

Source: TSG CN WG 3
Title: CRs to Rel-5 Work Item "E2EQoS"
Agenda item: 8.5
Document for: APPROVAL

Introduction:

This document contains **5** CRs to **Rel-5** Work Item "**E2EQoS**", that have been agreed by **TSG CN WG3**, and are forwarded to TSG CN Plenary meeting #17 for approval.

Doc-2nd-	Spec	CR	Rev	Subject	Cat	Phase	Version-	Workitem
N3-020633	29.208	003	-	Correction of Reference [6]	D	Rel-5	5.0.0	E2E QoS
N3-020744	29.208	002	3	Data Rate Mapping in the PCF	F	Rel-5	5.0.0	E2E QoS
N3-020743	29.208	004	2	QoS Parameter Mapping between IMS and GPRS	F	Rel-5	5.0.0	E2E QoS
N3-020711	29.208	008	1	Removal of incomplete function	F	Rel-5	5.0.0	E2E QoS
N3-020717	29.208	001	2	Service Class Mapping in the PCF	F	Rel-5	5.0.0	E2E QoS

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CHANGE REQUEST

29.208 CR 003 # rev **-** # Current version: **5.0.0**

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

Title:	# Correction of Reference [6]		
Source:	# TSG_CN WG3		
Work item code:	# e2eQoS	Date:	# 21/07/2002
Category:	# D	Release:	# Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)		2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)		R96 (Release 1996)
	B (addition of feature),		R97 (Release 1997)
	C (functional modification of feature)		R98 (Release 1998)
	D (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	# Incorrect Reference, Unclear if TS 26.235 "Packet switched conversational multimedia applications; Default codecs" or 26.236 "Packet switched conversational multimedia applications; Transport protocols" is intended
Summary of change:	# Reference to 26.236 "Packet switched conversational multimedia applications; Transport protocols"
Consequences if not approved:	# Spec open to misinterpretation

Clauses affected:	# 2				
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> Other core specifications # <input type="checkbox"/>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Y	N				
<input type="checkbox"/>	<input checked="" type="checkbox"/>				
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> Test specifications # <input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
<input type="checkbox"/>	<input checked="" type="checkbox"/>				
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> O&M Specifications # <input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
<input type="checkbox"/>	<input checked="" type="checkbox"/>				
Other comments:	#				

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 24.228: "Signalling flows for the IP multimedia call control based on SIP and SDP; Stage 3".
- [3] 3GPP TS 24.229: "IP Multimedia Call Control Protocol based on SIP and SDP; Stage 3".
- [4] 3GPP TS 23.060: "General Packet Radio Service (GPRS); Service description; Stage 2".
- [5] 3GPP TS 26.234: "End-to-end transparent streaming service; Protocols and codecs".
- [6] 3GPP TS 26.236: "Packet switched conversational multimedia applications; Transport protocols~~Default codecs~~".
- [7] 3GPP TS 29.207: "Policy control over Go interface".
- [8] 3GPP TS 23.107: "Quality of Service (QoS) concept and architecture".

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CHANGE REQUEST

29.208 CR 008 # rev 1 # Current version: 5.0.0

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

Title:	# Removal of incomplete function		
Source:	# TSG_CN WG3		
Work item code:	# E2EQOS	Date:	# 31/07/2002
Category:	# F	Release:	# Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	2	(GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R96	(Release 1996)
	B (addition of feature),	R97	(Release 1997)
	C (functional modification of feature)	R98	(Release 1998)
	D (editorial modification)	R99	(Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.	Rel-4	(Release 4)
		Rel-5	(Release 5)
		Rel-6	(Release 6)

Reason for change:	# Since the "control of RSVP admission control and interworking" was not included in the minimum set of functionality for the Go interface for Rel-5, which was given in the LS from SA2 as N3-020154 (S2-020909) and the work was not complete in Rel-5 time frame, the descriptions related to this function shall be removed from the Rel-5 specification.
Summary of change:	# The place holder for resource reservation flows with end-to-end RSVP interaction has been removed. The scope section has also been modified accordingly. The title of the figure and descriptions in the clause 5 have slightly been modified.
Consequences if not approved:	# The specification contains ambiguity.

Clauses affected:	# 1, 5, 5.1, 5.2										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	X			X		X	Other core specifications	# TS29.207 CR011
Y	N										
X											
	X										
	X										
		Test specifications									
		O&M Specifications									
Other comments:	#										

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- 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.

First amended sections

1 Scope

The present specification shows QoS signalling flows for resource reservation to provide end-to-end QoS. The flows are used as bases of developing QoS related protocol descriptions for new and existing specifications. ~~The following two types of flows are described:~~

- ~~1) flows defining the interaction of GPRS session management procedures over the Gn interface, service based local policy (SBLP) procedures over the Go interface and QoS interworking (e.g. RSVP) over the Mb interface; and~~
- ~~2) end to end flows of RSVP and GPRS bearer level.~~

The relationship between SIP/SDP session level and the bearer level (RSVP and GPRS) in flows ~~showing both SIP/SDP session level and the bearer level in end to end flows are~~ is described in 3GPP TS 24.228 [2]. The present specification adds detailed flows of service based local policy (SBLP) procedures over the Go interface and their relationship with the bearer level signalling flows over the Gn interface, involving the network interfaces Gn, Go and Mb and also further details the flows with detailed RSVP and GPRS bearer level flows not showing the SIP/SDP session level.

The present specification also describes the mapping of QoS parameters among SDP, UMTS QoS parameters, and QoS authorization parameters.

Next amended section

5 Resource reservation flows with Service-based local policy

~~5.1 Resource reservation without End-to-end RSVP~~

~~This clause defines a mobile originated procedure without End to End RSVP~~ describes a resource reservation flow with service based local policy. The service based local policy is done via exchange of information through the Go interface. The Go interface allows the service based local policy and QoS interworking information to be requested by the GGSN from a PCF.

The figure 5.1 presents the "Resource Reservation" procedure at PDP context activation to both the Mobile Originating (MO) side and Mobile Terminating (MT) side.

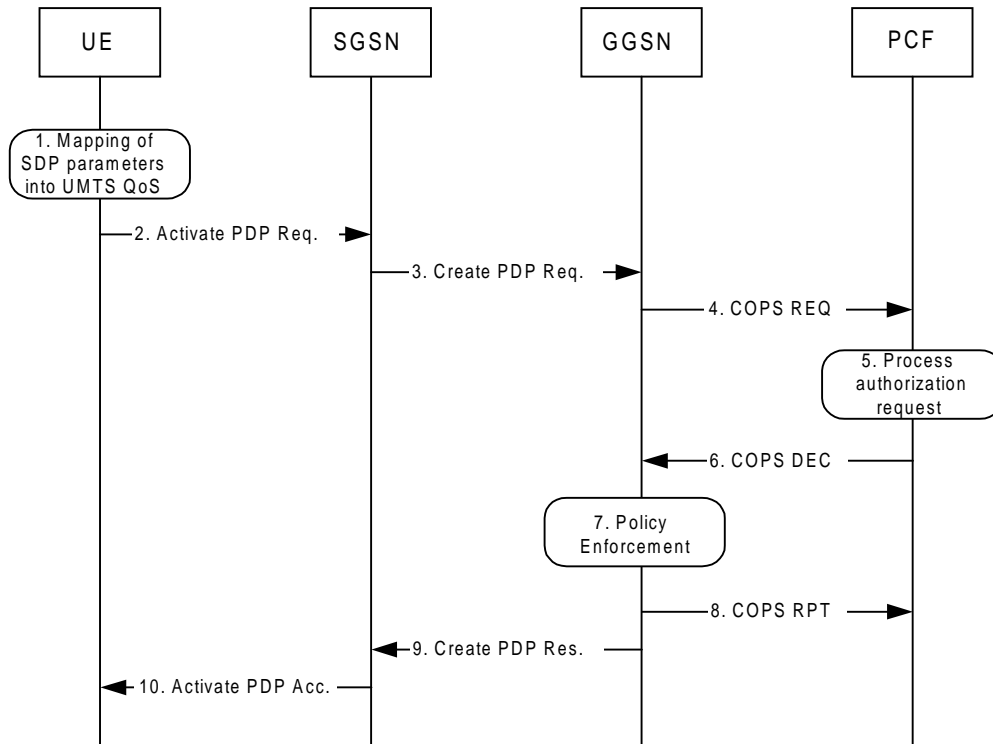


Figure 5.1: Resource reservation flow with service based local policy without End-to-end RSVP

1. Mapping from SDP to UMTS QoS parameters

The UE uses the SDP parameters in order to define the UMTS QoS parameter needed to request a PDP context. The QoS parameter mapping mechanism is described in clause 7.2.

2. GPRS: Activate PDP Context Request (UE to SGSN)

The UE sends an Activate PDP Context Request message to the SGSN with the UMTS QoS parameters. The UE shall include binding information in the PDP context activation messages to associate the PDP context bearer with policy information. The authorization token is sent by the P-CSCF to the UE during SIP signalling.

3. GPRS: Create PDP Context Request (SGSN to GGSN)

The SGSN carries out the procedures identified in 3GPP TS 23.060 [4] related to the PDP context activation.

4. COPS: REQ (GGSN to PCF)

The GGSN receives the PDP context activation request with the binding information. The GGSN uses the authorisation token in order to localise the PCF. The GGSN sends a COPS REQ message to the PCF and includes the binding information.

5. Process Resource Request (PCF)

The PCF receives the information sent by the GGSN. The PCF identifies the multimedia session by using the binding information. The PCF performs an authorization decision.

6. COPS: DEC (PCF to GGSN)

The decision taken by the PCF is returned via the COPS DEC message. The DEC message includes the policy information to be used by the GGSN in order to perform the policy-based admission control.

7. Policy Enforcement (GGSN)

The GGSN enforces the PCF policy decision based on the received authorization information from the PCF for the media flows carried by the PDP context.

8. COPS: RPT (GGSN to PCF)

The GGSN sends COPS RPT message back to the PCF and reports its success or failure in carrying out the PCF decision.

9. GPRS: Create PDP Context Response (GGSN to SGSN)

The GGSN accepts the PDP context request based on the results of the authorisation policy decision enforcement. If the requested QoS parameters are not within the authorized QoS, the GGSN either rejects the PDP context activation request or downgrades the requested UMTS QoS parameters.

10. GPRS: Activate PDP Context Accept (SGSN to UE)

The SGSN sends an Activate PDP Context Accept message to the UE indicating that the PDP context has been activated and that the QoS requirements have been authorized successfully for both downlink and uplink.

~~5.2 Resource reservation with End-to-end RSVP~~

~~Editor's Note: This clause is FFS.~~

End of amended sections

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CHANGE REQUEST

⌘ **29.208 CR 001** ⌘ rev **2** ⌘ Current version: **5.0.0** ⌘

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

Title:	⌘ Service Class Mapping in the PCF		
Source:	⌘ Ericsson		
Work item code:	⌘ E2EQoS	Date:	⌘ 19/07/2002
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)		2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)		R96 (Release 1996)
	B (addition of feature),		R97 (Release 1997)
	C (functional modification of feature)		R98 (Release 1998)
	D (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ The current mapping table of 29.208 for the service class mapping in the PCF is not sufficient or even incorrect because: <ul style="list-style-type: none"> - It is not possible to use the conversational class for a unidirectional media component. - If a media component using conversational class is put on hold (one party sets the direction attribute to sendonly and stops sending) the traffic class would be downgraded to streaming class. - The usage of all traffic classes should be possible for the media types "audio", "video" and "application" to allow for real-time gaming, e-commerce and so on.
Summary of change:	⌘ The media types "audio" and "video" are mapped to the conversational traffic class. For the media type "application" there are no restrictions regarding the traffic class, i.e. any requested traffic class will be authorized for this media type. Now it is possible to use e.g. the conversational or streaming traffic class for media streams other than audio and video. On the other hand, the original intention of the media type to identify the characteristics of the described media is not changed.
Consequences if not approved:	⌘ Scenarios like video-telephony with only one endpoint sending video are not possible. If a media component is put on hold the traffic class would be reduced. Proprietary, new or not-standardized services (e.g. codecs, real-time games, e-commerce applications) cannot use the conversational or streaming traffic class.

Clauses affected:	⌘ 7.1.1, 7.2.2							
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>	Y	N	X		Other core specifications	⌘
Y	N							
X								

Affected:

<input checked="" type="checkbox"/>	Test specifications
<input checked="" type="checkbox"/>	O&M Specifications

Other comments: ☞ In table 7.1.1.2 the term PDP context is replaced by Binding information because the PCF has no knowledge about PDP contexts.

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Below is a brief summary:

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7.1.1 SDP parameters to Authorized IP QoS parameters mapping in PCF

The QoS authorization is to be based on the parameters Maximum Authorized DiffServ PHB and Maximum Authorized Data Rate UL/DL.

The PCF shall use the mapping rules in table 7.1.1.1 to derive the Authorized IP QoS parameters Maximum Authorized Data Rate DL/UL and the Maximum Authorized DiffServ PHB from the SDP Parameters.

Table 7.1.1.1: Rules for derivation of the Maximum Authorized Data Rates and Maximum Authorized DiffServ PHB per media flow in the PCF

Authorized IP QoS Parameter per media flow	Derivation from SDP Parameters
<p>Maximum Authorized Data Rate DL and UL per media flow (see note 1)</p>	<pre> /* Check if the media use codec(s) */ IF [(<media> = ("audio" or "video")) and (<transport> = "RTP/AVP")] THEN /* Check if Streaming */ IF a=("sendonly" or "recvonly") THEN Maximum Authorized Data Rate DL/UL per media flow is set equal to Maximum Bitrate DL/UL. See reference [5] ; Editor's note: Whether Maximum Authorized Data Rate per media flow is set to Maximum or Guaranteed Bitrate is ffs. /* Conversational as default !*/ ELSE Maximum Authorized Data Rate DL/UL per media flow is set equal to Maximum Bitrate DL/UL. See reference [6] ; Editor's note: Whether Maximum Authorized Data Rate per media flow is set to Maximum or Guaranteed Bitrate is ffs. ENDF ; /* Check for presence of bandwidth attributes */ ELSEIF b=AS:<bandwidth-value> is present THEN Maximum Authorized Data Rate DL/UL per media flow = "bandwidth-value" ; /* SDP do not give any guidance! / ELSE Maximum Authorized Data Rate DL/UL per media flow is set according to operator policy ; ENDIF ; </pre>
<p>Maximum Authorized DiffServ PHB [MaxClass] per media flow (see note 2)</p>	<pre> IF [(<media> = ("audio" or "video")) and (a="sendrecv")] THEN Maximum Authorized DiffServ PHB per media flow = "EF" ; ELSEIF [(<media> = ("audio" or "video")) and (a=("sendonly" or "recvonly"))] THEN Maximum Authorized DiffServ PHB per media flow = "AF4" ; ELSEIF <media> = ("application" or "control") THEN Maximum Authorized DiffServ PHB per media flow = "AF3" ; ELSE Maximum Authorized DiffServ PHB per media flow = "BE" ; END ; CASE <media> OF "audio": MaxClass:=EF; /*conversational*/ "video": MaxClass:=EF; /*conversational*/ "application": MaxClass:=EF; /*conversational*/ "data": MaxClass:=AF1; /*interactive with priority 3*/ "control": MaxClass:=AF3; /*interactive with priority 1*/ /*new media type*/ OTHERWISE: MaxClass:=BE; /*background*/ END; </pre>
<p>NOTE 1: For a RTP media flow the Maximum Authorized Bandwidth DL/UL are the sum of the RTP flow DL/UL and the associated RTCP flow DL/UL. NOTE 2: The Maximum Authorized Traffic Class for a RTCP flow is the same as the corresponding RTP flow.</p>	

The PCF shall per ongoing session store the Authorized IP QoS parameters per media flow.

When the GGSN requests the Authorized UMTS QoS parameters for an activated/modified PDP Context carrying one or more media flows (eventually with associated RTCP signalling), the PCF shall use the rules in table 7.1.1.2 to calculate the Authorized IP QoS parameters.

Table 7.1.1.2: Rules for calculating the Maximum Authorized Data Rate and Maximum Authorized Diffserv PHB Parameters per Binding Information in the PCF

Authorized IP QoS Parameter per Binding	Calculation Rule
Maximum Authorized Data Rate DL and UL per Binding Information	Maximum Authorized Data Rate DL/UL per Binding Information is the sum of all Maximum Authorized Data Rate DL/UL per media flow for all the media flows identified by the Binding Information IF Maximum Authorized Data Rate DL/UL per Binding Information > 2047 kbps THEN Maximum Authorized Data Rate DL/UL per Binding Information = 2047 kbps /* See ref [8] */ END;
Maximum Authorized Diffserv PHB per Binding Information	Maximum Authorized Diffserv PHB per Binding Information = MAX [Maximum Authorized Diffserv PHB per media flow among all the media flows <u>identified by the Binding Information carried by the current PDP Context</u>] (The MAX function ranks the possible Maximum Authorized Diffserv PHB values as follows: "EF" > "AF4" > "AF3" > "BE")

7.1.2 Authorized IP QoS parameters to Authorized UMTS QoS parameters mapping in GGSN

The Translation/Mapping function in the GGSN shall derive the Authorized UMTS QoS parameters from the Authorized IP QoS parameters received from the PCF according to the rules in table 7.1.2.

Table 7.1.2: Rules for derivation of the Authorized UMTS QoS Parameters from the Authorized IP QoS Parameters

Authorized UMTS QoS Parameter	Derivation from Authorized IP QoS Parameters
Maximum Authorized Bandwidth DL and UL	Maximum Authorized Bandwidth DL/UL = Maximum Authorized Data Rate DL/UL
Maximum Authorized Traffic Class	IF Maximum Authorized Diffserv PHB = "EF" THEN Maximum Authorized Traffic Class = "Conversational" ELSEIF Maximum Authorized Diffserv PHB = "AF4" THEN Maximum Authorized Traffic Class = "Streaming" ELSEIF Maximum Authorized Diffserv PHB = "AF3" THEN Maximum Authorized Traffic Class = "Interactive" ELSE Maximum Authorized Traffic Class = "Background" ENDIF ;

7.1.3 Comparing UMTS QoS Parameters against the Authorized UMTS QoS parameters in GGSN

Upon receiving a PDP context activation, the UMTS BS Manager in the GGSN requests the Authorized UMTS QoS parameters from the PCF, and might request the Authorized UMTS QoS Parameters if a PDP context is modified (see [7] for details). The GGSN compares the requested UMTS QoS parameters against the corresponding Authorized UMTS QoS parameters. If all the requested parameters lie within the limits, the PDP context activation or modification

shall be accepted. If any of the requested parameters do not lie within their respective limit, the GGSN shall either reject the activation or modification of the PDP context or downgrade the requested UMTS QoS parameters.

7.2 QoS parameter mapping in the UE

Figure 7.2 indicates the entities participating in the generation of the requested QoS parameters when activate or modify a PDP Context in the UE. The steps are:

1. The Application provides the UMTS BS Manager, possibly via the IP BS Manager and the Translation/Mapping function, with relevant information to perform step 2 or step 4. (Not subject to standardization within 3GPP).
2. If needed, information from step 1 is used to access a proper set of UMTS QoS Parameters. See 3GPP TS 26.236 [6] for Conversational Codec Applications and 3GPP TS 26.234 [5] for Streaming Codec Applications.
3. If SDP is present then the SDP Parameters might give guidance for the UMTS BS Manager to set the Maximum Bitrate UL/DL, Guaranteed Bitrate UL/DL and the Maximum SDU Size. The Application deliver extracted SDP information, possibly via the IP BS Manager, to the Translation/Mapping function. The Translation/Mapping function finally derives the UMTS QoS parameters according to the rules in clause 7.2.1. Furthermore if the SDP Parameters are received in an IMS context it is recommended that the Maximum Authorized Bandwidth UL and DL and Maximum Authorised Traffic Class are derived according to the rules in clause 7.2.2.
4. A set of UMTS QoS Parameters values from step 2 (or directly from step 1) is eventually merged together with the Maximum Bitrate UL/DL, the Guaranteed Bitrate UL/DL and the Maximum SDU Size from step 3. The result constitutes a recommendation of requested UMTS QoS Parameters. If the PDP Context is activated or modified in an IMS context it is recommended that the UE checks that the actual requested Maximum Bitrate UL/DL are not greater than the Maximum Authorized Bandwidth UL/DL. Furthermore, if the UE has implemented the mapping rule for Maximum Authorized Traffic Class, as defined in clause 7.2.2, it is also recommended that the requested Traffic Class is not greater than the Maximum Authorised Traffic Class derived in step 3.

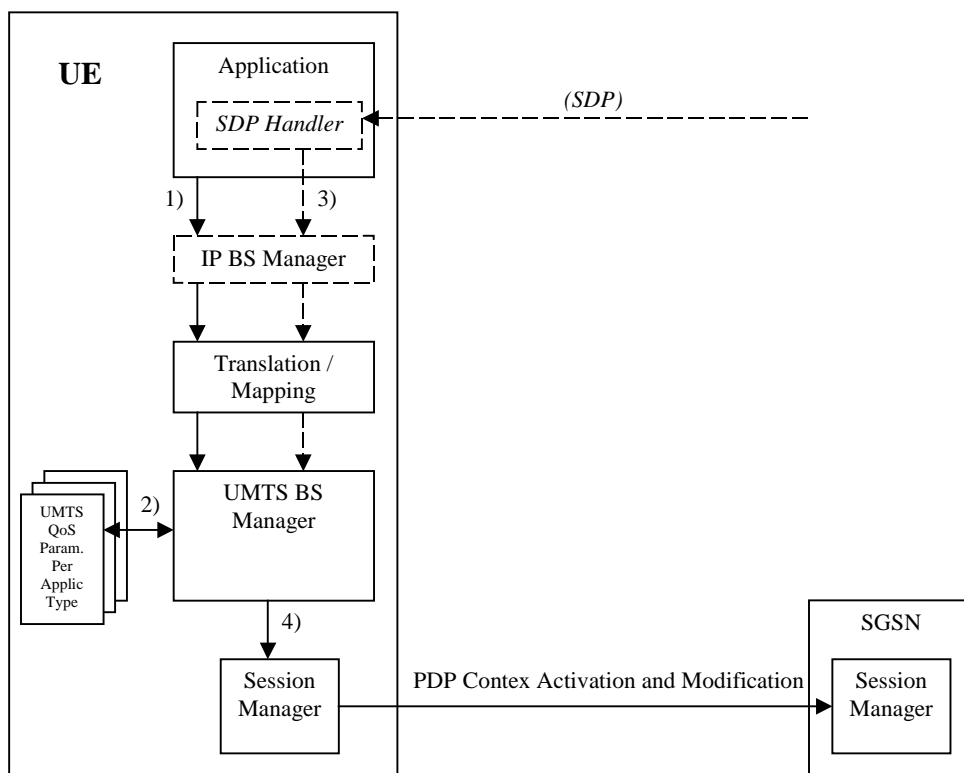


Figure 7.2: Framework for generating requested QoS parameters in the UE

7.2.1 SDP to UMTS QoS parameter mapping in UE

If SDP Parameters are available, then before activating or modifying a PDP Context the UE should check if the SDP Parameters give guidance for setting the requested UMTS QoS Parameters. The UE is recommended to use the mapping rules in table 7.2.1 to derive the Maximum and Guaranteed Bitrate DL/UL and Maximum SDU Size from the SDP Parameters.

Table 7.2.1: Recommended rules for derivation of the requested Maximum and Guaranteed Bitrate DL/UL and the requested Maximum SDU Size in the UE

UMTS QoS Parameter	Derivation from SDP Parameters
Maximum Bitrate DL/UL and Guaranteed Bitrate DL/UL	<pre> /* Check if the media use codec(s) */ IF [(<media> = ("audio" or "video")) and (<transport> = "RTP/AVP")] THEN /* Check if Streaming */ IF a= ("sendonly" or "recvonly") THEN Maximum Bitrate DL/UL and Guaranteed Bitrate DL/UL as specified in reference [5] ; /* Conversational as default !*/ ELSE Maximum Bitrate DL/UL and Guaranteed Bitrate DL/UL as specified in reference [6] ; ENDIF ; /* Check for presence of bandwidth attribute */ ELSEIF b=AS:<bandwidth-value> is present THEN Maximum Bitrate DL/UL and Guaranteed Bitrate DL/UL = "bandwidth-value" ; ELSE /* SDP do not give any guidance ! */ Maximum Bitrate DL/UL and Guaranteed Bitrate DL/UL as specified by the UE manufacturer; ENDIF ; </pre>
Maximum SDU size	<pre> /* Check if the media use codec(s) */ IF [(<media> = ("audio" or "video")) and (<transport> = "RTP/AVP")] THEN /* Check if Streaming */ IF a= ("sendonly" or "recvonly") THEN Maximum SDU Size as specified in reference [5] ; /* Conversational as default !*/ ELSE Maximum SDU Size as specified in reference [6] ; ENDIF ; ELSE Maximum SDU Size as specified by the UE manufacturer ; ENDIF ; </pre>

7.2.2 SDP parameters to Authorized UMTS QoS parameters mapping in UE

If the PDP Context is activated or modified in an IMS context then it is recommended that the UE uses the mapping rules in table 7.2.2.1 to derive the Maximum Authorized Bandwidth UL/DL.

Table 7.2.2.1 also has a mapping rule for derivation of Maximum Authorized Traffic Class. In future releases this mapping rule may change. For the reason of future compatibility, the release 5 mapping rule is optional for the UE.

In the case this mapping rule is implemented then it is recommended that the UE use the mapping rule in table 7.2.2.1 to derive the Maximum Authorised Traffic Class from the SDP Parameters.

Table 7.2.2.1: Rules for derivation of the Maximum Authorized Bandwidth DL/UL and the Maximum Authorized Traffic Class per media flow in the UE

Authorized UMTS QoS Parameter per media flow	Derivation from SDP Parameters
<p>Maximum Authorized Bandwidth DL and UL per media flow</p>	<pre> /* Check if IMS context (the criteria for this check is an UE manufactures issue) */ IF IMS context THEN /* Check if the media use codec(s) */ IF [(<media> = ("audio" or "video")) and (<transport> = "RTP/AVP")] THEN /* Check if Streaming */ IF a=("sendonly" or "recvonly") THEN Maximum Authorized Bandwidth DL/UL set equal to Maximum Bitrate DL/UL. See reference [5] ; Editor's note: Whether Maximum Authorized Bandwidth is set to Maximum or Guaranteed Bitrate is ffs. /* Conversational as default !*/ ELSE Maximum Authorized Bandwidth DL/UL set equal to Maximum Bitrate DL/UL. See reference [6] ; Editor's note: Whether Maximum Authorized Bandwidth is set to Maximum or Guaranteed Bitrate is ffs. ENDIF ; /* Check for presence of bandwidth attributes */ ELSEIF b=AS:<bandwidth-value> is present THEN Maximum Authorized Bandwidth DL/UL = "bandwidth-value" ; /* SDP do not give any guidance! / ELSE Maximum Authorized Bandwidth DL/UL as specified by the UE manufacturer ; ENDIF ; ELSE No authorization is done ; ENDIF ; </pre>
<p>Maximum Authorized Traffic Class [MaxTrafficClass] per media flow</p>	<pre> /* Check if IMS context (the criteria for this check is an UE manufactures issue) */ IF IMS context THEN IF [(<media> = ("audio" or "video")) and (a="sendrecv")] THEN Maximum Authorised Traffic Class = "Conversational" ; ELSEIF [(<media> = ("audio" or "video")) and (a=("sendonly" or "recvonly"))] THEN Maximum Authorised Traffic Class = "Streaming" ; ELSEIF <media> = ("application" or "control") THEN Maximum Authorised Traffic Class = "Interactive" ; ELSE Maximum Authorised Traffic Class = "Background" ; END ; CASE <media> OF "audio": MaxTrafficClass:=conversational; "video": MaxTrafficClass:=conversational; "application": MaxTrafficClass:=conversational; "data": MaxTrafficClass:=interactive with priority 3; "control": MaxTrafficClass:=interactive with priority 1; /*new media type*/ OTHERWISE:MaxTrafficClass:=background; END; ELSE No authorization is done ; ENDIF ; </pre>

It is recommended that the UE per ongoing session store the Authorized UMTS QoS parameters per media flow.

Furthermore it is recommended that the UE checks that the requested UMTS QoS parameters Traffic Class and Maximum Bitrate UL/DL not exceeds the values of the corresponding Authorized UMTS QoS parameters (calculated according to the rules in table 7.2.2.2) before activating/modifying a PDP Context.

The table 7.2.2.1 defines mapping rules to determine the Maximum Authorized Traffic Class. This table does not specify how to determine the UMTS QoS parameter traffic class.

Table 7.2.2.2: Rules for calculating the Maximum Authorized Bandwidths and Maximum Authorized Traffic Class Parameters per PDP Context in the UE

Authorized UMTS QoS Parameter per PDP Context	Calculation Rule
Maximum Authorized Bandwidth DL and UL per PDP Context	<pre> /* Check if IMS context (the criteria for this check is an UE manufactures issue) */ IF IMS context THEN Maximum Authorized Bandwidth DL/UL per PDP Context is the sum of all Maximum Authorized Bandwidth DL/UL per media flow for all the media flows <u>to be</u> carried by the PDP Context ; IF Maximum Authorized Bandwidth DL/UL per PDP Context > 2047 kbps THEN Maximum Authorized Bandwidth DL/UL per PDP Context = 2047 kbps /* See ref [8] */ END; ELSE No authorization is done ; ENDIF ; </pre>
Maximum Authorized Traffic Class per PDP Context	<pre> /* Check if IMS context (the criteria for this check is an UE manufactures issue) */ IF IMS context THEN Maximum Authorised Traffic Class per PDP Context = MAX [Maximum Authorised Traffic Class per media flow among all the media flows <u>to be</u> carried by the PDP Context] ; ELSE No authorization is done ; ENDIF ; (The MAX function ranks the possible Maximum Authorised Traffic Class values as follows: Conversational > Streaming > Interactive > Background) </pre>

CR-Form-v7

CHANGE REQUEST

⌘ **29.208 CR 004** ⌘ rev **2** ⌘ Current version: **5.0.0** ⌘

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

Title:	⌘ QoS Parameter Mapping between IMS and GPRS		
Source:	⌘ TSG_CN WG3		
Work item code:	⌘ E2EQoS	Date:	⌘ 19/08/2002
Category:	⌘ F	Release:	⌘ Rel-5
	<i>Use <u>one</u> of the following categories:</i> 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 .		<i>Use <u>one</u> of the following releases:</i> 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:	⌘ The section on the QoS parameter mapping was updated to correct some statements especially about the mapping functionality of the UE.
Summary of change:	⌘ Beside some mostly editorial modifications it was clarified that: <ul style="list-style-type: none"> - the PCF combines the per flow authorization information according to the binding information received, - the UE generates also IP QoS parameters in case an IP BS manager is present, - the UE performs multiplexing of individual IP flows on the same PDP context and is therefore responsible for the combination of the individual QoS parameters, - the translation/mapping function inside the UE maps from the IP QoS parameters to the corresponding UMTS QoS parameters only in case an IP BS manager is present. The figure was also redrawn to reflect the changes.
Consequences if not approved:	⌘ The present text identifies the translation/mapping function for the mapping from SDP to UMTS QoS parameters. However, the translation/mapping function is only responsible for the mapping between IP and UMTS QoS parameters if an IP BS manager is present. With the present text the UE would not be able to influence the mapping regarding its specific demands or new codecs/media types not covered by the mapping rules. Furthermore, the multiplexing of IP flows on the same PDP context is not sufficiently described.

Clauses affected:	⌘ 7.1						
Other specs	⌘ <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px; text-align: center;">Y</td> <td style="width: 20px; height: 20px; text-align: center;">N</td> </tr> <tr> <td style="width: 20px; height: 20px; text-align: center;">X</td> <td style="width: 20px; height: 20px;"></td> </tr> </table> Other core specifications	Y	N	X		⌘	
Y	N						
X							

affected:

<input checked="" type="checkbox"/>	Test specifications
<input checked="" type="checkbox"/>	O&M Specifications

Other comments: ☞

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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.

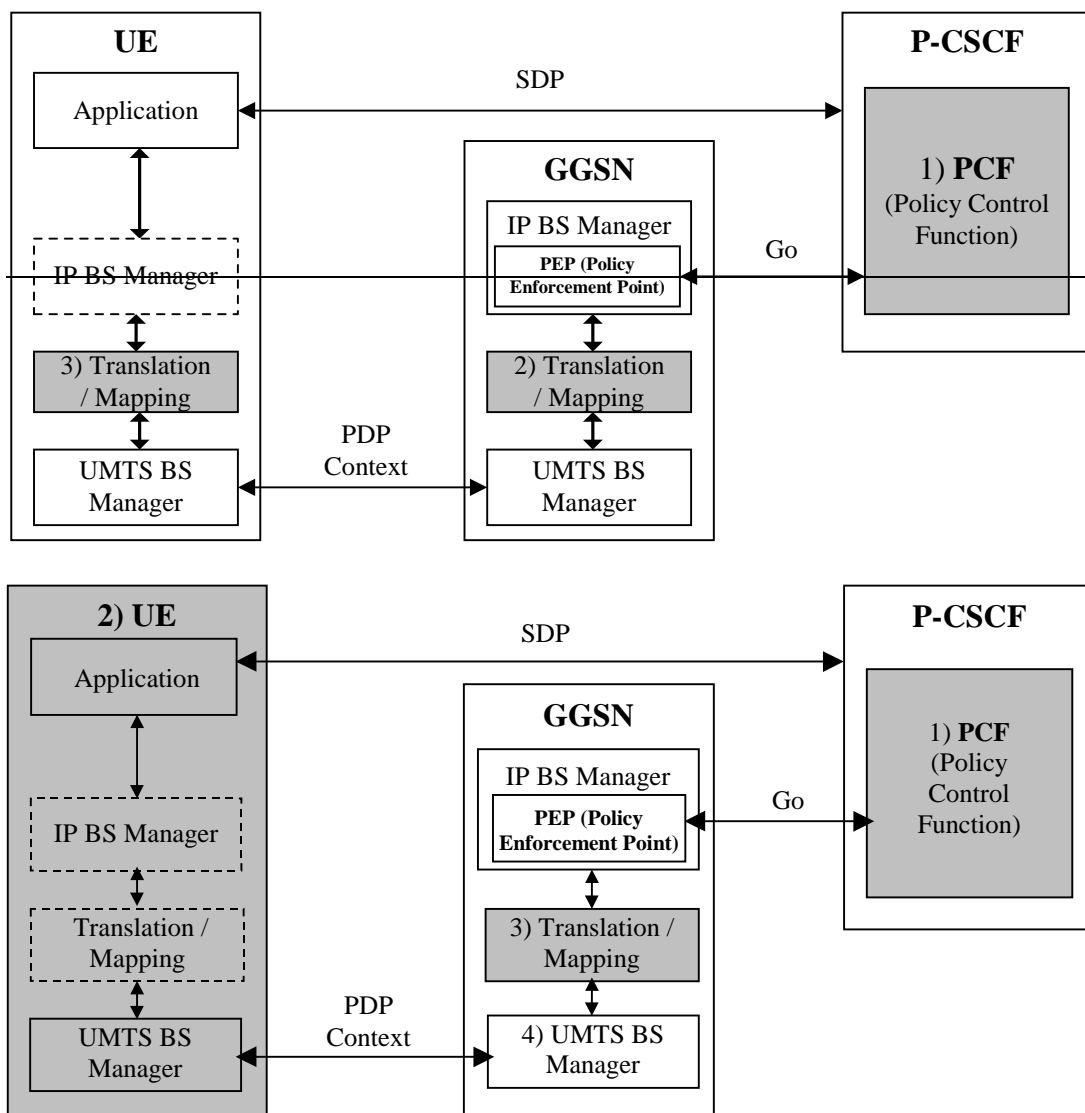
7.1 QoS parameter mapping between IMS and GPRS

Within the IM sub-system, session establishment and modification involves an end-to-end message-exchange using SIP/SDP with negotiation of media attributes (e.g. Codecs) as defined in 3GPP TS 24.229 [3] and 3GPP TS 24.228 [2]. ~~Upon completion of the negotiation, the P-CSCF shall forward the relevant SDP information to the PCF together with an indication of the originator.~~ The PCF notes and authorises the chosen media flow components and Codec preferences ~~their attributes, by mappings~~ from SDP parameters to Authorized IP QoS parameters for transfer to the GGSN via the Go interface. The GGSN will map from the Authorized IP QoS parameters to the Authorized UMTS QoS parameters. The SIP/SDP message will also have been passed on to the UE, where the UE will perform its own mapping from the SDP parameters and application demands to some UMTS QoS Parameters in order to populate the requested QoS field within the PDP context activation or modification. If the SDP parameters are received in an IMS context the UE ~~will also~~ should take the mapping from the SDP parameters to some the Authorized UMTS QoS parameters into consideration. If the UE contains an IP BS manager IP QoS parameters are also generated. Upon receiving the PDP context activation or modification, the GGSN shall compare the UMTS QoS parameters against the Authorized UMTS QoS parameters. If the request lies within the limits authorised by the PCF, the PDP context activation or modification shall be accepted.

Figure 7.1 indicates the network entities where QoS mapping functionality is required. This mapping is performed by:

1. The PCF maps from the SDP parameters determined from the SIP signalling to the Authorized IP QoS parameters that shall be passed to the GGSN via the Go interface. The mapping is performed for each IP flow of each media component. Upon a request from the GGSN, the PCF combines per direction the individual Authorised IP QoS parameters of the IP flows that are identified by the binding information (see clause 7.1.1).
2. The UE maps from the SDP parameters to IP QoS parameters (if an IP BS manager is present) and to UMTS QoS parameters. This mapping is performed for each IP flow of each media component. The IP and UMTS QoS parameters should be generated according to application demands and recommendations for conversational [6] or streaming applications [5] (see clause 7.2.1). The mapping rules for the authorised QoS parameters should be taken into consideration because they define the maximum values for the different requested bit rates and traffic classes (see clause 7.2.2). In case the UE multiplexes several IP flows onto the same PDP context, it has to combine their IP and UMTS QoS parameters. If an IP BS manager is present, the Translation/Mapping function maps the IP QoS parameters to the corresponding UMTS QoS parameters.
3. The GGSN maps from the Authorized IP QoS parameters received from PCF to the Authorized UMTS QoS parameters (see clause 7.1.2).
4. The GGSN compares then the UMTS QoS parameters of the PDP context against the Authorized UMTS QoS parameters (see clause 7.1.3).
3. ~~The UE in which a mapping is made from the SDP parameters to some UMTS QoS parameters (see clause 7.2.1) and, if the SDP parameters are received in an IMS context, also to some Authorized UMTS QoS parameters (see clause 7.2.2).~~

The mapping that takes place in the UE and the network shall be compatible in order to ensure that the GGSN will be able to correctly authorise the session.



- NOTE 1: SDP parameters to Authorized IP QoS parameters mapping.
- NOTE 2: SDP parameters to (IP QoS parameters and) UMTS QoS parameters mapping.
- NOTE 3: Authorized IP QoS parameters to Authorized UMTS QoS parameters mapping.
- NOTE 4: SDP parameters to UMTS QoS parameters with Authorized UMTS QoS parameters comparison mapping.

Figure 7.1: Framework for QoS mapping between IMS and GPRS

CHANGE REQUEST

⌘ **29.208 CR 002** ⌘ rev **3** ⌘ Current version: **5.0.0** ⌘

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

Title:	⌘ Data Rate Mapping in the PCF and in the UE		
Source:	⌘ TSG_CN WG3		
Work item code:	⌘ E2EQoS	Date:	⌘ 19/08/2002
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	2	(GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R96	(Release 1996)
	B (addition of feature),	R97	(Release 1997)
	C (functional modification of feature)	R98	(Release 1998)
	D (editorial modification)	R99	(Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.	Rel-4	(Release 4)
		Rel-5	(Release 5)
		Rel-6	(Release 6)

Reason for change:	⌘ The current mapping table of 29.208 for the data rate mapping in the PCF is not sufficient or even incorrect: <ul style="list-style-type: none"> - The bandwidth attribute should be used whenever available. - There is only one operator specific value for the authorized data rate regardless of the actual media type. - The direction attribute should be taken into account for generating the authorized data rate.
Summary of change:	⌘ Whenever the SDP bandwidth attribute is present it should be used for the authorization (TS 24.229 defines that the UE shall specify the “b=” media descriptor for every “audio” or “video” media component applying RTP/RTCP. For others (any other media type or audio/video without RTP/RTCP) it may be used.). The minimum value in case of a unidirectional media component should allow for a potential RTCP flow but only if RTP/AVP is indicated in the <transport> field for this media component. For media components without bandwidth attribute the operator can define maximum values depending on the SDP media type.
Consequences if not approved:	⌘ An insufficient or incorrect mapping table could lead to unsuccessful authorizations although the UE behaves standard conform.

Clauses affected:	⌘ 7.1.1, 7.2.2						
Other specs Affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	⌘
Y	N						
<input type="checkbox"/>	<input checked="" type="checkbox"/>						
	<input checked="" type="checkbox"/>	Test specifications					
	<input checked="" type="checkbox"/>	O&M Specifications					

Other comments: ☹

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

7.1.1 SDP parameters to Authorized IP QoS parameters mapping in PCF

The QoS authorization is to be based on the parameters Maximum Authorized DiffServ PHB and Maximum Authorized Data Rate UL/DL.

The PCF shall use the mapping rules in table 7.1.1.1 to derive the Authorized IP QoS parameters Maximum Authorized Data Rate DL/UL and the Maximum Authorized DiffServ PHB from the SDP Parameters.

Table 7.1.1.1: Rules for derivation of the Maximum Authorized Data Rates and Maximum Authorized DiffServ PHB per media flow in the PCF

Authorized IP QoS Parameter per media flow	Derivation from SDP Parameters
---	---------------------------------------

Maximum Authorized Data Rate DL (Max DR DL) and UL (Max DR UL) per media flow (see note 1)

```

/* Check if the media use codec(s) */
IF [(<media> = ("audio" or "video")) and (<transport> = "RTP/AVP")] THEN

  /* Check if Streaming */
  IF a=("sendonly" or "recvonly") THEN
    Maximum Authorized Data Rate DL/UL per media flow is set equal to Maximum Bitrate DL/UL. See reference [5];
    Editor's note: Whether Maximum Authorized Data Rate per media flow is set to Maximum or Guaranteed Bitrate is ffs.

  /* Conversational as default !*/
  ELSE
    Maximum Authorized Data Rate DL/UL per media flow is set equal to Maximum Bitrate DL/UL. See reference [6];
    Editor's note: Whether Maximum Authorized Data Rate per media flow is set to Maximum or Guaranteed Bitrate is ffs.
  ENDIF;

/* Check for presence of bandwidth attributes */
ELSEIF b=AS:<bandwidth-value> is present THEN
  Maximum Authorized Data Rate DL/UL per media flow = "bandwidth-value";

/* SDP do not give any guidance! */
ELSE
  Maximum Authorized Data Rate DL/UL per media flow is set according to operator policy;
ENDIF;
IF a=recvonly THEN
  IF <SDP direction> = mobile originated THEN
    Direction:= downlink;
  ELSE /* mobile terminated */
    Direction:= uplink;
  ENDIF;
ELSE
  IF a=sendonly THEN
    IF <SDP direction> = mobile originated THEN
      Direction: = uplink;
    ELSE /* mobile terminated */
      Direction:= downlink;
    ENDIF;
  ELSE /*sendrecv or no direction attribute*/
    Direction:=both;
  ENDIF;
ENDIF;

IF b=AS:<bandwidth> is present THEN
  IF Direction=downlink THEN
    IF <transport>="RTP/AVP" then
      Max DR UL:=0.025 * <bandwidth>;
      Max DR DL:=1.025 * <bandwidth>;
    ELSE
      Max DR UL:=0;
      Max DR DL:=<bandwidth>;
    ENDIF;
  ELSE
    IF Direction=uplink THEN
      IF <transport>="RTP/AVP" then
        Max DR UL:= 1.025 * <bandwidth>;
        Max DR DL:=0.025 * <bandwidth>;
      ELSE
        Max DR UL:=<bandwidth>;
        Max DR DL:=0;
      ENDIF;
    ELSE /*Direction=both*/
      Max DR UL:= 1.025 * <bandwidth>;
      Max DR DL:= 1.025 * <bandwidth>;
    ENDIF;
  ENDIF;
ELSE
  bw:= as set by the operator;
  IF Direction=downlink THEN
    Max DR UL:=0;
    Max DR DL:=bw;
  ELSE

```

Maximum Authorized DiffServ PHB per media flow (see note 2)	<pre> IF [(<media> = ("audio" or "video")) and (a="sendrecv")] THEN Maximum Authorised DiffServ PHB per media flow = "EF" ; ELSEIF [(<media> = ("audio" or "video")) and (a=("sendonly" or "recvonly"))] THEN Maximum Authorised DiffServ PHB per media flow = "AF4" ; ELSEIF <media> = ("application" or "control") THEN Maximum Authorised DiffServ PHB per media flow = "AF3" ; ELSE Maximum Authorised DiffServ PHB per media flow = "BE" ; END ; </pre>
NOTE 1: For a RTP media flow the Maximum Authorized Bandwidth DL/UL are the sum of the RTP flow DL/UL and the associated RTCP flow DL/UL.	
NOTE 2: The Maximum Authorized Traffic Class for a RTCP flow is the same as the corresponding RTP flow.	

Editor’s note: Further clarification is required if the SDP b=AS:<bandwidth> parameter includes the bandwidth for RTCP.

The PCF shall per ongoing session store the Authorized IP QoS parameters per media flow.

When the GGSN requests the Authorized UMTS QoS parameters for an activated/modified PDP Context carrying one or more media flows (eventually with associated RTCP signalling), the PCF shall use the rules in table 7.1.1.2 to calculate the Authorized IP QoS parameters.

Table 7.1.1.2: Rules for calculating the Maximum Authorized Data Rate and Maximum Authorized Diffserv PHB Parameters per Binding Information in the PCF

Authorized IP QoS Parameter per Binding	Calculation Rule
Maximum Authorized Data Rate DL and UL per Binding Information	Maximum Authorized Data Rate DL/UL per Binding Information is the sum of all Maximum Authorized Data Rate DL/UL per media flow for all the media flows identified by the Binding Information IF Maximum Authorized Data Rate DL/UL per Binding Information > 2047 kbps THEN Maximum Authorized Data Rate DL/UL per Binding Information = 2047 kbps /* See ref [8] */ END;
Maximum Authorized Diffserv PHB per Binding Information	Maximum Authorized Diffserv PHB per Binding Information = MAX [Maximum Authorized Diffserv PHB per media flow among all the media flows carried by the current PDP Context] (The MAX function ranks the possible Maximum Authorized Diffserv PHB values as follows: "EF" > "AF4" > "AF3" > "BE")

7.1.2 Authorized IP QoS parameters to Authorized UMTS QoS parameters mapping in GGSN

The Translation/Mapping function in the GGSN shall derive the Authorized UMTS QoS parameters from the Authorized IP QoS parameters received from the PCF according to the rules in table 7.1.2.

Table 7.1.2: Rules for derivation of the Authorized UMTS QoS Parameters from the Authorized IP QoS Parameters

Authorized UMTS QoS Parameter	Derivation from Authorized IP QoS Parameters
Maximum Authorized Bandwidth DL and UL	Maximum Authorized Bandwidth DL/UL = Maximum Authorized Data Rate DL/UL
Maximum Authorized Traffic Class	IF Maximum Authorized Diffserv PHB = "EF" THEN Maximum Authorized Traffic Class = "Conversational" ELSEIF Maximum Authorized Diffserv PHB = "AF4" THEN Maximum Authorized Traffic Class = "Streaming" ELSEIF Maximum Authorized Diffserv PHB = "AF3" THEN Maximum Authorized Traffic Class = "Interactive" ELSE Maximum Authorized Traffic Class = "Background" ENDIF ;

7.1.3 Comparing UMTS QoS Parameters against the Authorized UMTS QoS parameters in GGSN

Upon receiving a PDP context activation, the UMTS BS Manager in the GGSN requests the Authorized UMTS QoS parameters from the PCF, and might request the Authorized UMTS QoS Parameters if a PDP context is modified (see [7] for details). The GGSN compares the requested UMTS QoS parameters against the corresponding Authorized UMTS QoS parameters. If all the requested parameters lie within the limits, the PDP context activation or modification shall be accepted. If any of the requested parameters do not lie within their respective limit, the GGSN shall either reject the activation or modification of the PDP context or downgrade the requested UMTS QoS parameters.

7.2 QoS parameter mapping in the UE

Figure 7.2 indicates the entities participating in the generation of the requested QoS parameters when activate or modify a PDP Context in the UE. The steps are:

1. The Application provides the UMTS BS Manager, possibly via the IP BS Manager and the Translation/Mapping function, with relevant information to perform step 2 or step 4. (Not subject to standardization within 3GPP).
2. If needed, information from step 1 is used to access a proper set of UMTS QoS Parameters. See 3GPP TS 26.236 [6] for Conversational Codec Applications and 3GPP TS 26.234 [5] for Streaming Codec Applications.
3. If SDP is present then the SDP Parameters might give guidance for the UMTS BS Manager to set the Maximum Bitrate UL/DL, Guaranteed Bitrate UL/DL and the Maximum SDU Size. The Application deliver extracted SDP information, possibly via the IP BS Manager, to the Translation/Mapping function. The Translation/Mapping function finally derives the UMTS QoS parameters according to the rules in clause 7.2.1. Furthermore if the SDP Parameters are received in an IMS context it is recommended that the Maximum Authorized Bandwidth UL and DL and Maximum Authorised Traffic Class are derived according to the rules in clause 7.2.2.
4. A set of UMTS QoS Parameters values from step 2 (or directly from step 1) is eventually merged together with the Maximum Bitrate UL/DL, the Guaranteed Bitrate UL/DL and the Maximum SDU Size from step 3. The result constitutes a recommendation of requested UMTS QoS Parameters. If the PDP Context is activated or modified in an IMS context it is recommended that the UE checks that the actual requested Maximum Bitrate UL/DL are not greater than the Maximum Authorized Bandwidth UL/DL. Furthermore, if the UE has implemented the mapping rule for Maximum Authorized Traffic Class, as defined in clause 7.2.2, it is also recommended that the requested Traffic Class is not greater than the Maximum Authorised Traffic Class derived in step 3.

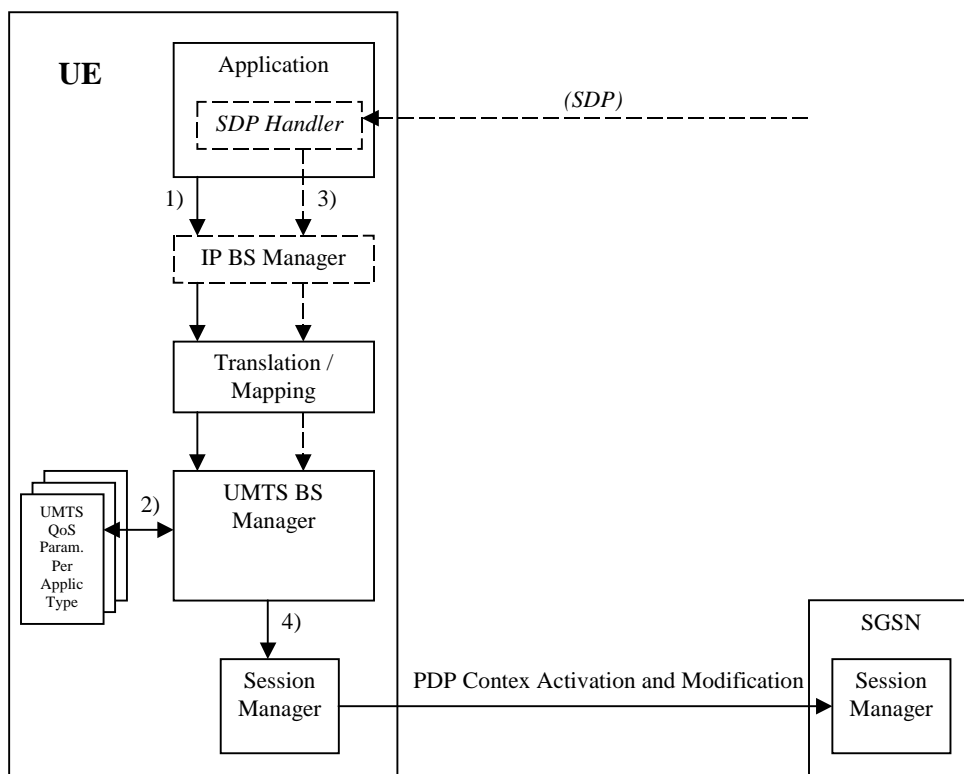


Figure 7.2: Framework for generating requested QoS parameters in the UE

7.2.1 SDP to UMTS QoS parameter mapping in UE

If SDP Parameters are available, then before activating or modifying a PDP Context the UE should check if the SDP Parameters give guidance for setting the requested UMTS QoS Parameters. The UE is recommended to use the mapping rules in table 7.2.1 to derive the Maximum and Guaranteed Bitrate DL/UL and Maximum SDU Size from the SDP Parameters.

Table 7.2.1: Recommended rules for derivation of the requested Maximum and Guaranteed Bitrate DL/UL and the requested Maximum SDU Size in the UE

UMTS QoS Parameter	Derivation from SDP Parameters
Maximum Bitrate DL/UL and Guaranteed Bitrate DL/UL	<pre> /* Check if the media use codec(s) */ IF [<media> = ("audio" or "video")] and (<transport> = "RTP/AVP")] THEN /* Check if Streaming */ IF a= ("sendonly" or "recvonly") THEN Maximum Bitrate DL/UL and Guaranteed Bitrate DL/UL as specified in reference [5] ; /* Conversational as default !*/ ELSE Maximum Bitrate DL/UL and Guaranteed Bitrate DL/UL as specified in reference [6] ; ENDIF ; /* Check for presence of bandwidth attribute */ ELSEIF b=AS:<bandwidth-value> is present THEN Maximum Bitrate DL/UL and Guaranteed Bitrate DL/UL = "bandwidth-value" ; ELSE /* SDP do not give any guidance ! */ Maximum Bitrate DL/UL and Guaranteed Bitrate DL/UL as specified by the UE manufacturer; ENDIF ; </pre>
Maximum SDU size	<pre> /* Check if the media use codec(s) */ IF [<media> = ("audio" or "video")] and (<transport> = "RTP/AVP")] THEN /* Check if Streaming */ IF a= ("sendonly" or "recvonly") THEN Maximum SDU Size as specified in reference [5] ; /* Conversational as default !*/ ELSE Maximum SDU Size as specified in reference [6] ; ENDIF ; ELSE Maximum SDU Size as specified by the UE manufacturer ; ENDIF ; </pre>

7.2.2 SDP parameters to Authorized UMTS QoS parameters mapping in UE

If the PDP Context is activated or modified in an IMS context then it is recommended that the UE uses the mapping rules in table 7.2.2.1 to derive the Maximum Authorized Bandwidth UL/DL.

Table 7.2.2.1 also has a mapping rule for derivation of Maximum Authorized Traffic Class. In future releases this mapping rule may change. For the reason of future compatibility, the release 5 mapping rule is optional for the UE.

In the case this mapping rule is implemented then it is recommended that the UE use the mapping rule in table 7.2.2.1 to derive the Maximum Authorised Traffic Class from the SDP Parameters.

Table 7.2.2.1: Rules for derivation of the Maximum Authorized Bandwidth DL/UL and the Maximum Authorized Traffic Class per media flow in the UE

Authorized UMTS QoS Parameter per media flow	Derivation from SDP Parameters
---	---------------------------------------

Maximum Authorized Bandwidth DL (Max BW DL) and UL (Max BW UL) per media flow

```

/* Check if IMS context (the criteria for this check is an UE manufactures issue ) */
IF IMS context THEN

IF a=recvonly THEN
  IF <SDP direction> = mobile originated THEN
    Direction:= downlink;
  ELSE /* mobile teminated */
    Direction:= uplink;
  ENDIF;
ELSE;
  IF a=sendonly THEN
    IF <SDP direction> = mobile originated THEN
      Direction:= uplink;
    ELSE /* mobile teminated */
      Direction:= downlink;
    ENDIF;
  ELSE /*sendrcv or no direction attribute*/
    Direction:=both;
  ENDIF;
ENDIF;

IF b=AS:<bandwidth> is present THEN
  IF Direction=downlink THEN
    IF <transport>="RTP/AVP" then
      Max BW UL:=0.025 * <bandwidth>;
      Max BW DL:=1.025 * <bandwidth>;
    ELSE
      Max BW UL:=0;
      Max BW DL:=<bandwidth>;
    ENDIF;
  ELSE
    IF Direction=uplink THEN
      IF <transport>="RTP/AVP" then
        Max BW UL:= 1.025 * <bandwidth>;
        Max BW DL:=0.025 * <bandwidth>;
      ELSE
        Max BW UL:=<bandwidth>;
        Max BW DL:=0;
      ENDIF;
    ELSE /*Direction=both*/
      Max BW UL:= 1.025 * <bandwidth>;
      Max BW DL:= 1.025 * <bandwidth>;
    ENDIF;
  ENDIF;
ELSE
  bw:= as set by the UE manufacturer;
  IF Direction=downlink THEN
    Max BW UL:=0;
    Max BW DL:= bw;
  ELSE
    IF Direction=uplink THEN
      Max BW UL:= bw;
      Max BW DL:=0;
    ELSE /*Direction=both*/
      Max BW UL:= bw;
      Max BW DL:= bw;
    ENDIF;
  ENDIF;
ENDIF;

/* Check if the media use codec(s) */
IF [(<media> = ("audio" or "video")) and (<transport> = "RTP/AVP")] THEN

  /* Check if Streaming */
  IF a=("sendonly" or "recvonly") THEN
    Maximum Authorized Bandwidth DL/UL set equal to Maximum Bitrate DL/UL. See
reference [5];
Editor's note: Whether Maximum Authorized Bandwidth is set to Maximum or Guaranteed
Bitrate is ffs.

  /* Conversational as default !*/
  ELSE
    Maximum Authorized Bandwidth DL/UL set equal to Maximum Bitrate DL/UL. See
reference [6];

```

Maximum Authorized Traffic Class per media flow	<pre> /* Check if IMS context (the criteria for this check is an UE manufactures issue) */ IF IMS context THEN IF [<media> = ("audio" or "video")) and (a="sendrecv")] THEN Maximum Authorised Traffic Class = "Conversational" ; ELSEIF [<media> = ("audio" or "video")) and (a=("sendonly" or "recvonly"))] THEN Maximum Authorised Traffic Class = "Streaming" ; ELSEIF <media> = ("application" or "control") THEN Maximum Authorised Traffic Class = "Interactive" ; ELSE Maximum Authorised Traffic Class = "Background" ; END ; ELSE No authorization is done ; ENDIF ; </pre>
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Editor’s note: Further clarification is required if the SDP b=AS:<bandwidth> parameter includes the bandwidth for RTCP.

It is recommended that the UE per ongoing session store the Authorized UMTS QoS parameters per media flow.

Furthermore it is recommended that the UE checks that the requested UMTS QoS parameters Traffic Class and Maximum Bitrate UL/DL not exceeds the values of the corresponding Authorized UMTS QoS parameters (calculated according to the rules in table 7.2.2.2) before activating/modifying a PDP Context.

Table 7.2.2.2: Rules for calculating the Maximum Authorized Bandwidths and Maximum Authorized Traffic Class Parameters per PDP Context in the UE

Authorized UMTS QoS Parameter per PDP Context	Calculation Rule
Maximum Authorized Bandwidth DL and UL per PDP Context	<pre> /* Check if IMS context (the criteria for this check is an UE manufactures issue) */ IF IMS context THEN Maximum Authorized Bandwidth DL/UL per PDP Context is the sum of all Maximum Authorized Bandwidth DL/UL per media flow for all the media flows carried by the PDP Context ; IF Maximum Authorized Bandwidth DL/UL per PDP Context > 2047 kbps THEN Maximum Authorized Bandwidth DL/UL per PDP Context = 2047 kbps /* See ref [8] */ END; ELSE No authorization is done ; ENDIF ; </pre>
Maximum Authorized Traffic Class per PDP Context	<pre> /* Check if IMS context (the criteria for this check is an UE manufactures issue) */ IF IMS context THEN Maximum Authorised Traffic Class per PDP Context = MAX [Maximum Authorised Traffic Class per media flow among all the media flows carried by the PDP Context] ; ELSE No authorization is done ; ENDIF ; (The MAX function ranks the possible Maximum Authorised Traffic Class values as follows: Conversational > Streaming > Interactive > Background) </pre>