Source :   **Nortel Networks**

Agenda Item :   **6**

Title :   **Support for LCS in GERAN release 4 in Iu mode**

1. Introduction

GERAN release 4 has two modes: A/Gb mode, and Iu mode. In Iu mode, the GERAN BSS connects to the Core Network via the same Iu interface as UTRAN, and has an Iur interface between BSSs limited to the Control Plane. GERAN release 4 is due for completion in April 01.

This contributions addresses the support of LCS in GERAN release 4 in Iu mode, and shows that an adaptation of the current GERAN LCS support based on the UTRAN set of protocols should be used.

2. Iu mode GERAN release 4 architecture

A GERAN release 4 BSS connects to a 3G Core Network via the Iu interface. There is also an interface which is defined between BSSs, called Iurg, which is based on the Control Plane of the UTRAN Iur. The internal architecture of a GERAN BSS is not standardised i.e. Abis.

The Iu mode of GERAN inherits a RRC protocol state machine from UTRAN, this RRC being responsible for controlling the PS and CS Domain Radio Access Bearers. Iu and Iur procedures are identical as UTRAN.

A number of modifications have been necessary to match the Iu interface requirements e.g. ciphering for the PS Domain is now in the BSS.

3. Support of LCS in GERAN release 4 in Iu mode

It is proposed that GERAN LCS support inherits some of the protocols that have been defined for UTRAN. This looks like the only way to achieve the support for LCS in time for release 4.

The proposal is the following:
- Positioning requests/confirmations are provided on the Iu interface
- LCS assistance data is sent like in release 99 on the Cell Broadcast channel
- Measurement reports are sent on the RRC layer, which provides for ciphering for both CS and PS Domain (an issue currently for the support of LCS on the Gb interface)
- The LCS functionality between BSSs is provided via the Iur interface. This allows for exchange of information in between GERAN BSSs, but also between a GERAN BSS and a UTRAN RNC

Existing Iu and Iur interfaces can be used, and since RRC layer under design for GERAN is based on UTRAN RRC, RRC protocol can be inherited (except for assistance data sent on CBC).

It should be noted that this proposal supports for LCS in both PS and CS Domain.

4. Conclusion

This contribution has shown how the support for LCS should be provided for GERAN release 4. Given that GERAN release 4 needs to be completed by April 01, and that support for LCS is an essential requirement, it is advised that GERAN defines the support for LCS in GERAN release 4 based on the principles given in section 3. This will ensure that work can be completed in time, and also that GERAN and UTRAN harmonisation extends also to LCS.