3GPP TSG CN Plenary Meeting #20   **NP-030219**
4th – 6th June 2003 Hämeenlinna, FINLAND.

Source:	TSG CN WG4	
Title:	Corrections on GTP	
Agenda item:	8.8	
Document for:	APPROVAL	

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.060	421		N4-030496	Rel-5	QoS Profile Data parameter in the Quality of Service (Data) Profile IE extended with one octet	F	5.5.0
29.060	422		N4-030497	Rel-6	QoS Profile Data parameter in the Quality of Service (Data) Profile IE extended with one octet	A	6.0.0
29.060	411	1	N4-030664	Rel-5	Enhancement of description for error codes for Create PDP Context response message	F	5.5.0
29.060	412	1	N4-030665	Rel-6	Enhancement of description for error codes for Create PDP Context response message	A	6.0.0
29.060	419	2	N4-030704	Rel-5	Definition of reserved TEID value	F	5.5.0
29.060	420	2	N4-030705	Rel-6	Definition of reserved TEID value	A	6.0.0

CR-Form-v7

CHANGE REQUEST

⌘ **29.060 CR 411** ⌘**rev 1** ⌘ Current version: **5.5.0** ⌘

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

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

Title: ⌘	Enhancement of description for error codes for Create PDP Context response message	
Source: ⌘	CN4	
Work item code: ⌘	GTP enhancements	**Date:** ⌘ 22/05/2003
Category: ⌘ **F**		**Release:** ⌘ Rel-5

Use one of the following categories:
F (correction)
A (corresponds to a correction in an earlier release)
B (addition of feature),
C (functional modification of feature)
D (editorial modification)
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change: ⌘	If the Selection Mode field in the Create PDP Context Request message is set to 1 or 2 (MS or network provided APN, subscription not verified) and this APN is configured to allow only requests with verified subscription ("Subscription Required" set in the APN configuration) then the GGSN rejects the PDP Context activation (see TS 23.060, section 9.2.2.1 and Annex A.2 for more information on Selection Mode). Currently it is unclear which cause code should be sent back to the SGSN from the GGSN in the PDP Context Response for this scenario. There are also errors in the description for other cause codes.
Summary of change: ⌘	A new cause code is added to the Create PDP Context Response message to state that the reason why the request failed was that the subscriber has tried to access an APN which requires a subscription but the user does not have a subscription. The explanatory text for other cause codes for the Create PDP Context Response message is slightly enhanced.
Consequences if not approved: ⌘	Identifying that the reason of why a PDP Context activation failed due to Selection Mode criteria set in the GGSN will be difficult and may differ between implementations of a GGSN. Different GSN suppliers may have different understandings on the usage of the different cause codes.

Clauses affected: ⌘	7.3.2, 7.7.1,

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

Other comments: ⌘	

**** First Modified Section ****

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".

- "Context not found"

- "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".

- "APN access denied – no subscription".

'No resources available' indicates that not enough resources are available within the network to allow the PDP Context to be created 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 e.g. the authentication check in the RADIUS server failed. 'PDP context without TFT already activated' indicates that a PDP context has already been activated without a TFT for that MS. 'Context not found' indicates that a Create PDP Request for a subsequent PDP context has been received, but the PDP context associated with the request, which the SGSN believes to be active does not exist on the GGSN. 'APN access denied – no subscription' indicates that the GGSN has denied the user access to an APN because a subscription is required, but the subscriber does not have the neccessary subscription.

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).

If the Create PDP Context Request received from the SGSN included IPv6 SGSN address, an IPv4/IPv6 capable GGSN shall include IPv6 addresses in the fields GGSN Address for Control Plane and GGSN Address for user traffic, and IPv4 addresses in the fields Alternative GGSN Address for Control Plane and Alternative GGSN Address for user traffic. If SGSN included only an IPv4 SGSN address in the request, IPv4/IPv6 capable GGSN shall include IPv4 addresses in the fields GGSN Address for Control Plane and GGSN Address for user traffic, and IPv6 addresses in the fields Alternative GGSN Address for Control Plane and Alternative GGSN Address for user traffic. The SGSN shall store these GGSN Addresses and use one set of 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 Alternative Charging Gateway Address IE has a similar purpose as the Charging Gateway Address but enables co-existence of IPv4 and IPv6 stacks in the Ga charging interfaces, without mandating any node to have a dual stack. The format of the optional Alternative Charging Gateway Address information element is the same as the format of the Charging Gateway Address.

When both these addresses are present, the Charging Gateway address IE shall contain the IPv4 address of the Charging Gateway Function and the Alternative Charging Gateway address IE shall contain the IPv6 address of the Charging Gateway Function.

> NOTE: The Charging Gateway Address and Alternative Charging Gateway Address both refer to the same Charging Gateway Function.

The optional Private Extension contains vendor or operator specific information.

The Protocol Configuration Options (PCO) information element may be included in the response when the GGSN provides the MS with application specific parameters.

Table 6: Information Elements in a Create PDP Context Response

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
Alternative GGSN Address for Control Plane	Conditional	GSN Address 7.7.32
Alternative GGSN Address for user traffic	Conditional	GSN Address 7.7.32
Quality of Service Profile	Conditional	7.7.34
Charging Gateway Address	Optional	7.7.44
Alternative Charging Gateway Address	Optional	7.7.44
Private Extension	Optional	7.7.46

****** Next Modified Section ******

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)' and '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.
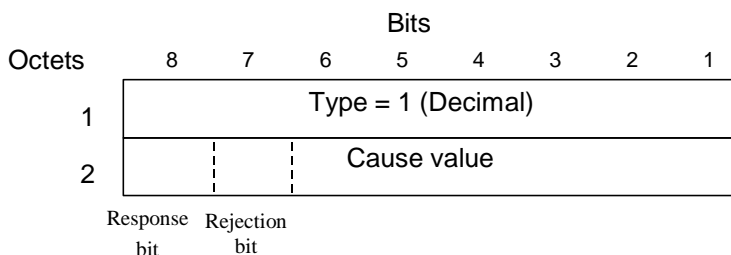

Figure 9: Cause information element

Table 38: Cause Values

Cause			Value (Decimal)
request		Request IMSI	0
		Request IMEI	1
		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 protocol use (see GTP' in 3GPP TS 32.215)	49-63
For future use			64-127
response	acc	Request accepted	128
		For future use	129-176
		Cause values reserved for GPRS charging protocol use (see GTP' in 3GPP TS 32.215)	177-191
	rej	Non-existent	192
		Invalid message format	193
		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
		APN access denied – no subscription	222
		For future use	22~~2~~3-240
		Cause values reserved for GPRS charging protocol use (see GTP' in 3GPP TS 32.215)	241-255

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

NOTE: The value '01' is for future use and shall not be sent. If received in a response, it shall be treated as a rejection.

CR-Form-v7

CHANGE REQUEST

| ⌘ | **29.060** CR **412** | ⌘ **rev** **1** | ⌘ | Current version: | **6.0.0** | ⌘ |

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

Title: ⌘	Enhancement of description for error codes for Create PDP Context response message	
Source: ⌘	CN4	
Work item code: ⌘	GTP enhancements	**Date:** ⌘ 22/05/2003
Category: ⌘ **A**		**Release:** ⌘ Rel-6

Use *one* of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use *one* of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*

Reason for change: ⌘	If the Selection Mode field in the Create PDP Context Request message is set to 1 or 2 (MS or network provided APN, subscription not verified) and this APN is configured to allow only requests with verified subscription ("Subscription Required" set in the APN configuration) then the GGSN rejects the PDP Context activation (see TS 23.060, section 9.2.2.1 and Annex A.2 for more information on Selection Mode). Currently it is unclear which cause code should be sent back to the SGSN from the GGSN in the PDP Context Response for this scenario.

There are also errors in the description for other cause codes. |
| **Summary of change:** ⌘ | A new cause code is added to the Create PDP Context Response message to state that the reason why the request failed was that the subscriber has tried to access an APN which requires a subscription but the user does not have a subscription.

The explanatory text for other cause codes for the Create PDP Context Response message is slightly enhanced. |
| **Consequences if not approved:** ⌘ | Identifying that the reason of why a PDP Context activation failed due to Selection Mode criteria set in the GGSN will be difficult and may differ between implementations of a GGSN. Different GSN suppliers may have different understandings on the usage of the different cause codes. |

Clauses affected: ⌘	7.3.2, 7.7.1

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

Other comments: ⌘	

**** First Modified Section ****

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".

- "Context not found"

- "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".

- "APN access denied – no subscription".

'No resources available' indicates that not enough resources are available within the network to allow the PDP Context to be created 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 e.g. the authentication check in the RADIUS server failed. 'PDP context without TFT already activated' indicates that a PDP context has already been activated without a TFT for that MS. 'Context not found' indicates that a Create PDP Request for a subsequent PDP context has been received, but the PDP context associated with the request, which the SGSN believes to be active does not exist on the GGSN. 'APN access denied – no subscription' indicates that the GGSN has denied the user access to an APN because a subscription is required, but the subscriber does not have the neccessary subscription.

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).

If the Create PDP Context Request received from the SGSN included IPv6 SGSN address, an IPv4/IPv6 capable GGSN shall include IPv6 addresses in the fields GGSN Address for Control Plane and GGSN Address for user traffic, and IPv4 addresses in the fields Alternative GGSN Address for Control Plane and Alternative GGSN Address for user traffic. If SGSN included only an IPv4 SGSN address in the request, IPv4/IPv6 capable GGSN shall include IPv4 addresses in the fields GGSN Address for Control Plane and GGSN Address for user traffic, and IPv6 addresses in the fields Alternative GGSN Address for Control Plane and Alternative GGSN Address for user traffic. The SGSN shall store these GGSN Addresses and use one set of 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 Alternative Charging Gateway Address IE has a similar purpose as the Charging Gateway Address but enables co-existence of IPv4 and IPv6 stacks in the Ga charging interfaces, without mandating any node to have a dual stack. The format of the optional Alternative Charging Gateway Address information element is the same as the format of the Charging Gateway Address.

When both these addresses are present, the Charging Gateway address IE shall contain the IPv4 address of the Charging Gateway Function and the Alternative Charging Gateway address IE shall contain the IPv6 address of the Charging Gateway Function.

NOTE: The Charging Gateway Address and Alternative Charging Gateway Address both refer to the same Charging Gateway Function.

The optional Private Extension contains vendor or operator specific information.

The Protocol Configuration Options (PCO) information element may be included in the response when the GGSN provides the MS with application specific parameters.

Table 6: Information Elements in a Create PDP Context Response

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
Alternative GGSN Address for Control Plane	Conditional	GSN Address 7.7.32
Alternative GGSN Address for user traffic	Conditional	GSN Address 7.7.32
Quality of Service Profile	Conditional	7.7.34
Charging Gateway Address	Optional	7.7.44
Alternative Charging Gateway Address	Optional	7.7.44
Private Extension	Optional	7.7.46

**** Next Modified Section ****

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.

Cause values are shared with the GTP' protocol specified in 3GPP TS 32.215 [18].

'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)' and '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 [5].

'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.
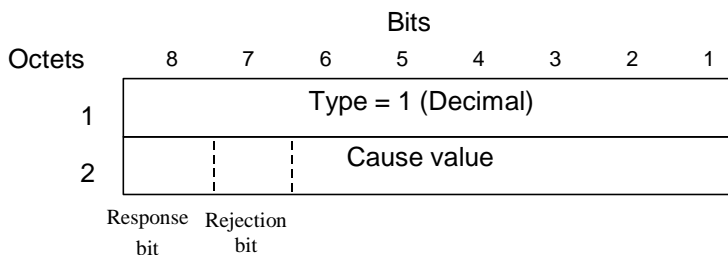

Figure 9: Cause information element

Table 38: Cause Values

Cause		Value (Decimal)
request	Request IMSI	0
	Request IMEI	1
	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 protocol use (see GTP' in 3GPP TS 32.215 [18])	49-63

Cause			Value (Decimal)
For future use			64-127
response	acc	Request accepted	128
		For future use	129-176
		Cause values reserved for GPRS charging protocol use (see GTP' in 3GPP TS 32.215 [18])	177-191
	rej	Non-existent	192
		Invalid message format	193
		IMSI not known	194
		MS is GPRS Detached	195
		MS is not GPRS Responding	196
		MS Refuses	197
		Version not supported	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
		APN access denied – no subscription	222
		For future use	2232-240
		Cause values reserved for GPRS charging protocol use (see GTP' in 3GPP TS 32.215 [18])	241-255
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
NOTE: The value '01' is for future use and shall not be sent. If received in a response, it shall be treated as a rejection.		

CR-Form-v7

CHANGE REQUEST

⌘	**29.060** CR **419**	⌘**rev** **2** ⌘	Current version:	**5.5.0** ⌘

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

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

Title: ⌘	Definition of reserved TEID value	
Source: ⌘	CN4	
Work item code: ⌘	GTP enhancements	***Date:*** ⌘ 22/05/2003
Category: ⌘	**F**	***Release:*** ⌘ Rel-5

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 TR 21.900.

Use <u>one</u> of the following releases:
2   (GSM Phase 2)
R96   (Release 1996)
R97   (Release 1997)
R98   (Release 1998)
R99   (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change: ⌘	There are several cases where TEID value 0 is used to indicate a special circumstance. Hence it is proposed to have TEID value 0 to be defined as a value reserved for special circumstances. Section 8.2 'Usage of the GTP-C header' defines the special circumstances when value '0' is allowed.
Summary of change: ⌘	Define TEID value 0 as reserved.
Consequences if not approved: ⌘	Some interoperability problems may occur.

Clauses affected: ⌘		

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

Other comments: ⌘	

How to create CRs using this form:

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

7.7.14   Tunnel Endpoint Identifier Control Plane

The Tunnel Endpoint Identifier Control Plane information element contains the Tunnel Endpoint Identifier for the control plane; it is assigned by the receiver of the flow. It distinguishes the tunnel from other tunnels between the same pair of entities. The value 0 is reserved for special cases defined in subclause 8.2.

If the receiver has not yet assigned a TEID for this tunnel, it shall assign an unused value to the TEID.

If the receiver has already assigned a Tunnel Endpoint Identifier Control Plane to the tunnel, but has not yet received confirmation of successful assignment from the transmitter, this information element shall take the same value as was sent before for this tunnel.

The receiver receives confirmation of successful assignment of its Tunnel Endpoint Identifier Control Plane from the transmitter when it receives any message with its assigned Tunnel Endpoint Identifier Control Plane in the GTP header from the transmitter.

If the Tunnel Endpoint Identifier Control Plane is received from the transmitter, this information element shall be stored.
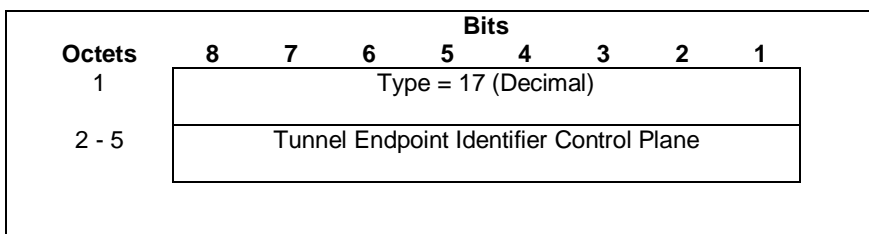
Octets	Bits							
	8	7	6	5	4	3	2	1
1	Type = 17 (Decimal)							
2 - 5	Tunnel Endpoint Identifier Control Plane							

Figure 22: Tunnel Endpoint Identifier Control Plane Information Element

Copy of the referred section, no changes:

8.2 Usage of the GTP-C Header

For control plane messages the GTP header shall be used as specified in clause 6 with the following clarifications and additions:

- Version shall be set to decimal 1 ('001').

- Protocol Type flag (PT) shall be set to '1'.

- Sequence number flag (S) shall be set to '1'.

- N-PDU Number flag (PN) shall be set to '0'. A GTP-C receiver shall not return an error if this flag is set to '1'.

- Message Type shall be set to the unique value that is used for each type of control plane message. Valid message types are marked with an x in the GTP-C column in table 1.

- Length shall be the length in octets of the payload, i.e. the rest of the packet following the mandatory part of the GTP header (that is the first 8 octets). The Sequence Number, the N-PDU Number or any Extension headers shall be considered to be part of the payload, i.e. included in the length count.

- The Tunnel Endpoint Identifier is set by the sending entity to the value requested by the corresponding entity (SGSN or GGSN); it identifies all the PDP Contexts with the same PDP address and APN (for Tunnel Management messages) or it identifies each MS and its associated context data (for messages not related to Tunnel Management), except for the following cases:

  - The Create PDP Context Request message for a given MS sent to a specific GGSN shall have the Tunnel Endpoint Identifier set to all zeroes, if the SGSN has not been assigned a Tunnel Endpoint Identifier Control Plane by the GGSN.

  - The Update PDP Context Request message for a given MS sent to a specific GGSN shall have the Tunnel Endpoint Identifier set to all zeros, if it is used to switch the GTP version of the tunnel to the GGSN from GTP v0 to GTP v1.

  - The Identification Request/Response messages, where the Tunnel Endpoint Identifier shall be set to all zeroes.

  - The SGSN Context Request message, where the Tunnel Endpoint Identifier shall be set to all zeroes.

  - The Echo Request/Response, Supported Extension Headers notification and the Version Not Supported messages, where the Tunnel Endpoint Identifier shall be set to all zeroes.

  - The Forward Relocation Request message, where the Tunnel Endpoint Identifier shall be set to all zeroes.

  - The PDU Notification Request message, where the Tunnel Endpoint Identifier shall be set to all zeroes.

  - The RAN Information Relay message, where the Tunnel Endpoint Identifier shall be set to all zeroes.

  - The Relocation Cancel Request message where the Tunnel Endpoint Identifier shall be set to all zeroes, except for the case where the old SGSN has already been assigned the Tunnel Endpoint Identifier Control Plane of the new SGSN.

  - All Location Management messages, where the Tunnel Endpoint Identifier shall be set to all zeroes.

  - If a GSN receives a GTP-C message requesting action related to a PDP context that the sending node believes is in existence, but that is not recognised by the receiving node, the receiving node shall send back to the source of the message, a response with the appropriate cause value (either 'Non-existent' or 'Context not found'). The Tunnel Endoint Identifier used in the response message shall be set to all zeroes.

The GSN Address for Control Plane set in the request message could be different from the IP Source address of the message. The Tunnel Endpoint Identifier notified in the request message is also used in this case for sending the corresponding response message.

- Sequence Number shall be a message number valid for a path. Within a given set of contiguous Sequence Numbers from 0 to 65535, a given Sequence Number shall, if used, unambiguously define a GTP control plane request message sent on the path (see section Reliable delivery of signalling messages). The Sequence Number in a control plane response message shall be copied from the control plane request message that the GSN is replying to. For GTP-C messages not having a defined response message for a request message, i.e. for messages Version Not Supported, RAN Information Relay and Supported Extension Headers Notification, the Sequence Number shall be ignored by the receiver.

- N-PDU Number shall not be interpreted.

The GTP-C header may be followed by subsequent information elements dependent on the type of control plane message. Only one information element of each type is allowed in a single control plane message, except for the Authentication Triplet, the PDP Context and the Tunnel Endpoint Identifier Data II information element where several occurrences of each type are allowed.
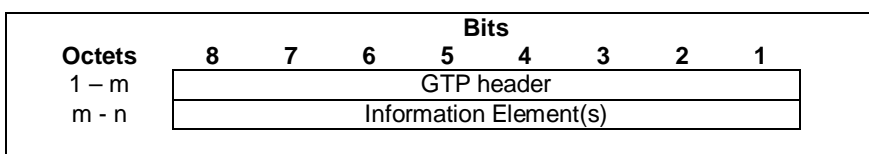
				Bits				
Octets	8	7	6	5	4	3	2	1
1 – m	GTP header							
m - n	Information Element(s)							

Figure 63: GTP Header followed by subsequent Information Elements

CR-Form-v7

CHANGE REQUEST

| ⌘ | **29.060** CR **420** | ⌘**rev** **2** ⌘ | Current version: | **6.0.0** | ⌘ |

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

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

Title: ⌘	Definition of reserved TEID value	
Source: ⌘	CN4	
Work item code: ⌘	GTP enhancements	*Date:* ⌘ 22/05/2003
Category: ⌘ **A**		*Release:* ⌘ Rel-6

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 TR 21.900.

Use <u>one</u> of the following releases:
   2   *(GSM Phase 2)*
   R96   *(Release 1996)*
   R97   *(Release 1997)*
   R98   *(Release 1998)*
   R99   *(Release 1999)*
   Rel-4 *(Release 4)*
   Rel-5 *(Release 5)*
   Rel-6 *(Release 6)*

Reason for change: ⌘	There are several cases where TEID value 0 is used to indicate a special circumstance. Hence it is proposed to have TEID value 0 to be defined as a value reserved for special circumstances. Section 8.2 'Usage of the GTP-C header' defines the special circumstances when value '0' is allowed.
Summary of change: ⌘	Define TEID value 0 as reserved.
Consequences if not approved: ⌘	Some interoperability problems may occur.

Clauses affected: ⌘	

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

Other comments: ⌘	

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

7.7.14   Tunnel Endpoint Identifier Control Plane

The Tunnel Endpoint Identifier Control Plane information element contains the Tunnel Endpoint Identifier for the control plane; it is assigned by the receiver of the flow. It distinguishes the tunnel from other tunnels between the same pair of entities. The value 0 is reserved for special cases defined in subclause 8.2.

If the receiver has not yet assigned a TEID for this tunnel, it shall assign an unused value to the TEID.

If the receiver has already assigned a Tunnel Endpoint Identifier Control Plane to the tunnel, but has not yet received confirmation of successful assignment from the transmitter, this information element shall take the same value as was sent before for this tunnel.

The receiver receives confirmation of successful assignment of its Tunnel Endpoint Identifier Control Plane from the transmitter when it receives any message with its assigned Tunnel Endpoint Identifier Control Plane in the GTP header from the transmitter.

If the Tunnel Endpoint Identifier Control Plane is received from the transmitter, this information element shall be stored.
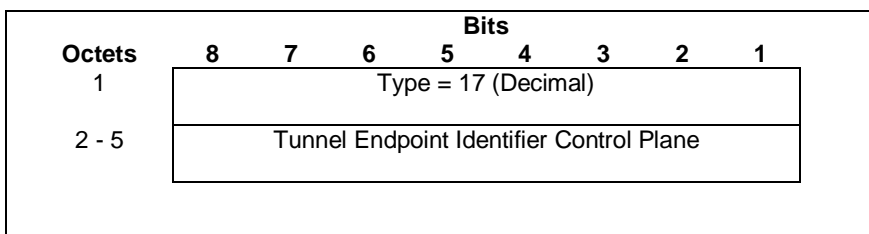
					Bits				
Octets	8	7	6	5	4	3	2	1
1				Type = 17 (Decimal)				
2 - 5				Tunnel Endpoint Identifier Control Plane				

Figure 22: Tunnel Endpoint Identifier Control Plane Information Element

Copy of the referred section, no changes:

8.2   Usage of the GTP-C Header

For control plane messages the GTP header shall be used as specified in clause 6 with the following clarifications and additions:

-   Version shall be set to decimal 1 ('001').

-   Protocol Type flag (PT) shall be set to '1'.

-   Sequence number flag (S) shall be set to '1'.

-   N-PDU Number flag (PN) shall be set to '0'. A GTP-C receiver shall not return an error if this flag is set to '1'.

-   Message Type shall be set to the unique value that is used for each type of control plane message. Valid message types are marked with an x in the GTP-C column in table 1.

-   Length shall be the length in octets of the payload, i.e. the rest of the packet following the mandatory part of the GTP header (that is the first 8 octets). The Sequence Number, the N-PDU Number or any Extension headers shall be considered to be part of the payload, i.e. included in the length count.

-   The Tunnel Endpoint Identifier is set by the sending entity to the value requested by the corresponding entity (SGSN or GGSN); it identifies all the PDP Contexts with the same PDP address and APN (for Tunnel Management messages) or it identifies each MS and its associated context data (for messages not related to Tunnel Management), except for the following cases:

    •   The Create PDP Context Request message for a given MS sent to a specific GGSN shall have the Tunnel Endpoint Identifier set to all zeroes, if the SGSN has not been assigned a Tunnel Endpoint Identifier Control Plane by the GGSN.

    •   The Update PDP Context Request message for a given MS sent to a specific GGSN shall have the Tunnel Endpoint Identifier set to all zeros, if it is used to switch the GTP version of the tunnel to the GGSN from GTP v0 to GTP v1.

    •   The Identification Request/Response messages, where the Tunnel Endpoint Identifier shall be set to all zeroes.

    •   The SGSN Context Request message, where the Tunnel Endpoint Identifier shall be set to all zeroes.

    •   The Echo Request/Response, Supported Extension Headers notification and the Version Not Supported messages, where the Tunnel Endpoint Identifier shall be set to all zeroes.

    •   The Forward Relocation Request message, where the Tunnel Endpoint Identifier shall be set to all zeroes.

    •   The PDU Notification Request message, where the Tunnel Endpoint Identifier shall be set to all zeroes.

    •   The RAN Information Relay message, where the Tunnel Endpoint Identifier shall be set to all zeroes.

    •   The Relocation Cancel Request message where the Tunnel Endpoint Identifier shall be set to all zeroes, except for the case where the old SGSN has already been assigned the Tunnel Endpoint Identifier Control Plane of the new SGSN.

    •   All Location Management messages, where the Tunnel Endpoint Identifier shall be set to all zeroes.

    •   If a GSN receives a GTP-C message requesting action related to a PDP context that the sending node believes is in existence, but that is not recognised by the receiving node, the receiving node shall send back to the source of the message, a response with the appropriate cause value (either 'Non-existent' or 'Context not found'). The Tunnel Endoint Identifier used in the response message shall be set to all zeroes.

The GSN Address for Control Plane set in the request message could be different from the IP Source address of the message. The Tunnel Endpoint Identifier notified in the request message is also used in this case for sending the corresponding response message.

- Sequence Number shall be a message number valid for a path. Within a given set of contiguous Sequence Numbers from 0 to 65535, a given Sequence Number shall, if used, unambiguously define a GTP control plane request message sent on the path (see section Reliable delivery of signalling messages). The Sequence Number in a control plane response message shall be copied from the control plane request message that the GSN is replying to. For GTP-C messages not having a defined response message for a request message, i.e. for messages Version Not Supported, RAN Information Relay and Supported Extension Headers Notification, the Sequence Number shall be ignored by the receiver.

- N-PDU Number shall not be interpreted.

The GTP-C header may be followed by subsequent information elements dependent on the type of control plane message. Only one information element of each type is allowed in a single control plane message, except for the Authentication Triplet, the PDP Context and the Tunnel Endpoint Identifier Data II information element where several occurrences of each type are allowed.
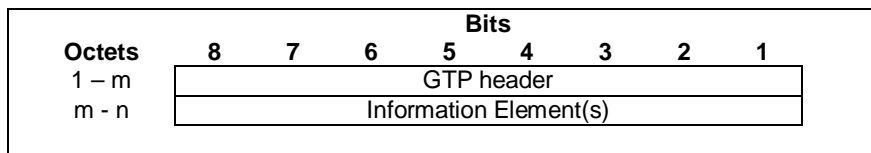
				Bits				
Octets	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
1 – m	GTP header							
m - n	Information Element(s)							

Figure 63: GTP Header followed by subsequent Information Elements

CR-Form-v7

CHANGE REQUEST

| | ⌘ | **29.060** CR **421** | ⌘**rev** | **-** | ⌘ | Current version: | **5.5.0** | ⌘ |

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

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

Title: ⌘	QoS Profile Data parameter in the Quality of Service (Data) Profile IE extended with one octet	
Source: ⌘	CN4	
Work item code:⌘	GTP enhancements	***Date:*** ⌘ 09/05/2003
Category: ⌘	**F**	***Release:*** ⌘ Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can
be found in 3GPP TR 21.900.

Use one of the following releases:
2   (GSM Phase 2)
R96   (Release 1996)
R97   (Release 1997)
R98   (Release 1998)
R99   (Release 1999)
Rel-4   (Release 4)
Rel-5   (Release 5)
Rel-6   (Release 6)

Reason for change: ⌘	To align with 3GPP TS 23.107 and 24.008 w.r.t. the length of the QoS IE in rel-5, the coding of the QoS Profile Data parameter in the Quality of Service (Data) Profile IE needs to be extended with one octet. Currently, octets 5 – n in the QoS Profile IE are coded according to 3GPP TS 24.008 Quality of Service IE, octets 3 – 13 and as the Signalling Indication and the Source Statistics Descriptor are located in octet 14 they will not be included. Hence, the coding of octets 5-n needs to be extended with one octet.
Summary of change:⌘	The coding of the QoS Profile Data parameter in the Quality of Service (Data) Profile IE has been extended with one octet.
Consequences if not approved: ⌘	The octet 14 of the QoS IE (containing the Signalling Indication and the Source Statistics Descriptor) will not be included when sent on the GTP.

Clauses affected: ⌘	7.7.34	

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

Other comments: ⌘	

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

****   START OF MODIFICATION   ****

7.7.34   Quality of Service (QoS) Profile

The Quality of Service (QoS) Profile shall include the values of the defined QoS parameters. Octet 4 carries the allocation/retention priority octet that is defined in 3GPP TS 23.107. The allocation/retention priority octet encodes each priority level defined in 23.107 as the binary value of the priority level. Octets 5 – n are coded according to 3GPP TS 24.008 Quality of Service IE, octets 3 - 1314. If a pre-Release '99 only capable terminal is served, octets 5 - n are coded according to 3GPP TS 44.008 Quality of Service IE, octets 3 - 5. The minimum length of the field QoS Profile Data is 3 octets; the maximum length may be up tois 254 octets.

The allocation/retention priority shall be ignored if the QoS profile is pre-Release '99 or the QoS profile is present in Quality of Service Requested (QoS Req) of the PDP context. A receiving end shall interpret the QoS profile Data field to be coded according to 3GPP TS 44.008 (i.e. according to the pre-Release '99 format) if the Length field value is 4.
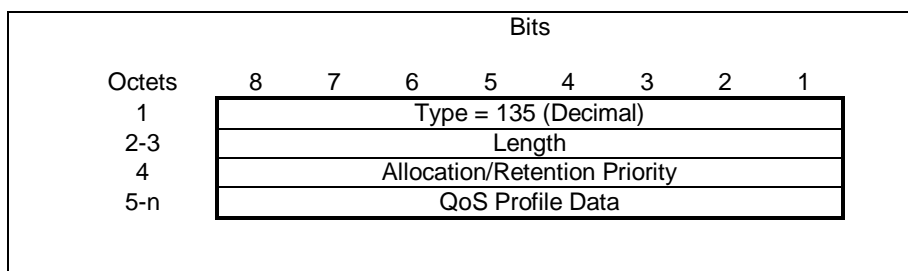
		Bits						
Octets	8	7	6	5	4	3	2	1
1	Type = 135 (Decimal)							
2-3	Length							
4	Allocation/Retention Priority							
5-n	QoS Profile Data							

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

****   END OF MODIFICATION   ****

CR-Form-v7

CHANGE REQUEST

⌘ **29.060 CR 422** ⌘rev **-** ⌘ Current version: **6.0.0** ⌘

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

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

Title: ⌘	QoS Profile Data parameter in the Quality of Service (Data) Profile IE extended with one octet	
Source: ⌘	CN4	
Work item code:⌘	GTP enhancements	**Date:** ⌘ 09/05/2003
Category: ⌘ **A**		**Release:** ⌘ Rel-6

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 TR 21.900.

Use <u>one</u> of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change: ⌘	To align with 3GPP TS 23.107 and 24.008 w.r.t. the length of the QoS IE in rel-5, the coding of the QoS Profile Data parameter in the Quality of Service (Data) Profile IE needs to be extended with one octet. Currently, octets 5 – n in the QoS Profile IE are coded according to 3GPP TS 24.008 Quality of Service IE, octets 3 – 13 and as the Signalling Indication and the Source Statistics Descriptor are located in octet 14 they will not be included. Hence, the coding of octets 5-n needs to be extended with one octet.
Summary of change:⌘	The coding of the QoS Profile Data parameter in the Quality of Service (Data) Profile IE has been extended with one octet.
Consequences if not approved: ⌘	The octet 14 of the QoS IE (containing the Signalling Indication and the Source Statistics Descriptor) will not be included when sent on the GTP.

Clauses affected: ⌘	7.7.34

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

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 ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

****   START OF MODIFICATION   ****

7.7.34   Quality of Service (QoS) Profile

The Quality of Service (QoS) Profile shall include the values of the defined QoS parameters. Octet 4 carries the allocation/retention priority octet that is defined in 3GPP TS 23.107. The allocation/retention priority octet encodes each priority level defined in 3GPP TS 23.107 as the binary value of the priority level. Octets 5 - n are coded according to 3GPP TS 24.008 [5] Quality of Service IE, octets 3 - ~~13~~14. If a pre-Release '99 only capable terminal is served, octets 5 - n are coded according to 3GPP TS 44.008 Quality of Service IE, octets 3 - 5. The minimum length of the field QoS Profile Data is 3 octets; the maximum length ~~may be up to~~is 254 octets.

The allocation/retention priority shall be ignored if the QoS profile is pre-Release '99 or the QoS profile is present in Quality of Service Requested (QoS Req) of the PDP context. A receiving end shall interpret the QoS profile Data field to be coded according to 3GPP TS 44.008 (i.e. according to the pre-Release '99 format) if the Length field value is 4.
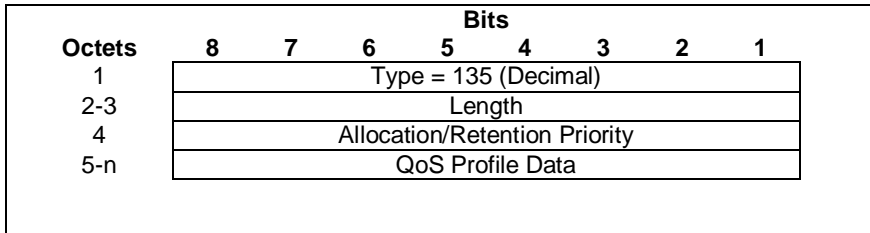
Bits							
Octets	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
1	Type = 135 (Decimal)							
2-3	Length							
4	Allocation/Retention Priority							
5-n	QoS Profile Data							

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

****   END OF MODIFICATION   ****