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(54) Abstract Title
**Transmitting short messages between fixed line and cellular telephone networks**

(57) The arrangement allows a user 10 of a PSTN network 1 to transmit an SMS type message to a second user of a cellular network and vice versa. Messages are transmitted via a first server 20 of the PSTN 1 and a second server 30 acting as a short message service centre of the cellular network 2. Short messages are supplemented with an additional field uniquely identifying the first server, either at the first server or at the second user apparatus.

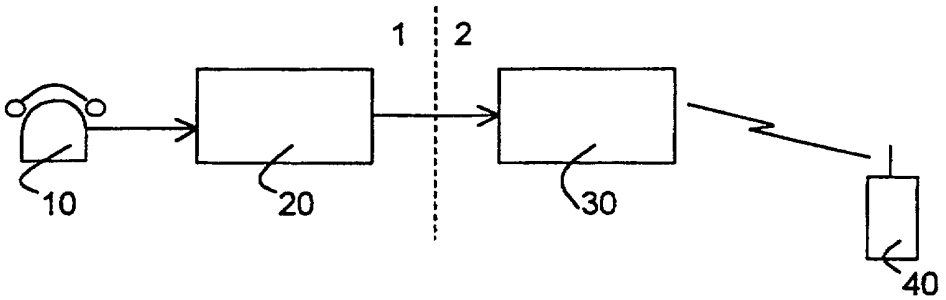


FIG 2

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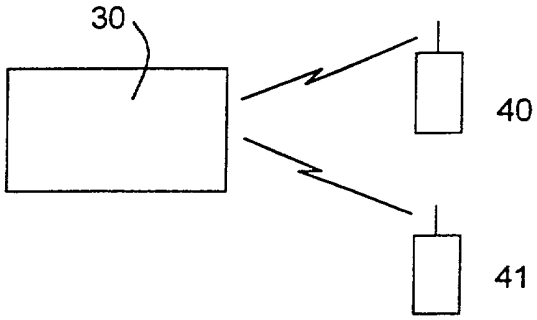


FIG 1

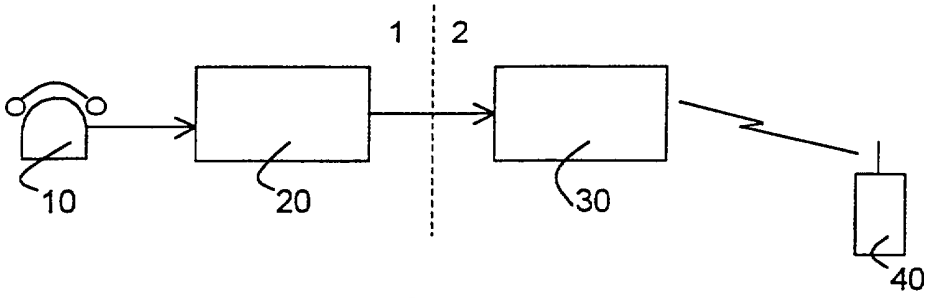


FIG 2

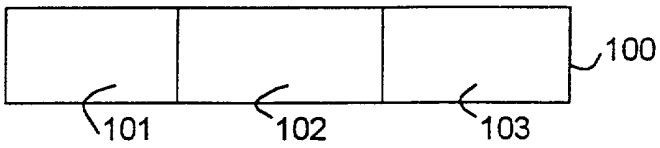


FIG 3

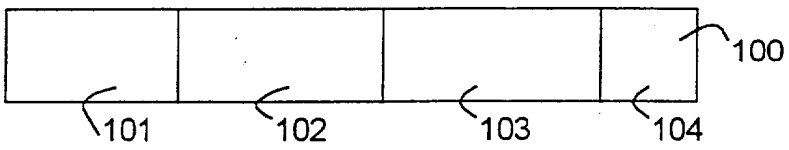


FIG 4

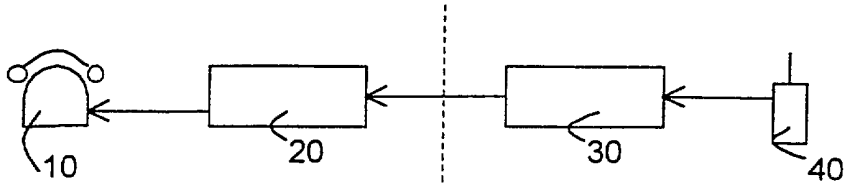


FIG 5

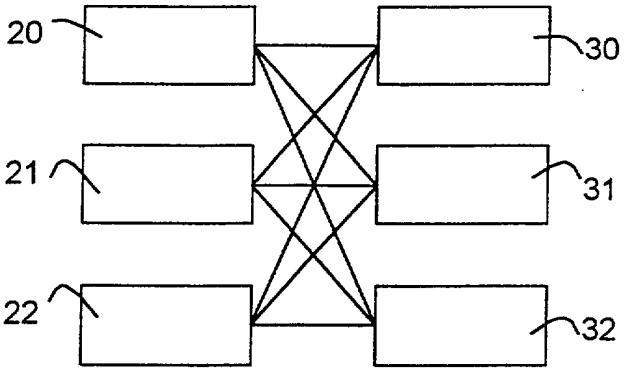


FIG 6

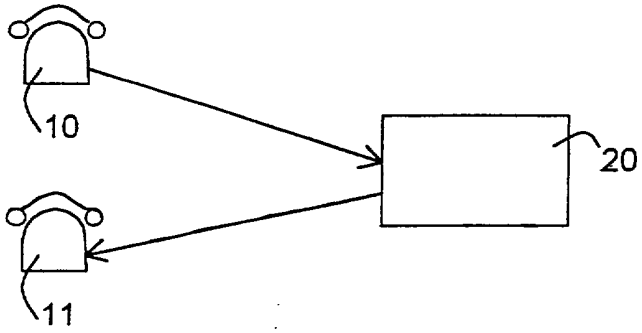


FIG 7

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# Method and Apparatus for Transmitting Short Messages between Fixed Line and Cellular Telephone Networks

The present invention relates in general to the transmission of messages between a fixed line telephone network such as a public switched telephone network (PSTN), and a cellular telephone network. The invention also relates to the transmission of messages between user apparatus coupled to a fixed line telephone network such as a PSTN.

A short message service (SMS) is well known in the field of cellular telephony, allowing users to send and receive short text messages (typically up to around 160 characters). Each short message comprises a packet of data including a recipient identifier (giving the telephone number of the intended recipient), a free text portion (conveniently prepared off-line prior to transmission), and an originator identifier (giving the telephone number of the originator).

Referring to Figure 1, a known short message service for use with a cellular telephony network will be briefly described. The system comprises many user apparatus of which two are shown 40 and 41, and a short message service centre (SMSC) 30. In use, a text message is prepared off-line on a first user apparatus 40 and then sent to the SMSC 30 as a short message data packet. The SMSC 30 forwards the short message to the second user apparatus 41 as the intended recipient. If the second user apparatus 41 is turned off or is in a poor reception area, the SMSC 30 waits until a connection is established before

delivering the short message to the second user apparatus 41. Importantly, both the first and second user apparatus 40 and 41 must be part of the cellular telephony network in order for the SMSC 30 to correctly interpret the originator identifier and recipient identifier within the data package of the short message. A problem arises in that it is not possible to transmit such a short message from a first user apparatus coupled to the cellular telephone network to a second user apparatus coupled to any other telephony network such as a fixed line telephone network or PSTN. Further, at present it is not possible to send and receive short messages between first and second user apparatus that are both coupled to a fixed line telephone network such as a PSTN.

An aim of at least some embodiments of the present invention is to provide a method and apparatus enabling the transmission of short messages between user apparatus coupled to separate telephone networks, and in particular between a fixed line network such as a PSTN and a cellular telephony network.

An aim of other embodiments of the present invention is to provide a method and apparatus enabling the transmission of short messages between fixed line user apparatus coupled to a fixed line telephony network such as a PSTN.

According to a first aspect of the present invention there is provided a method a method for transmitting a short message, comprising the steps of: (a) preparing a short message at a first user apparatus; (b) sending the prepared short message to a first message server; and (c)

delivering the short message to a second user apparatus; characterised in that: the first user apparatus and the first server are both members of a first telephony network whilst the second user apparatus is a member of a separate second telephony network; the step (c) includes supplementing the short message at the first server with information identifying the first server; and the step (c) includes forwarding the supplemented short message from the first server to a second server being a member of the second telephony network for delivery to the second user apparatus.

Also, according to the first aspect of the present invention there is provided a method for transmitting a short message comprising the steps of: (a) preparing a short message at a first user apparatus within a first network environment; (b) sending the prepared short message from the first apparatus to a first message server also in the first network environment; (c) supplementing the short message with information identifying the first message server; (d) forwarding the supplemented short message to a second message server in a second network environment; and (e) delivering the supplemented short message from the second message server to a second user apparatus in the second network environment.

According to a second aspect of the present invention there is provided a method for transmitting a short message, comprising the steps of: (a) preparing a short message at a second user apparatus; (b) sending the prepared short message to a second server; and (c) delivering the short message to a first user apparatus; characterised in that: the second user apparatus and the

second server are both members of a second telephony network; the step (a) includes supplementing the prepared message with information identifying a first server; the step (c) includes forwarding the supplemented short message to the identified first server in a separate first telephony network for delivery to the first user apparatus of the first telephony network.

Also according to a second aspect of the present invention there is provided a method for transmitting a short message, comprising the steps of: (f) preparing a short message at a second user apparatus in a second network environment, sending the prepared short message to a second message server also in the second network environment; (h) extracting from the short message information identifying a first message server in a first network environment; (i) forwarding the short message to the identified first message server; and (j) delivering the short message from the first message server to a first user apparatus in the first network.

Preferably, the first telephony network is a fixed line network such as a public switched telephone network (PSTN) whilst the second telephony network is a cellular telephony network such as a GSM network. Preferably, the method of the first aspect and the method of the second aspect are combined, to provide for the transmission of a short message from the first user apparatus to the second user apparatus, and vice versa. Preferably, the short message sent from the second user apparatus to the first user apparatus is a new message, or is a reply to a message received from the first user apparatus, or vice versa.

Preferably, the information identifying the first server comprises a server ID which is unique to the first server. The server ID is conveniently added as an additional field within the short message, and comprises a numeric data string of up to six characters. Preferably the step (c) of either the first or second aspect of the method includes translating the short message in the first server from a format suitable for transmission in the first telephony network to a format suitable for transmission in the second telephony network, or vice versa.

Preferably, in the second aspect the step (c) includes forwarding the short message to the identified first server in response to the second server detecting the presence of the information identifying the first server, and/or in response to the second server failing to resolve the intended recipient of the short message because the first user apparatus is not a member of the second telephony network. Preferably, the step (c) includes confirming at the first server that the information identifying the first server corresponds with the identity of the first server and if not then rejecting the short message back to the second server. Preferably, the step (c) comprises suppressing or removing at the first server the information in the supplemented short message identifying the first server prior to delivery of the short message to the first user apparatus. Suitably, the prepared short message only includes the information identifying the first server if the intended recipient is not a member of the second telephony network. Preferably, the step (c) comprises making an outgoing notification

call from the first server to the first user apparatus to notify the first user apparatus that a short message awaits delivery at the first server; and delivering the short message to the first user apparatus in response to an outgoing collection call from the first user apparatus to the first server.

Preferably, the first user apparatus is one of many each uniquely identified by a telephone number within the first telephony network; the first server is one of many each uniquely identified by a server ID; the second server is one of many within the second telephony network; and the second user apparatus is one of many each uniquely identified by a telephone number within the second telephony network.

Further according to the present invention there is provided a method for transmitting a short message between a first user apparatus in a first network environment and a second user apparatus in a second network environment, via at least one message server adapted to translate messages from the first environment to the second environment and vice versa, the method comprising the steps of: when transmitting a short message from the first user apparatus to the second user apparatus supplementing the message at the message server with information identifying the message server; and when transmitting a short message from the second user apparatus to the first user apparatus supplementing the message at the second user apparatus with information identifying the message server.

Also according to the present invention there is provided an apparatus for transmitting a short message, the apparatus for use with a first user apparatus of a first telephony network and with a second user apparatus of a second telephony network, the apparatus comprising: a first server having means for receiving a short message prepared on the first user apparatus, means for supplementing the short message with information identifying the first server, and means for forwarding the supplemented short message for delivery to the second user apparatus.

Preferably, the apparatus further comprises a second server for receiving the supplemented short message from the first server for delivery to the second user apparatus, the first server being a member of the first telephony network whilst the second server being a member of the second telephony network.

Further according to the present invention there is provided an apparatus for transmitting a short message, the apparatus for use with a first user apparatus of a first telephony network and a second user apparatus of a second telephony network, the apparatus comprising: a second server for receiving a short message prepared on the second user apparatus and for forwarding the short message for delivery to the first user apparatus via a first server based on information identifying the first server contained within the prepared short message.

Still further according to the present invention there is provided an apparatus for transmitting a short message, comprising a second user apparatus for preparing a short

message including information identifying a first server, the second user apparatus being a member of a second telephone network, the second user apparatus for transmitting the short message to a first user apparatus of a first telephony network via a second server of the second telephony network and a first server of the first telephony network.

In the apparatus of the present invention the first user apparatus may take any suitable form, and is preferably a combined voice and message telephony apparatus. Preferably, the first user apparatus comprises a data message system including user interface means such as a screen and a keyboard or keypad for the preparation and reading of text messages.

In one preferred embodiment the first user apparatus is an e-mail telephone adapted to send and receive SMS-type messages.

The first server is coupled to the second server by any suitable communications link including, but not limited to, a PSTN telephone line, a digital subscriber line such as an ISDN line, a kilostream line or a dedicated high speed data communications link.

Preferably, the second server is adapted to receive short message data packets forwarded from the first server. Preferably, the second server is arranged to deliver the short message data packets to an intended recipient apparatus. The second server and the recipient apparatus are members of a second network environment, preferably a cellular telephone network environment.

Preferably, the second server selects one recipient apparatus from amongst many potential recipient apparatus based upon a recipient identifier field in the short message data packet. The second server may take any suitable form, but preferably comprises a short message service centre for transmitting messages in a cellular telephone network. The apparatus may be provided in one location, or may be distributed amongst several separate processing portions.

Preferably, the second server is adapted to receive short message data packets from an originating user apparatus within the second network environment. The originating apparatus and the recipient apparatus in the second network environment may be a combined send and receive user apparatus. Ideally the recipient and originator apparatus are combined in a mobile telephone handset. Preferably, a message prepared by an originating apparatus in the second network and intended for a recipient apparatus in the first network includes a server identifier field in the short message data packet. Preferably, the server identifier field identifies a first server responsible for delivering messages to the recipient apparatus in the first network environment. Preferably, the second server is adapted to receive the short message data packet from the originating apparatus in the second network and to selectively identify the server identifier field. Preferably, the server, in response to determination of the second identifier field, forwards the short message data packet to the identified first server.

Preferably, the first server is adapted to receive short message data packets from the second server, including information identifying the first server. The first server preferably checks that the server identifier field correctly identifies the first server. Preferably, the first server suppresses or removes the server identifier field and then delivers the remainder of the short message data packet to the recipient apparatus in the first network. Preferably, the first server selects one intended recipient apparatus from amongst many potential recipient apparatus in the first network based upon the recipient identifier field.

According to another embodiment of the present invention there is provided a method for transmission of messages in a public switched telephone network, comprising the steps of: preparing a short message data packet; transmitting the short message data packet from an originating apparatus to a first server apparatus; and delivering the short message data packet from the first server apparatus to a recipient apparatus.

In this embodiment of the invention the originating apparatus and the recipient apparatus are both coupled to a public switched telephone network (PSTN). Preferably, the server apparatus selects the recipient apparatus from amongst many potential recipient apparatus based upon a recipient identifier field in the short message data packet. Preferably, the first server attempts delivery of the short message to the recipient apparatus substantially immediately after receipt thereof from the originator apparatus. Preferably, the receiver apparatus is adapted to answer an incoming call on a PSTN line, and to receive

a short message data packet from the first server. Preferably, a receiving apparatus and an originating apparatus are combined in a single user apparatus. Preferably, the user apparatus comprises user interface means such as a screen and a keyboard or keypad for preparing text messages for transmission to the first server, and for displaying text messages received from the first server.

For a better understanding of the invention, and to show how embodiments of the same may be carried into effect, reference will now be made, by way of example, to the accompanying diagrammatic drawings in which:

Figure 1 is a schematic diagram showing a prior art messaging system;

Figure 2 is a schematic diagram illustrating a preferred messaging system for use;

Figure 3 is a schematic diagram illustrating the structure of part of a prior art short message data packet;

Figure 4 illustrates part of a short message data packet used in preferred embodiments of the present invention;

Figure 5 is a schematic diagram illustrating another operation in the message system of Figure 2;

Figure 6 is a schematic diagram showing structure of another preferred messaging system; and

Figure 7 is a schematic diagram illustrating operation of another preferred messaging system.

Referring to Figure 2 a first preferred embodiment of the present invention will now be described starting with the example of sending a short message from a fixed line originator user apparatus 10 to a cellular telephone recipient user apparatus 40. The originator apparatus 10 is coupled to a public switched telephone network 1 or equivalent such as a PABX. The recipient apparatus 40 is coupled to a cellular telephone network 2. Previously it has not been possible to send short messages between these two different networks due to inherent structural incompatibility. In particular, since the originator apparatus 10 is not a member of the cellular telephony network the messaging centre 30 cannot interpret an originator identifier in the format of the telephone number of the originator apparatus 10 within the PSTN environment 1. Further, the signal format required for data transmission in a PSTN is incompatible with the format required for transmission within a cellular telephone network. For example, different handshaking protocols apply.

The messaging apparatus of the preferred embodiment comprises a PSTN server 20 coupled to the PSTN 1 and coupled to a cellular message server 30. Communication between the PSTN message server 20 and the cellular message server 30 may take any suitable form, but ideally takes place over a fixed line communications link such as a PSTN telephone line, kilostream line or ISDN line.

In use, a short message is prepared on the originator apparatus 10 by the user and sent over the PSTN to the PSTN message server 20. The PSTN message server 20 translates the format of the short message data packet from a format suitable for use in the PSTN environment to a format suitable for use in a cellular telephone network environment. The PSTN message server 20 then forwards the translated short message to the cellular messaging centre 30. The cellular messaging centre 30 receives the translated message in a format equivalent to messages received from elsewhere in the cellular network environment. The cellular messaging centre 30 may then deliver the short message to the recipient apparatus 40 in the same manner as short messages originating within the cellular telephone network 2.

Figure 3 shows part of a typical known short message data packet 100 including fields relevant to the present invention namely a recipient identifier field 101, a free text message field 102 and an originator identifier field 103. The recipient identifier field 101 identifies the telephone number of the intended recipient within the relevant telephony network, in this case the cellular telephone network 2. Likewise, the originator identifier field 103 identifies the telephone number of the originator in the relevant network environment which in the prior art must also be the cellular telephony network 2. The text message field 102 is free text that may be prepared off-line by the user and is typically up to 160 characters although any suitable length may be used.

Figure 4 illustrates a short message data packet used in preferred embodiments of the present invention,

including a recipient identifier field 101, a message field 102, and an originator identifier field 103 as discussed for Figure 3. These fields are supplemented by an additional field, namely a server identifier field 104. In use, the PSTN message server 20 supplements the originator identifier 103 by adding a server identifier 104 unique to the PSTN message server 20, after receiving a message from the originator 10 and prior to forwarding the message to the cellular message server 30. The server identifier field 104 enables short messages to be transmitted between mutually incompatible networks such as a PSTN and a cellular telephone network. The server identifier field 104 may be placed at any convenient location within the short message data packet and/or may comprise a plurality of fields in or around the short message data packet.

Referring now to Figure 5, transmission of a short message from a user apparatus 40 in the cellular telephone environment 2 to a user apparatus 10 on the PSTN environment 1 will now be described. Such transmission may be a new message, or may be a reply to a message received from an originator 10 in the PSTN environment 1. In either case, the recipient is intended to be the user apparatus 10 in the PSTN environment 1. The short message is prepared on the originator user apparatus 40 and sent to the cellular messaging centre 30. In processing the message the cellular messaging centre 30 cannot interpret the recipient identifier because this telephone number does not correspond to a number within the cellular telephony network 2. The messaging centre 30 may attempt to interpret the recipient identifier 101 and fail. Preferably, in response to such a failure or in order to

avoid such a failure, the cellular message server 30 determines whether the server identifier 104 is present in the short message data packet. In effect, the server identifier 104 informs the cellular messaging centre 30 that this message is intended for a recipient on another network. In this example, the server identifier 104 identifies the PSTN message server 20 as being responsible for delivering the short message to the intended recipient 10. The cellular messaging centre 30 then forwards the message packet to the identified PSTN message server 20.

The PSTN message server 20 is able to correctly interpret the recipient identifier 101 to identify the intended recipient 10 because the recipient is a member of the PSTN network 1. The PSTN message server optionally removes or suppresses the server identifier 104. The PSTN server 20 then delivers the remainder of the short message data packet to the recipient 10. Delivery of the message may take any suitable form. For example, messages may be kept on the server until delivery is requested by the user. In one embodiment the server makes an outgoing notification call to the user apparatus indicating that messages await delivery from the server. In another embodiment the server attempts delivery of the message substantially immediately after receipt.

Referring to Figure 6, it is desired that a plurality of PSTN message servers are provided 20, 21, 22 etc operated, for example, by different commercial entities to provide a competing commercial environment. Similarly, it is desired that a plurality of cellular messaging centres 30, 31, 32 etc are provided, such that there is a many to many relationship with the plurality of PSTN message

servers. Here, the server identifier field 104 enables the or each cellular messaging centre 30 to identify the message as intended for a recipient in another network, and to identify the appropriate PSTN message server 20 responsible for delivery of the message to the intended recipient.

The server identifier field 104 may take any suitable form. In the preferred embodiment the server identifier field 104 is an alphanumeric character string, preferably a numeric character string. Preferably the server identification field 104 is of a length sufficient to uniquely identify the desired PSTN message server amongst the plurality of message servers. Suitably, the server identifier field 104 comprises 3, 4, 5 or 6 numeric characters.

A method and apparatus have been described enabling transmission of short messages between incompatible networks. Advantageously, minimal additional equipment is required thereby minimising capital investment requirements. Further, minimal change to existing cellular messaging systems is required.

Referring now to Figure 7 the transmission of a message from an originator 10 on the PSTN network to a recipient 11 also on the PSTN network will now be described. A short message data packet is prepared and sent from the originating apparatus 10 to the PSTN message server 20. The PSTN message server 20 suitably determines that the recipient identifier field corresponds to a recipient in the PSTN network, rather than a recipient in another network as was the case in the embodiments

described above. Such determination may be made by, for example, inherent knowledge of the format of the recipient telephone number, such as a list of dialling codes. Here, the PSTN message server 20 dials the recipient 11 and attempts to deliver the short message direct to the recipient apparatus 11. If the first attempt fails, for example because the recipient apparatus 11 is busy, then the PSTN server may re-try later and/or may leave an indication on the recipient apparatus 11 that an attempt to deliver messages has been made. However, in most cases the delivery attempt is successful and the short message is stored on the recipient apparatus 11 such as in a memory, to be read offline by the user at a convenient time. Ideally the PSTN message server 20 attempts to deliver the short message immediately upon receipt and advantageously the user of the recipient apparatus 11 does not have to check with an external party such as the PSTN message server 20 to see whether messages are waiting delivery.

A messaging method and system have been described enabling fixed line to fixed line messaging.

The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or

process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

Each feature disclosed in this specification (including any accompanying claims, abstract and drawings), may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

The invention is not restricted to the details of the foregoing embodiment(s). The invention extend to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

**Claims**

1. A method for transmitting a short message, comprising the steps of:

(a) preparing a short message at a first user apparatus;

(b) sending the prepared short message to a first message server; and

(c) delivering the short message to a second user apparatus;

characterised in that:

the first user apparatus and the first server are both members of a first telephony network whilst the second user apparatus is a member of a separate second telephony network;

the step (c) includes supplementing the short message at the first server with information identifying the first server; and

the step (c) includes forwarding the supplemented short message from the first server to a second server being a member of the second telephony network for delivery to the second user apparatus.

2. A method for transmitting a short message, comprising the steps of:

(a) preparing a short message at a second user apparatus;

(b) sending the prepared short message to a second server; and

(c) delivering the short message to a first user apparatus;

characterised in that:

the second user apparatus and the second server are both members of a second telephony network;

the step (a) includes supplementing the prepared message with information identifying a first server (10);

the step (c) includes forwarding the supplemented short message to the identified first server in a separate first telephony network for delivery to the first user apparatus of the first telephony network.

3. A method as set forth in claim 1 for transmitting a short message from the first user apparatus to the second user apparatus, also including a method as set forth in claim 2 for transmitting a short message from the second user apparatus to the first user apparatus.

4. A method as claimed in any of claims 1 to 3, wherein the first telephony network is a fixed line network such as a PSTN, whilst the second telephony network is a cellular telephony network.

5. A method as claimed in any of claims 1 to 4, wherein the information identifying the first server comprises a server ID which is unique to the first server.

6. A method as claimed in claim 5, wherein the step of supplementing the short message includes adding the server ID as an additional field within the short message.

7. A method as claimed in claim 5 or 6, wherein the server ID comprises a numeric data string of up to six characters.

8. A method as claimed in any of claims 1 to 7, wherein the step (c) includes translating the short message in the first server from a format suitable for transmission in the first telephony network to a format suitable for transmission in the second telephony network.

9. A method as claimed in claim 8, wherein the translation step produces a translated short message for forwarding to the second server and delivery to the second user apparatus in the same manner as short messages originating within the second telephony network.

10. A method as claimed in claim 2 or any claim dependent thereon, wherein in the step (a) the prepared short message is a new message intended for the first user apparatus, or is a reply to a short message received from the first user apparatus.

11. A method as claimed in claim 10, wherein the prepared short message only includes the information (104)

identifying the first server if the intended recipient is not a member of the second telephony network.

12. A method as claimed in claim 2 or any claim dependent thereon, wherein the step (c) includes forwarding the short message to the identified first server in response to the second server detecting the presence of the information identifying the first server, and/or in response to the second server failing to resolve the intended recipient of the short message because the first user apparatus is not a member of the second telephony network.

13. A method as claimed in claim 2 or any claim dependent thereon, wherein the step (c) includes confirming at the first server that the information identifying the first server corresponds with the identity of the first server and if not then rejecting the short message back to the second server.

14. A method as claimed in 2 or any claim dependent thereon, wherein the step (c) comprises suppressing or removing at the first server the information in the supplemented short message identifying the first server prior to delivery of the short message to the first user apparatus.

15. A method as claimed in any of claims 1 to 14, wherein the prepared short message includes at least a recipient identifier field giving the telephone number of the intended recipient within the relevant telephony network; a free text message field; and an originator

identifier field giving the telephone number of the originator within the relevant telephony network.

16. A method as claimed in any of claims 1 to 15, wherein the first user apparatus is one of many each uniquely identified by a telephone number within the first telephony network; the first server is one of many each uniquely identified by a server ID; the second server is one of many within the second telephony network; and the second user apparatus is one of many each uniquely identified by a telephone number within the second telephony network.

17. A method as claimed in claim 2 or any claim dependent thereon, wherein the step (c) comprises making an outgoing notification call from the first server to the first user apparatus to notify the first user apparatus that a short message awaits delivery at the first server; and delivering the short message to the first user apparatus in response to an outgoing collection call from the first user apparatus to the first server.

18. A method for transmitting a short message between a first user apparatus in a first network environment and a second user apparatus in a second network environment, via at least one message server adapted to translate messages from the first environment to the second environment and vice versa, the method comprising the steps of:

when transmitting a short message from the first user apparatus to the second user apparatus, supplementing the

message at the message server with information identifying the message server; and

when transmitting a short message from the second user apparatus to the first user apparatus, supplementing the message at the second user apparatus with information identifying the message server.

19. An apparatus for transmitting a short message, the apparatus for use with a first user apparatus of a first telephony network and with a second user apparatus of a second telephony network, the apparatus comprising:

a first server having means for receiving a short message prepared on the first user apparatus, means for supplementing the short message with information identifying the first server, and means for forwarding the supplemented short message for delivery to the second user apparatus.

20. An apparatus as claimed in claim 19, further comprising a second server for receiving the supplemented short message from the first server for delivery to the second user apparatus, the first server being a member of the first telephony network whilst the second server being a member of the second telephony network.

21. An apparatus for transmitting a short message, the apparatus for use with a first user apparatus of a first telephony network and a second user apparatus of a second telephony network, the apparatus comprising:

a second server for receiving a short message prepared on the second user apparatus and for forwarding the short message for delivery to the first user apparatus via a first server based on information identifying the first server contained within the prepared short message.

22. An apparatus as claimed in claim 21, comprising a first server for receiving the short message from the second server, confirming the identity of the first server with the identity information given in the short message, and delivering the short message to the first user apparatus.

23. An apparatus for transmitting a short message, comprising a second user apparatus for preparing a short message including information identifying a first server, the second user apparatus being a member of a second telephony network, the second user apparatus for transmitting the short message to a first user apparatus of a first telephony network via a second server of the second telephony network and a first server of the first telephony network.

24. A method for transmission of messages in a public switched telephone network, comprising the steps of: preparing a short message data packet; transmitting the short message data packet from an originating apparatus to a first server apparatus; and delivering the short message data packet from the first server apparatus to a recipient apparatus.

25. A method for transmitting a short message from a first telephony network to a second telephony network to a

second telephone network, substantially as hereinbefore described with reference to the accompanying drawings.

26. A method for transmitting a short message from a second telephony network to a first telephony network substantially as hereinbefore described with reference to the accompanying drawings.

27. A method as claimed in claim 18 and substantially as hereinbefore described.

28. An apparatus as claimed in claim 19 and substantially as hereinbefore described.

29. An apparatus as claimed in claim 21 and substantially as hereinbefore described.

30. An apparatus as claimed in claim 23 and substantially as hereinbefore described.

31. A method as claimed in claim 24 and substantially as hereinbefore described.

**Application No:** GB 0020665.6 27 **Examiner:** Glyn Hughes
**Claims searched:** 1 to 31 — **Date of search:** 27 April 2001

# Patents Act 1977
# Search Report under Section 17

## Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): H4L (LDPC, LRAD), H4K (KF42)

Int Cl (Ed.7): H04Q 7/22

Other: Online: WPI, JAPIO, EPODOC

## Documents considered to be relevant:

| Category | Identity of document and relevant passage | | Relevant to claims |
|---|---|---|---|
| X | GB 2298339 A | (NOKIA) see whole document | 21-23 |
| X, E | WO 00/79825 A1 | (NOKIA) see page 32 line 22 to page 39 line 3 | 21-23 |

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