



METHOD AND SYSTEM FOR CHANGING SUBSCRIBER PROFILE BASED
ON IDENTITY OF BASE STATION SERVING THE TERMINAL
EQUIPMENT

The present invention relates to a method as
5 defined in the preamble of claim 1 for changing a sub-
scriber profile based on the identity of the base sta-
tion serving the terminal equipment. Moreover, the in-
vention relates to a system as defined in the preamble
of claim 4 for changing a subscriber profile based on
10 the identity of the base station serving the terminal
equipment.

In the near future it is to be expected that
there will be a growing demand for various applications
and services that need the identity of the base station
15 serving the terminal equipment in mobile communication
networks. Based on subscriber movements, the subscriber
profile can be modified, e.g. by limiting/extending
services or changing applications, depending on the
cell in whose area the subscriber is currently located.
20 An example of this is the home cell pricing policy, ac-
cording to which the subscriber's calls are charged for
at a reduced rate when the terminal equipment is within
the area of so-called home cells.

In present mobile communication systems, how-
25 ever, changing the subscriber profile on the basis of
base station identity is difficult. This is because
base stations do not have a permanent identity (for a
period of months - years). The CGI information (Cell
Global Identity, CGI) transmitted in the BCCH channel
30 (Broadcast Control Channel, BCCH) contains e.g. a cell
identifier, but in network reconfigurations the identi-
fiers occasionally have to be changed. Some of the
changes apply to only one base station at a time, so
applications and services could be designed to utilise
35 the identifiers of a plurality of base stations, in
which case changing the identifier of one of the base
stations would not necessarily confuse the application.



Other changes, such as BSC switch-over, apply to a large number of base stations at a time, so in this case the above-mentioned technique of monitoring a plurality of base stations is not applicable. In short,
5 designing and constructing a system for changing the subscriber profile on the basis of base station identity is at present either impossible or at least very expensive.

The object of the present invention is to disclose
10 a new type of method and system to eliminate the drawbacks described above.

A specific object of the invention is to disclose a method for changing the subscriber profile on the basis of the identity of the base station serving
15 the terminal equipment in a mobile communication network. A further object of the invention is to disclose a system for changing the subscriber profile on the basis of the identity of the base station serving the terminal equipment in a mobile communication network.

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

In the method of the present invention for changing the subscriber profile on the basis of the identity of the base station serving the terminal
25 equipment in a mobile communication network, information signals are sent by each base station and the information signals are received by the terminal equipment, which comprises a mobile station provided with a subscriber identity module. A permanent base station
30 identity is included in the information signals sent by each base station, and the subscriber profile is changed on the basis of the permanent identity of the base station serving the terminal equipment.

As compared with prior art, the present invention
35 tion provides the advantage that a more stable extra identity is created for each base station, and this identity is sent by the base station to the subscribers

in its area. Thus, each terminal device is at all times informed as to the base station in whose area it is currently located. The base station identity is not changed in conjunction with network reconfiguration as in prior-art solutions. Therefore, changing the subscriber profile on the basis of subscriber movements is accomplished flexibly and considerably more easily and at a lower cost than before.

In an embodiment of the method, information signals are transmitted in the cell broadcast channel (CBCH) or some other channel suited for the purpose.

In an embodiment of the method, the mobile communication network is based on digital technology, such as GSM technology, DCS1800 technology or equivalent.

The system of the invention for changing the subscriber profile on the basis of the identity of the base station serving the terminal equipment in a mobile communication network comprises a base station which sends information signals and terminal equipment comprising a mobile station provided with a subscriber identity module, said information signals being received by the mobile station. According to the invention, the system comprises means for including a permanent base station identity in the information signals sent by each base station. Moreover, according to the invention, the terminal equipment comprises means for changing the subscriber profile on the basis of the permanent identity of the base station serving the terminal equipment.

In an embodiment of the system, the information signals are transmitted in the cell broadcast channel (CBCH) or in some other channel suited for the purpose.

In an embodiment of the system, the mobile communication network is based on digital technology, such as GSM technology, DCS1800 technology or equivalent.

In the following, the invention will be described by the aid of a few examples of its embodiments by referring to the attached drawing, wherein

Fig. 1a presents a system according to the present invention;

Fig. 1b presents a system according to the present invention.

The mobile communication system presented in Fig. 1a, which in this example is a system based on GSM technology, comprises four base stations 1¹, 1², 1³ and 1⁴. The base stations are connected to a base station controller (BSC) 3, which again is connected to a cell broadcast (CB) server 4. Implemented in the cell broadcast server 4 is supervision software 41, which is used to create an extra identity of permanent nature for each one of the base stations 1¹, 1², 1³ and 1⁴. In practice, the identity may consist of e.g. a sequence number. The supervision software 41 and the base station controller 3 see to it that the identity assigned to each base station 1¹, 1², 1³ and 1⁴ is included in the information signal sent by the base station. Moreover, the supervision software 41 and the base station controller 3 take care of preserving the same identity for each base station after changes made in the network. The base stations 1¹, 1², 1³ and 1⁴ send the information signals e.g. in the cell broadcast channel (CBCH).

Furthermore, Fig. 1a shows a terminal 2, which forms an essential part of the system. The system may comprise an almost unlimited number of terminals. The terminal equipment comprises a mobile station provided with a subscriber identity module. Moreover, the terminal equipment 2 comprises means 5 for changing the subscriber profile on the basis of the identity of the base station currently serving the terminal. These means 5 may consist of e.g. software implemented in the subscriber identity module and/or a separate device

connected to the mobile station. They are used to receive the information signal and with it the permanent identity of the base station serving the terminal equipment. Subscriber profile changes are made on the basis of the permanent identity. A change in subscriber profile may consist of e.g. lower call charges if the subscriber remains within the area of predetermined home cells.

Fig. 1b presents a system corresponding to that in Fig. 1a after BSC switch-over. In BSC switch-over, which is a network reconfiguration procedure commonly used in mobile communication systems, base stations 6¹, 6², 6³ and 6⁴ originally controlled by a single base station controller are allotted to several base station controllers 8, 9. In prior-art implementations, this changes the base station identities, whereas the identity according to the invention remains the same, this being taken care of by the supervision software 101 implemented in the cell broadcast server 10 and the base station controllers 8 and 9. The terminal equipment 7 comprises means 11 for changing the subscriber profile on the basis of the identity of the mobile station currently serving the terminal equipment, as in the previous example.

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. Method for changing a subscriber profile on the basis of the identity of the base station serving the terminal equipment in a mobile communication network, in which method information signals are sent by the base station and the information signals are received by the terminal equipment, which comprises a mobile station provided with a subscriber identity module, characterised in that
- 10 - a permanent base station identity independent of configuration changes in the mobile communication network is included in the information signals sent by the base station;
- and the subscriber profile is changed on the basis of the permanent base station identity.
2. Method as defined in claim 1, characterised in that the information signals are transmitted in the cell broadcast channel (CBCH).
3. Method as defined in claim 1 or 2, characterised in that the mobile communication network is based on digital technology, such as the GSM technology.
- 20 4. System for changing a subscriber profile on the basis of the identity of the base station serving the terminal equipment in a mobile communication network, said system comprising a base station ($1^1, \dots, 1^n$) which sends information signals and terminal equipment (2) which comprises a mobile station provided with a subscriber identity module and receives the information signals, characterised in that
- 30 - the system comprises means (3, 4, 41) for including in the information signals a permanent identity of the base station ($1^1, \dots, 1^n$) which is independent of configuration changes in the mobile communication network; and
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- the terminal equipment (2) comprises means (5) for changing the subscriber profile on the basis of the permanent identity of the base station ($1^1, \dots 1^n$).

5 5. System as defined in claim 4, characterised in that the information signals are transmitted in the cell broadcast channel (CBCH).

6. System as defined in claim 4 or 5, characterised in that the mobile communication network is based on digital technology, such as GSM
10 technology.