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WO 2004/036773 A2

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UK CL (Edition X) **H4L**
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(54) Abstract Title: **Messaging gateway system**

(57) A messaging gateway system designed to route messages to mobile devices via either GSM SMS text messaging or IP internet based routes to the same device depending upon availability of the routes or upon specification of the sender or recipient.

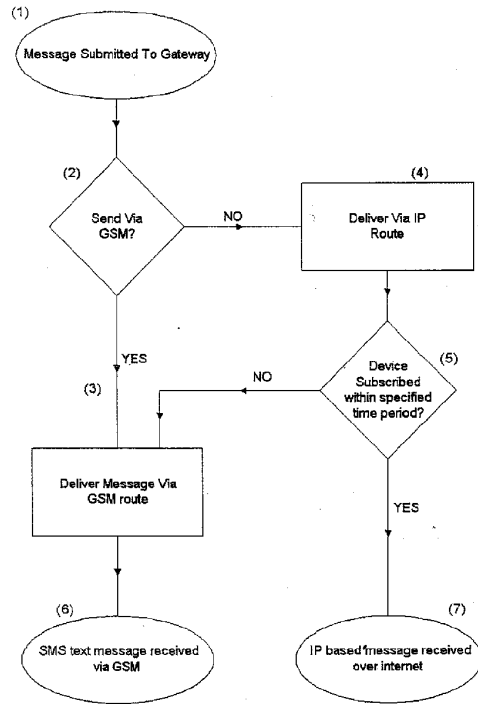


Figure 2. Scenario whereby messages are submitted to the gateway (Routing System) and are routed depending upon whether a flag is set at the point of message submission which specifies that the message should be sent over IP. If the mobile device is not subscribed via IP, messages would be either be queued until the mobile device registers over an IP based route or after a set period the messages would be routed as a GSM SMS message.

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Title

Diverse Mobile Messaging Routing System using GSM SMS text messaging and Internet Protocol (IP) based communication.

Background

SMS text messaging to mobiles telephones has seen an increase in popularity over time. Sending an SMS message to a mobile telephone carries an attached cost for sending the message over the mobile network.

Statement of Invention

New generation mobile phones in addition to GSM capability also have the ability to access the internet via 802.11g, b and other related wireless protocols. The invention herein is an intelligent Routing System (herein referred to as "Routing System") for sending mobile text messages via either GSM SMS messaging protocols or via IP such as (but not necessarily) SIP or HTTP if the phone has internet access available to it.

Advantages

If a phone is on the GSM network, but does not have a source of internet access available to it (eg via WiFi hotspot or free GPRS), the Routing System would send the text message via GSM text message. However, if the phone was also registered with a remote registration server as being connected to the internet, an internet based text message would be sent to the phone. This internet-based method of sending text messages has advantages especially to large organisations who could send messages to mobile phones without charge if the phones were logged into a local WiFi connection in the workplace.

Example

A user of a mobile device whilst in a location with WiFi (or other form of) internet access would authenticate with the remote registration server and this would indicate to the Routing System that it was possible for that mobile device to receive text messages via the internet rather than via GSM SMS messages offering substantial cost savings to the sending party. Replies could also be made over the internet providing further costs savings.

Introduction to Drawings

The following drawing represent the process flow for the messaging schema. The message would be submitted to the gateway by the sending party, Figure 1(1), the sending party would submit this message using standard IP based protocols such as but not limited to SMPP, HTTP (post or get), XML, SOAP, EMAIL, SMTP, SIP or FTP. The Routing System would make a routing decision, Figure 1(2) based upon whether the mobile device is currently registered with a registration server.

Registration with the registration server will allow the possibility or option of delivering the message via an IP based route, Figure 1(4). If the IP based route is not available, conventional GSM delivery of an SMS message, Figure 1(3) is attempted.

In both cases, delivery receipting may be implemented as part of the protocol.

A similar scenario is described in Figure 2. The message would be submitted to the gateway by the sending party, Figure 2(1), the sending party would submit this message using standard IP based protocols such as but not limited to SMPP, HTTP (post or get), XML, SOAP, EMAIL, SMTP, SIP or FTP. The Routing System would attempt to route the message based on a flag or variable indicating the preferred route for delivery. If, Figure 2(2), there is a preference expressed or a flag set such that the

message should be delivered via an IP route, IP based delivery will be attempted, Figure 2(4). However, if the handset is not registered with the registration server, the message will be queued for IP based delivery within a specified time period. If after that time period, Figure 2(5) the mobile device has not registered/subscribed to the registration server, the message will be re-routed via GSM as an SMS text message, Figure 2(3)..

Figure 3 shows a more detailed example as to how the system could be implemented giving specific example of a protocol which could be used at each stage.

Mobile messages would be sent to specific mobile number(s) by the remote party, Figure 3(1), via the internet, Figure 3(2) using for example, SMPP over IPSEC or SSL. This would be received by a messaging API, Figure3(3),(such as a commercial

SMPP Server) and written into a database, Figure 3(4) (oracle, postgresql, mysql, access, ms-sql or other). The Routing Platform, Figure 3(5) would poll this database by making periodic queries for unsent messages. It would then compare the mobile number (MSISDN number) to be sent to with the mobiles logged in to the SIP proxy via the internet, by querying the location database within the SIP proxy, Figure 3(6). An off the shelf SIP proxy such as Sip Express Router (SER) could be used . If the mobile, Figure 3(9) was logged in via the SIP proxy, the messages would be sent as a SIP message to the SIP user-agent running on the mobile phone. If the phone was not found in the location database on the SIP proxy, the messages could be submitted to the mobile network via normal connection methods with the networks SMSC's, Figure 3(8).

Detailed Description

The mobile GSM device would have an operating system capable of running an application which could subscribe and log into a registration server when the device gained access to the internet via a route such as bluetooth, Wifi (802.11b,g or other), or via infrared or any other packet radio (eg GPRS) or other electromagnetic means.

The mobile device would register with the remote registration server and this registration would inform the Routing System that the message could be sent via the internet based connection rather than via the GSM network if required. The registration server could be either a dedicated solution using normal web based protocols such as http post or get, or via SIP, SMPP or other protocol which allows authentication with a remote device.

Should the remote device either unbind with the registration server or the login time-out, any text messages sent via the gateway would be routed to the mobile device via GSM SMS message.

Glossary

SMS - Short message service

SIP - Session Initiation Protocol

WiFi - **Wi-Fi** is an **abbreviation** for wireless fidelity and is used to refer generically to any type of wireless network based on the IEEE 802.11 standard or similar form of IP based wireless communication

GSM - Global System Mobile

IP – Internet Protocol

GPRS – General Packet Radio Service

XML -- eXtensible Markup Language

SOAP -- Simple Object Access Protocol

HTTP – Hypertext transfer protocol

HTTPS – Hypertext transfer protocol secure

FTP – File transfer Protocol

SMTP – Simple Mail Transfer Protocol

UA – User agent

IPSEC – Internet Protocol Security

Claims

- 1) A Routing System consisting of a gateway system which allows routing of messages to mobile devices via either conventional GSM SMS messaging or via an internet IP based route.
- 2) A Routing System consisting of a gateway system which allows routing of messages to mobile devices via either conventional GSM SMS messaging or via an internet based route, routing via the internet based route should the mobile device be registered with a remote registration server indicating that an IP based communication route with the mobile device was available.
- 3) A Routing System capable of utilising conventional SMS text message routing mechanisms to deliver mobile messages to mobile phones, such as a direct connection to a mobile network via HTTP (get or post), HTTPS (get or post), SMPP, XML, X25, X21 or similar, or directly via a gsm modem or similar.
- 4) A Routing System consisting of a gateway system containing a registration server capable of authenticating remote mobile devices via IP and identifying the device via a unique identifier which can be related to the devices GSM mobile number via lookup in a database or other information storage system
- 5) A Routing System consisting of a gateway system containing a registration server capable of authenticating remote mobile devices via IP which, should the mobile device be registered with the remote registration server, route all messages bound for that device via the internet based route using protocols such as SIP, http post, XML or any protocol capable of carrying authentication and data information.
- 6) A Routing System consisting of a gateway system which will allow the sender to specify whether a GSM or IP route be used to send messages.
- 7) A Routing System consisting of a gateway system which will allow the sender to specify whether a GSM or IP route be used to send messages. If the message cannot be delivered via an IP route, the message will be attempted to be delivered via GSM SMS messaging.
- 8) A Routing System consisting of a gateway system capable of accepting inbound messaging from a mobile device via an internet based route, or, if the internet based route is not available, via a conventional GSM MSISDN mobile originated (MT) route.
- 9) A Routing System consisting of a gateway system capable of accepting inbound messaging from a mobile device via an internet based route, or, if the internet based route is not available, via a conventional GSM MSISDN mobile originated (MT) route (via connection to the mobile networks using protocols such as via HTTP (get or post), HTTPS (get or post), SMPP, XML, X25, X21 or similar, or directly via a gsm modem or similar and routing the messages back to the sender using industry standard IP based protocols such as SMPP, HTTP (post or get), XML, SOAP, EMAIL, SMTP, FTP.

- 10) A Routing System utilising of Software capable of being installed and operated on a mobile device which authenticates with a remote database to signify it's accessibility via an IP based route.
- 11) A Routing System utilising of Software capable of being installed and operated on a mobile device which , once authenticated with a remote database, can be sent text messages via IP based protocols such as (but not necessarily via) SIP, XML or HTTP
- 12) A Routing System utilising of Software capable of being installed and operated on a mobile device such that the outbound route for an text based message may be sent either via conventional GSM means or via an Internet based route if available.
- 13) A routing system which consists of a registration server and messaging platform which could send text message data to remote mobile devices running SIP UA software using the SIP protocol.
- 14) A routing system based on using the subscriber location database within a SIP proxy server to ascertain whether a mobile SIP user agent was subscribed to that proxy server.
- 15) A routing system based on using the subscriber location database within a SIP proxy server to ascertain whether a mobile SIP user agent was subscribed to that proxy server and based on that information would route a text message to that UA using the SIP protocol.
- 16) A routing system based on using the subscriber location database within a SIP proxy server to ascertain whether a mobile SIP user agent was subscribed to that proxy server and in the event that the UA was not subscribed, to route any messages via GSM SMS.

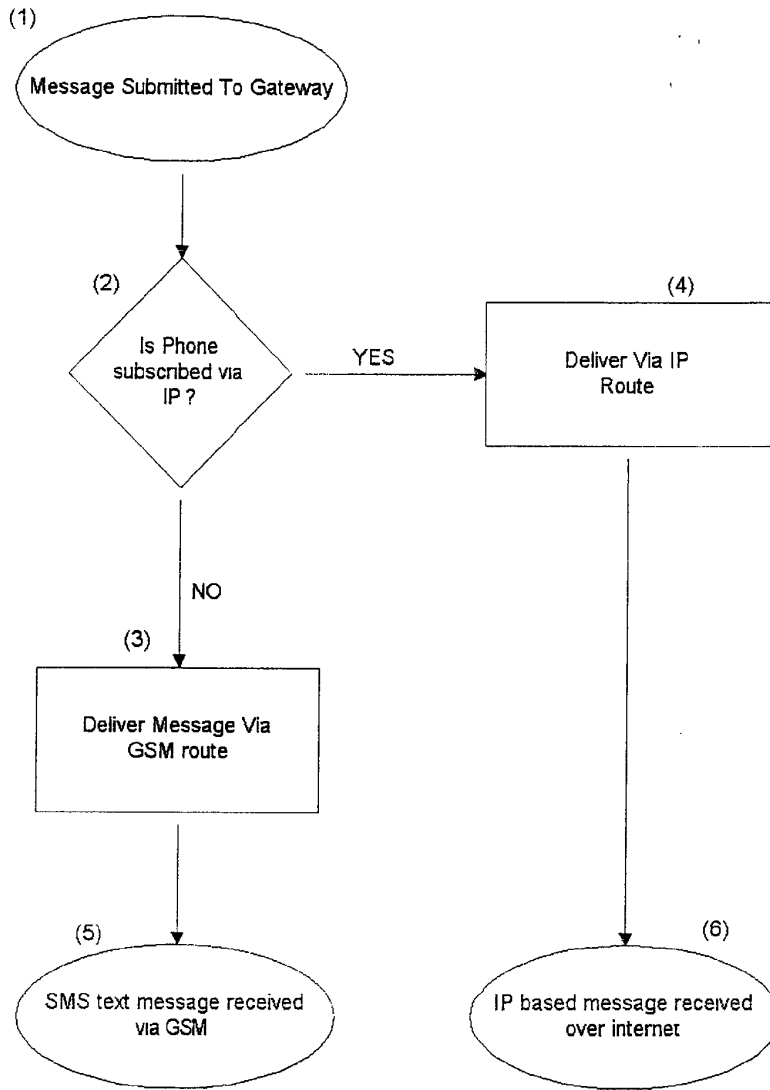


Figure 1. Scenario whereby messages are submitted to the gateway (Routing System) and are routed depending upon whether the phone is subscribed via an IP route.

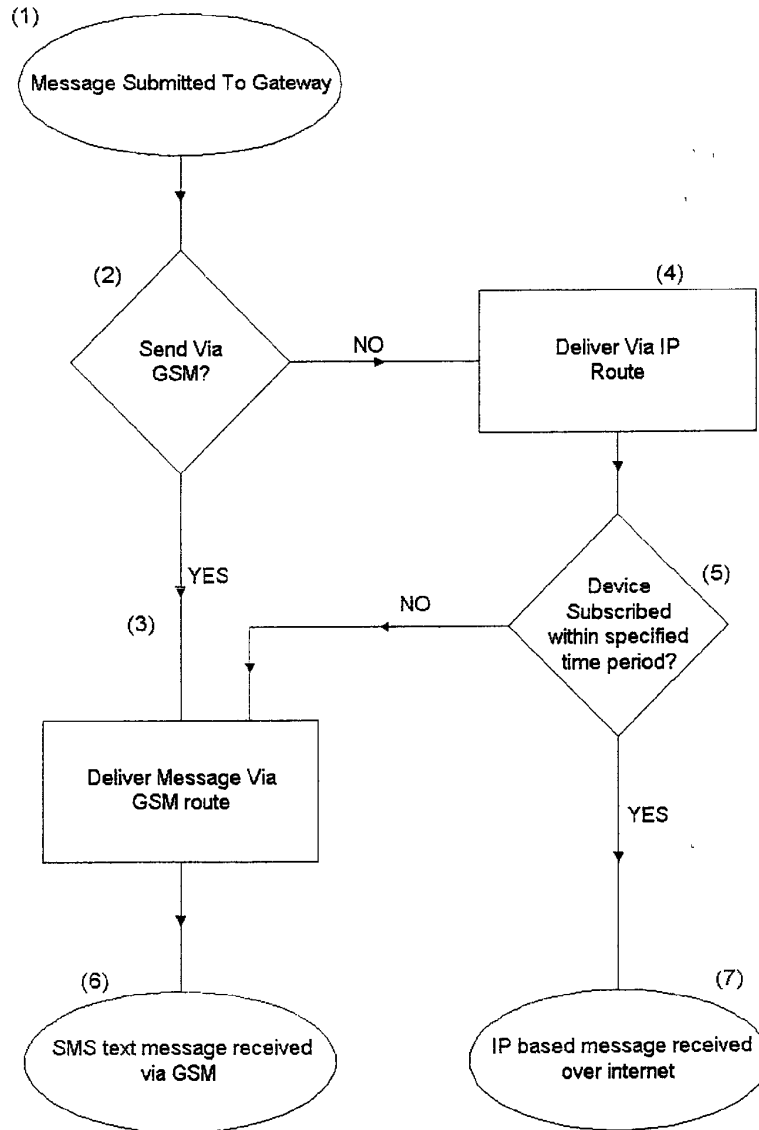


Figure 2. Scenario whereby messages are submitted to the gateway (Routing System) and are routed depending upon whether a flag is set at the point of message submission which specifies that the message should be sent over IP. If the mobile device is not subscribed via IP, messages would be either be queued until the mobile device registers over an IP based route or after a set period the messages would be routed as a GSM SMS message.

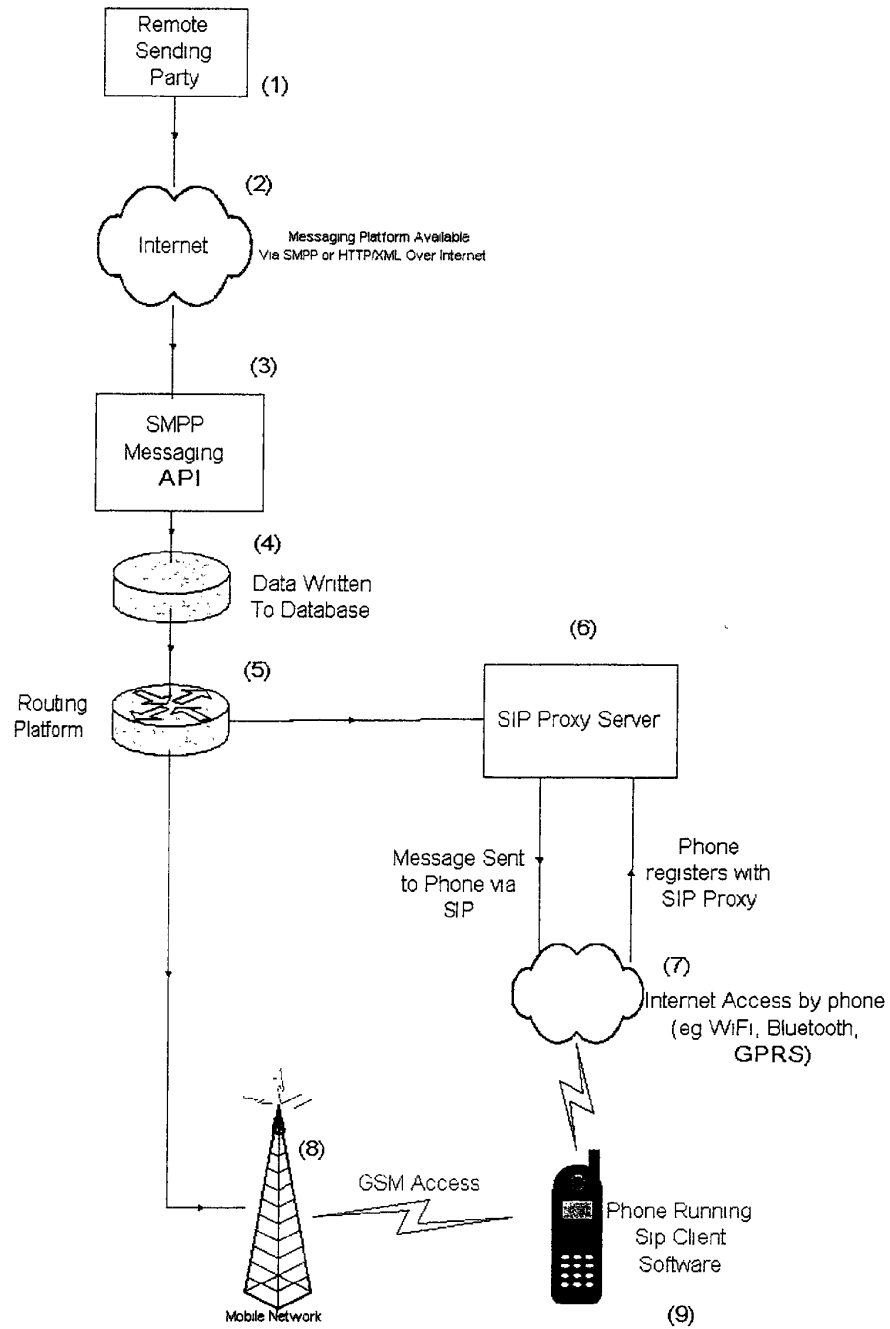


Figure 3. More detailed example scenario using specific protocols.



For Innovation

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Examiner: Mr Richard Howe

Claims searched: 1-16

Date of search: 10 October 2006

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
A	1	WO2004/036773 A2 Gabriel - see abstract

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art
Y	Document indicating lack of inventive step if combined with one or more other documents of same category	P	Document published on or after the declared priority date but before the filing date of this invention
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X :

H4L

Worldwide search of patent documents classified in the following areas of the IPC

H04Q

The following online and other databases have been used in the preparation of this search report

Online : wpi ; epodoc ; paj