

Source: TSG CN WG 1

Title: CRs to R97 and R99 (with mirror CRs) on Work Item GPRS towards 04.08 and 24.008

Agenda item: 7.12

Document for: APPROVAL

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**Introduction:**

This document contains 8 CRs on R97 and R99 (with mirror CRs) to Work Item "GPRS", 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
04.08	A1117		R97	Handling of new/old TLLI in the network	F	6.15.0	6.16.0	N1-011464
04.08	A1119		R98	Handling of new/old TLLI in the network	A	7.14.0	7.15.0	N1-011604
24.008	496		R99	P-TMSI Signature handling	F	3.9.0	3.10.0	N1-011527
24.008	497		Rel-4	P-TMSI Signature handling	A	4.4.0	4.5.0	N1-011528
24.008	498		Rel-5	P-TMSI Signature handling	A	5.1.0	5.2.0	N1-011529
24.008	505		R99	Handling of new/old TLLI in the network	A	3.9.0	3.10.0	N1-011613
24.008	506		Rel-4	Handling of new/old TLLI in the network	A	4.4.0	4.5.0	N1-011614
24.008	507		Rel-5	Handling of new/old TLLI in the network	A	5.1.0	5.2.0	N1-011615

## CHANGE REQUEST

⌘ **04.08 CR A1117** ⌘ ev **-** ⌘ Current version: **6.15.0** ⌘

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

<b>Title:</b>	⌘ Handling of new/old TLLI in the network		
<b>Source:</b>	⌘ Motorola		
<b>Work item code:</b>	⌘ GPRS	<b>Date:</b>	⌘ Oct. 16, 2001
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ R97
	<i>Use <u>one</u> of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (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> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)

**Reason for change:** ⌘

- (1) After the MS derives a local TLLI from the stored PTMSI and use it for addressing at the lower layers (as per section 4.7.1.4), it is not clear whether the network should accept subsequent LLC frames from the MS containing only a local TLLI or not.
- (2) Correction of an ambiguity regarding the point at which the old P-TMSI is invalidated at the SGSN.

**Summary of change:** ⌘

- (1) It is clarified that, after a successful GPRS attach or RAU, the BSS may not be immediately updated with the local TLLI value, derived from the P-TMSI stored in the MS. (This is further discussed in N1-011465, N1-011531 and also in 2-99-1569.) Such clarification is necessary to make sure that, after a successful GPRS attach or RAU, the network should not accept only LLC frames with local TLLI.
- (2) As a consequence of (1):
  - a. After a successful GPRS attach or RAU, wherein a new P-TMSI is allocated:  
 LLC frames may still be received at the SGSN using the TLLI value derived from the old P-TMSI. The SGSN must be prepared to receive such frames until an LLC frame is received with a TLLI value derived from the new P-TMSI. To ensure such behavior, it is specified that, the network invalidates the old P-TMSI not when it receives a P-TMSI REALLOCATION COMPLETE message, but rather when it receives an LLC frame with a local TLLI derived from the new P-TMSI. In other words, the old P-TMSI is invalidated when the new P-TMSI is "reflected" at the LLC layer and not when the new P-TMSI is acknowledged at the GMM layer.
  - b. After a successful GPRS attach or RAU, wherein NO new P-TMSI is allocated:  
 LLC frames may still be transmitted to the SGSN using the foreign TLLI as opposed to the local TLLI. The SGSN must be prepared to receive such frames until an LLC frame is received using the local TLLI value. Such behavior is assured with the clarification provided

		in (1).
<b>Consequences if not approved:</b>	⌘	(1) After a successful GPRS attach or RAU, the network might reject any further LLC frames not containing a local TLLI. (2) After a P-TMSI reallocation, the SGSN does not know at which point the old P-TMSI should be invalidated.

<b>Clauses affected:</b>	⌘	4.7.1.4, 4.7.6.3
<b>Other specs affected:</b>	⌘	<input type="checkbox"/> Other core specifications      ⌘ <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications
<b>Other comments:</b>	⌘	

#### 4.7.1.4 Radio resource sublayer address handling

While a packet TMSI (P-TMSI) is used in the GMM sublayer for identification of an MS, a temporary logical link identity (TLLI) is used for addressing purposes at the RR sublayer. This section describes how the RR addressing is managed by GMM. For the detailed coding of the different TLLI types and how a TLLI can be derived from a P-TMSI, see GSM 03.03 [10].

Two cases can be distinguished:

- a valid P-TMSI is available in the MS; or
- no valid P-TMSI is available in the MS

NOTE: For anonymous access, the RR address assignment is handled by the SM sublayer as described in section 6.1.1.1.

##### i) valid P-TMSI available

If the MS has stored a valid P-TMSI, the MS shall derive a foreign TLLI from that P-TMSI and shall use it for transmission of the:

- ATTACH REQUEST message of any GPRS combined/non-combined attach procedure; other GMM messages sent during this procedure shall be transmitted using the same foreign TLLI until the ATTACH ACCEPT message or the ATTACH REJECT message is received; and
- ROUTING AREA UPDATE REQUEST message of a combined/non-combined RAU procedure if the MS has entered a new routing area, or if the GPRS update status is not equal to GU1 UPDATED. Other GMM messages sent during this procedure shall be transmitted using the same foreign TLLI, until the ROUTING AREA UPDATE ACCEPT message or the ROUTING AREA UPDATE REJECT message is received.

After a successful GPRS attach or routing area update procedure, independent whether a new P-TMSI is assigned, if the MS has stored a valid P-TMSI then the MS shall derive a local TLLI from the stored P-TMSI and shall use it for addressing at lower layers.

NOTE: Although the MS derives a local TLLI for addressing at lower layers, the network should not assume that it will receive only LLC frames using a local TLLI. Immediately after the successful GPRS attach or routing area update procedure, the network must be prepared to continue accepting LLC frames from the MS still using the foreign TLLI.

##### ii) no valid P-TMSI available

When the MS has not stored a valid P-TMSI, i.e. the MS is not attached to GPRS, the MS shall use a randomly selected random TLLI for transmission of the:

- ATTACH REQUEST message of any combined/non-combined GPRS attach procedure.

The same randomly selected random TLLI value shall be used for all message retransmission attempts and for the cell updates within one attach attempt.

Upon receipt of an ATTACH REQUEST message, the network shall assign a P-TMSI to the MS. The network derives a local TLLI from the assigned P-TMSI, and transmits the assigned P-TMSI to the MS.

Upon receipt of the assigned P-TMSI, the MS shall derive the local TLLI from this P-TMSI and shall use it for addressing at lower layers.

NOTE: Although the MS derives a local TLLI for addressing at lower layers, the network should not assume that it will receive only LLC frames using a local TLLI. Immediately after the successful GPRS attach, the network must be prepared to continue accepting LLC frames from the MS still using the random TLLI.

In both cases, the MS shall acknowledge the reception of the assigned P-TMSI to the network. After receipt of the acknowledgement, the network shall use the local TLLI for addressing at lower layers.

<b>NEXT MODIFICATION</b>
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#### 4.7.6.3 P-TMSI reallocation completion by the network

Upon receipt of the P-TMSI REALLOCATION COMPLETE message, the network stops the timer T3350 and considers both the old and the new P-TMSI and the corresponding P-TMSI signatures ~~the new P-TMSI~~ as valid until the old P-TMSI can be considered as invalid by the network (see section 4.7.1.5). ~~and the old one as invalid.~~

The GMM layer shall notify the LLC layer that the P-TMSI has been changed (see GSM 04.64 [76]).

## CHANGE REQUEST

⌘ **04.08 CR A1119** ⌘ ev **-** ⌘ Current version: **7.13.0** ⌘

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

<b>Title:</b>	⌘ Handling of new/old TLLI in the network		
<b>Source:</b>	⌘ Motorola		
<b>Work item code:</b>	⌘ GPRS <span style="float: right;"><b>Date:</b> ⌘ Oct. 16, 2001</span>		
<b>Category:</b>	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;">                 ⌘ <b>A</b>                  Use <u>one</u> of the following categories:  <b>F</b> (correction)  <b>A</b> (corresponds to a correction in an earlier release)  <b>B</b> (addition of feature),  <b>C</b> (functional modification of feature)  <b>D</b> (editorial modification)                  Detailed explanations of the above categories can be found in 3GPP TR 21.900.             </td> <td style="width: 50%; vertical-align: top;"> <b>Release:</b> ⌘ R98                  Use <u>one</u> of the following releases:                  2 (GSM Phase 2)                  R96 (Release 1996)                  R97 (Release 1997)                  R98 (Release 1998)                  R99 (Release 1999)                  REL-4 (Release 4)                  REL-5 (Release 5)             </td> </tr> </table>	⌘ <b>A</b> Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	<b>Release:</b> ⌘ R98 Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)
⌘ <b>A</b> Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	<b>Release:</b> ⌘ R98 Use <u>one</u> of the following releases: 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:** ⌘

- (1) After the MS derives a local TLLI from the stored PTMSI and use it for addressing at the lower layers (as per section 4.7.1.4), it is not clear whether the network should accept subsequent LLC frames from the MS containing only a local TLLI or not.
- (2) Correction of an ambiguity regarding the point at which the old P-TMSI is invalidated at the SGSN.

**Summary of change:** ⌘

- (1) It is clarified that, after a successful GPRS attach or RAU, the BSS may not be immediately updated with the local TLLI value, derived from the P-TMSI stored in the MS. (This is further discussed in N1-011465, N1-011531 and also in 2-99-1569.) Such clarification is necessary to make sure that, after a successful GPRS attach or RAU, the network should not accept only LLC frames with local TLLI.
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  - b. After a successful GPRS attach or RAU, wherein NO new P-TMSI is allocated:  
 LLC frames may still be transmitted to the SGSN using the foreign TLLI as opposed to the local TLLI. The SGSN must be prepared to receive such frames until an LLC frame is received using the local TLLI value. Such behavior is assured with the clarification provided

		in (1).
<b>Consequences if not approved:</b>	⌘	<ul style="list-style-type: none"> <li>(1) After a successful GPRS attach or RAU, the network might reject any further LLC frames not containing a local TLLI.</li> <li>(2) After a P-TMSI reallocation, the SGSN does not know at which point the old P-TMSI should be invalidated.</li> </ul>

<b>Clauses affected:</b>	⌘	4.7.1.4, 4.7.6.3									
<b>Other specs affected:</b>	⌘	<table border="0"> <tr> <td><input type="checkbox"/></td> <td>Other core specifications</td> <td>⌘</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Test specifications</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td>O&amp;M Specifications</td> <td></td> </tr> </table>	<input type="checkbox"/>	Other core specifications	⌘	<input type="checkbox"/>	Test specifications		<input type="checkbox"/>	O&M Specifications	
<input type="checkbox"/>	Other core specifications	⌘									
<input type="checkbox"/>	Test specifications										
<input type="checkbox"/>	O&M Specifications										
<b>Other comments:</b>	⌘										

#### 4.7.1.4 Radio resource sublayer address handling

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NOTE: Although the MS derives a local TLLI for addressing at lower layers, the network should not assume that it will receive only LLC frames using a local TLLI. Immediately after the successful GPRS attach or routing area update procedure, the network must be prepared to continue accepting LLC frames from the MS still using the foreign TLLI.

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The same randomly selected random TLLI value shall be used for all message retransmission attempts and for the cell updates within one attach attempt.

Upon receipt of an ATTACH REQUEST message, the network shall assign a P-TMSI to the MS. The network derives a local TLLI from the assigned P-TMSI, and transmits the assigned P-TMSI to the MS.

Upon receipt of the assigned P-TMSI, the MS shall derive the local TLLI from this P-TMSI and shall use it for addressing at lower layers.

NOTE: Although the MS derives a local TLLI for addressing at lower layers, the network should not assume that it will receive only LLC frames using a local TLLI. Immediately after the successful GPRS attach, the network must be prepared to continue accepting LLC frames from the MS still using the random TLLI.

In both cases, the MS shall acknowledge the reception of the assigned P-TMSI to the network. After receipt of the acknowledgement, the network shall use the local TLLI for addressing at lower layers.

<b>NEXT MODIFICATION</b>
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#### 4.7.6.3 P-TMSI reallocation completion by the network

Upon receipt of the P-TMSI REALLOCATION COMPLETE message, the network stops the timer T3350 and considers both the old and the new P-TMSI and the corresponding P-TMSI signatures ~~the new P-TMSI~~ as valid until the old P-TMSI can be considered as invalid by the network (see section 4.7.1.5). ~~and the old one as invalid.~~

The GMM layer shall notify the LLC layer that the P-TMSI has been changed (see GSM 04.64 [76]).

## CHANGE REQUEST

⌘ **24.008 CR 496** ⌘ ev **-** ⌘ Current version: **3.9.0** ⌘

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

<b>Title:</b>	⌘ P-TMSI Signature handling		
<b>Source:</b>	⌘ NTT Software		
<b>Work item code:</b>	⌘ GPRS	<b>Date:</b>	⌘ 03.10.2001
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ R99
	<i>Use <u>one</u> of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		<i>Use <u>one</u> of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘ Old P-TMSI Signature shall be deleted when attach or routing area update procedure are successfully completed and detach procedure is completed. Additionally, old P-TMSI Signature shall be deleted when a P-TMSI signature is present in the P-TMSI REALLOCATION COMMAND message, and shall be kept when no P-TMSI signature is present in the P-TMSI REALLOCATION COMMAND message. These definitions are described in 4.7.1.3 and 4.7.6. However, old P-TMSI signature is regarded as invalid when GMM message containing a new P-TMSI is received is defined in 4.7.1.5. It is incompatible with above definitions. Because P-TMSI REALLOCATION COMMAND message with no P-TMSI Signature is not considered. Therefore description of P-TMSI Signature in 4.7.1.5 should be deleted. There is no impact for P-TMSI handling if it is deleted. Additionally, P-TMSI Signature handling is completely defined in 4.7.1.3 and related procedure sections(i.e. attach, routing area updating, detach and P-TMSI reallocation). Consideration of the P-TMSI Signature in 4.7.1.5 is not needed.
	Some editorial errors should be collected.
<b>Summary of change:</b>	⌘ 1) Description of P-TMSI Signature in 4.7.1.5 should be deleted. 2) 'PTMSI' should be replaced to 'P-TMSI'.
<b>Consequences if not approved:</b>	⌘ Description in 4.7.1.5 still makes confusion.

<b>Clauses affected:</b>	⌘ 4.7.1.5		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘	
	<input type="checkbox"/> Test specifications		
	<input type="checkbox"/> O&M Specifications		
<b>Other comments:</b>	⌘		

### **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](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.

## 4.7.1.5 P-TMSI handling

### 4.7.1.5.1 P-TMSI handling in GSM

If a new P-TMSI is assigned by the network the MS and the network shall handle the old and the new P-TMSI as follows:

Upon receipt of a GMM message containing a new P-TMSI the MS shall consider the new P-TMSI and new RAI and also the old P-TMSI and old RAI as valid in order to react to paging requests and downlink transmission of LLC frames. For uplink transmission of LLC frames the new P-TMSI shall be used.

The MS shall consider the old P-TMSI and old RAI as invalid as soon as an LLC frame is received with the local TLLI derived from the new P-TMSI.

Upon the transmission of a GMM message containing a new P-TMSI the network shall consider the new P-TMSI and new RAI and also the old P-TMSI and old RAI as valid in order to be able to receive LLC frames from the MS.

The network shall consider the old P-TMSI and old RAI as invalid as soon as an LLC frame is received with the local TLLI derived from the new P-TMSI.

### 4.7.1.5.2 P-TMSI handling in UMTS

If a new P-TMSI is assigned by the network the MS and the network shall handle the old and the new P-TMSI as follows:

- Upon receipt of a GMM message containing a new P-TMSI the MS shall consider the new P-TMSI and new RAI as valid. Old P-TMSI, ~~and~~ old RAI ~~and P-TMSI signature~~ are regarded as invalid.
- The network shall consider the old P-TMSI and old RAI as invalid as soon as an acknowledge message (e.g. ATTACH COMPLETE, ROUTING AREA UPDATE COMPLETE and P-TMSI REALLOCATION COMPLETE) is received.

## CHANGE REQUEST

⌘ **24.008 CR 497** ⌘ ev **-** ⌘ Current version: **4.4.0** ⌘

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

<b>Title:</b>	⌘ P-TMSI Signature handling		
<b>Source:</b>	⌘ NTT Software		
<b>Work item code:</b>	⌘ GPRS	<b>Date:</b>	⌘ 03.10.2001
<b>Category:</b>	⌘ <b>A</b> Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .	<b>Release:</b>	⌘ <b>REL-4</b> Use <u>one</u> of the following releases: <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘ Old P-TMSI Signature shall be deleted when attach or routing area update procedure are successfully completed and detach procedure is completed. Additionally, old P-TMSI Signature shall be deleted when a P-TMSI signature is present in the P-TMSI REALLOCATION COMMAND message, and shall be kept when no P-TMSI signature is present in the P-TMSI REALLOCATION COMMAND message. These definitions are described in 4.7.1.3 and 4.7.6. However, old P-TMSI signature is regarded as invalid when GMM message containing a new P-TMSI is received is defined in 4.7.1.5. It is incompatible with above definitions. Because P-TMSI REALLOCATION COMMAND message with no P-TMSI Signature is not considered. Therefore description of P-TMSI Signature in 4.7.1.5 should be deleted. There is no impact for P-TMSI handling if it is deleted. Additionally, P-TMSI Signature handling is completely defined in 4.7.1.3 and related procedure sections(i.e. attach, routing area updating, detach and P-TMSI reallocation). Consideration of the P-TMSI Signature in 4.7.1.5 is not needed.  Some editorial errors should be collected.
<b>Summary of change:</b>	⌘ 1) Description of P-TMSI Signature in 4.7.1.5 should be deleted. 2) 'PTMSI' should be replaced to 'P-TMSI'.
<b>Consequences if not approved:</b>	⌘ Description in 4.7.1.5 still makes confusion.

<b>Clauses affected:</b>	⌘ 4.7.1.5
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications ⌘ <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications
<b>Other comments:</b>	⌘ This is a mirror CR of N1-011527.

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Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](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.

## 4.7.1.5 P-TMSI handling

### 4.7.1.5.1 P-TMSI handling in GSM

If a new P-TMSI is assigned by the network the MS and the network shall handle the old and the new P-TMSI as follows:

Upon receipt of a GMM message containing a new P-TMSI the MS shall consider the new P-TMSI and new RAI and also the old P-TMSI and old RAI as valid in order to react to paging requests and downlink transmission of LLC frames. For uplink transmission of LLC frames the new P-TMSI shall be used.

The MS shall consider the old P-TMSI and old RAI as invalid as soon as an LLC frame is received with the local TLLI derived from the new P-TMSI.

Upon the transmission of a GMM message containing a new P-TMSI the network shall consider the new P-TMSI and new RAI and also the old P-TMSI and old RAI as valid in order to be able to receive LLC frames from the MS.

The network shall consider the old P-TMSI and old RAI as invalid as soon as an LLC frame is received with the local TLLI derived from the new P-TMSI.

### 4.7.1.5.2 P-TMSI handling in UMTS

If a new P-TMSI is assigned by the network the MS and the network shall handle the old and the new P-TMSI as follows:

Upon receipt of a GMM message containing a new P-TMSI the MS shall consider the new P-TMSI and new RAI as valid. Old P-TMSI, ~~and~~ old RAI ~~and P-TMSI signature~~ are regarded as invalid.

The network shall consider the old P-TMSI and old RAI as invalid as soon as an acknowledge message (e.g. ATTACH COMPLETE, ROUTING AREA UPDATE COMPLETE and P-TMSI REALLOCATION COMPLETE) is received.

## CHANGE REQUEST

⌘ **24.008 CR 498** ⌘ ev **-** ⌘ Current version: **5.1.0** ⌘

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

<b>Title:</b>	⌘ P-TMSI Signature handling		
<b>Source:</b>	⌘ NTT Software		
<b>Work item code:</b>	⌘ GPRS <span style="float: right;"><b>Date:</b> ⌘ 03.10.2001</span>		
<b>Category:</b>	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;">                 ⌘ <b>A</b>                  Use <u>one</u> of the following categories:  <b>F</b> (correction)  <b>A</b> (corresponds to a correction in an earlier release)  <b>B</b> (addition of feature),  <b>C</b> (functional modification of feature)  <b>D</b> (editorial modification)                  Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a>.             </td> <td style="width: 50%; vertical-align: top;"> <b>Release:</b> ⌘ REL-5                  Use <u>one</u> of the following releases:                  2 (GSM Phase 2)                  R96 (Release 1996)                  R97 (Release 1997)                  R98 (Release 1998)                  R99 (Release 1999)                  REL-4 (Release 4)                  REL-5 (Release 5)             </td> </tr> </table>	⌘ <b>A</b> Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .	<b>Release:</b> ⌘ REL-5 Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)
⌘ <b>A</b> Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .	<b>Release:</b> ⌘ REL-5 Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)		

<b>Reason for change:</b>	⌘ Old P-TMSI Signature shall be deleted when attach or routing area update procedure are successfully completed and detach procedure is completed. Additionally, old P-TMSI Signature shall be deleted when a P-TMSI signature is present in the P-TMSI REALLOCATION COMMAND message, and shall be kept when no P-TMSI signature is present in the P-TMSI REALLOCATION COMMAND message. These definitions are described in 4.7.1.3 and 4.7.6. However, old P-TMSI signature is regarded as invalid when GMM message containing a new P-TMSI is received is defined in 4.7.1.5. It is incompatible with above definitions. Because P-TMSI REALLOCATION COMMAND message with no P-TMSI Signature is not considered. Therefore description of P-TMSI Signature in 4.7.1.5 should be deleted. There is no impact for P-TMSI handling if it is deleted. Additionally, P-TMSI Signature handling is completely defined in 4.7.1.3 and related procedure sections(i.e. attach, routing area updating, detach and P-TMSI reallocation). Consideration of the P-TMSI Signature in 4.7.1.5 is not needed.  Some editorial errors should be collected.
<b>Summary of change:</b>	⌘ 1) Description of P-TMSI Signature in 4.7.1.5 should be deleted. 2) 'PTMSI' should be replaced to 'P-TMSI'.
<b>Consequences if not approved:</b>	⌘ Description in 4.7.1.5 still makes confusion.

<b>Clauses affected:</b>	⌘ 4.7.1.5						
<b>Other specs affected:</b>	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"><input type="checkbox"/> Other core specifications</td> <td style="width: 50%;">⌘</td> </tr> <tr> <td><input type="checkbox"/> Test specifications</td> <td></td> </tr> <tr> <td><input type="checkbox"/> O&amp;M Specifications</td> <td></td> </tr> </table>	<input type="checkbox"/> Other core specifications	⌘	<input type="checkbox"/> Test specifications		<input type="checkbox"/> O&M Specifications	
<input type="checkbox"/> Other core specifications	⌘						
<input type="checkbox"/> Test specifications							
<input type="checkbox"/> O&M Specifications							
<b>Other comments:</b>	⌘ This is a mirror CR of N1-011527.						



### **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](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.

## 4.7.1.5 P-TMSI handling

### 4.7.1.5.1 P-TMSI handling in GSM

If a new P-TMSI is assigned by the network the MS and the network shall handle the old and the new P-TMSI as follows:

Upon receipt of a GMM message containing a new P-TMSI the MS shall consider the new P-TMSI and new RAI and also the old P-TMSI and old RAI as valid in order to react to paging requests and downlink transmission of LLC frames. For uplink transmission of LLC frames the new P-TMSI shall be used.

The MS shall consider the old P-TMSI and old RAI as invalid as soon as an LLC frame is received with the local TLLI derived from the new P-TMSI.

Upon the transmission of a GMM message containing a new P-TMSI the network shall consider the new P-TMSI and new RAI and also the old P-TMSI and old RAI as valid in order to be able to receive LLC frames from the MS.

The network shall consider the old P-TMSI and old RAI as invalid as soon as an LLC frame is received with the local TLLI derived from the new P-TMSI.

### 4.7.1.5.2 P-TMSI handling in UMTS

If a new P-TMSI is assigned by the network the MS and the network shall handle the old and the new P-TMSI as follows:

Upon receipt of a GMM message containing a new P-TMSI the MS shall consider the new P-TMSI and new RAI as valid. Old P-TMSI, ~~and~~ old RAI ~~and P-TMSI signature~~ are regarded as invalid.

The network shall consider the old P-TMSI and old RAI as invalid as soon as an acknowledge message (e.g. ATTACH COMPLETE, ROUTING AREA UPDATE COMPLETE and P-TMSI REALLOCATION COMPLETE) is received.

## CHANGE REQUEST

⌘ **24.008 CR 505** ⌘ ev **-** ⌘ Current version: **3.9.0** ⌘

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

<b>Title:</b>	⌘ Handling of new/old TLLI in the network		
<b>Source:</b>	⌘ Motorola		
<b>Work item code:</b>	⌘ GPRS <span style="float: right;"><b>Date:</b> ⌘ Oct. 16, 2001</span>		
<b>Category:</b>	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;">                 ⌘ <b>A</b>                  Use <u>one</u> of the following categories:  <b>F</b> (correction)  <b>A</b> (corresponds to a correction in an earlier release)  <b>B</b> (addition of feature),  <b>C</b> (functional modification of feature)  <b>D</b> (editorial modification)                  Detailed explanations of the above categories can be found in 3GPP TR 21.900.             </td> <td style="width: 50%; vertical-align: top;"> <b>Release:</b> ⌘ R99                  Use <u>one</u> of the following releases:                  2 (GSM Phase 2)                  R96 (Release 1996)                  R97 (Release 1997)                  R98 (Release 1998)                  R99 (Release 1999)                  REL-4 (Release 4)                  REL-5 (Release 5)             </td> </tr> </table>	⌘ <b>A</b> Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	<b>Release:</b> ⌘ R99 Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)
⌘ <b>A</b> Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	<b>Release:</b> ⌘ R99 Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)		

<b>Reason for change:</b>	⌘ (1) After the MS derives a local TLLI from the stored PTMSI and use it for addressing at the lower layers (as per section 4.7.1.4.1), it is not clear whether the network should accept subsequent LLC frames from the MS containing only a local TLLI or not. (2) Correction of an ambiguity regarding the point at which the old P-TMSI is invalidated at the SGSN.
<b>Summary of change:</b>	⌘ (1) It is clarified that, after a successful GPRS attach or RAU, the BSS may not be immediately updated with the <u>local TLLI</u> value, derived from the P-TMSI stored in the MS. (This is further discussed in N1-011465, N1-011531 and also in 2-99-1569.) Such clarification is necessary to make sure that, after a successful GPRS attach or RAU, <u>the network should not accept only LLC frames with local TLLI</u> . (2) As a consequence of (1): a. After a successful GPRS attach or RAU, wherein <u>a new P-TMSI is allocated</u> : LLC frames may still be received at the SGSN using the TLLI value derived from the old P-TMSI. The SGSN must be prepared to receive such frames until an LLC frame is received with a TLLI value derived from the new P-TMSI. To ensure such behavior, it is specified that, the network invalidates the old P-TMSI not when it receives a P-TMSI REALLOCATION COMPLETE message, but rather when it receives an LLC frame with a local TLLI derived from the new P-TMSI. In other words, the old P-TMSI is invalidated when <u>the new P-TMSI is "reflected" at the LLC layer</u> and not when the new P-TMSI is acknowledged at the GMM layer. b. After a successful GPRS attach or RAU, wherein <u>NO new P-TMSI is allocated</u> : LLC frames may still be transmitted to the SGSN using the foreign TLLI as opposed to the local TLLI. The SGSN must be prepared to receive such frames until an LLC frame is received using the local TLLI value. Such behavior is assured with the clarification provided

in (1).

**Consequences if not approved:**

- ⌘ (1) After a successful GPRS attach or RAU, the network might reject any further LLC frames not containing a local TLLI.
- ⌘ (2) After a P-TMSI reallocation, the SGSN does not know at which point the old P-TMSI should be invalidated.

**Clauses affected:**

⌘ 4.7.1.4.1, 4.7.6.3

**Other specs affected:**

- ⌘  Other core specifications
- ⌘  Test specifications
- ⌘  O&M Specifications

**Other comments:**

⌘

#### 4.7.1.4.1 Radio resource sublayer address handling (GSM only)

This clause describes how the RR addressing is managed by GMM. For the detailed coding of the different TLLI types and how a TLLI can be derived from a P-TMSI, see 3GPP TS 23.003 [10].

Two cases can be distinguished:

- a valid P-TMSI is available in the MS; or
  - no valid P-TMSI is available in the MS
- i) valid P-TMSI available

If the MS has stored a valid P-TMSI, the MS shall derive a foreign TLLI from that P-TMSI and shall use it for transmission of the:

- ATTACH REQUEST message of any GPRS combined/non-combined attach procedure; other GMM messages sent during this procedure shall be transmitted using the same foreign TLLI until the ATTACH ACCEPT message or the ATTACH REJECT message is received; and
- ROUTING AREA UPDATE REQUEST message of a combined/non-combined RAU procedure if the MS has entered a new routing area, or if the GPRS update status is not equal to GU1 UPDATED. Other GMM messages sent during this procedure shall be transmitted using the same foreign TLLI, until the ROUTING AREA UPDATE ACCEPT message or the ROUTING AREA UPDATE REJECT message is received.

After a successful GPRS attach or routing area update procedure, independent whether a new P-TMSI is assigned, if the MS has stored a valid P-TMSI then the MS shall derive a local TLLI from the stored P-TMSI and shall use it for addressing at lower layers.

NOTE: Although the MS derives a local TLLI for addressing at lower layers, the network should not assume that it will receive only LLC frames using a local TLLI. Immediately after the successful GPRS attach or routing area update procedure, the network must be prepared to continue accepting LLC frames from the MS still using the foreign TLLI.

- ii) no valid P-TMSI available

When the MS has not stored a valid P-TMSI, i.e. the MS is not attached to GPRS, the MS shall use a randomly selected random TLLI for transmission of the:

- ATTACH REQUEST message of any combined/non-combined GPRS attach procedure.

The same randomly selected random TLLI value shall be used for all message retransmission attempts and for the cell updates within one attach attempt.

Upon receipt of an ATTACH REQUEST message, the network shall assign a P-TMSI to the MS. The network derives a local TLLI from the assigned P-TMSI, and transmits the assigned P-TMSI to the MS.

Upon receipt of the assigned P-TMSI, the MS shall derive the local TLLI from this P-TMSI and shall use it for addressing at lower layers.

NOTE: Although the MS derives a local TLLI for addressing at lower layers, the network should not assume that it will receive only LLC frames using a local TLLI. Immediately after the successful GPRS attach, the network must be prepared to continue accepting LLC frames from the MS still using the random TLLI.

In both cases, the MS shall acknowledge the reception of the assigned P-TMSI to the network. After receipt of the acknowledgement, the network shall use the local TLLI for addressing at lower layers.

<b>NEXT MODIFICATION</b>
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#### 4.7.6.3 P-TMSI reallocation completion by the network

Upon receipt of the P-TMSI REALLOCATION COMPLETE message, the network stops the timer T3350 and considers both the old and the new P-TMSI and the corresponding P-TMSI signatures ~~the new P-TMSI~~ as valid until the old P-TMSI can be considered as invalid by the network (see section 4.7.1.5). ~~and the old one as invalid.~~

The GMM layer shall notify the LLC layer that the P-TMSI has been changed (see GSM 04.64 [76]).

## CHANGE REQUEST

⌘ **24.008 CR 506** ⌘ ev **-** ⌘ Current version: **4.4.0** ⌘

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

<b>Title:</b>	⌘ Handling of new/old TLLI in the network		
<b>Source:</b>	⌘ Motorola		
<b>Work item code:</b>	⌘ GPRS <span style="float: right;"><b>Date:</b> ⌘ Oct. 16, 2001</span>		
<b>Category:</b>	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;">                 ⌘ <b>A</b>                  Use <u>one</u> of the following categories:  <b>F</b> (correction)  <b>A</b> (corresponds to a correction in an earlier release)  <b>B</b> (addition of feature),  <b>C</b> (functional modification of feature)  <b>D</b> (editorial modification)                  Detailed explanations of the above categories can be found in 3GPP TR 21.900.             </td> <td style="width: 50%; vertical-align: top;"> <b>Release:</b> ⌘ REL-4                  Use <u>one</u> of the following releases:                  2 (GSM Phase 2)                  R96 (Release 1996)                  R97 (Release 1997)                  R98 (Release 1998)                  R99 (Release 1999)                  REL-4 (Release 4)                  REL-5 (Release 5)             </td> </tr> </table>	⌘ <b>A</b> Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	<b>Release:</b> ⌘ REL-4 Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)
⌘ <b>A</b> Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	<b>Release:</b> ⌘ REL-4 Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)		

<b>Reason for change:</b>	⌘ (1) After the MS derives a local TLLI from the stored PTMSI and use it for addressing at the lower layers (as per section 4.7.1.4.1), it is not clear whether the network should accept subsequent LLC frames from the MS containing only a local TLLI or not. (2) Correction of an ambiguity regarding the point at which the old P-TMSI is invalidated at the SGSN.
<b>Summary of change:</b>	⌘ (1) It is clarified that, after a successful GPRS attach or RAU, the BSS may not be immediately updated with the <u>local TLLI</u> value, derived from the P-TMSI stored in the MS. (This is further discussed in N1-011465, N1-011531 and also in 2-99-1569.) Such clarification is necessary to make sure that, after a successful GPRS attach or RAU, <u>the network should not accept only LLC frames with local TLLI</u> . (2) As a consequence of (1): a. After a successful GPRS attach or RAU, wherein <u>a new P-TMSI is allocated</u> : LLC frames may still be received at the SGSN using the TLLI value derived from the old P-TMSI. The SGSN must be prepared to receive such frames until an LLC frame is received with a TLLI value derived from the new P-TMSI. To ensure such behavior, it is specified that, the network invalidates the old P-TMSI not when it receives a P-TMSI REALLOCATION COMPLETE message, but rather when it receives an LLC frame with a local TLLI derived from the new P-TMSI. In other words, the old P-TMSI is invalidated when <u>the new P-TMSI is "reflected" at the LLC layer</u> and not when the new P-TMSI is acknowledged at the GMM layer. b. After a successful GPRS attach or RAU, wherein <u>NO new P-TMSI is allocated</u> : LLC frames may still be transmitted to the SGSN using the foreign TLLI as opposed to the local TLLI. The SGSN must be prepared to receive such frames until an LLC frame is received using the local TLLI value. Such behavior is assured with the clarification provided

in (1).

**Consequences if not approved:**

- ⌘ (1) After a successful GPRS attach or RAU, the network might reject any further LLC frames not containing a local TLLI.
- ⌘ (2) After a P-TMSI reallocation, the SGSN does not know at which point the old P-TMSI should be invalidated.

**Clauses affected:**

⌘ 4.7.1.4.1, 4.7.6.3

**Other specs affected:**

- ⌘  Other core specifications
- ⌘  Test specifications
- ⌘  O&M Specifications

**Other comments:**

⌘



#### 4.7.1.4.1 Radio resource sublayer address handling (GSM only)

This clause describes how the RR addressing is managed by GMM. For the detailed coding of the different TLLI types and how a TLLI can be derived from a P-TMSI, see 3GPP TS 23.003 [10].

Two cases can be distinguished:

- a valid P-TMSI is available in the MS; or
  - no valid P-TMSI is available in the MS
- i) valid P-TMSI available

If the MS has stored a valid P-TMSI, the MS shall derive a foreign TLLI from that P-TMSI and shall use it for transmission of the:

- ATTACH REQUEST message of any GPRS combined/non-combined attach procedure; other GMM messages sent during this procedure shall be transmitted using the same foreign TLLI until the ATTACH ACCEPT message or the ATTACH REJECT message is received; and
- ROUTING AREA UPDATE REQUEST message of a combined/non-combined RAU procedure if the MS has entered a new routing area, or if the GPRS update status is not equal to GU1 UPDATED. Other GMM messages sent during this procedure shall be transmitted using the same foreign TLLI, until the ROUTING AREA UPDATE ACCEPT message or the ROUTING AREA UPDATE REJECT message is received.

After a successful GPRS attach or routing area update procedure, independent whether a new P-TMSI is assigned, if the MS has stored a valid P-TMSI then the MS shall derive a local TLLI from the stored P-TMSI and shall use it for addressing at lower layers.

NOTE: Although the MS derives a local TLLI for addressing at lower layers, the network should not assume that it will receive only LLC frames using a local TLLI. Immediately after the successful GPRS attach or routing area update procedure, the network must be prepared to continue accepting LLC frames from the MS still using the foreign TLLI.

- ii) no valid P-TMSI available

When the MS has not stored a valid P-TMSI, i.e. the MS is not attached to GPRS, the MS shall use a randomly selected random TLLI for transmission of the:

- ATTACH REQUEST message of any combined/non-combined GPRS attach procedure.

The same randomly selected random TLLI value shall be used for all message retransmission attempts and for the cell updates within one attach attempt.

Upon receipt of an ATTACH REQUEST message, the network shall assign a P-TMSI to the MS. The network derives a local TLLI from the assigned P-TMSI, and transmits the assigned P-TMSI to the MS.

Upon receipt of the assigned P-TMSI, the MS shall derive the local TLLI from this P-TMSI and shall use it for addressing at lower layers.

NOTE: Although the MS derives a local TLLI for addressing at lower layers, the network should not assume that it will receive only LLC frames using a local TLLI. Immediately after the successful GPRS attach, the network must be prepared to continue accepting LLC frames from the MS still using the random TLLI.

In both cases, the MS shall acknowledge the reception of the assigned P-TMSI to the network. After receipt of the acknowledgement, the network shall use the local TLLI for addressing at lower layers.

<b>NEXT MODIFICATION</b>
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#### 4.7.6.3 P-TMSI reallocation completion by the network

Upon receipt of the P-TMSI REALLOCATION COMPLETE message, the network stops the timer T3350 and considers both the old and the new P-TMSI and the corresponding P-TMSI signatures ~~the new P-TMSI~~ as valid until the old P-TMSI can be considered as invalid by the network (see section 4.7.1.5). ~~and the old one as invalid.~~

The GMM layer shall notify the LLC layer that the P-TMSI has been changed (see GSM 04.64 [76]).

## CHANGE REQUEST

⌘ **24.008 CR 507** ⌘ ev **-** ⌘ Current version: **5.1.0** ⌘

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

<b>Title:</b>	⌘ Handling of new/old TLLI in the network		
<b>Source:</b>	⌘ Motorola		
<b>Work item code:</b>	⌘ GPRS <span style="float: right;"><b>Date:</b> ⌘ Oct. 16, 2001</span>		
<b>Category:</b>	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;">                 ⌘ <b>A</b>                  Use <u>one</u> of the following categories:  <b>F</b> (correction)  <b>A</b> (corresponds to a correction in an earlier release)  <b>B</b> (addition of feature),  <b>C</b> (functional modification of feature)  <b>D</b> (editorial modification)                  Detailed explanations of the above categories can be found in 3GPP TR 21.900.             </td> <td style="width: 50%; vertical-align: top;"> <b>Release:</b> ⌘ REL-5                  Use <u>one</u> of the following releases:                  2 (GSM Phase 2)                  R96 (Release 1996)                  R97 (Release 1997)                  R98 (Release 1998)                  R99 (Release 1999)                  REL-4 (Release 4)                  REL-5 (Release 5)             </td> </tr> </table>	⌘ <b>A</b> Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	<b>Release:</b> ⌘ REL-5 Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)
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<b>Reason for change:</b>	⌘ (1) After the MS derives a local TLLI from the stored PTMSI and use it for addressing at the lower layers (as per section 4.7.1.4.1), it is not clear whether the network should accept subsequent LLC frames from the MS containing only a local TLLI or not. (2) Correction of an ambiguity regarding the point at which the old P-TMSI is invalidated at the SGSN.
<b>Summary of change:</b>	⌘ (1) It is clarified that, after a successful GPRS attach or RAU, the BSS may not be immediately updated with the <u>local TLLI</u> value, derived from the P-TMSI stored in the MS. (This is further discussed in N1-011465, N1-011531 and also in 2-99-1569.) Such clarification is necessary to make sure that, after a successful GPRS attach or RAU, <u>the network should not accept only LLC frames with local TLLI</u> . (2) As a consequence of (1): a. After a successful GPRS attach or RAU, wherein <u>a new P-TMSI is allocated</u> : LLC frames may still be received at the SGSN using the TLLI value derived from the old P-TMSI. The SGSN must be prepared to receive such frames until an LLC frame is received with a TLLI value derived from the new P-TMSI. To ensure such behavior, it is specified that, the network invalidates the old P-TMSI not when it receives a P-TMSI REALLOCATION COMPLETE message, but rather when it receives an LLC frame with a local TLLI derived from the new P-TMSI. In other words, the old P-TMSI is invalidated when <u>the new P-TMSI is "reflected" at the LLC layer</u> and not when the new P-TMSI is acknowledged at the GMM layer. b. After a successful GPRS attach or RAU, wherein <u>NO new P-TMSI is allocated</u> : LLC frames may still be transmitted to the SGSN using the foreign TLLI as opposed to the local TLLI. The SGSN must be prepared to receive such frames until an LLC frame is received using the local TLLI value. Such behavior is assured with the clarification provided

in (1).

**Consequences if not approved:**

- ⌘ (1) After a successful GPRS attach or RAU, the network might reject any further LLC frames not containing a local TLLI.
- ⌘ (2) After a P-TMSI reallocation, the SGSN does not know at which point the old P-TMSI should be invalidated.

**Clauses affected:**

⌘ 4.7.1.4.1, 4.7.6.3

**Other specs affected:**

- ⌘  Other core specifications
- ⌘  Test specifications
- ⌘  O&M Specifications

**Other comments:**

⌘

#### 4.7.1.4.1 Radio resource sublayer address handling (GSM only)

This clause describes how the RR addressing is managed by GMM. For the detailed coding of the different TLLI types and how a TLLI can be derived from a P-TMSI, see 3GPP TS 23.003 [10].

Two cases can be distinguished:

- a valid P-TMSI is available in the MS; or
  - no valid P-TMSI is available in the MS
- i) valid P-TMSI available

If the MS has stored a valid P-TMSI, the MS shall derive a foreign TLLI from that P-TMSI and shall use it for transmission of the:

- ATTACH REQUEST message of any GPRS combined/non-combined attach procedure; other GMM messages sent during this procedure shall be transmitted using the same foreign TLLI until the ATTACH ACCEPT message or the ATTACH REJECT message is received; and
- ROUTING AREA UPDATE REQUEST message of a combined/non-combined RAU procedure if the MS has entered a new routing area, or if the GPRS update status is not equal to GU1 UPDATED. Other GMM messages sent during this procedure shall be transmitted using the same foreign TLLI, until the ROUTING AREA UPDATE ACCEPT message or the ROUTING AREA UPDATE REJECT message is received.

After a successful GPRS attach or routing area update procedure, independent whether a new P-TMSI is assigned, if the MS has stored a valid P-TMSI then the MS shall derive a local TLLI from the stored P-TMSI and shall use it for addressing at lower layers.

NOTE: Although the MS derives a local TLLI for addressing at lower layers, the network should not assume that it will receive only LLC frames using a local TLLI. Immediately after the successful GPRS attach or routing area update procedure, the network must be prepared to continue accepting LLC frames from the MS still using the foreign TLLI.

- ii) no valid P-TMSI available

When the MS has not stored a valid P-TMSI, i.e. the MS is not attached to GPRS, the MS shall use a randomly selected random TLLI for transmission of the:

- ATTACH REQUEST message of any combined/non-combined GPRS attach procedure.

The same randomly selected random TLLI value shall be used for all message retransmission attempts and for the cell updates within one attach attempt.

Upon receipt of an ATTACH REQUEST message, the network shall assign a P-TMSI to the MS. The network derives a local TLLI from the assigned P-TMSI, and transmits the assigned P-TMSI to the MS.

Upon receipt of the assigned P-TMSI, the MS shall derive the local TLLI from this P-TMSI and shall use it for addressing at lower layers.

NOTE: Although the MS derives a local TLLI for addressing at lower layers, the network should not assume that it will receive only LLC frames using a local TLLI. Immediately after the successful GPRS attach, the network must be prepared to continue accepting LLC frames from the MS still using the random TLLI.

In both cases, the MS shall acknowledge the reception of the assigned P-TMSI to the network. After receipt of the acknowledgement, the network shall use the local TLLI for addressing at lower layers.

<b>NEXT MODIFICATION</b>
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#### 4.7.6.3 P-TMSI reallocation completion by the network

Upon receipt of the P-TMSI REALLOCATION COMPLETE message, the network stops the timer T3350 and considers both the old and the new P-TMSI and the corresponding P-TMSI signatures ~~the new P-TMSI~~ as valid until the old P-TMSI can be considered as invalid by the network (see section 4.7.1.5). ~~and the old one as invalid.~~

The GMM layer shall notify the LLC layer that the P-TMSI has been changed (see GSM 04.64 [76]).