NOKIA

Feature 155: Call Re-establishment

Contents

Summary of changes

Changes between document issues are cumulative. Therefore, the latest document issue contains all changes made to previous issues.

Changes made between issues 11–0 and 10–0

Chapter Installation and testing

Contents have been reorganised and clarified.

Changes made between issues 10-0 and 1.7-3 of the document

The issue numbering has been changed together with the changes in the document format.

Chapter Description of the feature

Influence to charging added to section *Functionality in the statistics and charging*.

MML command for the BSC removed in section *Functionality in the BSC*.

1 Introduction

The Call Re-establishment feature is used when a mobile station loses its connection to the Base Transceiver Station (BTS) and attempts to re-establish the network connection. The re-establishment can be made to the same or to another cell.

2 Description of the feature

2.1 Functional capabilities

2.1.1 General

After the MS has recognized the radio_link_failure during a transaction it may re_establish the connection to the network. MS is informed on the BCCH if the re_establishment is allowed to that cell.

2.1.2 Functionality in the MSC

MSC is able to connect the re_establishment request to the old call.

Re_establishment is possible only in speech phase of a call. If a call drop is noticed in any other state all resources are released immediately. The ciphering state of the transaction must be set the same way after re_establishment as it was before it.

For call transactions the call state of the MS is checked with STATUS_ENQUIRY procedure for confirming that there has not been any state changes at the MS side during the connection interruption. If the states are not compatible the call is released.

The supplementary service (SS) or short message service (SMS) transactions are not re-established if there is no call at the same time. If there exists a call in speech state and there is a SS or a SMS transaction at the same time the connection is re-established. If there are messages related to these service types sending is delayed until the re-establishment is completed.

For certain bssmap_cause values MSC delays the handling of the CLEAR_REQUEST from the BSC for enabling the MS to start the re_establishment. The delaying of the CLEAR_REQUEST is done only if there is at least one call in speech state. As a default the only bssmap_cause values that trigger the awaiting of the re-establishment request from the MS are the 0x00 “Radio interface message failure” and 0x01 “Radio interface failure”.

Re_establishment is not possible after the inter MSC handover in the MSC-B because the MS's IMSI is not transferred between MSC's during inter MSC handover.

Transaction types for which the re_establishment is not supported are all types of location_updatings and IMSI_detach.

2.1.3 Functionality in the statistics and charging

This feature is seen in the statistics as one type of a handover. The charging is suspended during the re-establishment phase i.e. from the detection of the radio link failure (Clear Request) or from the Re-establishment request until the connection is re-established (Assignment Complete).

2.1.4 Functionality in the BSC

The re_establishment functionality itself is quite transparent to the whole BSS. At the BSC the use of the re_establishment in the system is defined. The use is relayed to the MS at the BCCH channel.

3 Interfaces

None.

4 Installation and testing

4.1 Configuration requirements

4.1.1 Network elements involved

- Mobile Services Switching Centre (MSC) (software)
- Base Station Controller (BSC) (software)
- Mobile Station (MS) (software)

4.1.2 Hardware effects

None.

4.1.3 Firmware effects

None.

4.2 Remarks

The re_establishment function itself is quite transparent to the whole Base Station System (BSS). The use of re_establishment in the system is defined in the Base Station Controller (BSC); it is relayed to the mobile station via the broadcast control channel (BCCH).

Statistics changes

This feature is presented in the statistics as one type of handover.

Charging changes

Charging is stopped during the dropping and it is resumed after the succesful re-establishment.

4.3 Installation and activation

The feature is automatically available after software installation.

The use of re_establishment in the system is defined in the Base Station Controller (BSC); it is relayed to the mobile station via the broadcast control channel (BCCH).

Check the BSSAP version from the BSC data with the EDO command:

```
ZEDO:NAME=BSC_NAME;
```

where BSC_NAME is the name of the BSC.

Modify information on BSSAP version with the EDT command, so that re-establishment is supported.

```
ZEDT:VER=<used_BSSAP_version>:F,36,1;
```

where BSSAP_VERSION is the BSSAP version identification you checked earlier.

4.4 Testing

4.4.1 Test environment

The testing requires a Mobile Services Switching Centre (MSC), a Base Station Controller (BSC), two Base Transceiver Stations (BTSs) and a Mobile Station (MS).

4.4.2 Test prerequisite

The mobile station has to be attached to the BTS1 via the location updating procedure. The Tx of the BTS2 has to be disconnected or damped.

Check the BSSAP version from the BSC data with the EDO command:

where BSC_NAME is the name of the BSC.

Modify information on BSSAP version with the EDT command, so that re-establishment is supported.

```
ZEDT:VER=<used_BSSAP_version>:F,36,1;
```

where BSSAP_VERSION is the BSSAP version identification you checked earlier.

4.4.3 Test execution and expected results

Establish a mobile originating call via the BTS1. Disconnect or damp the BTS1 Tx; the BTS2 Tx is instantly connected. A call re-establishment is performed via the BTS2 Tx.

The test can also be carried out with a single BTS and a Tx by using a fully damped box. In that case, after the mobile originating call, the mobile station is placed in the box for a few seconds. When the MS is removed from the box, call re-establishment is performed via the same BTS and Tx.

4.5 Deactivation of feature

Deactivation

Modify information on BSSAP version with the `EDT` command, so that re-establishment is not supported..

```
ZEDT:VER=<used_BSSAP_version>:F,36,0;
```