3GPP TSG-CN Meeting #26 **NP-040562**
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	C	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	B	Modification to Gq protocols to make it more generic	Rel-6	6.0.0	FBC

3GPP TSG-CN WG3 Meeting #33bis ***Tdoc ⌘ N3-040676***

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

CR-Form-v7.1

CHANGE REQUEST

⌘ **29.208** **CR** **074** ⌘ **rev** **1** ⌘ Current version: **6.1.0** ⌘

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

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

Title:	⌘	Correcting Mapping Table for early media handling
Source:	⌘	Siemens
Work item code:	⌘	QoS1
Date:	⌘	27/09/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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

Use one of the following releases:
Ph2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)
Rel-7 (Release 7)

Reason for change:	⌘	According to IMS callflows and Rel-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.
Summary of change:	⌘	1. 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. 2. A clarifying remark in line with TS 29.209 about the early media handling is 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.
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.

Clauses affected:	⌘	7.1.0, 7.1.1			
Other specs	⌘	Y ☐	N ☒	Other core specifications	⌘

affected:		Test specifications
	X	O&M Specifications
Other comments:	⌘	

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.

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

service information per Media-Component-Description AVP (NOTE 1)	Derivation from SDP Parameters (see NOTE 2)
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 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
	Flow-Status := ENABLED_DOWNLINK; (NOTE 4)
	ELSE /* mobile terminated */
	Flow-Status := ENABLED_UPLINK; (NOTE 4)
	ENDIF;
	ELSE
	IF a=sendonly THEN
	IF <SDP direction> = mobile originated THEN
	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-Bandwidth	IF b=AS:<bandwidth> is present THEN
	Max-Requested-Bandwidth:= <bandwidth> * 1000; /* Unit is bit/s
	ELSE
	Max-Requested-Bandwidth:= <Operator specific setting>,
	or AVP not supplied;
	ENDIF;

RR-Bandwidth (NOTE **3**)	IF b=RR:<bandwidth> is present THEN
	RR-Bandwidth:= <bandwidth>;
	ELSE
	AVP not supplied
	ENDIF;

RS-Bandwidth (NOTE **3**)	IF b=RS:<bandwidth> is present THEN
	RS-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

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 'b=RS:' and 'b=RR:' SDP bandwidth modifiers are defined in RFC 3556 [10].
NOTE 4: As an operator policy to disable forward and/or backward early media, the Flow-Status may be downgraded before a SIP dialogue 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_UPLINK" or "ENABLED_DOWNLINK" may be used instead of the Value "ENABLED".

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

Gq service information per Media-Sub-Component AVP (NOTE 1)	Derivation from SDP Parameters (see NOTE 2)
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-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
	Provide only downlink Flow-Description AVP
	ELSE /* mobile terminated */
	Provide only uplink Flow-Description AVP
	ENDIF;
	ELSE
	IF a=sendonly THEN (NOTE 3)
	IF <SDP direction> = mobile originated THEN
	Provide only uplink Flow-Description AVP
	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;
	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(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. 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 service information is defined in TS 29.209 [12]. NOTE 2: The SDP parameters 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 sendrecv, or if no direction attribute was provided, and the new SDP direction attribute sendonly or recvonly is negotiated in a subsequent SDP offer-answer exchange, uplink and downlink Flow-Description AVPs shall be supplied.	

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

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

Authorized IP QoS Parameter per flow identifier	Derivation from service information (see note 4)

Maximum Authorized Data Rate DL (Max_DR_DL) and UL (Max_DR_UL) per flow identifier	IF AF-Application-Identifier AVP demands application specific data rate handling THEN
	
	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
	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;
	ELSE
	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;~~
	~~ELSE~~
	~~IF Flow-Status = ENABLED_UPLINK THEN~~
	~~Max_DR_UL:= bw;~~
	~~Max_DR_DL:= 0;~~
	~~IF Flow-Status = REMOVED THEN~~
	~~Max_DR_UL:= 0;~~
	~~Max_DR_DL:= 0;~~
	~~ELSE /* Flow-Status = ENABLED or DISABLED */~~
	~~Max_DR_UL:= bw;~~
	~~Max_DR_DL:= bw;~~
	~~ENDIF;~~
	~~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,
	RS-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 RR-Bandwidth is not present THEN
	Max_DR_UL:= 0.05 * Max-Requested-Bandwidth ;
	Max_DR_DL:= 0.05 * Max-Requested-Bandwidth ;
	ENDIF;

	ELSE
	Max_DR_UL:= as set by the operator;
	Max_DR_DL:= as set by the operator;
	ENDIF;
	ENDIF;
	ENDIF;
	
	/* MAX-Requested-Bandwidth-UL and MAX-Requested-Bandwidth-DL take precedence*/
	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;
	ENDIF
	
	ENDIF;

Maximum Authorized QoS Class [MaxClass] per flow identifier (see notes 1, 2 and 3)	IF AF-Application-Identifier AVP demands application specific QoS Class handling THEN
	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 with media type "audio" or "video" and with no flow usage "RTCP", or only downlink Flow Desription AVPs are supplied for all IP flows of the session with media type "audio" or "video" and with 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:=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 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 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.

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	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;

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 [7]) */

3GPP TSG-CN WG3 Meeting #34 ***Tdoc ⌘N3-040875***

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

CR-Form-v7.1

CHANGE REQUEST

⌘ **29.209** **CR** **002** ⌘ **rev** **2** ⌘ Current version: **6.0.0** ⌘

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

Title:	⌘	Resource reservation at PDF
Source:	⌘	Siemens
Work item code:	⌘	QoS1
Date:	⌘	08/11/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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

Use one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

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 not approved:	⌘	Impossible behavior is demanded from PDF

Clauses affected:	⌘	5.1.2

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	

Other comments:	⌘	

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~~authorization 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 **Tdoc ⌘N3-040825**
Seoul, Korea. 15th - 19th November 2004.

CR-Form-v7.1

CHANGE REQUEST

⌘ **29.208** **CR** **074** ⌘**rev** **3** ⌘ Current version: **6.1.0** ⌘

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

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

Title:	⌘	Correcting Mapping Table for early media handling
Source:	⌘	Siemens
Work item code:	⌘	QoS1
Date:	⌘	08/11/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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

Use one of the following releases:
Ph2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*
Rel-7 *(Release 7)*

Reason for change: ⌘ According to IMS callflows and Rel-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.

Unspecified if SDP direction attribute shall be taken from SDP offer or SDP answer.
The SDP inactive attribute has a specila meaning when interworking with external SIP clients, see TR 29.962, and TS 23.228 and 24.229. According to RFC 3264 the SDP inactive attribute shall be answered when offered. However, older SIP clients may not understand the SDP inactive attribute and ignore it when received in an SDP offer. As suggested in TR 29.962, the correct behavior is emulted by giving precedence to an inactive attribute in an SDP offer.

Summary of change: ⌘
1. 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.
2. A clarifying remark in line with TS 29.209 about the early media handling is

		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. 4. 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 Gq service information Unclear Mapping rules may lead to incorrect enabling and disabling of IP flows.

Clauses affected:	⌘	7.1.0, 7.1.1				
Other specs affected:	⌘	**Y**	**N**		⌘	29.209
		X		Other core specifications		
			X	Test specifications		
			X	O&M Specifications		
Other comments:	⌘					

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.

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

service information per Media-Component-Description AVP (NOTE 1)	Derivation from SDP Parameters (see NOTE 2)
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 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
	  Flow-Status := ENABLED_DOWNLINK; (NOTE 4)
	  ELSE /* mobile terminated */
	  Flow-Status := ENABLED_UPLINK; (NOTE 4)
	  ENDIF;
	  ELSE
	  IF a=sendonly THEN
	  IF <SDP direction> = mobile originated THEN
	  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;
	(NOTE 5)

~~**Max-Requested-Bandwidth**~~	~~IF b=AS:<bandwidth> is present THEN~~ ~~ Max-Requested-Bandwidth:= <bandwidth> * 1000; /* Unit is bit/s~~ ~~ELSE~~ ~~ Max-Requested-Bandwidth:= <Operator specific setting>,~~ ~~ or AVP not supplied;~~ ~~ENDIF;~~

Max-Requested-Bandwidth-UL	IF <SDP direction> = mobile terminated THEN
	  IF b=AS:<bandwidth> is present THEN
	  Max-Requested-Bandwidth-UL:= <bandwidth> * 1000; /* Unit is bit/s
	  ELSE
	  Max-Requested-Bandwidth-UL:= <Operator specific setting>,
	  or AVP not supplied;
	  ENDIF;
	ELSE
	  Consider SDP in opposite direction
	ENDIF

Max-Requested-Bandwidth-DL	IF <SDP direction> = mobile originated THEN
	  IF b=AS:<bandwidth> is present THEN
	  Max-Requested-Bandwidth-DL:= <bandwidth> * 1000; /* Unit is bit/s
	  ELSE
	  Max-Requested-Bandwidth-DL:= <Operator specific setting>,
	  or AVP not supplied;
	  ENDIF;
	ELSE
	  Consider SDP in opposite direction
	ENDIF

RR-Bandwidth (NOTE **3)**	IF b=RR:<bandwidth> is present THEN
	  RR-Bandwidth:= <bandwidth>;
	ELSE
	  AVP not supplied
	ENDIF;
	(NOTE 6)

RS-Bandwidth (NOTE **3)**	IF b=RS:<bandwidth> is present THEN
	  RS-Bandwidth:= <bandwidth>;
	ELSE

	AVP not supplied ENDIF; (NOTE 6)
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

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 'b=RS:' and 'b=RR:' SDP bandwidth modifiers are defined in RFC 3556 [10].
NOTE 4: As an operator policy to disable forward and/or backward early media, the Flow-Status may be downgraded before a SIP dialogue 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_UPLINK" or "ENABLED_DOWNLINK" may be used instead of the Value "ENABLED".
NOTE 5: 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=inactive was supplied in the SDP offer, this shall be used to derive the flow status.
NOTE 6: Information from the SDP answer is applicable

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

Gq service information per Media-Sub-Component AVP (NOTE 1)	Derivation from SDP Parameters (see NOTE 2)
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-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 (NOTE 4) 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
	Provide only downlink Flow-Description AVP
	ELSE /* mobile terminated */
	Provide only uplink Flow-Description AVP
	ENDIF;
	ELSE
	IF a=sendonly THEN (NOTE 3)
	IF <SDP direction> = mobile originated THEN
	Provide only uplink Flow-Description AVP
	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;
	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(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. 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 service information is defined in TS 29.209 [12].
NOTE 2: The SDP parameters 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 sendrecv, or if no direction attribute was provided, and the new SDP direction attribute sendonly or recvonly is negotiated in a subsequent SDP offer-answer exchange, uplink and downlink Flow-Description AVPs shall be supplied.
NOTE 4: The direction attributes 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.

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

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

Authorized IP QoS Parameter per flow identifier	Derivation from service information (see note 4)

Maximum Authorized Data Rate DL (Max_DR_DL) and UL (Max_DR_UL) per flow identifier	IF AF-Application-Identifier AVP demands application specific data rate handling THEN
	
	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~~
	IF Flow-Status = REMOVED THEN
	Max_DR_UL:= 0;
	Max_DR_DL:= 0;
	ELSE
	IF uplink Flow Desription AVP is supplied THEN
	IF Max-Requested-Bandwidth-UL is present 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 Desription AVPs is supplied THEN
	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
	Max_DR_DL:= 0;
	ENDIF;
	~~IF Flow-Status = ENABLED_DOWNLINK THEN~~
	~~Max_DR_UL:= 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_UL:= 0;~~
	~~Max_DR_DL:= 0;~~
	~~ELSE /* Flow-Status = ENABLED or DISABLED */~~
	~~Max_DR_UL:= bw;~~
	~~Max_DR_DL:= bw;~~
	~~ENDIF;~~
	~~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-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,
	RS-Bandwidth];
	~~Max_DR_DL:= MAX[0.05 * Max-Requested-Bandwidth,~~
	~~RS-Bandwidth];~~
	ENDIF;
	IF RS-Bandwidth is not present and
	RR-Bandwidth is present THEN
	Max_DR_UL:= MAX[0.05 * Max-Requested-Bandwidth_UL,

```
                                    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_UL:= 0.05 * Max-Requested-Bandwidth-UL ;
               Max_DR_DL:= 0.05 * Max-Requested-Bandwidth-DL;
            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 RS-Bandwidth is present and
               RR-Bandwidth  is not present THEN
               Max_DR_DL:= MAX[0.05 * Max-Requested-Bandwidth-DL,
                                    RS-Bandwidth];

            ENDIF;
            IF RS-Bandwidth is not present and
               RR-Bandwidth is present THEN
               Max_DR_DL:= MAX[0.05 * Max-Requested-Bandwidth-DL,
                                    RR-Bandwidth];

            ENDIF;
            IF RS-Bandwidth and RR-Bandwidth is not present THEN
               Max_DR_DL:= 0.05 * Max-Requested-Bandwidth-DL;
            ENDIF;
         ELSE
            Max_DR_DL:= as set by the operator;
         ENDIF;
      ENDIF;
   ENDIF;

   /* MAX-Requested-Bandwidth-UL and MAX-Requested-Bandwidth-DL take
      precedence*/
   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;
   ENDIF


ENDIF;
```

Maximum Authorized QoS Class [MaxClass] per flow identifier (see notes 1, 2 and 3)	IF AF-Application-Identifier AVP demands application specific QoS Class handling THEN
	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"~~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 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 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.

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	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;

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 [7]) */

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

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CR-Form-v7.1

CHANGE REQUEST

⌘ **29.209** **CR** **003** ⌘**rev** **-** ⌘ Current version: **x.y.z** ⌘

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

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

Title:	⌘	Bandwidth attributes
Source:	⌘	Siemens
Work item code:	⌘	QoS1
Date:	⌘	08/11/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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

Use one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	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. 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	O&M Specifications		

Other comments:	⌘	

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).

Table 6.5.1: Gq specific Diameter AVPs

				AVP Flag rules (note 1)				
Attribute Name	**AVP Code**	**Clause defined**	**Value Type (note 2)**	**Must**	**May**	**Should not**	**Must not**	**May Encr.**
Abort-Cause	500	6.5.1	Enumerated	M,V	P			Y
Access-Network-Charging-Address	501	6.5.2	Address	M,V	P			Y
Access-Network-Charging-Identifier	502	6.5.3	Grouped	M,V	P			Y
Access-Network-Charging-Identifier-Value	503	6.5.4	OctetString	M,V	P			Y
AF-Application-Identifier	504	6.5.5	OctetString	M,V	P			Y
AF-Charging-Identifier	505	6.5.6	OctetString	M,V	P			Y
Authorization-Token	506	6.5.7	OctetString	M,V	P			Y
Flow-Description	507	6.5.8	IPFilterRule	M,V	P			Y
Flow-Grouping	508	6.5.9	Grouped	M,V	P			Y
Flow-Number	509	6.5.10	Unsigned32	M,V	P			Y
Flows	510	6.5.11	Grouped	M,V	P			Y
Flow-Status	511	6.5.12	Enumerated	M,V	P			Y
Flow-Usage	512	6.5.13	Enumerated	M,V	P			Y
Gq-Specific-Action	513	6.5.14	Enumerated	M,V	P			Y
~~Max-Requested-Bandwidth~~	~~514~~	~~6.5.15~~	~~Unsigned32~~	~~M,V~~	~~P~~			~~Y~~
Max-Requested-Bandwidth-DL	515	6.5.16	Unsigned32	M,V	P			Y
Max-Requested-Bandwidth-UL	516	6.5.17	Unsigned32	M,V	P			Y
Media-Component-Description	517	6.5.18	Grouped	M,V	P			Y
Media-Component-Number	518	6.5.19	Unsigned32	M,V	P			Y
Media-Sub-Component AVP	519	6.5.20	Grouped	M,V	P			Y
Media-Type	520	6.5.21	Enumerated	M,V	P			Y
RR-Bandwidth	521	6.5.22	Unsigned32	M,V	P			Y
RS-Bandwidth	522	6.5.23	Unsigned32	M,V	P			Y
SIP-Forking-Indication	523	6.5.24	Enumerated	M,V	P			Y

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 Void~~Max-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:

```
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 ]
                                 [ Max-Requested-Bandwidth-UL ]
                                 [ Max-Requested-Bandwidth-DL ]
                                 [ Flow-Status ]
                                 [ RS-Bandwidth ]
                                 [ RR-Bandwidth ]
```

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 ]
```

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Sophia Antipolis, 4-7 October 2004.

N3-040702

CR-Form-v7

CHANGE REQUEST

⌘ **29.208** **CR** **76** ⌘**rev** **1** ⌘ Current version: **6.0.0** ⌘

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

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

Title:	⌘	Allowing the use of Application identifier for IMS
Source:	⌘	Nokia
Work item code:	⌘	QoS1
Date:	⌘	07/10/2004
Category:	⌘	**C**
Release:	⌘	Rel-6

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

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	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 not approved:	⌘	Restrictive standardization limiting operators choice for using the system resources and for providing differentiated treatment for the services.

Clauses affected:	⌘	7.1.0			
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 http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

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.

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

service information per Media-Component-Description AVP (NOTE 1)	Derivation from SDP Parameters (see NOTE 2)
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 shouldall 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.
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
	Flow-Status := ENABLED_DOWNLINK;
	ELSE /* mobile terminated */
	Flow-Status := ENABLED_UPLINK;
	ENDIF;
	ELSE
	IF a=sendonly THEN
	IF <SDP direction> = 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=sendrecv or no direction attribute */
	Flow-Status := ENABLED
	ENDIF;
	ENDIF;
	ENDIF;
	ENDIF;

Max-Requested-Bandwidth	IF b=AS:<bandwidth> is present THEN
	Max-Requested-Bandwidth:= <bandwidth> * 1000; /* Unit is bit/s
	ELSE
	Max-Requested-Bandwidth:= <Operator specific setting>,
	or AVP not supplied;
	ENDIF;

RR-Bandwidth (NOTE **3)**	IF b=RR:<bandwidth> is present THEN
	RR-Bandwidth:= <bandwidth>;
	ELSE
	AVP not supplied
	ENDIF;

RS-Bandwidth (NOTE **3)**	IF b=RS:<bandwidth> is present THEN
	RS-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

3GPP TSG-CN WG3 Meeting #33bis ***Tdoc ⌘ N3-040700***

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

CR-Form-v7.1

CHANGE REQUEST

⌘ **29.208** **CR** **075** ⌘ **rev** **2** ⌘ Current version: **6.1.0** ⌘

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

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

Title:	⌘	Clarification on Mapping Table 7.1.1.1
Source:	⌘	Siemens
Work item code:	⌘	QoS1
Date:	⌘	27/09/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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

Use one of the following releases:
Ph2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)
Rel-7 (Release 7)

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.
Summary of change:	⌘	1. An outdated editor´s note that the Diameter base protocol multi round feature is ffs is removed. 2. A Note is added clarifying that AVPs may be omitted if the same value has already been supplied, as specified in TS 29.209. 3. References to NOTE 3 in table 7.1.0.1 are moved to correct location, as the note provides a reference for SDP parameters handled in the right column. 4. A Note is added clarifying that if AVPs are omitted within a Media-Component-Description AVP or Media-Sub-Component AVP of the service information, the corresponding information from previous service information shall be used, as specified in TS 29.209 [12].
Consequences if not approved:	⌘	Table 7.1.1.1 is ambiguous in combination with TS 29.209. Thus, the authorized QoS is no longer well-defined.

Clauses affected:	⌘	4, 7.1.0, 7.1.1

Other specs affected: ⌘	Y	N	
		X	Other core specifications
		X	Test specifications
		X	O&M Specifications

⌘

Other comments: ⌘

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.

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

service information per Media-Component-Description AVP (NOTE 1; Note x)	Derivation from SDP Parameters (see NOTE 2)
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 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
	Flow-Status := ENABLED_DOWNLINK;
	ELSE /* mobile terminated */
	Flow-Status := ENABLED_UPLINK;
	ENDIF;
	ELSE
	IF a=sendonly THEN
	IF <SDP direction> = 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=sendrecv or no direction attribute */
	Flow-Status := ENABLED
	ENDIF;
	ENDIF;
	ENDIF;
	ENDIF;

Max-Requested-Bandwidth	IF b=AS:<bandwidth> is present THEN
	Max-Requested-Bandwidth:= <bandwidth> * 1000; /* Unit is bit/s
	ELSE
	Max-Requested-Bandwidth:= <Operator specific setting>,
	or AVP not supplied;
	ENDIF;

RR-Bandwidth ~~(NOTE 3)~~	IF b=RR:<bandwidth> is present THEN
	RR-Bandwidth:= <bandwidth>;
	ELSE
	AVP not supplied
	ENDIF; (NOTE 3)

RS-Bandwidth ~~(NOTE 3)~~	IF b=RS:<bandwidth> is present THEN
	RS-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 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 service information is defined in TS 29.209 [12].
NOTE 2: The SDP parameters are described in RFC 2327 [9].
NOTE 3: The 'b=RS:' and 'b=RR:' SDP bandwidth modifiers are defined in RFC 3556 [10].
NOTE x: The AVPs may be omitted if they have been supplied in previous service information and have not changed, as detailed in TS 29.209 [12].

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

Gq service information per Media-Sub-Component AVP (NOTE 1, NOTE x)	Derivation from SDP Parameters (see NOTE 2)
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-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 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) 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 service information is defined in TS 29.209 [12]. 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 29.209 [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

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

Authorized IP QoS Parameter per flow identifier	Derivation from service information (see note 4)

Maximum Authorized Data Rate DL (Max_DR_DL) and UL (Max_DR_UL) per flow identifier	IF AF-Application-Identifier AVP demands application specific data rate handling THEN
	
	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
	IF Flow-Status = ENABLED_DOWNLINK THEN
	Max_DR_UL:= 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_UL:= 0;
	Max_DR_DL:= 0;
	ELSE /* Flow-Status = ENABLED or DISABLED */
	Max_DR_UL:= bw;
	Max_DR_DL:= bw;
	ENDIF;
	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,
	RS-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 RR-Bandwidth is not present THEN
	Max_DR_UL:= 0.05 * Max-Requested-Bandwidth ;
	Max_DR_DL:= 0.05 * Max-Requested-Bandwidth ;
	ENDIF;
	ELSE
	Max_DR_UL:= as set by the operator;
	Max_DR_DL:= as set by the operator;
	ENDIF;
	ENDIF;
	ENDIF;
	
	/* MAX-Requested-Bandwidth-UL and MAX-Requested-Bandwidth-DL take precedence*/
	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;

	ENDIF
	
	ENDIF;

Maximum Authorized QoS Class [MaxClass] per flow identifier (see notes 1, 2 and 3)	IF AF-Application-Identifier AVP demands application specific QoS Class handling THEN
	MaxClass:= as defined by application specific algorithm;
	ELSE
	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 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 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]. If AVPs are omitted within a Media-Component-Description AVP or Media-Sub-Component AVP of the service information, the corresponding information from previous 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.

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	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;

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 [7]) */

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CHANGE REQUEST

⌘ **29.209** **CR** **003** ⌘ **rev** **1** ⌘ Current version: **6.0.0** ⌘

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

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

Title:	⌘	Smaller corrections to avoid misinterpretations
Source:	⌘	Siemens
Work item code:	⌘	QoS1
Date:	⌘	27/09/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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

Use one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change: ⌘

1. (5.1.4) Bearer Actions the PDF needs to take at session modification are not mentioned. Unnecessary to supply Access-Network-Charging-Identifier(s) several times.
2. (5.1.6) Revoke authorization needs to consider case where several AF sessions use same PDP context, but this is detailed in TS 29.207
3. (5.2.2) According to message description, RAR is optional.
4. (5.2.3) Inhomogenous description: Sending of Diameter answer message mentioned only here. No need to describe this, as sending of answers is mandated by Diameter.
5. (5.3.1) The PDF does not pass service information, but receives it.
6. (6.3.7) According to TS 29.208, ASR is only used when ALL bearer resources for the authorized session are no longer available
7. (6.5.3) Word “may” could be understood as normative. In fact, conditions for sending of the Access-Network-Charging-Identifier AVP are detailed elsewhere and sending is not optional.
8. (6.5.12) Meaning of “Removed” Value of Flow status AVP is unclear. According to TS 29.208, this is used when media component is removed (port 0 in SDP)
9. (6.5.14) Description of Gq Specific action is confusing.While parts applying to AAR are clearly identified, parts intended to apply to RAR only may be understood to apply in general.

Summary of change: ⌘

1. (5.1.4) The PDF shall enforce bearer modifications as detailed in TS 29.207. Access-Network-Charging-Address is only required to be sent, if not yet supplied earlier to the AF.
2. (5.1.6) Reference to details in TS 29.207 is added

		3. (5.2.2) Enhanced wording: The AF does not need to send a new authorization request 4. (5.2.4) Diameter answer message no longer mentioned. 5. (5.3.1) word “passes” replaced by “receives” 6. (6.3.7) word “all” added. 7. (6.5.3) descriptive wording is used with term “can be”. 8. (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. 9. (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			
		Y	**N**		
Other specs affected:	⌘		**X**	Other core specifications	⌘
			X	Test specifications	
			X	O&M 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 a 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 AF does not need to send a new authorization request back to the PDF when receiving a Re-Auth-Request message with a request for the service information ~~of session description request does not trigger the sending of a new authorization request back to the PDF~~. 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. 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~~.

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 all bearer resources for the authorized session ~~are no longer~~have become unavailable.

Message Format:

```
<AS-Request>  ::= < Diameter Header: 274, REQ, PXY >
                   < Session-Id >
                  { Origin-Host }
                  { Origin-Realm }
                  { Destination-Realm }
                  { Destination-Host }
                  { Auth-Application-Id }
                  { Abort-Cause }
                  [ Origin-State-Id ]
                 *[ Proxy-Info ]
                 *[ Route-Record ]
                  [ AVP ]
```

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 be~~can 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.

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)

This value shall be used to remove all associated IP flow(s). 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, t~~T~~his 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~~T~~his 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)

Within a RAR, t~~T~~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~~T~~his 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.

3GPP TSG-CN WG3 Meeting #33bis ***Tdoc ⌘N3-040679***

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

CR-Form-v7.1

CHANGE REQUEST

⌘ **29.209** **CR** **002** ⌘ **rev** **1** ⌘ Current version: **6.0.0** ⌘

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

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

Title:	⌘	Flow grouping AVPs in modified service information
Source:	⌘	Siemens
Work item code:	⌘	QoS1
Date:	⌘	27/09/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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

Use one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	It is unclear if Flow Grouping AVP needs to be provided in subsequent service information if provided earlier. Go procedures do not describe an enforcement of a more restrictive flow grouping provided during a session modification.
Summary of change:	⌘	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. Rules for the meaning of Flow Grouping AVPs in subsequent service information are also provided. 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 not approved:	⌘	Unclear semantics of flow grouping AVP in modified session information.

Clauses affected:	⌘	6.5.9

Other specs affected: ⌘	Y	N		⌘
		X	Other core specifications	
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

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.

A Flow-Grouping AVP containing no Flows AVP may be used to invalidate flow grouping information provided in 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 ::= < AVP Header: x >
~~1*{~~ *[Flows ~~}~~]

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

CR-Form-v7.1

CHANGE REQUEST

⌘ **29.209** **CR** **001** ⌘**rev** **1** ⌘ Current version: **6.0.0** ⌘

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

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

Title:	⌘	Semantics of updated Flow-Description AVP(s)
Source:	⌘	Siemens
Work item code:	⌘	QoS1
Date:	⌘	27/09/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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

Use one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	Unclear if new Flow Description AVP(s) within a media-subcomponent replace old flow description AVP(s) or are added.
Summary of change:	⌘	New Flow Description AVP(s) within a media-subcomponent replace old flow decription AVP(s).
Consequences if not approved:	⌘	Ambiguous semantics of Flow-Description AVP(s)

Clauses affected:	⌘	6.5.20

Other specs affected: ⌘	Y	N		⌘
		X	Other core specifications	
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

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:

```
Media-Sub-Component ::= < AVP Header: ?>
                          { Flow-Number }      ; Ordinal number of the IP flow
                        10*2[ Flow-Description ]        ; UL and/or DL
                          [ Flow-Status ]
                          [ Max-Requested-Bandwidth-UL ]
                          [ Max-Requested-Bandwidth-DL ]
```

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

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CR-Form-v7.1

CHANGE REQUEST

⌘ **29.209** **CR** **010** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

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

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

Title:	⌘	Modifications to Gq protocol to make it more generic
Source:	⌘	Ericsson
Work item code:	⌘	QoS1
Date:	⌘	18/11/2004
Category:	⌘	**D**
Release:	⌘	Rel-6

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

Use one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

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:	⌘	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

	Y	N		
Other specs affected: ⌘		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 http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

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

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

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 ~~PDF cannot authorize the bearer with the~~ service information provided by the AF is invalid or insufficient 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 6.5.8~~6~~ 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).

Table 6.5.1: Gq specific Diameter AVPs

Attribute Name	AVP Code	Clause defined	Value Type (note 2)	AVP Flag rules (note 1)				May Encr.
				Must	May	Should not	Must not	
Abort-Cause	500	6.5.1	Enumerated	M,V	P			Y
Access-Network-Charging-Address	501	6.5.2	Address	M,V	P			Y
Access-Network-Charging-Identifier	502	6.5.3	Grouped	M,V	P			Y
Access-Network-Charging-Identifier-Value	503	6.5.4	OctetString	M,V	P			Y
AF-Application-Identifier	504	6.5.5	OctetString	M,V	P			Y
AF-Charging-Identifier	505	6.5.6	OctetString	M,V	P			Y
Authorization-Token	506	6.5.7	OctetString	M,V	P			Y
Flow-Description	507	6.5.8	IPFilterRule	M,V	P			Y
Flow-Grouping	508	6.5.9	Grouped	M,V	P			Y
Flow-Number	509	6.5.10	Unsigned32	M,V	P			Y
Flows	510	6.5.11	Grouped	M,V	P			Y
Flow-Status	511	6.5.12	Enumerated	M,V	P			Y
Flow-Usage	512	6.5.13	Enumerated	M,V	P			Y
~~Gq-~~Specific-Action	513	6.5.14	Enumerated	M,V	P			Y
Max-Requested-Bandwidth	514	6.5.15	Unsigned32	M,V	P			Y
Max-Requested-Bandwidth-DL	515	6.5.16	Unsigned32	M,V	P			Y
Max-Requested-Bandwidth-UL	516	6.5.17	Unsigned32	M,V	P			Y
Media-Component-Description	517	6.5.18	Grouped	M,V	P			Y
Media-Component-Number	518	6.5.19	Unsigned32	M,V	P			Y
Media-Sub-Component AVP	519	6.5.20	Grouped	M,V	P			Y
Media-Type	520	6.5.21	Enumerated	M,V	P			Y
RR-Bandwidth	521	6.5.22	Unsigned32	M,V	P			Y
RS-Bandwidth	522	6.5.23	Unsigned32	M,V	P			Y
SIP-Forking-Indication	523	6.5.24	Enumerated	M,V	P			Y

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

6.5.1 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:

BEARER~~PDP_CONTEXT~~_RELEASED (0)

This value is used~~ ~~when the ~~PDP context~~bearer has been deactivated as a result from normal ~~PDP context~~ signalling handling. For GPRS the bearer refers to the PDP Context.

INSUFFICIENT_~~PDF~~SERVER_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 bearer~~PDP context~~ has been deactivated due to insufficient bearer resources at a transport gateway (e.g. GGSN for GPRS). ~~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 t~~This 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 ~~PDF~~server.

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 ~~PDF~~ server at the bearer ~~authorization~~ events and to limit the contact ~~at bearer authorization~~ to such bearer ~~authorization~~ events where ~~this~~ specific 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 ~~PDF~~ server requests the service information from the AF for the bearer ~~authorization~~event. In the AAR, this value indicates that the AF requests the ~~PDF~~ server to demand service information at each bearer ~~authorization~~ authorization.

CHARGING_CORRELATION_EXCHANGE (1)

This value shall be used when the ~~PDF~~ server reports the access network charging identifier to the AF. The ~~PDF 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 ~~PDF~~ server to provide an access network charging identifier to the AF at each bearer ~~authorization~~establishment/modification, when a new access network charging identifier becomes available.

INDICATION_OF_LOSS_OF_BEARER (2)

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

INDICATION_OF_RECOVERY_OF_BEARER (3)

This value shall be used when the ~~PDF~~ server reports a recovery of a bearer (e.g. in the case of GPRS, 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~~server to provide a notification at the recovery of a bearer.

INDICATION_OF_RELEASE_OF_BEARER (4)

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