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(71) Applicant(s)
Privacom B.V.

(72) Inventor(s)
Bartel Johannes Verkruijssen

(74) Agent/Attorney
GRIFFITH HACK,GPO Box 1285K,MELBOURNE VIC 3001

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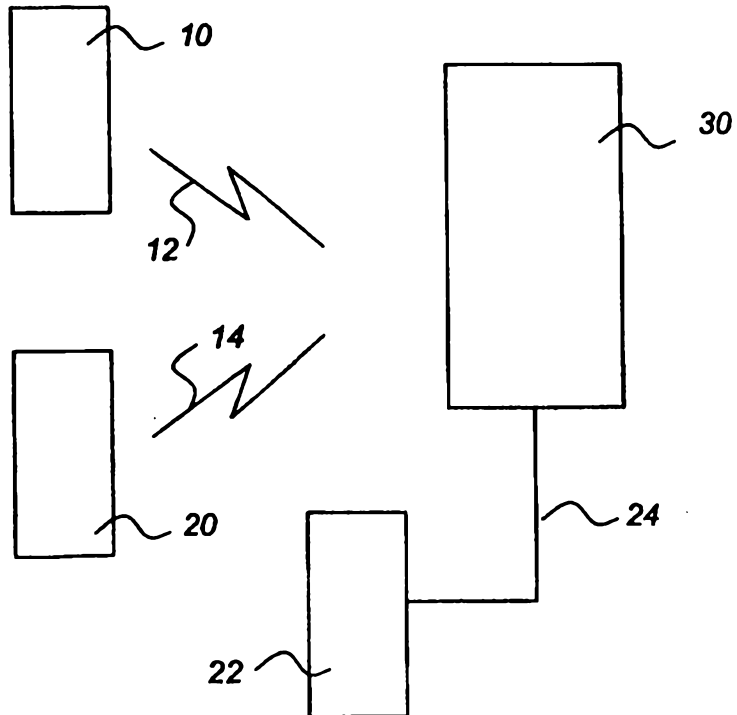
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<p>(21) International Application Number: PCT/NL99/00133 (22) International Filing Date: 10 March 1999 (10.03.99) (30) Priority Data: 1008563 11 March 1998 (11.03.98) NL <i>PRIVACOM B.V.</i> (71) Applicant (for all designated States except US): CONCORD HOLDING B.V. [NL/NL]; Ereprijs 23, NL-6721 ZA Bennekom (NL). <i>Honingerdijk 87B 3063 AK Rotterdam</i> (72) Inventor; and (75) Inventor/Applicant (for US only): VERKRUJISSEN, Bartel, Johannes [NL/NL]; Ereprijs 23, NL-6721 Bennekom (NL). (74) Agent: DE BRUIJN, Leendert, C.; Nederlandsch Octrooibureau, Scheveningseweg 82, P.O. Box 29720, NL-2502 LS The Hague (NL).</p>		<p>(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, 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, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, 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).</p> <p>Published <i>With international search report.</i></p> <div data-bbox="810 869 1029 1086" style="border: 1px solid black; border-radius: 50%; padding: 5px; text-align: center;"> <p>AUSTRALIAN PATENT OFFICE 92015 14/9/99</p> </div> <div data-bbox="1008 891 1396 1102" style="border: 1px solid black; padding: 5px; text-align: center;"> <p>IP AUSTRALIA 27 SEP 1999 RECEIVED</p> </div>

(54) Title: COMMUNICATION SYSTEM

(57) Abstract

Communication system comprising one or more exchanges and a number of terminals (telephone sets, facsimile apparatuses, etc.) which each through one of the mentioned exchanges is able to communicate with at least one of the other terminals whereby a) the user of a calling terminal calls the number of its own exchange, transmits signals indicating that the terminal has to be called back by the exchange after which the connection is cut off, b) thereafter the exchange establishes a connection with the calling terminal, c) the user of the terminal transmits the number of a desired other terminal to the exchange, d) the exchange thereafter establishes the connection with the desired terminal, whereby at least the calling terminals can be connected partly through wireless communication paths with their own exchange and to comprise a buffer in which the number of the desired other terminal can be stored, and comprise a circuit which, after said number is keyed in by the user and is stored in the said buffer, performs the above-mentioned steps a) instead of the user, waits until the exchange reports again, retrieves the number from said buffer and transmits this number instead of the user to the exchange which will perform thereafter step d).



Communication system

DESCRIPTION

State of the art

5 The invention relates to a call back method in a communication system comprising one or more exchanges and a number of terminals (telephone sets, facsimile apparatuses, etc.) each of which being able to communicate through at least one of said exchanges with at least one
10 of said other terminals, which method includes the performance of the following steps:

- establishing a connection with a predetermined exchange,
- transmitting signals to the exchange indicating the
15 number of the calling terminal, the number of the called terminal and the fact that the calling terminal has to be called back,
- breaking the connection and wait for the exchange to establish the connection.

20 Such a method is described in WO9201350. Various embodiments of call back methods are described in this publication. The disadvantages will be described in the following. In general these prior art methods require significant efforts from the user who has to be active
25 during at least the first two of the above-indicated steps.

Such a system, in which use is made of the so-called call back procedure, is known as such for wire-bounded communication systems. The advantage of such
30 systems is in many cases that the communication costs of the actual communication between the calling terminal and the desired terminal are calculated on the basis of date which will become available from the exchange which was involved in establishing the connection.

35 In general a number of exchanges are involved into establishing a connection, certainly if we are talking about trunk or international communication



traffic. In general thereby the costs will be calculated by the first exchange in the series onto which the calling terminal is connected. That can be an exchange which calculates according to a relatively high tariff.

5 By making use of a call back procedure any arbitrary exchange anywhere in the world which preferably calculates according to a relatively low tariff, can be used for establishing the actual connection. Although sometimes contact has to be made with the call back
10 exchange according to a relatively high tariff for a short while the timespan of this connection is very restricted. However, in many cases during establishing the connection use will be made only of signalling of which the costs are much lower or even nil.

15 A practical disadvantage of such a call back procedure is that to start with the user has to call the number of the call back exchange, has to wait thereafter until the call back exchange reports back and has to key in the number of the desired terminal thereafter. This
20 procedure is very laborious. If automatic number callers are used this will lead to practical or sometimes even insurmountable problems.

It is sometimes possible by means of a predefined number translation to order the exchange directly to call
25 a restricted number of predefined numbers. This, however, has the disadvantages that an extra manipulation (taking up the receiver) is still necessary, the number of items is restricted and always an appeal should be made to the memory of the caller to establish the correct connection.

30 In the mean time automatic call back diallers are developed for terminals in wire-bounded systems by means of which the above described manipulations can be automated. For wireless connections from a mobile terminal (mobile telephone, fax, modem, etc.) no
35 corresponding solutions are known.



Summary of the invention

According to one aspect of the present invention, there is provided a call back method in a communication system comprising one or more exchanges and a number of terminals each of which being able to communicate through at least one of said exchanges with at least one of said other terminals, whereby at least part of the terminals comprises a buffer circuit for storing the number of a terminal to be called, as well as an electronic circuit for controlling the call back method according to which method the following steps are performed:

- by the user:
 - a) storing the number of the called terminal in said buffer,
- by the electronic circuit:
 - b) establishing a connection at least partly through wireless paths with a predetermined exchange,
 - c) transmitting signals to the exchange indicating that the terminal has to be called back,
 - d) breaking the connection and wait for the exchange to call back,
 - e) as the connection is re-established retrieving the stored number from the buffer and transmitting it to the exchange,
 - f) waiting for the exchange to establish the connection between the called terminal and the calling terminal and switching over to control of the terminal by the user.

According to a further aspect of the present invention, there is provided a terminal for carrying out the call back method.

Description of the figures

Figure 1 illustrates a communication system according to the state of the art.

Figure 2 illustrates a communication system in which the characterizing features according to an



embodiment of the invention are applied.

Description of the invention

5 Figure 1 illustrates a terminal 10, for instance a mobile telephone, which through a wireless communication path 12 is able to establishes a connection with a suitable exchange 30. Through said exchange 30 the terminal 10 is able to establish a connection with another terminal, for instance through the wireless path 14 with a mobile telephone 20 or through a wire-bounded network 24 with a wire-bounded terminal 22.

10 In case the terminal 10 for instance wants to establish a connection with the terminal 20, then the terminal 10 will transmit a signal through the wireless path 12 to the exchange 30. Thereafter the number of the desired terminal 20 will be transmitted to the exchange 30 whereafter the exchange will take care that through communication path 14 the terminal 20 is called. As soon as the terminal 20 reports back, the connection from terminal 10 to terminal 20 through the exchange 30 is established. In a similar manner the terminal 10 is able to establish a connection with the wire-bounded terminal 22.

15 In this prior art procedure the costs of the communication connection between the terminal 10 and the terminal 20 respectively 22 are calculated on the basis of the standards handled by the exchange 30.

20 In this prior art procedure the costs of the communication connection between the terminal 10 and the terminal 20 respectively 22 are calculated on the basis of the standards handled by the exchange 30.

25 Figure 2 illustrates a configuration whereby besides the terminals 10 and 20 and the exchange 30 an other exchange 40 is involved. The terminals 10 and 20 are for instance embodied again as mobile telephones and are able to establish a connection with the exchange 30 respectively through the wireless communication path 12 and the wireless communication path 14. The wire-bounded apparatus 22 is connected to the exchange 30 through the network 24. The system comprises furthermore an other exchange 40 which through a communication path 16 is able

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to get into communication with the exchange 30. The communication path 16 will in general run through cables. In the communication path 16 in general one or more further exchanges will play a role, however, only for performing switch through functions and therefore these exchanges are within the scope of the invention of less relevance. It is only made clear that the exchanges 30 and 40 may have in a geographical sense a large mutual distance.

It is now assumed that the terminal 10 has no subscriber relation with the exchange 30 but has a subscriber relation with the exchange 40. However, at the moment the terminal 10 is situated within the influence area of the exchange 30. As soon as the mobile apparatus 10 indicates, by transmitting the number of the exchange 40, that he wants to make a connection with another terminal, then said number will be received by the exchange 30 and will be transmitted to the exchange 40. The exchange 40 recognizes the identity of the calling terminal 10 (for instance by means of the Calling Line Identification) whereafter the further connection is prohibited or an eventual established connection is cut off through the calling terminal or through the exchange. Thereafter the exchange 40 will establish a connection with the terminal 10, receives from the terminal 10 the number of the desired subscriber such as the mobile terminal 20 or the wire-bound apparatus 22 and establishes the connection with said terminal 20 respectively the apparatus 22. Thereby it is not necessary that the same communication routes will be used. It is very well conceivable that dependent on the available free channels the final connection runs along other paths.

In this configuration according to figure 2 in fact the exchange 40 will provide the data on the basis of which the costs of the communication connection between the terminals 10 and 20 will be calculated. In case the



exchange 40 uses a lower tariff than the exchange 30, then the subscriber 10 who has to pay for the connection has the benefit.

5 To perform the whole procedure such that the user of the terminal 10 is not aware of the manner in which the connection is established, it is necessary to add a buffer 18 to the terminal 10 in which buffer the number of the called subscriber 20 (or 22) is stored as well as the number of the exchange 40 is stored and furthermore an
10 electronic circuit 19 which reacts on the return call of the exchange 40 by accepting this return call and by transmitting the number of the terminal 20 or 22 which is stored in the buffer 18. The user of the terminal 10 is not aware of this and keeps waiting until the called
15 terminal 20 (or 22) reports itself. In fact the user of terminal 10 gets the feeling that the connection is made in the same manner as in the configuration according to figure 1. The essential difference, however, is that the costs of the established connection in case of the
20 configuration of figure 2 can be significantly lower. The costs are dependent on the tariff according to which the calculations are made in the exchange 40.

25 It is to be understood that, if any prior art publication is referred to herein, such reference does not constitute an admission that the publication forms a part of the common general knowledge in the art, in Australia or any other country.

30 For the purposes of this specification it will be clearly understood that the word "comprising" means "including but not limited to", and that the word "comprises" has a corresponding meaning.



THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A call back method in a communication system comprising one or more exchanges and a number of terminals each of which being able to communicate through at least one of said exchanges with at least one of said other terminals, whereby at least part of the terminals comprises a buffer circuit for storing the number of a terminal to be called, as well as an electronic circuit for controlling the call back method according to which method the following steps are performed:

- by the user:

a) storing the number of the called terminal in said buffer,

- by the electronic circuit:

b) establishing a connection at least partly through wireless paths with a predetermined exchange,

c) transmitting signals to the exchange indicating that the terminal has to be called back,

d) breaking the connection and wait for the exchange to call back,

e) as the connection is re-established retrieving the stored number from the buffer and transmitting it to the exchange,

f) waiting for the exchange to establish the connection between the called terminal and the calling terminal and switching over to control of the terminal by the user.

2. A call back method as claimed in claim 1, wherein said terminals are telephone sets, facsimile machines or the like.

3. A terminal adapted to carry out the call back method as claimed in claim 1 or claim 2, characterized in that the terminal comprises a buffer circuit for storing the number of a terminal to be called, as well as an



electronic circuit for controlling the call back method.

4. A terminal as claimed in claim 3,
characterized in that the electronic circuit is housed in
5 the SIM module.

5. A method as claimed in claim 1 and claim 2, and
substantially as herein described with reference to the
accompanying drawings.
10

6. A terminal as claimed in claim 3 and claim 4,
substantially as herein described with reference to the
accompanying drawings.
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Dated this 18th day of December 2002

PRIVACOM B.V.

By their Patent Attorneys

GRIFFITH HACK

20 Fellows Institute of Patent and
Trade Mark Attorneys of Australia



Fig 1

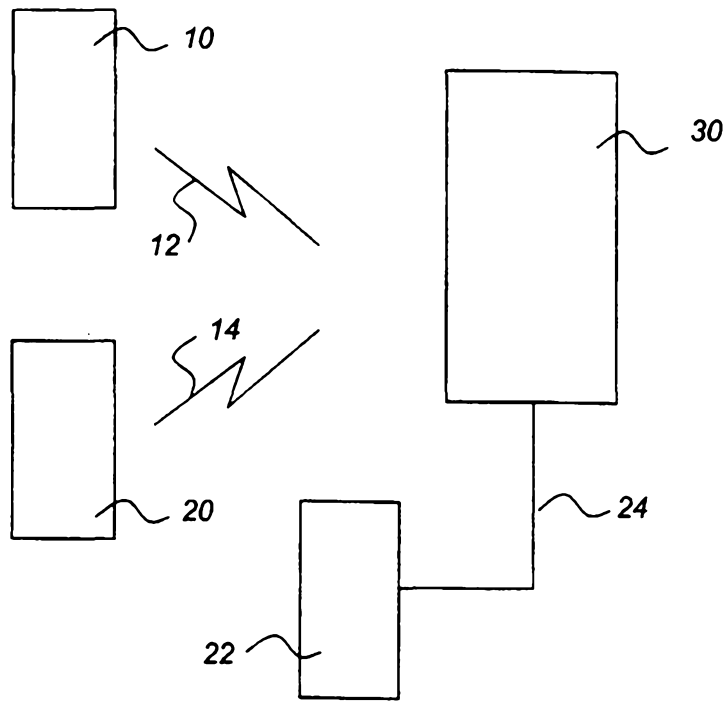


Fig 2

