3GPP TSG CN Plenary Meeting #22 **NP-030497**
10th – 12th December 2003 Maui, USA.

Source: TSG CN WG4

Title: Corrections on GPRS Rel-4 and earlier

Agenda item: 7.3

Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.060	435	1	N4-031099	R99	Correction to imprecise reference	F	3.17.0
29.060	475		N4-031100	Rel-4	Correction of incorrect reference to a withdrawn specification	F	4.9.0
29.060	476		N4-031322	Rel-5	Correction of incorrect reference to a withdrawn specification	A	5.7.0
29.060	477		N4-031102	Rel-6	Correction of incorrect reference to a withdrawn specification	A	6.2.0
29.060	458		N4-031120	R99	Correction of Sequence Number Up handling	F	3.17.0
29.060	459		N4-031121	Rel-4	Correction of Sequence Number Up handling	A	4.9.0
29.060	460		N4-031122	Rel-5	Correction of Sequence Number Up handling	A	5.7.0
29.060	461		N4-031123	Rel-6	Correction of Sequence Number Up handling	A	6.2.0
23.007	009	1	N4-031323	R99	Restoration of data in RA update	F	3.5.0
23.007	010	1	N4-031324	Rel-4	Restoration of data in RA update	A	4.1.1
23.007	011	1	N4-031325	Rel-5	Restoration of data in RA update	A	5.0.0

3GPP TSG CN WG4 Meeting #21 **N4-031323**
Bangkok, THAILAND, 27th – 31st October 2003

CR-Form-v7

CHANGE REQUEST

⌘ **23.007** **CR** **009** ⌘ **rev** **1** ⌘ Current version: **3.5.0** ⌘

*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:	⌘	Restoration of data in RA update
Source:	⌘	CN4
Work item code:	⌘	GPRS
Date:	⌘	15/10/2003
Category:	⌘	**F**
Release:	⌘	R99

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 restoration procedure for MS initiated RA update in section 11.2.4 is in contradiction to the corresponding description in 23.060 (section 13.8.2). Section 11.2.4 requests to execute the RA update even if the network holds no MM context anymore and to establish a new MM context. But in case of Inter SGSN RA Update, if the old SGSN has no MM context, the new SGSN has to reject the RA Update. In case of Intra SGSN RA Update this SGSN behaviour can result in data inconsistencies: • At least in R99, the SGSN cannot indicate to the MS that PDP contexts that are active in the MS are no more existing in the CN (PDP Context Status IE). • Depending on the type of RA update, e.g. in case of periodic update, the SGSN cannot know whether it has to establish a Gs-interface association or not. The restoration procedure described in 23.060 avoids these problems and covers also the Inter SGSN scenario. **This is an essential correction.**
Summary of change:	⌘	It is clarified that the current handling applies only to attach. New handling for RA Update is added, in accordance with 23.060.
Consequences if not approved:	⌘	The current description does not satisfy the Inter SGSN RAU scenario. Inconsistency between specifications can lead to different SGSN implementations. Risk of inconsistencies between MS and SGSN (PDP Contexts, for R99) and between MSC/VLR and SGSN (Gs interface association)

Clauses affected:	⌘	11.2.4

		Y	N			
Other specs affected:	⌘		X	Other core specifications	⌘	
			X	Test specifications		
			X	O&M Specifications		
Other comments:	⌘					

How to create CRs using this form:

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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.

11.2.4 Mobile originated Routeing Area Updating or Attach

~~I~~For attach, ~~f~~where the MS is unknown in the SGSN (i.e. the SGSN has no MM context for the MS) the SGSN creates an MM context for the MS and sets the indicators "Location Information Confirmed in HLR" and "Subscriber Data Confirmed by HLR" to "Not Confirmed". If authentication is required, the SGSN retrieves authentication data. The SGSN then performs an "Update GPRS Location" to the HLR. If this is successful, the SGSN sets the indicators "Location Information Confirmed in HLR" and "Subscriber Data Confirmed by HLR" to "Confirmed".

For routing area update, where the MS is unknown in the SGSN (i.e. the SGSN has no MM context for the MS) or for inter-SGSN routing area update, where the MS is unkown in the old SGSN, the SGSN shall reject the RA update with an appropriate cause. In order to remain GPRS-attached, the MS shall then perform a new GPRS attach and should (re-)activate its PDP contexts.

If the SGSN has an MM context for the MS, and the indicators "Location Information Confirmed in HLR" or "Subscriber Data Confirmed by HLR" is set to "Not Confirmed" the SGSN performs an "Update GPRS Location" to the HLR. If this is successful, the SGSN sets the indicators "Location Information Confirmed in HLR" and "Subscriber Data Confirmed by HLR" to "Confirmed".

If the SGSN has an MM context for the MS with the indicator "Subscriber Data Confirmed by HLR" marked "Confirmed" the originated transmission is handled in the normal way.

The SGSN retrieves subscriber data from the HLR by sending an "Update GPRS Location" request, which triggers one or more "Insert Subscriber Data" operations from the HLR.

3GPP TSG CN WG4 Meeting #21 **N4-031324**
Bangkok, THAILAND, 27th – 31st October 2003

CR-Form-v7

CHANGE REQUEST

⌘ **23.007** **CR** **010** ⌘ **rev** **1** ⌘ Current version: **4.1.1** ⌘

*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:	⌘	Restoration of data in RA update
Source:	⌘	CN4
Work item code:	⌘	GPRS
Date:	⌘	15/10/2003
Category:	⌘	**A**
Release:	⌘	Rel-4

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)*
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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 restoration procedure for MS initiated RA update in section 11.2.4 is in contradiction to the corresponding description in 23.060 (section 13.8.2). Section 11.2.4 requests to execute the RA update even if the network holds no MM context anymore and to establish a new MM context. But in case of Inter SGSN RA Update, if the old SGSN has no MM context, the new SGSN has to reject the RA Update. In case of Intra SGSN RA Update this SGSN behaviour can result in data inconsistencies: • At least in R99, the SGSN cannot indicate to the MS that PDP contexts that are active in the MS are no more existing in the CN (PDP Context Status IE). • Depending on the type of RA update, e.g. in case of periodic update, the SGSN cannot know whether it has to establish a Gs-interface association or not. The restoration procedure described in 23.060 avoids these problems and covers also the Inter SGSN scenario. This is an essential correction.
Summary of change:	⌘	It is clarified that the current handling applies only to attach. New handling for RA Update is added, in accordance with 23.060.
Consequences if not approved:	⌘	The current description does not satisfy the Inter SGSN RAU scenario. Inconsistency between specifications can lead to different SGSN implementations. Risk of inconsistencies between MS and SGSN (PDP Contexts, for R99) and between MSC/VLR and SGSN (Gs interface association)

Clauses affected:	⌘	11.2.4

		Y	N			
Other specs affected:	⌘		X	Other core specifications	⌘	
			X	Test specifications		
			X	O&M Specifications		
Other comments:	⌘					

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11.2.4 Mobile originated Routeing Area Updating or Attach

~~I~~For attach, ~~f~~where the MS is unknown in the SGSN (i.e. the SGSN has no MM context for the MS) the SGSN creates an MM context for the MS and sets the indicators "Location Information Confirmed in HLR" and "Subscriber Data Confirmed by HLR" to "Not Confirmed". If authentication is required, the SGSN retrieves authentication data. The SGSN then performs an "Update GPRS Location" to the HLR. If this is successful, the SGSN sets the indicators "Location Information Confirmed in HLR" and "Subscriber Data Confirmed by HLR" to "Confirmed".

For routing area update, where the MS is unknown in the SGSN (i.e. the SGSN has no MM context for the MS) or for inter-SGSN routing area update, where the MS is unkown in the old SGSN, the SGSN shall reject the RA update with an appropriate cause. In order to remain GPRS-attached, the MS shall then perform a new GPRS attach and should (re-)activate its PDP contexts.

If the SGSN has an MM context for the MS, and the indicators "Location Information Confirmed in HLR" or "Subscriber Data Confirmed by HLR" is set to "Not Confirmed" the SGSN performs an "Update GPRS Location" to the HLR. If this is successful, the SGSN sets the indicators "Location Information Confirmed in HLR" and "Subscriber Data Confirmed by HLR" to "Confirmed".

If the SGSN has an MM context for the MS with the indicator "Subscriber Data Confirmed by HLR" marked "Confirmed" the originated transmission is handled in the normal way.

The SGSN retrieves subscriber data from the HLR by sending an "Update GPRS Location" request, which triggers one or more "Insert Subscriber Data" operations from the HLR.

3GPP TSG CN WG4 Meeting #21 **N4-031325**
Bangkok, THAILAND, 27th – 31st October 2003

CR-Form-v7

CHANGE REQUEST

⌘ **23.007** **CR** **011** ⌘ **rev** **1** ⌘ Current version: **5.0.0** ⌘

*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:	⌘	Restoration of data in RA update
Source:	⌘	CN4
Work item code:	⌘	GPRS
Date:	⌘	15/10/2003
Category:	⌘	**A**
Release:	⌘	Rel-5

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)*
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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 restoration procedure for MS initiated RA update in section 11.2.4 is in contradiction to the corresponding description in 23.060 (section 13.8.2). Section 11.2.4 requests to execute the RA update even if the network holds no MM context anymore and to establish a new MM context. But in case of Inter SGSN RA Update, if the old SGSN has no MM context, the new SGSN has to reject the RA Update. In case of Intra SGSN RA Update this SGSN behaviour can result in data inconsistencies: • At least in R99, the SGSN cannot indicate to the MS that PDP contexts that are active in the MS are no more existing in the CN (PDP Context Status IE). • Depending on the type of RA update, e.g. in case of periodic update, the SGSN cannot know whether it has to establish a Gs-interface association or not. The restoration procedure described in 23.060 avoids these problems and covers also the Inter SGSN scenario. This is an essential correction.
Summary of change:	⌘	It is clarified that the current handling applies only to attach. New handling for RA Update is added, in accordance with 23.060.
Consequences if not approved:	⌘	The current description does not satisfy the Inter SGSN RAU scenario. Inconsistency between specifications can lead to different SGSN implementations. Risk of inconsistencies between MS and SGSN (PDP Contexts, for R99) and between MSC/VLR and SGSN (Gs interface association)

Clauses affected:	⌘	11.2.4

		Y	N			
Other specs affected:	⌘		X	Other core specifications	⌘	
			X	Test specifications		
			X	O&M Specifications		
Other comments:	⌘					

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11.2.4 Mobile originated Routeing Area Updating or Attach

~~I~~For attach, ~~f~~where the MS is unknown in the SGSN (i.e. the SGSN has no MM context for the MS) the SGSN creates an MM context for the MS and sets the indicators "Location Information Confirmed in HLR" and "Subscriber Data Confirmed by HLR" to "Not Confirmed". If authentication is required, the SGSN retrieves authentication data. The SGSN then performs an "Update GPRS Location" to the HLR. If this is successful, the SGSN sets the indicators "Location Information Confirmed in HLR" and "Subscriber Data Confirmed by HLR" to "Confirmed".

For routing area update, where the MS is unknown in the SGSN (i.e. the SGSN has no MM context for the MS) or for inter-SGSN routing area update, where the MS is unkown in the old SGSN, the SGSN shall reject the RA update with an appropriate cause. In order to remain GPRS-attached, the MS shall then perform a new GPRS attach and should (re-)activate its PDP contexts.

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If the SGSN has an MM context for the MS with the indicator "Subscriber Data Confirmed by HLR" marked "Confirmed" the originated transmission is handled in the normal way.

The SGSN retrieves subscriber data from the HLR by sending an "Update GPRS Location" request, which triggers one or more "Insert Subscriber Data" operations from the HLR.

3GPP TSG CN WG4 Meeting #21 **N4-031099**
Bangkok, THAILAND, 27th – 31st October 2003

CR-Form-v7

CHANGE REQUEST

⌘ **29.060** **CR** **435** ⌘ **rev** **1** ⌘ Current version: **3.17.0** ⌘

*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:	⌘	Correction to imprecise reference
Source:	⌘	CN4
Work item code:	⌘	TEI
Date:	⌘	25/09/2003
Category:	⌘	**F**
Release:	⌘	Rel-99

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)*
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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:	⌘	In the definition of the QoS IE there is an imprecise reference which instead should be “24.008 octets 3-5”. It is essential, to avoid interoperability issues, to correct this. This is an essential correction.
Summary of change:	⌘	The precise reference is put in place.
Consequences if not approved:	⌘	Some implementors may be misled and then start impelementing according to best guess.

Clauses affected:	⌘	7.7.34

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

Other comments: ⌘

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7.7.34 Quality of Service (QoS) Profile

The Quality of Service (QoS) Profile shall include the values of the defined QoS parameters. Octet 4 carries the allocation/retention priority octet that is defined in 3GPP TS 23.107. The allocation/retention priority octet encodes each priority level defined in 3GPP TS 23.107 as the binary value of the priority level. Octets 5 - n are coded according to 3GPP TS 24.008 Quality of Service IE, octets 3 - 13. If a pre-Release '99 only capable terminal is served, octets 5 - n are coded according to 3GPP TS 24.008 [5] Quality of Service IE, octets 3 - 5. The minimum length of the field QoS Profile Data is 3 octets; the maximum length may be up to 254 octets.

The allocation/retention priority shall be ignored if the QoS profile is pre-Release '99 or the QoS profile is present in Quality of Service Requested (QoS Req) of the PDP context. A receiving end shall interpret the QoS profile Data field to be coded according to 3GPP TS 24.008 [5] octets 3-5 (i.e. according to the pre-Release '99 format) if the Length field value is 4.

Figure 48: Quality of Service (QoS) Profile Information Element

	Bits							
Octets	8	7	6	5	4	3	2	1
1	Type = 135 (Decimal)							
2-3	Length							
4	Allocation/Retention Priority							
5-n	QoS Profile Data							

3GPP TSG CN WG4 Meeting #21 **N4-031120**
Bangkok, THAILAND, 27th – 31st October 2003

CR-Form-v7

CHANGE REQUEST

⌘ **29.060** **CR** **458** ⌘ **rev** **-** ⌘ Current version: **3.17.0** ⌘

*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:	⌘	Correction of Sequence Number Up handling
Source:	⌘	CN4
Work item code:	⌘	GPRS
Date:	⌘	15/10/2003
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
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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:	⌘	In the descriptive text of the Sequence Number Up handling in section 7.7.29 it is stated: *" The Sequence Number Up is the number that new SGSN shall use as the Sequence Number in the GTP Header for the next encapsulated T-PDU from the MS to the GGSN. The new SGSN shall ignore Sequence Number Up when the PDP context QoS profile does not require transmission order to be preserved. In this case, the **old** SGSN shall not include Sequence number field in the G-PDUs of the PDP context."* Not to include the SN field in the G-PDU is required in the 'new' SGSN (not in the 'old' SGSN). CR252 (CN4#10) introduced this description for SNU in section 7.7.29. It seems that during revision of this CR 'new' SGSN was accidently replaced by 'old' SGSN. **This is an essential correction.**
Summary of change:	⌘	Replace 'old SGSN' with 'new SGSN'
Consequences if not approved:	⌘	Wrong description of the required behaviour of the old SGSN. The sequence number handling for SNU in the new SGSN is still unclear and will lead to interoperability problems.

Clauses affected:	⌘	7.7.29

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

Other comments:	⌘	

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7.7.29 PDP Context

The PDP Context information element contains the Session Management parameters, defined for an external packet data network address, that are necessary to transfer between SGSNs at the Inter SGSN Routeing Area Update procedure.

NSAPI is an integer value in the range [0; 15].

The NSAPI points out the affected PDP context.

The SAPI indicates the LLC SAPI that is associated with the NSAPI.

The Transaction Identifier is the 4 bit or 12 bit Transaction Identifier used in the 3GPP TS 24.008 Session Management messages which control this PDP Context. If the length of the Transaction Identifier is 4 bit, the second octet shall be set to all zeros. The encoding is defined in 3GPP TS 24.007. The latest Transaction Identifier sent from SGSN to MS is stored in the PDP context IE.

Reordering Required (Order) indicates whether the SGSN shall reorder T-PDUs before delivering the T-PDUs to the MS. When the Quality of Service Negotiated (QoS Neg) is Release 99, the Reordering Required (Order) shall be ignored by receiving entity.

The VPLMN Address Allowed (VAA) indicates whether the MS is allowed to use the APN in the domain of the HPLMN only or additionally the APN in the domain of the VPLMN.

The QoS Sub Length, QoS Req Length and QoS Neg Length represent respectively the lengths of the QoS Sub, QoS Req and QoS Neg fields, excluding the QoS Length octet.

The Quality of Service Subscribed (QoS Sub), Quality of Service Requested (QoS Req) and Quality of Service Negotiated (QoS Neg) are encoded as described in section 'Quality of Service (QoS) Profile. Their minimum length is 4 octets; their maximum length may be 255 octets.

The Sequence Number Down is the number of the next T-PDU that shall be sent from the new SGSN to the MS. The number is associated to the Sequence Number from the GTP Header of an encapsulated T-PDU. The new SGSN shall ignore Sequence Number Down when the PDP context QoS profile does not require transmission order to be preserved. In this case the new SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Sequence Number Up is the number that new SGSN shall use as the Sequence Number in the GTP Header for the next encapsulated T-PDU from the MS to the GGSN. The new SGSN shall ignore Sequence Number Up when the PDP context QoS profile does not require transmission order to be preserved. In this case, the ~~old~~ new SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Send N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. Send N-PDU Number is the N-PDU number to be assigned by SNDCP to the next down link N-PDU received from the GGSN. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Receive N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. The Receive N-PDU Number is the N-PDU number expected by SNDCP from the next up link N-PDU to be received from the MS. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Uplink Tunnel Endpoint Identifier Control Plane is the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in up link direction for control plane purpose. It shall be used by the new SGSN within the GTP header of the Update PDP Context Request message.

The GGSN Address for User Traffic and the UplinkTunnel Endpoint Identifier Data I are the GGSN address and the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in uplink direction for user plane traffic on a PDP context. They shall be used by the new SGSN to send uplink user plane PDU to the GGSN

The PDP Context Identifier is used to identify a PDP context for the subscriber. The SGSN shall set the value of PDP Context Identifier to binary (1111 1111) if after inter-SGSN RAU using GTPv0 the new SGSN is not able to assign a correct PDP Context Identifier to the existing PDP contexts.

The PDP Type Organisation and PDP Type Number are encoded as in the End User Address information element.

The PDP Address Length represents the length of the PDP Address field, excluding the PDP Address Length octet.

The PDP Address is an octet array with a format dependent on the PDP Type. The PDP Address is encoded as in the End User Address information element if the PDP Type is IPv4 or IPv6.

The GGSN Address Length represents the length of the GGSN Address field, excluding the GGSN Address Length octet.

The old SGSN includes the GGSN Address for control plane that it has received from GGSN at PDP context activation or update.

The APN is the Access Point Name in use in the old SGSN. This APN field shall be composed of the APN Network Identifier part and the APN Operator Identifier part.

The spare bits x indicate unused bits that shall be set to 0 by the sending side and which shall not be evaluated by the receiving side.

Figure 43: PDP Context Information Element

1	Type = 130 (Decimal)				
2-3	Length				
4	Res-erved	VAA	Res-erved	Order	NSAPI
5	X	X	X	X	SAPI
6	QoS Sub Length				
7 - (q+6)	QoS Sub [4..255]				
q+7	QoS Req Length				
(q+8)-(2q+7)	QoS Req [4..255]				
2q+8	QoS Neg. Length				
(2q+9)-(3q+8)	QoS Neg [4..255]				
(3q+9)-(3q+10)	Sequence Number Down (SND) (note)				
(3q+11)-(3q+12)	Sequence Number Up (SNU) (note)				
3q+13	Send N-PDU Number (note)				
3q+14	Receive N-PDU Number (note)				
(3q+15)-(3q+18)	Uplink Tunnel Endpoint Identifier Control Plane				
(3q+19)-(3q+22)	UplinkTunnel Endpoint Identifier Data I				
3q+23	PDP Context Identifier				
3q+24	Spare 1 1 1 1				PDP Type Organisation
3q+25	PDP Type Number				
3q+26	PDP Address Length				
(3q+27)-m	PDP Address [0..63]				
m+1	GGSN Address for control plane Length				
(m+2)-n	GGSN Address for control plane [4..16]				
n+1	GGSN Address for User Traffic Length				
(n+2)-o	GGSN Address for User Traffic [4..16]				
o+1	APN length				
(o+2)-p	APN				
p+1	Spare (sent as 0 0 0 0)				Transaction Identifier
p+2	Transaction Identifier				

NOTE: This field shall not be evaluated when the PDP context is received during UMTS intra system handover/relocation.

Table 48: Reordering Required Values

Reordering Required	Value (Decimal)
No	0
Yes	1

Table 49: VPLMN Address Allowed Values

VPLMN Address Allowed	Value (Decimal)
No	0
Yes	1

3GPP TSG CN WG4 Meeting #21 **N4-031121**
Bangkok, THAILAND, 27th – 31st October 2003

CR-Form-v7

CHANGE REQUEST

⌘ **29.060** **CR** **459** ⌘ **rev** **-** ⌘ Current version: **4.9.0** ⌘

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

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

Title:	⌘	Correction of Sequence Number Up handling
Source:	⌘	CN4
Work item code:	⌘	GPRS
Date:	⌘	15/10/2003
Category:	⌘	**A**
Release:	⌘	Rel-4

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:	⌘	In the descriptive text of the Sequence Number Up handling in section 7.7.29 it is stated: *" The Sequence Number Up is the number that new SGSN shall use as the Sequence Number in the GTP Header for the next encapsulated T-PDU from the MS to the GGSN. The new SGSN shall ignore Sequence Number Up when the PDP context QoS profile does not require transmission order to be preserved. In this case, the **old** SGSN shall not include Sequence number field in the G-PDUs of the PDP context."* Not to include the SN field in the G-PDU is required in the 'new' SGSN (not in the 'old' SGSN). CR274 (CN4#10) introduced this description for SNU in section 7.7.29. It seems that during revision of this CR 'new' SGSN was accidently replaced by 'old' SGSN. This is an essential correction.
Summary of change:	⌘	Replace 'old SGSN' with 'new SGSN'
Consequences if not approved:	⌘	Wrong description of the required behaviour of the old SGSN. The sequence number handling for SNU in the new SGSN is still unclear and will lead to interoperability problems.

Clauses affected:	⌘	7.7.29			
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.

7.7.29 PDP Context

The PDP Context information element contains the Session Management parameters, defined for an external packet data network address, that are necessary to transfer between SGSNs at the Inter SGSN Routeing Area Update procedure.

NSAPI is an integer value in the range [0; 15].

The NSAPI points out the affected PDP context.

The SAPI indicates the LLC SAPI that is associated with the NSAPI.

The Transaction Identifier is the 4 or 12 bit Transaction Identifier used in the 3GPP TS 24.008 Session Management messages which control this PDP Context. If the length of the Transaction Identifier is 4 bit, the second octet shall be set to all zeros. The encoding is defined in 3GPP TS 24.007. The latest Transaction Identifier sent from SGSN to MS is stored in the PDP context IE.

Reordering Required (Order) indicates whether the SGSN shall reorder T-PDUs before delivering the T-PDUs to the MS. When the Quality of Service Negotiated (QoS Neg) is Release 99, the Reordering Required (Order) shall be ignored by receiving entity.

The VPLMN Address Allowed (VAA) indicates whether the MS is allowed to use the APN in the domain of the HPLMN only or additionally the APN in the domain of the VPLMN.

The QoS Sub Length, QoS Req Length and QoS Neg Length represent respectively the lengths of the QoS Sub, QoS Req and QoS Neg fields, excluding the QoS Length octet.

The Quality of Service Subscribed (QoS Sub), Quality of Service Requested (QoS Req) and Quality of Service Negotiated (QoS Neg) are encoded as described in section 'Quality of Service (QoS) Profile. Their minimum length is 4 octets; their maximum length may be 255 octets.

The Sequence Number Down is the number of the next T-PDU that shall be sent from the new SGSN to the MS. The number is associated to the Sequence Number from the GTP Header of an encapsulated T-PDU. The new SGSN shall ignore Sequence Number Down when the PDP context QoS profile does not require transmission order to be preserved. In this case the new SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Sequence Number Up is the number that new SGSN shall use as the Sequence Number in the GTP Header for the next encapsulated T-PDU from the MS to the GGSN. The new SGSN shall ignore Sequence Number Up when the PDP context QoS profile does not require transmission order to be preserved. In this case, the ~~old~~ new SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Send N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. Send N-PDU Number is the N-PDU number to be assigned by SNDCP to the next down link N-PDU received from the GGSN. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Receive N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. The Receive N-PDU Number is the N-PDU number expected by SNDCP from the next up link N-PDU to be received from the MS. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Uplink Tunnel Endpoint Identifier Control Plane is the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in up link direction for control plane purpose. It shall be used by the new SGSN within the GTP header of the Update PDP Context Request message.

The GGSN Address for User Traffic and the UplinkTunnel Endpoint Identifier Data I are the GGSN address and the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in uplink direction for user plane traffic on a PDP context. They shall be used by the new SGSN to send uplink user plane PDU to the GGSN

The PDP Context Identifier is used to identify a PDP context for the subscriber. The SGSN shall set the value of PDP Context Identifier to binary (1111 1111) if after inter-SGSN RAU using GTPv0 the new SGSN is not able to assign a correct PDP Context Identifier to the existing PDP contexts.

The PDP Type Organisation and PDP Type Number are encoded as in the End User Address information element.

The PDP Address Length represents the length of the PDP Address field, excluding the PDP Address Length octet.

The PDP Address is an octet array with a format dependent on the PDP Type. The PDP Address is encoded as in the End User Address information element if the PDP Type is IPv4 or IPv6.

The GGSN Address Length represents the length of the GGSN Address field, excluding the GGSN Address Length octet.

The old SGSN includes the GGSN Address for control plane that it has received from GGSN at PDP context activation or update.

The APN is the Access Point Name in use in the old SGSN. This APN field shall be composed of the APN Network Identifier part and the APN Operator Identifier part.

The spare bits x indicate unused bits that shall be set to 0 by the sending side and which shall not be evaluated by the receiving side.

Figure 43: PDP Context Information Element

1	Type = 130 (Decimal)				
2-3	Length				
4	Res-erved	VAA	Res-erved	Order	NSAPI
5	X	X	X	X	SAPI
6	QoS Sub Length				
7 - (q+6)	QoS Sub [4..255]				
q+7	QoS Req Length				
(q+8)-(2q+7)	QoS Req [4..255]				
2q+8	QoS Neg. Length				
(2q+9)-(3q+8)	QoS Neg [4..255]				
(3q+9)-(3q+10)	Sequence Number Down (SND) (note)				
(3q+11)-(3q+12)	Sequence Number Up (SNU) (note)				
3q+13	Send N-PDU Number (note)				
3q+14	Receive N-PDU Number (note)				
(3q+15)-(3q+18)	Uplink Tunnel Endpoint Identifier Control Plane				
(3q+19)-(3q+22)	UplinkTunnel Endpoint Identifier Data I				
3q+23	PDP Context Identifier				
3q+24	Spare 1 1 1 1				PDP Type Organisation
3q+25	PDP Type Number				
3q+26	PDP Address Length				
(3q+27)-m	PDP Address [0..63]				
m+1	GGSN Address for control plane Length				
(m+2)-n	GGSN Address for control plane [4..16]				
n+1	GGSN Address for User Traffic Length				
(n+2)-o	GGSN Address for User Traffic [4..16]				
o+1	APN length				
(o+2)-p	APN				
p+1	Spare (sent as 0 0 0 0)				Transaction Identifier
p+2	Transaction Identifier				

NOTE: This field shall not be evaluated when the PDP context is received during UMTS intra system handover/relocation.

Table 48: Reordering Required Values

Reordering Required	Value (Decimal)
No	0
Yes	1

Table 49: VPLMN Address Allowed Values

VPLMN Address Allowed	Value (Decimal)
No	0
Yes	1

3GPP TSG CN WG4 Meeting #21 **N4-031122**
Bangkok, THAILAND, 27th – 31st October 2003

CR-Form-v7

CHANGE REQUEST

⌘ **29.060** **CR** **460** ⌘ **rev** **-** ⌘ Current version: **5.7.0** ⌘

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

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

Title:	⌘	Correction of Sequence Number Up handling
Source:	⌘	CN4
Work item code:	⌘	GPRS
Date:	⌘	15/10/2003
Category:	⌘	**A**
Release:	⌘	Rel-5

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:	⌘	In the descriptive text of the Sequence Number Up handling in section 7.7.29 it is stated: *" The Sequence Number Up is the number that new SGSN shall use as the Sequence Number in the GTP Header for the next encapsulated T-PDU from the MS to the GGSN. The new SGSN shall ignore Sequence Number Up when the PDP context QoS profile does not require transmission order to be preserved. In this case, the **old** SGSN shall not include Sequence number field in the G-PDUs of the PDP context."* Not to include the SN field in the G-PDU is required in the 'new' SGSN (not in the 'old' SGSN). CR274 (CN4#10, Rel-4) introduced this description for SNU in section 7.7.29. It seems that during revision of this CR 'new' SGSN was accidently replaced by 'old' SGSN. This is an essential correction.
Summary of change:	⌘	Replace 'old SGSN' with 'new SGSN'
Consequences if not approved:	⌘	Wrong description of the required behaviour of the old SGSN. The sequence number handling for SNU in the new SGSN is still unclear and will lead to interoperability problems.

Clauses affected:	⌘	7.7.29			
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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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.

7.7.29 PDP Context

The PDP Context information element contains the Session Management parameters, defined for an external packet data network address, that are necessary to transfer between SGSNs at the Inter SGSN Routeing Area Update procedure.

NSAPI is an integer value in the range [0; 15].

The NSAPI points out the affected PDP context.

The SAPI indicates the LLC SAPI that is associated with the NSAPI.

The Transaction Identifier is the 4 or 12 bit Transaction Identifier used in the 3GPP TS 24.008 [5] Session Management messages which control this PDP Context. If the length of the Transaction Identifier is 4 bit, the second octet shall be set to all zeros. The encoding is defined in 3GPP TS 24.007 [3]. The latest Transaction Identifier sent from SGSN to MS is stored in the PDP context IE.

NOTE: Bit 5-8 of the first octet in the encoding defined in 3GPP TS 24.007 [3] is mapped into bit 1-4 of the first octet in this field.

Reordering Required (Order) indicates whether the SGSN shall reorder T-PDUs before delivering the T-PDUs to the MS. When the Quality of Service Negotiated (QoS Neg) is Release 99, the Reordering Required (Order) shall be ignored by receiving entity.

The VPLMN Address Allowed (VAA) indicates whether the MS is allowed to use the APN in the domain of the HPLMN only or additionally the APN in the domain of the VPLMN.

The QoS Sub Length, QoS Req Length and QoS Neg Length represent respectively the lengths of the QoS Sub, QoS Req and QoS Neg fields, excluding the QoS Length octet.

The Quality of Service Subscribed (QoS Sub), Quality of Service Requested (QoS Req) and Quality of Service Negotiated (QoS Neg) are encoded as described in section 'Quality of Service (QoS) Profile'. Their minimum length is 4 octets; their maximum length may be 255 octets.

The Sequence Number Down is the number of the next T-PDU that shall be sent from the new SGSN to the MS. The number is associated to the Sequence Number from the GTP Header of an encapsulated T-PDU. The new SGSN shall ignore Sequence Number Down when the PDP context QoS profile does not require transmission order to be preserved. In this case the new SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Sequence Number Up is the number that new SGSN shall use as the Sequence Number in the GTP Header for the next encapsulated T-PDU from the MS to the GGSN. The new SGSN shall ignore Sequence Number Up when the PDP context QoS profile does not require transmission order to be preserved. In this case, the ~~old~~ new SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Send N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. Send N-PDU Number is the N-PDU number to be assigned by SNDCP to the next down link N-PDU received from the GGSN. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Receive N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. The Receive N-PDU Number is the N-PDU number expected by SNDCP from the next up link N-PDU to be received from the MS. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Uplink Tunnel Endpoint Identifier Control Plane is the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in up link direction for control plane purpose. It shall be used by the new SGSN within the GTP header of the Update PDP Context Request message.

The GGSN Address for User Traffic and the UplinkTunnel Endpoint Identifier Data I are the GGSN address and the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in uplink direction for user plane traffic on a PDP context. They shall be used by the new SGSN to send uplink user plane PDU to the GGSN until new GGSN address for User Traffic is possibly received from GGSN (in Update PDP Context Response).

The PDP Context Identifier is used to identify a PDP context for the subscriber. The SGSN shall set the value of PDP Context Identifier to binary (1111 1111) if after inter-SGSN RAU using GTPv0 the new SGSN is not able to assign a correct PDP Context Identifier to the existing PDP contexts.

The PDP Type Organisation and PDP Type Number are encoded as in the End User Address information element.

The PDP Address Length represents the length of the PDP Address field, excluding the PDP Address Length octet.

The PDP Address is an octet array with a format dependent on the PDP Type. The PDP Address is encoded as in the End User Address information element if the PDP Type is IPv4 or IPv6.

The GGSN Address Length represents the length of the GGSN Address field, excluding the GGSN Address Length octet.

When forwarding the GGSN addresses to another SGSN (in PDP Context IE in Forward Relocation Request or SGSN Context Response message), the IPv4/IPv6 capable SGSN shall include GGSN addresses according to the IP version capability of the receiving SGSN.

The old SGSN includes the GGSN Address for control plane that it has received from GGSN at PDP context activation or update. If the new SGSN is IPv6 capable and the old SGSN has IPv6 control plane address of the GGSN available, the old IPv4/IPv6 capable SGSN includes the IPv6 GGSN control plane address in the field GGSN Address for control plane. If the new SGSN is IPv4 only capable or the old SGSN does not have any IPv6 GGSN address for control plane, the old SGSN includes the IPv4 GGSN Address in the field GGSN Address for control plane.

The use of Ipv6 addressing in pre-Release 5 nodes can cause interoperability problems and as such the use of IPv6 GSN addressing is not recommended in pre-Release 5.

NOTE: There is still the need for further study of the included addresses on SRNS relocation.

The APN is the Access Point Name in use in the old SGSN. This APN field shall be composed of the APN Network Identifier part and the APN Operator Identifier part.

The spare bits x indicate unused bits that shall be set to 0 by the sending side and which shall not be evaluated by the receiving side.

Octets	Bits 8	7	6	5	4	3	2	1
1	Type = 130 (Decimal)							
2-3	Length							
4	Res-erved	VAA	Res-erved	Order	NSAPI			
5	X	X	X	X	SAPI			
6	QoS Sub Length							
7 - (q+6)	QoS Sub [4..255]							
q+7	QoS Req Length							
(q+8)-(2q+7)	QoS Req [4..255]							
2q+8	QoS Neg. Length							
(2q+9)-(3q+8)	QoS Neg [4..255]							
(3q+9)-(3q+10)	Sequence Number Down (SND) (note)							
(3q+11)-(3q+12)	Sequence Number Up (SNU) (note)							
3q+13	Send N-PDU Number (note)							
3q+14	Receive N-PDU Number (note)							
(3q+15)-(3q+18)	Uplink Tunnel Endpoint Identifier Control Plane							
(3q+19)-(3q+22)	UplinkTunnel Endpoint Identifier Data I							
3q+23	PDP Context Identifier							
3q+24	Spare 1 1 1 1				PDP Type Organisation			
3q+25	PDP Type Number							
3q+26	PDP Address Length							
(3q+27)-m	PDP Address [0..63]							
m+1	GGSN Address for control plane Length							
(m+2)-n	GGSN Address for control plane [4..16]							
n+1	GGSN Address for User Traffic Length							
(n+2)-o	GGSN Address for User Traffic [4..16]							
o+1	APN length							
(o+2)-p	APN							
p+1	Spare (sent as 0 0 0 0)				Transaction Identifier			
p+2	Transaction Identifier							

NOTE: This field shall not be evaluated when the PDP context is received during UMTS intra system handover/relocation.

Figure 43: PDP Context Information Element

Table 48: Reordering Required Values

Reordering Required	Value (Decimal)
No	0
Yes	1

Table 49: VPLMN Address Allowed Values

VPLMN Address Allowed	Value (Decimal)
No	0
Yes	1

3GPP TSG CN WG4 Meeting #21 **N4-031123**
Bangkok, THAILAND, 27th – 31st October 2003

CR-Form-v7

CHANGE REQUEST

⌘ **29.060** **CR** **461** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

*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:	⌘	Correction of Sequence Number Up handling
Source:	⌘	CN4
Work item code:	⌘	GPRS ***Date:*** ⌘ 15/10/2003
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:	⌘	In the descriptive text of the Sequence Number Up handling in section 7.7.29 it is stated: *" The Sequence Number Up is the number that new SGSN shall use as the Sequence Number in the GTP Header for the next encapsulated T-PDU from the MS to the GGSN. The new SGSN shall ignore Sequence Number Up when the PDP context QoS profile does not require transmission order to be preserved. In this case, the **old** SGSN shall not include Sequence number field in the G-PDUs of the PDP context."* Not to include the SN field in the G-PDU is required in the 'new' SGSN (not in the 'old' SGSN). CR274 (CN4#10, Rel-4) introduced this description for SNU in section 7.7.29. It seems that during revision of this CR 'new' SGSN was accidently replaced by 'old' SGSN. This is an essential correction.
Summary of change:	⌘	Replace 'old SGSN' with 'new SGSN'
Consequences if not approved:	⌘	Wrong description of the required behaviour of the old SGSN. The sequence number handling for SNU in the new SGSN is still unclear and will lead to interoperability problems.

Clauses affected:	⌘	7.7.29

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

Other comments:	⌘	

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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.

7.7.29 PDP Context

The PDP Context information element contains the Session Management parameters, defined for an external packet data network address, that are necessary to transfer between SGSNs at the Inter SGSN Routeing Area Update procedure.

NSAPI is an integer value in the range [0; 15].

The NSAPI points out the affected PDP context.

The SAPI indicates the LLC SAPI that is associated with the NSAPI.

The Transaction Identifier is the 4 or 12 bit Transaction Identifier used in the 3GPP TS 24.008 [5] Session Management messages which control this PDP Context. If the length of the Transaction Identifier is 4 bit, the second octet shall be set to all zeros. The encoding is defined in 3GPP TS 24.007 [3]. The latest Transaction Identifier sent from SGSN to MS is stored in the PDP context IE.

NOTE: Bit 5-8 of the first octet in the encoding defined in 3GPP TS 24.007 [3] is mapped into bit 1-4 of the first octet in this field.

Reordering Required (Order) indicates whether the SGSN shall reorder T-PDUs before delivering the T-PDUs to the MS. When the Quality of Service Negotiated (QoS Neg) is Release 99, the Reordering Required (Order) shall be ignored by receiving entity.

The VPLMN Address Allowed (VAA) indicates whether the MS is allowed to use the APN in the domain of the HPLMN only or additionally the APN in the domain of the VPLMN.

The QoS Sub Length, QoS Req Length and QoS Neg Length represent respectively the lengths of the QoS Sub, QoS Req and QoS Neg fields, excluding the QoS Length octet.

The Quality of Service Subscribed (QoS Sub), Quality of Service Requested (QoS Req) and Quality of Service Negotiated (QoS Neg) are encoded as described in section 'Quality of Service (QoS) Profile'. Their minimum length is 4 octets; their maximum length may be 255 octets.

The Sequence Number Down is the number of the next T-PDU that shall be sent from the new SGSN to the MS. The number is associated to the Sequence Number from the GTP Header of an encapsulated T-PDU. The new SGSN shall ignore Sequence Number Down when the PDP context QoS profile does not require transmission order to be preserved. In this case the new SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Sequence Number Up is the number that new SGSN shall use as the Sequence Number in the GTP Header for the next encapsulated T-PDU from the MS to the GGSN. The new SGSN shall ignore Sequence Number Up when the PDP context QoS profile does not require transmission order to be preserved. In this case, the ~~old~~ new SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Send N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. Send N-PDU Number is the N-PDU number to be assigned by SNDCP to the next down link N-PDU received from the GGSN. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Receive N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. The Receive N-PDU Number is the N-PDU number expected by SNDCP from the next up link N-PDU to be received from the MS. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Uplink Tunnel Endpoint Identifier Control Plane is the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in up link direction for control plane purpose. It shall be used by the new SGSN within the GTP header of the Update PDP Context Request message.

The GGSN Address for User Traffic and the UplinkTunnel Endpoint Identifier Data I are the GGSN address and the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in uplink direction for user plane traffic on a PDP context. They shall be used by the new SGSN to send uplink user plane PDU to the GGSN until new GGSN address for User Traffic is possibly received from GGSN (in Update PDP Context Response).

The PDP Context Identifier is used to identify a PDP context for the subscriber. The SGSN shall set the value of PDP Context Identifier to binary (1111 1111) if after inter-SGSN RAU using GTPv0 the new SGSN is not able to assign a correct PDP Context Identifier to the existing PDP contexts.

The PDP Type Organisation and PDP Type Number are encoded as in the End User Address information element.

The PDP Address Length represents the length of the PDP Address field, excluding the PDP Address Length octet.

The PDP Address is an octet array with a format dependent on the PDP Type. The PDP Address is encoded as in the End User Address information element if the PDP Type is IPv4 or IPv6.

The GGSN Address Length represents the length of the GGSN Address field, excluding the GGSN Address Length octet.

When forwarding the GGSN addresses to another SGSN (in PDP Context IE in Forward Relocation Request or SGSN Context Response message), the IPv4/IPv6 capable SGSN shall include GGSN addresses according to the IP version capability of the receiving SGSN.

The old SGSN includes the GGSN Address for control plane that it has received from GGSN at PDP context activation or update. If the new SGSN is IPv6 capable and the old SGSN has IPv6 control plane address of the GGSN available, the old IPv4/IPv6 capable SGSN includes the IPv6 GGSN control plane address in the field GGSN Address for control plane. If the new SGSN is IPv4 only capable or the old SGSN does not have any IPv6 GGSN address for control plane, the old SGSN includes the IPv4 GGSN Address in the field GGSN Address for control plane.

The use of Ipv6 addressing in pre-Release 5 nodes can cause interoperability problems and as such the use of IPv6 GSN addressing is not recommended in pre-Release 5.

NOTE: There is still the need for further study of the included addresses on SRNS relocation.

The APN is the Access Point Name in use in the old SGSN. This APN field shall be composed of the APN Network Identifier part and the APN Operator Identifier part.

The spare bits x indicate unused bits that shall be set to 0 by the sending side and which shall not be evaluated by the receiving side.

Octets	Bits 8	7	6	5	4	3	2	1
1	Type = 130 (Decimal)							
2-3	Length							
4	Res-erved	VAA	Res-erved	Order	NSAPI			
5	X	X	X	X	SAPI			
6	QoS Sub Length							
7 - (q+6)	QoS Sub [4..255]							
q+7	QoS Req Length							
(q+8)-(2q+7)	QoS Req [4..255]							
2q+8	QoS Neg. Length							
(2q+9)-(3q+8)	QoS Neg [4..255]							
(3q+9)-(3q+10)	Sequence Number Down (SND) (note)							
(3q+11)-(3q+12)	Sequence Number Up (SNU) (note)							
3q+13	Send N-PDU Number (note)							
3q+14	Receive N-PDU Number (note)							
(3q+15)-(3q+18)	Uplink Tunnel Endpoint Identifier Control Plane							
(3q+19)-(3q+22)	UplinkTunnel Endpoint Identifier Data I							
3q+23	PDP Context Identifier							
3q+24	Spare 1 1 1 1				PDP Type Organisation			
3q+25	PDP Type Number							
3q+26	PDP Address Length							
(3q+27)-m	PDP Address [0..63]							
m+1	GGSN Address for control plane Length							
(m+2)-n	GGSN Address for control plane [4..16]							
n+1	GGSN Address for User Traffic Length							
(n+2)-o	GGSN Address for User Traffic [4..16]							
o+1	APN length							
(o+2)-p	APN							
p+1	Spare (sent as 0 0 0 0)				Transaction Identifier			
p+2	Transaction Identifier							

NOTE: This field shall not be evaluated when the PDP context is received during UMTS intra system handover/relocation.

Figure 43: PDP Context Information Element

Table 48: Reordering Required Values

Reordering Required	Value (Decimal)
No	0
Yes	1

Table 49: VPLMN Address Allowed Values

VPLMN Address Allowed	Value (Decimal)
No	0
Yes	1

3GPP TSG CN WG4 Meeting #21 **N4-031100**
Bangkok, THAILAND, 27th – 31st October 2003

CR-Form-v7

CHANGE REQUEST

⌘ **29.060** **CR** **475** ⌘**rev** ⌘ Current version: **4.9.0** ⌘

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

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

Title:	⌘	Correction of incorrect reference to a withdrawn specification
Source:	⌘	CN4
Work item code:	⌘	GTP enhancements
Date:	⌘	29/10/2003
Category:	⌘	**F**
Release:	⌘	Rel-4

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:	⌘	In the GTP protocol specification there is an incorrect reference to a withdrawn specification (04.08). This change is an essential correction.
Summary of change:	⌘	The correct references are put in place.
Consequences if not approved:	⌘	Some implementors may be misled to believe that such a specification exists and then start implementing according to best a guess.

Clauses affected:	⌘	7.7.34			
Other specs affected:	⌘	**Y**	**N**		
			X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘	CR was referred back to CN4 at CN#21 to ensure correct reference was included.			

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.

7.7.34 Quality of Service (QoS) Profile

The Quality of Service (QoS) Profile shall include the values of the defined QoS parameters. Octet 4 carries the allocation/retention priority octet that is defined in 3GPP TS 23.107. The allocation/retention priority octet encodes each priority level defined in 3GPP TS 23.107 as the binary value of the priority level. Octets 5 - n are coded according to 3GPP TS 24.008 Quality of Service IE, octets 3 - 13. If a pre-Release '99 only capable terminal is served, octets 5 - n are coded according to 3GPP TS 24.008 [5] Quality of Service IE, octets 3 - 5. The minimum length of the field QoS Profile Data is 3 octets; the maximum length may be up to 254 octets.

The allocation/retention priority shall be ignored if the QoS profile is pre-Release '99 or the QoS profile is present in Quality of Service Requested (QoS Req) of the PDP context. A receiving end shall interpret the QoS profile Data field to be coded according to 3GPP TS ~~04.08~~24.008 [5] octets 3-5 (i.e. according to the pre-Release '99 format) if the Length field value is 4.

Figure 48: Quality of Service (QoS) Profile Information Element

	Bits							
Octets	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
1	Type = 135 (Decimal)							
2-3	Length							
4	Allocation/Retention Priority							
5-n	QoS Profile Data							

3GPP TSG CN WG4 Meeting #21 **N4-031322**
Bangkok, THAILAND, 27th – 31st October 2003

CR-Form-v7

CHANGE REQUEST

⌘ **29.060** **CR** **476** ⌘ **rev** ⌘ Current version: **5.7.0** ⌘

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

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

Title:	⌘	Correction of incorrect reference to a withdrawn specification
Source:	⌘	CN4
Work item code:	⌘	GTP enhancements
Date:	⌘	29/10/2003
Category:	⌘	**A**
Release:	⌘	Rel-5

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)*
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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:	⌘	In the GTP protocol specification there is an incorrect reference to a withdrawn specification (04.08).
Summary of change:	⌘	The correct references are put in place.
Consequences if not approved:	⌘	Some implementors may be misled to believe that such a specification exists and then start implementing according to a best guess.

Clauses affected:	⌘	7.7.34			
Other specs affected:	⌘	**Y**	**N**		
			X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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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.

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The allocation/retention priority shall be ignored if the QoS profile is pre-Release '99 or the QoS profile is present in Quality of Service Requested (QoS Req) of the PDP context. A receiving end shall interpret the QoS profile Data field to be coded according to 3GPP TS ~~04.08~~24.008 [5] octets 3-5 (i.e. according to the pre-Release '99 format) if the Length field value is 4.

Figure 48: Quality of Service (QoS) Profile Information Element

	Bits							
Octets	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
1	Type = 135 (Decimal)							
2-3	Length							
4	Allocation/Retention Priority							
5-n	QoS Profile Data							

3GPP TSG CN WG4 Meeting #21 **N4-031102**
Bangkok, THAILAND, 27th – 31st October 2003

CR-Form-v7

CHANGE REQUEST

⌘ **29.060** **CR** **477** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

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

Title:	⌘	Correction of incorrect reference to a withdrawn specification
Source:	⌘	CN4
Work item code:	⌘	GTP enhancements
Date:	⌘	29/10/2003
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)*
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R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	In the GTP protocol specification there is an incorrect reference to a withdrawn specification (04.08).
Summary of change:	⌘	The correct references are put in place.
Consequences if not approved:	⌘	Some implementors may be misled to believe such specification exists and then start implementing according to a best guess.

Clauses affected:	⌘	7.7.34			
Other specs affected:	⌘	**Y**	**N**		
			X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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The allocation/retention priority shall be ignored if the QoS profile is pre-Release '99 or the QoS profile is present in Quality of Service Requested (QoS Req) of the PDP context. A receiving end shall interpret the QoS profile Data field to be coded according to 3GPP TS ~~04.08~~24.008 [5] octets 3-5 (i.e. according to the pre-Release '99 format) if the Length field value is 4.

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	Bits							
Octets	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
1	Type = 135 (Decimal)							
2-3	Length							
4	Allocation/Retention Priority							
5-n	QoS Profile Data							