

Source: TSG CN WG 1
Title: CR to R99 (with mirror CR) on Work Item TEI towards 29.018
Agenda item: 7.22
Document for: APPROVAL

Introduction:

This document contains 2 CRs on **R99 (with mirror CR)** to Work Item "TEI", that have been agreed by **TSG CN WG1**, and are forwarded to TSG CN Plenary meeting #14 for approval.

Spec	CR	Rev	Phase	Subject	Cat	Version-Current	Version-New	Doc-2nd-Level
29.018	022		R99	Correction of the Location Update for non-GPRS service procedure	F	3.7.0	3.8.0	N1-011808
29.018	023		Rel-4	Correction of the Location Update for non-GPRS service procedure	A	4.1.0	4.2.0	N1-011809

CHANGE REQUEST

⌘ **29.018 CR 22** ⌘ ev **-** ⌘ Current version: **3.7.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ Correction of the Location Update for non-GPRS service procedure		
Source:	⌘ Siemens AG		
Work item code:	⌘ TEI	Date:	⌘ 16.11.01
Category:	⌘ F	Release:	⌘ R99
	<i>Use <u>one</u> of the following categories:</i> F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		<i>Use <u>one</u> of the following releases:</i> 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

Reason for change:	⌘ The conditions, when the SGSN has to start a Location Update for non-GPRS service procedure, are not specified correctly. Especially, one case (combined RA/LA update, when the state of the association is Gs-Null) is missing completely: According to TS 24.008, subclause 4.7.5.2.1: "A GPRS MS in MS operation modes A or B that is in an ongoing circuit-switched transaction, shall initiate the combined routing area updating procedure after the circuit-switched transaction has been released, if the MS has changed the RA during the circuit-switched transaction and if the network operates in network operation mode I." If the MS is operating in MS operation mode A, it performed a non-combined routing area update when it changed the routing area while the circuit-switched transaction was ongoing. Therefore, the Gs association in the SGSN is broken. However, according to the current wording in 6.2.1, the SGSN will (re-)establish the association only if the MS performs a combined RA/LA update <ul style="list-style-type: none"> - if the update type indicates "combined RA/LA update with IMSI attach"; - if the LA has been changed; or - if the SGSN serving the MS has changed. The case of update type "combined RA/LA update", without change of the LA, is not covered by this list.
Summary of change:	⌘ The description of the conditions, when the SGSN has to start a Location Update for non-GPRS service procedure, is aligned with TS 24.008. The missing condition is added.
Consequences if not approved:	⌘ Incomplete specification: If the association is not re-established immediately after termination of the non-GPRS service, because the MS has only changed the RA but not the LA, the MS cannot be paged for CS services if a PCCCH is allocated in the cell.

Clauses affected:	⌘ 6.2, 6.2.1
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Other specs affected:	⌘ <input type="checkbox"/>	Other core specifications	⌘	
	<input type="checkbox"/>	Test specifications		
	<input type="checkbox"/>	O&M Specifications		
Other comments:	⌘			

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

***** SECTION PROVIDED FOR INFORMATION ONLY *****

4.2.2 States at the SGSN

Gs-NULL

There is no association with a VLR for the MS and therefore the SGSN considers that the MS is IMSI detached of non-GPRS services. In this state the SGSN accepts BSSAP+-PAGING-REQUEST messages to MSs only if the 'SGSN-Reset' restoration indicator in the SGSN is set to 'true'.

LA-UPDATE Requested

The SGSN has sent a BSSAP+-LOCATION-UPDATE-REQUEST message to the VLR. In this state the SGSN waits for the outcome of the Location Update for non-GPRS procedure at the VLR before sending the response to the MS. In this state the SGSN accepts BSSAP+-PAGING-REQUEST messages.

Gs-ASSOCIATED

The SGSN stores an association for that MS. In this state the SGSN performs the Location Update for non-GPRS services procedure towards the VLR for MSs in class-A and MSs in class-B mode of operation when the MS moves to a new LA.

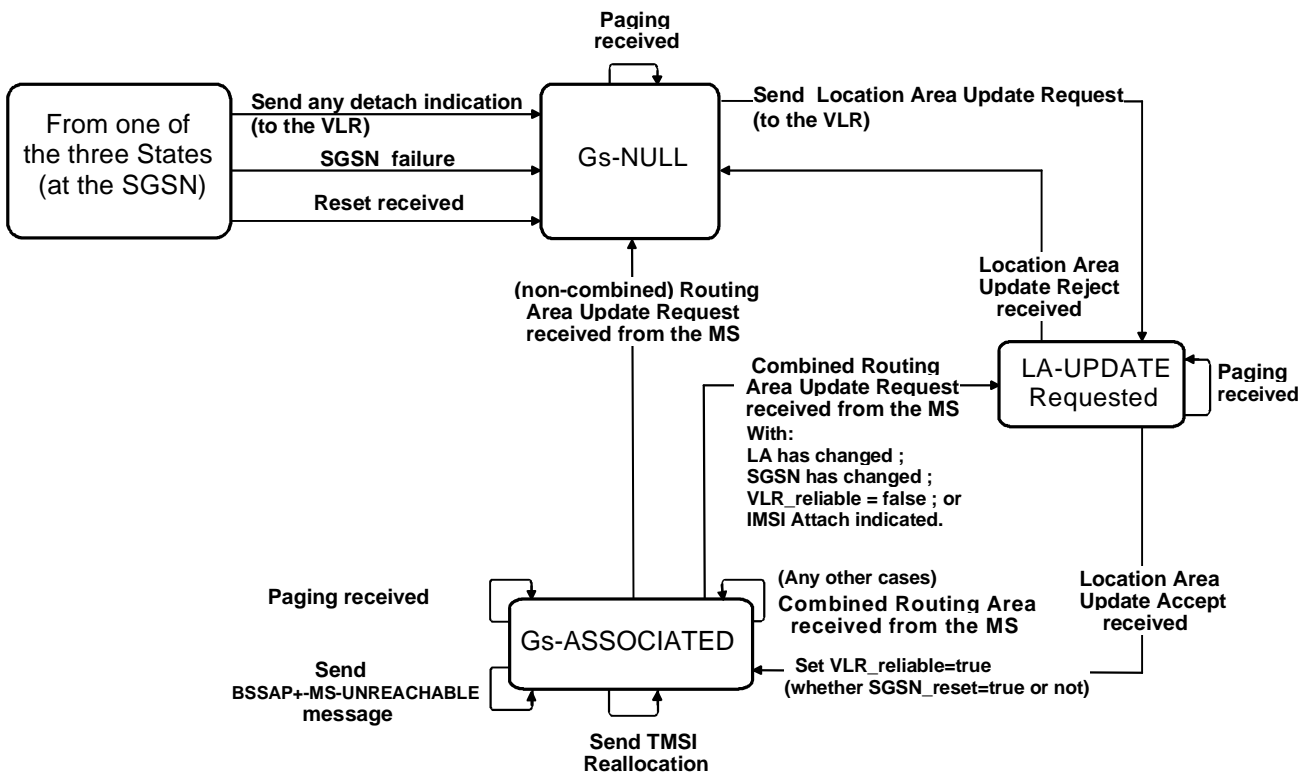


Figure 4.2/3GPP TS 29.018: State diagram at the SGSN

***** FIRST MODIFIED SECTION *****

6 Location Update for non-GPRS services procedure

6.1 General description

The location update for non-GPRS services procedure is a general procedure used by MSs in class-A mode of operation and MSs in class-B mode of operation. This procedure allows MSs and network to perform:

- Combined IMSI attach for GPRS and non-GPRS services;
- IMSI attach for non-GPRS services if the MS is already IMSI attached for GPRS services;
- IMSI attach for GPRS services indication to the VLR if the MS is already IMSI attached for non-GPRS services;
- Normal Location Update procedure to the VLR if the MS is IMSI attached for both GPRS and non-GPRS services;
- Reallocation of TMSI to an MS.

The Location Update for non-GPRS services procedures in the Gs interface is always started as a consequence of a direct action by the MS. The combined routing area update procedure is further specified in 3GPP TS 23.060 and 24.008.

The Location Update for non-GPRS services procedure is used by the SGSN to forward to the VLR those parts of the combined routing area update or IMSI attach procedure which belong to the non-GPRS services. This means that non-GPRS related requests which are included in the combined request, are sent from the SGSN to the VLR. The procedure is also used by the SGSN to indicate to the VLR when an IMSI attach to GPRS services has been performed by an MS that was already IMSI attached to non-GPRS services. The SGSN may also forward a BSSAP+-TMSI-REALLOCATION-COMPLETE message from the MS to the VLR.

The VLR shall acknowledge the BSSAP+-LOCATION-UPDATE-REQUEST message. When the VLR processes the request it does not perform authentication because it relies on the SGSN's security functions.

When an MS is IMSI attached for GPRS and non-GPRS services, any implicit detach timer in the VLR shall be stopped. Instead the Paging Proceed Flag in the SGSN is used to determine the likely availability of the MS to the network. The SGSN does not report to the VLR upon reception of the periodic Routing Area Update message. When the MS performs a detach only from the GPRS system the GPRS detach indication to the VLR shall cause the VLR's implicit detach timer to be restarted from its initial value.

If the SGSN performs an implicit detach for both GPRS and non-GPRS traffic, then the SGSN shall indicate to the VLR a BSSAP+-IMSI-DETACH-INDICATION message with cause 'Implicit SGSN initiated IMSI detach from non-GPRS service', as further described in clause 'Implicit IMSI detach from non-GPRS service procedure' (the implicit IMSI detach message indicates that the MS is unavailable for both GPRS and non-GPRS services).

The IMSI attach for GPRS services to the VLR, when the MS is already IMSI attached for non-GPRS services, is requested by the MS sending a combined IMSI attach for GPRS and non-GPRS services message to the SGSN, as further specified in 3GPP TS 23.060 and 24.008.

6.2 Procedures in the SGSN

The Location Update for non-GPRS services is initiated with a [combined](#) routing area update procedure or a IMSI/GPRS attach procedure. On receipt of a Routing Area Update message, the SGSN shall handle the GPRS related request as specified in 3GPP TS 24.008. The Location Update for non-GPRS services procedure may be handled by the SGSN in parallel to the Update Location procedure to the HLR. The SGSN shall wait for the outcome of both location update procedures towards the VLR and the HLR before sending the response message to the MS (see 3GPP TS 24.008).

6.2.1 Location Update Initiation

If timer T6-1 is not running, the SGSN shall start the Location Update for non-GPRS service procedure when it receives from the MS:

- An Attach request indicating combined IMSI and GPRS attach;
- An Attach request indicating GPRS attach while IMSI only-attached;
- A Combined Routeing and Location Area Update request indicating IMSI attach;
- A Combined Routeing and Location Area Update request indicating that the Location Area has changed; ~~or~~
- A Combined Routeing and Location Area Update request, if the state of the association is Gs-NULL; or
- A Combined Routeing and Location Area Update request when the SGSN serving the MS has changed.

The number of the VLR is derived from the RAI where the MS is camping. The SGSN starts Timer T6-1. The BSSAP+-LOCATION-UPDATE-REQUEST message includes the old Location Area Identifier received from the MS. The SGSN shall also include the new Location Area Identifier where the MS is currently camping. The new LAI is derived from the RAI.

The BSSAP+-LOCATION-UPDATE-REQUEST message includes the type of location update performed by the MS in the GPRS location update type IE. If the MS has performed an combined attach request or a combined routing and location area update request with IMSI attach, the SGSN indicates 'IMSI attach', otherwise the SGSN indicates 'Normal location update'.

The BSSAP+-LOCATION-UPDATE-REQUEST message shall include the TMSI status if received from the MS.

If timer T6-1 is running:

If the SGSN receives from the MS:

- An Attach request indicating combined IMSI and GPRS attach;
- An Attach request indicating GPRS attach while IMSI only-attached; or
- ~~A Combined Routeing and Location Area Update request with or without IMSI attach indicating that the Location Area has changed.~~

Then:

- If the new LAI is the same as in the outstanding request, the SGSN shall not process this new request and shall wait for the VLR's response to the ongoing procedure; or
- If the new LAI is different but is in the same VLR as the outstanding request:
 - any response from the VLR to the outstanding request is ignored;
 - Timer T6-1 shall be stopped and reset; and
 - The SGSN shall start the Location Update for non-GPRS service procedure; or
- If the new LAI is different, and is in a different VLR to the outstanding request:
 - Any response from the previously addressed VLR to the outstanding request is ignored;
 - Timer T6-1 shall be stopped and reset; and
 - the SGSN shall start the Location Update for non-GPRS service procedure.

When the SGSN receives from the MS a Routeing Area Update request and the SGSN serving the MS has changed, the SGSN shall stop and reset timer T6-1.

CHANGE REQUEST

⌘ **29.018 CR 23** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

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- Timer T6-1 shall be stopped and reset; and
- the SGSN shall start the Location Update for non-GPRS service procedure.

When the SGSN receives from the MS a Routing Area Update request and the SGSN serving the MS has changed, the SGSN shall stop and reset timer T6-1.