**3GPP TSG CN Plenary Meeting #23** **NP-040069**
**10th – 12th March 2004 Phoenix, USA.**

**Source:** TSG CN WG4

**Title:** Corrections on GRPS R99

**Agenda item:** 7.3

**Document for:** APPROVAL

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| Spec | CR | Rev | Doc-2nd-Level | Phase | Subject | Cat | Ver_C |
|---|---|---|---|---|---|---|---|
| 29.060 | 491 | | N4-040315 | R99 | PDCP and GTP-U sequence numbers received in the PDP Context information element inside SGSN Context Response message. | F | 3.18.0 |
| 29.060 | 490 | | N4-040314 | Rel-4 | PDCP and GTP-U sequence numbers received in the PDP Context information element inside SGSN Context Response message. | A | 4.10.0 |
| 29.060 | 489 | 1 | N4-040313 | Rel-5 | PDCP and GTP-U sequence numbers received in the PDP Context information element inside SGSN Context Response message. | A | 5.8.0 |
| 29.060 | 482 | 1 | N4-040312 | Rel-6 | PDCP and GTP-U sequence numbers received in the PDP Context information element inside SGSN Context Response message. | A | 6.3.0 |

**3GPP TSG CN WG4 Meeting #22**
**Atlanta, USA, 16th – 20st February 2003**

***N4-040312***

*CR-Form-v7*

# CHANGE REQUEST

⌘ **29.060** **CR** **482** ⌘ **rev** **1** ⌘ Current version: **6.3.0** ⌘

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

***Proposed change affects:*** UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

| | | |
|---|---|---|
| ***Title:*** | ⌘ | PDCP and GTP-U sequence numbers received in the PDP Context information element inside SGSN Context Response message. |
| ***Source:*** | ⌘ | CN4 |
| ***Work item code:*** | ⌘ | TEI |
| ***Date:*** | ⌘ | 19/02/2004 |
| ***Category:*** | ⌘ | **A** |
| ***Release:*** | ⌘ | Rel-6 |

*Use one of the following categories:*
***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.

*Use one 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)* |
| *Rel-6* | *(Release 6)* |

| | | |
|---|---|---|
| ***Reason for change:*** | ⌘ | The current specification can lead to misinterpretation which sequence number is invalid inside the SGSN Context Response message when the RAB Context IE was received in the new SGSN |
| ***Summary of change:*** | ⌘ | N-PDU Sequence numbers and Sequence numbers inside the PDP Context IE shall be ignored in the new SGSN in case the RAB Context IE was received by the new SGSN inside the SGSN Context Response message. |
| ***Consequences if not approved:*** | ⌘ | Interoperability problems if vendors interpret the sequence numbers which shall be ignored in a different way. |

| | | |
|---|---|---|
| ***Clauses affected:*** | ⌘ | 7.5.4 |

| ***Other specs affected:*** | ⌘ | Y | N | | ⌘ |
|---|---|---|---|---|---|
| | | | X | Other core specifications | |
| | | | X | Test specifications | |
| | | | X | O&M Specifications | |

| | | |
|---|---|---|
| ***Other comments:*** | ⌘ | |

**How to create CRs using this form:**
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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.

## 7.5.4 SGSN Context Response

The old SGSN shall send an SGSN Context Response to the new SGSN as a response to a previous SGSN Context Request.

Possible Cause values are:

- 'Request Accepted'.
- 'IMSI not known'.
- 'System failure'.
- 'Mandatory IE incorrect'.
- 'Mandatory IE missing'.
- 'Optional IE incorrect'.
- 'Invalid message format'.
- 'P-TMSI Signature mismatch'.

If the Cause contains the value 'Request accepted', all information elements are mandatory, except PDP Context, RAB Context and Private Extension.

If the Cause contains the value 'P-TMSI Signature mismatch' the IMSI information element shall be included in the response, otherwise only the Cause information element shall be included in the response.

The old SGSN shall include a SGSN Address for control plane. The new SGSN shall store this SGSN Address and use it when sending control plane messages for the MS to the old SGSN in the SGSN context transfer procedure.

The Tunnel Endpoint Identifier Control Plane field specifies a Tunnel Endpoint Identifier, which is chosen by the old SGSN. The new SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent control plane messages, which are sent from the new SGSN to the old SGSN and related to the PDP context(s) requested.

The IMSI information element contains the IMSI matching the TLLI or P-TMSI (for GSM or UMTS respectively) and RAI in the SGSN Context Request.

The MM Context contains necessary mobility management and security parameters. An SGSN supporting the 'PUESBINE' feature (see 3GPP TS 23.195 [24] for more information) shall include the IMEISV in the MM Context when transferring the IMEISV from the old SGSN to the new SGSN.

All active PDP contexts in the old SGSN shall be included as PDP Context information elements. The PDP contexts are included in an implementation dependant prioritized order, and the most important PDP context is placed first. When the PDP Context Prioritization IE is included, it informs the new SGSN that the PDP contexts are sent prioritized. If the new SGSN is not able to maintain active all the PDP contexts received from the old SGSN when it is indicated that prioritization of the PDP contexts is applied, the new SGSN should use the prioritisation sent by old SGSN as input when deciding which PDP contexts to maintain active and which ones to delete.

If there is at least one active PDP context, the old SGSN shall start the T3-TUNNEL timer and store the address of the new SGSN in the "New SGSN Address" field of the MM context. The old SGSN shall wait for SGSN Context Acknowledge before sending T-PDUs to the new SGSN. If an SGSN Context Acknowledge message is not received within a time defined by T3-RESPONSE, the old SGSN shall retransmit the SGSN Context Response to the new SGSN as long as the total number of attempts is less than N3-REQUESTS. After N3-REQUESTS unsuccessfully attempts, the old SGSN shall proceed as described in section 'Reliable delivery of signalling messages' in case the transmission of a control plane message fails N3-REQUESTS times.

For each RAB using lossless PDCP context, the old SGSN shall include a RAB Context. If a RAB Context is included in the SGSN Context Response, the new SGSN shall ignore the N-PDU number fields ~~(PDCP)~~ and sequence number fields ~~GTP-U sequence numbers~~ received in the PDP Context IE.

Radio Priority SMS contains the radio priority level for MO SMS transmission, and shall be included if a valid Radio Priority SMS value exists for the MS in the old SGSN.

Radio Priority LCS contains the radio priority level for MO LCS transmission, and shall be included if a valid Radio Priority LCS value exists for the MS in the old SGSN.

Radio Priority is the radio priority level that the MS uses when accessing the network for the transmission of uplink user data for a particular PDP context. One Radio Priority IE shall be included per PDP context that has a valid radio priority value assigned to it in the old SGSN.

Packet Flow Id is the packet flow identifier assigned to the PDP context. One Packet Flow Id IE shall be included per PDP context that has a valid packet flow identifier value assigned to it in the old SGSN.

Charging Characteristics IE contains the charching characteristics which apply for a PDP context; see 3GPP TS 32.215 [18]. One Charging Characteristics IE shall be included per PDP context IE. If no PDP context is active, this IE shall not be included. The mapping of a Charging Characteristics IE to a PDP Context IE is done according to the sequence of their appearance, e.g. the first Charging Characteristics IE is mapped to the first PDP Context IE.

The optional Private Extension contains vendor or operator specific information.

**Table 27: Information Elements in a SGSN Context Response**

| Information element | Presence requirement | Reference |
|---|---|---|
| Cause | Mandatory | 7.7.1 |
| IMSI | Conditional | 7.7.2 |
| Tunnel Endpoint Identifier Control Plane | Conditional | 7.7.14 |
| RAB Context | Conditional | 7.7.19 |
| Radio Priority SMS | Optional | 7.7.20 |
| Radio Priority | Optional | 7.7.21 |
| Packet Flow Id | Optional | 7.7.22 |
| CharingCharacteristics | Optional | 7.7.23 |
| Radio Priority LCS | Optional | 7.7.25B |
| MM Context | Conditional | 7.7.28 |
| PDP Context | Conditional | 7.7.29 |
| SGSN Address for Control Plane | Conditional | 7.7.32 |
| PDP Context Prioritization | Optional | 7.7.45 |
| Private Extension | Optional | 7.7.46 |

**3GPP TSG CN WG4 Meeting #22** **N4-040313**
**Atlanta, USA, 16th – 20st February 2003**

CR-Form-v7

# CHANGE REQUEST

⌘ **29.060** **CR** **489** ⌘ **rev** **1** ⌘ Current version: **5.8.0** ⌘

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

***Proposed change affects:*** UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

| | | |
|---|---|---|
| ***Title:*** | ⌘ | PDCP and GTP-U sequence numbers received in the PDP Context information element inside SGSN Context Response message. |
| ***Source:*** | ⌘ | CN4 |
| ***Work item code:*** | ⌘ | TEI |
| ***Date:*** | ⌘ | 19/02/2004 |
| ***Category:*** | ⌘ | **A** |
| ***Release:*** | ⌘ | Rel-5 |

*Use one of the following categories:*
***F*** *(correction)*
***A*** *(corresponds to a correction in an earlier release)*
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*Use one of the following releases:*

| | |
|---|---|
| *2* | *(GSM Phase 2)* |
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| | | |
|---|---|---|
| ***Reason for change:*** | ⌘ | The current specification can lead to misinterpretation which sequence number is invalid inside the SGSN Context Response message when the RAB Context IE was received in the new SGSN |
| ***Summary of change:*** | ⌘ | N-PDU Sequence numbers and Sequence numbers inside the PDP Context IE shall be ignored in the new SGSN in case the RAB Context IE was received by the new SGSN inside the SGSN Context Response message. |
| ***Consequences if not approved:*** | ⌘ | Interoperability problems if vendors interpret the sequence numbers which shall be ignored in a different way. |

| | | |
|---|---|---|
| ***Clauses affected:*** | ⌘ | 7.5.4 |

| ***Other specs affected:*** | ⌘ | Y | N | | ⌘ |
|---|---|---|---|---|---|
| | | | X | Other core specifications | |
| | | | X | Test specifications | |
| | | | X | O&M Specifications | |

| | | |
|---|---|---|
| ***Other comments:*** | ⌘ | |

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## 7.5.4 SGSN Context Response

The old SGSN shall send an SGSN Context Response to the new SGSN as a response to a previous SGSN Context Request.

Possible Cause values are:

- 'Request Accepted'.
- 'IMSI not known'.
- 'System failure'.
- 'Mandatory IE incorrect'.
- 'Mandatory IE missing'.
- 'Optional IE incorrect'.
- 'Invalid message format'.
- 'P-TMSI Signature mismatch'.

If the Cause contains the value 'Request accepted', all information elements are mandatory, except PDP Context, RAB Context and Private Extension.

If the Cause contains the value 'P-TMSI Signature mismatch' the IMSI information element shall be included in the response, otherwise only the Cause information element shall be included in the response.

The old SGSN shall include a SGSN Address for control plane. The new SGSN shall store this SGSN Address and use it when sending control plane messages for the MS to the old SGSN in the SGSN context transfer procedure.

The Tunnel Endpoint Identifier Control Plane field specifies a Tunnel Endpoint Identifier, which is chosen by the old SGSN. The new SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent control plane messages, which are sent from the new SGSN to the old SGSN and related to the PDP context(s) requested.

The IMSI information element contains the IMSI matching the TLLI or P-TMSI (for GSM or UMTS respectively) and RAI in the SGSN Context Request.

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The optional Private Extension contains vendor or operator specific information.

**Table 27: Information Elements in a SGSN Context Response**

| Information element | Presence requirement | Reference |
|---|---|---|
| Cause | Mandatory | 7.7.1 |
| IMSI | Conditional | 7.7.2 |
| Tunnel Endpoint Identifier Control Plane | Conditional | 7.7.14 |
| RAB Context | Conditional | 7.7.19 |
| Radio Priority SMS | Optional | 7.7.20 |
| Radio Priority | Optional | 7.7.21 |
| Packet Flow Id | Optional | 7.7.22 |
| CharingCharacteristics | Optional | 7.7.23 |
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| PDP Context Prioritization | Optional | 7.7.45 |
| Private Extension | Optional | 7.7.46 |

**3GPP TSG CN WG4 Meeting #22**
**Atlanta, USA, 16th – 20st February 2003**

***N4-040314***

*CR-Form-v7*

# CHANGE REQUEST

⌘ **29.060** **CR** **490** ⌘**rev** ⌘ Current version: **4.10.0** ⌘

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

***Proposed change affects:*** UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

| | | |
|---|---|---|
| ***Title:*** | ⌘ | PDCP and GTP-U sequence numbers received in the PDP Context information element inside SGSN Context Response message. |
| ***Source:*** | ⌘ | CN4 |
| ***Work item code:*** | ⌘ | TEI |
| ***Date:*** | ⌘ | 19/02/2004 |
| ***Category:*** | ⌘ | **A** |
| ***Release:*** | ⌘ | Rel-4 |

*Use one of the following categories:*
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| | |
|---|---|
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| *Rel-4* | *(Release 4)* |
| *Rel-5* | *(Release 5)* |
| *Rel-6* | *(Release 6)* |

| | | |
|---|---|---|
| ***Reason for change:*** | ⌘ | The current specification can lead to misinterpretation which sequence number is invalid inside the SGSN Context Response message when the RAB Context IE was received in the new SGSN |
| ***Summary of change:*** | ⌘ | N-PDU Sequence numbers and Sequence numbers inside the PDP Context IE shall be ignored in the new SGSN in case the RAB Context IE was received by the new SGSN inside the SGSN Context Response message. |
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| | | |
|---|---|---|
| ***Clauses affected:*** | ⌘ | 7.5.4 |

| ***Other specs affected:*** | ⌘ | Y | N | | ⌘ |
|---|---|---|---|---|---|
| | | | X | Other core specifications | |
| | | | X | Test specifications | |
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| | | |
|---|---|---|
| ***Other comments:*** | ⌘ | |

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**Table 27: Information Elements in a SGSN Context Response**

| Information element | Presence requirement | Reference |
|---|---|---|
| Cause | Mandatory | 7.7.1 |
| IMSI | Conditional | 7.7.2 |
| Tunnel Endpoint Identifier Control Plane | Conditional | 7.7.14 |
| RAB Context | Conditional | 7.7.19 |
| Radio Priority SMS | Optional | 7.7.20 |
| Radio Priority | Optional | 7.7.21 |
| Packet Flow Id | Optional | 7.7.22 |
| Charging Characteristics | Optional | 7.7.23 |
| MM Context | Conditional | 7.7.28 |
| PDP Context | Conditional | 7.7.29 |
| SGSN Address for Control Plane | Conditional | 7.7.32 |
| Private Extension | Optional | 7.7.44 |

**3GPP TSG CN WG4 Meeting #22** **N4-040315**
**Atlanta, USA, 16th – 20st February 2003**

CR-Form-v7

# CHANGE REQUEST

⌘ **29.060** **CR** **491** ⌘**rev** ⌘ Current version: 3.18.0 ⌘

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

***Proposed change affects:*** UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

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| ***Date:*** | ⌘ | 19/02/2004 |
| ***Category:*** | ⌘ | **F** |
| ***Release:*** | ⌘ | R99 |

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| | | |
|---|---|---|
| ***Reason for change:*** | ⌘ | **This is essential correction**<br><br>The current specification can lead to misinterpretation which sequence number is invalid inside the SGSN Context Response message when the RAB Context IE was received in the new SGSN |
| ***Summary of change:*** | ⌘ | N-PDU Sequence numbers and Sequence numbers inside the PDP Context IE shall be ignored in the new SGSN in case the RAB Context IE was received by the new SGSN inside the SGSN Context Response message. |
| ***Consequences if not approved:*** | ⌘ | Interoperability problems if vendors interpret the sequence numbers which shall be ignored in a different way. |

| | | |
|---|---|---|
| ***Clauses affected:*** | ⌘ | 7.5.4 |

| ***Other specs affected:*** ⌘ | Y | N | |
|---|---|---|---|
| | | X | Other core specifications |
| | | X | Test specifications |
| | | X | 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/specs/CR.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.

## 7.5.4 SGSN Context Response

The old SGSN shall send an SGSN Context Response to the new SGSN as a response to a previous SGSN Context Request.

Possible Cause values are:

- 'Request Accepted'.
- 'IMSI not known'.
- 'System failure'.
- 'Mandatory IE incorrect'.
- 'Mandatory IE missing'.
- 'Optional IE incorrect'.
- 'Invalid message format'.
- 'P-TMSI Signature mismatch'.

If the Cause contains the value 'Request accepted', all information elements are mandatory, except PDP Context, RAB Context and Private Extension.

If the Cause contains the value 'P-TMSI Signature mismatch' the IMSI information element shall be included in the response, otherwise only the Cause information element shall be included in the response.

The old SGSN shall include a SGSN Address for control plane. The new SGSN shall store this SGSN Address and use it when sending control plane messages for the MS to the old SGSN in the SGSN context transfer procedure.

The Tunnel Endpoint Identifier Control Plane field specifies a Tunnel Endpoint Identifier, which is chosen by the old SGSN. The new SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent control plane messages, which are sent from the new SGSN to the old SGSN and related to the PDP context(s) requested.

The IMSI information element contains the IMSI matching the TLLI or P-TMSI (for GSM or UMTS respectively) and RAI in the SGSN Context Request.

The MM Context contains necessary mobility management and security parameters.

All active PDP contexts in the old SGSN shall be included as PDP Context information elements.

If there is at least one active PDP context, the old SGSN shall start the T3-TUNNEL timer and store the address of the new SGSN in the "New SGSN Address" field of the MM context. The old SGSN shall wait for SGSN Context Acknowledge before sending T-PDUs to the new SGSN. If an SGSN Context Acknowledge message is not received within a time defined by T3-RESPONSE, the old SGSN shall retransmit the SGSN Context Response to the new SGSN as long as the total number of attempts is less than N3-REQUESTS. After N3-REQUESTS unsuccessfully attempts, the old SGSN shall proceed as described in section 'Reliable delivery of signalling messages in case the transmission of a control plane message fails N3-REQUESTS times.

For each RAB using lossless PDCP context, the old SGSN shall include a RAB Context. If a RAB Context is included in the SGSN Context Response, the new SGSN shall ignore the N-PDU number fields ~~PDCP~~ and sequence number fields ~~GTP-U sequence numbers~~ received in the PDP Context IE.

Radio Priority SMS contains the radio priority level for MO SMS transmission, and shall be included if a valid Radio Priority SMS value exists for the MS in the old SGSN.

Radio Priority is the radio priority level that the MS uses when accessing the network for the transmission of uplink user data for a particular PDP context. One Radio Priority IE shall be included per PDP context that has a valid radio priority value assigned to it in the old SGSN.

Packet Flow Id is the packet flow identifier assigned to the PDP context. One Packet Flow Id IE shall be included per PDP context that has a valid packet flow identifier value assigned to it in the old SGSN.

The optional Private Extension contains vendor or operator specific information.

**Table 27: Information Elements in a SGSN Context Response**

| Information element | Presence requirement | Reference |
|---|---|---|
| Cause | Mandatory | 7.7.1 |
| IMSI | Conditional | 7.7.2 |
| Tunnel Endpoint Identifier Control Plane | Conditional | 7.7.14 |
| RAB Context | Conditional | 7.7.19 |
| Radio Priority SMS | Optional | 7.7.20 |
| Radio Priority | Optional | 7.7.21 |
| Packet Flow Id | Optional | 7.7.22 |
| MM Context | Conditional | 7.7.28 |
| PDP Context | Conditional | 7.7.29 |
| SGSN Address for Control Plane | Conditional | 7.7.32 |
| Private Extension | Optional | 7.7.44 |