3GPP TSG CN Plenary Meeting #17 4th – 6th September 2002 Biarritz, FRANCE.

Source:	TSG CN WG4
Title:	CRs on Rel99 & earlier GPRS
Agenda item:	7.3
Document for:	APPROVAL

Spec	Spec CR		Doc-2nd-Level	Phase	Subject	Cat	Ver_C
23.003	047	2	N4-021064	R99	Clarification on the definition of DNS	F	3.10.0
23.003	048	2	N4-021065	Rel4	Clarification on the definition of DNS		4.4.0
23.003	049	3	N4-021080	Rel5	Clarification on the definition of DNS	F	5.3.0
29.060	334		N4-020921	R99	Removing inconsistency in definition of PDP Address length	F	3.13.0
29.060	335		N4-020922	Rel4	Removing inconsistency in definition of PDP Address length	A	4.4.0
29.060	336		N4-020923	Rel5	Removing inconsistency in definition of PDP Address length	A	5.2.0
29.060	337		N4-020924	R99	16 bit PDCP sequence numbers in RAB Context	F	3.13.0
29.060	338		N4-020925	Rel4	16 bit PDCP sequence numbers in RAB Context	A	4.4.0
29.060	339		N4-020926	Rel5	16 bit PDCP sequence numbers in RAB Context	A	5.2.0
29.060	345		N4-020968	R99	No equivalent Cause Code in GTP to 'PDP context without TFT already activated	F	3.13.0
29.060	346		N4-020969	Rel4	No equivalent Cause Code in GTP to 'PDP context without TFT already activated	A	4.4.0
29.060	347		N4-020970	Rel5	No equivalent Cause Code in GTP to 'PDP context without TFT already activated	A	5.2.0
29.060	349		N4-021010	Rel4	Incorrect references	F	4.4.0
29.060	324	1	N4-020985	Rel5	Incorrect references	F	5.2.0
29.060	340	1	N4-021016	R99	Forward Relocation Response without 'RAB Setup Information' IE	F	3.13.0
29.060	341	1	N4-021017	Rel4	Forward Relocation Response without 'RAB Setup Information' IE	A	4.4.0
29.060	342	1	N4-021018	Rel5	Forward Relocation Response without 'RAB Setup Information' IE	A	5.2.0
29.060	330	1	N4-021061	R99	Setting PDP ID after inter-SGSN RAU using GTPv0	F	3.13.0
29.060	331	1	N4-021062	Rel4	Setting PDP ID after inter-SGSN RAU using GTPv0	A	4.4.0
29.060	332	1	N4-021063	Rel5	Setting PDP ID after inter-SGSN RAU using GTPv0	A	5.2.0
29.060	326	1	N4-021067	R99	Clarification on the coding of RANAP cause value	F	3.13.0
29.060	327	1	N4-021068	Rel4	Clarification on the coding of RANAP cause value	A	4.4.0
29.060	328	1	N4-021069	Rel5	Clarification on the coding of RANAP cause value	Α	5.2.0

N4-020971

			(CHANGE	ERE	EQI	JE	ST				CR-Form-v7
¥		23.003	CR	046	жrе	€V	2	ж	Current vers	ion: <mark>3</mark>	<mark>.10.0</mark>	ж
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Reason for change: ೫	Critical correction
	The current definition of logical, names allows different interpretations for logical names regarding MNC and MCC
Summary of change: #	The range for MNC is limited to the digits 0-9 and an example is added
Consequences if % not approved:	Inconsistent implementationsare possible. The current definition allows two methode for logical name for one MNC-MCC combination: i.e. MCC=167, MNC=92 1) RACxxxx.LACyyyy.MNC0092.MCC0167 or RACxxxx.LACyyyy.MNC005C.MCC00A7

Clauses affected:	<mark>ቼ C.1, C.2</mark>
Other specs affected:	YN%XAOther core specificationsXTest specificationsXO&M Specifications
Other comments:	¥

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <u>http://www.3gpp.org/specs/CR.htm</u>. 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.

C.1 Routing Area Identities

A possible way to support inter-PLMN roaming is discussed very briefly in this sub-section.

When an MS roams between two SGSNs within the same PLMN, the new SGSN finds the address to the old SGSN by the association old RA - old SGSN. Thus, each SGSN knows the address to every other SGSN in the PLMN.

When an MS roams from an SGSN to an SGSN in another PLMN, the new SGSN may not itself have access to the address to the old SGSN. Instead, the SGSN transforms the old RA information to a logical name of the form:

RACxxxx.LACyyyy.MNCzzzz.MCCwwww.GPRS; x and,y,z and w shall be Hex coded digits. z and w shall be encoded as single digits (in the range of 0-9)., where z and w are in the range of 0 9.

If there are less than 4 significant digits in xxxx, yyyy, zzzz, wwww, one or more "0" digit(s) is/are inserted at the left side to fill the 4 digits HEX-coding.

As an example, the logical name for RAC 123A, LAC 234B, MCC 167 and MNC 92 shall be coded in the DNS as *RAC123A.LAC234B.MNC0092.MCC0167.GPRS*.

The SGSN may then acquire the IP address of the old SGSN from a DNS server, using the logical address. Every PLMN should include one DNS server each. Note that these DNS servers are GPRS internal entities, unknown outside the GPRS system.

The above implies that at least MCC + MNC + RAC + LAC (= RAI) is sent as RA parameter over the radio when an MS roams to another RA.

If the new SGSN for any reason fails to obtain the address of the old SGSN, the same actions as when the corresponding event occurs within one PLMN are taken.

Introducing the DNS concept in GPRS gives a general possibility to use logical names instead of IP addresses when referring to e.g. GSNs, thus providing flexibility in addressing of PLMN nodes.

Another way to support seamless inter-PLMN roaming is to store the SGSN IP addresses in HLR and request them when necessary.

C.2 GPRS Support Nodes

In this sub-section a naming convention for GSNs is described.

It shall be possible to refer to a GSN by a logical name that shall then be translated into a physical IP address. Here a GSN naming convention is proposed which would make it possible for an internal GPRS DNS server to make the translation.

An example of how a logical name of a SGSN could look like is:

SGSNxxxx.MNCyyyy.MCCzzzz.GPRS; $x, y \text{ and } z \text{ shall be Hex coded digits}, y \text{ and } z \text{ shall be encoded as single digits (in the range of 0-9). where z and y are in the range of 0-9.$

If there are less than 4 significant digits in xxxx, yyyy, zzzz, one or more "0" digit(s) is/are inserted at the left side to fill the 4 digits coding.

As an example, the logical name for SGSN 12B34, MCC 167 and MNC 92 shall be coded in the DNS as <u>SGSN12B34</u>. MNC0092.MCC0167.GPRS.

N4-021065

CHANGE REQUEST											CR-Form-v7
æ		23.003 C	R <mark>047</mark>	жre	θV	2	ж	Current vers	ion:	4.4.0	ж
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Reason for change: ೫	The current definition of logical, names allows different interpretations for logical names regarding MNC and MCC
Summary of change: #	The range for MNC is limited to the digits 0-9 and an example is added
Consequences if % not approved:	methode for logical name for one MNC-MCC combination: i.e. MCC=167, MNC=92 1) RACxxxx.LACyyyy.MNC0092.MCC0167 or
	RACxxxx.LACyyyy.MNC005C.MCC00A7

Clauses affected:	<mark>೫ C.1, C.2</mark>
Other specs affected:	Y N % X Other core specifications % X Test specifications X O&M Specifications
Other comments:	¥

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C.1 Routing Area Identities

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When an MS roams from an SGSN to an SGSN in another PLMN, the new SGSN may not itself have access to the address to the old SGSN. Instead, the SGSN transforms the old RA information to a logical name of the form:

RACxxxx.LACyyyy.MNCzzzz.MCCwwww.GPRS; x, and y, z and w shall be Hex coded digits, z and w shall be encoded as single digits (in the range of 0-9). where z and w are in the range of 0-9.

If there are less than 4 significant digits in xxxx, yyyy, zzzz, wwww, one or more "0" digit(s) is/are inserted at the left side to fill the 4 digits HEX-coding.

As an example, the logical name for RAC 123A, LAC 234B, MCC 167 and MNC 92 shall be coded in the DNS as *RAC123A.LAC234B.MNC0092.MCC0167.GPRS*.

The SGSN may then acquire the IP address of the old SGSN from a DNS server, using the logical address. Every PLMN should include one DNS server each. Note that these DNS servers are GPRS internal entities, unknown outside the GPRS system.

The above implies that at least MCC + MNC + RAC + LAC (= RAI) is sent as RA parameter over the radio when an MS roams to another RA.

If the new SGSN for any reason fails to obtain the address of the old SGSN, the same actions as when the corresponding event occurs within one PLMN are taken.

Introducing the DNS concept in GPRS gives a general possibility to use logical names instead of IP addresses when referring to e.g. GSNs, thus providing flexibility in addressing of PLMN nodes.

Another way to support seamless inter-PLMN roaming is to store the SGSN IP addresses in HLR and request them when necessary.

C.2 GPRS Support Nodes

In this sub-section a naming convention for GSNs is described.

It shall be possible to refer to a GSN by a logical name that shall then be translated into a physical IP address. Here a GSN naming convention is proposed which would make it possible for an internal GPRS DNS server to make the translation.

An example of how a logical name of a SGSN could look like is:

SGSNxxxx.MNCyyyy.MCCzzzz.GPRS; $x_{,y}$ and z shall be Hex coded digits, where y and z shall be encoded as single digits (in the range of 0-9)..z and y are in the range of 0-9.

If there are less than 4 significant digits in xxxx, yyyy, zzzz, one or more "0" digit(s) is/are inserted at the left side to fill the 4 digits coding.

As an example, the logical name for SGSN 1B34, MCC 167 and MNC 92 shall be coded in the DNS as *SGSN1B34. MNC0092.MCC0167.GPRS.*

N4-021080

CHANGE REQUEST												CR-Form-v7
¥		23.003	CR	048	ж г	ev	3	ж	Current vers	ion:	5.3.0	ж
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Title:	ж	Clarificati	on on t	he definition	n of DN	S						
Source:	ж	CN4										
Work item code:	ж	GPRS							Date: ೫	01/	08/2002	
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Reason for change: ೫	The current definition of logical, names allows different interpretations for logical names regarding MNC and MCC
Summary of change: #	The range for MNC is limited to the digits 0-9 and an example is added
Consequences if # not approved:	Inconsistent implementationsare possible. The current definition allows two methode for logical name for one MNC-MCC combination: i.e. MCC=167, MNC=92 1) RACxxxx.LACyyyy.MNC0092.MCC0167 or RACxxxx.LACyyyy.MNC005C.MCC00A7

Clauses affected:	¥ C.1, C.2
Other specs affected:	Y N % X Other core specifications % X Test specifications X O&M Specifications
Other comments:	¥

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When an MS roams between two SGSNs within the same PLMN, the new SGSN finds the address to the old SGSN by the association old RA - old SGSN. Thus, each SGSN knows the address to every other SGSN in the PLMN.

When an MS roams from an SGSN to an SGSN in another PLMN, the new SGSN may not itself have access to the address to the old SGSN. Instead, the SGSN transforms the old RA information to a logical name of the form:

RACxxxx.LACyyyy.MNCzzzz.MCCwwww.GPRS; $x_{and y,z}$ and w_{shall} be Hex coded digits <u>z and w shall be</u> encoded as single digits (in the range of 0-9)., where z and w are in the range of 0-9.

If there are less than 4 significant digits in xxxx, yyyy, zzzz, wwww, one or more "0" digit(s) is/are inserted at the left side to fill the 4 digits HEX coding.

As an example, the logical name for RAC 123A, LAC 234B, MCC 167 and MNC 92 shall be coded in the DNS as *RAC123A.LAC234B.MNC0092.MCC0167.GPRS*.

The SGSN may then acquire the IP address of the old SGSN from a DNS server, using the logical address. Every PLMN should include one DNS server each. Note that these DNS servers are GPRS internal entities, unknown outside the GPRS system.

The above implies that at least MCC + MNC + RAC + LAC (= RAI) is sent as RA parameter over the radio when an MS roams to another RA.

If the new SGSN for any reason fails to obtain the address of the old SGSN, the same actions as when the corresponding event occurs within one PLMN are taken.

Introducing the DNS concept in GPRS gives a general possibility to use logical names instead of IP addresses when referring to e.g. GSNs, thus providing flexibility in addressing of PLMN nodes.

Another way to support seamless inter-PLMN roaming is to store the SGSN IP addresses in HLR and request them when necessary.

If Intra Domain Connection of RAN Nodes to Multiple CN Nodes [23] is applied then the Network Resource Identifier (NRI) identifies uniquely a given SGSN node out of all SGSNs serving the same pool area.

- If the new SGSN is not able to extract the NRI from the old P-TMSI, it shall retrieve the address of the default SGSN [23] serving the old RA, using the logical name described earlier in this section. The default SGSN in the old RA relays the GTP signalling to the old SGSN identified by the NRI in the old P-TMSI unless the default SGSN itself is the old SGSN.

If the new SGSN is able to extract NRI from old P-TMSI, then it shall attempt to derive the address of the old SGSN from the NRI and the old RAI. NRI-to-SGSN assignments may be either configured (by O&M) in the new SGSN, or retrieved from DNS. If DNS is used, it shall be queried using the following logical name, derived from old RAI and NRI information:

NRIxxxx.RACyyyy.LACzzzz.MNCvvvv.MCCwwww.GPRS

 $x,y_{\overline{2}}$ and z,v and w shall be Hex coded digits, v and w shall be encoded as single digits (in the range of 0-9). If there are less than 4 significant digits in xxxx, yyyy, zzzz, vvvv, wwww, one or more "0" digit(s) is/are inserted at the left side to fill the 4 digits Hex coding.

As an example, the logical name for NRI 3A, RAC 123A, LAC 234B, MCC 167 and MNC 92 shall be coded in the DNS as *NRI003A.RAC123A.LAC234B.MNC0092.MCC0167.GPRS*.

If the new SGSN for any reason fails to obtain the address of the old SGSN using this method, then as a fallback method it shall retrieve the address of the default SGSN serving the old RA.

C.2 GPRS Support Nodes

In this sub-section a naming convention for GSNs is described.

It shall be possible to refer to a GSN by a logical name that shall then be translated into a physical IP address. Here a GSN naming convention is proposed which would make it possible for an internal GPRS DNS server to make the translation.

An example of how a logical name of a SGSN could look like is:

SGSNxxxx.MNCyyyy.MCCzzzz.GPRS; single digits (in the range of 0-9)..

x, *y* and *z* shall be Hex coded digits, <u>y</u> and <u>z</u> shall be encoded as

If there are less than 4 significant digits in xxxx, yyyy, zzzz, one or more "0" digit(s) is/are inserted at the left side to fill the 4 digits coding.

As an example, the logical name for SGSN 1B34, MCC 167 and MNC 92 shall be coded in the DNS as SGSN1B34. MNC0092.MCC0167.GPRS.

Tdoc **#N4-020985**

	CHANGE REQUEST										
ж		29.060 CR 324 # rev	1	Ħ	Current vers	ion:	5.2.0	¥			
For <u>HELP</u> or	n u	sing this form, see bottom of this page o	r look	at th	e pop-up text	over	the	nbols.			
Proposed chang	je a	affects: UICC apps೫ ME	Ra	dio A	ccess Networ	·k 📃	Core Ne	twork X			
Title:	ж	Incorrect references									
Source:	ж	CN4									
Work item code:	; X	TEI5			<i>Date:</i>	23/0	07/2002				
Category:	Ħ	 F Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an ease (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories be found in 3GPP <u>TR 21.900</u>. 			R97 R98 R99 Rel-4	the fol (GSM (Relea (Relea (Relea (Relea (Relea	-	pases:			

Reason for change: ೫	Incorrect references.
5	
Summary of change: #	Referenced TS corrected, i.e. 32.015 => 32.215, 03.60 => 23.060 and 04.08 => 24.008.
Consequences if #	Risk for missunderstandings
not approved:	
Clauses affected: #	7.7.23, 7.7.36
Other specs #	Y N X Other core specifications #
affected:	X Test specifications X O&M Specifications
Other comments: #	

How to create CRs using this form:

- 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.

**** START OF MODIFICATION ****

7.7.23 Charging Characteristics

The charging characteristics information element is a way of informing both the SGSN and GGSN of the rules for producing charging information based on operator configured triggers. For the encoding of this information element see TS-3GPP TS 32.015215.

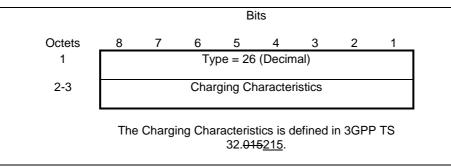


Figure 31: Charging Characteristics Information Element

**** END OF MODIFICATION ****

**** START OF MODIFICATION ****

7.7.36 Traffic Flow Template (TFT)

The Traffic Flow Template (TFT) is used to distinguish between different user traffic flows.

The content and the coding of the TFT are defined in 3GPP TS 24.008.

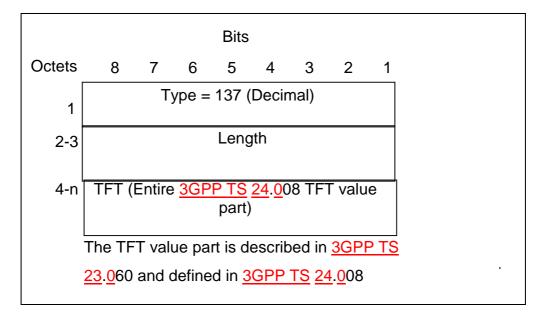


Figure 50: Traffic Flow Template Information Element

**** END OF MODIFICATION ****

N4-021067

	CHANGE REQUEST		CR-Form-v7
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Proposed chang	using this form, see bottom of this page or look at the e affects: UICC apps # ME Radio Ac	cess Networ	
Title:	Clarification on the coding of RANAP cause value		
Source:	f CN4		
Work item code:	GTP enhancements	<i>Date:</i>	31/07/2002
Category:	 F Use <u>one</u> 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 <u>TR 21.900</u>. 	2 R96 R97 R98 R99 Rel-4	R99 the following releases: (GSM Phase 2) (Release 1996) (Release 1997) (Release 1998) (Release 1999) (Release 4) (Release 4) (Release 5) (Release 6)

Reason for change: ೫	Critical correction
	Only a hint to 25.413 is not sufficient because in 25.413 the RANAP cause is defined as a choice (1 bit for extension) of 6 groups (3 bits) and the largest group has a range of 1-64 (6 bits) so we need 10 bits. 29.060 reserves only one octet for the RANAP cause value. No mapping of the different codings is defined
Summary of change: भ्र	A definition is added that the RANAP cause value is the integer value of the cause defined in 25.413 decremented by 1
Consequences if % not approved:	Definition of the mapping of RANAP cause value from Iu to GTP is not defined. This leads to interoperability problems.

Clauses affected:	% 7.7.18
Other specs affected:	Y N X Other core specifications % X Test specifications % X O&M Specifications
Other comments:	¥

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7.7.18 RANAP Cause

The RANAP Cause information element contains the cause as defined in 3GPP TS 25.413. The value part (which has a range of 1..2565) of the RANAP Cause IE which is transferred over the Iu interface is encoded into one octet-by subtracting 1 from the binary encoding of the value part of the RANAP Cause IE.

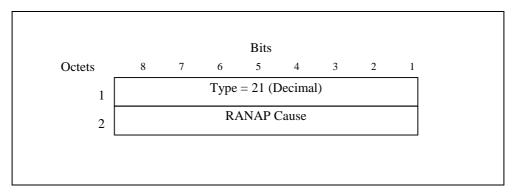


Figure 26: RANAP Cause Information Element

N4-021068

				CHANG	E RE	EQI	JE	ST	I					CR-Form-v7
ж		29.06	0 CR	327	жrе	€V	1	ж	Curre	nt ver	sion:	4.4	.0	ж
For HELF	2 on u	sing this	form, se	e bottom of th	is page	e or le	ook a	at the	e pop-l	up tex	t over	the #	s syn	nbols.
Proposed ch	ange a	affects:	UICC a	apps# <mark></mark>	ME	≡ 🦲	Rad	lio A	ccess	Netwo	ork 📃	Cor	e Ne	etwork X
Title:	ж	Clarific	ation on	the coding of	RANA	P cau	usev	alue						
Source:	ж	CN4												
Work item co	ode: ೫	GTP e	nhancem	ients					D	ate: ¥	3 <mark>26</mark> /	/06/20	02	
Category:	¥	Use <u>one</u> F (0 A (B (C (Detailed	correction, correspon addition o functional editorial n explanatio	owing categorie) ds to a correcti f feature), modification of nodification) ons of the abov <u>TR 21.900</u> .	ion in ar f feature	e)		lease	Use 2 F F F F F F	ase: # <u>one</u> o 296 297 298 299 201-5 201-5 201-5	f the fo (GSI (Rele (Rele (Rele (Rele (Rele		se 2) 996) 997) 998) 999))	pases:
Reason for c	hange	de ha	efined as as a rang	to 25.413 is a choice (1 b e of 1-64 (6 b NAP cause va	it for ex its) so	xtens we n	ion) eed	of 6 10 b	groups its. 29.	s (3 bi .060 r	ts) an eservo	d the es onl	large y one	est group e octet

Summary of change: # A definition mapping of is added that the RANAP cause value from lu to GTP is the integer value of the cause defined in 25.413 decremented by 1

Consequences if	ж	Definition of the RANAP cause value is not defined. This leads to interoperability
not approved:		problems
		•

Clauses affected:	¥ 7.7.18
Other specs affected:	Y N X Other core specifications % X Test specifications % X O&M Specifications %
Other comments:	ж

How to create CRs using this form:

- 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.

7.7.18 RANAP Cause

The RANAP Cause information element contains the cause as defined in 3GPP TS 25.413. The value part (which has a range of 1..2565) of the RANAP Cause IE which is transferred over the Iu interface is encoded into one octet-by subtracting 1 from the binary encoding of the value part of the RANAP Cause IE.

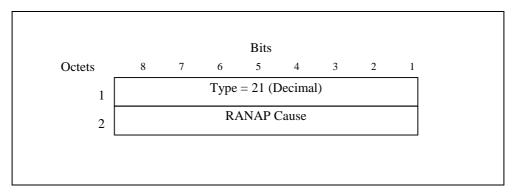


Figure 26: RANAP Cause Information Element

N4-021069

			(CHANGE	EREQ	UE	ST				CR-Form-v7
¥		29.060	CR	328	жrev	1	ж	Current vers	ion:	5.2.0	ж
For <u>HELP</u> of	n u:	sing this fo	orm, see	e bottom of thi	s page or	· look	at the	e pop-up text	over	the	nbols.
Proposed chang	je a	affects:	UICC a	apps#	ME	Rad	dio A	ccess Networ	k 📃	Core Ne	twork X
Title:	ж	Clarifica	tion on t	the coding of I	RANAP c	ausev	alue				
Source:	ж	CN4									
Work item code.	: X	GTP enh	nancem	ents				<i>Date:</i>	26/0	06/2002	
Category:	ж	F (co A (co B (ac C (fu D (eo Detailed et	rrection) prrespon Idition of nctional litorial m xplanatic	owing categorie ds to a correctio f feature), modification of iodification) ons of the above <u>TR 21.900</u> .	on in an ea feature)			Release: ₩ Use <u>one</u> of 2 9) R96 R97 R98 R99 Rel-4 Rel-5 Rel-6	the fol (GSM (Relea (Relea (Relea (Relea (Relea		pases:

Reason for change: ೫	Only a hint to 25.413 is not sufficient because in 25.413 the RANAP cause is defined as a choice (1 bit for extension) of 6 groups (3 bits) and the largest group has a range of 1-64 (6 bits) so we need 10 bits. 29.060 reserves only one octet for the RANAP cause value. No mapping of the different codings is defined
Summary of change:	A definition is added that the RANAP cause value is the integer value of the cause defined in 25.413 decremented by 1
Consequences if % not approved:	Definition of the mapping of RANAP cause value from Iu to GTP is not defined. This leads to interoperability problems.

Clauses affected:	¥ 7.7.18
Other specs affected:	Y N X Other core specifications ¥ X Test specifications ¥ X O&M Specifications 4
Other comments:	ж

How to create CRs using this form:

- 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.

7.7.18 RANAP Cause

The RANAP Cause information element contains the cause as defined in 3GPP TS 25.413. The value part (which has a range of 1..2565) of the RANAP Cause IE which is transferred over the Iu interface is encoded into one octet-by subtracting 1 from the binary encoding of the value part of the RANAP Cause IE.

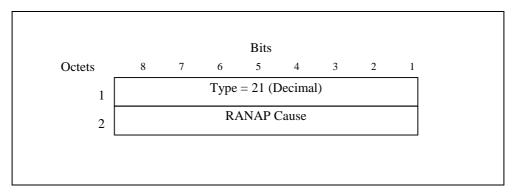


Figure 26: RANAP Cause Information Element

N4-021061

	CHANGE REQUEST		CR-Form-v7
æ	29.060 CR 330 #rev 1 [#]	Current vers	^{ion:} <mark>3.13.0</mark> [≇]
For <u>HELP</u> or	using this form, see bottom of this page or look at th	e pop-up text	over the # symbols.
Proposed chang	e affects: UICC apps# ME Radio A	ccess Networ	k Core Network X
Title:	Setting PDP ID after inter-SGSN RAU using GTF	° v0	
Source:	ቼ CN4		
Work item code:	# GPRS	<i>Date:</i>	31 July 2002
Category:	 F Use <u>one</u> 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 <u>TR 21.900</u>. 	2 R96 R97 R98 R99 R99 Rel-4	R99 the following releases: (GSM Phase 2) (Release 1996) (Release 1997) (Release 1998) (Release 1999) (Release 4) (Release 5) (Release 6)

Reason for change: 🕷	Critical correction
	Deficiency in GTPv0 results in that the old SGSN_1 cannot pass the 'PDP Context Identifier' IE to the next SGSN_2 in the SGSN Context Response message. It's too late to add this IE to the protocol. SGSN_2 would have a set of PDP contexts without PDP IDs. Later SGSN_2 would send the SGSN Context Response message to the next SGSN_3. However, SGSN_2 would not be able to determine a right value for the 'PDP Context Identifier' IE in each the PDP Context IE. It is proposed to use a PDP Context ID value (1111 1111) ₂ for such cases.
Summary of change: ೫	Once SGSN does not have valid value for PDP IDs, it shall set the values to binary (1111 1111).
Consequences if % not approved:	Possible problems in the SGSN once PDP Context IDs are missing and the SGSN has to send the SGSN Context Response message.
Clauses affected: #	7.7.29
Other specs % affected:	YNXOther core specifications#XZ3.060 CR 376XTest specifications

· · · · · · · · · · · · · · · · · · ·	20881) to S2 "in reply to the LS on Setting of PDP Context pr-SGSN RAU from GTPv0-only SGSN (S2-022052)".

How to create CRs using this form:

- 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 <u>ftp://ftp.3gpp.org/specs/</u> 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 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 Uplink Tunnel 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. <u>The SGSN should</u>shall set the value of <u>PDP Context Identifier to binary (1111 1111) if after inter-SGSN RAU using GTPv0 the new SGSN is not able to</u> 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.

1		Type = 130 (Decimal)						
2-3				Len				
4	Res-	VAA	Res-	Ord	NSAPI			
	erved		erve	er				
			d	0.				
5	Х	Х	Х	Х	SAPI			
6	QoS Sub Length							
7 - (q+6)					[4255]			
q+7					ղ Length			
(q+8)-(2q+7)					[4255]			
2q+8					J. Length			
(2q+9)-			G	loS Neg	[4255]			
(3q+8)		<u> </u>		Niumala				
(3q+9)- (3q+10)		36	quence		er Down (SND) ¹⁾			
(3q+10) (3q+11)-		5	equen		ber Up (SNU) ¹⁾			
(3q+12)	Sequence Number Up (SNU) ¹⁾							
3q+13	Send N-PDU Number ¹⁾							
3q+14	Receive N-PDU Number ¹⁾							
(3q+15)-	Uplink Tunnel Endpoint Identifier Control Plane							
(3q+18)								
(3q+19)-	UplinkTunnel Endpoint Identifier Data I							
(3q+22)		· · ·						
3q+23			PDF	^o Conte	xt Identifier			
3q+24		Spare	1111		PDP Type Organisation			
3q+25					e Number			
3q+26					ess Length			
(3q+27)-m					ess [163]			
m+1					control plane Length			
(m+2)-n		GGS	N Addr	ess for	control plane [416]			
n+1		GGSN	Addre	ess for	User Traffic Length			
(n+2)-o		GGSN	Addre		User Traffic [416]			
o+1				APN I				
(o+2)-p				AF				
p+1	Spa	re (sen			Transaction Identifier			
p+2					n Identifier			
Figu	ire 43:	PDP (Contex	kt Info	mation Element			

1) 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

VPLMN Address Allowed	Value (Decimal)
No	0
Yes	1

N4-021062

								CR-Form-v7
CHANGE REQUEST								
ж		29.060 CR 330	жrev	v 1	ж	Current versi	on: 4.4.0	ж
				•			7.7.0	
For <u>HELP</u>	on u	sing this form, see bottom	of this page	or look	at the	e pop-up text	over the # sy	mbols.
Proposed cha	nao :	affects: UICC apps#	ME	Rac	tio Ar	ccess Networ	k Core N	etwork X
r roposcu cha	nge			nac				
Title:	ж	Setting PDP ID after inte	r-SGSN RAI	J using	GTP	v0		
				Ū				
Source:	ж	CN4						
Work item coa	le: Ж	GPRS				Date: ೫	31 July 200	2
Category:	ж	Α				Release: ೫	Rel-4	
		Use one of the following cate	egories:				the following re	
		F (correction)					(GSM Phase 2	/
		A (corresponds to a co	rrection in an	earlier re	elease		(Release 1996	·
		B (addition of feature),					(Release 1997	
		C (functional modification					(Release 1998	
		D (editorial modification				R99	(Release 1999)
		Detailed explanations of the		ries can		Rel-4	(Release 4)	
		be found in 3GPP TR 21.900	<u>)</u> .			Rel-5	(Release 5)	
						Rel-6	(Release 6)	

Reason for change: #	Critical correction
	Deficiency in GTPv0 results in that the old SGSN_1 cannot pass the 'PDP Context Identifier' IE to the next SGSN_2 in the SGSN Context Response message. It's too late to add this IE to the protocol. SGSN_2 would have a set of PDP contexts without PDP IDs. Later SGSN_2 would send the SGSN Context Response message to the next SGSN_3. However, SGSN_2 would not be able to determine a right value for the 'PDP Context Identifier' IE in each the PDP Context IE. It is proposed to use a PDP Context ID value (1111 1111) ₂ for such cases.
Summary of change: ೫	Once SGSN does not have valid value for PDP IDs, it shall set the values to binary (1111 1111).
Consequences if % not approved:	Possible problems in the SGSN once PDP Context IDs are missing and the SGSN has to send the SGSN Context Response message.
Clauses affected: #	7.7.29
Ciauses affected: #	1.1.23
	YN
Other specs % affected:	

· · · · · · · · · · · · · · · · · · ·	20881) to S2 "in reply to the LS on Setting of PDP Context pr-SGSN RAU from GTPv0-only SGSN (S2-022052)".

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 <u>ftp://ftp.3gpp.org/specs/</u> 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 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 Uplink Tunnel 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. <u>The SGSN should</u>shall set the value of <u>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.</u>

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.

1		Type = 130 (Decimal)						
2-3				Len				
4	Res-	VAA	Res-	Ord	NSAPI			
	erved		erve	er				
			d	0.				
5	Х	Х	Х	Х	SAPI			
6	QoS Sub Length							
7 - (q+6)					[4255]			
q+7					ղ Length			
(q+8)-(2q+7)					[4255]			
2q+8					J. Length			
(2q+9)-			G	loS Neg	[4255]			
(3q+8)		<u> </u>		Niumala				
(3q+9)- (3q+10)		36	quence		er Down (SND) ¹⁾			
(3q+10) (3q+11)-		5	equen		ber Up (SNU) ¹⁾			
(3q+12)	Sequence Number Up (SNU) ¹⁾							
3q+13	Send N-PDU Number ¹⁾							
3q+14	Receive N-PDU Number ¹⁾							
(3q+15)-	Uplink Tunnel Endpoint Identifier Control Plane							
(3q+18)								
(3q+19)-	UplinkTunnel Endpoint Identifier Data I							
(3q+22)		· · ·						
3q+23			PDF	^o Conte	xt Identifier			
3q+24		Spare	1111		PDP Type Organisation			
3q+25					e Number			
3q+26					ess Length			
(3q+27)-m					ess [163]			
m+1					control plane Length			
(m+2)-n		GGS	N Addr	ess for	control plane [416]			
n+1		GGSN	Addre	ess for	User Traffic Length			
(n+2)-o		GGSN	Addre		User Traffic [416]			
o+1				APN I				
(o+2)-p				AF				
p+1	Spa	re (sen			Transaction Identifier			
p+2					n Identifier			
Figu	ire 43:	PDP (Contex	kt Info	mation Element			

1) 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

VPLMN Address Allowed	Value (Decimal)
No	0
Yes	1

N4-021063

			CHANGI	EREC	UE	ST				CR-Form-v7
¥	29	<mark>.060</mark> CR	330	жrev	1	ж	Current vers	ion:	5.2.0	ж
For <u>HELP</u> or	using	this form, see	e bottom of th	is page oi	r look	at the	e pop-up text	over ti	he	nbols.
Proposed chang	e affec	ts: UICC a	apps#	ME	Rad	dio A	ccess Networ	'k 📃	Core Ne	twork X
Title:	ដ <mark>ី Se</mark> t	tting PDP ID	after inter-SG	SN RAU	using	GTP	v0			
Source:	ж <mark>СN</mark>	4								
Work item code:	<mark>ដ GP</mark>	RS					Date: ೫	31 J	uly 2002	
Category:	Deta	 <i>F</i> (correction) <i>A</i> (correspond <i>B</i> (addition of <i>C</i> (functional <i>D</i> (editorial maginal 	ds to a correcti feature), modification of odification) ons of the abov	on in an ea feature)			Release: ℜ Use <u>one</u> of 2 9) R96 R97 R98 R99 Rel-4 Rel-5 Rel-6	the foll (GSM (Relea (Relea (Relea	owing rele Phase 2) ase 1996) ase 1997) ase 1998) ase 1999) ase 4) ase 5)	eases:

Reason for change: #	Critical correction
	Deficiency in GTPv0 results in that the old SGSN_1 cannot pass the 'PDP Context Identifier' IE to the next SGSN_2 in the SGSN Context Response message. It's too late to add this IE to the protocol.
	SGSN_2 would have a set of PDP contexts without PDP IDs. Later SGSN_2 would send the SGSN Context Response message to the next SGSN_3. However, SGSN_2 would not be able to determine a right value for the 'PDP Context Identifier' IE in each the PDP Context IE.
	It is proposed to use a PDP Context ID value $(1111\ 1111)_2$ for such cases.
Summary of change: #	Once SGSN does not have valid value for PDP IDs, it shall set the values to binary (1111 1111).
Consequences if % not approved:	Possible problems in the SGSN once PDP Context IDs are missing and the SGSN has to send the SGSN Context Response message.
Clauses affected: %	7.7.29
	ΥΝ
Other specs % affected:	XOther core specifications#23.060 CR 378XTest specifications#

· · · · · · · · · · · · · · · · · · ·	20881) to S2 "in reply to the LS on Setting of PDP Context pr-SGSN RAU from GTPv0-only SGSN (S2-022052)".

How to create CRs using this form:

- 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 <u>ftp://ftp.3gpp.org/specs/</u> 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 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 Uplink Tunnel 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. <u>The SGSN should</u>shall set the value of <u>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.</u>

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.

1			Tvp	e = 130) (Decimal)				
2-3				Len					
4	Res-	VAA	Res-	Ord	NSAPI				
	erved		erve	er					
			d	0.					
5	Х	Х	Х	Х	SAPI				
6			C	oS Sub	b Length				
7 - (q+6)	QoS Sub [4255]								
q+7					ղ Length				
(q+8)-(2q+7)					[4255]				
2q+8					J. Length				
(2q+9)-			G	loS Neg	[4255]				
(3q+8)		<u> </u>		Niumala					
(3q+9)- (3q+10)		36	quence		er Down (SND) ¹⁾				
(3q+10) (3q+11)-		5	equen		ber Up (SNU) ¹⁾				
(3q+12)	Sequence Number Up (SNU) ¹⁾								
3q+13	Send N-PDU Number ¹⁾								
3q+14	Receive N-PDU Number ¹⁾								
(3q+15)-	Uplink Tunnel Endpoint Identifier Control Plane								
(3q+18)									
(3q+19)-	UplinkTunnel Endpoint Identifier Data I								
(3q+22)									
3q+23			PDF	^o Conte	xt Identifier				
3q+24		Spare	1111		PDP Type Organisation				
3q+25					e Number				
3q+26					ess Length				
(3q+27)-m					ess [163]				
m+1					control plane Length				
(m+2)-n		GGS	N Addr	ess for	control plane [416]				
n+1		GGSN	Addre	ess for	User Traffic Length				
(n+2)-o		GGSN	Addre		User Traffic [416]				
o+1				APN I					
(o+2)-p				AF					
p+1	Spa	re (sen			Transaction Identifier				
p+2					n Identifier				
Figu	ire 43:	PDP (Contex	kt Info	mation Element				

1) 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

VPLMN Address Allowed	Value (Decimal)
No	0
Yes	1

N4-020921

		CHANGE REQUEST		CR-Form-v7
ж		29.060 CR 334 #rev - ^{# C}	Current vers	^{ion:} 3.13.0 [#]
For <u>HELP</u> or	า นะ	sing this form, see bottom of this page or look at the	pop-up text	over the # symbols.
Proposed chang	e a	affects: UICC apps# ME Radio Acc	cess Networ	k Core Network X
Title:	Ж	Removing inconsistency in definition of PDP Addre	ss length	
Source:	ж	CN4		
Work item code:	ж	GPRS	<i>Date:</i>	17/07/2002
Category:	æ	 F Use <u>one</u> 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 <u>TR 21.900</u>. 	Release: ₩ Use <u>one</u> of 2 R96 R97 R98 R99 Rel-4 Rel-5 Rel-6	R99 the following releases: (GSM Phase 2) (Release 1996) (Release 1997) (Release 1998) (Release 1999) (Release 4) (Release 5) (Release 6)

Reason for change: ೫	There is an inconsitency in 29.060 in the definition of the length of the PDP Address. In chapter 7.7.29 the length of the 'pure' PDP Address is defined as [163]. I.e. even if no PDP Address shall be provided, this IE cannot be empty. In the same chapter a reference is given to chapter 7.7.27, where the same Address can be of length 0.							
Summary of change: #	7.7.29: Change length of PDP Address to [063].							
canna, cronanger n	······································							
	The incomplete state of the state will be added different time because the second to							
	The inconsistent definition will lead to different implementations and to							
not approved:	interoperability problems.							
Clauses affected: #	7.7.29							
Other specs % affected:	Y N X Other core specifications X Test specifications X O&M Specifications							

How to create CRs using this form:

ж

Other comments:

- 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.

**** FOR INFORMATION ****

7.7.27 End User Address

The purpose of the End User Address information element shall be to supply protocol specific information of the external packet data network accessed by the GPRS subscriber.

The Length field value shall be 2 in an End User Address information element with an empty PDP Address.

The PDP Type defines the end user protocol to be used between the external packet data network and the MS and is divided into an Organisation field and a Number field.

The PDP Type Organisation is the organisation that is responsible for the PDP Type Number field and the PDP Address format.

For PPP the PDP Type Organisation is ETSI and the PDP Type Number is 1 and there shall be no address in the End User Address IE. In this case the address is negotiated later as part of the PPP protocol.

If the PDP Type Organisation is IETF, the PDP Type Number is a compressed number (i.e. the most significant HEX(00) is skipped) in the "Assigned PPP DLL Protocol Numbers" list in the most recent "Assigned Numbers" RFC (RFC 1700 or later). The most recent "Assigned PPP DLL Protocol Numbers" can also be found using the URL = ftp://ftp.isi.edu/in-notes/iana/assignments/ppp-numbers.

The PDP Address shall be the address that this PDP context of the MS is identified with from the external packet data network.

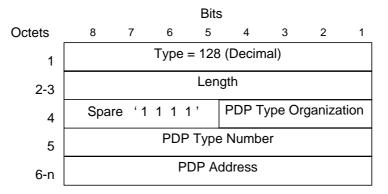


Figure 35: End User Address Information Element

Table 44: PDP Type Organisation Values

PDP Type Organisation	Value (Decimal)						
ETSI	0						
IETF	1						
All other values are reserved							

Table 45: ETSI defined PDP Type Values

PDP Type Number	Value (Decimal)					
PPP	1					
All other values are reserved						

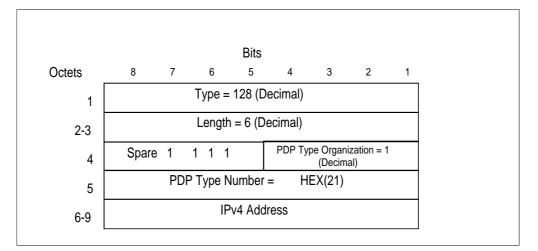


Figure 36: End User Address Information Element for IPv4

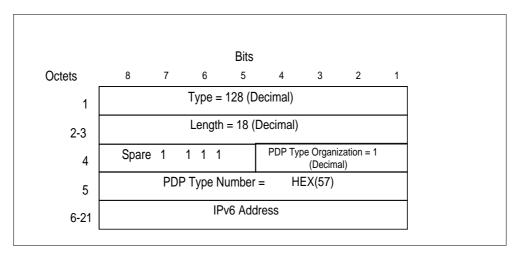


Figure 37: End User Address Information Element for IPv6

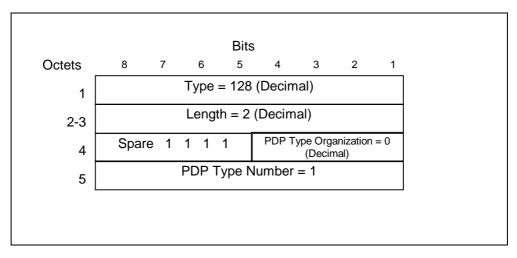


Figure 38: End User Address Information Element for PPP

**** FOR INFORMATION ****

**** START OF MODIFICATION ****

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 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 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.

1			Tvp	e = 130) (Decimal)				
2-3				Ler					
4	Res-	VAA	Res-	Ord	NSAPI				
	erved		erve	er	_				
			d	0.					
5	Х	Х	Х	Х	SAPI				
6				oS Sul	o Length				
7 - (q+6)	QoS Sub [4255]								
q+7					q Length				
(q+8)-(2q+7)					[4255]				
2q+8					g. Length				
(2q+9)-			G	oS Neg	g [4255]				
(3q+8)		<u> </u>		Nicconte	er Down (SND) ¹⁾				
(3q+9)- (3q+10)		56	quence	amuni e	er Down (SND)				
(3q+10) (3q+11)-		Sequence Number Up (SNU) ¹⁾							
(3q+12)	Sequence Number Op (SNO)								
3q+13	Send N-PDU Number ¹⁾								
3q+14	Receive N-PDU Number ¹⁾								
(3q+15)-	Uplink Tunnel Endpoint Identifier Control Plane								
(3q+18)									
(3q+19)-	UplinkTunnel Endpoint Identifier Data I								
(3q+22)									
3q+23			PDF	^o Conte	xt Identifier				
3q+24		Spare	1111		PDP Type Organisation				
3q+25					e Number				
3q+26					ess Length				
(3q+27)-m					ess [<u>0</u> 463]				
m+1					control plane Length				
(m+2)-n					control plane [416]				
n+1		GGSN	Addre	ess for	User Traffic Length				
(n+2)-o		GGSN	Addro	ess for	User Traffic [416]				
o+1				APN I					
(o+2)-p				AF					
p+1	Spa	re (sen	t as 0 0	0 0)	Transaction Identifier				
p+2					n Identifier				
Figu	ire 43:	PDP (Contex	ct Info	rmation Element				

1) 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

VPLMN Address Allowed	Value (Decimal)
No	0
Yes	1

**** END OF MODIFICATION ****

N4-020922

CHANGE REQUEST										CR-Form-v7	
¥		<mark>29.060</mark>	CR <mark>335</mark>	5	# rev	-	ж	Current vers	ion: <mark>4</mark> .	4.0	ж
For <u>HELP</u> of	n us	ing this for	m, see bott	om of this _l	bage or	look	at th	e pop-up text	over the	ж syn	nbols.
Proposed chang	ge a	ffects: l	JICC apps¥	€ <mark></mark>	ME	Rac	dio A	ccess Networ	k C	ore Ne	twork X
Title:	ж	Removing	<mark>j inconsiste</mark>	ncy in defir	nition of	PDP	Add	ress length			
Source:	ж	CN4									
Work item code.	: #	GPRS						Date: ೫	17/07/2	2002	
Category:	1	F (corr A (corr B (add C (fund D (edit Detailed exp	the following rection) responds to a lition of featu ctional modific olanations of 3GPP <u>TR 21</u>	a correction ire), ication of fea ation) the above c	ature)		elease	Release: ¥ Use <u>one</u> of 2 9) R96 R97 R98 R99 Rel-4 Rel-5 Rel-6	-	nase 2) 1996) 1997) 1998) 1999) 4) 5)	ases:

Reason for change: ೫	There is an inconsitency in 29.060 in the definition of the length of the PDP Address. In chapter 7.7.29 the length of the 'pure' PDP Address is defined as [163]. I.e. even if no PDP Address shall be provided, this IE cannot be empty. In the same chapter a reference is given to chapter 7.7.27, where the same Address can be of length 0.						
Summary of change: ೫	7.7.29: Change length of PDP Address to [063].						
Consequences if ^発 not approved:	The inconsistent definition will lead to different implementations and to interoperability problems.						
Clauses affected: #	7.7.29						
Other specs अ affected:	Y N X Other core specifications # X Test specifications # X O&M Specifications #						

Other comments: #

How to create CRs using this form:

- 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.

**** FOR INFORMATION ****

7.7.27 End User Address

The purpose of the End User Address information element shall be to supply protocol specific information of the external packet data network accessed by the GPRS subscriber.

The Length field value shall be 2 in an End User Address information element with an empty PDP Address.

The PDP Type defines the end user protocol to be used between the external packet data network and the MS and is divided into an Organisation field and a Number field.

The PDP Type Organisation is the organisation that is responsible for the PDP Type Number field and the PDP Address format.

For PPP the PDP Type Organisation is ETSI and the PDP Type Number is 1 and there shall be no address in the End User Address IE. In this case the address is negotiated later as part of the PPP protocol.

If the PDP Type Organisation is IETF, the PDP Type Number is a compressed number (i.e. the most significant HEX(00) is skipped) in the "Assigned PPP DLL Protocol Numbers" list in the most recent "Assigned Numbers" RFC (RFC 1700 or later). The most recent "Assigned PPP DLL Protocol Numbers" can also be found using the URL = ftp://ftp.isi.edu/in-notes/iana/assignments/ppp-numbers.

The PDP Address shall be the address that this PDP context of the MS is identified with from the external packet data network.

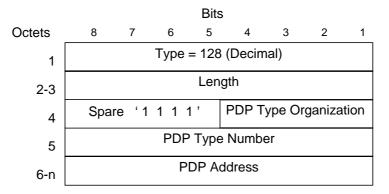


Figure 35: End User Address Information Element

Table 44: PDP Type Organisation Values

PDP Type Organisation	Value (Decimal)				
ETSI	0				
IETF	1				
All other values are reserved					

Table 45: ETSI defined PDP Type Values

PDP Type Number	Value (Decimal)				
PPP	1				
All other values are reserved					

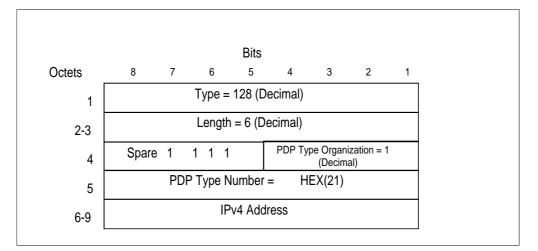


Figure 36: End User Address Information Element for IPv4

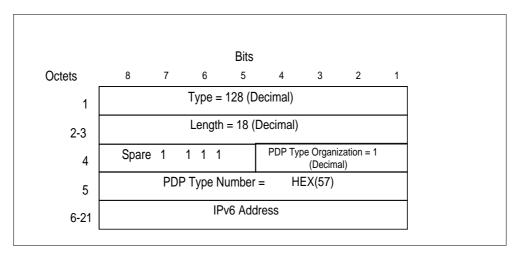


Figure 37: End User Address Information Element for IPv6

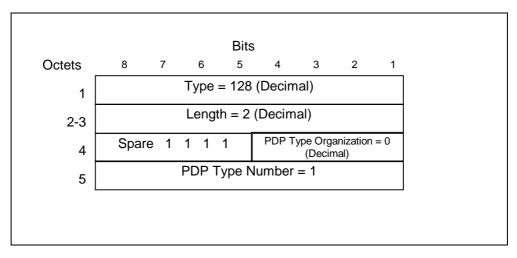


Figure 38: End User Address Information Element for PPP

**** FOR INFORMATION ****

**** START OF MODIFICATION ****

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 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 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.

1	Type = 130 (Decimal)						
2-3	Length						
4	Res-	VAA	Res-		NSAPI		
	erved		erve	er	_		
			d	01			
5	Х	Х	Х	Х	SAPI		
6	QoS Sub Length						
7 - (q+6)					o [4255]		
q+7					q Length		
(q+8)-(2q+7)					[4255]		
2q+8					g. Length		
(2q+9)-			G	oS Neg] [4255]		
(3q+8)		<u> </u>	~	Numb	er Down (SND) 1)		
(3q+9)- (3q+10)		36	quence		er Down (SND)		
(3q+10) (3q+11)-			Sequen	e Num	ber Up (SNU) 1)		
(3q+12)							
3q+13	Send N-PDU Number ¹⁾						
3q+14		Receive N-PDU Number ¹⁾					
(3q+15)-	U	Uplink Tunnel Endpoint Identifier Control Plane					
(3q+18)							
(3q+19)-	UplinkTunnel Endpoint Identifier Data I						
(3q+22)							
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					ess [<u>0</u> 463]		
m+1					control plane Length		
(m+2)-n					control plane [416]		
n+1		GGSN	Addre	ess for	User Traffic Length		
(n+2)-o		GGSN	Addre	ess for	User Traffic [416]		
o+1				APN I			
(o+2)-p				AF			
p+1	Spa	re (sen			Transaction Identifier		
p+2					n Identifier		
Figu	ire 43:	PDP (Contex	ct Info	rmation Element		

NOTE 1) 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

VPLMN Address Allowed	Value (Decimal)
No	0
Yes	1

**** END OF MODIFICATION ****

N4-020923

			СНА		EQ	UE	ST				CR-Form-v7
x		29.060	CR 336		rev	-	Ħ	Current vers	ion:	5.2.0	ж
For <u>HELP</u> or	า นะ	sing this fo	rm, see botto	m of this pa	ige or	look	at the	e pop-up text	over	the X syr	nbols.
Proposed chang	je a	affects:	UICC apps#	<mark>.</mark> 1	ME	Rac	dio Ad	ccess Networ	'k 📃	Core Ne	etwork X
Title:	ж	Removing	g inconsisten	<mark>cy in definit</mark>	ion of	PDP	Add	ress length			
Source:	ж	CN4									
Work item code:	ж	GPRS						Date: ೫	17/0	07/2002	
Category:	ж	F (cor A (cor B (add C (fun D (edi Detailed ex	the following c rection) rresponds to a dition of feature actional modific itorial modificat planations of th 3GPP <u>TR 21.9</u>	correction in e), ation of featu tion) ne above cat	ure)		elease	Release: ¥ Use <u>one</u> of 2 8) R96 R97 R98 R99 Rel-4 Rel-5 Rel-6	(GSM (Relea (Relea (Relea (Relea (Relea	•	pases:

Reason for change: ೫	There is an inconsitency in 29.060 in the definition of the length of the PDP Address. In chapter 7.7.29 the length of the 'pure' PDP Address is defined as [163]. I.e. even if no PDP Address shall be provided, this IE cannot be empty. In the same chapter a reference is given to chapter 7.7.27, where the same Address can be of length 0.						
Summary of change: X	7.7.29: Change length of PDP Address to [063].						
, ,							
Consequences if 🛛 🕷	The inconsistent definition will lead to different implementations and to						
not approved:	interoperability problems.						
not applotea.							
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:

- 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.

**** FOR INFORMATION ****

7.7.27 End User Address

The purpose of the End User Address information element shall be to supply protocol specific information of the external packet data network accessed by the GPRS subscriber.

The Length field value shall be 2 in an End User Address information element with an empty PDP Address.

The PDP Type defines the end user protocol to be used between the external packet data network and the MS and is divided into an Organisation field and a Number field.

The PDP Type Organisation is the organisation that is responsible for the PDP Type Number field and the PDP Address format.

For PPP the PDP Type Organisation is ETSI and the PDP Type Number is 1 and there shall be no address in the End User Address IE. In this case the address is negotiated later as part of the PPP protocol.

If the PDP Type Organisation is IETF, the PDP Type Number is a compressed number (i.e. the most significant HEX(00) is skipped) in the "Assigned PPP DLL Protocol Numbers" list in the most recent "Assigned Numbers" RFC (RFC 1700 or later). The most recent "Assigned PPP DLL Protocol Numbers" can also be found using the URL = ftp://ftp.isi.edu/in-notes/iana/assignments/ppp-numbers.

The PDP Address shall be the address that this PDP context of the MS is identified with from the external packet data network.

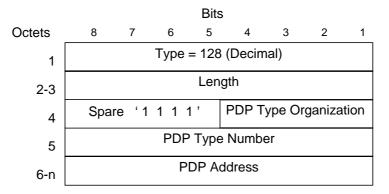


Figure 35: End User Address Information Element

Table 44: PDP Type Organisation Values

PDP Type Organisation	Value (Decimal)				
ETSI	0				
IETF	1				
All other values are reserved					

Table 45: ETSI defined PDP Type Values

PDP Type Number	Value (Decimal)				
PPP	1				
All other values are reserved					

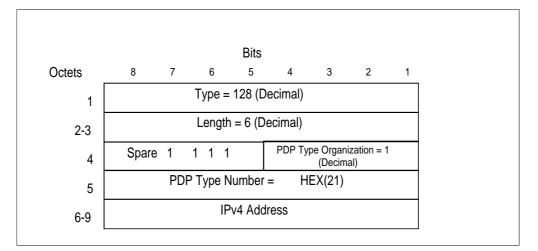


Figure 36: End User Address Information Element for IPv4

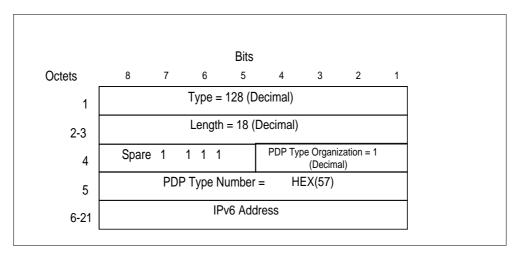


Figure 37: End User Address Information Element for IPv6

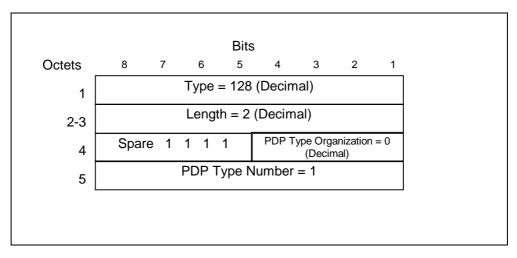


Figure 38: End User Address Information Element for PPP

**** FOR INFORMATION ****

**** START OF MODIFICATION ****

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 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 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.

1	Type = 130 (Decimal)							
2-3	Length							
4	Res-	VAA	Res-	Ord	.gt	NSAPI		
	erved	vлл	erve			NOALI		
			d	er				
5	Х	Х	X	Х		SAPI		
	^	^				_		
6 7 - (q+6)				QoS Sul QoS Sul				
q+7				loS Sul	_			
(q+8)-(2q+7)				OS Red				
2q+8				oS Neg		-		
(2q+9)-				oS Neg				
(3q+8)					-	-		
(3q+9)-		Se	quence	e Numb	er	Down (SND) ¹⁾		
(3q+10)								
(3q+11)-		Sequence Number Up (SNU) ¹⁾						
(3q+12)		Cand N DDU Number ¹⁾						
3q+13 3q+14	Send N-PDU Number ¹⁾ Receive N-PDU Number ¹⁾							
(3q+14)-	Uplink Tunnel Endpoint Identifier Control Plane							
(3q+18)								
(3q+19)-	UplinkTunnel Endpoint Identifier Data I							
(3q+19)- (3q+22)								
,	DDD Orgeteet blegtffor							
3q+23		PDP Context Identifier Spare 1 1 1 1 PDP Type Organisation						
3q+24 3q+25		Spare				PDP Type Organisation		
3q+25 3q+26						s Length		
(3q+27)-m						s [0463]		
m+1		GGSI				ntrol plane Length		
(m+2)-n						ntrol plane [416]		
n+1		GGSN	Addre	ess for	U	ser Traffic Length		
(n+2)-o		GGSN	Addre	ess for	U	ser Traffic [416]		
o+1				APN	len	igth		
(o+2)-p				A	PN			
p+1	Spa	Spare (sent as 0 0 0 0) Transaction Identifier						
p+2		Transaction Identifier						
Figu	Iro 13.	PDP (Contes	rt Info	rm	nation Element		

Figure 43: PDP Context Information Element

NOTE 1) 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

VPLMN Address Allowed	Value (Decimal)
No	0
Yes	1

**** END OF MODIFICATION ****

N4-020924

	CHANGE REQUEST		CR-Form-v7
ж	29.060 CR 337	Current vers	^{ion:} 3.13.0 [#]
For <u>HELP</u> or	using this form, see bottom of this page or look at the	pop-up text	over the # symbols.
Proposed chang	e affects: UICC apps# ME Radio Acc	cess Networ	k Core Network X
Title:	16 bit PDCP sequence numbers in RAB Context		
Source:	K CN4		
Work item code:	# GPRS	<i>Date:</i>	17/07/2002
Category:	 F Use <u>one</u> 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 <u>TR 21.900</u>. 	2	R99 the following releases: (GSM Phase 2) (Release 1996) (Release 1997) (Release 1998) (Release 1999) (Release 4) (Release 4) (Release 5) (Release 6)

Reason for change: ⊮	In 25.413 and in 29.060 chapter 6.1.1 (GTP Header), the PDCP sequence numbers are encoded in 16 bits. In contrary to that, 29.060 chapter 7.7.19 'RAB Context' defines the PDCP sequence numbers to only have one octet (8 bits).
Summary of change: ₩	7.7.19 Changing 'DL PDCP Sequence Number' and ' UL PDCP Sequence Number' to 2 octets.
Consequences if # not approved:	Lossless Inter SGSN Hard Handover will not work.
Clauses affected: #	7.7.19

Other specs affected:	ж	Υ	N X X X	Other core specifications # Test specifications O&M Specifications	3	
Other comments:	ж					

How to create CRs using this form:

- 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.

**** START OF MODIFICATION ****

7.7.19 RAB Context

The RAB context information element contains sequence number status for one RAB in RNC, which corresponds to one PDP context in CN. The RAB contexts are transferred between the RNCs via the SGSNs at inter SGSN hard handover.

NSAPI identifies the PDP context and the associated RAB for which the RAB context IE is intended.

DL GTP-U Sequence Number is the number for the next downlink GTP-U T-PDU to be sent to the MS.

UL GTP-U Sequence Number is the number for the next uplink GTP-U T-PDU to be tunnelled to the GGSN.

DL PDCP Sequence Number is the number for the next downlink PDCP-PDU to be sent to the MS.

UL PDCP Sequence Number is the number for the next uplink PDCP-PDU to be received from the MS.

Type = 22 (Decimal)							
Spare (0 0 0 0) NSAPI							
DL GTP-U Sequence Number							
UL GTP-U Sequence Number							
DL PDCP Sequence Number							
UL PDCP Sequence Number							
	Spare (0 0 0 0) DL GTP-U Sec UL GTP-U Sec DL PDCP Sec						

Figure 27: RAB Context Information Element

**** END OF MODIFICATION ****

N4-020925

CHANGE REQUEST											CR-Form-v7		
ж		29.060	CR	338	ж г	ev	-	ж	Current v	ersion:	4.4	4.0	ж
For <u>HELP</u> o	n u:	sing this for	m, see	bottom of	this pag	ge or l	look	at the	e pop-up t	ext ove	r the S	₩ syr	nbols.
Proposed chang	ge a	affects: l	JICC ap	ops# 📃	N	IE <mark></mark>	Rac	lio A	ccess Netv	work	Co	ore Ne	twork X
Title:	ж	16 bit PD	CP seq	uence nun	nbers in	RAB	Con	text					
Source:	ж	CN4											
Work item code	: X	GPRS							Date:	ະ <mark>ສ 17</mark>	7/07/2	002	
Category:	ж	Use <u>one</u> of f F (corr A (corr B (ado C (fund	rection) respond lition of t ctional n torial mo planatior	s to a correc feature), nodification odification) is of the abo	ction in a of featur	re)		lease	Release: Use <u>one</u> 2 () R96 R97 R98 R99 Rel-4 Rel-5 Rel-6	of the i (GS (Re (Re (Re (Re (Re (Re		ase 2) 1996) 1997) 1998) 1999) 4) 5)	eases:

Reason for change: %	In 25.413 and in 29.060 chapter 6.1.1 (GTP Header), the PDCP sequence numbers are encoded in 16 bits. In contrary to that, 29.060 chapter 7.7.19 'RAB Context' defines the PDCP sequence numbers to only have one octet (8 bits).
Summary of change: #	7.7.19 Changing 'DL PDCP Sequence Number' and ' UL PDCP Sequence Number' to 2 octets.
Consequences if % not approved:	Lossless Inter SGSN Hard Handover will not work.
Clauses affected: #	7 7 19

•••••••••••••						
Other specs affected:	ж	Y	N X X X	Other core specifications # Test specifications O&M Specifications	3	
Other comments:	ж					

How to create CRs using this form:

- 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.

**** START OF MODIFICATION ****

7.7.19 RAB Context

The RAB context information element contains sequence number status for one RAB in RNC, which corresponds to one PDP context in CN. The RAB contexts are transferred between the RNCs via the SGSNs at inter SGSN hard handover.

NSAPI identifies the PDP context and the associated RAB for which the RAB context IE is intended.

DL GTP-U Sequence Number is the number for the next downlink GTP-U T-PDU to be sent to the MS.

UL GTP-U Sequence Number is the number for the next uplink GTP-U T-PDU to be tunnelled to the GGSN.

DL PDCP Sequence Number is the number for the next downlink PDCP-PDU to be sent to the MS.

UL PDCP Sequence Number is the number for the next uplink PDCP-PDU to be received from the MS.

Type = 22 (Decimal)							
Spare (0 0 0 0) NSAPI							
DL GTP-U Sequence Number							
UL GTP-U Sequence Number							
DL PDCP Sequence Number							
UL PDCP Sequence Number							
	Spare (0 0 0 0) DL GTP-U Sec UL GTP-U Sec DL PDCP Seq						

Figure 27: RAB Context Information Element

**** END OF MODIFICATION ****

N4-020926

												CR-Form-v7
	CHANGE REQUEST											
ж		29.060	CR	339	жr	ev	-	ж	Current vers	ion:	5.2.0	ж
For <u>HELP</u> o	n u	sing this for	m, see	bottom of th	nis pag	e or i	look	at the	e pop-up text	over	the # syn	nbols.
Proposed chang	ye i	affects: U	JICC a	ррѕж	М	E	Rac	dio A	ccess Networ	k	Core Ne	etwork X
Title:	ж	16 bit PD	CP sec	quence numb	pers in	RAB	Con	text				
Source:	ж	CN4										
Work item code	: X	GPRS							Date: ೫	17/	07/2002	
Category:	ж	Use <u>one</u> of F (corr A (cor B (add C (fun D (edit	rection) respond lition of ctional i torial m planatio	ds to a correct feature), modification of odification) ns of the abov	ion in a f feature	e)		elease	Release: # Use <u>one</u> of 2 9) R96 R97 R98 R99 Rel-4 Rel-5 Rel-6	(GSN (Rele (Rele (Rele (Rele (Rele		eases:

Reason for change: ೫	In 25.413 and in 29.060 chapter 6.1.1 (GTP Header), the PDCP sequence numbers are encoded in 16 bits. In contrary to that, 29.060 chapter 7.7.19 'RAB Context' defines the PDCP sequence numbers to only have one octet (8 bits).
Summary of change: #	7.7.19 Changing 'DL PDCP Sequence Number' and ' UL PDCP Sequence Number' to 2 octets.
Consequences if % not approved:	Lossless Inter SGSN Hard Handover will not work.
-	
Clauses offeeted. 9	7 7 10

Clauses allected.	ሙ	1.	1.1	9		
Other specs affected:	ж	Y	Χ	Other core specifications Test specifications O&M Specifications	ж	
Other comments:	ж					

How to create CRs using this form:

- 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.

**** START OF MODIFICATION ****

7.7.19 RAB Context

The RAB context information element contains sequence number status for one RAB in RNC, which corresponds to one PDP context in CN. The RAB contexts are transferred between the RNCs via the SGSNs at inter SGSN hard handover.

NSAPI identifies the PDP context and the associated RAB for which the RAB context IE is intended.

DL GTP-U Sequence Number is the number for the next downlink GTP-U T-PDU to be sent to the MS.

UL GTP-U Sequence Number is the number for the next uplink GTP-U T-PDU to be tunnelled to the GGSN.

DL PDCP Sequence Number is the number for the next downlink PDCP-PDU to be sent to the MS.

UL PDCP Sequence Number is the number for the next uplink PDCP-PDU to be received from the MS.

Type = 22 (Decimal)	
Spare (0 0 0 0)	NSAPI
DL GTP-U Sequence Number	
UL GTP-U Sequence Number	
DL PDCP Sequence Number	
UL PDCP Sequence Number	
	Spare (0 0 0 0) DL GTP-U Sec UL GTP-U Sec DL PDCP Seq

Figure 27: RAB Context Information Element

**** END OF MODIFICATION ****

N4-021016

	CHANGE REQUEST	CR-Form-v7		
¥	29.060 CR 340 # rev 1 ^{# C}	urrent version: <mark>3.13.0</mark> [#]		
For HELP on using this form, see bottom of this page or look at the pop-up text over the # symbols.				
Proposed chang	e affects: UICC apps# ME Radio Acc	ess Network Core Network X		
Title:	Forward Relocation Response without 'RAB Setup	Information' IE		
Source:	₩ CN4			
Work item code:	# GPRS	Date: ೫ 30/07/2002		
Category:	 F F Vse <u>one</u> 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 <u>TR 21.900</u>. 	Release: %R99Use oneof 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: अ	Essential Correction: During SRNS Relocation the new SGSN may receive a valid Forward Relocation Request that does not contain any PDP Context. Therefore it also shall be possible for the new SGSN to reply with a Forward Relocation Response with cause 'Request accepted' and without any 'RAB Setup Information' IE. 25.413 also allowes this for the corresponding RANAP message 'Relocation Request Acknowledge'. But according to chapter 7.5.7 this is not possible in GTP.
Summary of change: #	7.5.7 Allow to send a Forward Relocation Response with cause 'Request accepted' and without the 'RAB Setup Information' IE.
Consequences if % not approved:	Interoperability problems for SRNS Relocation for a MS without PDP contexts.

Clauses affected:	¥ 7.5.7
Other specs affected:	Y N % X 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 <u>http://www.3gpp.org/specs/CR.htm</u>. 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.

**** START OF MODIFICATION ****

7.5.7 Forward Relocation Response

The new SGSN shall send a Forward Relocation Response to the old SGSN as a response to a previous Forward Relocation Request.

Possible Cause values is:

- 'Request Accepted'.
- 'System failure'.
- 'Mandatory IE incorrect'.
- 'Mandatory IE missing'.
- 'Optional IE incorrect'.
- 'No resources available'.
- 'Invalid message format'.
- 'Relocation failure'.

RANAP Cause is mandatory if cause value is contained in RANAP message.

RAB Setup Information, UTRAN transparent container and RANAP Cause are information from the target RNC in the new SGSN.

One or more RAB Setup Information parameters <u>mayshall</u> be sent in this message. This information element shall be included if the Cause contains the value 'Request accepted' and there is at least oneny RAB assigned in the new SGSN.

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

The Tunnel Endpoint Identifier Control Plane field specifies a Tunnel Endpoint Identifier that is chosen by the new SGSN. The old SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent signalling messages that are sent from the old SGSN to the new SGSN. This information element shall be included if the Cause contains the value 'Request accepted'.

The optional Private Extension contains vendor or operator specific information.

Table 50. Information Elements in a Forward Relocation				
Information element	Presence requirement	Reference		
Cause	Mandatory	7.7.1		
Tunnel Endpoint Identifier Control Plane	Conditional	7.7.14		
RANAP Cause	Conditional	7.7.18		
SGSN Address for Control plane	Conditional	7.7.32		
UTRAN transparent container	Optional	7.7.38		
RAB Setup Information	Conditional	7.7.39		
Private Extension	Optional	7.7.44		

Table 30: Information Elements in a Forward Relocation

**** END OF MODIFICATION ****

3GPP TSG CN WG4 Meeting #15 Helsinki, Finland, 29th July – 2nd August 2002

N4-021017

	С	HANGE RE	QUEST			CR-Form-v7
ж	29.060 CR 3	<mark>41</mark> ж ге	ev <mark>1</mark> [#]	Current vers	^{ion:} 4.4.0	ж
For <u>HELP</u> or	sing this form, see b	pottom of this page	e or look at the	e pop-up text	over the X syr	nbols.
Proposed chang	affects: UICC ap	ps# 🦲 ME	E Radio A	ccess Networ	k Core Ne	etwork X
Title:	Forward Relocation	on Response witho	out 'RAB Setu	p Information	' IE	
Source:	CN4					
Work item code:	GPRS			Date:	30/07/2002	
Category:	B (addition of fe	to a correction in ar eature), odification of feature lification) s of the above categ)	2 R96 R97 R98 R99 R99 Rel-4	Rel-4 the following rele (GSM Phase 2) (Release 1996) (Release 1997) (Release 1998) (Release 1999) (Release 4) (Release 5) (Release 6)	eases:

Reason for change: ೫	During SRNS Relocation the new SGSN may receive a valid Forward Relocation Request that does not contain any PDP Context. Therefore it also shall be
	possible for the new SGSN to reply with a Forward Relocation Response with
	cause 'Request accepted' and without any 'RAB Setup Information' IE. 25.413
	also allowes this for the corresponding RANAP message 'Relocation Request
	Acknowledge'. But according to chapter 7.5.7 this is not possible in GTP.
Summary of change: ₩	
	accepted' and without the 'RAB Setup Information' IE.
Consequences if #	Interoperability problems for SRNS Relocation for a MS without PDP contexts.
not approved:	
Clauses affected: #	7.5.7
Other specs #	X Other core specifications #
affected:	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 <u>http://www.3gpp.org/specs/CR.htm</u>. 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.

**** START OF MODIFICATION ****

7.5.7 Forward Relocation Response

The new SGSN shall send a Forward Relocation Response to the old SGSN as a response to a previous Forward Relocation Request.

Possible Cause values is:

- 'Request Accepted'.
- 'System failure'.
- 'Mandatory IE incorrect'.
- 'Mandatory IE missing'.
- 'Optional IE incorrect'.
- 'No resources available'.
- 'Invalid message format'.
- 'Relocation failure'.

RANAP Cause is mandatory if cause value is contained in RANAP message.

RAB Setup Information, UTRAN transparent container and RANAP Cause are information from the target RNC in the new SGSN.

One or more RAB Setup Information parameters <u>mayshall</u> be sent in this message. This information element shall be included if the Cause contains the value 'Request accepted' and there is at least oneny RAB assigned in the new SGSN.

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

The Tunnel Endpoint Identifier Control Plane field specifies a Tunnel Endpoint Identifier that is chosen by the new SGSN. The old SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent signalling messages that are sent from the old SGSN to the new SGSN. This information element shall be included if the Cause contains the value 'Request accepted'.

The optional Private Extension contains vendor or operator specific information.

Table 50. Information Elements in a Forward Relocation				
Information element	Presence requirement	Reference		
Cause	Mandatory	7.7.1		
Tunnel Endpoint Identifier Control Plane	Conditional	7.7.14		
RANAP Cause	Conditional	7.7.18		
SGSN Address for Control plane	Conditional	7.7.32		
UTRAN transparent container	Optional	7.7.38		
RAB Setup Information	Conditional	7.7.39		
Private Extension	Optional	7.7.44		

Table 30: Information Elements in a Forward Relocation

**** END OF MODIFICATION ****

3GPP TSG CN WG4 Meeting #15 Helsinki, Finland, 29th July – 2nd August 2002

N4-021018

CHANGE REQUEST					
¥	29.060 CR 342 # rev 1 ^{# C}	Current version: 5.2.0 [#]			
For <u>HELP</u> or	using this form, see bottom of this page or look at the	pop-up text over the X symbols.			
Proposed chang	e affects: UICC apps# ME Radio Acc	cess Network Core Network X			
Title:	Forward Relocation Response without 'RAB Setup	Information' IE			
Source:	K CN4				
Work item code:	# GPRS	Date: 業 <u>30/07/2002</u>			
Category:	 A Use <u>one</u> 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 <u>TR 21.900</u>. 	Release: #Rel-5Use one of the following releases:2(GSM Phase 2)R96R97(Release 1996)R97R98(Release 1997)R98R99Release 1999)Rel-4Release 4)Rel-5Release 5)Rel-6(Release 6)			

Reason for change: ೫	During SRNS Relocation the new SGSN may receive a valid Forward Relocation Request that does not contain any PDP Context. Therefore it also shall be possible for the new SGSN to reply with a Forward Relocation Response with cause 'Request accepted' and without any 'RAB Setup Information' IE. 25.413 also allowes this for the corresponding RANAP message 'Relocation Request Acknowledge'. But according to chapter 7.5.7 this is not possible in GTP.
Summary of change: #	7.5.7 Allow to send a Forward Relocation Response with cause 'Request accepted' and without the 'RAB Setup Information' IE.
Consequences if #	Interoperability problems for SRNS Relocation for a MS without PDP contexts.
	interoperability problems for SKNS Relocation for a MS without PDP contexts.
not approved:	
Clauses affected: #	7.5.7
Other specs ℜ 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 <u>http://www.3gpp.org/specs/CR.htm</u>. 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.

**** START OF MODIFICATION ****

7.5.7 Forward Relocation Response

The new SGSN shall send a Forward Relocation Response to the old SGSN as a response to a previous Forward Relocation Request.

Possible Cause values is:

- 'Request Accepted'.
- 'System failure'.
- 'Mandatory IE incorrect'.
- 'Mandatory IE missing'.
- 'Optional IE incorrect'.
- 'No resources available'.
- 'Invalid message format'.
- 'Relocation failure'.

RANAP Cause is mandatory if cause value is contained in RANAP message.

RAB Setup Information, UTRAN transparent container and RANAP Cause are information from the target RNC in the new SGSN.

One or more RAB Setup Information parameters <u>mayshall</u> be sent in this message. This information element shall be included if the Cause contains the value 'Request accepted' and there is at least oneny RAB assigned in the new SGSN.

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

The Tunnel Endpoint Identifier Control Plane field specifies a Tunnel Endpoint Identifier that is chosen by the new SGSN. The old SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent signalling messages that are sent from the old SGSN to the new SGSN. This information element shall be included if the Cause contains the value 'Request accepted'.

The optional Private Extension contains vendor or operator specific information.

Table 30. Information Elements in a Forward Nelocation				
Information element	Presence requirement	Reference		
Cause	Mandatory	7.7.1		
Tunnel Endpoint Identifier Control Plane	Conditional	7.7.14		
RANAP Cause	Conditional	7.7.18		
SGSN Address for Control plane	Conditional	7.7.32		
UTRAN transparent container	Optional	7.7.38		
RAB Setup Information	Conditional	7.7.39		
Private Extension	Optional	7.7.46		

Table 30: Information Elements in a Forward Relocation

**** END OF MODIFICATION ****

3GPP TSG CN WG4 Meeting #15 Helsinki, Finland, 29th July – 2nd August 2002

N4-020968

			(CHANGE	E RI	EQI	JE	ST				CR-Form-v7
¥		29.060	CR	345	жr	ev	-	ж	Current vers	ion: <mark>3</mark>	<mark>.13.0</mark>	ж
For <u>HELP</u> or	า นร	sing this for	m, see	e bottom of th	is pag	ie or l	ook a	at th	e pop-up text	over th	ne ¥ syr	mbols.
Proposed chang	je a	offects: U	JICC a	apps#	М	E	Rac	lio A	ccess Networ	·k 📃	Core Ne	etwork X
Title:	ж	No equiva	alent C	ause Code in	GTP	to 'Pl	DP c	onte	xt without TF	T alrea	dy activ	ated'
Source:	ж	CN4										
Work item code:	ж	GTP enha	ancem	ents					<i>Date:</i>	18/07	7/2002	
Category:	ж	Use <u>one</u> of F (corr A (cor B (add C (fun D (edit	rection) respon- lition of ctional torial m blanatic	ds to a correction f feature), modification of podification) ons of the above	on in a featur	e)		elease	Release: ₩ Use <u>one</u> of 2) R96 R97 R98 R99 Rel-4 Rel-5 Rel-6	the follo (GSM I (Releas (Releas (Releas	Phase 2) se 1996) se 1997) se 1998) se 1999) se 4) se 5)	eases:

Reason for change: ¥	 Within 24.008, cause code <i>PDP</i> context without TFT already activated is used to report to the MS that a PDP Context could not be activated without a TFT, because there is already a PDP Context without a TFT active for that MS. 29.060 does not include an equivalent cause code, so it could be assumed that the SGSN is expected to determine when this condition exists. This requires that the SGSN track which contexts have TFT and which do not. However, 23.060 implies that the SGSN should not be doing anything in relation to TFT. For example in section 9.2.2.1.1 (Secondary PDP Context Activation) it is stated that <i>"TFT is sent transparently through the SGSN to the GGSN to enable packet classification for downlink data transfer."</i> Further, during an IRAU event, the old SGSN does not inform the new SGSN which PDP contexts have TFT. As a result, the new SGSN cannot reliably track which contexts have TFTs associated with them. Thus, the SGSN can never send the <i>PDP context without TFT already activated</i> cause code to the MS. This is a critical correction.
Summary of change: #	Introduce a cause code into 29.060 to map onto PDP context without TFT already activated in 24.008.
Consequences if # not approved:	PDP context without TFT already activated can not ever be sent to the MS, denying the MS useful diagnostic information. Also the SGSN can not accurately interpret error causes for Create Context Requests.

Clauses affected:	¥ 7.3.2, 7.7.1
Other specs affected:	Y N X Other core specifications X X Test specifications X X O&M Specifications X
Other comments:	¥

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <u>http://www.3gpp.org/specs/CR.htm</u>. 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.

7.3.2 Create PDP Context Response

The message shall be sent from a GGSN node to a SGSN node as a response of a Create PDP Context Request. When the SGSN receives a Create PDP Context Response with the Cause value indicating 'Request Accepted', the SGSN activates the PDP context and may start to forward T-PDUs to/from the MS from/to the external data network.

The Cause value indicates if a PDP context has been created in the GGSN or not. A PDP context has not been created in the GGSN if the Cause differs from 'Request accepted'. Possible Cause values are:

- "Request Accepted".
- "No resources available".
- "All dynamic PDP addresses are occupied".
- "No memory is available".
- "Missing or unknown APN".
- "Unknown PDP address or PDP type".
- "User authentication failed".
- "System failure".
- "Semantic error in the TFT operation".
- "Syntactic error in the TFT operation".
- "Semantic errors in packet filter(s)".
- "Syntactic errors in packet filters(s)".
- "Mandatory IE incorrect".
- "Mandatory IE missing".
- "Optional IE incorrect".

-____"Invalid message format".

- "PDP context without TFT already activated"

'No resources available' indicates e.g. that all dynamic PDP addresses are occupied or no memory is available. 'Missing or unknown APN' indicates e.g. when the GGSN does not support the Access Point Name. 'Unknown PDP address or PDP type' indicates e.g. when the GGSN does not support the PDP type or the PDP address.

'User authentication failed' indicates that the external packet network has rejected the service requested by the user. <u>'PDP context without TFT already activated' indicates that a PDP context has already been activated without a TFT for that MS.</u>

Only the Cause information element, optionally Protocol Configuration Options and optionally the Recovery information element shall be included in the response if the Cause contains another value than 'Request accepted'.

All information elements, except Recovery, Protocol Configuration Options, Charging Gateway Address, Tunnel Endpoint Identifier Control Plane and Private Extension, are mandatory if the Cause contains the value 'Request accepted'.

The Tunnel Endpoint Identifier for Data (I) field specifies an uplink Tunnel Endpoint Identifier for G-PDUs that is chosen by the GGSN. The SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent uplink G-PDUs which are related to the requested PDP context.

The Tunnel Endpoint Identifier Control Plane field specifies an uplink Tunnel Endpoint Identifier for control plane messages, which is chosen by the GGSN. The SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent uplink-control plane messages, which are related to the requested PDP context. If the GGSN has already

confirmed successful assignment of its Tunnel Endpoint Identifier Control Plane to the peer SGSN, this field shall not be present. The GGSN confirms successful assignment of its Tunnel Endpoint Identifier Control Plane to the SGSN when it receives any message with its assigned Tunnel Endpoint Identifier Control Plane in the GTP header from the SGSN.

The GGSN shall include a GGSN Address for control plane and a GGSN address for user traffic, which may differ from that provided by the underlying network service (e.g. IP). The SGSN shall store these GGSN Addresses and use them when sending control plane on this GTP tunnel or G-PDUs to the GGSN for the MS.

If the MS requests a dynamic PDP address with the PDP Type IPv4 or IPv6 and a dynamic PDP address is allowed, then the End User Address information element shall be included and the PDP Address field in the End User Address information element shall contain the dynamic PDP Address allocated by the GGSN.

If the MS requests a static PDP address with the PDP Type IPv4 or IPv6, or a PDP address is specified with PDP Type PPP, then the End User Address information element shall be included and the PDP Address field shall not be included.

The PDP address in End User Address IE and in the Protocol configuration options IE shall be the same, if both IEs are present in the create PDP context response.

The QoS values supplied in the Create PDP Context Request may be negotiated downwards by the GGSN. The negotiated values or the original values from SGSN are inserted in the Quality of Service Profile information element of the Create PDP Context Response message.

The GGSN may start to forward T-PDUs after the Create PDP Context Response has been sent. The SGSN may start to forward T-PDUs when the Create PDP Context Response has been received. In this case the SGSN shall also be prepared to receive T-PDUs from the GGSN after it has sent a Create PDP Context Request but before a Create PDP Context Response has been received.

The Reordering Required value supplied in the Create PDP Context Response indicates whether the end user protocol benefits from packet in sequence delivery and whether the SGSN and the GGSN therefore shall perform reordering or not. In other words, if reordering is required by the GGSN, the SGSN and the GGSN shall perform reordering of incoming T-PDUs on this path. When the Quality of Service (QoS) Profile is Release 99 the receiving entity shall ignore the Reordering Required.

The GGSN shall include the Recovery information element into the Create PDP Context Response if the GGSN is in contact with the SGSN for the first time or the GGSN has restarted recently and the new Restart Counter value has not yet been indicated to the SGSN. The SGSN receiving the Recovery information element shall handle it as when an Echo Response message is received but shall consider the PDP context being created as active if the response indicates successful context activation at the GGSN.

The Charging ID is used to identify all charging records produced in SGSN(s) and the GGSN for this PDP context. The Charging ID is generated by the GGSN and shall be unique within the GGSN.

The Charging Gateway Address is the IP address of the recommended Charging Gateway Functionality to which the SGSN should transfer the Charging Detail Records (CDR) for this PDP Context.

The optional Private Extension contains vendor or operator specific information.

Information element	Presence requirement	Reference
Cause	Mandatory	7.7.1
Reordering required	Conditional	7.7.6
Recovery	Optional	7.7.11
Tunnel Endpoint Identifier Data I	Conditional	7.7.13
Tunnel Endpoint Identifier Control Plane	Conditional	7.7.14
Charging ID	Conditional	7.7.26
End User Address	Conditional	7.7.27
Protocol Configuration Options	Optional	7.7.31
GGSN Address for Control Plane	Conditional	GSN Address 7.7.32
GGSN Address for user traffic	Conditional	GSN Address 7.7.32
Quality of Service Profile	Conditional	7.7.34
Charging Gateway Address	Optional	7.7.43
Private Extension	Optional	7.7.44

Table 6: Information Elements in a Create PDP Context Response

****** Next section to be changed ******

7.7.1 Cause

In a request, the Cause Value indicates the reason for the request. The Cause shall be included in the request message.

In a response, the Cause Value indicates the acceptance or the rejection of the corresponding request. In addition, the Cause Value may indicate what was the reason for the corresponding request. The Cause value shall be included in the response message.

'Request accepted' is returned when a GSN has accepted a control plane request.

'Non-existent' indicates a non-existent or an inactive PDP context.

'IMSI not known' indicates a non-existent MM context.

'MS is GPRS Detached' indicates an idle MM context.

'MS is not GPRS Responding' and 'MS Refuses' may be used by SGSN to reject a Network-Requested PDP Context Activation.

'Version not supported' is returned when the recipient does not recognise the version number in the request message.

'Request IMSI', 'Request IMEI', 'Request IMSI and IMEI' and 'No identity needed' are used by GGSN to notify SGSN what to do.

'No resources available' is a generic temporary error condition e.g. all dynamic PDP addresses occupied or no memory available.

'Service not supported' is a generic error indicated that the GSN do not support the requested service.

'User authentication failed' indicates that the external packet network has rejected the user's service request.

'System failure' is a generic permanent error condition.

'Roaming restriction' indicates that the SGSN cannot activate the requested PDP context because of the roaming restrictions.

'P-TMSI Signature mismatch' is returned if either:

- the P-TMSI Signature stored in the old SGSN does not match the value sent by the MS via the new SGSN
- or the MS does not provide the P-TMSI Signature to the new SGSN while the old SGSN has stored the P-TMSI Signature for that MS.

'Semantic error in the TFT operation', 'Syntactic error in the TFT operation', 'Semantic errors in packet filter(s)'<u>- and</u> 'Syntactic errors in packet filters(s)' and 'PDP context without TFT already activated' are indications of abnormal cases involving TFTs. The abnormal TFT cases and the use of the cause codes are defined in 3GPP TS 24.008.

'Invalid message format', 'Mandatory IE incorrect', 'Mandatory IE missing' and 'Optional IE incorrect' are indications of protocol errors described in the section Error handling.

'GPRS connection suspended' indicates that the GPRS activities of the mobile station are suspended.

'Authentication failure' indicates that the user authentication failed in the new SGSN.

'Context not found' indicates that the PDP Context referenced in an Active Secondary Context Request message was not found in the receiving GGSN.

'Relocation failure' indicates that the SRNS relocation failed in the new SGSN side.

'Unknown mandatory extension header' signals in a response message that the corresponding request included an extension header for which comprehension was required but unknown to the receiving end.

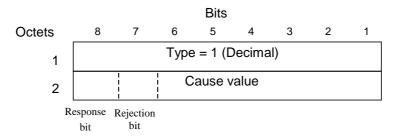


Figure 9: Cause information element

	Cause		Value (Decima
		Request IMSI	0
		Request IMEI	1
request		Request IMSI and IMEI	2
		No identity needed	3
		MS Refuses	4
		MS is not GPRS Responding	5
		For future use	6-48
		Cause values reserved for GPRS charging	49-63
		protocol use (see GTP' in GSM 12.15)	
For future use			64-127
	0.00	Pequest apported	128
	acc	Request accepted For future use	129-176
		Cause values reserved for GPRS charging protocol use (see GTP' in GSM 12.15)	177-191
F		Non-existent	192
		Invalid message format	193
response	rej	IMSI not known	194
•		MS is GPRS Detached	195
		MS is not GPRS Responding	196
		MS Refuses	197
		For future use	198
		No resources available	199
		Service not supported	200
		Mandatory IE incorrect	201
		Mandatory IE missing	202
		Optional IE incorrect	203
		System failure	204
		Roaming restriction	205
		P-TMSI Signature mismatch	206
		GPRS connection suspended	207
		Authentication failure	208
		User authentication failed	209
		Context not found	210
		All dynamic PDP addresses are occupied	211
		No memory is available	212
		Relocation failure	213
		Unknown mandatory extension header	214
		Semantic error in the TFT operation	215
		Syntactic error in the TFT operation	216
		Semantic errors in packet filter(s)	217
		Syntactic errors in packet filter(s)	218
		Missing or unknown APN	219
		Unknown PDP address or PDP type	220
		PDP context without TFT already activated	221
		For future use	222 1 -240
		Cause values reserved for GPRS charging	241-255
			2 11 200

Table 38: Cause Values

NOTE: With this coding, bits 8 and 7 of the Cause Value respectively indicate whether the message was a request or a response, and whether the request was accepted or rejected.

Table 39:	Use of	the Cause	Values
-----------	--------	-----------	--------

Cause 8	value bits 7	Result
0	0	Request
0	1	For future use (Note)
1	0	Acceptance
1	1	Rejection

3GPP TSG CN WG4 Meeting #15 Helsinki, Finland, 29th July – 2nd August 2002

N4-020969

			CHA	ANGE F	REQ	UE	ST				CR-Form-v7
ж		29.060	CR 346	ж	rev	-	ж	Current vers	ion:	4.4.0	ж
For <u>HELP</u> or	n us	sing this fo	rm, see botto	om of this pa	age or l	ook a	t the	e pop-up text	over ti	he ፝ ሄ syr	nbols.
Proposed chang	je a	affects:	UICC apps೫		ME	Radi	o Ao	ccess Networ	k 📃	Core Ne	twork X
Title:	ж	No equiv	alent Cause	Code in GT	P to 'P	DP co	onte	xt without TF	T alrea	ady activa	ated'
Source:	ж	CN4									
Work item code:	: X	GTP enh	ancements					Date: ₩	18/0	7/2002	
Category:	ж	F (con A (con B (ad C (fur D (ed Detailed ex	the following or rection) rresponds to a dition of featur actional modifica planations of t 3GPP <u>TR 21.</u>	correction in e), cation of feat tion) he above cat	ure)		ease	Release: ₩ Use <u>one</u> of 2 9) R96 R97 R98 R99 Rel-4 Rel-5 Rel-6	(GSM (Relea (Relea (Relea	owing relé Phase 2) ase 1996) ase 1997) ase 1998) ase 1999) ase 4) ase 5)	eases:

Reason for change: ℜ	 Within 24.008, cause code <i>PDP context without TFT already activated</i> is used to report to the MS that a PDP Context could not be activated without a TFT, because there is already a PDP Context without a TFT active for that MS. 29.060 does not include an equivalent cause code, so it could be assumed that the SGSN is expected to determine when this condition exists. This requires that the SGSN track which contexts have TFT and which do not. However, 23.060 implies that the SGSN should not be doing anything in relation to TFT. For example in section 9.2.2.1.1 (Secondary PDP Context Activation) it is stated that <i>"TFT is sent transparently through the SGSN to the GGSN to enable packet classification for downlink data transfer."</i> Further, during an IRAU event, the old SGSN does not inform the new SGSN which PDP contexts have TFT. As a result, the new SGSN cannot reliably track which contexts have TFTs associated with them. Thus, the SGSN can never send the <i>PDP context without TFT already activated</i> cause code to the MS. This is a critical correction.
Summary of change: ೫	Introduce a cause code into 29.060 to map onto PDP context without TFT already activated in 24.008.
Consequences if # not approved:	PDP context without TFT already activated can not ever be sent to the MS, denying the MS useful diagnostic information. Also the SGSN can not accurately interpret error causes for Create Context Requests.

Clauses affected:	¥ 7.3.2, 7.7.1
Other specs affected:	Y N X Other core specifications X X Test specifications X X O&M Specifications X
Other comments:	¥

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <u>http://www.3gpp.org/specs/CR.htm</u>. 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.

7.3.2 Create PDP Context Response

The message shall be sent from a GGSN node to a SGSN node as a response of a Create PDP Context Request. When the SGSN receives a Create PDP Context Response with the Cause value indicating 'Request Accepted', the SGSN activates the PDP context and may start to forward T-PDUs to/from the MS from/to the external data network.

The Cause value indicates if a PDP context has been created in the GGSN or not. A PDP context has not been created in the GGSN if the Cause differs from 'Request accepted'. Possible Cause values are:

- "Request Accepted".
- "No resources available".
- "All dynamic PDP addresses are occupied".
- "No memory is available".
- "Missing or unknown APN".
- "Unknown PDP address or PDP type".
- "User authentication failed".
- "System failure".
- "Semantic error in the TFT operation".
- "Syntactic error in the TFT operation".
- "Semantic errors in packet filter(s)".
- "Syntactic errors in packet filters(s)".
- "Mandatory IE incorrect".
- "Mandatory IE missing".
- "Optional IE incorrect".

-____"Invalid message format".

- "PDP context without TFT already activated"

'No resources available' indicates e.g. that all dynamic PDP addresses are occupied or no memory is available. 'Missing or unknown APN' indicates e.g. when the GGSN does not support the Access Point Name. 'Unknown PDP address or PDP type' indicates e.g. when the GGSN does not support the PDP type or the PDP address.

'User authentication failed' indicates that the external packet network has rejected the service requested by the user. <u>'PDP context without TFT already activated' indicates that a PDP context has already been activated without a TFT for that MS.</u>

Only the Cause information element, optionally Protocol Configuration Options and optionally the Recovery information element shall be included in the response if the Cause contains another value than 'Request accepted'.

All information elements, except Recovery, Protocol Configuration Options, Charging Gateway Address, Tunnel Endpoint Identifier Control Plane and Private Extension, are mandatory if the Cause contains the value 'Request accepted'.

The Tunnel Endpoint Identifier for Data (I) field specifies an uplink Tunnel Endpoint Identifier for G-PDUs that is chosen by the GGSN. The SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent uplink G-PDUs which are related to the requested PDP context.

The Tunnel Endpoint Identifier Control Plane field specifies an uplink Tunnel Endpoint Identifier for control plane messages, which is chosen by the GGSN. The SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent uplink-control plane messages, which are related to the requested PDP context. If the GGSN has already

confirmed successful assignment of its Tunnel Endpoint Identifier Control Plane to the peer SGSN, this field shall not be present. The GGSN confirms successful assignment of its Tunnel Endpoint Identifier Control Plane to the SGSN when it receives any message with its assigned Tunnel Endpoint Identifier Control Plane in the GTP header from the SGSN.

The GGSN shall include a GGSN Address for control plane and a GGSN address for user traffic, which may differ from that provided by the underlying network service (e.g. IP). The SGSN shall store these GGSN Addresses and use them when sending control plane on this GTP tunnel or G-PDUs to the GGSN for the MS.

If the MS requests a dynamic PDP address with the PDP Type IPv4 or IPv6 and a dynamic PDP address is allowed, then the End User Address information element shall be included and the PDP Address field in the End User Address information element shall contain the dynamic PDP Address allocated by the GGSN.

If the MS requests a static PDP address with the PDP Type IPv4 or IPv6, or a PDP address is specified with PDP Type PPP, then the End User Address information element shall be included and the PDP Address field shall not be included.

The PDP address in End User Address IE and in the Protocol configuration options IE shall be the same, if both IEs are present in the create PDP context response.

The QoS values supplied in the Create PDP Context Request may be negotiated downwards by the GGSN. The negotiated values or the original values from SGSN are inserted in the Quality of Service Profile information element of the Create PDP Context Response message.

The GGSN may start to forward T-PDUs after the Create PDP Context Response has been sent. The SGSN may start to forward T-PDUs when the Create PDP Context Response has been received. In this case the SGSN shall also be prepared to receive T-PDUs from the GGSN after it has sent a Create PDP Context Request but before a Create PDP Context Response has been received.

The Reordering Required value supplied in the Create PDP Context Response indicates whether the end user protocol benefits from packet in sequence delivery and whether the SGSN and the GGSN therefore shall perform reordering or not. In other words, if reordering is required by the GGSN, the SGSN and the GGSN shall perform reordering of incoming T-PDUs on this path. When the Quality of Service (QoS) Profile is Release 99 the receiving entity shall ignore the Reordering Required.

The GGSN shall include the Recovery information element into the Create PDP Context Response if the GGSN is in contact with the SGSN for the first time or the GGSN has restarted recently and the new Restart Counter value has not yet been indicated to the SGSN. The SGSN receiving the Recovery information element shall handle it as when an Echo Response message is received but shall consider the PDP context being created as active if the response indicates successful context activation at the GGSN.

The Charging ID is used to identify all charging records produced in SGSN(s) and the GGSN for this PDP context. The Charging ID is generated by the GGSN and shall be unique within the GGSN.

The Charging Gateway Address is the IP address of the recommended Charging Gateway Functionality to which the SGSN should transfer the Charging Detail Records (CDR) for this PDP Context.

The optional Private Extension contains vendor or operator specific information.

Information element	Presence requirement	Reference
Cause	Mandatory	7.7.1
Reordering required	Conditional	7.7.6
Recovery	Optional	7.7.11
Tunnel Endpoint Identifier Data I	Conditional	7.7.13
Tunnel Endpoint Identifier Control Plane	Conditional	7.7.14
Charging ID	Conditional	7.7.26
End User Address	Conditional	7.7.27
Protocol Configuration Options	Optional	7.7.31
GGSN Address for Control Plane	Conditional	GSN Address 7.7.32
GGSN Address for user traffic	Conditional	GSN Address 7.7.32
Quality of Service Profile	Conditional	7.7.34
Charging Gateway Address	Optional	7.7.43
Private Extension	Optional	7.7.44

Table 6: Information Elements in a Create PDP Context Response

***** Next section to be changed *****

7.7.1 Cause

In a request, the Cause Value indicates the reason for the request. The Cause shall be included in the request message.

In a response, the Cause Value indicates the acceptance or the rejection of the corresponding request. In addition, the Cause Value may indicate what was the reason for the corresponding request. The Cause value shall be included in the response message.

'Request accepted' is returned when a GSN has accepted a control plane request.

'Non-existent' indicates a non-existent or an inactive PDP context.

'IMSI not known' indicates a non-existent MM context.

'MS is GPRS Detached' indicates an idle MM context.

'MS is not GPRS Responding' and 'MS Refuses' may be used by SGSN to reject a Network-Requested PDP Context Activation.

'Version not supported' is returned when the recipient does not recognise the version number in the request message.

'Request IMSI', 'Request IMEI', 'Request IMSI and IMEI' and 'No identity needed' are used by GGSN to notify SGSN what to do.

'No resources available' is a generic temporary error condition e.g. all dynamic PDP addresses occupied or no memory available.

'Service not supported' is a generic error indicated that the GSN do not support the requested service.

'User authentication failed' indicates that the external packet network has rejected the user's service request.

'System failure' is a generic permanent error condition.

'Roaming restriction' indicates that the SGSN cannot activate the requested PDP context because of the roaming restrictions.

'P-TMSI Signature mismatch' is returned if either:

- the P-TMSI Signature stored in the old SGSN does not match the value sent by the MS via the new SGSN
- or the MS does not provide the P-TMSI Signature to the new SGSN while the old SGSN has stored the P-TMSI Signature for that MS.

'Semantic error in the TFT operation', 'Syntactic error in the TFT operation', 'Semantic errors in packet filter(s)'<u>- and</u> 'Syntactic errors in packet filters(s)' and 'PDP context without TFT already activated' are indications of abnormal cases involving TFTs. The abnormal TFT cases and the use of the cause codes are defined in 3GPP TS 24.008.

'Invalid message format', 'Mandatory IE incorrect', 'Mandatory IE missing' and 'Optional IE incorrect' are indications of protocol errors described in the section Error handling.

'GPRS connection suspended' indicates that the GPRS activities of the mobile station are suspended.

'Authentication failure' indicates that the user authentication failed in the new SGSN.

'Context not found' indicates that the PDP Context referenced in an Active Secondary Context Request message was not found in the receiving GGSN.

'Relocation failure' indicates that the SRNS relocation failed in the new SGSN side.

'Unknown mandatory extension header' signals in a response message that the corresponding request included an extension header for which comprehension was required but unknown to the receiving end.

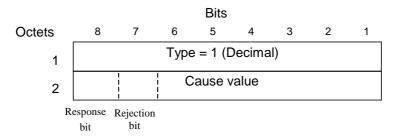


Figure 9: Cause information element

	Cause		Value (Decima
		Request IMSI	0
		Request IMEI	1
request		Request IMSI and IMEI	2
		No identity needed	3
		MS Refuses	4
		MS is not GPRS Responding	5
		For future use	6-48
		Cause values reserved for GPRS charging	49-63
		protocol use (see GTP' in GSM 12.15)	
For future use			64-127
	0.00	Pequest apported	128
	acc	Request accepted For future use	129-176
		Cause values reserved for GPRS charging protocol use (see GTP' in GSM 12.15)	177-191
F		Non-existent	192
		Invalid message format	193
response	rej	IMSI not known	194
•		MS is GPRS Detached	195
		MS is not GPRS Responding	196
		MS Refuses	197
		For future use	198
		No resources available	199
		Service not supported	200
		Mandatory IE incorrect	201
		Mandatory IE missing	202
		Optional IE incorrect	203
		System failure	204
		Roaming restriction	205
		P-TMSI Signature mismatch	206
		GPRS connection suspended	207
		Authentication failure	208
		User authentication failed	209
		Context not found	210
		All dynamic PDP addresses are occupied	211
		No memory is available	212
		Relocation failure	213
		Unknown mandatory extension header	214
		Semantic error in the TFT operation	215
		Syntactic error in the TFT operation	216
		Semantic errors in packet filter(s)	217
		Syntactic errors in packet filter(s)	218
		Missing or unknown APN	219
		Unknown PDP address or PDP type	220
		PDP context without TFT already activated	221
		For future use	222 1 -240
		Cause values reserved for GPRS charging	241-255
			2 11 200

Table 38: Cause Values

NOTE: With this coding, bits 8 and 7 of the Cause Value respectively indicate whether the message was a request or a response, and whether the request was accepted or rejected.

Table 39:	Use of	the Cause	Values
-----------	--------	-----------	--------

Cause 8	value bits 7	Result
0	0	Request
0	1	For future use (Note)
1	0	Acceptance
1	1	Rejection

3GPP TSG CN WG4 Meeting #15 Helsinki, Finland, 29th July – 2nd August 2002

N4-020970

			GE RE		ст			CR-Form-v7
		CHAN	GERE	QUE	31			
ж	29.060	CR 347	жre	v -	ж	Current vers	ion: 5.2.0	ж
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Source:	策 CN4							
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Work item code:	策 GTP enl	nancements				Date: ೫	18/07/2002	
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		prrection)					(GSM Phase 2)	
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		ditorial modification					(Release 1999))
		xplanations of the a		ries can			(Release 4)	
	be found in	n 3GPP <u>TR 21.900</u> .					(Release 5)	
						Rel-6	(Release 6)	

Reason for change: ₩	 Within 24.008, cause code <i>PDP context without TFT already activated</i> is used to report to the MS that a PDP Context could not be activated without a TFT, because there is already a PDP Context without a TFT active for that MS. 29.060 does not include an equivalent cause code, so it could be assumed that the SGSN is expected to determine when this condition exists. This requires that the SGSN track which contexts have TFT and which do not. However, 23.060 implies that the SGSN should not be doing anything in relation to TFT. For example in section 9.2.2.1.1 (Secondary PDP Context Activation) it is stated that <i>"TFT is sent transparently through the SGSN to the GGSN to enable packet classification for downlink data transfer."</i> Further, during an IRAU event, the old SGSN does not inform the new SGSN which PDP contexts have TFT. As a result, the new SGSN cannot reliably track which contexts have TFTs associated with them. Thus, the SGSN can never send the <i>PDP context without TFT already activated</i> cause code to the MS. This is a critical correction.
Summary of change: ೫	Introduce a cause code into 29.060 to map onto PDP context without TFT already activated in 24.008.
Consequences if # not approved:	PDP context without TFT already activated can not ever be sent to the MS, denying the MS useful diagnostic information. Also the SGSN can not accurately interpret error causes for Create Context Requests.

Clauses affected:	¥ 7.3.2, 7.7.1
Other specs affected:	Y N X Other core specifications X X Test specifications X X O&M Specifications X
Other comments:	¥

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <u>http://www.3gpp.org/specs/CR.htm</u>. 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.

7.3.2 Create PDP Context Response

The message shall be sent from a GGSN node to a SGSN node as a response of a Create PDP Context Request. When the SGSN receives a Create PDP Context Response with the Cause value indicating 'Request Accepted', the SGSN activates the PDP context and may start to forward T-PDUs to/from the MS from/to the external data network.

The Cause value indicates if a PDP context has been created in the GGSN or not. A PDP context has not been created in the GGSN if the Cause differs from 'Request accepted'. Possible Cause values are:

- "Request Accepted".
- "No resources available".
- "All dynamic PDP addresses are occupied".
- "No memory is available".
- "Missing or unknown APN".
- "Unknown PDP address or PDP type".
- "User authentication failed".
- "System failure".
- "Semantic error in the TFT operation".
- "Syntactic error in the TFT operation".
- "Semantic errors in packet filter(s)".
- "Syntactic errors in packet filters(s)".
- "Mandatory IE incorrect".
- "Mandatory IE missing".
- "Optional IE incorrect".

-____"Invalid message format".

- "PDP context without TFT already activated"

'No resources available' indicates e.g. that all dynamic PDP addresses are occupied or no memory is available. 'Missing or unknown APN' indicates e.g. when the GGSN does not support the Access Point Name. 'Unknown PDP address or PDP type' indicates e.g. when the GGSN does not support the PDP type or the PDP address.

'User authentication failed' indicates that the external packet network has rejected the service requested by the user. <u>'PDP context without TFT already activated' indicates that a PDP context has already been activated without a TFT for that MS.</u>

Only the Cause information element, optionally Protocol Configuration Options and optionally the Recovery information element shall be included in the response if the Cause contains another value than 'Request accepted'.

All information elements, except Recovery, Protocol Configuration Options, Charging Gateway Address, Tunnel Endpoint Identifier Control Plane and Private Extension, are mandatory if the Cause contains the value 'Request accepted'.

The Tunnel Endpoint Identifier for Data (I) field specifies an uplink Tunnel Endpoint Identifier for G-PDUs that is chosen by the GGSN. The SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent uplink G-PDUs which are related to the requested PDP context.

The Tunnel Endpoint Identifier Control Plane field specifies an uplink Tunnel Endpoint Identifier for control plane messages, which is chosen by the GGSN. The SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent uplink-control plane messages, which are related to the requested PDP context. If the GGSN has already

confirmed successful assignment of its Tunnel Endpoint Identifier Control Plane to the peer SGSN, this field shall not be present. The GGSN confirms successful assignment of its Tunnel Endpoint Identifier Control Plane to the SGSN when it receives any message with its assigned Tunnel Endpoint Identifier Control Plane in the GTP header from the SGSN.

The GGSN shall include a GGSN Address for control plane and a GGSN address for user traffic, which may differ from that provided by the underlying network service (e.g. IP). The SGSN shall store these GGSN Addresses and use them when sending control plane on this GTP tunnel or G-PDUs to the GGSN for the MS.

If the MS requests a dynamic PDP address with the PDP Type IPv4 or IPv6 and a dynamic PDP address is allowed, then the End User Address information element shall be included and the PDP Address field in the End User Address information element shall contain the dynamic PDP Address allocated by the GGSN.

If the MS requests a static PDP address with the PDP Type IPv4 or IPv6, or a PDP address is specified with PDP Type PPP, then the End User Address information element shall be included and the PDP Address field shall not be included.

The PDP address in End User Address IE and in the Protocol configuration options IE shall be the same, if both IEs are present in the create PDP context response.

The QoS values supplied in the Create PDP Context Request may be negotiated downwards by the GGSN. The negotiated values or the original values from SGSN are inserted in the Quality of Service Profile information element of the Create PDP Context Response message.

The GGSN may start to forward T-PDUs after the Create PDP Context Response has been sent. The SGSN may start to forward T-PDUs when the Create PDP Context Response has been received. In this case the SGSN shall also be prepared to receive T-PDUs from the GGSN after it has sent a Create PDP Context Request but before a Create PDP Context Response has been received.

The Reordering Required value supplied in the Create PDP Context Response indicates whether the end user protocol benefits from packet in sequence delivery and whether the SGSN and the GGSN therefore shall perform reordering or not. In other words, if reordering is required by the GGSN, the SGSN and the GGSN shall perform reordering of incoming T-PDUs on this path. When the Quality of Service (QoS) Profile is Release 99 the receiving entity shall ignore the Reordering Required.

The GGSN shall include the Recovery information element into the Create PDP Context Response if the GGSN is in contact with the SGSN for the first time or the GGSN has restarted recently and the new Restart Counter value has not yet been indicated to the SGSN. The SGSN receiving the Recovery information element shall handle it as when an Echo Response message is received but shall consider the PDP context being created as active if the response indicates successful context activation at the GGSN.

The Charging ID is used to identify all charging records produced in SGSN(s) and the GGSN for this PDP context. The Charging ID is generated by the GGSN and shall be unique within the GGSN.

The Charging Gateway Address is the IP address of the recommended Charging Gateway Functionality to which the SGSN should transfer the Charging Detail Records (CDR) for this PDP Context.

The optional Private Extension contains vendor or operator specific information.

Information element	Presence requirement	Reference
Cause	Mandatory	7.7.1
Reordering required	Conditional	7.7.6
Recovery	Optional	7.7.11
Tunnel Endpoint Identifier Data I	Conditional	7.7.13
Tunnel Endpoint Identifier Control Plane	Conditional	7.7.14
Charging ID	Conditional	7.7.26
End User Address	Conditional	7.7.27
Protocol Configuration Options	Optional	7.7.31
GGSN Address for Control Plane	Conditional	GSN Address 7.7.32
GGSN Address for user traffic	Conditional	GSN Address 7.7.32
Quality of Service Profile	Conditional	7.7.34
Charging Gateway Address	Optional	7.7.43
Private Extension	Optional	7.7.44

Table 6: Information Elements in a Create PDP Context Response

***** Next section to be changed *****

7.7.1 Cause

In a request, the Cause Value indicates the reason for the request. The Cause shall be included in the request message.

In a response, the Cause Value indicates the acceptance or the rejection of the corresponding request. In addition, the Cause Value may indicate what was the reason for the corresponding request. The Cause value shall be included in the response message.

'Request accepted' is returned when a GSN has accepted a control plane request.

'Non-existent' indicates a non-existent or an inactive PDP context.

'IMSI not known' indicates a non-existent MM context.

'MS is GPRS Detached' indicates an idle MM context.

'MS is not GPRS Responding' and 'MS Refuses' may be used by SGSN to reject a Network-Requested PDP Context Activation.

'Version not supported' is returned when the recipient does not recognise the version number in the request message.

'Request IMSI', 'Request IMEI', 'Request IMSI and IMEI' and 'No identity needed' are used by GGSN to notify SGSN what to do.

'No resources available' is a generic temporary error condition e.g. all dynamic PDP addresses occupied or no memory available.

'Service not supported' is a generic error indicated that the GSN do not support the requested service.

'User authentication failed' indicates that the external packet network has rejected the user's service request.

'System failure' is a generic permanent error condition.

'Roaming restriction' indicates that the SGSN cannot activate the requested PDP context because of the roaming restrictions.

'P-TMSI Signature mismatch' is returned if either:

- the P-TMSI Signature stored in the old SGSN does not match the value sent by the MS via the new SGSN
- or the MS does not provide the P-TMSI Signature to the new SGSN while the old SGSN has stored the P-TMSI Signature for that MS.

'Semantic error in the TFT operation', 'Syntactic error in the TFT operation', 'Semantic errors in packet filter(s)'<u>- and</u> 'Syntactic errors in packet filters(s)' and 'PDP context without TFT already activated' are indications of abnormal cases involving TFTs. The abnormal TFT cases and the use of the cause codes are defined in 3GPP TS 24.008.

'Invalid message format', 'Mandatory IE incorrect', 'Mandatory IE missing' and 'Optional IE incorrect' are indications of protocol errors described in the section Error handling.

'GPRS connection suspended' indicates that the GPRS activities of the mobile station are suspended.

'Authentication failure' indicates that the user authentication failed in the new SGSN.

'Context not found' indicates that the PDP Context referenced in an Active Secondary Context Request message was not found in the receiving GGSN.

'Relocation failure' indicates that the SRNS relocation failed in the new SGSN side.

'Unknown mandatory extension header' signals in a response message that the corresponding request included an extension header for which comprehension was required but unknown to the receiving end.

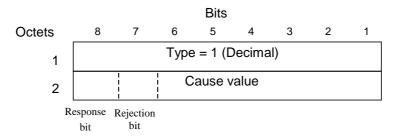


Figure 9: Cause information element

	Cause		Value (Decima
		Request IMSI	0
		Request IMEI	1
request		Request IMSI and IMEI	2
		No identity needed	3
		MS Refuses	4
		MS is not GPRS Responding	5
		For future use	6-48
		Cause values reserved for GPRS charging	49-63
		protocol use (see GTP' in GSM 12.15)	
For future use			64-127
	acc	Request accepted	128
	acc	For future use	129-176
		Cause values reserved for GPRS charging	177-191
		protocol use (see GTP' in GSM 12.15)	177-131
-		Non-existent	192
		Invalid message format	193
response	rej	IMSI not known	194
response	10)	MS is GPRS Detached	195
		MS is not GPRS Responding	196
		MS Refuses	197
		For future use	198
		No resources available	199
		Service not supported	200
		Mandatory IE incorrect	200
		Mandatory IE missing	202
		Optional IE incorrect	202
		System failure	203
		Roaming restriction	205
		P-TMSI Signature mismatch	205
		GPRS connection suspended	200
		Authentication failure	207
		User authentication failed	208
		Context not found	209
		All dynamic PDP addresses are occupied	210
		No memory is available	212
		Relocation failure	212
		Unknown mandatory extension header	213
		Semantic error in the TFT operation	215
		Syntactic error in the TFT operation	215
		Semantic errors in packet filter(s)	210
		Syntactic errors in packet filter(s)	217
		Missing or unknown APN	218
		Unknown PDP address or PDP type	219
		PDP context without TFT already activated	220
		For future use	2221-240
		Cause values reserved for GPRS charging	22 <u>2</u> +-240 241-255
		L Cause values reserved for GPKS charding	241-200

Table 38: Cause Values

NOTE: With this coding, bits 8 and 7 of the Cause Value respectively indicate whether the message was a request or a response, and whether the request was accepted or rejected.

Table 39: Use of t	the Cause Values
--------------------	------------------

Cause 8	value bits 7	Result
0	0	Request
0	1	For future use (Note)
1	0	Acceptance
1	1	Rejection

3GPP TSG-CN WG4 Meeting #15 Helsinki, Finland, 29th July – 2nd August 2002

Tdoc **#N4-021010**

							CR-Form-v7
	CHANGE REQUEST						
			_ ~ • -				
ж		29.060 CR 349 #r	ev -	ж	Current vers	^{ion:} 4.4.0	ж
For HFI P or	<u>- 11</u>	sing this form, see bottom of this pag	ne or look	at th	e non-un text	over the ¥ sv	mhols
	i u			atu		over the se sy	1110013.
Proposed chang	e a	affects: UICC apps%	IE Ra	dio A	ccess Networ	k Core N	etwork X
- J							
Title:	ж	Incorrect references					
Source:	ж	CN4					
Work item code:	ж	TEI4			<i>Date:</i>	30/07/2002	
-							
Category:	ж	F			Release: #	Rel-4	
		Use <u>one</u> of the following categories:				the following rel	
		F (correction)		,	2	(GSM Phase 2)	
		A (corresponds to a correction in a	an earlier r	eleas	,	(Release 1996)	
		B (addition of feature),	,		R97	(Release 1997)	
		C (functional modification of featur	e)		R98	(Release 1998)	
		D (editorial modification)			R99	(Release 1999))
		Detailed explanations of the above cate	gories can		Rel-4	(Release 4)	
		be found in 3GPP <u>TR 21.900</u> .				(Release 5)	
					Rel-6	(Release 6)	

Reason for change: ೫	Incorrect references.		
Summary of change: #	Referenced TS corrected, i.e. 32.015 => 32.215.		
	This is an essential correction.		
Consequences if 🛛 🕷	The wrong charging specification is referenced.		
not approved:	The wong charging opeonodion is released.		
not approved.			
Clauses affected: #	7.7.23		
	YN		
Other specs अ	X Other core specifications %		
affected:	X Test specifications		

How to create CRs using this form:

Other comments:

ж

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

X O&M Specifications

- 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.

**** START OF MODIFICATION ****

7.7.23 Charging Characteristics

The charging characteristics information element is a way of informing both the SGSN and GGSN of the rules for producing charging information based on operator configured triggers. For the encoding of this information element see TS-3GPP TS 32.015215.

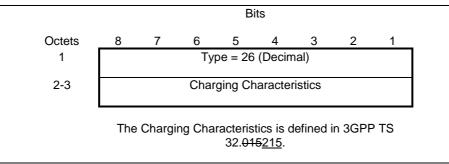


Figure 31: Charging Characteristics Information Element

**** END OF MODIFICATION ****