

CR-Form v7

CHANGE REQUEST

✎ **29.078 CR 344** ✎ 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

Title:	✎ Extension of QoS for HSDPA in GPRS CAMEL		
Source:	✎ NEC, Vodafone		
Work item code:	✎ CAMEL4	Date:	✎ 03/11/2003
Category:	✎ F (essential correction)	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:	✎ In the SA-Plenary #21, the TS 23.107 CR that upgrades the maximum bitrate up to 16 megabits/sec was approved in order to support HSDPA. The linked TS 24.008 CR was also approved in the CN-Plenary #21. These upgrades have an impact on CAP since bitrate information as part of QoS is handled in some CAMEL procedures.
Summary of change:	✎ The following updates are proposed in this CR. <ul style="list-style-type: none"> - New parameter Ext2 QoS Subscribed that is defined in 29.002 is newly imported. - New parameter GPRS QoS Extension, requested QoS Extension, subscribed QoS Extension and negotiated QoS Extension 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 additional parameter may be included. - Add new description in EventReportGPRS procedure to explain that additional parameter may be included. - Add new description in InitialDPGPRS procedure to explain that additional 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 if the HSDPA function is deployed in the radio access network.

Clauses affected:	✎ 5.1, 13.3.1.1, 13.8.1.1, 13.10.1.1				
Other specs	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="text-align: center;">Y</td> <td style="text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> </table> Other core specifications ✎ CR 23.078-646	Y	N	X	
Y	N				
X					

affected:	<input checked="" type="checkbox"/>	Test specifications
	<input checked="" type="checkbox"/>	O&M Specifications
Other comments:	✎	This is a revision of CR 23.078-637r3, which was agreed in CN2 #31. It resolves concerns which were raised after CN2 #31 had closed. The related CR S2-032688 (CR#139r1 for 23.107) has been approved in TSG SA #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 extensions 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.

```
Ext 2-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-Extension ::= 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-Extension [3] GPRS-QoS-Extension OPTIONAL,
  subscribed-QoS-Extension [4] GPRS-QoS-Extension OPTIONAL,
  negotiated-QoS-Extension [5] GPRS-QoS-Extension 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 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. This 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-Extension" may be present as a 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-Extension" and the "subscribed-QoS-Extension" may be present as supplements 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-Extension", the "subscribed-QoS-Extension" and the "negotiated-QoS-Extension" may be present as supplements 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.
- gPRSMSCClass:
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-Extension" and

the "subscribed-QoS-Extension" may be present as supplements to the "requested-QoS" and the "subscribed-QoS" respectively.

If the InitialDPGPRS operation is sent as a result of the "PDP Context Establishment Acknowledgement" 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-Extension", the "subscribed-QoS-Extension" and the "negotiated-QoS-Extension" may be present as supplements 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.
- routingAreaIdentity:
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.