3GPP TSG-CN Meeting #26 8th – 10th December 2004. Athens, Greece.

Source:	TSG CN WG3
Title:	CRs to Rel-6 on Work Item "QoS1"(Gq interface)
Agenda item:	9.20
Document for:	APPROVAL

Introduction:

This document contains 10 CRs to Rel-6 on Work Item "QoS" (Gq interface) that have been agreed by TSG CN WG3, and are forwarded to TSG CN Plenary for approval.

WG_tdoc	Spec	CR	R	Cat	Title	Rel	C_Ver	Work Item
N3- 040676	29.208	074	1	F	Correcting Mapping Table for early media handling	Rel- 6	6.1.0	QoS1
N3- 040700	29.208	075	2	F	Clarification on Mapping Table 7.1.1.1	Rel- 6	6.1.0	QoS1
N3- 040678	29.209	001	1	F	semantics of updated Flow-Description AVP(s)	Rel- 6	6.0.0	QoS1
N3- 040679	29.209	002	1	F	Flow grouping AVPs in modified service information	Rel- 6	6.0.0	QoS1
N3- 040680	29.209	003	1	F	Smaller corrections to avoid misinterpretations	Rel- 6	6.0.0	QoS1
N3- 040702	29.208	076	2	С	Allowing the use of Application identifier for IMS	Rel- 6	6.1.0	QoS1
N3- 040875	29.209	008	2	F	Resource reservation at PDF	Rel- 6	6.0.0	QoS1
N3- 040802	29.209	009		F	Bandwidth attributes	Rel- 6	6.0.0.	QoS1
N3- 040825	29.208	094	1	F	Correcting Mapping Table[Update to existing CR 074 against 29.208]	Rel- 6	6.1.0	QoS1
N3- 040890	29.209	010	2	В	Modification to Gq protocols to make it more generic	Rel- 6	6.0.0	FBC

3GPP TSG-CN WG3 Meeting #33bis

Tdoc **೫** *N*3-040676

Sophia Antipolis, France. 4th – 7th October 2004.

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Other specs

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X Test specificationsX O&M Specifications

Other comments: Ж

7.1 QoS parameter mapping between AF and GPRS

7.1.0 SDP parameters to service information mapping in AF

The mapping described in this clause is mandatory for the P-CSCF and should also be applied by other AFs if the SDI is SDP.

When a session is initiated or modified the P-CSCF shall use the mapping rules in table 7.1.0.1 for each SDP media component to derive a Media-Component-Description AVP from the SDP Parameters. Furthermore, the P-CSCF shall map information about the grouping of media lines into resource reservation flows into the Flow-Grouping AVP as specified in table 7.1.0.3.

service information per	Derivation from SDP Parameters					
Media-Component-	(see NOTE 2)					
Description AVP						
(NOTE 1)						
Media-Component-	ordinal number of the position of the " $m = "$ line in the SDP					
Number						
AE Application Identifier	The AF-Annligation-Identifier AVD may be supplied or omitted depending on					
AF-Application-Identifier	the application For IMS if the AF application Identifier AVD is supplied					
	the application. For IMS, if the AF-Application identified ave is supplied,					
	handling					
Madia Tura	The Media Time AVD shall be included with the same value as supplied for					
weula-i ype	The media type for the $\frac{1}{2}$ m = $\frac{1}{2}$ line					
Flow-Status	The mean acype in the _ m _ THE.					
Tiow-Status	Flow-Status:= REMOVED;					
	ELSE					
	IF a=recvonly THEN					
	IF (SDP direction) = mobile originated THEN					
	Flow-Status := ENABLED DOWNLINK; (NOTE 4)					
1	ELSE /* mobile terminated */					
	Flow-Status := ENABLED UPLINK; (NOTE 4)					
1	ENDIF;					
	ELSE					
	IF a=sendonly THEN					
	IF <sdp direction=""> = mobile originated THEN</sdp>					
	Flow-Status := ENABLED_UPLINK; (NOTE 4)					
	ELSE /* mobile terminated */					
	Flow-Status := ENABLED_DOWNLINK; (NOTE 4)					
	ENDIF;					
	ELSE					
	IF a=inactive THEN					
	Flow-Status :=DISABLED;					
	ELSE /* a=sendrecv or no direction attribute */					
	Flow-Status := ENABLED (NOTE 4)					
	ENDIF;					
	ENDIF;					
	ENDIF;					
	ENDIF;					
Max-Requested-	IF b=AS: bandwidth> is present THEN					
Bandwidth	Max-Requested-Bandwidth:= <bandwidth> * 1000; /* Unit is bit/s</bandwidth>					
	ELSE					
	Max-Requested-Bandwidth:= <operator setting="" specific="">,</operator>					
	or AVP not supplied;					
	ENDIF;					
RR-Bandwidth	IF b=RR: <baddwidth> is present THEN</baddwidth>					
(NOTE 3)	RR-Bandwidth:= <bandwidth>;</bandwidth>					
	ELSE					
	AVP not supplied					
DO Demokralskih	ENDIF;					
RS-Bandwidth	PRS-conducidations is present THEN					
(NOTE 3)						
	NVD not supplied					
	FNDTE:					
Modia-Sub-Component	Supply one AVD for each Flow Identifier within the media component. The					
Wedia-Sub-Component	Flow identifiers are derived according to Annex D of 3GPP TS 29 207 [7]					
	The encoding of the AVP is described in Table 7.1.0.2					
NOTE 1: The encoding of the	e service information is defined in TS 29 209 [12]					
NOTE 2: The SDD parameter	are are described in PEC 2227 [0]					
	no are ueonineu III RFU 2027 [8]. DDV CDD handwidth madifian are defined in DEC 0550 [40]					
NOTE 3: The DERS: and b	RK: SDP bandwidth modifiers are defined in RFC 3556 [10].					
NUTE 4: As an operator poli	cy to disable forward and/or backward early media, the Flow-Status may be downgraded					
before a SIP dialog	ue is established, i.e. until a 200 OK(INVITE) is received. The Value "DISABLED" may be					
used instead of the	Values "ENABLED_UPLINK" or "ENABLED_DOWNLINK". The Values "DISABLED",					
<u>"ENABLED_UPLIN</u>	K" or "ENABLED_DOWNLINK" may be used instead of the Value "ENABLED".					

Table 7.1.0.1: Rules for derivation of service information within Media-Component-Description AVP from SDP media component

Gg service information	Derivation from SDP Parameters
per Media-Sub-	(see NOTE 2)
Component AVP	(,
(NOTE 1)	
Flow-Number	derived according to Annex C of 3GPP TS 29,207 [7]
Flow-Status	AVP not supplied
Max Paguastad	AND not supplied
Bandwidth-UL	
Max-Requested- Bandwidth-DL	AVP not supplied
Flow-Description	For uplink and dowlink direction, a Flow-Description AVP shall be provided unless no IP Flows in this direction are described within the media
	component.
	The SDP direction attribute indicates the direction of the media IP flows
	within the media component as follows:
	IF a=recvonly THEN (NOTE 3)
	IF <sdp direction=""> = mobile originated THEN</sdp>
	Provide only downlink Flow-Description AVP
	ELSE /* mobile terminated */
	Provide only uplink Flow-Description AVP
	ENDIF;
	IF a=sendonly THEN (NOTE 3)
	IF <sdp direction=""> = mobile originated THEN</sdp>
	Provide only uplink Flow-Description AVP
	ELSE /* mobile terminated */
	Provide only downlink Flow-Description AVP
	FIGE /* a-sendregy or a-inactive or no direction attribute */
	Browide unlink and domnlink Flow Description AVDs
	ENDIF:
	For RTCP IP flows uplink and downlink Flow-Description AVPs shall be
	provided irrespective of the SDP direction attribute.
	÷
	The uplink destination address shall be copied from the "c=" line of downlink SDP.
	The uplink destination port shall be derived from the "m=" line of downlink SDP.
	The downlink destination address shall be copied from the "c=" line of uplink SDP.
	The downlink destination port shall be derived from the "m=" line of uplink SDP.
	Uplink and downlink source adresses should be set to "any" and source ports should not be supplied
	Proto shall be derived from the transport of the "m=" line. For "RTP/AVP"
	proto is 17(IDP).
Flow-Usage	The Flow-Usage AVP shall be supplied with value "RTCP" if the IP flow(s)
lien bouge	described in the Media-Sub-Component AVP are used to transport RTCP.
	Otherwise the Flow-Usage AVP shall not be supplied. RFC 2327 [9] specifies
	how RTCP flows are described within SDP.
NOTE 1: The encoding of the	e service information is defined in TS 29.209 [12].
NOTE 2: The SDP parameter	rs are described in RFC 2327 [9].
NOTE 3: If the SDP direction	attribute for the media component negotiated in a previous offer-answer exchange was
sendrecy or if no d	irection attribute was provided, and the new SDP direction attribute sendonly or recycly is
negotiated in a sub	sequent SDP offer-answer exchange uplink and downlink Flow-Description AV/Ps shall be
supplied.	

Table 7.1.0.2: Rules for derivation of Media-Sub-Component AVP from SDP media component

Table 7.1.0.3: Rules for mapping SDP information about the grouping of media lines into resourcereservation flows into the Flow Grouping AVP

Flow-Grouping AVP (NOTE1)	Derivation from SDP Parameters (see NOTE 2)			
Flow Grouping	For each SDP "a=group:SRF" SDP line, a Flow Grouping AVP shall be			
	generated. (NOTE 5)			
Flows	For each identification tag within "a=group:SRF" SDP line, a Flows AVP containing a Media-Component-Number AVP identifying the corresponding m- line shall be generated. (NOTE 3) No Flow-Number AVP shall be supplied within the Flows AVP.			
NOTE 1: The encoding of the service information is defined in TS 29.209 [12].				

NOTE 2: The SDP parameters are described in RFC 2327 [9].
 NOTE 3: The SDP "group" attribute is defined in RFC 3388 [13]. The "SRF" semantics attribute within this grouping framework is defined in RFC 3524 [14].

7.1.1 Gq service information to Authorized IP QoS parameters mapping in PDF

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

When a session is initiated or modified the PDF 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 QoS Class from the service information. In the case of forking, the various forked responses may have different QoS requirements for the IP flows of the same media component. Each Authorized IP QoS Parameter shall be set to the highest value requested for the IP flow(s) of that media component by any of the active forked responses. These values are derived by the rules in table 7.1.1.1

Authorized IP QoS	Derivation from service information
Parameter per flow	(see note 4)
identifier	
Maximum Authorized Data Rate DL (Max_DR_DL) and UL (Max_DR_UL) per flow	IF AF-Application-Identifier AVP demands application specific data rate handling THEN
identifier	Max_DR_UL:= as defined by application specific algorithm; Max_DR_DL:= as defined by application specific algorithm;
	ELSE
	IF not RTCP flow(s) according to Flow-Usage AVP THEN IF Max-Requested-Bandwidth is present THEN bw:= Max-Requested-Bandwidth;
	but:= as set by the operator; ENDIF
	IF Flow-Status = REMOVED THEN Max_DR_UL:= 0;
	Max_DR_DL:= 0; ELSE
	IF uplink Flow Desription AVP is supplied THEN Max_DR_UL:= bw;
	Max_DR_UL:= 0; ENDIF;
	IF downlink Flow Desription AVPs is supplied THEN Max_DR_DL:= bw;
	ELSE Max_DR_DL:= 0;
	ENDIF; IF Flow-Status = ENABLED_DOWNLINK THEN
	Max_DR_UL:= 0; Max_DR_DL:= bw;
	IF Flow-Status = REMOVED THEN
	<u>Max_DR_DL:= 0;</u>
	<u>Max_DR_HIL:= bw;</u>
	ENDIF;
	ELSE /* RTCP IP flow(s) */
	IF RS-Bandwidth is present and
	RR-Bandwidth is present THEN
	Max_DR_DL:= (RS-Bandwidth + RR-Bandwidth); ELSE
	IF Max-Requested-Bandwidth is present THEN IF RS-Bandwidth is present and
	RR-Bandwidth is not present THEN
	<pre>Max_DR_UL:= MAX[0.05 * Max-Requested-Bandwidth, RS-Bandwidth];</pre>
	<pre>Max_DR_DL:= MAX[0.05 * Max-Requested-Bandwidth, RS-Bandwidth];</pre>
	ENDIF; IF RS-Bandwidth is not present and
	RR-Bandwidth is present THEN Max_DR_UL:= MAX[0.05 * Max-Requested-Bandwidth,
	RR-Bandwidth]; Max_DR_DL:= MAX[0.05 * Max-Requested-Bandwidth,
	RR-Bandwidth]; ENDIF;
	IF RS-Bandwidth and RR-Bandwidth is not present THEN
	Max_DR_DL:= 0.05 * Max-Requested-Bandwidth;
	ENDIF;

Table 7.1.1.1: Rules for derivation of the Maximum Authorized Data Rates and Maximum Authorized QoS Class per flow identifier in the PDF

	ELSE										
	Max_DR_UL:=	as set by the oper	ator;								
	Max_DR_DL:=	as set by the oper	ator;								
	ENDIF;										
	ENDIF;										
	ENDIF;										
	/* MAX-Requested-Band	dwidth-UL and MAX-R	Requested-Bandwidth-DL take								
	precedence*/		1								
	IF Max-Requested-Band	dwidth-UL is presen	IT. THEN								
	Max DR UL:= Max-Re	Max DR UL:= Max-Requested-Bandwidth-UL;									
	ENDIF	ENDIF									
	IF Max-Requested-Ban	dwidth-DL is presen	THEN								
	Max DR DL:= Max-Re	Max DR DL:= Max-Requested-Bandwidth-DL;									
	ENDIF	Squebeca Banawiaen	227								
	BRDII										
	FNDTF:										
Maximum Authorized Oos	IE AE-Application-Ident:	ifier AVR demands a	polication specific Oos Class								
	handling THEN	LITEL AVE GEMANDS A	ppiicación specific Q05 class								
Class [MaxClass] per flow	MaxClagg:- ag dofino	t by application an	ogifig placrithm:								
identifier	FICE	by application sp									
(see notes 1, 2 and 3)	LE Modio Trmo id prov	TONT THEN									
	IF Media-Type is present THEN										
	IF (Only uplink F)	low Desription AVPS	time "audie" or "widee"								
		leve ugage "DTCD"	cype addio of video								
		Tow usage "RICP", O	<u>The and sumplied for all Th</u>								
	flows of the	Flow Desription Av	trme "eudie" en "uidee"								
	LIOWS OI LIE S	Session with media	rype "audio" or "video"								
	and with no I.	tow usage "RTCP"all	<u>meala IP Ilows of meala type</u>								
	<u>~audio" or ~video" for</u>	-tne -be sever discontines)									
	<u> </u>	the same direction)	IHEN (tetuceningt (
	MaxclassDerivat	стоп.=в,	/ "Streaming"/								
	ELSE Marcelle a speciment		(*************************************								
	MaxClassDerivat	LION.=A,	/ "Conversational"/								
	ENDIF,										
	CASE Modia Trma Ol	7									
	CASE Media-Type Of	MaxClagg:- MaxCla	agDorivation								
	addio :	MaxClass- MaxCla									
	"VIGEO".	MaxClass = MaxCla	(*gonworgotional*/								
	"application".	MaxClass.=A/	/*conversacional"/								
	uata ·	MaxClassL/	/*interactive with priority 3*/								
	CONCLOT	MaxClass.=C/	/ "Inceractive with priority 1"/								
	OTHEDWICE .	Maw@laga:-E:	/ media type"/								
	UIHERWISE ·	MaxClass.=F/	/ "background"/								
	Marclaga'- ag daf	ined by by energiator									
	MAXCIASS.= AS UEL	filed by by operator	. 1								
	ENDIF,										
NOTE 1: The Maximum Auth	orized QoS Class for a RTCP	IP now is the same as	s for the corresponding RTP media IP								
flow.											
NOTE 2: When audio or vide	o IP flow (s) are removed from	n a session, the maxim	num Authorized QoS class shall keep the								
originally assigned	value.										
NOTE 3: When audio or video IP flow(s) are added to a session, the PDF shall derive the maximum Authorized QoS											

Class taking into account the already existing media IP flow(s) within the session. NOTE 4: The encoding of the service information is defined in TS 29.209 [12].

The PDF shall per ongoing session store the Authorized IP QoS parameters per flow identifier.

When the GGSN requests the Authorized UMTS QoS parameters for an activated/modified PDP Context carrying IP flows of media component(s), the PDF shall use the rules in table 7.1.1.2 to calculate the Authorized IP QoS parameters per Client Handle.

Authorized IP	Calculation Rule
QoS Parameter	
nor Client	
per chent	
Handle	
Maximum	Maximum Authorized Data Rate DL/UL per Client Handle is the sum of all Maximum
Authorized Data	Authorized Data Rate DL/UL for all the flow identifiers associated with that
Rate DL and LI	Client Handle.
per Client	IF Maximum Authorized Data Rate DL/UL per Client Handle > 16000 kbps THEN
Handle	Maximum Authorized Data Rate DL/III, per Client Handle = 16000 kbps /* See
	COD TS 22 107 [8] */
	SGFF 15 25.107 [6] /
	END;
Maximum	Maximum Authorized QoS Class per Client Handle = MAX [Maximum Authorized QoS
Authorized QoS	Class per flow identifier among all the flow identifiers associated with that
Class per Client	Client Handle.
папше	(The MAX function ranks the possible Maximum Authorized QoS Class values as
	follows: "A" > "B" > "C" > "D" > "E" > "F") /* See 3GPP TS 29.207 [7]) */

Table 7.1.1.2: Rules for calculating the Maximum Authorized Data Rates and Maximum Authorized QoS Class per Client Handle in the PDF

3GPP TSG-CN WG3 Meeting #34

Tdoc **#***N*3-040875

Seoul, Korea. 15th - 19th November 2004.

	CHANGE REQUEST										
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Reason for change:	% No resources are requested by GGSN, but this is implied by existing text.
Summary of change:	Condition on requested bearer resources is replaced by condition "authorization
	for unknown flow identifiers is being requested"
Consequences if	# Impossible behavior is demanded from PDF
not approved:	
Clauses affected:	第 5.1.2
	YN
Other specs	# X Other core specifications #
affected:	X Test specifications
	X O&M Specifications
Other comments:	<mark>೫</mark>

5.1.2 Resource reservation

When receiving a bearer authorization request from the Go interface, the PDF shall authorize the request according to the stored SBLP for the session, if available.

For a bearer authorization request with a new authorization token the PDF shall behave as described within the present paragraph: If the SBLP is not available for the session, or if the AF has instructed the PDF to do so, the PDF shall send the Re-Auth_Request message with the SERVICE_INFORMATION_REQUEST indication in the Gq-Specific-Action AVP to the AF to request the service information. When receiving the Media-Component-Description AVP(s) in the Re-Auth-Answer message, the PDF shall authorize the required QoS resources and shall store the SBLP for the session. If SBLP is available for the session but the requested bearer resources exceed itauthorization for unknown flow identifiers is being requested, and the AF has not instructed the PDF to contact it at bearer authorization, the PDF shall deny the resources-authorization without contacting the AF.

3GPP TSG-CN WG3 Meeting #34 Seoul, Korea. 15th - 19th November 2004.

Tdoc **≋***N*3-040825

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For <u>HELP</u> on using this form, see bottom of this page or look at the pop-up text over the # symbols.										
Title:	Ħ	Correcting Mapping Table for early media handling	g							
Source:	ж	Siemens								
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Category:	₩	F 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 <u>TR 21.900</u> .	Rele Us	e <u>one</u> of Ph2 R96 R97 R98 R99 Rel-4 Rel-5 Rel-6 Rel-7	Re the fc (GSN (Rele (Rele (Rele (Rele (Rele (Rele	I-6 M Phase 2) Pase 1996) Pase 1997) Pase 1998) Pase 1999) Pase 4) Pase 5) Pase 6) Pase 7)	eases:			

Reason for change: ≆	According to IMS callflows and ReI-5 Go specifications, there is a requirement to authorize the QoS for the estblished media already during the SIP session set-up, while disabling early media by closing gates (QoS Commit) until the 200 OK(INVITE). According to agreed text in 29.207, the handling of early media is a task of the AF. However, the current mapping tables at the PDF couple the gate operation and the QoS derivation, as the Flow Status AVP is used for both purposes. Information about the directionality of a media component is also included in the presence or absence of uplink and downlink flow description AVPs. SDP offer-answer RFC 3264 allows to express that uplink and downlink bandwidths for bidirectional media components, as expressed by b:AS bandwidth modifier, are different.
	is emulted by giving precedence to an inactive attribute in an SDP offer.
Summary of change: ೫	 In the PDF QoS mapping, the directionality of a media component is derived from the presence or absence of uplink and downlink flow description AVPs, rather than from the Flow Status AVP. A clarifying remark in line with TS 29.209 about the early media handling is

1		
	 added to the SDP to service information mapping table. 3. The rules which flow description AVPs shall be supplied are detailed. The handling of "a=inactive" is clarified. The handling of media put on hold, as already agreed in Rel-5, is also taken into account. 	
	 b:AS is mapped into Max-Requested-Bandwidth-UL and -Requested- Bandwidth-DL AVPs rather than Max-Requested-Bandwidth AVP. Mapping tables are updated to use these AVPs accordingly. 	
	5. Note added to mapping table for mapping SDP parameters to servive information clarifying that The direction attributes and port number from the SDP answer shall be used to derive the flow status. However, to enable interoperability with SIP clients that do not understand the inactive SDP attribute, if a=sendonly was supplied in the SDP offer, this shall be used to derive the flow status.	
Consequences if # not approved:	A separate enabling or disabling of early media is not possible. Media put on hold are handled in a different manner as in Rel-5. A PDP context modification is enforced. Bandwidth Information that can be provided in SDP is not expressed correctly as	
	Oq service information	
	Unclear Mapping rules may lead to incorrect enabling and disabling of IP flows	
	encied, mapping raise may load to meencer enabling and disabiling of it nows.	
Clauses affected *	8 710 711	
	YN	
Other specs #	Other core specifications # 29,209	
affected:	X Test specifications X O&M Specifications	
Other comments:		
	b	

7.1 QoS parameter mapping between AF and GPRS

7.1.0 SDP parameters to service information mapping in AF

The mapping described in this clause is mandatory for the P-CSCF and should also be applied by other AFs if the SDI is SDP.

When a session is initiated or modified the P-CSCF shall use the mapping rules in table 7.1.0.1 for each SDP media component to derive a Media-Component-Description AVP from the SDP Parameters. Furthermore, the P-CSCF shall map information about the grouping of media lines into resource reservation flows into the Flow-Grouping AVP as specified in table 7.1.0.3.

service information per Media-Component-	Derivation from SDP Parameters (see NOTE 2)			
Description AVP (NOTE 1)				
Media-Component- Number	ordinal number of the position of the ""m="" line in the SDP			
AF-Application-Identifier	The AF-Application-Identifier AVP may be supplied or omitted, depending on the application. For IMS, if the AF-Application-Identifier AVP is supplied, its value shall not demand application specific bandwidth or QoS class			
Media-Type	handling. The Media Type AVP shall be included with the same value as supplied for			
Flow-Status	the media type in the ""m=""" line. IF port in m-line = 0 THEN			
	<pre>Flow-Status:= REMOVED; ELSE IF a=recvonly THEN IF <sdp direction=""> = mobile originated THEN Flow-Status := ENABLED_DOWNLINK; (NOTE 4) ELSE /* mobile terminated */ Flow-Status := ENABLED_UPLINK; (NOTE 4) ENDIF; ELSE IE a=aaandarly TUEN</sdp></pre>			
	<pre>IF a=Sendonry THEN IF a=Sen</pre>			
	ELSE IF a=inactive THEN Flow-Status :=DISABLED; ELSE /* a=sendrecv or no direction attribute */ Flow-Status := ENABLED (NOTE 4) ENDIF; ENDIF; ENDIF;			
	ENDIF; (NOTE 5)			
Max-Requested- Bandwidth	<pre>IF b=AS:<bandwidth> is present THEN</bandwidth></pre>			
Max-Requested-	IF <sdp direction=""> = mobile terminated THEN IF b=AS: bandwidth> is present THEN</sdp>			
Bandwidth-OL	Max-Requested-Bandwidth-UL:= <bandwidth> * 1000; /* Unit is bit/s ELSE Max-Requested-Bandwidth-UL:= <operator setting="" specific="">, or AVP not supplied; ENDIF; ELSE Consider SDP in opposite direction ENDIF</operator></bandwidth>			
Max-Requested- Bandwidth-DI	IF <sdp direction=""> = mobile originated THENIF b=AS: bandwidth> is present THEN</sdp>			
	Max-Requested-Bandwidth-DL:= <bandwidth> * 1000; /* Unit is bit/s ELSE Max-Requested-Bandwidth-DL:= <operator setting="" specific="">, or AVP not supplied; ENDIF; ELSE Consider SDP in opposite direction ENDIF</operator></bandwidth>			
RR-Bandwidth (NOTE 3)	<pre>IF b=RR:<bandwidth> is present THEN</bandwidth></pre>			
RS-Bandwidth	IF b=RS: <bandwidth> is present THEN RS-Bandwidth:= <bandwidth>;</bandwidth></bandwidth>			
	ELSE			

Table 7.1.0.1: Rules for derivation of service information within Media-Component-Description AVP from SDP media component

_		AVP not supplied	
		ENDIF;	
		(NOTE 6)	
Media-Sub	b-Component	Supply one AVP for each Flow Identifier within the media component. The	
	•	Flow identifiers are derived according to Annex D of 3GPP TS 29.207 [7].	
		The encoding of the AVP is described in Table 7.1.0.2	
NOTE 1:	The encoding of the	e service information is defined in TS 29.209 [12].	
NOTE 2:	The SDP paramete	rs are described in RFC 2327 [9].	
NOTE 3:	E 3: The 'b=RS:' and 'b=RR:' SDP bandwidth modifiers are defined in RFC 3556 [10].		
NOTE 4:	As an operator poli	cy to disable forward and/or backward early media, the Flow-Status may be downgraded	
	before a SIP dialog	ue is established, i.e. until a 200 OK(INVITE) is received. The Value "DISABLED" may be	
	used instead of the	Values "ENABLED_UPLINK" or "ENABLED_DOWNLINK". The Values "DISABLED",	
	"ENABLED_UPLIN	K" or "ENABLED_DOWNLINK" may be used instead of the Value "ENABLED".	
NOTE 5:	The direction attribution	utes and port number from the SDP answer shall be used to derive the flow status. However,	
	to enable interoperation	ability with SIP clients that do not understand the inactive SDP attribute, if a=inactive was	
	supplied in the SDF	P offer, this shall be used to derive the flow status.	
NOTE 6:	Information from the	e SDP answer is applicable	

Gq service information	Derivation from SDP Parameters
per Media-Sub-	(see NOTE 2)
Component AVP	
(NOTE 1)	
Flow-Number	derived according to Annex C of 3GPP TS 29.207 [7]
Flow-Status	AVP not supplied
Max-Requested-	AVP not supplied
Bandwidth-UL	
Max-Requested-	AVP not supplied
Bandwidth-DL	
Flow-Description	For uplink and dowlink direction, a Flow-Description AVP shall be provided
-	unless no IP Flows in this direction are described within the media
	component.
	The SDP direction attribute (NOTE 4) indicates the direction of the media
	IF arrevently THEN (NOTE 3)
	$\frac{11 \text{ d} - 100 \text{ control max} (\text{NOTE S})}{\text{IF = mobile originated THEN}}$
	Provide only downlink Flow-Description AVP
	ELSE /* mobile terminated */
	Provide only uplink Flow-Description AVP
	ENDIF;
	ELSE
	<u>IF a=sendonly THEN (NOTE 3)</u> IE <u>sendonly THEN (NOTE 3)</u>
	Drovide only unlink Flow-Description AVD
	ELSE /* mobile terminated */
	Provide only downlink Flow-Description AVP
	ENDIF;
	ELSE /* a=sendrecv or a=inactive or no direction attribute */
	Provide uplink and downlink Flow-Description AVPs
	ENDIF;
	ENDIF;
	provided irrespective of the SDP direction attribute
	provided intespective of the bbi direction delibitet.
	The uplink destination address shall be copied from the "c=" line of
	downlink SDP.
	The uplink destination port shall be derived from the "m=" line of downlink
	SDP.
	The downlink destination address shall be copied from the "c=" line of
	uplink SDP.
	and a still at the point shart be derived from the "m=" the of uprink
	Uplink and downlink source adresses should be set to "any" and source ports
	should not be supplied.
	Proto shall be derived from the transport of the "m=" line. For "RTP/AVP"
	proto is 17(UDP).
Flow-Usage	The Flow-Usage AVP shall be supplied with value "RTCP" if the IP flow(s)
	described in the Media-Sub-Component AVP are used to transport RTCP.
	how RTCP flows are described within SDP
NOTE 1: The encoding of the	e service information is defined in TS 29.209 [12]
NOTE 2: The SDP parameter	urs are described in RFC 2327 [9]
NOTE 3: If the SDP direction	attribute for the media component negotiated in a previous offer-answer exchange was
sendrecy or if no d	irection attribute was provided, and the new SDP direction attribute sendonly or recycly is
negotiated in a sub	sequent SDP offer-answer exchange uplink and downlink Flow-Description AV/Ps shall be
supplied	
NOTE 4: The direction attribution	ites from the SDP answer shall be used to derive the flow description. However, to enable
interoperability with	SIP clients that do not understand the inactive SDP attribute if a-inactive was supplied in
the SDP offer this	shall be used
	onun bo uodu.

Table 7.1.0.2: Rules for derivation of Media-Sub-Component AVP from SDP media component

Table 7.1.0.3: Rules for mapping SDP information about the grouping of media lines into resourcereservation flows into the Flow Grouping AVP

Flow-Grouping AVP (NOTE1)	Derivation from SDP Parameters (see NOTE 2)	
Flow Grouping	For each SDP "a=group:SRF" SDP line, a Flow Grouping AVP shall be generated. (NOTE 3)	
Flows	For each identification tag within "a=group:SRF" SDP line, a Flows AVP containing a Media-Component-Number AVP identifying the corresponding m-	

		line shall be generated. (NOTE 3) No Flow-Number AVP shall be supplied within the Flows AVP.	
NOTE 1:	The encoding of the	e service information is defined in TS 29.209 [12].	
NOTE 2:	The SDP parameters are described in RFC 2327 [9].		
NOTE 3:	The SDP "group" attribute is defined in RFC 3388 [13]. The "SRF" semantics attribute within this grouping		
	framework is define	ed in RFC 3524 [14].	

7.1.1 Gq service information to Authorized IP QoS parameters mapping in PDF

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

When a session is initiated or modified the PDF 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 QoS Class from the service information. In the case of forking, the various forked responses may have different QoS requirements for the IP flows of the same media component. Each Authorized IP QoS Parameter shall be set to the highest value requested for the IP flow(s) of that media component by any of the active forked responses. These values are derived by the rules in table 7.1.1.1

Authorized IP QoS	Derivation from service information				
Parameter per flow	(see note 4)				
Maximum Authorized Data					
Rate DL (Max_DR_DL) and UL (Max_DR_UL) per flow	IF AF-Application-Identifier AVP demands application specific data rate handling THEN				
identifier	Max_DR_UL:= as defined by application specific algorithm; Max_DR_DL:= as defined by application specific algorithm;				
	ELSE				
	IF not RTCP flow(s) according to Flow-Usage AVP THEN ————————————————————————————————————				
	Bandwidth.; 				
	Bw:= as set by the operator; ENDIF				
	IF Flow-Status = REMOVED THEN				
	$\underline{\text{Max}_DR}_{UL}:= 0;$				
	ELSE				
	IF uplink Flow Desription AVP is supplied THEN				
	Max_DR_UL:= Max-Requested-Bandwidth-UL ; ELSE				
	Max_DR_UL:= as set by the operator;				
	ENDIF ELSE				
	Max_DR_UL:= 0;				
	ENDIF; IF downlink Flow Degription AVDs is sumplied TUPN				
	IF Max-Requested-Bandwidth-DL is present THEN				
	Max_DR_DL:= Max-Requested-Bandwidth-DL;				
	ELSE Max DR DL:= as set by the operator;				
	ENDIF				
	ELSE Nov. DR. DI := 0:				
	ENDIF;				
	IF Flow Status = ENABLED_DOWNLINK THEN				
	$Max_DR_UL:= 0;$				
	ELSE				
	IF Flow-Status = ENABLED_UPLINK THEN				
	$- \frac{\text{Max}_D \text{K}_0 \text{L}_{\cdot} = 0 \text{W}_{\cdot}}{\text{Max}_D \text{R}_D \text{L}_{\cdot} = 0 \text{H}_{\cdot}}$				
	IF Flow Status = REMOVED THEN				
	ELSE /* Flow-Status = ENABLED or DISABLED */				
	<u>Max_DR_UL:= bw;</u>				
	ENDIF;				
	ENDIF;				
	ELSE /* RTCP IP flow(s) */				
	IF RS-Bandwidth is present and PR-Bandwidth is present THEN				
	Max_DR_UL:= (RS-Bandwidth + RR-Bandwidth);				
	Max_DR_DL:= (RS-Bandwidth + RR-Bandwidth);				
	IF Max-Requested-Bandwidth-UL is present THEN				
	IF RS-Bandwidth is present and				
	RR-Bandwidth is not present THEN Max DR UL:= MAX[0.05 * Max-Requested-Bandwidth-UL.				
1	RS-Bandwidth];				
	Max_DR_DL:= MAX[0.05 * Max-Requested-Bandwidth,				
	ENDIF;				
	IF RS-Bandwidth is not present and				
	<pre>kk-bandwidth is present THEN Max_DR_UL:= MAX[0.05 * Max-Requested-Bandwidth UL,</pre>				

Table 7.1.1.1: Rules for derivation of the Maximum Authorized Data Rates and Maximum Authorized QoS Class per flow identifier in the PDF

	RR-Bandwidth];
	Max DR DL:= MAX 0.05 * Max Requested Bandwidth,
	PP_Bandwidth1:
	ENDIF,
1	IF RS-Bandwidth and RR-Bandwidth is not present then
	Max_DR_UL:= 0.05 * Max-Requested-Bandwidth_UL;
	ENDIF;
	ELSE
	Max_DR_UL := as set by the operator;
	Max DR DL:= as set by the operator;
	ENDIF;
	IF Max-Requested-Bandwidth-DL is present THEN
	IF Re-Randwidth is present and
	IF to bandwidth is present and
	Mer DR DI + MAYLO C + Mer Demoted Denduidth DI
	Max_DR_DL.= MAX[0.05 ~ Max-Requested-Bandwidth-DL,
	RS-Bandwidtn];
	ENDIF;
	IF RS-Bandwidth is not present and
	RR-Bandwidth is present THEN
	Max_DR_DL:= MAX[0.05 * Max-Requested-Bandwidth-DL,
	TE DE Pandwidth and BR-Bandwidth is not present TUEN
	IF KS-BAILWILLI ALL KK-BAILWILLI IS HOL PLESENCI THEN
	Max_bk_bL.= 0.05 * Max-kequested-Bandwidth-bL;
	ELSE
	Max_DR_DL:= as set by the operator;
	ENDIF;
	ENDIF;
	ENDIF;
	TE Max-Requested_Randwidth_III is present THEN
	Max hequested bandwidth of is presented him
	Max_DR_DL:= Max_Requested_Bandwidth_DL;
	ENDIF;

Class [MaxClass] per flow identifier (see notes 1, 2 and 3) handling THEN (see notes 1, 2 and 3) Haddias:= as defined by application specific algorithm; ELSE IF Media-Type is present THEN IF (only uplink Flow Desription AVPs are supplied for all IP flows of the session, which have media type "audio" or "video" and no flow usage "RTCP", or only downlink Flow Desription AVPs are supplied for all IP flows of the session, which have media type "audio" or "video" and no flow usage "RTCP", or only downlink Flow Desription AVPs are supplied for all IP flows of the session, which have media type "audio" or "video" and no flow usage "RTCP", all media IP flows of media type "audio". or "video" for the session have the same direction) THEN MaxClassDerivation:=B; /*streaming*/ ELSE MaxClassDerivation:=B; /*streaming*/ ELSE MaxClassDerivation:=A; /*conversational*/ "udio": MaxClass:= MaxClassDerivation "video": MaxClass:=MaxClassDerivation "video": MaxClass:=E; /*interactive with priority 3*/ "control": MaxClass:=E; /*interactive with priority 3*/ "control": MaxClass:=F; /*background*/ ELSE MaxClass:= as defined by by operator; ENDI; NOTE 1: The Maximum Authorized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the visitedNeximation of the set of the	Maximum	Authorized QoS	IF AF-Application-Identi	fier AVP demands appl	ication specific QoS Class
<pre>identifier (see notes 1, 2 and 3) MaxClass:= as defined by application specific algorithm; ELSE IF Media=Type is present THEN IF (only uplink Flow Desription AVPs are supplied for all IP flows of the session, which have media type "audio" or "video" and no flow usage "RTCP", or only downlink Flow Desription AVPs are supplied for all IP flows of the session, which have media type "audio" or "video" and no flow usage "RTCP", or only downlink Flow Desription AVPs are supplied for all IP flows of the session, which have media type "audio" or "video" and no flow usage "RTCP"all media IP flows of media type "audio" or "video" for the session have the same direction) THEN MaxClassDerivation:=B; /*streaming*/ ELSE MaxClassDerivation:=A; /*conversational*/ ENDIF; CASE Media-Type OF "audio": MaxClass:= MaxClassDerivation "video": MaxClass:=MaxClassDerivation "video": MaxClass:=MaxClassDerivation "video": MaxClass:=MaxClassDerivation "video": MaxClass:=MaxClassDerivation "video": MaxClass:=MaxClassDerivation "video": MaxClass:=MaxClassDerivation "video": MaxClass:=F; /*background*/ ENDD; ELSE MaxClass:= as defined by by operator; ENDIF; NOTE 1: The Maximum Authorized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the trainer". </pre>	Class [Ma	axClass] per flow	handling THEN		
<pre>(see notes 1, 2 and 3) IF Media-Type is present THEN IF (only uplink Flow Desription AVPs are supplied for all IP flows of the session, which have media type "audio" or "video" and no flow usage "RTCP", or only downlink Flow Desription AVPs are supplied for all IP flows of the session, which have media type "audio" or "video" and no flow usage "RTCP"all media IP flows of media type "audio" or "video" for the</pre>	identifier		Maxclass.= as delined by application specific algorithm;		
<pre>IF Media-Type IS present THEN IF (only uplink Flow Desription AVPs are supplied for all IP flows of the session, which have media type "audio" or "video" and no flow usage "RTCP", or only downlink Flow Desription AVPs are supplied for all IP flows of the session, which have media type "audio" or "video" and no flow usage "RTCP" all media IP flows of media type "audio" or "video" for the session have the same direction) THEN MaxClassDerivation:=B; /*streaming*/ ELSE MaxClassDerivation:=A; /*conversational*/ ENDIF; CASE Media-Type OF "audio": MaxClass:=A: /*conversational*/ "video": MaxClass:=A: /*conversational*/ "data": MaxClass:=C; /*interactive with priority 3*/ "control": MaxClass:=C; /*interactive with priority 1*/ (*new media type*/ OTHERWISE: MaxClass:=F; /*background*/ ENDIF; NOTE 1: The Maximum Authorized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the article// aution// application//</pre>	(see note	s 1, 2 and 3)	LLOL IF Media-Type is present THEN		
<pre>If (billy diffine Flow Design which have media type "audio" or "video" and no flow usage "RTCP", or only downlink Flow Desription AVPs are supplied for all IP flows of the session, which have media type "audio" or "video" and no flow usage "RTCP"all media IP flows of media type "audio" or "video" for the session have the same direction) THEN MaxClassDerivation:=B; /*streaming*/ ELSE MaxClassDerivation:=A; /*conversational*/ ENDIF; CASE Media-Type OF "audio": MaxClass:= MaxClassDerivation "video": MaxClass:= MaxClassDerivation "application": MaxClass:= MaxClassDerivation "application": MaxClass:=C; /*interactive with priority 3*/ "control": MaxClass:=C; /*interactive with priority 1*/ OTHERWISE: MaxClass:=F; /*background*/ ENDIF; NOTE 1: The Maximum Authorized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the mating flow is the same as for the corresponding RTP media IP flow.</pre>	、 		IF Media-Type is pres	ent THEN	a supplied for all TD
<pre>introduct of the session, which have methal type "audio" of "video" and no flow usage "RTCP", or only downlink Flow Desription AVPs are supplied for all IP flows of the session, which have media type "audio" or "video" and no flow usage "RTCP"all media IP flows of media type "audio" or "video" for the session have the same direction) THEN MaxClassDerivation:=B; /*streaming*/ ELSE MaxClassDerivation:=A; /*conversational*/ ENDIF; CASE Media-Type OF "audio": MaxClass:= MaxClassDerivation "video": MaxClass:= MaxClassDerivation "video": MaxClass:=E; /*interactive with priority 3*/ "control": MaxClass:=E; /*interactive with priority 3*/ "control": MaxClass:=C; /*interactive with priority 1*/ OTHERWISE: MaxClass:=F; /*background*/ END; ELSE MaxClass:= as defined by by operator; ENDIF; ENDIF; NOTE 1: The Maximum Authorized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the maximum function in the same and for the corresponding RTP media IP flow.</pre>			flowg of the g	ow Desription AVPS are	dia tuma "audia" an "uidea"
<pre>and no flow usage "RTCP", of only downlink Flow Desription AVPs are supplied for all IP flows of the session, which have media type "audio" or "video" and no flow usage "RTCP"all media IP flows of media type "audio" or "video" for the session have the same direction) THEN MaxClassDerivation:=B; /*streaming*/ ELSE MaxClassDerivation:=A; /*conversational*/ ENDIF; CASE Media-Type OF "audio": MaxClass:= MaxClassDerivation "video": MaxClass:=AxClassDerivation "video": MaxClass:=A; /*conversational*/ "data": MaxClass:=E; /*interactive with priority 3*/ "control": MaxClass:=E; /*interactive with priority 3*/ "control": MaxClass:=F; /*interactive with priority 1*/ OTHERWISE: MaxClass:=F; /*background*/ ENDIF; ELSE MaxClass:= as defined by by operator; ENDIF; NOTE 1: The Maximum Authorized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the ericited with priore of the same as for the corresponding RTP media IP flow.</pre>			and no flow usage "PTCP" or		
flows of the session, which have media type "audio" or "video" and no flow usage "RTCP"all media IP flows of media type "audio" or "video" for the session have the same direction) THEN MaxClassDerivation:=B; /*streaming*/ ELSE MaxClassDerivation:=A; /*conversational*/ ENDIF; CASE Media-Type OF "audio": MaxClass:= MaxClassDerivation "video": MaxClass:= MaxClassDerivation "audio: MaxClass:= MaxClassDerivation "video": MaxClass:=A; /*conversational*/ "data": MaxClass:=E; /*interactive with priority 3*/ "control": MaxClass:=C; /*interactive with priority 1*/ "control": MaxClass:=F; /*background*/ END; ELSE MaxClass:= as defined by by operator; ENDIF; ENDIF; NOTE 1: The Maximum Authorized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the original flow and the same and			and no 110W Usage "KTCP", or		
<pre>and no flow usage "RTCP"all media LP flows of media type "audio" or "video" for the session have the same direction) THEN MaxClassDerivation:=B; /*streaming*/ ELSE MaxClassDerivation:=A; /*conversational*/ ENDIF; CASE Media-Type OF "audio": MaxClass:= MaxClassDerivation "video": MaxClass:= MaxClassDerivation "video": MaxClass:= MaxClassDerivation "audio": MaxClass:= MaxClassDerivation "video": MaxClass:=A; /*conversational*/ "application": MaxClass:=A; /*conversational*/ "data": MaxClass:=A; /*interactive with priority 3*/ "control": MaxClass:=C; /*interactive with priority 1*/</pre>			flows of the s	ession which have me	dia type "audio" or "wideo"
<pre>or "video" for the session have the same direction) THEN MaxClassDerivation:=B; /*streaming*/ ELSE MaxClassDerivation:=A; /*conversational*/ ENDIF; CASE Media-Type OF "audio": MaxClass:= MaxClassDerivation "video": MaxClass:= MaxClassDerivation "application": MaxClass:=A; /*conversational*/ "data": MaxClass:=A; /*conversational*/ "data": MaxClass:=C; /*interactive with priority 3*/ "control": MaxClass:=C; /*interactive with priority 1*/ (Thew media type*/ OTHERWISE: MaxClass:=F; /*background*/ END; END; ENDF; EN</pre>			and no flow us	age "RTCD"all media T	D flows of media type "audio"
Image: Section in the section is the secon is the secon is the section is the section is the se			or "video" for the	<u>age filer</u> all meala i	r riows or meara cype addre
MaxClassDerivation:=B; /*streaming*/ ELSE MaxClassDerivation:=A; /*conversational*/ ENDIF; CASE Media-Type OF "audio": MaxClass:= MaxClassDerivation "video": MaxClass:= MaxClassDerivation "application": MaxClass:=A; /*conversational*/ "data": MaxClass:=E; /*interactive with priority 3*/ "control": MaxClass:=C; /*interactive with priority 1*/ OTHERWISE: MaxClass:=F; /*background*/ END; ELSE MaxClass:= as defined by by operator; ENDIF; NOTE 1: The Maximum Authorized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the article duration of the same as for the corresponding RTP media IP flow.				he same direction) TH	EN
ELSE MaxClassDerivation:=A; /*conversational*/ ENDIF; CASE Media-Type OF "audio": MaxClass:= MaxClassDerivation "video": MaxClass:= MaxClassDerivation "application": MaxClass:=A; /*conversational*/ "data": MaxClass:=E; /*interactive with priority 3*/ "control": MaxClass:=C; /*interactive with priority 3*/ "control": MaxClass:=C; /*interactive with priority 1*/ (*new media type*/ OTHERWISE: MaxClass:=F; /*background*/ END; ELSE MaxClass:= as defined by by operator; ENDIF; NOTE 1: The Maximum Authorized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the			MaxClassDerivat	ion:=B;	/*streaming*/
MaxClassDerivation:=A; /*conversational*/ ENDIF; CASE Media-Type OF "audio": MaxClass:= MaxClassDerivation "video": MaxClass:= MaxClassDerivation "application": MaxClass:=A; /*conversational*/ "data": MaxClass:=E; /*interactive with priority 3*/ "data": MaxClass:=C; /*interactive with priority 1*/ "control": MaxClass:=C; /*interactive with priority 1*/ CTHERWISE: MaxClass:=F; /*background*/ END; ELSE MaxClass:= as defined by by operator; ENDIF; ENDIF; NOTE 1: The Maximum Authorized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the			ELSE		,
<pre>ENDIF; CASE Media-Type OF "audio": MaxClass:= MaxClassDerivation "video": MaxClass:= MaxClassDerivation "application": MaxClass:=A; /*conversational*/ "data": MaxClass:=E; /*interactive with priority 3*/ "control": MaxClass:=C; /*interactive with priority 1*/</pre>			MaxClassDerivat	ion:=A;	/*conversational*/
<pre>CASE Media-Type OF "audio": MaxClass:= MaxClassDerivation "video": MaxClass:= MaxClassDerivation "application": MaxClass:=A; /*conversational*/ "data": MaxClass:=E; /*interactive with priority 3*/ "control": MaxClass:=C; /*interactive with priority 1*/</pre>			ENDIF;		
<pre>CASE Media-Type OF "audio": MaxClass:= MaxClassDerivation "video": MaxClass:= MaxClassDerivation "video": MaxClass:= MaxClassDerivation "application": MaxClass:=A; /*conversational*/ "data": MaxClass:=E; /*interactive with priority 3*/ "data": MaxClass:=C; /*interactive with priority 1*/</pre>					
<pre>"audio": MaxClass:= MaxClassDerivation "video": MaxClass:= MaxClassDerivation "application": MaxClass:=A; /*conversational*/ "data": MaxClass:=E; /*interactive with priority 3*/ "control": MaxClass:=C; /*interactive with priority 1*/ "control": MaxClass:=C; /*hackground*/ END; ELSE MaxClass:= as defined by by operator; ENDIF; ENDIF; NOTE 1: The Maximum Authorized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the arise all control and a session.</pre>			CASE Media-Type OF	1	
<pre>"video": MaxClass:= MaxClassDerivation "application": MaxClass:=A; /*conversational*/ "data": MaxClass:=E; /*interactive with priority 3*/ "control": MaxClass:=C; /*interactive with priority 1*/ "control": MaxClass:=C; /*new media type*/ OTHERWISE: MaxClass:=F; /*background*/ END; ELSE MaxClass:= as defined by by operator; ENDIF; ENDIF; NOTE 1: The Maximum Authorized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the existence of the same as for the corresponding RTP media IP flow.</pre>			"audio":	MaxClass:= MaxClassDo	erivation
<pre>"application": MaxClass:=A; /*conversational*/ "data": MaxClass:=E; /*interactive with priority 3*/ "control": MaxClass:=C; /*interactive with priority 1*/ "control": MaxClass:=C; /*interactive with priority 1*/ "control": MaxClass:=C; /*background*/ END; ELSE MaxClass:= as defined by by operator; ENDIF; ENDIF; NOTE 1: The Maximum Authorized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the existence of the same as for the corresponding RTP media IP flow.</pre>			"video": MaxClass:= MaxClassDerivation		
<pre>"data": MaxClass:=E; /*interactive with priority 3*/ "control": MaxClass:=C; /*interactive with priority 1*/ /*new media type*/ OTHERWISE: MaxClass:=F; /*background*/ END; ELSE MaxClass:= as defined by by operator; ENDIF; NOTE 1: The Maximum Authorized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the existence of the maximum Authorized QoS class shall keep the</pre>			"application": MaxClass:=A; /*conversational*/		
<pre>"control": MaxClass:=C; /*interactive with priority 1*/</pre>			"data": MaxClass:=E; /*interactive with priority 3*/		
<pre>/*new media type*/ OTHERWISE: MaxClass:=F; /*background*/ END; ELSE MaxClass:= as defined by by operator; ENDIF; NOTE 1: The Maximum Authorized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the existence of the same as for the corresponding RTP media IP flow.</pre>			"control":	MaxClass:=C; /*:	interactive with priority 1*/
OTHERWISE: MaxClass:=F; /*background*/ END; ELSE MaxClass:= as defined by by operator; ENDIF; NOTE 1: The Maximum Authorized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the aviant up to the same as for the corresponding RTP media IP flow.				/*new med	dia type*/
<pre>END; ELSE MaxClass:= as defined by by operator; ENDIF; ENDIF; NOTE 1: The Maximum Authorized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the existence in the same as for the corresponding RTP media IP flow.</pre>			OTHERWISE:	MaxClass:=F; /*J	background*/
<pre>MaxClass:= as defined by by operator; ENDIF; ENDIF; NOTE 1: The Maximum Authorized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the existence without and the same as for the corresponding RTP media IP flow.</pre>			END;		
MaxClass:= as defined by by operator; ENDIF; NOTE 1: The Maximum Authorized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the principle period upber			ELSE Marclanza an lafi		
NOTE 1: The Maximum Authorized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the			MaxClass:= as dell	ned by by operator;	
NOTE 1: The Maximum Authorized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the			ENDIE:		
NOTE 1: The Maximum Authorized QoS class for a RTCP IP flow is the same as for the corresponding RTP media IP flow. NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the		The Merine was Arith	arized Occ Close for a DTCD		the corresponding DTD media ID
NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the	NOTE 1:		orized QoS Class for a RTCP	IP now is the same as for	the corresponding RTP media IP
NOTE 2: When audio or video IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the		TIOW.			
aning all y an a internal y all y a	NOTE 2:	When audio or vide	o IP flow (s) are removed from	a session, the maximum	Authorized QoS class shall keep the
onginaliy assigned value.		originally assigned	assigned value.		
NOTE 3: When audio or video IP flow(s) are added to a session, the PDF shall derive the maximum Authorized QoS	NOTE 3:	When audio or vide	o IP flow(s) are added to a ses	sion, the PDF shall derive	e the maximum Authorized QoS
Class taking into account the already existing media IP flow(s) within the session.		Class taking into ac	account the already existing media IP flow(s) within the session.		
NOTE 4: The encoding of the service information is defined in TS 29.209 [12].	NOTE 4:	The encoding of the	of the service information is defined in TS 29.209 [12].		

The PDF shall per ongoing session store the Authorized IP QoS parameters per flow identifier.

When the GGSN requests the Authorized UMTS QoS parameters for an activated/modified PDP Context carrying IP flows of media component(s), the PDF shall use the rules in table 7.1.1.2 to calculate the Authorized IP QoS parameters per Client Handle.

Table 7.1.1.2: Rules for calculating the Maximum Authorized Data Rates
and Maximum Authorized QoS Class per Client Handle in the PDF

Authorized IP QoS Parameter per Client Handle	Calculation Rule
Maximum Authorized Data Rate DL and UL per Client Handle	<pre>Maximum Authorized Data Rate DL/UL per Client Handle is the sum of all Maximum Authorized Data Rate DL/UL for all the flow identifiers associated with that Client Handle. IF Maximum Authorized Data Rate DL/UL per Client Handle > 16000 kbps THEN Maximum Authorized Data Rate DL/UL per Client Handle = 16000 kbps /* See 3GPP TS 23.107 [8] */ END;</pre>
Maximum Authorized QoS Class per Client Handle	Maximum Authorized QoS Class per Client Handle = MAX [Maximum Authorized QoS Class per flow identifier among all the flow identifiers associated with that Client Handle. (The MAX function ranks the possible Maximum Authorized QoS Class values as follows: "A" > "B" > "C" > "D" > "E" > "F") /* See 3GPP TS 29.207 [71] */

3GPP TSG-CN WG3 Meeting #34 Seoul, Korea. 15th - 19th November 2004.

Tdoc **#***N*3-040802

CR-Form-v7.1 CHANGE REQUEST												
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Reason f	for change	e: # SI ba	P offer-answindwidths for	ver RFC 32 bidirection	264 allov al media	vs to e	expre	ess that up nts, as ex	plink a press	and dow sed by b:	nlink AS	

reason for change.	bandwidths for bidirectional media components, as expressed by b:AS bandwidth modifier, are different. The current media component encoding coveres this possibility only in less than ideal manner, i.e.for media subcomponents.						
Summary of change: ¥	Add uplink and downlink bandwidth AVPs to media component,						
	Remove Max-Requested-Bandwidth, as it is no longer required.						
Consequences if # not approved:	Information provided in SDP can not be expressed as Gq service information in media component granularity.						
Clauses affected: #	6.5						
Other specs ₩ affected:	Y N X Other core specifications # 29.208 X Test specifications X ORM On a pitiantiana						
Other comments: #							

Table 6.5.1 describes the Diameter AVPs defined for the Gq interface protocol, their AVP Code values, types, possible flag values and whether or not the AVP may be encrypted. The Vendor-Id header of all AVPs defined in the present document shall be set to 3GPP (10415).

					P Flag i	rules (no	te 1)	
Attribute Name	AVP	Clause	Value Type (note 2)	Must	May	Should	Must	May Encr.
	Code	defined				not	not	
Abort-Cause	500	6.5.1	Enumerated	M,V	Ρ			Y
Access-Network-Charging-	501	6.5.2	Address	M,V	Р			Y
Address								
Access-Network-Charging-	502	6.5.3	Grouped	M,V	Р			Y
Identifier								
Access-Network-Charging-	503	6.5.4	OctetString	M,V	Р			Y
Identifier-Value								
AF-Application-Identifier	504	6.5.5	OctetString	M,V	Ρ			Y
AF-Charging-Identifier	505	6.5.6	OctetString	M,V	Ρ			Y
Authorization-Token	506	6.5.7	OctetString	M,V	Ρ			Y
Flow-Description	507	6.5.8	IPFilterRule	M,V	Р			Y
Flow-Grouping	508	6.5.9	Grouped	M,V	Ρ			Y
Flow-Number	509	6.5.10	Unsigned32	M,V	Р			Y
Flows	510	6.5.11	Grouped	M,V	Р			Y
Flow-Status	511	6.5.12	Enumerated	M,V	Р			Y
Flow-Usage	512	6.5.13	Enumerated	M,V	Р			Y
Gq-Specific-Action	513	6.5.14	Enumerated	M,V	Р			Y
Max-Requested-Bandwidth	514	6.5.15	Unsigned32	M,∀	₽			¥
Max-Requested-Bandwidth-DL	515	6.5.16	Unsigned32	M,V	Р			Y
Max-Requested-Bandwidth-UL	516	6.5.17	Unsigned32	M,V	Р			Y
Media-Component-Description	517	6.5.18	Grouped	M,V	Р			Y
Media-Component-Number	518	6.5.19	Unsigned32	M,V	Р			Y
Media-Sub-Component AVP	519	6.5.20	Grouped	M,V	Р			Y
Media-Type	520	6.5.21	Enumerated	M,V	Р			Y
RR-Bandwidth	521	6.5.22	Unsigned32	M,V	Р			Y
RS-Bandwidth	522	6.5.23	Unsigned32	M,V	Р			Y
SIP-Forking-Indication	523	6.5.24	Enumerated	M,V	Ρ			Υ
NOTE 1: The AVP header bit c	lenoted	as 'M', ind	icates whether support	of the A	VP is r	equired.	The AV	P header bit

Table 6.5.1: Gq specific Diameter AVPs

NOTE 1: The AVP header bit denoted as 'M', indicates whether support of the AVP is required. The AVP header bit denoted as 'V', indicates whether the optional Vendor-ID field is present in the AVP header. For further details, see RFC 3588 [6].

NOTE 2: The value types are defined in RFC 3588 [6].

Next modified Section

6.5.15 VoidMax-Requested-Bandwidth AVP

The Max Requested Bandwidth AVP (AVP code 514) is of type Unsigned32, and it indicates the maximum requested bandwidth in bits per second for an uplink or downlink IP flow. The bandwidth contains all the overhead coming from the IP layer and the layers above, e.g. IP, UDP, RTP and RTP payload.

Next modified Section

6.5.18 Media-Component-Description AVP

The Media-Component-Description AVP (AVP code 517) is of type Grouped, and it contains service information for a single media component within an AF session. It may be based on the SDI exchanged between the AF and the AF client in the UE. The information is used by the PDF to determine authorized QoS and IP flow classifiers for bearer authorization.

Within one Gq message, a single IP flow shall not be described by more than one Media-Component-Description AVP.

Bandwidth information and Flow-Status information provided within the Media-Component-Description AVP applies to all those IP flows within the media component, for which no corresponding information is being provided within Media-Sub-Component AVP(s).

If a Media-Component-Description AVP is not supplied, or if optional AVP(s) within a Media-Component-Description AVP are omitted, but corresponding information has been provided in previous Gq messages, the previous information for the corresponding IP flow(s) remains valid.

All IP flows within a Media-Component-Description AVP are permanently disabled by supplying a Flow Status AVP with value "REMOVED". The PDF may delete corresponding filters and state information.

AVP format:

6.5.19 Media-Component-Number AVP

The Media-Component-Number AVP (AVP code 518) is of type Unsigned32, and it contains the ordinal number of the media component, assigned according to the rules in annex C of 3GPP TS 29.207 [4].

6.5.20 Media-Sub-Component AVP

The Media-Sub-Component AVP (AVP code 519) is of type Grouped, and it contains the requested QoS and filters for the set of IP flows identified by their common Flow-Identifier. The Flow-Identifier is defined in 3GPP TS 29.207 [4].

Possible Bandwidth information and Flow-Status information provided within the Media-Sub-Component AVP takes precedence over information within the encapsulating Media Component Description AVP. If a Media-Sub-Component AVP is not supplied, or if optional AVP(s) within a Media-Sub-Component AVP are omitted, but corresponding information has been provided in previous Gq messages, the previous information for the corresponding IP flow(s) remains valid, unless new information is provided within the encapsulating Media-Component-Description AVP.

All IP flows within a Media-Sub-Component- AVP are permanently disabled by supplying a Flow Status AVP with value "REMOVED". The PDF may delete corresponding filters and state information.

AVP format:

```
Media-Sub-Component ::= < AVP Header: ?>
        { Flow-Number } ; Ordinal number of the IP flow
        1*2[ Flow-Description ] ; UL and/or DL
        [ Flow-Status ]
        [ Flow-Usage ]
        [ Max-Requested-Bandwidth-UL ]
        [ Max-Requested-Bandwidth-DL ]
```

N3-040702

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		C (functional r D (editorial mo	nodification of odification)	feature)				R98 R99	(Release (Release	e 1998) e 1999)	
		Detailed explanation be found in 3GPP T	ns of the above <u>R 21.900</u> .	e catego	ries car	ſ		Rel-4 Rel-5 Rel-6	(Release (Release (Release	e 4) e 5) e 6)	

Reason for change: # Currently, the Application identifier may be used for other services than IMS to provide additional information to the PDF. The PDF may use the identifier to alter the QoS related mapping, e.g. QoS class and bandwidth, for the service. The use of the Application id is optional; the AF may provide it, and if provided, the PDF may use it for the QoS related decisions. This contribution proposes that the use of Application identifier be allowed for IMS also. The use of it would again be optional, and if any company or operator does not want to use it, it can be omitted and/or ignored. At the same time, if would allow more flexibility for the operators to use the QoS in their systems. Summary of change: # For IMS, if the AF-Application-Identifier AVP is supplied, its value should not demand application specific bandwidth or QoS class handling. However, if an IMS application is capable of handling a QoS downgrading, the AF-Application-Identifier AVP may be used to demand application specific bandwidth or QoS class handling. Consequences if Restrictive standardization limiting operators choice for using the system æ resources and for providing differentiated treatment for the services. not approved: ж 7.1.0 Clauses affected: Ν Other specs ж Х Other core specifications ж affected: Х Test specifications

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <u>http://www.3gpp.org/specs/CR.htm</u>. 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.

7.1.0 SDP parameters to service information mapping in AF

The mapping described in this clause is mandatory for the P-CSCF and should also be applied by other AFs if the SDI is SDP.

3

When a session is initiated or modified the P-CSCF shall use the mapping rules in table 7.1.0.1 for each SDP media component to derive a Media-Component-Description AVP from the SDP Parameters. Furthermore, the P-CSCF shall map information about the grouping of media lines into resource reservation flows into the Flow-Grouping AVP as specified in table 7.1.0.3.

service information per	Derivation from SDP Parameters
Madia Component	
Media-Component-	(see NOTE 2)
Description AVP	
(NOTE 1)	
Media-Component-	ordinal number of the position of the "m=" line in the SDP $$
Number	
AF-Application-Identifier	The AF-Application-Identifier AVP may be supplied or omitted, depending on
	the application. For IMS, if the AF-Application-Identifier AVP is supplied,
	its value shouldall not demand application specific bandwidth or QoS class
	handling. However, if an IMS application is capable of handling a OoS
	downgrading, the AF-Application-Identifier AVP may be used to demand
	application specific bandwidth or OoS class handling.
Media-Type	The Media Type AVP shall be included with the same value as supplied for
inoula i ypo	the media type in the "m=" line.
Flow-Status	IF port in m-line = 0 THEN
	<pre>Flow-Status:= REMOVED;</pre>
	ELSE
	IF a=recyonly THEN
	IF $\langle SDP direction \rangle = mobile originated THEN$
	Flow-Status := ENABLED DOWNLINK;
	ELSE /* mobile terminated */
	Flow-Status := ENARLED UPLINK;
	ENDIF;
	ELSE
	IF a=sendonly THEN
	$IF \langle SDP direction \rangle = mobile originated THEN$
	Flow-Status := ENABLED UPLINK;
	ELSE /* mobile terminated */
	Flow-Status := ENABLED DOWNLINK;
	ENDIF:
	ELSE
	IF a=inactive THEN
	Flow-Status :=DISABLED;
	ELSE /* a=sendrecy or no direction attribute */
	Flow-Status = ENARED
	ENDIF:
	ENDLE:
	ENDIF;
	ENDIF;
Max-Requested-	IF b=AS: bandwidth> is present THEN
Bandwidth	Max-Requested-Bandwidth:= <bandwidth> * 1000; /* Unit is bit/s</bandwidth>
Banawiatii	ELSE
	Max-Requested-Bandwidth:= <operator setting="" specific="">,</operator>
	or AVP not supplied;
	ENDIF;
RR-Bandwidth	IF b=RR: bandwidth> is present THEN
(NOTE 3)	RR-Bandwidth:= <bandwidth;< th=""></bandwidth;<>
(1012 0)	ELSE
	AVP not supplied
	ENDIF;
RS-Bandwidth	IF b=RS: <bandwidth> is present THEN</bandwidth>
(NOTE 3)	RS-Bandwidth:= <bandwidth>;</bandwidth>
	ELSE
	AVP not supplied
	ENDIF;
Media-Sub-Component	Supply one AVP for each Flow Identifier within the media component. The
	Flow identifiers are derived according to Annex D of 3GPP TS 29.207 [7].
	The encoding of the AVP is described in Table 7.1.0.2

Table 7.1.0.1: Rules for derivation of service information within Media-Component-Description AVP from SDP media component

3GPP TSG-CN WG3 Meeting #33bis

Tdoc ж N3-040700

Sophia Antipolis, France. 4th – 7th October 2004.

	CHANGE REQUEST							
æ	29.208	8 CR <mark>075</mark>	ж г	ev <mark>2</mark>	ж	Current versio	^{n:} 6.1.0	ж
For <u>HELP</u> on u Proposed change	sing this fo affects:	orm, see botto UICC apps೫	om of this pag	ge or look 1E <mark></mark> Ra	<i>at the</i> dio Ac	e pop-up text of	ver the ೫ syr	nbols. etwork 🗙
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Work item code: ℜ	QoS1					Date: ೫	27/09/2004	
Category: # F Release: # Rel-6 Use one of the following categories: Use one of the following releases: Ph2 (GSM Phase 2) A (corresponds to a correction in an earlier release) Ph2 (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 Rel-4 (Release 4) be found in 3GPP TR 21.900. Rel-5 (Release 5) Rel-6 (Release 6) Rel-7 (Release 7)							eases:	
Reason for change	Reason for change: * According to TS 29.209, AVPs supplied previously within the Media_Component_Description AVPs and Media_Subcomponent AVPs remain valid. However, Table 7.1.1.1 may be understood to refer only to the latest service information. It also provides rules to handle cases where AVPs are provided, e.g. max Max-Requested-Bandwidth.							emain st service led, e.g.
 Summary of change: # An outdated editor's note that the Diameter base protocol multi round feasis ffs is removed. A Note is added clarifying that AVPs may be omitted if the same value h already been supplied, as specified in TS 29.209. References to NOTE 3 in table 7.1.0.1 are moved to correct location, as note provides a reference for SDP parameters handled in the right colum A Note is added clarifying that if AVPs are omitted within a Media-Component-Description AVP or Media-Sub-Component AVP of the servinformation, the corresponding information from previous service information shall be used, as specified in TS 29.209 [12]. 							d feature ue has , as the olumn. service ormation	
Consequences if not approved:	策 Tab Qos	o <mark>le 7.1.1.1 is a</mark> S is no longer	mbiguous in well-defined	combinat	tion wi	ith TS 29.209.	Thus, the au	thorized
Clauses affected:	೫ <mark>4,7</mark>	7.1.0, 7.1.1						

	Υ	Ν		
Other specs ೫		Χ	Other core specifications #	
affected:		Χ	Test specifications	
		Χ	O&M Specifications	

Other comments: ೫

4 Authorize QoS resources

Editor's note: The Multi-Round feature of the Diameter base protocol is FFS.

Next modified Section

7.1 QoS parameter mapping between AF and GPRS

7.1.0 SDP parameters to service information mapping in AF

The mapping described in this clause is mandatory for the P-CSCF and should also be applied by other AFs if the SDI is SDP.

When a session is initiated or modified the P-CSCF shall use the mapping rules in table 7.1.0.1 for each SDP media component to derive a Media-Component-Description AVP from the SDP Parameters. Furthermore, the P-CSCF shall map information about the grouping of media lines into resource reservation flows into the Flow-Grouping AVP as specified in table 7.1.0.3.

service information per	Derivation from SDP Parameters
Media-Component-	(see NOTE 2)
Description AVP	
(NOTE 1; Note x)	
Media-Component-	ordinal number of the position of the "m=" line in the SDP
Number	
AF-Application-Identifier	The AF-Application-Identifier AVP may be supplied or omitted, depending on
	the application. For IMS, if the AF-Application-Identifier AVP is supplied,
	its value shall not demand application specific bandwidth or QoS class
	handling.
Media-Type	The Media Type AVP shall be included with the same value as supplied for
	the media type in the "m=" line.
Flow-Status	IF port in m-line = 0 THEN
	Flow-Status:= REMOVED;
	ELSE
	IF a=recvonly THEN
	IF (SDP direction) = mobile originated THEN
	FIGW-SCALUS ·= ENABLED_DOWNLINK,
	Flow-Status := ENABLED UPLINK:
	ENDIF;
	ELSE
	IF a=sendonly THEN
	IF <sdp direction=""> = mobile originated THEN</sdp>
	<pre>Flow-Status := ENABLED_UPLINK;</pre>
	ELSE /* mobile terminated */
	<pre>Flow-Status := ENABLED_DOWNLINK;</pre>
	ENDIF;
	ELSE
	IF a=Inactive THEN
	FIOW-Status :=DISABLED;
	Flow Status - FNAR FD
	FIDW-Status - ENABLED
	ENDIF;
	ENDIF;
	ENDIF;
Max-Requested-	IF b=AS: <bandwidth> is present THEN</bandwidth>
Bandwidth	Max-Requested-Bandwidth:= <bandwidth> * 1000; /* Unit is bit/s</bandwidth>
	ELSE
	Max-Requested-Bandwidth:= <operator setting="" specific="">,</operator>
	or AVP not supplied;
DD Dan duridéh	ENDIF;
	DPBandwidth': Spiesent Inen
(INOTE 3)	
	AVP not supplied
	ENDIF; (NOTE 3)
RS-Bandwidth	IF b=RS: <bandwidth> is present THEN</bandwidth>
(NOTE 3)	RS-Bandwidth:= <bandwidth>;</bandwidth>
(ELSE
	AVP not supplied
	ENDIF; (NOTE 3)
Media-Sub-Component	Supply one AVP for each Flow Identifier within the media component. The
	Flow identitiers are derived according to Annex D of 3GPP TS 29.207 [7].
	The encoding of the AVP is described in Table 7.1.0.2
NOTE 1: The encoding of the	e service information is defined in 15 29.209 [12].
NOTE 2: The SDP paramete	rs are described in RFC 2327 [9].
NOTE 3: The 'b=RS:' and 'b=	KR: SDP bandwidth modifiers are defined in RFC 3556 [10].
NOTE X: The AVPs may be o	pomitted it they have been supplied in previous service information and have not changed, as
detailed in TS 29.20	09 [12].

Table 7.1.0.1: Rules for derivation of service information within Media-Component-Description AVP from SDP media component

Table 7.1.0.2: Rules for derivation of Media-Sub-Component AVP fro	m SDP media component
--	-----------------------

Gq service information	Derivation from SDP Parameters						
per Media-Sub-	(see NOTE 2)						
Component AVP							
(NOTE 1, NOTE x)							
Flow-Number	derived according to Annex C of 3GPP TS 29.207 [7]						
Flow-Status	AVP not supplied						
Max-Requested- Bandwidth-UL	AVP not supplied						
Max-Requested-	AVP not supplied						
Bandwidth-DL							
Flow-Description	For uplink and dowlink direction, a Flow-Description AVP shall be provided unless no IP Flows in this direction are described within the media component.						
	The uplink destination address shall be copied from the "c=" line of downlink SDP						
	The uplink destination port shall be derived from the "m=" line of downlink SDP.						
	The downlink destination address shall be copied from the "c=" line of uplink SDP.						
	The downlink destination port shall be derived from the "m=" line of uplink SDP.						
	Uplink and downlink source adresses should be set to "any" and source ports should not be supplied.						
	Proto shall be derived from the transport of the "m=" line. For "RTP/AVP" proto is 17(UDP).						
Flow-Usage	The Flow-Usage AVP shall be supplied with value "RTCP" if the IP flow(s)						
U U	described in the Media-Sub-Component AVP are used to transport RTCP.						
	Otherwise the Flow-Usage AVP shall not be supplied. RFC 2327 [9] specifies						
	how RTCP flows are described within SDP.						
NOTE 1: The encoding of the	e service information is defined in TS 29.209 [12].						
NOTE 2: The SDP paramete	NOTE 2: The SDP parameters are described in RFC 2327 [9].						
NOTE x: The AVPs may be	omitted if they have been supplied in previous service information and have not changed, as						
detailed in TS 29.2	09 [12].						

Table 7.1.0.3: Rules for mapping SDP information about the grouping of media lines into resource reservation flows into the Flow Grouping AVP

Flow-Grouping AVP (NOTE1)	Derivation from SDP Parameters (see NOTE 2)			
Flow Grouping	For each SDP "a=group:SRF" SDP line, a Flow Grouping AVP shall be generated. (NOTE 3)			
Flows	For each identification tag within "a=group:SRF" SDP line, a Flows AVP containing a Media-Component-Number AVP identifying the corresponding m- line shall be generated. (NOTE 3) No Flow-Number AVP shall be supplied within the Flows AVP.			
NOTE 1: The encoding of the service information is defined in TS 29.209 [12]. NOTE 2: The SDP parameters are described in RFC 2327 [9]. NOTE 3: The SDP "group" attribute is defined in RFC 3388 [13]. The "SRF" semantics attribute within this grouping framework is defined in RFC 3524 [14].				

7.1.1 Gq service information to Authorized IP QoS parameters mapping in PDF

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

When a session is initiated or modified the PDF 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 QoS Class from the service information. In the case of forking, the various forked responses may have different QoS requirements for the IP flows of the same media component. Each Authorized IP QoS Parameter shall be set to the highest value requested for the IP flow(s) of that media component by any of the active forked responses. These values are derived by the rules in table 7.1.1.1

Authorized IP QoS	Derivation from service information
Parameter per flow	(see note 4)
identifier	
Maximum Authorized Data Rate DL (Max_DR_DL) and UL (Max_DR_UL) per flow	IF AF-Application-Identifier AVP demands application specific data rate handling THEN
identifier	Max_DR_UL:= as defined by application specific algorithm; Max_DR_DL:= as defined by application specific algorithm;
	ELSE
	IF not RTCP flow(s) according to Flow-Usage AVP THEN IF Max-Requested-Bandwidth is present THEN bw:= Max-Requested-Bandwidth; ELSE
	bw:= as set by the operator; ENDIF
	Max_DR_DL:= 0; Max_DR_DL:= bw;
	ELSE IF Flow-Status = ENABLED_UPLINK THEN Max DR UL:= bw;
	Max_DR_DL:= 0; IF Flow-Status = REMOVED THEN
	Max_DR_DL:= 0; Max_DR_DL:= 0; EVEN (t. Eleventre ENADLED en DIGADLED t(
	ELSE / ^ Flow-Status = ENABLED OF DISABLED ^/ Max_DR_UL:= bw; Max_DR_DL:= bw;
	ENDIF;
	ENDIF; ENDIF;
	ELSE /* RTCP IP flow(s) */ IF RS-Bandwidth is present and
	RR-Bandwidth is present THEN Max DR UL:= (RS-Bandwidth + RR-Bandwidth);
	Max_DR_DL:= (RS-Bandwidth + RR-Bandwidth); ELSE
	IF Max-Requested-Bandwidth is present THEN IF RS-Bandwidth is present and
	RR-Bandwidth is not present THEN Max_DR_UL:= MAX[0.05 * Max-Requested-Bandwidth,
	RS-Bandwidth; Max_DR_DL:= MAX[0.05 * Max-Requested-Bandwidth, PS-Bandwidth]:
	ENDIF; IF RS-Bandwidth is not present and
	RR-Bandwidth is present THEN Max_DR_UL:= MAX[0.05 * Max-Requested-Bandwidth,
	RR-Bandwidth]; Max_DR_DL:= MAX[0.05 * Max-Requested-Bandwidth,
	RR-Bandwidth]; ENDIF; IF RS-Bandwidth and PR Bandwidth is not procent THEN
	Max_DR_UL:= 0.05 * Max-Requested-Bandwidth ;
	ENDIF; ELSE
	<pre>Max_DR_UL:= as set by the operator; Max_DR_DL:= as set by the operator; ENDIF:</pre>
	ENDIF; ENDIF;
	<pre>/* MAX-Requested-Bandwidth-UL and MAX-Requested-Bandwidth-DL take precedence*/</pre>
	IF Max-Requested-Bandwidth-UL is present THEN Max_DR_UL:= Max-Requested-Bandwidth-UL; ENDIF
	IF Max-Requested-Bandwidth-DL is present THEN Max_DR_DL:= Max-Requested-Bandwidth-DL;

Table 7.1.1.1: Rules for derivation of the Maximum Authorized Data Rates and Maximum Authorized QoS Class per flow identifier in the PDF

	ENDIF									
	ENDIF;									
Maximum Authorized QoS	IF AF-Application-Identifier AVP demands application specific QoS Class									
Class [MaxClass] per flow	handling THEN									
identifier	MaxClass:= as defined by application specific algorithm;									
(see notes 1, 2 and 3)	LSE									
	IF Media-Type is present THEN									
	IF (all media IP flows of media type "audio" or "video" for the									
	session have the same direction) THEN									
	MaxClassDerivation:=B; /*streaming*/									
	ELSE									
	MaxClassDerivation:=A; /*conversational*/									
	ENDIF;									
	CASE Media-Type OF									
	"audio": MaxClass:= MaxClassDerivation									
	"video": MaxClass:= MaxClassDerivation									
	"application": MaxClass:=A; /*conversational*/									
	"data": MaxClass:=E; /*interactive with priority 3*/									
	"control": MaxClass:=C; /*interactive with priority 1*/									
	/*new media type*/									
	OTHERWISE: MaxClass:=F; /*background*/									
	END;									
	ELSE									
	MaxClass:= as defined by by operator;									
	ENDIF;									
	ENDIF;									
NOTE 1: The Maximum Auth	orized QoS Class for a RTCP IP flow is the same as for the corresponding RTP media IP									
flow.										
NOTE 2: When audio or vide	o IP flow (s) are removed from a session, the maximum Authorized QoS class shall keep the									
originally assigned	value.									
NOTE 3. When audio or vide	o IP flow(s) are added to a session, the PDF shall derive the maximum Authorized OoS									
Class taking into ac	count the already existing media IP flow(s) within the session									
NOTE 4: The encoding of the	a convice information in defined in TS 20 200 [12] If AVEs are emitted within a Media									
	s service information is defined in 15 23.203 [12]. In AVES are officiated within a Weblat									
Component-Descrip	Submit AVP of the data Sub-Component AVP of the service information, the corresponding									
information from pro	evious service information shall be used, as specified in TS 29.209 [12].									

The PDF shall per ongoing session store the Authorized IP QoS parameters per flow identifier.

When the GGSN requests the Authorized UMTS QoS parameters for an activated/modified PDP Context carrying IP flows of media component(s), the PDF shall use the rules in table 7.1.1.2 to calculate the Authorized IP QoS parameters per Client Handle.

Authorized IP QoS Parameter per Client Handle	Calculation Rule
Maximum Authorized Data Rate DL and UL per Client Handle	<pre>Maximum Authorized Data Rate DL/UL per Client Handle is the sum of all Maximum Authorized Data Rate DL/UL for all the flow identifiers associated with that Client Handle. IF Maximum Authorized Data Rate DL/UL per Client Handle > 16000 kbps THEN Maximum Authorized Data Rate DL/UL per Client Handle = 16000 kbps /* See 3GPP TS 23.107 [8] */ END;</pre>
Maximum Authorized QoS Class per Client Handle	<pre>Maximum Authorized QoS Class per Client Handle = MAX [Maximum Authorized QoS Class per flow identifier among all the flow identifiers associated with that Client Handle. (The MAX function ranks the possible Maximum Authorized QoS Class values as follows: "A" > "B" > "C" > "D" > "E" > "F") /* See 3GPP TS 29.207 [7]) */</pre>

 Table 7.1.1.2: Rules for calculating the Maximum Authorized Data Rates

 and Maximum Authorized QoS Class per Client Handle in the PDF

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Reason for change: 3	 1. (5.1.4) Bearer Acting mentioned. Unnexpected several times. 2. (5.1.6) Revoke auros sessions use sam 3. (5.2.2) According to the session of the several times. 4. (5.2.3) Inhomoger mentioned only here mandated by Dian 5. (5.3.1) The PDF d 6. (6.3.7) According to the authorized 7. (6.5.3) Word "may sending of the According to TS 2 0 in SDP) 9. (6.5.14) Descriptice AAR are clearly id 	ons the PDF nee essary to supply thorization needs e PDP context, bit to message desci- ous description: 3 ore. No need to de neter. to TS 29.208, AS session are no lo " could be unders tess-Network-Cha oding is not option of "Removed" Val 9.208, this is used in of Gq Specific a entified, parts inte	ds to take Access-Ne to conside ut this is de iption, RA Sending of escribe this vice inform R is only u nger availa tood as no arging-Ider nal. ue of Flow d when me action is co	at session me etwork-Charg er case where etailed in TS 2 R is optional. f Diameter an s, as sending ation, but rec sed when AL able ormative. In fa otifier AVP are v status AVP i edia compone onfusing.Whil pply to RAR of	odification ing-Identifie e several A 29.207 swer mess of answers eives it. L bearer re act, conditions e detailed s unclear. ent is removies e parts app	are not er(s) F age s is esources ons for ved (port olying to
Summary of change: 8	understood to app 3 1. (5.1.4) The PDF s Access-Network- supplied earlier to 2. (5.1.6) Reference	iy in general. shall enforce bear Charging-Address the AF. to details in TS 2	er modific s is only re 29.207 is a	ations as deta equired to be	ailed in TS sent, if not	29.207. yet

	 (5.2.2) Enhanced wording: The AF does not need to send a new authorization request (5.2.4) Diameter answer message no longer mentioned. (5.3.1) word "passes" replaced by "receives" (6.3.7) word "all" added. (6.5.3) descriptive wording is used with term "can be". (6.5.12) description of Removed value is revised. This value shall be used to remove all associated IP flow(s). All associated IP flow(s) in both directions shall be dissabled. The IP Filters for the associated IP flow(s) may be removed. The associated IP flows shall not be taken into account when deriving the authorized QoS. (6.5.14) Parts of the description applying to AAR only are clearly identified.
Consequences if # not approved:	Ambiguous specification and contradictions to TS 29.207 and 29.208
Clauses affected: #	5.1.4, 5.1.6, 5.2.2, 5.2.4, 5.3.1, 6.3.7, 6.5.3, 6.5.12, 6.5.14
	YN
Other specs #	Contractions %
affected:	X Lest specifications
Other comments: #	

5.1.4 Session modification

The PDF may receive the AA-Request message from the AF with modified service information. The PDF shall store the SBLP for the session based on the new service information. The PDF shall acknowledge the session modification by issuing an AA-Answer back to the AF and shall include the Access-Network-Charging-Identifier(s) and may include the Access-Network-Charging-Address, if they are available at this moment and have not yet been supplied earlier to the AF. The PDF shall enforce corresponding bearer modifications as detailed in 3GPP TS 29.207 [4].

Next modified Section

5.1.6 Revoke authorization

When receiving the Session-Termination-Request message from the AF, the PDF shall revoke the bearer authorization as detailed in 3GPP TS 29.207 [4].

Next modified Section

5.2.2 Resource reservation

The PDF may contact the AF at the UE resource reservation by sending the Re-Auth-Request message with <u>a</u> request for the service information. The AF shall respond with the Re-Auth-Answer message containing the Media-Component-Description AVP(s). The information in the Media-Component-Description AVP(s) may be based on the session description information negotiated within the AF session signaling. The <u>AF does not need to send a new authorization</u> <u>request back to the PDF when</u> receiving <u>a Re-Auth-Request message with a request for the service information of</u> <u>session description request does not trigger the sending of a new authorization request back to the PDF</u>. The AF may include the Flow-Grouping AVP(s) to request a particular way on how the IP flows described within the service description are distributed to PDP contexts.

The AF may receive an access network charging identifier (e.g. GCID) and access network charging address (e.g. GGSN IP address) for charging correlation purposes from the PDF in a separate Re-Auth-Request message after the bearer has been authorized. <u>The AF does not need to send a new authorization request when receiving a Re-Auth-Request message with access network charging identifier (e.g. GCID) and access network charging address (e.g. GGSN IP address) The receiving of charging correlation information from the PDF does not trigger the sending of a new authorization request back to the PDF.</u>

Next modified Section

5.2.4 Session modification

During the AF session modification, the AF shall send an update for the session description information to the PDF based on the new SDI exchanged within the AF session signalling. The AF does this by sending the AA-Request message containing the Media-Component-Description AVP(s) containing the updated service information. The AF may include the Flow-Grouping AVP(s) to request a particular way on how the IP flows described within the service description are distributed to PDP contexts.

The PDF acknowledges the session modification by issueing an AA Answer back to the AF.

Next modified Section

5.3.1 Provisioning of Service Information at P-CSCF

The P-CSCF shall send service information to the PDF upon every SIP message that includes an SDP answer payload. The service information shall be derived both from the SDP offer and the SDP answer. This ensures that the PDF passes receives proper information to perform media authorization for all possible IMS session set-up scenarios, and that the PDF is also capable of handling session modifications.

Next modified Section

6.3.7 Abort-Session-Request (ASR) command

The ASR command, indicated by the Command-Code field set to 274 and the 'R' bit set in the Command Flags field, is sent by the PDF to inform the AF that <u>all</u> bearer resources for the authorized session <u>are no longerhave become</u> <u>un</u>available.

Message Format:

Next modified Section

6.5.3 Access-Network-Charging-Identifier AVP

The Access-Network-Charging-Identifier AVP (AVP code 502) is of type Grouped, and contains a charging identifier (e.g. GCID) within the Access-Network-Charging-Identifier-Value AVP along with information about the flows transported within the corresponding bearer within the Flows AVP. If no Flows AVP is provided, the Access-Network-Charging-Identifier-Value applies for all flows within the AF session.

The Access-Network-Charging-Identifier AVP may becan be sent from the PDF to the AF. The AF may use this information for charging correlation with session layer.

AVP Format:

```
Access-Network-Charging-Identifier ::= < AVP Header: x >
        { Access-Network-Charging-Identifier-Value}
        *[ Flows ]
```

Next modified Section

6.5.12 Flow-Status AVP

The Flow-Status AVP (AVP code 511) is of type Enumerated, and describes whether the IP flow(s) are enabled or disabled. The following values are defined:

ENABLED-UPLINK (0)

This value shall be used to enable associated uplink IP flow(s) and to disable associated downlink IP flow(s). If any downlink RTCP IP flow(s) are identified by the Flow_Usage AVP(s), those flow(s) shall be enabled.

ENABLED-DOWNLINK (1)

This value shall be used to enable associated downlink IP flow(s) and to disable associated uplink IP flow(s). If any uplink RTCP IP flow(s) are identified by the Flow_Usage AVP(s), those flow(s) shall be enabled.

ENABLED (2)

This value shall be used to enable all associated IP flow(s) in both directions.

CR page 4

DISABLED (3)

This value shall be used to disable all associated IP flow(s) in both directions. If any RTCP IP flow(s) are identified by the Flow_Usage AVP(s), those flow(s) shall be enabled.

REMOVED (4)

<u>This value shall be used to remove all associated IP flow(s)</u>. The IP Filters for the associated IP flow(s) shall be removed. The associated IP flows shall not be taken into account when deriving the authorized QoS.

Next modified Section

6.5.14 Gq-Specific-Action AVP

The Gq-Specific-Action AVP (AVP code 513) is of type Enumerated.

Within a PDF initiated Re-Authorization Request, the Gq-Specific-Action AVP, and determines the type of the Gq action within the PDF initiated request.

Within an initial AA request the AF may use the Gq-Specific-Action AVP to request specific actions from the PDF at the bearer authorization and to limit the contact at bearer authorization to such bearer authorization events where this action is required. If the Gq-Specific-Action AVP is omitted within the initial AA request, no notification of any of the events defined below is requested.

The following values are defined:

SERVICE_INFORMATION_REQUEST (0)

Within a RAR, tThis value shall be used when the PDF requests the service information from the AF for the bearer authorization. In the AAR, this value indicates that the AF requests the PDF to demand service information at each bearer authorization

CHARGING_CORRELATION_EXCHANGE (1)

Within a RAR, t^This value shall be used when the PDF reports the access network charging identifier to the AF. The PDF shall include the Access-Network-Charging-Identifier AVP within the request. In the AAR, this value indicates that the AF requests the PDF to provide an access network charging identifier to the AF at each bearer authorization, when a new access network charging identifier becomes available.

INDICATION_OF_LOSS_OF_BEARER (2)

Within a RAR, t^T his value shall be used when the PDF reports a loss of a bearer (PDP context bandwidth modification to 0 kbit) to the AF. In the AAR, this value indicates that the AF requests the PDF to provide a notification at the loss of a bearer.

INDICATION_OF_RECOVERY_OF_BEARER (3)

<u>Within a RAR, t</u> his value shall be used when the PDF reports a recovery of a bearer (PDP context bandwidth modification from 0 kbit to another value) to the AF. In the AAR, this value indicates that the AF requests the PDF to provide a notification at the recovery of a bearer.

INDICATION_OF_RELEASE_OF_BEARER (4)

Within a RAR, t^{This} value shall be used when the PDF reports the release of a bearer (PDP context removal) to the AF. In the AAR, this value indicates that the AF requests the PDF to provide a notification at the removal of a bearer.

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				CHANGE REQUEST										
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An encoding to lift any restrictions on the flow grouping is also provided. Gq flow grouping shall not be made more restrictive if updated AF session signalling is provided.

Consequences if	ж	Unclear semantics of flow grouping AVP in modified session information.
not approved:		

Clauses affected:	¥ 6.5.9
	YN
Other specs	% X Other core specifications %
affected:	X O&M Specifications
Other comments:	ж

6.5.9 Flow-Grouping AVP

The Flow-Grouping AVP (AVP code 508) is of type Grouped, and it indicates that no other IP Flows shall be transported together with the listed IP Flows in the same PDP context(s).

If Flow-Grouping AVP(s) have been provided in earlier service information, but are not provided in subsequent service information, the old flow grouping remains valid.

If Flow-Grouping AVP(s) have been provided in earlier service information, and new Flow-Grouping AVP(s) are provided, the new flow grouping information replaces the previous information. Previous flow grouping information is invalidated even if the new Flow-Grouping AVP(s) affect other IP flows.

<u>A Flow-Grouping AVP containing no Flows AVP may be used to invalidate flow grouping information provided in</u> earlier service information. A Flow-Grouping AVP containing no Flows AVP shall not be supplied together with other Flow-Grouping AVP(s).

If earlier service information has already been provided, flow grouping information in subsequent service information shall not restrict the flow grouping further for IP flows already described in the previous service information. However, new IP flows described for the first time in the subsequent service information may be added to existing flow groups or in new flow groups.

AVP Format:

Flow-Grouping ::= $\langle AVP Header: x \rangle$ $\frac{1*[*[Flows]}{2}$

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Other comments:

ж

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Summary of change	. ~	decri	ption AVP(s).	1111 a 111	edia-subcomponent replace old now
Consequences if not approved:	ж	Amb	iguous semantics of Flow-De	escriptio	on AVP(s)
Clauses affected:	ж	6.5.2	20		
	[YN			
Other specs	ж	X	Other core specifications	ж	
affected:		Χ	Test specifications		
		Χ	O&M Specifications		

6.5.20 Media-Sub-Component AVP

The Media-Sub-Component AVP (AVP code 519) is of type Grouped, and it contains the requested QoS and filters for the set of IP flows identified by their common Flow-Identifier. The Flow-Identifier is defined in 3GPP TS 29.207[4].

Possible Bandwidth information and Flow-Status information provided within the Media-Sub-Component AVP takes precedence over information within the encapsulating Media Component Description AVP. If a Media-Sub-Component- AVP is not supplied, or if optional AVP(s) within a Media-Sub-Component AVP are omitted, but corresponding information has been provided in previous Gq messages, the previous information for the corresponding IP flow(s) remains valid, unless new information is provided within the encapsulating Media-Component-Description AVP. If Flow-Description AVP(s) are supplied, they replace all previous Flow-Description AVP(s), even if a new Flow-Description AVP has the opposite direction as the previous Flow-Description AVP.

All IP flows within a Media-Sub-Component- AVP are permanently disabled by supplying a Flow Status AVP with value "REMOVED". The PDF may delete corresponding filters and state information.

AVP format:

3GPP TSG-CN WG3 Meeting #34 Seoul, Korea. 15th – 19th November 2004.

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CHANGE REQUEST										
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For <mark>HELP</mark> on u	sing this for	m, see bottom of t	this page or	look a	t the	e pop-up text	over the ¥	symbols	s.	
Proposed change a	affects: \	JICC apps#	ME	Radi	o Ad	ccess Networ	k Core	Networl	'k <mark>X</mark>	
Title: ដ	Modificati	ons to Gq protoco	I to make it r	more g	jene	eric				
Source: ដ	Ericsson									
Work item code: Ж	QoS1					<i>Date:</i> ೫	18/11/200)4		
Category: ⊮	D Use <u>one</u> of F (cor A (cor B (add C (fun D (edi Detailed exp be found in	the following catego rection) responds to a correc lition of feature), ctional modification torial modification) planations of the abo 3GPP <u>TR 21.900</u> .	ries: ction in an ear of feature) ove categories	rlier rele s can	ease	Release: # Use <u>one</u> of Ph2 Ph2 R96 R97 R98 R99 Rel-4 Rel-5 Rel-6 Rel-7	Rel-6 the following (GSM Phase (Release 19 (Release 19 (Release 19 (Release 4) (Release 5) (Release 6) (Release 7)	releases ≥ 2) 96) 97) 98) 99)		

Reason for change:	Some Gq specified AVPs are not generic, which they ought to be in order for easier reuse according to Diameter specification recommendations.							
Summary of change:	Changes to AVPs to make them generic. References to AVPs updated An erroneous reference between chapter 6.4 and 6.5.8 is also corrected.							
Consequences if not approved:	Not possible to reuse the Gq specified AVPs for other interfaces. Inconsistencies in TS 29.209							
Clauses affected:	業 <u>5.2, 5.5, 5.7, 6.4, 6.5. 6.5.1, 6.5.6, 6.5.8, 6.5.13, 6.5.14, 6.5.18, 6.5.20, 6.5.24</u>							
Other specs affected:	Y N X Other core specifications # X Test specifications # X O&M Specifications #							
Other comments:	¥							

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <u>http://www.3gpp.org/specs/CR.htm</u>. 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 http://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

Start of modifications

5.1.2 Resource reservation

When receiving a bearer authorization request from the Go interface, the PDF shall authorize the request according to the stored SBLP for the session, if available.

For a bearer authorization request with a new authorization token the PDF shall behave as described within the present paragraph: If the SBLP is not available for the session, or if the AF has instructed the PDF to do so, the PDF shall send the Re-Auth_Request message with the SERVICE_INFORMATION_REQUEST indication in the Gq_Specific-Action AVP to the AF to request the service information. When receiving the Media-Component-Description AVP(s) in the Re-Auth-Answer message the PDF shall authorize the required QoS resources and shall store the SBLP for the session. If SBLP is available for the session but the requested bearer resources exceed it, and the AF has not instructed the PDF to contact it at bearer authorization, the PDF shall deny the resources without contacting the AF.

For a bearer authorization request for an authorization token already authorized by the PDF, the PDF shall behave as described within the present paragraph: If the request contains binding information for media with no corresponding SBLP available at the PDF, or if the PDF has already authorized the same binding information and not obtained updated service information since then, or if the AF has instructed the PDF to do so, the PDF shall send a Re-Auth-Request message with the SERVICE_INFORMATION_REQUEST indication in the Gq-Specific-Action AVP to the AF to request updated service information. When receiving the Media-Component-Description AVP(s) in the Re-Auth-Answer message the PDF shall authorize the required QoS resources and shall store the SBLP for the session.

After the bearer authorization the PDF shall send possible new access network charging identifier(s) (e.g. GCID), received from the GGSN during the bearer authorization to the AF for charging correlation purposes, and an access network charging-address (e.g. GGSN IP Address), if the AF has instructed the PDF to do so. The PDF does this by sending the Re-Auth_Request message with the CHARGING_CORRELATION_EXCHANGE indication in the Gq_Specific-Action AVP to the AF.

Next modified section

5.1.5 Bearer modification

The bearer authorization for the session- or bearer-initiated modification is performed as specified in 3GPP TS 29.207 [4].

If the AF has requested a notification at the loss of a bearer, and the PDF receives a notification that a PDP context is modified to the bandwidth of 0 kbit via the Go interface, the PDF shall send a Re-Auth_Request with the value for the Gq-Specific-Action AVP set to INDICATION_OF_LOSS_OF_BEARER and shall indicate the affected IP flows with the Flows AVP(s) if not all IP flows within an AF session are affected.

If the AF has requested a notification at the recovery of a bearer, and the PDF receives a notification that a PDP context is modified from the bandwidth of 0 kbit to a higher value via the Go interface, the PDF shall send a Re-Auth_Request with the value for the Gq-Specific-Action AVP set to INDICATION_OF_RECOVERY_OF_BEARER and shall indicate the affected IP flows with the Flows AVP(s) if not all IP flows within an AF session are affected.

Next modified section

5.1.7 Indication of bearer release

If the AF has requested a notification at the release of a bearer, and the PDF receives a notification that a PDP context is released via the Go interface, but not all IP flows within the corresponding AF session are affected by the PDP context

release, the PDF shall send a Re-Auth_Request with the value for the Gq-Specific-Action AVP set to INDICATION_OF_RELEASE_OF_BEARER and shall indicate the affected IP flows with the Flows AVP(s) and the appropriate Abort-Cause AVP value.

Next modified section

6.4 Gq-Experimental-Result-Code AVP values

This subclause defines the Gq specific values of the Experimental-Result-Code AVP:

GQ_INVALID_SERVICE_INFORMATION (5061)

The <u>PDF cannot authorize the bearer with the service information provided by the AF is invalid or insufficient</u> for the server to perform the requested action.

GQ_FILTER_RESTRICTIONS (5062)

The PDF cannot handle Flow_Description AVP(s) cannot be handled by the server because restrictions defined in clause 6.5.86 are not observed.

Next modified section

6.5 Gq specific AVPs

Table 6.5.1 describes the Diameter AVPs defined for the Gq interface protocol, their AVP Code values, types, possible flag values and whether or not the AVP may be encrypted. The Vendor-Id header of all AVPs defined in the present document shall be set to 3GPP (10415).

AVP Flag rule							te 1)	L	
Attribute Name	AVP Code	Clause defined	Value Type (note 2)	Must	Мау	Should not	Must not	May Encr.	
Abort-Cause	500	6.5.1	Enumerated	M,V	Р			Y	
Access-Network-Charging-	501	6.5.2	Address	M,V	Ρ			Y	
Address									
Access-Network-Charging- Identifier	502	6.5.3	Grouped	M,V	Р			Y	
Access-Network-Charging- Identifier-Value	503	6.5.4	OctetString	M,V	Р			Y	
AF-Application-Identifier	504	6.5.5	OctetString	M,V	Р			Y	
AF-Charging-Identifier	505	6.5.6	OctetString	M,V	Р			Y	
Authorization-Token	506	6.5.7	OctetString	M,V	Р			Y	
Flow-Description	507	6.5.8	IPFilterRule	M,V	Ρ			Y	
Flow-Grouping	508	6.5.9	Grouped	M,V	Р			Y	
Flow-Number	509	6.5.10	Unsigned32	M,V	Ρ			Y	
Flows	510	6.5.11	Grouped	M,V	Ρ			Y	
Flow-Status	511	6.5.12	Enumerated	M,V	Ρ			Y	
Flow-Usage	512	6.5.13	Enumerated	M,V	Ρ			Y	
Gq-Specific-Action	513	6.5.14	Enumerated	M,V	Ρ			Y	
Max-Requested-Bandwidth	514	6.5.15	Unsigned32	M,V	Ρ			Y	
Max-Requested-Bandwidth-DL	515	6.5.16	Unsigned32	M,V	Ρ			Y	
Max-Requested-Bandwidth-UL	516	6.5.17	Unsigned32	M,V	Ρ			Y	
Media-Component-Description	517	6.5.18	Grouped	M,V	Ρ			Y	
Media-Component-Number	518	6.5.19	Unsigned32	M,V	Р			Y	
Media-Sub-Component AVP	519	6.5.20	Grouped	M,V	Р			Y	
Media-Type	520	6.5.21	Enumerated	M,V	Р			Y	
RR-Bandwidth	521	6.5.22	Unsigned32	M,V	Ρ			Y	
RS-Bandwidth	522	6.5.23	Unsigned32	M,V	Р			Y	
SIP-Forking-Indication	523	6.5.24	Enumerated	M,V	Р			Y	
NOTE 1: The AVP header bit of denoted as 'V', indica details, see RFC 358	denoted ites whe 8 [6]. defined	as 'M', ind ether the op	icates whether support of ptional Vendor-ID field is	of the A s prese	VP is r nt in the	equired. AVP he	The AV ader. F	P header bit or further	

Table 6.5.1: Gq specific Diameter AVPs

Next modified section

6.5.1 Abort-Cause AVP

The Session-Abort-Cause AVP (AVP code 500) is of type Enumerated, and determines the cause of a session abort request or of an RAR indicating a PDP context release. The following values are defined:

<u>BEARERPDP_CONTEXT</u>_RELEASED (0)

This value is used-when the <u>PDP contextbearer</u> has been deactivated as a result from normal <u>PDP context</u> signalling handling. For GPRS the bearer refers to the PDP Context.

INSUFFICIENT_PDFSERVER_RESOURCES (1)

This value is used to indicate that the server PDF is overloaded and needs to abort the session.

INSUFFICIENT_BEARER_RESOURCES (2)

This value is used when the <u>bearer</u>PDP context has been deactivated due to insufficient bearer resources <u>at a</u> <u>transport gateway (e.g. GGSN for GPRS)</u>. at the GGSN.

Next modified section

6.5.6 AF-Charging-Identifier AVP

The AF-Charging-Identifier AVP (AVP code 505) is of type OctetString, contains the AF Charging Identifier that is sent from by the AF-to the PDF. The PDF may use tThis information may be used for charging correlation with bearer layer.

Next modified section

6.5.8 Flow-Description AVP

The Flow-Description AVP (AVP code 507) is of type IPFilterRule, and defines a packet filter for an IP flow with the following information:

- Direction (in or out).
- Source and destination IP address (possibly masked).
- Protocol.
- Source and destination port (list or ranges).

The IPFilterRule type shall be used with the following restrictions:

- Only the Action "permit" shall be used.
- No "options" shall be used.
- The invert modifier "!" for addresses shall not be used.
- The keyword "assigned" shall not be used.

If any of these restrictions is not observed by the AF, the PDF shall send the server shall send an error response to the AF containing the Gq-Experimental-Result-Code AVP with value FILTER RESTRICTIONS. GQ_INVALID_SERVICE_INFORMATION.

The Flow description AVP shall be used to describe a single IP flow.

The direction "in" refers to uplink IP flows, and the direction "out" refers to downlink IP flows.

Next modified section

6.5.13 Flow-Usage AVP

The Flow-Usage AVP (AVP code 512) is of type Enumerated, and provides information about the usage of IP Flows. The following values are defined:

NO_INFORMATION (0)

This value is used to indicate that no information about the usage of the IP flow is being provided

RTCP(1)

This value is used to indicate that an IP flow is used to transport RTCP.

NO_INFORMATION is the default value.

NOTE: An AF may choose not to identify RTCP flows, e.g. in order to avoid that RTCP flows are always enabled by the PDFserver.

Next modified section

6.5.14 Gq-Specific-Action AVP

The Gq-Specific-Action AVP (AVP code 513) is of type Enumerated, and determines the type of the Gq-action within the PDF-server initiated request.

Within an initial AA request the AF may use the Gq-Specific-Action AVP to request specific actions from the <u>PDF</u> <u>server</u> at the bearer <u>authorization events</u> and to limit the contact <u>at bearer authorization</u> to such bearer <u>authorization</u> events where <u>this specific</u> action is required. If the Gq-Specific-Action AVP is omitted within the initial AA request, no notification of any of the events defined below is requested.

The following values are defined:

SERVICE_INFORMATION_REQUEST (0)

This value shall be used when the <u>PDF server</u> requests the service information from the AF for the bearer <u>authorization_event</u>. In the AAR, this value indicates that the AF requests the <u>PDF server</u> to demand service information at each bearer <u>authorization_authorization</u>.

CHARGING_CORRELATION_EXCHANGE (1)

This value shall be used when the <u>PDF-server</u> reports the access network charging identifier to the AF. The <u>PDF</u> shall include the Access-Network-Charging-Identifier AVP shall be included within the request. In the AAR, this value indicates that the AF requests the <u>PDF-server</u> to provide an access network charging identifier to the AF at each bearer <u>authorizationestablishment/modification</u>, when a new access network charging identifier becomes available.

INDICATION_OF_LOSS_OF_BEARER (2)

This value shall be used when the <u>PDF server</u> reports a loss of a bearer (<u>e.g. in the case of GPRS</u> PDP context bandwidth modification to 0 kbit) to the AF. In the AAR, this value indicates that the AF requests the <u>PDF</u> server to provide a notification at the loss of a bearer.

INDICATION_OF_RECOVERY_OF_BEARER (3)

This value shall be used when the <u>PDF server</u> reports a recovery of a bearer (<u>e.g. in the case of GPRS</u>, PDP context bandwidth modification from 0 kbit to another value) to the AF. In the AAR, this value indicates that the AF requests the <u>PDF server</u> to provide a notification at the recovery of a bearer.

INDICATION_OF_RELEASE_OF_BEARER (4)

This value shall be used when the <u>PDF server</u> reports the release of a bearer (<u>e.g.</u> PDP context removal <u>for</u> <u>GPRS</u>) to the AF. In the AAR, this value indicates that the AF requests the <u>PDF server</u> to provide a notification at the removal of a bearer.

Next modified section

6.5.18 Media-Component-Description AVP

The Media-Component-Description AVP (AVP code 517) is of type Grouped, and it contains service information for a single media component within an AF session. It may be based on the SDI exchanged between the AF and the AF client in the UE. The information is-may be used by the <u>PDF server</u> to determine authorized QoS and IP flow classifiers for bearer authorization and charging rule selection.

Within one Gq Diameter message, a single IP flow shall not be described by more than one Media-Component-Description AVP.

Bandwidth information and Flow-Status information provided within the Media-Component-Description AVP applies to all those IP flows within the media component, for which no corresponding information is being provided within Media-Sub-Component AVP(s).

If a Media-Component-Description AVP is not supplied, or if optional AVP(s) within a Media-Component-Description AVP are omitted, but corresponding information has been provided in previous Gq-Diameter messages, the previous information for the corresponding IP flow(s) remains valid.

All IP flows within a Media-Component-Description AVP are permanently disabled by supplying a Flow Status AVP with value "REMOVED". The <u>PDF-server</u> may delete corresponding filters and state information.

AVP format:

```
Media-Component-Description ::= < AVP Header: ?>
    { Media-Component-Number } ; Ordinal number of the media comp.
    *[ Media-Sub-Component ] ; Set of flows for one flow identifier
    [ AF-Application-Identifier ]
    [ Media-Type ]
    [ Max-Requested-Bandwidth ]
    [ Flow-Status ]
    [ RS-Bandwidth ]
    [ RR-Bandwidth ]
```

Next modified section

6.5.20 Media-Sub-Component AVP

The Media-Sub-Component AVP (AVP code 519) is of type Grouped, and it contains the requested QoS and filters for the set of IP flows identified by their common Flow-Identifier. The Flow-Identifier is defined in 3GPP TS 29.207 [4].

Possible Bandwidth information and Flow-Status information provided within the Media-Sub-Component AVP takes precedence over information within the encapsulating Media Component Description AVP. If a Media-Sub-Component AVP is not supplied, or if optional AVP(s) within a Media-Sub-Component AVP are omitted, but corresponding information has been provided in previous Gq-Diameter messages, the previous information for the corresponding IP flow(s) remains valid, unless new information is provided within the encapsulating Media-Component-Description AVP.

All IP flows within a Media-Sub-Component- AVP are permanently disabled by supplying a Flow Status AVP with value "REMOVED". The <u>PDF-server</u> may delete corresponding filters and state information.

AVP format:

```
Media-Sub-Component ::= < AVP Header: ?>
    { Flow-Number } ; Ordinal number of the IP flow
    1*2[ Flow-Description ] ; UL and/or DL
    [ Flow-Status ]
    [ Max-Requested-Bandwidth-UL ]
    [ Max-Requested-Bandwidth-DL ]
```

Next modified section

6.5.24 SIP-Forking-Indication AVP

The SIP_Forking AVP (AVP code 523) is of type Enumerated, and describes if several SIP dialogues are related to one Gq_Diameter_session.:

SINGLE_DIALOGUE (0)

This value is used to indicate that the Gq Diameter session relates to a single SIP dialogue. This is the default value applicable if the AVP is omitted.

SEVERAL_DIALOGUES (1)

This value is used to indicate that the Gq-Diameter session relates to several SIP dialogues.

End of modifications