

Source: Motorola
Title: Multiple PLMNs (Working Assumptions from UE in Idle Mode Workshop)
Agenda item: 7.16 (GSM-UMTS interworking, including PLMN selection)
Document for: Information
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1 Introduction

Although the basic PLMN selection requirements and procedures were agreed at a “Handover and Cell Selection” Workshop (9th and 10th of June 1999), discussions in this area have been on going ever since.

As a result a number of contributions were made to the latest “UE in Idle Mode” Workshop in Helsinki (7th and 8th of February 2001) outlining several scenarios that are still not adequately covered in the existing specifications.

Following general discussion on these inputs the “UE in Idle Mode” Workshop decided that a function, which allows the operator to instruct the UE to regard multiple MCC/MNC combinations as a single PLMN should be elaborated and prepared for approval by 3GPP.

2 Solution

The “UE in Idle Mode” Workshop considered proposals for handling the problems related to the case where more than one MCC+MNC had been allocated to networks which, from the subscriber’s perspective, are meant to look like one network, e.g., the case with a common 3G network and two independent 2G networks, where the subscriber belongs to either of the 2G network operators.

It was concluded that a solution based on using the Location Update procedure (as well as the GPRS Attach procedure, and the Routing Area Update procedure) to download a list of MCC+MNCs, which would be considered to be equivalent to the Registered PLMN with respect to PLMN selection, cell (re-) selection, seemed to resolved the problems raised while providing a flexible method for solving the issue of multiple MCC+MNCs being allocated to the HPLMN.

In particular the Workshop agreed that:

1. The downloaded list of MCC+MNCs for the ‘equivalent’ PLMNs was to be stored in the UE until the next location update procedure at which time the list would be replaced (with a new list).
2. In the case of a location update not providing any information, the stored list would be deleted.
3. The list would be used to determine if a cell was ‘suitable’ for cell (re) selection purposes.

4. The list should also be stored at switch off so that it could be used in the search for the last registered PLMN.
5. Any MCC+MNC on the forbidden PLMN list should be removed by the UE from the downloaded list immediately at reception before storage in the UE.

As part of the general discussion on the proposal:

1. It was noted that the number of entries in the list do not need to be very large as only other PLMN codes used in the close vicinity of the Location areas needs to be downloaded.
2. It was clarified that to obtain interworking between two networks, e.g., for cell re-selection, not only the download of PLMN codes needs to be implemented, but the networks needs to be coordinated as in the case of one PLMN, e.g., neighbour list, colour and scrambling codes etc.
3. It was clarified that in the case of user re-selection of PLMN the individual PLMN-codes still counts as individual PLMNs. However, when the PLMN is selected the downloaded list is used irrespectively of whether manual or automatic PLMN selection is in use.
4. It was clarified that the normal roaming restriction would still work, as cells in another PLMN (different MCC+MNC) would be seen as belonging to a different location area and thus a location update will be performed. At the location update the UE could be rejected with the usual rejection causes, e.g., PLMN not allowed in which case the PLMN is put on the forbidden list.
5. It was noted that some care was needed when drafting the changes to the specification to ensure correct handling of partial rejection causes such as the case where, e.g., only CS service are allowed. Also it was noted that proper error handling would have to be specified in the case the function is only made optional in Release 99.

3 Drafted CRs

The Workshop agreed to propose to the TSGs that the multiple MCC+MNC changes should be implemented to the Release 99 specifications as an essential correction using the work item GSM-UMTS interworking. In particular some operators indicated a desire to have the 'Equivalent PLMNs' list implemented in all mobiles they purchase especially given the fact that, dual-mode operation does not work in the scenarios of two 2G operators sharing a 3G network, two 3G networks sharing a 2G network, or the case of an operator which for regulatory reasons have been allocated different PLMN codes for 2G and 3G access.

Based on the decisions of the Workshop and following comments made at the TSG CN WG1 meeting in Sophia Antipolis the following CRs have been drafted:

NP-010020, CR-??? to 22.011 R99
NP-010021, CR-??? to 22.011 REL-4
NP-010022, CR-??? to 23.122 R99 (currently there is no REL-4 version of this TS)
NP-010023, CR-??? to 24.008 R99
NP-010024, CR-??? to 24.008 REL-4