

Agenda Item: 8
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Title: CR to 25.304, UE Procedures in Idle Mode
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Introduction

The purpose of this change request is to remove the Radio Access Mode Selection and Reselection process which is thought to be part of the Cell Selection and Reselection process in [1]. In addition, a new concept, Radio Access System selection is introduced as a FFS item.

It is also proposed, that an LS is sent to TSG-SA WG2 to ask clarification on PLMN selection and radio access system selection [2] that is based on the old LS [3] sent to SMG12 and SMG1 from the last ETSI SMG UMTS L23 EG meeting.

References

- [1] 3GPP TS 25.304, UE Procedures in Idle Mode, v1.0.0
- [2] (Draft LS) Clarification request on PLMN and radio access system and mode selection, R2-99428
- [3] ETSI SMG2 UMTS L23 EG, LS to SMG12/SMG1, 2y99-074

3 Definitions, abbreviations and symbols

3.1 Definitions

Radio Access Mode Mode of the cell, FDD or TDD

Radio Access System UMTS, GSM etc.

4. General description of Idle mode

[NOTE: The Idle mode in UMTS also includes the Idle mode of GSM. Further details are invited.]

4.1 Overview

When a multi-mode UE is switched on, it attempts to make contact with a public land mobile network (PLMN) using a certain radio access ~~systemmode. The choice of radio access mode, for instance UTRA, GSM or GPRS may be done automatically or manually.~~

The particular PLMN to be contacted may be selected either automatically or manually.

The UE looks for a suitable cell of the chosen PLMN and chooses that cell to provide available services, and tunes to its control channel. This choosing is known as "camping on the cell". The UE will then register its presence in the registration area of the chosen cell if necessary, by means of a location registration procedure.

If the UE finds a more suitable cell, it reselects onto that alternative cell of the selected PLMN and camps on that cell. If the new cell is in a different registration area, location registration is performed.

If necessary, the UE will look for more suitable cells on other PLMNs at regular time intervals, which is referred to as PLMN-reselection. Particularly, in the home country of the UE, the UE will try to get back to its Home PLMN.

If the UE loses coverage of a PLMN, either a new PLMN is selected automatically (automatic mode), or an indication of which PLMNs are available is given to the user, so that a manual selection can be made (manual mode).

Registration is not performed by UE's only capable of services that need no registration.

The purpose of camping on a cell in idle mode is fourfold:

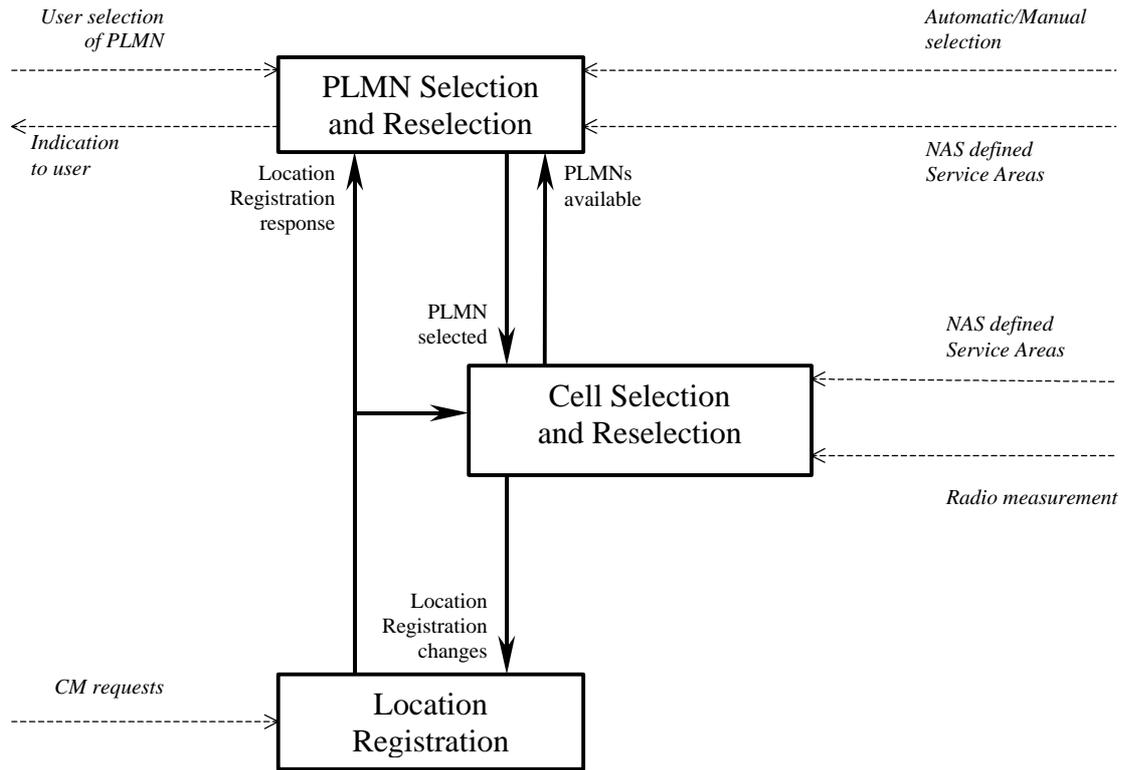
- a) It enables the UE to receive system information from the PLMN.
- b) When registered and if the UE wishes to initiate a call, it can do this by initially accessing the network on the control channel of the cell on which it is camped.
- c) If the PLMN receives a call for the registered UE, it knows (in most cases) the registration area of the cell in which the UE is camped. It can then send a "paging" message for the UE on control channels of all the cells in the registration area. The UE will then receive the paging message because it is tuned to the control channel of a cell in that registration area and the UE can respond on that control channel.
- d) It enables the UE to receive cell broadcast messages

If the UE is unable to find a suitable cell to camp on, or the USIM is not inserted, or if the location registration failed, it attempts to camp on a cell irrespective of the PLMN identity, and enters a "limited service" state in which it can only attempt to make emergency calls.

The idle mode tasks can be subdivided into four processes:

- ~~Radio access mode selection and reselection; [FFS]~~
- PLMN selection and reselection;
- Cell selection and reselection;
- Location registration.

The relationship between these processes is illustrated in the Figure 1.



5. Process descriptions

~~Radio access mode selection and reselection~~

5.2

The non-access stratum selects a suitable PLMN. Normally, the UE operates on its Home PLMN (HPLMN). However, a PLMN selection:

- This mode utilizes a list of PLMNs in priority order. The highest priority PLMN that is available and allowable is selected.

ii) Manual mode - Here the UE indicates which PLMNs are available to the user. Only when the user makes a manual selection does the UE try to obtain normal service on the VPLMN.

In the automatic mode, the UE will look for more suitable PLMNs regularly, if necessary. This is referred to as PLMN-reselection. Particularly, in the home country of the UE, the UE will try to get back to its Home PLMN.

Selection of the radio access system may be part of the PLMN selection and reselection process or it may be a separate process inside NAS [FFS].

[Note: Details of the possible process of the radio access system are out of the scope of TSG-RAN WG2.]

5.35.2 Cell selection and reselection

The UE selects the most suitable cell and the radio access mode based on idle mode measurements and cell selection criteria. The non-access stratum can control the cell selection, for instance in terms of a list of forbidden registration area(s) and a list of NAS defined service area(s) in priority order. In addition, NAS may also influence to the radio access system into which the cell should belong. For instance, NAS may prefer that a UMTS cell is selected instead of a GSM cell. [FFS]

When camped on a cell, the UE regularly searches a better cell according to the cell reselection criteria. If a more suitable cell is found, that cell is selected.

The non-access stratum is informed if the cell selection and reselection results in changes in the received system information.

For normal service, the UE has to camp on a suitable cell, tune to that cell's control channel(s) so that the UE can:

- Receive system information from the PLMN
 - Receive registration area information from the PLMN, e.g., location area and routing area, and,
 - Identify the NAS defined service area(s) to which the serving cell belongs
 - Other AS and NAS Information
- If registered,
 - receive paging and notification messages from the PLMN, and,
 - initiate call setup for outgoing calls or other actions from the UE.