

Agenda Item: 16
Source: Lucent Technologies
To: TSG SA WG1, TSG RAN and TSG SA
Title: Draft LS on Use of Prioritising Channel Selection for Cell Selection Procedure

Introduction

A contribution within RAN2 has proposed that an RF channel can have a priority assigned to it, which is intended to provide a mechanism to speed up the network and cell selection process.

The proposal is based on the UE storing channel raster information, (as defined in RAN WG4), along with some extra specific parameter information, which has been provided by the registered home PLMN (HPLMN) [1]. One of the specific parameters proposed is a priority level, which is set by the HPLMN operator.

Discussion

Currently the number of frequencies, on which the carrier could be located, as defined in the IMT2000 frequency band, is large. The UE currently has no stored knowledge of the HPLMN RF frequencies, although it may have some knowledge of previously connected cell/ PLMN. If the UE has left the coverage of the previous PLMN then it has no information on the current carrier frequency to be used. Potentially it must carry out a search of all the defined raster positions within the IMT2000 frequency band, to locate possible candidate cells. Even when a suitable channel has been found this is not a guarantee that the network is the home network, or that the UE will have access to the network, (when roaming), and resumption of cell search will have to be carried out if access is not possible.

One proposed use of the priority field is to signal highest priority for carrier frequencies belonging to the HPLMN set of frequencies, another level of priority for an approved set of roaming frequencies and a lower level of priorities for other usable frequencies. This would enable a UE to identify the home network in preference to other networks, followed by approved networks for roaming when connection to the home network is not possible.

Additionally, rather than having just one level of priority for acceptable roamed networks an additional level of priority could be used to identify PLMN carrier frequencies which belong to networks that have adjacent or overlapping coverage to the HPLMN. This would enable the UE to determine whether it should carry out a search for its home network whilst connected to this roaming network, as searching for the HPLMN is not required when operating in roamed networks that are not adjacent to the HPLMN.

There has also been a suggestion that the number of priority fields could be extended to enable operators to provide its own subscribers with preferential information on which roamed networks should be chosen over others, based on preferential roaming agreements. This would support the requirements of TSG SA WG1 which are specified in TS22.101 v.3.6.0 section 18. 'Network Selection' [2].

Summary

The use of these priority levels would reduce the time for the UE to locate an acceptable network, also not requiring the UE to decode the BCCH, of a cell to discover whether it can gain access. When operating in a roaming network the use of the priority field would enable the UE to determine initially which raster channels to search for. Additionally, when roaming on PLMN's adjacent to its HPLMN the UE can determine that it may have access to its HPLMN, and know on which carrier frequencies to search for these HPLMN channels rather than searching all raster frequencies. This ensures that the UE returns to its HPLMN as quickly as possible. Finally this mechanism also supports the requirement from SA1 for the home operator to specify preferential network selection when roaming.

Conclusion

RAN2 looks for guidance from RAN, SA and SA1 as to whether the use of a priority field in the manner described is acceptable, and whether extra priority levels should be allowed to be provided, to enable operators to influence their subscribers on their network selection.

References

- [1] TSG RAN WG2#5 T-doc 99644- A Flexible Method for Defining RF Channels for UMTS, Lucent Technologies
- [2] TS22.101 v.3.6.0, Service aspects; Service principles, 3GPP TSG SA WG1