

Liaison Statement

Source: TSG S2/SMG12
To: T2 SWG1 MExE
CC: TSG-RAN2, TSG-RAN3, TSG-CN1, TSG-SA2 QoS
Title: Response to the LS “MExE support of QoS negotiation”

TSG S2 would like to T2 SWG 1 MExE for the LS (see attached). TSG S2 and SMG 12 would like to inform the T2 SWG 1 MExE that two CRs to GSM 03.60 related to QoS modification have been recently approved. These changes now allow the modification of the PDP context including the QoS attributes related to the PDP context to be triggered by the MS and the GGSN in addition to the SGSN. This CR (Tdoc C-99-271) will be presented to SMG #30 and TSG SA plenary in October 1999 for approval. The approved CR have been attached for your perusal.

The newly added messages in conjunction with existing procedures (for PDP context modification) could be used by either the network or the MS to inform the other of an intended change and/or impending change in the QoS associated with any given PDP context.

Liaison Statement

Source: T2 SWG1 MExE
To: TSG-RAN2, TSG-RAN3, TSG-CN1, TSG-SA2 QoS
Title: MExE support of QoS negotiation

MExE has just commenced its release 99 work based on the requirements in the MExE Release 99 Stage 1 specification (02.57 v 8.0.0), which includes the following requirement:-

- <i>the ability for a MExE application to negotiate the QoS, and the ability to indicate to a MExE application changes in the QoS;</i>

The MExE group would like to understand what level of support could be provided for QoS negotiation capabilities to the MExE execution environment. It is the intention of the group to have such work completed by the end of this release year.

In particular, MExE would be interested in learning:-

1. what signalling could/should be provided from the network to a MExE device to request a QoS change,
2. what signalling could/should be provided from the network to a MExE device to inform of a QoS change that:
 - has occurred, or
 - is about to occur
3. the timescales in which support signalling could become available.

CHANGE REQUEST No : **A106**

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

Technical Specification GSM / UMTS: **03.60** Version **6.2.0**

Submitted to SMG **12**
list plenary meeting or STC here ↑

for approval **X**
for information

without presentation ("non-strategic")
with presentation ("strategic") **X**

PT SMG CR cover form. Filename: crf26_3.doc

Proposed change affects: SIM ME Network
(at least one should be marked with an X)

Work item: **Enhanced QoS Support in GPRS**

Source: **SMG12** **Date:** **22/1/1999**

Subject: **MS and GSN Initiated PDP Context Modification**

Category: <i>(one category and one release only shall be marked with an X)</i>	F Correction	<input type="checkbox"/>	Release:	Phase 2	<input type="checkbox"/>
	A Corresponds to a correction in an earlier release	<input type="checkbox"/>		Release 96	<input type="checkbox"/>
	B Addition of feature	<input checked="" type="checkbox"/>		Release 97	<input type="checkbox"/>
	C Functional modification of feature	<input type="checkbox"/>		Release 98	<input checked="" type="checkbox"/>
	D Editorial modification	<input type="checkbox"/>		Release 99	<input type="checkbox"/>
			UMTS	<input type="checkbox"/>	

Reason for change:

During a GPRS session, the QoS profile, e.g. the bandwidth reservation, for a data flow related to an activated PDP context may dynamically change in the PDN. This change may require a re-negotiation of the QoS profile for this PDP context in the GPRS network. Thus, a mechanism is required that allow the GGSN first to map the QoS-parameters of the PDP to the parameters used in the GPRS network and then to initiate a modification of the QoS for the PDP context.

Further, in order to adapt to the changing radio environment, network congestion, and changing application requirements an MS may need to modify the QoS profile associated with a PDP context.

However, in the current version of GSM 03.60 only an SGSN initiated PDP context modification is supported. Consequently, this CR proposes to enhance the QoS concept in GPRS to enable a GGSN and an MS initiated re-negotiation of QoS profiles by introduction of a GGSN and MS initiated PDP context modification procedures.

It should be noted that further details like error handling and procedure collision handling are not described in 03.60 and have to be covered by the corresponding stage 3 specifications.

Clauses affected: **9.2.3, 9.2.3.1, and new 9.2.3.2 and 9.2.3.3**

Other specs affected:	Other releases of same spec	<input type="checkbox"/>	→ List of CRs:	04.60, 09.60
	Other core specifications	<input type="checkbox"/>	→ List of CRs:	
	MS test specifications / TBRs	<input type="checkbox"/>	→ List of CRs:	
	BSS test specifications	<input type="checkbox"/>	→ List of CRs:	
	O&M specifications	<input type="checkbox"/>	→ List of CRs:	

Other comments:

9.2.3 Modification Procedures

A MS, or GGSN can request, or an SGSN can decide, possibly triggered by the HLR as explained in subclause "Insert Subscriber Data Procedure", to modify parameters that were negotiated during an activation procedure for one or several PDP contexts. The following parameters can be modified:

- QoS Negotiated; and
- Radio Priority.

The SGSN has several means to inform the MS of such a modification:

- send a separate Modify PDP Context Request message to the MS; or
- piggyback the modification information on a mobility management signalling exchange, e.g., routing area update.

A GGSN can request the modification of parameters by sending an Update PDP Context Request message to the SGSN.

An MS can request the modification of parameters by sending a Modify PDP Context Request message to the SGSN.

9.2.3.1 SGSN-Initiated PDP Context Modification Procedure

The SGSN-Initiated PDP Context Modification procedure is illustrated in Figure 1. Each step is explained in the following list.

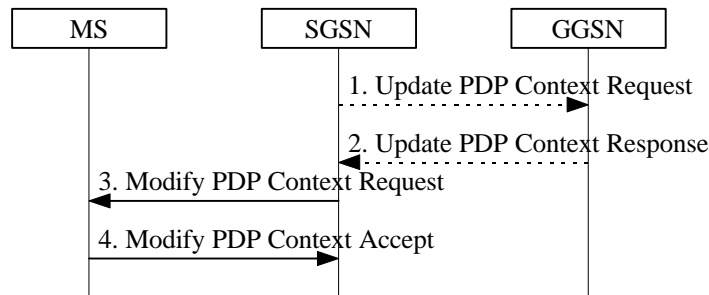


Figure 1: SGSN-Initiated PDP Context Modification Procedure

- 1) The SGSN may send an Update PDP Context Request (TID, QoS Negotiated) message to the GGSN. If QoS Negotiated received from the SGSN is incompatible with the PDP context being modified (e.g., the reliability class is insufficient to support the PDP type), then the GGSN rejects the Update PDP Context Request. The compatible QoS profiles are configured by the GGSN operator.
- 2) The GGSN may restrict QoS Negotiated given its capabilities and the current load. The GGSN stores QoS Negotiated and returns an Update PDP Context Response (TID, QoS Negotiated) message.
- 3) The SGSN selects a Radio Priority based on QoS Negotiated, and sends a Modify PDP Context Request (TI, QoS Negotiated, Radio Priority) message to the MS.
- 4) The MS acknowledges by returning a Modify PDP Context Accept message. If the MS does not accept the new QoS Negotiated it shall de-activate the PDP context with the PDP Context Deactivation Initiated by MS procedure.

9.2.3.2 GGSN-Initiated PDP Context Modification Procedure

The GGSN-Initiated PDP Context Modification procedure is illustrated in Figure x. Each step is explained in the following list.

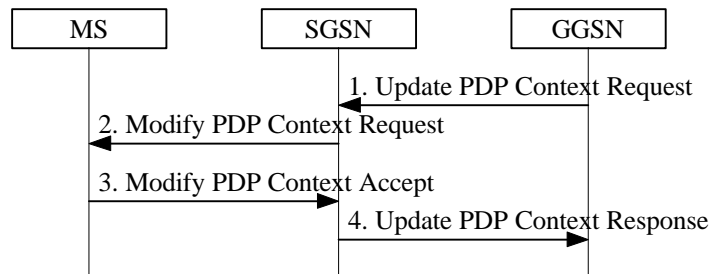


Figure x: GGSN-Initiated PDP Context Modification Procedure

- 1) The GGSN sends an Update PDP Context Request (TID, QoS Requested) message to the SGSN. QoS Requested indicates the desired QoS profile.
- 2) The SGSN may restrict the desired QoS profile given its capabilities, the current load, the current QoS profile, and the subscribed QoS profile. The SGSN selects a Radio Priority based on QoS Negotiated, and sends a Modify PDP Context Request (TI, QoS Negotiated, Radio Priority) message to the MS.

- 3) The MS acknowledges by returning a Modify PDP Context Accept (TI, QoS Negotiated) message. If the MS does not accept the new QoS Negotiated it shall return a Modify PDP Context Reject (TI, QoS Negotiated) message with the old QoS Negotiated.
- 4) The SGSN returns an Update PDP Context Response (TID, QoS Negotiated) message to the GGSN.

9.2.3.3 MS-Initiated PDP Context Modification Procedure

The MS-Initiated PDP Context Modification procedure is illustrated in Figure 2. Each step is explained in the following list.

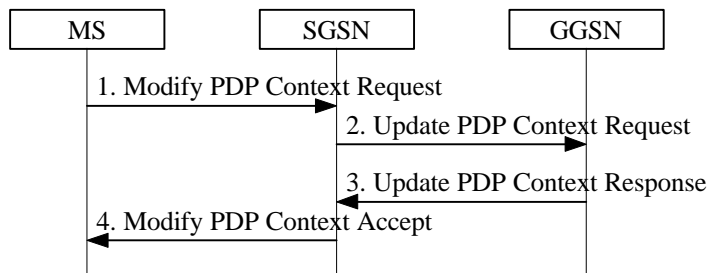


Figure 2: MS-Initiated PDP Context Modification Procedure

- 1) The MS sends a Modify PDP Context Request (TI, QoS Requested) message to the SGSN. QoS Requested indicates the desired QoS profile.
- 2) The SGSN may restrict the desired QoS profile given its capabilities, the current load, and the subscribed QoS profile. The SGSN sends an Update PDP Context Request (TID, QoS Negotiated) message to the GGSN. If QoS Negotiated received from the SGSN is incompatible with the PDP context being modified (e.g., the reliability class is insufficient to support the PDP type), then the GGSN rejects the Update PDP Context Request. The compatible QoS profiles are configured by the GGSN operator.
- 3) The GGSN may further restrict QoS Negotiated given its capabilities and the current load. The GGSN stores QoS Negotiated and returns an Update PDP Context Response (TID, QoS Negotiated) message.
- 4) The SGSN selects a Radio Priority based on QoS Negotiated, and returns a Modify PDP Context Accept (TI, QoS Negotiated, Radio Priority) message to the MS.

NOTE: If the SGSN does not accept QoS Requested, then steps 2 and 3 of this procedure are skipped, and the existing QoS Negotiated is returned to the MS in step 4.