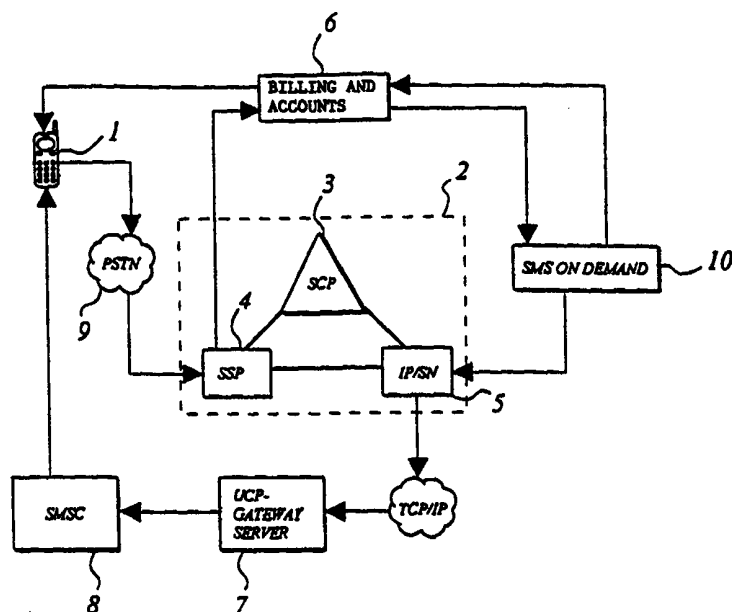




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(54) Title: METHOD FOR ARRANGING TRANSACTION BASED BILLING FOR TELEPHONE SERVICES



(57) Abstract

The present invention relates to telephony. In particular, the present invention concerns a procedure for implementing event-based billing in conjunction with services provided for consumers via a telephone connection. In the procedure, a connection is set up between a terminal device (1) and an intelligent peripheral (5), a service is selected in the peripheral by means of the terminal device, an assessment request based on the selected service is sent from the peripheral to a service control point (3) and, based on the assessment requests sent by the peripheral, an event-based bill for the customer is produced.

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**METHOD FOR ARRANGING TRANSACTION BASED BILLING FOR
TELEPHONE SERVICES**

The present invention relates to telephony.
5 In particular, the present invention concerns a procedure for implementing event-based billing in conjunction with services provided to consumers via terminal equipment, such as a telephone.

At present, teleoperators provide a variety
10 of services by telephone. Moreover, teleoperators may sell or rent systems which can be used by outside service providers to provide services, organise polls by telephone or carry out other corresponding kinds of operation via telephonic communication.

15 In the present system, the problem is that a separate telephone number is needed for each differently priced service and event. Therefore, to provide telephonic services, several telephone numbers need to be advertised, resulting in confused advertisements. A
20 further problem with the present system is that, after receiving one service, i.e. after the customer has called a service number and ordered or received a desired service, the customer has to hang up and make another call to the same or another service number.
25 However, the customer might want to buy additional services by the same call.

A practical example of the problem described above is a short-message sales service in which, upon an order by a customer, short messages containing e.g.
30 weather information, news, ticket information etc. can be sent to a terminal device selected by the customer. In the framework of present technology, the customer can order a single predetermined message by calling a so-called intelligent network number, all calls to
35 which are charged for at a rate defined for this particular use, the customer being charged for the call made to the intelligent network number. Therefore, a

separate intelligent network number must be provided e.g. for each differently priced weather information message. Moreover, the customer can only be charged for a single message transmission request during one
5 and the same call.

The object of the present invention is to eliminate the drawbacks described above. A specific object of the present invention is to disclose a procedure allowing intelligent event-based payment for
10 services implemented by means of telecommunication network components. A further object of the invention is to disclose a system in which a customer can buy and be charged for a plurality of services by calling a single telephone number.

15 As for the features characteristic of the invention, reference is made to the claims.

In the procedure of the invention for implementing event-based billing for services provided via a telecommunication network, a service is ordered using a terminal device via the telecommunication network. The telecommunication network preferably comprises an intelligent network comprising a service control point (SCP), a service switching point (SSP) and/or an intelligent peripheral (IP), and a number of
20 telephone exchanges as well as the data transmission channels between them. Intelligent peripheral refers to a device which preferably can be controlled e.g. by means of tone frequency tones of a telephone so as to cause it to carry out desired functions and which may
25 be provided e.g. with a voice menu or the like to present to the subscriber a list of services available. The intelligent network (IN) is not a separate network but an assembly integrated with the normal telephone network and implemented using suitable devices so that
30 it can be used to realise additional features of calls, such as call transfer, hold for consultation, call waiting, etc. The service is ordered from a pre-

determined service address, which preferably is a telephone number corresponding to the service, with which the customer sets up a connection by telephone. The call corresponding to the order is transmitted to
5 the intelligent network, where, based on the order, the actions required in the service are carried out and/or the performances associated with the service are transmitted to the terminal device.

According to the invention, a connection is
10 set up between the terminal device and the intelligent peripheral and, using the terminal device, a service to be transmitted to the terminal device e.g. in the form of a short message is selected in the peripheral. After the transmission of the service, an assessment
15 request based on the selected service is sent from the peripheral to the service control point and an event-based bill for the customer is generated on the basis of the assessment requests sent by the peripheral. In a preferred case, to generate the bill, a request to
20 form a ticket based on the assessment request is sent from the service control point to the service switching point and the tickets thus formed are sent to a billing system, where an event-based bill is produced by carrying out predetermined actions. The assessment
25 request and generally also the ticket preferably contain information identifying the terminal device, such as the A-subscriber number, and accurate data relating to the service that has been ordered and that the customer is to be charged for, based on the order.

30 In a preferred embodiment of the present invention, the telecommunication network comprises a gateway server for further transmission of the service. Moreover, in a preferred case, an acknowledgement of the service transmitted is received from the gate-
35 way server, from which acknowledgement it will be known that that the terminal device has received the service and the generation of a bill can be started by

sending an assessment request from the service control point. Generally, the service provider supplies the teleoperator maintaining the telecommunication network and the equipment required for the provision of the service with information regarding the billing principles, and this information is stored in the teleoperator's billing system.

In a preferred embodiment of the present invention, the services are further transmitted from the gateway server to a short-message service centre or a corresponding device, from where they are to be transmitted to the terminal device. On the other hand, the services can also be transmitted from the intelligent peripheral directly to the terminal device. The terminal device is preferably a mobile station, an ISDN system subscription or a similar digital receiver.

As compared with prior art, the present invention has the advantage that it allows the billing for services provided via a telecommunication network to be implemented on an event-based principle. A further advantage of the invention is that it makes it unnecessary to reserve a separate intelligent network number for each differently priced service, thus allowing easier provision of services to consumers.

In the following, the invention will be described by the aid of a few examples of its embodiments by referring to the attached drawing, which presents a diagram representing a telecommunication system according to the present invention.

The system presented in the drawing comprises a terminal device 1, which in this example is a GSM mobile station provided with features allowing reception and transmission of text messages and other data transmissions. The GSM mobile station communicates via a mobile communication network (not shown) with the public switched telephone network (PSTN) 9 and through it with an intelligent network 2, which preferably is

an assembly functioning "on top" of the telephone network to add auxiliary features to calls. The intelligent network further comprises a service switching point 4, which may be a digital group switch, which is commonly known and is therefore not described in detail. In addition, the intelligent network comprises a service control point 3, which is connected to the group switch 4 to control it. Furthermore, the intelligent network comprises a peripheral 5, which in this example is an IBM DirectTalk/6000 apparatus.

The system presented in the drawing further comprises a gateway server 7, which is connected to the intelligent peripheral using the TCP/IP protocol. The gateway server further communicates with a short message switching centre 8, designed especially for the transmission of short messages in the mobile communication network. Furthermore, the drawing diagrammatically depicts the parts performing the actual billing, i.e. a billing system 6, which is preferably managed by the teleoperator, and a service provider 'SMS On Demand' 10. In the drawing, the billing system 9 and the service provider 10 are interlinked by a two-way connection, which means that messages are sent both ways between them; from the billing system, the accounts regarding the services charged for are sent to the service provider, and from the service provider, at least information regarding the billing principles, such as service prices, is sent to the billing system, to be stored there.

In the following, referring to the attached drawing, an example illustrating the ordering and transmission of a short-message service will be presented. A person who wants to order a service, or in this case the customer using a GSM telephone, makes a call from his telephone 1 to a service number. From the service number, the call is directed by the service control point 3 to the intelligent peripheral 5,

where a service menu in the form of a voice menu is presented to the caller. In the voice menu, the subscriber selects the information he/she wants to buy and receive on his/her terminal device as a text message. Next, the intelligent peripheral 5 sends a text message addressed to the A-subscriber number via the gateway server 7 to the short message switching centre SMSC 8, from where it is to be transmitted further to the subscriber's terminal device. Upon receiving an acknowledgement from the gateway server 7, the intelligent peripheral 5 sends an assessment request to the service control point. After ordering the service, the customer may select another service in the voice menu or close the telephone, in which case the call is disconnected. Based on the assessment request, the service control point generates a ticket containing information regarding the A-subscriber number and the contents of the SMS message. In addition, the ticket may contain other information, such as data giving the duration of the call. Finally, all this information is transmitted to the operator's billing system 6, where a bill is generated for the subscriber and corresponding account information is sent to the service provider 10.

The signalling between the various parts as well as the billing procedure in themselves are known in telephony. By way of example, let it be stated that the signalling between the components of the intelligent network 2 can be implemented using SS7/TUP (Signalling System No. 7 / Telephone User Part) or SS7/ISUP (Signalling System No. 7 / Integrated Services Digital Network User Part) signalling. Moreover, it is possible to use ETSI CorelNAP in the signalling between the SSP and the SCP. The signalling between the SCP and the IP/SN may be e.g. ETSI CorelNAP, which uses the return value of the PromptAndCollectUserIn-

formation operation to transmit the desired assessment request from the IP/SN to the SCP.

The invention is not restricted to the examples of its embodiments described above, but many variations are possible within the scope of the inventive idea defined by the claims.

CLAIMS

1. Procedure for implementing event-based billing for services accomplished via a telecommunication network, in which procedure a service is ordered using a terminal device (1) via the telecommunication network, which comprises an intelligent network (2) comprising a service control point (3), a service switching point (4) and/or an intelligent peripheral (5), from a predetermined service address, the order is transmitted to the intelligent network and the actions required in the service are carried out and/or the performances associated with the service are transmitted to the terminal device, characterized in that
- 15 a connection is set up between the terminal device (1) and the intelligent peripheral (5);
using the terminal device, a service is selected in the peripheral;
an assessment request based on the selected service is sent from the peripheral to the service control point (3);
- 20 a request to generate a ticket based on the assessment request is sent from the service control point to the service switching point; and
- 25 the tickets thus generated are sent to a billing system (6), where, based on the assessment requests sent by the peripheral, an event-based bill for the customer is produced by carrying out predetermined actions.
- 30 2. Procedure as defined in claim 1, characterized in that the ticket contains at least information relating to the service transmitted to the terminal device (1) and a code identifying the terminal device, such as the A-subscriber number.
- 35 3. Procedure as defined in any one of the preceding claims 1 - 2, characterized in that the telecommunication network comprises a gateway

server (7) for further transmission of the service;
and that an acknowledgement of the service transmitted
is received from the gateway server (7), and, based on
the acknowledgement, an assessment request is sent
5 from the service control point (3).

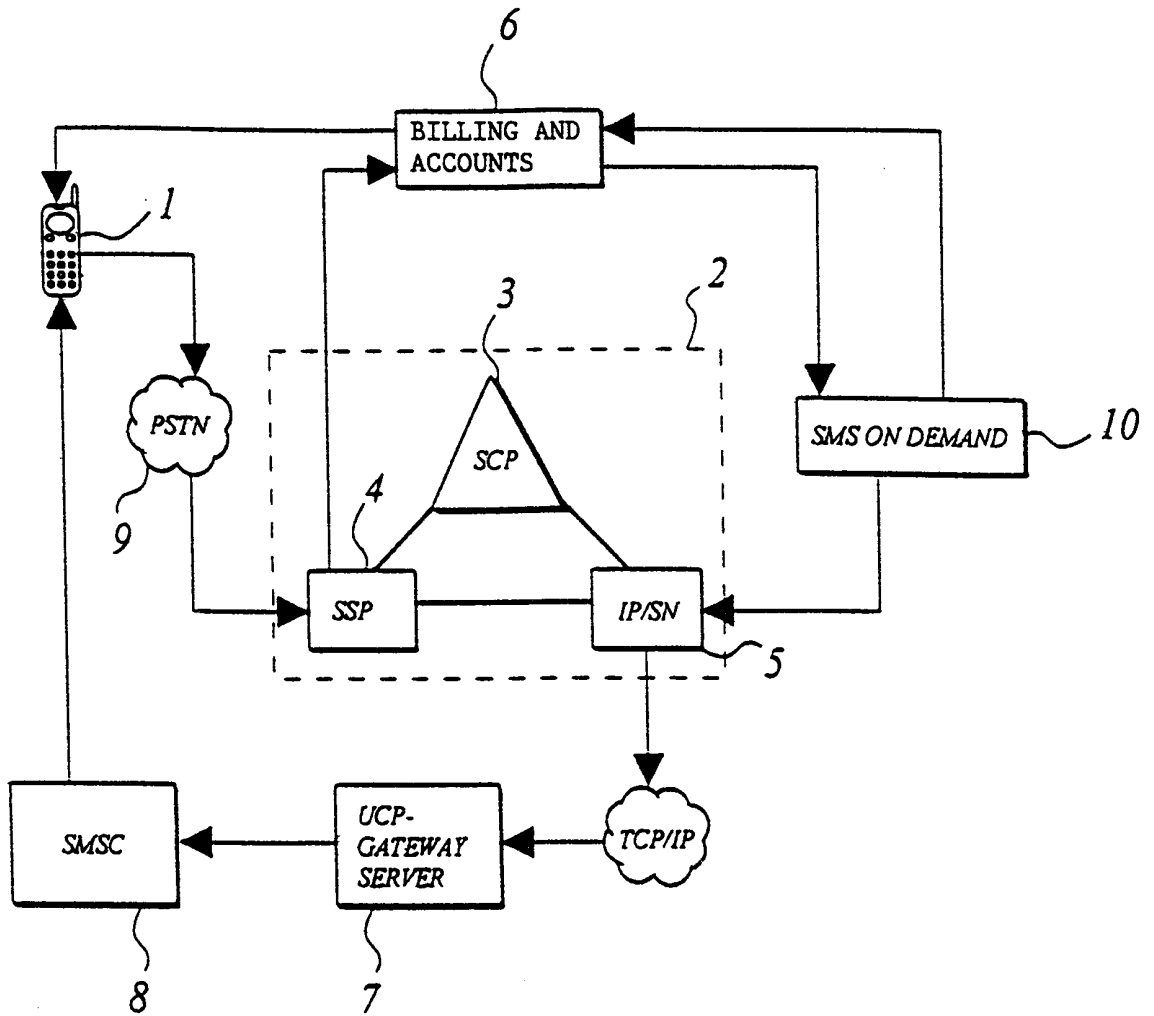
4. Procedure as defined in any one of the
preceding claims 1 - 3, characterised in
that the service is a short-message communication
service.

10 5. Procedure as defined in any one of the
preceding claims 1 - 4, characterised in
that the billing principles corresponding to the serv-
ice are stored in the teleoperator's billing system
(6).

15 6. Procedure as defined in any one of the
preceding claims 1 - 5, characterised in
that the services are further transmitted from the
gateway server (7) to a short-message switching centre
(8) or a corresponding device, to be transmitted to
20 the terminal device (1).

7. Procedure as defined in any one of the
preceding claims 1 - 6, characterised in
that the services are transmitted from the intelligent
peripheral (5) directly to the terminal device (1).

25 8. Procedure as defined in any one of the
preceding claims 1 - 7, characterised in
that the terminal device (1) is a mobile station, an
ISDN system subscription or a similar digital re-
ceiver.



INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 97/00601

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H04M 15/00, H04Q 3/00

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)

IPC6: H04M, H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 9730543 A1 (TELECOM FINLAND OY), 21 August 1997 (21.08.97), page 1, line 28 - page 2, line 15, see the claims --	1-8
X	EP 0779733 A2 (ALCATEL ALSTOM COMPAGNIE GENERAL D'ELECTRICITE), 18 June 1997 (18.06.97), see the whole document --	1-8
X	DE 4412727 A1 (SIEMENS AG), 26 October 1995 (26.10.95), see the whole document --	1-8
Y	EP 0698987 A2 (ALCATEL N.V.), 28 February 1996 (28.02.96), see the whole document --	4

 Further documents are listed in the continuation of Box C.
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Information on patent family members

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