXAMINER	
HO, HUY C	

ART UNIT	PAPER NUMBER
2644	

NOTIFICATION DATE	DELIVERY MODE
07/12/2017	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTO23552@merchantgould.com

<i>Applicant-Initiated Interview Summary</i>	Application No.	Applicant(s)	
	14/836,396	ALDWORTH, DAVID	
	Examiner	Art Unit	
	HUY C. HO	2644	

All participants (applicant, applicant's representative, PTO personnel):

(1) HUY C. HO. (3) DAVID ALDWORTH.

(2) GEORGE LEWIS (Reg. No. 53,214). (4) _____.

Date of Interview: 07/06/2017.

Type: ☐ Telephonic ☐ Video Conference
 ☒ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: N/A.

Issues Discussed ☐ 101 ☐ 112 ☐ 102 ☒ 103 ☐ Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: 1.

Identification of prior art discussed: Bajpay and Lehmacher.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

The argued features, i.e., "determining a RESPORG identification associated with a terminating RESPORG, the database is associated with the toll-free exchange and store the RESPORG identification associated with the terminating RESPORG, and routing to the terminating RESPORG the toll-free call based in part on the RESPORG identification", were discussed over the prior art references above. No agreement was reached at this time.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/HUY C HO/ Primary Examiner, Art Unit 2644	
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Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Doc code: RCEX

Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-09)

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL **(Submitted Only via EFS-Web)**

Application Number	14836396	Filing Date	2015-08-26	Docket Number (if applicable)	17005.0002US01	Art Unit	2644
First Named Inventor	David Aldworth			Examiner Name	Huy C. Ho		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
 Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☒ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

☒ Other Amendment & Response filed on July 11, 2017

☐ Enclosed

☐ Amendment/Reply

☐ Information Disclosure Statement (IDS)

☐ Affidavit(s)/ Declaration(s)

☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
 (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
 The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to
 Deposit Account No 132725

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature
 Applicant Signature

Doc code: RCEX

Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-09)

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Signature of Registered U.S. Patent Practitioner			
Signature	/George C. Lewis/	Date (YYYY-MM-DD)	2017-08-02
Name	George C. Lewis	Registration Number	63214

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal				
Application Number:		14836396		
Filing Date:		26-Aug-2015		
Title of Invention:		ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE		
First Named Inventor/Applicant Name:		David Aldworth		
Filer:		George Cone Lewis/Aimee Stevens		
Attorney Docket Number:		17005.0002US01		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
RCE- 1st Request	2801	1	600	600
Total in USD (\$)				600

Electronic Acknowledgement Receipt	
EFS ID:	29958909
Application Number:	14836396
International Application Number:	
Confirmation Number:	3541
Title of Invention:	ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE
First Named Inventor/Applicant Name:	David Aldworth
Customer Number:	23552
Filer:	George Cone Lewis/Aimee Stevens
Filer Authorized By:	George Cone Lewis
Attorney Docket Number:	17005.0002US01
Receipt Date:	02-AUG-2017
Filing Date:	26-AUG-2015
Time Stamp:	12:25:08
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$600
RAM confirmation Number	080217INTEFSW12262900
Deposit Account	132725
Authorized User	Aimee Stevens
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.21 (Miscellaneous fees and charges)	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	2017-08-02- RCE-17005-0002US01.PDF	697649	no	3
			079a0aa094b352ef8d8d7ac6f8ed97d7620 b5e8c		
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30616	no	2
			0406ba1b9f7b15a04deb0fa666512712de9 53900		
Warnings:					
Information:					
Total Files Size (in bytes):			728265		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875				Application or Docket Number 14/836,396		Filing Date 08/26/2015		☐ To be Mailed				
ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO												
APPLICATION AS FILED - PART I												
		(Column 1)		(Column 2)								
FOR		NUMBER FILED		NUMBER EXTRA		RATE (\$)		FEE (\$)				
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))		N/A		N/A		N/A						
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))		N/A		N/A		N/A						
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))		N/A		N/A		N/A						
TOTAL CLAIMS (37 CFR 1.16(i))		minus 20 = *				x \$40 =						
INDEPENDENT CLAIMS (37 CFR 1.16(h))		minus 3 = *				x \$210 =						
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))		If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).										
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))												
* If the difference in column 1 is less than zero, enter "0" in column 2.						TOTAL						
APPLICATION AS AMENDED - PART II												
		(Column 1)		(Column 2)		(Column 3)						
AMENDMENT	08/02/2017	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR		PRESENT EXTRA		RATE (\$)		ADDITIONAL FEE (\$)		
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0			x \$40 =		0		
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0			x \$210 =		0		
	☐ Application Size Fee (37 CFR 1.16(s))											
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))											
								TOTAL ADD'L FEE		0		
AMENDMENT	07/11/2017	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR		PRESENT EXTRA		RATE (\$)		ADDITIONAL FEE (\$)		
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0			x \$40 =		0		
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0			x \$210 =		0		
	☐ Application Size Fee (37 CFR 1.16(s))											
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))											
								TOTAL ADD'L FEE		0		
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.								SLIE				
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".								juliet mcmillan				
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".												
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.												

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

23552 7590 09/13/2017
MERCHANT & GOULD P.C.
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903

EXAMINER

HO, HUY C

ART UNIT PAPER NUMBER

2644

DATE MAILED: 09/13/2017

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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14/836,396

08/26/2015

David Aldworth

17005.0002US01

3541

TITLE OF INVENTION: ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0	\$0	\$480	12/13/2017

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax **(571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

23552 7590 09/13/2017
MERCHANT & GOULD P.C.
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/836,396	08/26/2015	David Aldworth	17005.0002US01	3541

TITLE OF INVENTION: ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0	\$0	\$480	12/13/2017

EXAMINER	ART UNIT	CLASS-SUBCLASS
HO, HUY C	2644	455-406000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) The names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
- ☐ Applicant asserting small entity status. See 37 CFR 1.27
- ☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/836,396	08/26/2015	David Aldworth	17005.0002US01	3541

23552	7590	09/13/2017
MERCHANT & GOULD P.C.		
P.O. BOX 2903		
MINNEAPOLIS, MN 55402-0903		

EXAMINER	
HO, HUY C	

ART UNIT	PAPER NUMBER
2644	

DATE MAILED: 09/13/2017

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 14/836,396	Applicant(s) ALDWORTH, DAVID	
	Examiner HUY C. HO	Art Unit 2644	AIA (First Inventor to File) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 08/02/2017.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are 1-20. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

- a) ☐ All b) ☐ Some *c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. ☐ Notice of References Cited (PTO-892) | 5. ☐ Examiner's Amendment/Comment |
| 2. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 6. ☒ Examiner's Statement of Reasons for Allowance |
| 3. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 7. ☐ Other _____. |
| 4. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____. | |

/HUY C HO/
Primary Examiner, Art Unit 2644

DETAILED ACTION

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08/02/2017 has been entered.

Response to Arguments

3. Applicant's arguments made in the Applicant's Arguments/Remarks filed on 07/11/2017, have been fully

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considered and are persuasive. The rejection of claims 1-20 has been withdrawn.

Allowable Subject Matter

4. Claims 1-20 are allowed.

5. The following is an examiner's statement of reasons for allowance:

The Applicant's arguments made in the Applicant's Arguments/Remarks filed on 07/11/2017 have been fully considered and are persuasive. Further search update has been conducted. However, no reference is found alone or in combination with the prior art references of record to provide the unique claimed features of the independent claims 1, 10 and 17 as recited and filed on 07/11/2017. Therefore, claims 1-20 are deemed allowed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUY C. HO whose telephone number is (571)270-1108. The examiner can

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normally be reached on Monday - Friday, 8:00 a.m. - 5:00 p.m., EST.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathy Wang-Hurst can be reached on 571-270-5371. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or

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access to the automated information system, call 800-786-9199

(IN USA OR CANADA) or 571-272-1000.

/HUY C HO/

Primary Examiner, Art Unit 2644

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	25904	(h04m15/00 h04m15/08 h04m15/90 h04m2215/62 455/554.1-555 455/560).cpc,ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/09/09 22:16
L2	25224	1 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/09/09 22:18
L3	710	2 and (toll\$free)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/09/09 22:19
L4	1	3 and (RESPORG)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/09/09 22:19
L5	19	3 and (toll\$free near4 (exchange intermediary router mediator intermediat\$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/09/09 22:21
L6	15	5 and database	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/09/09 22:22
L7	2	("20170064091").PN.	US-PGPUB; USPAT; USOCR; DERWENT	OR	OFF	2017/09/09 22:23
S1	9	("7953218" "8792478" "8559614" "9036625").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/04/15 09:25

S2	28	resporg	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/04/15 09:36
S3	27	S2 and (toll near3 free)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/04/15 09:36
S4	27	S3 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/04/15 09:37
S5	0	((David) near2 (Aldworth)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/27 00:32
S6	5969	455/445.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:34
S7	5964	S6 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:34
S8	95	S7 and ((toll near3 free) (toll\$free))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:34
S9	92	S8 and (subscriber customer client user)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:35
S10	85	S9 and (rout\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:35
S11	75	S10 and (id identifier identification)	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2016/08/27 00:35

			EPO; JPO; DERWENT; IBM_TDB			
S12	52	S11 and ((origina\$4 termina\$4) near5 (caller organization subscriber customer client user))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:37
S13	46	S12 and (service near4 provider)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:39
S14	3869	((toll near3 free) (toll\$free)) near5 (call)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:48
S15	3847	S14 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:48
S16	3688	S15 and (subscriber customer client user)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:48
S17	1991	S16 and (service near4 provider)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:48
S18	1613	S17 and (rout\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:48
S19	34	S18 and ((origina\$4 termina\$4) near6 (responsible organization RESPORG))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/27 00:50
S20	9	("7953218" "8792478" "8559614" "9036625").PN.	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2016/08/30 19:41

			EPO; JPO; DERWENT; IBM_TDB			
S21	8	("6035028" "6055232" "6285749" "6442169" "6584178" "6584183").PN. OR ("7953218").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/30 19:53
S22	270	"5867562"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 19:57
S23	0	(toll\$free) with (router near4 policy)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:18
S24	0	(toll\$free) with (policy near4 router)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:19
S25	2418	(policy near4 router)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:19
S26	1	S25 and (toll\$free near5 call)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:19
S27	1	S26 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:20
S28	9871	((((toll near3 free) toll\$free) near6 (number call))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:22
S29	9838	S28 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:22
S31	16	S29 and (policy near4 router)	US-PGPUB;	OR	OFF	2016/08/30

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			20:23
S32	1954	(policy near3 router)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:41
S33	1946	S32 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:43
S34	15	S33 and (((toll near3 free) toll\$free) near6 (number call))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/30 20:43
S35	22134	(h04m15/00 h04m15/08 h04m15/90 h04m2215/62).cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:04
S36	21562	S35 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:05
S37	782	S36 and (((toll near3 free) toll\$free) near6 (number call))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:05
S38	25	S37 and ((origina\$4 termina\$4) near6 (responsible organization RESPORG))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:05
S39	13470	(h04w4/16).cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:18
S40	13348	S39 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB;	OR	OFF	2016/09/05

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			12:19
S41	155	S40 and (((toll near3 free) toll\$free) near6 (number call))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:19
S42	1	S41 and ((origina\$4 termina\$4) near6 (responsible organization RESPORG))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:19
S43	5301	(455/406 379/114.24 379/114.25 379/222 379/223).ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:20
S44	250	S43 and (((toll near3 free) toll\$free) near6 (number call))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:20
S45	5	S44 and ((origina\$4 termina\$4) near6 (responsible organization RESPORG))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/09/05 12:20
S46	0	((toll\$free) same (call) same (toll\$free near4 exchange) same (data\$base) same (router) same (originat\$3 terminat\$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:04
S47	0	((toll\$free) same (call) same (toll\$free near4 exchange)) and ((data\$base) same (router)) and ((originat\$3 terminat\$3) same (Resporg))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:05
S48	12	((toll\$free) same (call) same (toll\$free near4 exchange)) and ((data\$base) same (router)) and (originat\$3 terminat\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:05
S49	12	S48 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB;	OR	OFF	2017/02/19

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			19:05
S50	12	S49 and (policy)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:06
S51	0	S50 and ((responsible near4 organization) RESPORG)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:06
S52	0	S50 and (organization RESPORG)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:07
S53	10046	((((toll near3 free) toll\$free) near6 (number call))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:47
S54	10001	S53 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:47
S55	10001	S54	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:47
S56	128	S55 and ((origina\$4 termina\$4) near6 (responsible organization RESPORG))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:48
S57	36	S56 and (router)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:49
S58	9	S56 and (toll\$free near4 exchange)	US-PGPUB;	OR	OFF	2017/02/19

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			19:49
S59	4	S57 and (policy)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 19:49
S60	568	((toll\$free) near5 (call number telephone phone exchange)) and ((toll\$free Resp\$Org) near4 (data\$base system storage)) and (router) and (subscriber)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 20:05
S61	38	((toll\$free) near5 (call number telephone phone exchange)) and ((toll\$free Resp\$Org) near4 (data\$base system storage)) and (router) and (toll\$free near4 subscriber)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 20:05
S62	0	((toll\$free) near5 (call number telephone phone exchange)) and ((toll\$free Resp\$Org) near4 (data\$base system storage)) and (policy near4 router) and (toll\$free near4 subscriber)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 20:06
S63	0	((toll\$free) near5 (call number telephone phone exchange)) and ((toll\$free Resp\$Org) near4 (data\$base system storage)) and (policy near4 router)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 20:06
S64	190	((toll\$free) near5 (call number telephone phone exchange)) and ((toll\$free Resp\$Org) near4 (data\$base system storage)) and (policy) and (router)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 20:07
S65	1	S64 and ((origina\$4 termina\$4) near6 (responsible organization RESP\$ORG))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 20:07
S66	188	S64 and (origina\$4 termina\$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 20:07
S67	188	S64 and (originat\$3 terminat\$3)	US-PGPUB;	OR	OFF	2017/02/19

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			20:08
S68	188	S67 and ((toll\$free Resp\$Org) near4 (exchange data\$base system storage))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 20:09
S69	18	S68 and (tandem)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/19 20:09
S70	28	("20050058270" "20120288078" "20130094640" "20130151314" "20130177142" "20140307730" "20160127539" "20160127540" "20160127541" "20160127548" "20160127549" "20160127552" "20160127562" "20160127566" "20160127569" "20160127808" "5528672" "6173279" "6236851" "6574661" "6654451" "6763376" "7099453" "7542553" "7643627" "8379531" "8401161" "8619961").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/02/19 20:13
S71	57	("4191860" "4757267" "4987587" "5095505" "5136636" "5185785" "5425090" "5430782" "5533107" "5533108" "5550910" "5563933" "5590186" "5590912" "5740237" "5771284" "5781620" "5796813" "5799072" "5812655" "5850432" "5878126" "5878127" "5887056" "5901213" "5905791" "5943411" "5956396" "5974133" "5987114" "6163597" "6188751" "6205214" "6327354" "6404876" "6411692" "6424702" "6445784").PN. OR ("6654451").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/02/19 20:18
S72	49	toll\$free near3 exchange	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/02/25 13:28
S73	49	S72 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/25 13:28
S74	589	(379/222-223).ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/25 15:03
S75	189	S74 and (@ad<"20150826" @rlad<"20150826")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	OFF	2017/02/25 15:03

			IBM_TDB			
S76	0	S75 and (toll\$free near3 exchange)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/02/25 15:03
S77	16	S75 and (toll\$free)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/02/25 15:04
S78	0	S77 and (Resp\$Org RESPORG)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/02/25 15:05
S79	39	S73 and (database)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/02/25 15:31
S80	17	S79 and ((termina\$4 end\$3 originat\$3) near4 (party subscriber caller organization))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/02/25 15:32

9/9/2017 10:55:20 PM

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CONFIRMATION NO. 3541

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.		
14/836,396	08/26/2015	455	2644	17005.0002US01		
APPLICANTS INVENTORS David Aldworth, Denver, CO; ** CONTINUING DATA ***** ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** * SMALL ENTITY ** 09/09/2015						
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☒ No Verified and /HUY C HO/ Acknowledged Examiner's Signature		☐ Met after Allowance HH Initials	STATE OR COUNTRY CO	SHEETS DRAWINGS 6	TOTAL CLAIMS 20	INDEPENDENT CLAIMS 3
ADDRESS MERCHANT & GOULD P.C. P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903 UNITED STATES						
TITLE ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE						
FILING FEE RECEIVED 800	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit			

Issue Classification 	Application/Control No. 14836396	Applicant(s)/Patent Under Reexamination ALDWORTH, DAVID	
	Examiner HUY C HO	Art Unit 2644	

CPC						
Symbol					Type	Version
H04M		15		8061	F	2013-01-01
H04M		15		09	I	2013-01-01
H04M		15		41	I	2013-01-01

CPC Combination Sets						
Symbol			Type	Set	Ranking	Version

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	20	
/HUY C HO/ Primary Examiner.Art Unit 2644	09/09/2017	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	3

Issue Classification 	Application/Control No. 14836396	Applicant(s)/Patent Under Reexamination ALDWORTH, DAVID
	Examiner HUY C HO	Art Unit 2644

US ORIGINAL CLASSIFICATION						INTERNATIONAL CLASSIFICATION											
CLASS		SUBCLASS				CLAIMED					NON-CLAIMED						
379		114.24				H	0	4	M	15 / 00 (2006.01.01)		H	0	4	M	11 / 00 (2006.01.01)	
CROSS REFERENCE(S)												H	0	4	M	1 / 00 (2006.01.01)	
												H	0	4	B	1 / 38 (2006.01.01)	
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)																
455	406	554.1	554.2	555	560												
379	114.25	222	223														

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	20	
/HUY C HO/ Primary Examiner. Art Unit 2644	09/09/2017	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	3

Issue Classification 	Application/Control No. 14836396	Applicant(s)/Patent Under Reexamination ALDWORTH, DAVID
	Examiner HUY C HO	Art Unit 2644

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1		17												
	2		18												
	3		19												
	4		20												
	5														
	6														
	7														
	8														
	9														
	10														
	11														
	12														
	13														
	14														
	15														
	16														

NONE		Total Claims Allowed:	
(Assistant Examiner)		20	
(Date)			
/HUY C HO/ Primary Examiner. Art Unit 2644	09/09/2017	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	3

Search Notes 	Application/Control No. 14836396	Applicant(s)/Patent Under Reexamination ALDWORTH, DAVID
	Examiner HUY C HO	Art Unit 2644

CPC- SEARCHED		
Symbol	Date	Examiner
H04M15/00; 15/08; 15/90; H04M2215/62; H04W4/16.	9/5/2016	HH

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
379	114.24	9/3/2016	HH

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Database Search	9/3/2016	HH
Inventor Search	9/3/2016	HH
Search update	2/25/2017	HH
Search update	9/9/2017	HH

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
379	114.24-114.25; 222;223	9/3/2016	HH
455	406;445	9/10/2016	HH
455	554.1-555; 560	9/9/2017	HH

	/HUY C HO/ Primary Examiner.Art Unit 2644
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Document Description: Issue Fee Payment (PTO-85B)

Issue Fee Transmittal Form

Application Number	Filing Date	First Named Inventor	Atty. Docket No.	Confirmation No.
14836396	26-Aug-2015	David Aldworth	17005.0002US01	3541

TITLE OF INVENTION :

ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE

Entity Status	Application Type	Art Unit	Class - Subclass	EXAMINER
Small	Utility under 35 USC 111(a)	2644	406000	HUY HO
Issue Fee Due	Publication Due	Total Fee(s) Due	Date Due	Prev. Paid Fee
\$480	\$0	\$480	13-Dec-2017	\$0

1.Change of Correspondence Address and/or Indication Of Fee Address (37 CFR 1.33 & 1.363)

Current Correspondence Address:	Current Indicated Fee Address :
23552 MERCHANT & GOULD P.C. P.O. BOX 2903 MINNEAPOLIS MN 55402-0903 UNITED STATES 612-332-5300 USPTO23552@merchantgould.com	
☐ Change of correspondence address requested, system generated AIA/122-EFS form attached	☐ Fee Address indication requested, system generated SB/47-EFS form attached

2.Entity Status**Change in Entity Status**

Applicant certifying micro entity status; system generated Micro Entity certification form attached. See 37 CFR 1.29.

Note: Absent a valid certification of micro entity status, issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment. If this box is checked, you will be prompted to choose a micro entity status on the gross income basis (37 CFR 1.29(a)) or the institution of higher education basis (37 CFR 1.29(d)), and make the applicable certification online.



Applicant asserting small entity status. See 37 CFR 1.27.

Note: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.



Applicant changing to regular undiscounted fee status.

Note: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.



Document Description: Issue Fee Payment (PTO-85B)

3.The Following Fee(s) Are Submitted:☒ Issue Fee☐ I authorize USPTO to apply my previously paid issue fee to the current fees due☐ Publication Fee☐ The Director is hereby authorized to apply my previously paid issue fee to the current fee due and to charge deficient fees to Deposit Account Number _____☐ Advance Order - # of copies _____

If **in addition** to the payment of the issue fee amount submitted with this form, there are any discrepancies in any amount(s) due, the Director is authorized to charge any deficiency or credit any overpayment, to Deposit Account Number 13-2725.

☒ The **issue fee must be submitted** with this form. **If payment of the issue fee does not accompany this form, checking this box and providing a deposit account number will NOT be effective to satisfy full payment of the fee(s) due.**

4.Firm and/or Attorney Names To Be Printed**NOTE: If no name is listed, no name will be printed**

For printing on the patent front page, list to be displayed as entered

1.

2.

3.

5.Assignee Name(s) and Residence Data To Be Printed

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

Name	City	State	Country	Category
------	------	-------	---------	----------

6.Signature

I certify, in accordance with 37 CFR 1.4(d)(4) that I am an attorney or agent registered to practice before the Patent and Trademark Office who has filed and has been granted power of attorney in this application. I also certify that this Fee(s) Transmittal form is being transmitted to the USPTO via EFS-WEB on the date indicated below.

Signature	/George C. Lewis/	Date	09-28-2017
Name	George Cone Lewis	Registration Number	53214

Electronic Patent Application Fee Transmittal				
Application Number:		14836396		
Filing Date:		26-Aug-2015		
Title of Invention:		ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE		
First Named Inventor/Applicant Name:		David Aldworth		
Filer:		George Cone Lewis/Rita Christensen		
Attorney Docket Number:		17005.0002US01		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
UTILITY APPL ISSUE FEE	2501	1	480	480
PUBL. FEE- EARLY, VOLUNTARY, OR NORMAL	1504	1	0	0
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				480

Electronic Acknowledgement Receipt	
EFS ID:	30509904
Application Number:	14836396
International Application Number:	
Confirmation Number:	3541
Title of Invention:	ROUTING OF TOLL-FREE NUMBERS USING A TOLL-FREE EXCHANGE
First Named Inventor/Applicant Name:	David Aldworth
Customer Number:	23552
Filer:	George Cone Lewis/Rita Christensen
Filer Authorized By:	George Cone Lewis
Attorney Docket Number:	17005.0002US01
Receipt Date:	28-SEP-2017
Filing Date:	26-AUG-2015
Time Stamp:	17:22:23
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$ 480
RAM confirmation Number	092917INTEFSW17222200
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	Web85b.pdf	45506	no	2
			459ad048b40f2e4f5e928b6d42fc88b14e0c7d3a		
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	32344	no	2
			d4090c6ff4d66d969f301620d9671e14718a1340		
Warnings:					
Information:					
Total Files Size (in bytes):			77850		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					



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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/836,396	10/31/2017	9807249	17005.0002US01	3541

23552 7590 10/11/2017
MERCHANT & GOULD P.C.
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

David Aldworth, Denver, CO;

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