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(54) Title: AUTOMATIC CHANGING OF THE SERVICE PROFILE

(57) Abstract: The invention relates to a method for releasing a subscriber identity module for use of services of telecommunications networks, especially land mobile networks, primary activation of the module taking place especially on the side of a network operator, especially of a land mobile network operator, an identification, especially a MSISDN and/or an IP address being assigned to the module and stored, this primary activation allowing the use of a limited and definable profile of primary services of a land mobile network.

Automatic changing of the service profile

The invention relates to a method for releasing a subscriber identity module for use of services of telecommunications networks, especially land mobile networks, primary activation of the module taking place especially on the side of a network operator, especially a land mobile network operator, an identification, especially a MSISDN and/or an IP address being assigned to the module and stored.

Previous use of services in land mobile networks has been driven mainly [by] end customers, i.e. that unique assignment of a subscriber identity module to an individual takes place. Each customer must be uniquely identifiable. To save resources and prevent abuse, each cellular card is only activated when it has been assigned to a customer. For this purpose, before use, a special activation process is initiated at the land mobile network operator. The cellular card here means a subscriber identity module, module for short, SIM.

A MSISDN is a selectable network address which the caller uses to reach a mobile subscriber (mobile subscriber integrated services digital network number, MSISDN). An IP address is an address within a network which can be used to establish a connection via a network, for example the Internet.

The activation process which has been necessary to date and which is required to activate, i.e. enable, a subscriber identity module for use of services of land mobile networks, is very complex. For a long time it has furthermore been such that billing preferably of a basic charge or establishing charge takes place associated with each activation. In conventional use of cellular

cards, i.e. modules, with activation the start of billing takes place immediately, regardless of whether the functions and services of the land mobile network which have been made available are being used or not.

This is especially disadvantageous when the cellular card, i.e. the subscriber identity module - module, for short - is to be installed early in devices and when an operating test is to or has to take place on the manufacturer side, since in existing methods this operating test can take place solely with the card activated, with which charge billing is also initiated although the card is not being productively used and months can pass until use.

The object of the invention is to devise a method for release of the subscriber identity module, which overcomes the indicated disadvantages and allows use early, for example for an operating test of the device.

This object is achieved as claimed in the invention by a method as claimed in claim 1. Advantageous developments are given in the dependent claims.

In the method for release of a subscriber identity module for use of services of telecommunications networks, especially land mobile networks, primary activation of the module taking place especially on the side of the land mobile network operator, an identification, especially a MDISDN and/or an IP address or the like being assigned to the module and stored, it is advantageous that this primary activation allows use of a limited and definable profile of primary services of the land mobile network.

Because the use of primary services of the land mobile network is possible by means of primary activation, an early operating test of the subscriber identity module and/or the terminal used is possible. The terms subscriber identity module or module or cellular card are used

synonymously. The term service encompasses any services and functions which have been made available, especially voice services and data services which are made available to the users of the land mobile network for use.

The invention is not limited to land mobile networks. Rather the method as claimed in the invention can be used in any telecommunications networks whose services can be used with the aid of a subscriber identity module. Use of the method with reference to land mobile networks is one of the possible applications and is especially preferred. To the extent land mobile networks are addressed below, this is intended only by way of example and is intended to encompass any type of telecommunications network.

Preferably the primary services are configured such that using the primary services authentication and/or alteration of the profile of the services of the land mobile network which have been enabled for use with the aid of the module can be carried out, especially cancellation of the limitation to primary services.

Limitation to the profile of primary services can take place especially by a connection set-up being possible using the module only to one or more certain remote stations which are defined, i.e. established, by their respective destination subscriber numbers.

Alternatively or cumulatively limitation to the profile of primary services can take place by a connection set-up being possible only to one or more certain remote stations which are defined, i.e. established by their respective address(es), especially IP address(es) within a network.

Furthermore, limitation to the profile of primary services can also take place alternatively or cumulatively by a connection set-up being possible only to one or more certain remote stations which are defined, i.e. established by their respective URL. A URL is a so-called uniform resource

locator, i.e. an address which can be dialed over a network, such as the Internet, for example www.t-mobile.de/service.

Preferably changing takes place to a certain profile of the services of the land mobile network which have been enabled for use with the aid of the module and/or general enabling of all services of the land mobile network takes place for use with the aid of the module depending on the primary service used for the first time with the aid of the module and/or depending on the type and/or number and/or address and/or URL of the dialed remote station.

In this way it is possible for the desired service profile of the services of the land mobile network which have been enabled for use to be selected accordingly and to be selected in a dedicated manner by choosing a remote station for the first-time connection set-up or even for a repeated one. A first-time connection set-up here also means especially that a certain number of connection set-ups are not counted at first since they are assigned to test operation, and only a certain further connection set-up is counted as the first relevant connection set-up. For example, the first three connection set-ups are detected as belonging to test operation, then the fourth connection set-up being counted as a new first connection set-up which can then be assigned to a certain customer and especially can be calculated.

Limitation to the profile of primary services is especially possible by limitation of the enabled use to one or more bearer services of a land mobile network. It is thus for example possible to limit use to a certain bearer service with a certain quality, i.e. the type of so-called bearer for example to a certain data service and/or bandwidth. Alternatively or cumulatively it is then also possible to establish the communications path, for example the connection destination, beforehand.

Preferably by use or an attempt at use of a service of the land mobile network outside the

profile of primary services a change or re-establishment of the profile of services enabled for use with the aid of the module is triggered.

Especially preferably a change and/or re-establishment of the profile of services enabled for use takes place automatically and/or authorized.

The module, i.e. the subscriber identity module, or the cellular card, can preferably be a SIM card (subscriber identity module) or a USIM card (universal subscriber identity module) or a virtual SIM (virtual subscriber identity module).

The method as claimed in the invention can thus be used in a versatile manner for the most varied modules and especially with stipulation of any profiles of enabled primary services.

Here a cellular card, i.e. a subscriber identity module, is made available already in the activated state. Here making available subsumes delivery to an end customer or also delivery to a hardware manufacturer who installs these modules permanently in his hardware. Here the activated state means that primary activation of the module has been done and that primary activation allows use of a limited profile, i.e. a certain service profile within the land mobile network. In this way test runs are possible without general release of the cellular card having to have taken place beforehand.

The user can thus use his terminal with the cellular card immediately with a specified service profile. The service profile limits use to a certain service level, for example a certain bearer service and/or to one or more destinations, i.e. remote stations. Identification of certain remote stations and thus also fixing on certain remote stations, i.e. limitation, can take place by using certain destination subscriber numbers, for example in so-called SMSC direct dialing and/or by limitation and definition of certain IP addresses which for example are assigned to a customer test server or the like, and/or by limitation to a certain URL such as for example the Internet address of

the customer test server.

By using the module, i.e. the cellular card, with a pre-established or specified behavior, the service profile can be changed by the primary service being used accordingly. In the extreme case for example blocking of the cellular card can also be induced or can take place automatically when abuse is identified.

This is especially advantageous since in the future especially the use of services of a land mobile network with reference to data applications will become more important. Here almost any technical device can be equipped with a so-called M2M module. M2M designates machine-to-machine communication which means that technical devices communicate with one another and exchange data in an automated manner using a land mobile network or other telecommunications networks. These applications lead to a very large number of M2M devices and thus necessarily to an enormous number of cellular cards, associated with the pertinent resource loading. Especially in the M2M environment, dictated by use, efficient processes are necessary to keep the costs of production and of use of applications as low as possible.

The method as claimed in the invention makes it possible for a user or provider of M2M services for each individual cellular card not to have to carry out several steps for activation of the card, i.e. of the subscriber identity module. Rather the method as claimed in the invention makes it possible to use cellular cards without major administrative cost and to set the desired service profiles. As explained, the concept of service profile means the scope and quality of the services of a land mobile network which can be used with the aid of the module. Test operation to be carried out beforehand is possible using the primary services which have been made available with the cellular card being made available. This can correspond to a specific service profile.

The method as claimed in the invention thus makes it possible to carry out for example test runs of hardware into which these modules have been permanently installed on the manufacturer side without the need for general activation, i.e. complete or more extensive enabling of use of all services or other services of a land mobile network. For a rest run, primary activation which allows use of the primary services of a land mobile network is sufficient. The primary services are limited compared to all services of the land mobile network, i.e. that it is a limited and fixed profile of the primary services.

After complete activation of the cellular card has been carried out using primary services, the use of further and/or other and/or all services of the land mobile network is possible. At the same time, billing for making available and/or use of the services is activated on the network operator side.

Activation of the cellular card means changing the service profile using the primary service which can be used based on primary activation of the module. Using the primary services the release of the module for enabling other or all services of the land mobile network can be carried out.

The service profile can be changed by using the module, i.e. the cellular card with a pre-specified behavior.

The cellular cards are activated after personalization. This can take place immediately in the production of the cellular card, but is done at latest with the delivery of the cellular cards to the customer. This delivery can mean the handover of the module to the end customer or delivery to a hardware manufacturer who is permanently installing the modules into his devices.

Here a service profile specified beforehand for the cellular card is released. The service

profile preferably limits the type and quality of the bearer service for example to data applications. Furthermore the service profile can likewise limit the communications path such as for example the connection destination.

Billing on the side of the land mobile network operator takes place preferably depending on the current service profile. Thus it is for example possible, instead of a basic charge for a service profile "test", not to compute a base price, but simply bill the connection prices.

Thus, immediate use of the card, such as for example a SIM card, can take place. The type and manner of allowable use is limited by way of the service profile, i.e. by way of the profile of the primary service.

If there is an attempt at use outside the set service profile, i.e. outside the limitation to primary services, the service profile changes. If for example the set service profile is the "test" profile and an attempt at use to a destination address other than the specified destination address in the "test" service profile takes place, according to the stipulation this can lead to changing into a "blocking" profile or "productive" profile or any other profile.

It is thus possible to provide security mechanisms which lead to automatic blocking of the subscriber identity module. But alternatively it can also be stipulated that use outside the primary services leads to enabling for use of all service of the land mobile network.

If use with pre-established features takes place, automatic changing of the service profile can take place. The service profile which has been activated thereby can therefore be selected by performing certain actions within the primary services. With the service profile then the scope of the services of the land mobile network which can be used with the subscriber identity module is established.

Claims

1. Method for releasing a subscriber identity module for use of services of telecommunications networks, especially land mobile networks, primary activation of the module taking place especially on the side of a network operator, especially a land mobile network operator, an identification, especially a MSISDN and/or an IP address being assigned to the module and stored, characterized in that this primary activation allows use of a limited and definable profile of primary services of a land mobile network.

2. Method as claimed in claim 1, wherein the primary services are configured such that using the primary services authentication and/or alteration of the profile of the services of the land mobile network which have been enabled for use with the aid of the module can be carried out, especially cancellation of the limitation to primary services.

3. Method as claimed in claim 1 or 2, wherein limitation to the profile of primary services takes place by a connection set-up being possible only to one or more certain remote stations which are established by their respective destination subscriber numbers.

4. Method as claimed in one of the preceding claims, wherein alternatively or cumulatively limitation to the profile of primary services takes place by a connection set-up being possible only to one or more certain remote stations which are established by their respective address(es), especially IP address(es) within a network.

5. Method as claimed in one of the preceding claims, wherein alternatively or cumulatively

limitation to the profile of primary services takes place by a connection set-up being possible only to one or more certain remote stations which are established by their respective URL.

6. Method as claimed in one of the preceding claims, wherein changing takes place to a certain profile of the services of the land mobile network which have been enabled for use with the aid of the module and/or general enabling of all services of the land mobile network takes place for use with the aid of the module depending on the primary service used for the first time or currently with the aid of the module and/or depending on the type and/or number and/or address and/or URL of the dialed remote station.

7. Method as claimed in one of the preceding claims, wherein limitation to the profile of primary services takes place by limitation of the enabled use to one or more bearer services with a certain quality of a land mobile network.

8. Method as claimed in one of the preceding claims, wherein a use or an attempt at use of a service of the land mobile network outside the profile of primary services triggers a change and re-establishment of the profile of services enabled for use with the aid of the module.

9. Method as claimed in one of the preceding claims, wherein a change and/or re-establishment of the profile of services enabled for use takes place automatically and/or authorized.

10. Method as claimed in one of the preceding claims, wherein the module is a SIM card or a USIM card or a virtual SIM.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2010/000341

A. CLASSIFICATION OF SUBJECT MATTER
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ADD.

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)
H04W H04L

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	US 7 266 371 B1 (AMIN UMESH J [US] ET AL) 4 September 2007 (2007-09-04) column 1, line 6 - line 11 column 1, line 44 - column 2, line 9 column 2, line 58 - column 3, line 19 column 4, line 10 - line 50 column 9, line 3 - line 42 column 10, line 28 - column 11, line 65 column 12, line 51 - column 13, line 3 column 14, line 41 - column 15, line 42 -----	1-10
X	EP 0 778 716 A2 (AT & T WIRELESS SERVICES INC [US]) 11 June 1997 (1997-06-11) column 2, line 53 - column 3, line 10 column 5, line 54 - column 6, line 51 ----- -/--	1-10

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"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	Date of mailing of the international search report
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Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2010/000341

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT

Information on patent family members

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