3GPP TSG-CN Meeting #22 **NP-030530**

10th - 12th December. Maui, Hawaii.

Source: **3GPP TSG CN2**

Title: **CRs on Release 5 WI CAMEL4**

Agenda item: **8.3**

Document for: **APPROVAL**

This document contains 2 CRs on Rel-5 WI CAMEL4 approved by CN2.

WG_tdoc	Title	Spec	CR	Rev	Cat	Rel	C_Ver
N2-030567	Extension of QoS for HSDPA in GPRS CAMEL	23.078	637	3	F	Rel-5	5.5.1
N2-030568	Extension of QoS for HSDPA in GPRS CAMEL	29.078	340	3	F	Rel-5	5.5.0

Note: After the meeting, a need for improvements was identified, therefore the source companies are sending improved versions of these documents with new CR numbers directly to CN#22 for approval (23.078-646 and 29.078-344).

3GPP TSG CN WG2 Meeting #31 ***N2-030567***
Bangkok, THAILAND, 27th – 31st October 2003 ***(Revision on N2-030550)***

CR-Form-v7

CHANGE REQUEST

⌘ **23.078** **CR** **637** ⌘**rev** **3** ⌘ Current version: **5.5.1** ⌘

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

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

Title:	⌘	Extension of QoS for HSDPA in GPRS CAMEL
Source:	⌘	NEC
Work item code:	⌘	CAMEL4
Date:	⌘	3/10/2003
Category:	⌘	**F** **(essential correction)**
Release:	⌘	Rel-5

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

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

Reason for change:	⌘	In the SA-Plenary#21, The TS 23.107 CR that upgrades the maximum bitrate upto 16 mega was approved in order to support HSDPA. Accrodingly, the TS 24.008 CR was also approved in the CN-Plenary#21. These upgrades has the impact to CAP since bitrate information as the part of QoS is handled in some CAMEL procedures.
Summary of change:	⌘	The following updates are proposed in this CR. - New parameter negotiated QoS is added to the quality of service IE in Apply Charging Report GPRS information flow. - New parameter requested QoS extended, Subscribed QoS extended and negotiated QoS extended are added to the quality of service IE in Event Report GPRS information flow. - New parameter requested QoS extended, Subscribed QoS extended and negotiated QoS extended are added to the quality of service IE in Initial DP GPRS information flow. - New parameter requested QoS extended, Subscribed QoS extended and negotiated QoS extended are added to the quality of service IE in Provide Subscriber Info ack information flow.
Consequences if not approved:	⌘	The GPRS interworking function and the Subscriber Location and State retrieval function may not handle accurate QoS related information in case HSDPA function deploied in radio access network.

Clauses affected:	⌘	6.6.1.2.2, 6.6.1.4.2, 6.6.1.5.2, 11.3.6.1.2

		Y	N			
Other specs	⌘	X		Other core specifications	⌘	29.078

Affected:		
	X	Test specifications
	X	O&M Specifications
Other comments:	⌘	The related CR S2-032688 (CR#139r1 for 23.107) has been approved in TSG SA-P#21.

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.

**** Informative descriptions ****

1. The Rel-5 extentios for Quality of Service IE in TS 24.008 version 5.9.0 section 10.5.6.5.

8	7	6	5	4	3	2	1	
Quality of service IEI								octet 1
Length of quality of service IE								Octet 2
0 0 spare			Delay class			Reliability class		octet 3
Peak throughput				0 spare		Precedence class		octet 4
0 0 0 spare			Mean throughput					octet 5
Traffic Class			Delivery order			Delivery of erroneous SDU		Octet 6
Maximum SDU size								Octet 7
Maximum bit rate for uplink								Octet 8
Maximum bit rate for downlink								Octet 9
Residual BER				SDU error ratio				Octet 10
Transfer delay						Traffic Handling priority		Octet 11
Guaranteed bit rate for uplink								Octet 12
Guaranteed bit rate for downlink								Octet 13
0 0 0 spare			Signal-ling Indicat-ion	Source Statistics Descriptor				Octet 14
Maximum bit rate for downlink (extended)								Octet 15
Guaranteed bit rate for downlink (extended)								Octet 16

The sub-fields indicated with right blue-colored area have been extended in Rel-5.

2. New parameter proposed for TS 29.002 (version 5.7.0 section 17.7.1.) is shown as follows. This parameter is imported to CAP.

```
Ext2-QoS-Subscribed ::= OCTET STRING (SIZE (1..3))
    -- Octets 1-3 are coded according to 3GPP TS 24.008 [35] Quality of Service Octets 14-16.
    -- If Quality of Service information is structured with 14 octet length, then
    -- Octet 1 is coded according to 3GPP TS 24.008 [35] Quality of Service Octet 14.
```

****** First modified section ******

6.6.1.2 Apply Charging Report GPRS

6.6.1.2.1 Description

This IF is used by the gprsSSF to report to the gsmSCF the information requested in the Apply Charging GPRS IF. In addition, this IF is used to notify the gsmSCF of changes in QoS. Note that there are several possible QoS profiles defined by the combinations of the different QoS attributes as defined in 3GPP TS 23.060 [**Error! Reference source not found.**]. A PLMN may only support and charge on a limited subset of those QoS. It is recommended that changes in QoS are only reported in Apply Charging Report GPRS for those QoS profiles.

6.6.1.2.2 Information Elements

Information element name	Status	Description
Gprs Reference Number	C	This IE consists of a number assigned by the gprsSSF and a number assigned by the gsmSCF. It is used for TCAP dialogue segmentation. Refer to 3GPP TS 29.078 [**Error! Reference source not found.**] for the usage of this element.
Charging Result	M	This IE contains the charging information for the PDP provided by the gprsSSF. It is a choice between elapsed time and data volume.
Quality Of Service	C	This IE is described in a table below.
Active	M	This IE indicates if the GPRS session or PDP context is still established, or if it has been detached or deactivated.
PDP ID	C	This IE identifies the PDP Context to which the IF applies. Scenario 1: If this IE is not present in the IF, then the Apply Charging Report GPRS applies to the GPRS Session. If this IE is present in the IF, then the Apply Charging Report GPRS applies to the indicated PDP Context. Scenario 2: This IE is not used in the IF.
Charging Roll Over	C	This IE indicates which parameter(s) of the Charging Result have overflowed. Refer to 3GPP TS 29.078 [**Error! Reference source not found.**] for the usage of this element.

Quality of Service contains the following information element:

Information element name	Status	Description
Negotiated QoS	C	This IE identifies the QoS which was negotiated between the user, the SGSN and the GGSN, as a result of a 'Modify PDP Context' request. This IE shall be included only if sending of the Apply Charging Report GPRS was triggered by a change in Quality of Service. This IE shall contain the negotiated QoS as on the time of sending the Apply Charging Report GPRS.
Negotiated QoS Extended	S	This IE contains a supplement to the Negotiated QoS. This IE shall be present if the Negotiated QoS is present and one or more of the following information was negotiated between the user, the SGSN and the GGSN. - Source Statistics Descriptor; - Signalling Indication; - Maximum bit rate for downlink (extended); - Guaranteed bit rate for downlink (extended). Otherwise, it shall be absent.

****** Next modified section ******

6.6.1.4 Event Report GPRS

6.6.1.4.1 Description

This IF is used to notify the gsmSCF of a GPRS event previously requested by the gsmSCF in a Request Report GPRS Event IF.

6.6.1.4.2 Information Elements

Information element name	Status	Description
Gprs Reference Number	C	This IE consists of a number assigned by the gprsSSF and a number assigned by the gsmSCF. It is used for TCAP dialogue segmentation. Refer to 3GPP TS 29.078 [**Error! Reference source not found.**] for the usage of this element.
GPRS Event Type	M	This IE specifies the type of event that is reported.
Misc GPRS Info	M	This IE indicates the DP type (EDP-N or EDP-R).
GPRS Event Specific Information	M	This IE is described in a table below. This IE contains information specific to the reported event.
PDP ID	C	This IE identifies the PDP Context to which the IF applies. Scenario 1: If this IE is not present in the IF, then the Event Report GPRS applies to the GPRS Session. If this IE is present in the IF, then the Event Report GPRS applies to the indicated PDP Context. Scenario 2: This IE is not used in the IF.

If the *GPRS Event Type* contains DP Change of Position GPRS Session, then the GPRS Event Specific Information IE contains the following information elements:

Information element name	Status	Description
Location Information In SGSN	M	See subclause **Error! Reference source not found.**.

If the *GPRS Event Type* contains DP Change of Position Context, then the GPRS Event Specific Information IE contains the following information elements:

Information element name	Status	Description
Access Point Name	S	This IE identifies the Access Point Name to which the MS is connected. It shall be present, if available, at inter-SGSN routing area update. It shall be absent at intra-SGSN routing area update.
Charging ID	S	This IE contains the Charging ID received from the GGSN for the PDP context. It shall be present, if available, at inter-SGSN routing area update. It shall be absent at intra-SGSN routing area update.
Location Information In SGSN	M	See subclause **Error! Reference source not found.**.
End User Address	S	See subclause 6.6.1.5.2. It shall be present, if available, at inter-SGSN routing area update. It shall be absent at intra-SGSN routing area update.
Quality Of Service	S	This IE is described in a table below. It shall be present, if available, at inter-SGSN routing area update. It shall be absent at intra-SGSN routing area update.
Time And Time Zone	S	This IE contains the time that the gprsSSF met the detection point, and the time zone the gprsSSF resides in. It shall be present, if available, at inter-SGSN routing area update. It shall be absent at intra-SGSN routing area update.
GGSN Address	S	This IE contains the GGSN address for control plane to which the MS is connected, see 3GPP TS 23.003 [**Error! Reference source not found.**]. It shall be present, if available, at inter-SGSN routing area update. It shall be absent at intra-SGSN routing area update.

If the *GPRS Event Type* contains DP Detach or DP PDP context disconnection, then the GPRS Event Specific Information IE contains the following information elements:

Information element name	Status	Description
Initiating Entity	M	This IE identifies the entity that has initiated the disconnection or detachment.
Routeing Area Update	C	This IE indicates that the Detach or Disconnection is due to inter-SGSN routeing area update.

If the *GPRS Event Type* contains DP PDP context establishment, then the GPRS Event Specific Information IE contains the following information elements:

Information element name	Status	Description
Access Point Name	C	This IE identifies the Access Point Name the MS has requested to connect to.
End User Address	C	See subclause 6.6.1.5.2.
Quality Of Service	M	This IE is described in a table below.
Location Information In SGSN	M	See subclause **Error! Reference source not found.**.
Time And Time Zone	M	This IE contains the time that the gprsSSF met the detection point, and the time zone the gprsSSF resides in.
PDP Initiation Type	M	This IE indicates whether a PDP context was established as a result of a network-initiated request or as a result of a subscriber request.
Secondary PDP Context	C	This IE indicates that the PDP context activation was requested for a secondary PDP context. See 3GPP TS 23.060 [**Error! Reference source not found.**].

If the *GPRS Event Type* contains DP PDP context establishment acknowledgement, then the GPRS Event Specific Information IE contains the following information elements:

Information element name	Status	Description
Access Point Name	M	This IE identifies the Access Point Name to which the MS is connected.
Charging ID	M	This IE contains the Charging ID received from the GGSN for the PDP context.
End User Address	M	See subclause 6.6.1.5.2.
Quality Of Service	M	This IE is described in a table below.
Location Information In SGSN	M	See subclause **Error! Reference source not found.**.
Time And Time Zone	M	This IE contains the time that the gprsSSF met the detection point, and the time zone the gprsSSF resides in.
GGSN Address	M	This IE contains the GGSN address for control plane to which the MS is connected, see 3GPP TS 23.003 [**Error! Reference source not found.**].

Quality of Service contains the following information elements:

Information element name	Status	Description
Requested QoS	C	This IE identifies the QoS requested by the subscriber for the PDP Context. It shall be included if the EventReportGPRS is sent at PDP Context Establishment, at PDP Context Establishment Acknowledgement and at Change of Position Context.
Subscribed QoS	C	This IE identifies the subscribed QoS. It shall be included if the EventReportGPRS is sent at PDP Context Establishment, at PDP Context Establishment Acknowledgement and at Change of Position Context.
Negotiated QoS	C	This IE identifies the QoS which was negotiated between the user, the SGSN and the GGSN. It shall be included if the EventReportGPRS is sent at PDP Context Establishment Acknowledgement and at Change of Position Context.
Requested QoS Extended	S	This IE contains a supplement to the Requested QoS. This IE shall present only if the Requested QoS is present and one or more of the following information was requested by the subscriber for the PDP context. - Source Statistics Descriptor; - Signalling Indication; - Maximum bit rate for downlink (extended); - Guaranteed bit rate for downlink (extended). Otherwise, it shall be absent.
Subscribed QoS Extended	S	This IE contains a supplement to the Subscribed QoS IE. This IE shall be present only if the Subsribed QoS is present and one or more of the following information is managed by the HLR as the subscription profile.

Information element name	Status	Description
		- Maximum bit rate for downlink (extended); - Guaranteed bit rate for downlink (extended). Otherwise, it shall be absent.
Negotiated QoS Extended	S	This IE contains a supplement to the Negotiated QoS. This IE shall be present only if the Negotiated QoS is present and one or more of the following information was negotiated between the user, the SGSN and the GGSN. - Source Statistics Descriptor; - Signalling Indication; - Maximum bit rate for downlink (extended); - Guaranteed bit rate for downlink (extended). Otherwise, it shall be absent.

****** Next modified section ******

6.6.1.5 Initial DP GPRS

6.6.1.5.1 Description

This IF is generated by the gprsSSF when a trigger is detected at a DP in the GPRS state models, to request instructions from the gsmSCF.

6.6.1.5.2 Information Elements

Information element name	Status	Description
Gprs Reference Number	M	This IE consists of a number assigned by the gprsSSF. It is used for TCAP dialogue segmentation. Refer to 3GPP TS 29.078 [**Error! Reference source not found.**] for the usage of this element.
ServiceKey	M	This IE indicates to the gsmSCF the requested CAMEL Service. It is used to address the required application/SLP within the gsmSCF.
GPRS Event Type	M	This IE indicates the armed GPRS DP event resulting in the Initial DP IF.
MSISDN	M	This IE contains the basic MSISDN of the MS.
IMSI	M	This IE identifies the mobile subscriber.
Time and Time zone	M	This IE contains the time that the gprsSSF was triggered, and the time zone in which the gprsSSF resides.
GPRS MS Class	C	This IE contains the MS network and radio access capabilities.
End User Address	C	This IE is described in a table below.
Quality of Service	C	This IE is described in a table below.
Access Point Name	C	This IE identifies the Access Point Name: - At DP Change Of Position Context contains the selected APN. - AT DP PDP Context Establishment contains the APN which the MS has requested. - AT DP PDP Context Establishment Acknowledgement contains the selected APN.
Charging ID	C	This IE contains the Charging ID received from the GGSN for the PDP context.
SGSN Capabilities	C	This IE specifies the capabilities of the SGSN to support the CAMEL interworking, e.g. support of Advice of Charge.
Location Information in SGSN	M	This IE is described in subclause **Error! Reference source not found.**.
PDP Initiation Type	C	This IE indicates whether a PDP context was established as a result of a network-initiated request or as a result of a subscriber request.
GGSN Address	C	This IE contains the GGSN address for control plane to which the MS is connected, see 3GPP TS 23.003 [**Error! Reference source not found.**].
Secondary PDP context	C	This IE indicates that the PDP context activation was requested for a secondary PDP context. See 3GPP TS 23.060 [**Error! Reference source not found.**]. This IE is not sent if this IF is initiated at DP Change of Position Context.
IMEI (with software version)	C	This IE contains the IMEISV (as defined in 3GPP TS 23.003 [**Error! Reference source not found.**]) of the ME in use by the served subscriber.

Quality of Service contains the following information elements:

Information element name	Status	Description
Requested QoS	C	This IE identifies the QoS requested by the subscriber for a new PDP Context. It shall be included if the InitialDPGPRS is sent at PDP Context Establishment, at PDP Context Establishment Acknowledgement and at Change of Position Context.
Subscribed QoS	C	This IE identifies the subscribed QoS. It shall be included if the InitialDPGPRS is sent at PDP Context Establishment, at PDP Context Establishment Acknowledgement and at Change of Position Context.
Negotiated QoS	C	This IE identifies the QoS which was negotiated between the user, the SGSN and the GGSN. It shall be included if the Initial DP GPRS is sent at PDP Context Establishment Acknowledgement and at Change of Position Context.
Requested QoS Extended	S	This IE contains a supplement to the Requested QoS. This IE shall present only if the Requested QoS is present and one or more of the following information was requested by the subscriber for the PDP context. - Source Statistics Descriptor; - Signalling Indication; - Maximum bit rate for downlink (extended); - Guaranteed bit rate for downlink (extended). -Otherwise, it shall be absent.
Subscribed QoS Extended	S	This IE contains a supplement to the Subscribed QoS IE. This IE shall be present only if the Subsribed QoS is present and one or more of the following information is managed by the HLR as the subscription profile. - Maximum bit rate for downlink (extended); - Guaranteed bit rate for downlink (extended). -Otherwise, it shall be absent.
Negotiated QoS Extended	S	This IE contains a supplement to the Negotiated QoS. This IE shall be present only if the Negotiated QoS is present and one or more of the following information was negotiated between the user, the SGSN and the GGSN. - Source Statistics Descriptor; - Signalling Indication; - Maximum bit rate for downlink (extended); - Guaranteed bit rate for downlink (extended). -Otherwise, it shall be absent.

End User Address shall be populated as follows:

- At DP Change Of Position Context in an Inter-SGSN Routeing Area Update: Initial DP GPRS and EventReportGPRS contain the selected value;
- At DP PDP Context Establishment: Initial DP GPRS and Event Report GPRS contain the value which the MS has requested;
- At DP PDP Context Establishment Acknowledgement: Initial DP GPRS and Event Report GPRS contain the selected value. Note that the PDP Address is not always available at this DP.

For details see 3GPP TS 23.060 [**Error! Reference source not found.**].

End User Address contains the following information elements:

Information element name	Status	Description
PDP Type Organization	C	This IE identifies the PDP Type Organisation (e.g. IETF).
PDP Type Number	C	This IE identifies the PDP type, e.g. IPv4 or IPv6.
PDP Address	C	This IE identifies the address of the subscriber for a new PDP Context.

****** Next modified section ******

11.3.6 SGSN to HLR information flows

11.3.6.1 Provide Subscriber Info ack

11.3.6.1.1 Description

This IF is used by the SGSN to provide the requested subscriber location and/or subscriber state information to the HLR.

11.3.6.1.2 Information Elements

This IF is defined in 3GPP TS 23.018 [**Error! Reference source not found.**]. The following differences apply:

Information element name	Status	Description
Subscriber State	-	Not applicable.
PS domain Subscriber State	C	This IE indicates the status of the MS in the PS Domain. It shall be present only if requested by the HLR. The possible values of the IE are: - Detached: The SGSN has determined from its internal data that the MS is not attached to the network. - CAMEL attached, MS not reachable for paging: The SGSN has determined from its internal data that the MS is attached to the network, but there is no PDP Context active, and the MS is not reachable for paging. - CAMEL attached, MS may be reachable for paging: The SGSN has determined from its internal data that the MS is attached to the network, but there is no PDP Context active; the SGSN has not determined from its internal data that the MS is not reachable for paging. - CAMEL PDP active, MS not reachable for paging: The SGSN has determined from its internal data that the MS is attached to the network there is at least on PDP context active, and the MS not reachable for paging. - CAMEL PDP active, MS may be reachable for paging: The SGSN has determined from its internal data that the MS is attached to the network and there is at least one PDP context active; the SGSN has not determined from its internal data that the MS is not reachable for paging.
PDP Context Information List	S	This IE is described in a table below. This IE indicates the PDP context information for each PDP context which is active for the MS. It shall be present if the PS domain Subscriber State has the value "CAMEL PDP active, MS not reachable for paging" or "CAMEL PDP active MS may be reachable for paging"; otherwise it shall be absent.
Location Information For GPRS	C	This IE is described in a table below. It indicates the location of the MS. It shall be present only if requested by the HLR.
IMEI (with software version)	C	This IE contains the IMEI & software version of the ME in use by the served subscriber. It shall be present only if requested by the HLR.
GPRS MS Class	C	This IE contains the MS network and radio access capabilities. It shall be present only if requested by the HLR.

PDP Context Information includes the following information elements:

Information element name	Status	Description
PDP Context Identifier	M	Index of the PDP context.
PDP State	C	Packet data protocol state, INACTIVE or ACTIVE.
PDP Type	C	PDP type, e.g., PPP or IP.
PDP Address	C	PDP address, e.g., an IP address.
APN Subscribed	C	The APN received from the HLR.
APN in Use	C	The APN currently used.
NSAPI	C	Network layer Service Access Point Identifier.
TI	C	Transaction Identifier.
TEID for Gn/Gp	C	Tunnel Endpoint Identifier for the Gn and Gp interfaces.
TEID for Iu	C	Tunnel Endpoint Identifier for the Iu interface.
GGSN Address in Use	C	The IP address of the GGSN currently used.

Information element name	Status	Description
Subscribed QoS	C	The quality of service profile subscribed.
Requested QoS	C	The quality of service profile requested.
Negotiated QoS	C	The quality of service profile negotiated.
Charging ID	C	Charging identifier, identifies charging records generated by SGSN and GGSN.
PDP Context Charging Characteristics	C	The charging characteristics of this PDP context, e.g., normal, prepaid, flat-rate, and/or hot billing.
RNC Address In Use	C	The IP address of the RNC currently used.
Requested QoS Extended	S	This IE contains a supplement to the Requested QoS. This IE shall present only if the Requested QoS is present and one or more of the following information was requested by the subscriber for the PDP context. - Source Statistics Descriptor; - Signalling Indication; - Maximum bit rate for downlink (extended); - Guaranteed bit rate for downlink (extended). -Otherwise, it shall be absent.
Subscribed QoS Extended	S	This IE contains a supplement to the Subscribed QoS IE. This IE shall be present only if the Subsribed QoS is present and one or more of the following information is managed by the HLR as the subscription profile. - Maximum bit rate for downlink (extended); - Guaranteed bit rate for downlink (extended). -Otherwise, it shall be absent.
Negotiated QoS Extended	S	This IE contains a supplement to the Negotiated QoS. This IE shall be present only if the Negotiated QoS is present and one or more of the following information was negotiated between the user, the SGSN and the GGSN. - Source Statistics Descriptor; - Signalling Indication; - Maximum bit rate for downlink (extended); - Guaranteed bit rate for downlink (extended). -Otherwise, it shall be absent.

Location Information For GPRS includes the following information elements:

Information element name	Status	Description
Service area ID	C,E	See 3GPP TS 23.018 [**Error! Reference source not found.**].
Cell ID	C,E	See 3GPP TS 23.018 [**Error! Reference source not found.**].
Location area ID	C,E	See 3GPP TS 23.018 [**Error! Reference source not found.**].
Routeing area ID	C	See 3GPP TS 23.003 [**Error! Reference source not found.**].
Geographical information	C	See 3GPP TS 23.032 [**Error! Reference source not found.**].
Geodetic information	C	See ITU-T Q.763 [**Error! Reference source not found.**].
Age of location information	C	See 3GPP TS 23.018 [**Error! Reference source not found.**].
Current Location Retrieved	C	See 3GPP TS 23.018 [**Error! Reference source not found.**].
SGSN number	M	Global Title of the SGSN. See 3GPP TS 23.060 [**Error! Reference source not found.**].
Selected LSA Identity	C	This IE is applicable only if SoLSA is supported by the SGSN. This IE indicates the LSA identity associated with the current position of the MS. It shall be present if the LSA ID in the subscriber data matches the LSA ID of the current cell. In the case of multiple matches the LSA ID with the highest priority it shall be present. See 3GPP TS 23.073 [**Error! Reference source not found.**]

3GPP TSG CN WG2 Meeting #31 ***N2-030568***
Bangkok, THAILAND, 27th – 31st October 2003 ***(Revision on N2-030551)***

CR-Form-v7

CHANGE REQUEST

⌘ **29.078** **CR** **340** ⌘**rev** **3** ⌘ 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 ☒

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Date:	⌘	3/10/2003
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Rel-6 *(Release 6)*

Reason for change:	⌘	In the SA-Plenary#21, The TS 23.107 CR that upgrades the maximum bitrate upto 16 mega was approved in order to support HSDPA. Accrodingly, the TS 24.008 CR was also approved in the CN-Plenary#21. These upgrades has the impact toCAP since bitrate information as the part of QoS is handled in some CAMEL procedures.
Summary of change:	⌘	The following updates are proposed in this CR. - New parameter Ext2 QoS Subscribed that is defined in 29.002 is newly imported. - New parameter GPRS QoS Extended, requested QoS Extended, subscribed QoS Extended and negotiated QoS Extended are newly defined to handle the extended QoS information that had been newly defined in 24.008. - Add new description in ApplyChargingReportGPRS procedure to explain that addition parameter may be included. - Add new description in EventReportGPRS procedure to explain that addition parameter may be included. - Add new description in InitialDPGPRS procedure to explain that addition parameter may be included.
Consequences if not approved:	⌘	The ApplyChargingReportGPRS procedure,the EventReportGPRS procedure and the InitialDPGPRS procedure may not handle accurate QoS related information in case HSDPA function deploied in radio access network.

Clauses affected:	⌘	5.1, 13.3.1.1, 13.8.1.1, 13.10.1.1
Other specs	⌘	Y ☒ N ☐ Other core specifications ⌘ 23.078

affected:		X	Test specifications
		X	O&M Specifications
Other comments:	⌘	The related CR S2-032688 (CR#139r1 for 23.107) has been approved in TSG SA-P#21.	

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.

**** Informative descriptions ****

1. The Rel-5 extentios for Quality of Service IE in TS 24.008 version 5.9.0 section 10.5.6.5.

8	7	6	5	4	3	2	1	
Quality of service IEI								octet 1
Length of quality of service IE								Octet 2
0 0 spare			Delay class			Reliability class		octet 3
Peak throughput				0 spare		Precedence class		octet 4
0 0 0 spare			Mean throughput					octet 5
Traffic Class			Delivery order			Delivery of erroneous SDU		Octet 6
Maximum SDU size								Octet 7
Maximum bit rate for uplink								Octet 8
Maximum bit rate for downlink								Octet 9
Residual BER				SDU error ratio				Octet 10
Transfer delay						Traffic Handling priority		Octet 11
Guaranteed bit rate for uplink								Octet 12
Guaranteed bit rate for downlink								Octet 13
0 0 0 spare			Signal-ling Indicat-ion	Source Statistics Descriptor				Octet 14
Maximum bit rate for downlink (extended)								Octet 15
Guaranteed bit rate for downlink (extended)								Octet 16

The sub-fields indicated with right blue-colored area have been extended in Rel-5.

2. New parameter proposed for TS 29.002 (version 5.7.0 section 17.7.1.) is shown as follows. This parameter is imported to CAP.

```
Ext2-QoS-Subscribed ::= OCTET STRING (SIZE (1..3))
    -- Octets 1-3 are coded according to 3GPP TS 24.008 [35] Quality of Service Octets 14-16.
    -- If Quality of Service information is structured with 14 octet length, then
    -- Octet 1 is coded according to 3GPP TS 24.008 [35] Quality of Service Octet 14.
```

****** First modified section ******

5 Common CAP Types

5.1 Data types

```
CAP-datatypes {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1)
modules(3) cap-datatypes(52) version4(3)}

DEFINITIONS IMPLICIT TAGS ::= BEGIN

IMPORTS

    Duration,
    Integer4,
    Interval,
    LegID,
    ServiceKey
FROM CS1-DataTypes {itu-t(0) identified-organization(4) etsi(0) inDomain(1) in-network(1)
modules(0) cs1-datatypes(2) version1(0)}

    BothwayThroughConnectionInd,
    CriticalityType,
    MiscCallInfo
FROM CS2-datatypes {itu-t(0) identified-organization(4) etsi(0) inDomain(1) in-network(1)
cs2(20) modules(0) in-cs2-datatypes(0) version1(0)}

    AddressString,
    Ext-BasicServiceCode,
    IMSI,
    ISDN-AddressString,
    NAEA-CIC
FROM MAP-CommonDataTypes {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0)
gsm-Network(1) modules(3) map-CommonDataTypes(18) version8(8)}

    Ext-QoS-Subscribed,
    Ext2-QoS-Subscribed,
    GeographicalInformation,
    GSN-Address,
    LocationInformation,
    LSAIdentity,
    QoS-Subscribed,
    RAIdentity,
    SubscriberState,
    GPRSChargingID
FROM MAP-MS-DataTypes {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0)
gsm-Network(1) modules(3) map-MS-DataTypes(11) version8(8)}

    CallReferenceNumber,
    SuppressionOfAnnouncement
FROM MAP-CH-DataTypes {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0)
gsm-Network(1) modules(3) map-CH-DataTypes(13) version8(8)}

    tc-Messages,
    classes
FROM CAP-object-identifiers {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cap-object-identifiers(100) version4(3)}
```

--- Some texts skipped. ---

```
GPRS-QoS ::= CHOICE {
    short-QoS-format                    [0] QoS-Subscribed,
    long-QoS-format                     [1] Ext-QoS-Subscribed
    }
-- Short-QoS-format shall be sent for QoS in pre GSM release 99 format.
-- Long-QoS-format shall be sent for QoS in GSM release 99 (and beyond) format.
-- Which of the two QoS formats shall be sent is determined by which QoS
-- format is available in the SGSN at the time of sending.
-- Refer to 3GPP TS 29.002 [11] for encoding details of QoS-Subscribed and
-- Ext-QoS-Subscribed.

GPRS-QoS-Extended ::= SEQUENCE {
    Supplement-to-long-QoS-format       [0] Ext2-QoS-Subscribed,
```

```
    ...
    }

GPRSCause {PARAMETERS-BOUND : bound} ::= OCTET STRING (SIZE
            (bound.&minGPRSCauseLength .. bound.&maxGPRSCauseLength))
-- Shall only include the cause value.

--  00000000   Unspecified
--  All other values shall be interpreted as 'Unspecified'.
--
-- This parameter indicates the cause for CAP interface related information.
-- The GPRSCause mapping to/from GTP cause values specified in the 3GPP TS 29.060 [12] and
-- to/from 3GPP TS 24.008 [9] GMM cause and SM cause values are outside scope of this document.

GPRSEvent ::= SEQUENCE {
    gPRSEventType                       [0] GPRSEventType,
    monitorMode                         [1] MonitorMode
    }
--  Indicates the GPRS event information for monitoring.

GPRSEventSpecificInformation {PARAMETERS-BOUND : bound} ::= CHOICE {

    attachChangeOfPositionSpecificInformation
                                        [0] SEQUENCE {
            locationInformationGPRS         [0] LocationInformationGPRS             OPTIONAL,
            ...
            },
```

--- Some texts skipped. ---

```
NAOliInfo ::= OCTET STRING (SIZE (1))
--  NA Oli information takes the same value as defined in ANSI T1.113-1995 [92]
--  e.g.    '3D'H  – Decimal value 61 - Cellular Service (Type 1)
--          '3E'H  – Decimal value 62 - Cellular Service (Type 2)
--          '3F'H  – Decimal value 63 - Cellular Service (roaming)

OCSIApplicable ::= NULL
--  Indicates that the Originating CAMEL Subscription Information, if present, shall be
--  applied on the outgoing call leg created with a Connect operation. For the use of this
--  parameter see 3GPP TS 23.078 [7].

OriginalCalledPartyID {PARAMETERS-BOUND : bound} ::= OCTET STRING (SIZE(
    bound.&minOriginalCalledPartyIDLength .. bound.&maxOriginalCalledPartyIDLength))
--  Indicates the original called number. Refer to ETSI EN 300 356-1 [23] Original Called Number
--  for encoding.

PDPID ::= OCTET STRING (SIZE (1))
--  PDP Identifier is a counter used to identify a specific PDP Context within a control
--  relationship between gprsSSF and gsmSCF.

PDPInitiationType ::= ENUMERATED {
    mSInitiated                         (0),
    networkInitiated                    (1)
    }

QualityOfService ::= SEQUENCE {
    requested-QoS                       [0] GPRS-QoS                                OPTIONAL,
    subscribed-QoS                      [1] GPRS-QoS                                OPTIONAL,
    negotiated-QoS                      [2] GPRS-QoS                                OPTIONAL,
    ...,
    requested-QoS-Extended              [3] GPRS-QoS-Extended                       OPTIONAL,
    subscribed-QoS-Extended             [4] GPRS-QoS-Extended                       OPTIONAL,
    negotiated-QoS-Extended             [5] GPRS-QoS-Extended                       OPTIONAL
    }
-- The procedure descriptions in clause 11 indicate which one(s) of the
-- QoS variables shall be transported.

ReceivingSideID ::= CHOICE {
    receivingSideID                     [1] LegType
    }
-- used to identify LegID in operations sent from gsmSSF to gsmSCF

RedirectingPartyID {PARAMETERS-BOUND : bound} ::= OCTET STRING (SIZE (
    bound.&minRedirectingPartyIDLength .. bound.&maxRedirectingPartyIDLength))
-- Indicates redirecting number.
-- Refer to ETSI EN 300 356-1 [23] Redirecting number for encoding.
```

****** Next modified section ******

13.3 ApplyChargingReportGPRS procedure

13.3.1 General description

The gprsSSF uses this operation to report charging related information to the gsmSCF as requested by the gsmSCF using the ApplyChargingGPRS operation.

Timing of duration and measuring of transferred data (if applicable) shall be started when either an Attach, PDP Context Establishment Acknowledgement or an Inter SGSN Routeing Area Update acceptance is detected by the gprsSSF.

A report shall be made when a PDP Context Disconnect, a Detach or a Change in QoS is detected by the gprsSSF or when the gprsSSF detects that the transferred volume or elapsed time duration indicated in the parameter "transferredVolume" or "elapsedTime" (received in ApplyChargingGPRS operation) has been reached. ApplyChargingReportGPRS shall be sent only on chargeable QoS changes.

13.3.1.1 Parameters

- chargingResult:
  This parameter provides the gsmSCF with the charging related information previously requested using the ApplyChargingGPRS operation. The "ChargingResult" is a choice, and can contain either of the following parameters:

  - transferredVolume:
    This is a choice of the following parameters:

    - volumeIfNoTariffSwitch:
      This parameter shall be present if no tariff switch has occurred for the PDP Context, otherwise it shall be absent. If present, then the volume transferred since the detection of the event that triggered volume count shall be reported.

    - volumeIfTariffSwitch:
      This parameter shall be present if a tariff switch has occurred for the PDP Context, otherwise it shall be absent. This parameter may contain the following information:

      - volumeSinceLastTariffSwitch:
        The volume since the detection of the event that triggered volume count or the last tariffSwitch (whichever of these events was last detected) shall be reported.

      - VolumeTariffSwitchInterval:
        This parameter shall be present only if a tariff switch was detected after the event that triggered volume count for the PDP Context in the current volume count period. If present, the volume between either the detection the event that triggered volume count or the previous tariff switch (whichever of these events was last detected) and the last tariff switch shall be reported.

  - elapsedTime:
    This parameter is a choice of the following parameters:

    - timeGPRSIfNoTariffSwitch:
      This parameter shall be be present if no tariff switch has occurred for the GPRS Session or the PDP Context, otherwise it shall be absent. If present, then the elapsed time since the detection of the event that triggered time count shall be reported.

    - timeGPRSIfTariffSwitch:
      This parameter shall be present if a tariff switch has occurred for the GPRS Session or the PDP Context, otherwise it shall be absent. TThis parameter may contain the following information:

      - timeGPRSSinceLastTariffSwitch:
        The time since the event that triggered time count or the last tariffSwitch shall be reported.

- timeGPRSTariffSwitchInterval:
  This parameter shall be present only if a tariff switch was detected after the event that triggered time count for the GPRS Session or PDP Context in the current time count period. If present, then the time between either the detection the event that triggered time count or the previous tariff switch (whichever of these events was last detected) and the last tariff switch shall be reported.

- qualityOfService:
  This parameter identifies the QoS which was negotiated between the user, the SGSN and the GGSN.
  This parameter shall be present only if the sending of the ApplyChargingReportGPRS operation was triggered by a change in Quality of Service. The "negotiated QoS Extended" may be present as supplement to the "negotiated QoS".

- active:
  This parameter indicates whether the GPRS Session or PDP Context is still active

- pDPID:
  This parameter identifies the PDP Context, within the GPRS Session dialogue, for which the charging report is valid.

- chargingRollOver:
  This parameter indicates possible rollovers of the "ChargingResult" parameter due to the limited value ranges of the associated charging parameters. The "chargingRollOver" parameter is a choice and may contain either of the following parameters:

  - transferredVolumeRollOver:
    This parameter is a choice of the following parameters:

    - rO-VolumeIfNoTariffSwitch:
      This parameter indicates how many times the volumeIfNoTariffSwitch parameter of the chargingResult has rolled over. If no rollover has happened, then rO-VolumeIfNoTariffSwitch may be absent.

    - rO-VolumeIfTariffSwitch:
      This parameter is present if at least one of the parameters below is present. It may contain the following information:

      - rO-VolumeSinceLastTariffSwitch:
        This parameter indicates how many times the volumeSinceLastTariffSwitch parameter of the chargingResult has rolled over. If no rollover has happened, then rO-VolumeSinceLastTariffSwitch may be absent.

      - rO-VolumeTariffSwitchInterval:
        This parameter indicates how many times the VolumeTariffSwitchInterval parameter of the chargingResult has rolled over. If no rollover has happened, then rO-VolumeTariffSwitchInterval may be absent.

  - elapsedTimeRollOver:
    This parameter is a choice of the following parameters:

    - rO-TimeGPRSIfNoTariffSwitch:
      This parameter indicates how many times the timeGPRSIfNoTariffSwitch parameter of the chargingResult has rolled over. If no rollover has happened, then rO-TimeGPRSIfNoTariffSwitch may be absent.

    - rO-TimeGPRSIfTariffSwitch:
      This parameter shall be present if at least one of the parameters below is present. If It may contain the following information:

      - rO-TimeGPRSSinceLastTariffSwitch:
        This parameter indicates how many times the timeGPRSSinceLastTariffSwitch parameter of the chargingResult has rolled over. If no rollover has happened, then rO-TimeGPRSSinceLastTariffSwitch may be absent.

      - rO-TimeGPRSTariffSwitchInterval:
        This parameter indicates how many times the timeGPRSTariffSwitchInterval parameter of the

chargingResult has rolled over. If no rollover has happened, then rO-TimeGPRSTariffSwitchInterval may be absent.

****** Next modified section ******

13.8 EventReportGPRS procedure

13.8.1 General description

The gprsSSF uses this operation to notify the gsmSCF of a GPRS Session or PDP Context event previously requested by the gsmSCF in a RequestReportGPRSEvent operation.

13.8.1.1 Parameters

- gPRSEventType:
  This parameter specifies the type of event that is reported.

- gPRSEventSpecificInformation:
  This parameter indicates the GPRS Session or PDP Context related information specific to the event.

  For Change of Position GPRS Session it shall contain the "locationInformationGPRS", if available.

  For Change of Position PDP Context it shall contain the "accessPointName", "chargingID", "locationInformationGPRS", "endUserAddress", Quality of Service, "timeAndTimeZone" and "gGSNAddress" and "secondaryPDP-context", if available.

  For Detach and PDP Context Disconnect it shall contain the "initiatingEntity" and, conditionally, "routeingAreaUpdate". The "initiatingEntity" indicates the entity that initiated the Detach or PDP Context Disconnect. The "routeingAreaUpdate" indicates that the Detach or PDP Context Disconnect is due to inter-SGSN routeing area update.
  In the case of inter-SGSN routeing area update, the gsmSCF may ignore the " initiatingEntity".

  For PDP Context Establishment it shall contain the "accessPointName", "endUserAddress", "pDPInitiationType", Quality of Service, "locationInformationGPRS", "timeAndTimeZone" and "secondaryPDP-context", if available.
  The Quality of Service shall contain the Requested QoS and the Subscribed QoS. The "requested QoS Extended" and the "subscribed QoS Extended" may be present as supplement to the "requested QoS" and the "subscribed QoS" respectively.

  For PDP Context Establishment Acknowledgement it shall contain the "accessPointName", "chargingID" "endUserAddress", Quality of Service, "locationInformationGPRS", "timeAndTimeZone" and "gGSNAddress", if available.
  The Quality of Service shall contain the Requested QoS, the Subscribed QoS and the Negotiated QoS. The "requested QoS Extended", the "subscribed QoS Extended" and the "negotiated QoS Extended" may be present as supplement to the "requested QoS", the "subscribed QoS" and the "negotiated QoS" respectively.

  All optional gPRSEventSpecificInformation parameters shall be sent in accordance with 3GPP TS 23.078 [7] subclause 6.6.1.4 and 3GPP TS 22.078 [3] annex "GPRS Information provided to the CSE".

- miscGPRSInfo:
  This parameter contains DP related information.

  - messageType:
    This parameter indicates whether the message is a request, i.e. resulting from a RequestReportGPRSEvent with "monitorMode" = "interrupted", or a notification, i.e. resulting from a RequestReportGPRSEvent with "monitorMode" = "notifyAndContinue".

- pDPID:
  This parameter identifies the PDP Context, within the GPRS Session dialogue, for which the event is reported.

****** Next modified section ******

13.10 InitialDPGPRS procedure

13.10.1 General description

The gprsSSF uses this operation after detection of a TDP-R in the GPRS Session or PDP Context state machine, to request the gsmSCF for instructions to complete the GPRS Session or PDP Context.

For a GPRS Session, the "Attach" and "Change of Position Session" TDPs may result in the InitialDPGPRS Procedure.

For a PDP Context, the "PDP Context Establishment", the "PDP Context Establishment Acknowledgement" and the "Change of Position Context" TDPs may result in the InitialDPGPRS Procedure.

If a PDP Context related TDP is met and there is at that moment a GPRS dialogue for the GPRS Session, then the gprsSSF shall not initiate the InitialDPGPRS Procedure for that PDP Context.

If the "PDP Context Establishment Acknowledgement" event occurs and this event is armed as a TDP, and there is at that moment a GPRS dialogue for the PDP Context, then the gprsSSF shall not initiate a new InitialDPGPRS Procedure for that PDP Context.

13.10.1.1 Parameters

- serviceKey:
  This parameter indicates to the gsmSCF the requested IN service. It is used to address the required application/SLP within the gsmSCF; it is not used for SCP addressing.

- gPRSEventType:
  This parameter indicates the armed GPRS Attach/Detach FSM or PDP Context FSM DP event, resulting in the InitialDPGPRS operation.

- mSISDN:
  This parameter contains the MSISDN of the mobile subscriber for which the CAMEL service is invoked.

- iMSI:
  This parameter contains the IMSI of the mobile subscriber for which the CAMEL service is invoked.

- timeAndTimezone:
  This parameter contains the time that the gprsSSF is triggered, and the time zone that the invoking gprsSSF resides in.

- gPRSMSClass:
  This parameter contains the MS capabilities of the mobile subscriber for which the CAMEL service is invoked.

- endUserAddress:
  This parameter identifies the PDP type, PDP type organisation and the actual PDP address.

- qualityOfService:
  This parameter contains the Quality of Service.
  If the InitialDPGPRS operation is sent as a result of the "PDP Context Establishment" TDP, then the Quality of Service parameter shall contain the Requested QoS and the Subscribed QoS. The "requested QoS Extended" and the "subscribed QoS Extended" may be present as supplement to the "requested QoS" and the "subscribed QoS" respectively.
  If the InitialDPGPRS operation is sent as a result of the "PDP Context Establishment Ackonwledgement" TDP or the Change of Position Context TDP, then the Quality of Service parameter shall contain the Requested QoS, the Subscribed QoS and the Negotiated QoS. The "requested QoS Extended", the "subscribed QoS Extended" and the "negotiated QoS Extended" may be present as supplement to the "requested QoS", the "subscribed QoS" and the "negotiated QoS" respectively.

- accessPointName:
  This parameter contains the requested address that the MS for which the CAMEL service is invoked for wants to connect to.

- routeingAreaIdentity:
  This parameter contains the location information of the MS for which the CAMEL service is invoked.

- chargingID:
  This parameter contains the charging ID that, together with the gGSNAddress, uniquely identifies the PDP Context for the MS for which the CAMEL service is invoked.

- sGSNcapabilities:
  This parameter specifies the capabilities which the SGSN node can provide for the CAMEL service control.

- locationInformationInSGSN:
  This parameter indicates the location of the sending MS.

- pDPInitiationType:
  This parameter indicates whether a PDP Context was established as a result of a network-initiated request or as a result of a subscriber request.

- gGSNAddress:
  This parameter refers to the IP address of the GGSN where the PDP Context terminates. It is used together with the chargingID for uniquely identification of the PDP Context for which the CAMEL service is invoked from.

- secondaryPDP-context:
  This parameter indicates that the PDP Context is requested as a secondary PDP Context.

- iMEI:
  This parameter contains the IMEI (with software version) of the mobile subscriber for which the service is invoked.