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ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
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Contents

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

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1 Scope

The present document lists the 3GPP specific Diameter protocol codes, including the AVP codes and Experimental result codes.

This document lists also the application identifiers assigned to 3GPP specific Diameter applications by IANA and the Diameter command code range which is assigned to 3GPP by IANA.

2 References

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

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

[1] 3GPP TS 29.228: "IP Multimedia (IM) Subsystem Cx and Dx interfaces; Signalling flows and message contents".

[2] 3GPP TS 29.229: "Cx and Dx interfaces based on the Diameter protocol; Protocol details".

[3] 3GPP TS 29.328: "IP Multimedia (IM) Subsystem Sh interface; Signalling flows and message contents".

[4] 3GPP TS 29.329: "Sh Interface based on the Diameter protocol; Protocol details".

[5] 3GPP TS 32.299: "3GPP Diameter charging application".

[6] 3GPP TS 29.234: "3GPP System to WLAN Interworking; Stage 3 Description".

[7] 3GPP TS 29.109: "Generic Authentication Architecture (GAA); Zh and Zn Interfaces based on the Diameter protocol; Protocol details".

[8] 3GPP TS 29.209: "Technical Specification Group Core Network; Policy control over Gq interface".

[9] IETF RFC 3588: "Diameter Base Protocol".

[10] IETF RFC 3589: "Diameter Command Codes for Third Generation Partnership Project (3GPP) Release 5".

[11] IANA"s Enterprise-Numbers: http://www.iana.org/assignments/enterprise-numbers

[12] IANA"s AAA parameters register: ftp://ftp.iana.org/assignments/aaa-parameters/

[13] 3GPP TS 29.061: "Interworking between the Public Land Mobile Network (PLMN) supporting packet based services and Packet Data Networks (PDN)".

[14] 3GPP TS 32.296: "Telecommunication management; Online Charging System (OCS): Applications and interfaces;".

[15] 3GPP TS 29.210: "Charging rule provisioning over Gx interface".

[16] 3GPP TS 29.140 Release 6: "Multimedia Messaging Service (MMS); MM10 interface based on Diameter protocol".

[17] 3GPP TS 29.211: "Rx Interface and Rx/Gx signalling flows".

[18] 3GPP TS 29.214: "Policy and Charging Control over Rx reference point".

[19] 3GPP TS 29.212: "Policy and Charging Control over Gx reference point".

[20] 3GPP TS 29.273: "Evolved Packet System (EPS); 3GPP EPS AAA interfaces".

[21] 3GPP TS 29.272: "MME and SGSN Related Interfaces Based on Diameter Protocol".

[22] 3GPP TS 29.215: "Policy and Charging Control (PCC) over S9 reference point".

[23] IETF RFC 5516: "Diameter Command Code Registration for Third Generation Partnership Project (3GPP) Evolved Packet System (EPS)".

[24] 3GPP TS 29.172: "Location Services; EPC LCS Protocol (ELP) between the GMLC and the MME; SLg interface".

[25] 3GPP TS 29.173: "Location Services; Diameter-based SLh interface for Control Plane LCS".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply.

3GPP specific: A definition which is used in conjunction with the 3GPP"s vendor identifier.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AVP	Attribute-Value-Pair
CR	Change Request
IANA	Internet Assigned Numbers Authority
IETF	Internet Engineering Task Force
LS	Liaison Statement

4 Application identifiers

The Diameter applications are identified with the application identifiers as specified in the RFC 3588 [9]. There are two kind of applications: IETF standards track applications and vendor specific applications. All application identifiers are assigned by IANA [12]. This chapter lists the application identifiers assigned by IANA to all 3GPP Diameter applications.

The application identifiers are transferred in Diameter command"s header in the Application-ID field.

4.1 3GPP specific application identifiers

The 3GPP specific application identifiers allocated by IANA are listed in the following table.

Table 4.1: 3GPP specific application identifiers

Application identifier	Application	3GPP TS
16777216	3GPP Cx/Px	29.228 [1] and 29.229 [2]
16777217	3GPP Sh/Ph	29.328 [3] and 29.329 [4]
16777218	3GPP Re	32.296 [14]
16777219	3GPP Wx	29.234 [6]
16777220	3GPP Zn	29.109 [7]
16777221	3GPP Zh	29.109 [7]
16777222	3GPP Gq	29.209 [8]
16777223	3GPP Gmb	29.061 [13]
16777224	3GPP Gx	29.210 [15]
16777225	3GPP Gx over Gy	29.210 [15]
16777226	3GPP MM10	29.140 [16]
16777229	3GPP Rx	29.211 [17]
16777230	3GPP Pr	29.234 [6]
16777236	3GPP Rx	29.214 [18]
16777238	3GPP Gx	29.212 [19]
16777250	3GPP STa	29.273 [20]
16777251	3GPP S6a	29.272 [21]
16777252	3GPP S13/S13"	29.272 [21]
16777255	3GPP SLg	29.172 [24]
16777264	3GPP SWm	29.273 [20]
16777265	3GPP SWx	29.273 [20]
16777266	3GPP Gxx	29.212 [19]
16777267	3GPP S9	29.215 [22]
16777268	3GPP Zpn	29.109 [7]
16777272	3GPP S6b	29.273 [20]
16777291	3GPP SLh	29.173 [25]
16777292	3GPP SGmb	29.061 [13]

5 Command codes

The command codes are used for communicating the command associated with the Diameter message. The command code is carried in the Diameter header"s Command-Code field. The command codes can be divided into standard command codes allocated by IANA and experimental command codes for testing purposes only.

5.1 Command codes allocated for 3GPP

Based on the IETF RFC 3589 [10] the IANA has allocated a standard command code range 300 - 313 for 3GPP. The command codes are presented in the following table.

Table 5.1/1: Command code values allocated for 3GPP

Command code value	Command name	Abbreviation	Specified in 3GPP TS
300	User-Authorization-Request/-Answer	UAR/UAA	29.229 [2]
301	Server-Assignment-Request/-Answer	SAR/SAA	
302	Location-Info-Request/-Answer	LIR/LIA	
303	Multimedia-Auth-Request/-Answer	MAR/MAA	
304	Registration-Termination-Request/-Answer	RTR/RTA	
305	Push-Profile-Request/-Answer	PPR/PPA	
306	User-Data-Request/-Answer	UDR/UDA	29.329 [4]
307	Profile-Update-Request/-Answer	PUR/PUA	
308	Subscribe-Notifications-Request/-Answer	SNR/SNA	
309	Push-Notification-Request/-Answer	PNR/PNA	
310	Boostrapping-Info-Request/Answer	BIR/BIA	29.109 [7]
311	Message-Process-Request/Answer	MPR/MPA	29.140 [16]
312	GBAPush-Info-Request/Answer	GPR/GPI	29.109 [7]

Editor's Note: The following command codes have been allocated to 3GPP, but they have not been used yet.

Table 5.1/2: Command codes allocated for 3GPP

Command code value	Command name	Abbreviation	Specified in 3GPP TS
313			

As defined in the IETF RFC 5516 [23]. IANA has allocated the following command code values for the S6a/S6d interface application and S13/S13" interface application.

Table 5.1/3: SAE related Standard Command code valuess allocated for 3GPP

Command code value	Command name	Abbreviation	Specified in 3GPP TS
316	Update-Location-Request/Answer	ULR/ULA	29.272 [21]
317	Cancel-Location-Request/Answer	CLR/CLA	
318	Authentication- Information - Request/Answer	AIR/AIA	
319	Insert Subscriber Data-Request/Answer	IDR/IDA	
320	Delete-Subscriber-Data-Request/Answer	DSR/DSA	
321	Purge-UE-Request/Answer	PUR/PUA	
322	Reset-Request/Answer	RSR/RSA	
323	Notify-Request/Answer	NOR/NOA	
324	ME-Identity-Check-Request/Answer	ECR/ECA	

Besides the standard command code values allocated for 3GPP, IANA has allocated the following vendor-specific command code values for 3GPP vendor-specific Diameter applications:

Table 5.1/4: Vendor-specific command codes allocated for 3GPP

Command code value	Command name	Abbreviation	Specified in 3GPP TS
8388620	Provide-Location-Request/Answer	PLR/PLA	29.172 [24]
8388621	Location-Report-Request/Answer	LRR/LRA	
8388622	LCS-Routing-Info-Request/Answer	RIR/RIA	29.173 [25]

6 Vendor identifier

The vendor identifier (also known as Enterprise number) indicates the vendor specific attributes, result codes and application identifiers in Diameter commands. The vendor identifier is used in the Vendor-ID field of the AVP header and in the Vendor-Id AVP. The Vendor-Id AVP is used to identify the vendor in the Vendor-Specific-Application-Id and Experimental-Result-Code grouped AVPs.

6.1 3GPP"s vendor identifier

The IANA has allocated a vendor identifier value 10415 for 3GPP [11].

7 Attribute-Value-Pair codes

The AVP codes are used together with the vendor identifier to identify each attribute uniquely. There are multiple AVP namespaces. The IETF IANA namespace, that is, the AVPs with vendor identifier zero or without vendor identifier, is controlled by IANA. Each vendor controls the AVP codes within their AVP namespaces.

7.1 3GPP specific AVP codes

The 3GPP specific AVPs have the Vendor-Specific bit ('V' bit) set in the AVP header and they carry the 3GPP"s vendor identifier in the Vendor-ID field of the AVP header. The 3GPP specific AVP codes are presented in the following table.

Table 7.1: 3GPP specific AVP codes

AVP Code	Attribute Name	Data Type	Specified in the 3GPP TS
100	3GPP-WLAN-APN-Id	OctetString	29.234 [6]
101	3GPP-WLAN-QoS-Filter-Rule	UTF8String	
102	3GPP-WLAN-QoS-Filter-Support	OctetString	
Note: The AVP codes from 1 to 255 are reserved for backwards compatibility with 3GPP RADIUS Vendor Specific Attributes (See TS 29.061 [13] and TS 29.234 [6])			
Note: The AVP codes from 256 to 299 are reserved for future use.			
300	Authentication-Method	Enumerated	29.234 [6]
301	Authentication-Information-SIM	OctetString	
302	Authorization -Information-SIM	OctetString	
303	WLAN-User-Data	Grouped	
304	Charging-Data	Grouped	
305	WLAN-Access	Enumerated	
306	WLAN- 3GPP-IP-Access	Enumerated	
307	APN-Authorized	Grouped	
308	APN-Id		
309	APN-Barring-Type	Enumerated	
310	WLAN-Direct-IP-Access	Enumerated	
311	Session-Request-Type	Enumerated	
312	Routing-Policy	IPFilterRule	
313	Max-Requested-Bandwidth	OctetString	
314	Charging-Characteristics	Integer	
315	Charging-Nodes	Grouped	
316	Primary-OCS-Charging-Function-Name	DiameterIdentity	
317	Secondary-OCS-Charging-Function-Name	DiameterIdentity	
318	3GPP-AAA-Server-Name	DiameterIdentity	
319	Maximum-Number-Accesses	Unsigned32	
Note: The AVP codes from 320 to 399 are reserved for TS 29.234			
400	GBA-UserSecSettings	OctetString	29.109 [7]
401	Transaction-Identifier	OctetString	
402	NAF-Hostname	OctetString	
403	GAA-Service-Identifier	OctetString	
404	Key-ExpiryTime	Time	
405	ME-Key-Material	OctetString	
406	UICC-Key-Material	OctetString	
407	GBA_U-Awareness-Indicator	Enumerated	
408	BootstrapInfoCreationTime	Time	
409	GUSS-Timestamp	Time	
410	GBA-Type	Enumerated	
411	UE-Id	OctetString	
412	UE-Id-Type	Enumerated	
413	UICC-App-Label	OctetString	
414	UICC-ME	Enumerated	
415	Requested-Key-Lifetime	Time	
416	Private-Identity-Request	Enumerated	
417	GBA-Push-Info	OctetString	
418	NAF-SA-Identifier	OctetString	
419	Security-Feature-Request	OctetString	
420	Security-Feature-Response	OctetString	
Note: The AVP codes from 421 to 499 are reserved for TS 29.109			
500	Abort-Cause	Enumerated	29.209 [8], 29.211 [17] , 29.214 [18]
501	Access-Network-Charging-Address	Address	
502	Access-Network-Charging-Identifier	Grouped	
503	Access-Network-Charging-Identifier-Value	OctetString	
504	AF-Application-Identifier	OctetString	
505	AF-Charging-Identifier	OctetString	
506	Authorization-Token	OctetString	
507	Flow-Description	IPFilterRule	
508	Flow-Grouping	Grouped	

509	Flow-Number	Unsigned32	
510	Flows	Grouped	
511	Flow-Status	Enumerated	
512	Flow-Usage	Enumerated	
513	Specific-Action	Enumerated	
514	Max-Requested-Bandwidth	Unsigned32	
515	Max-Requested-Bandwidth-DL	Unsigned32	
516	Max-Requested-Bandwidth-UL	Unsigned32	
517	Media-Component-Description	Grouped	
518	Media-Component-Number	Unsigned32	
519	Media-Sub-Component AVP	Grouped	
520	Media-Type	Enumerated	
521	RR-Bandwidth	Unsigned32	
522	RS-Bandwidth	Unsigned32	
523	SIP-Forking-Indication	Enumerated	
524	Codec-Data	OctetString	
525	Service-URN	OctetString	
526	Acceptable-Service-Info	Grouped	
527	Service-Info-Status	Enumerated	
528	MPS-Identifier	OctetString	
529	AF-Signalling-Protocol	Enumerated	
530	Sponsored-Connectivity-Data	Grouped	
531	Sponsor-Identity	OctetString	
532	Application-Service-Provider-Identity	OctetString	
Note: The AVP codes from 533 to 599 are reserved for TS 29.209, TS 29.211 and TS 29.214			
600	Visited-Network-Identifier	OctetString	29.229 [2]
601	Public-Identity	UTF8String	
602	Server-Name	UTF8String	
603	Server-Capabilities	Grouped	
604	Mandatory-Capability	Unsigned32	
605	Optional-Capability	Unsigned32	
606	User-Data	OctetString	
607	SIP-Number-Auth-Items	Unsigned32	
608	SIP-Authentication-Scheme	UTF8String	
609	SIP-Authenticate	OctetString	
610	SIP-Authorization	OctetString	
611	SIP-Authentication-Context	OctetString	
612	SIP-Auth-Data-Item	Grouped	
613	SIP-Item-Number	Unsigned32	
614	Server-Assignment-Type	Enumerated	
615	Deregistration-Reason	Grouped	
616	Reason-Code	Enumerated	
617	Reason-Info	UTF8String	
618	Charging-Information	Grouped	
619	Primary-Event-Charging-Function-Name	DiameterURI	
620	Secondary-Event-Charging-Function-Name	DiameterURI	
621	Primary-Charging-Collection-Function-Name	DiameterURI	
622	Secondary-Charging-Collection-Function-Name	DiameterURI	
623	User-Authorization-Type	Enumerated	
624	User-Data-Already-Available	Enumerated	
625	Confidentiality-Key	OctetString	
626	Integrity-Key	OctetString	
627	User-Data-Request-Type	Enumerated	
628	Supported-Features	Grouped	
629	Feature-List-ID	Unsigned32	
630	Feature-List	Unsigned32	
631	Supported-Applications	Grouped	
632	Associated-Identities	Grouped	
633	Originating-Request	Enumerated	
634	Wildcarded-Public-Identity	UTF8String	
635	SIP-Digest-Authenticate	Grouped	
636	Wildcarded-IMPU	UTF8String	
637	UAR-Flags	Unsigned32	
638	Loose-Route-Indication	Enumerated	
639	SCSCF-Restoration-Info	Grouped	

640	Path	OctetString	
641	Contact	OctetString	
642	Subscription-Info	Grouped	
643	Call-ID-SIP-Header	OctetString	
644	From-SIP-Header	OctetString	
645	To-SIP-Header	OctetString	
646	Record-Route	OctetString	
647	Associated-Registered-Identities	Grouped	
648	Multiple-Registration-Indication	Enumerated	
649	Restoration-Info	Grouped	
650	Session-Priority	Enumerated	
651	Identity-with-Emergency-Registration	Grouped	
652	Priviledged-Sender-Indication	Enumerated	
Note: The AVP codes from 653 to 699 are reserved for TS 29.229.			
700	User-Identity	Grouped	29.329 [4]
701	MSISDN	OctetString	
702	User-Data	OctetString	
703	Data-Reference	Enumerated	
704	Service-Indication	OctetString	
705	Subs-Req-Type	Enumerated	
706	Requested-Domain	Enumerated	
707	Current-Location	Enumerated	
708	Identity-Set	Enumerated	
709	Expiry-Time	Time	
710	Send-Data-Indication	Enumerated	
711	DSAI-Tag	OctetString	
712	One-Time-Notification	Enumerated	
713	Requested-Nodes	Unsigned32	
714	Serving-Node-Indication	Enumerated	
715	Repository-Data-ID	Grouped	
716	Sequence-Number	Unsigned32	
717	Pre-paging-Supported	Enumerated	
Note: The AVP codes from 718 to799 are reserved for TS 29.329.			
Note: The AVP codes from 800 to 822 are reserved for TS 32.299.			
823	Event-Type	Grouped	32.299 [5]
824	SIP-Method	UTF8String	
825	Event	UTF8String	
826	Content-Type	UTF8String	
827	Content-Length	Unsigned32	
828	Content-Disposition	UTF8String	
829	Role-of-Node	Enumerated	
830	User-Session-Id	UTF8String	
831	Calling-Party-Address	UTF8String	
832	Called-Party-Address	UTF8String	
833	Time-Stamps	Grouped	
834	SIP-Request-Timestamp	Time	
835	SIP-Response-Timestamp	Time	
836	Application-Server	UTF8String	
837	Application-provided-called-party-address	UTF8String	
838	Inter-Operator-Identifier	Grouped	
839	Originating-IOI	UTF8String	
840	Terminating-IOI	UTF8String	
841	IMS-Charging-Identifier	UTF8String	
842	SDP-Session-Description	UTF8String	
843	SDP-Media-Component	Grouped	
844	SDP-Media-Name	UTF8String	
845	SDP-Media-Description	UTF8String	
846	CG-Address	Address	
847	GGSN-Address	Address	
848	Served-Party-IP-Address	Address	
849	Authorized-QoS	UTF8String	
850	Application-Server-Information	Grouped	
851	Trunk-Group-Id	Grouped	
852	Incoming-Trunk-Group-Id	UTF8String	
853	Outgoing-Trunk-Group-Id	UTF8String	

854	Bearer-Service	OctetString	
855	Service-Id	UTF8String	
856	Associated-URI	UTF8String	
857	Charged-Party	UTF8String	
858	PoC-Controlling-Address	UTF8String	
859	PoC-Group-Name	UTF8String	
860	Cause	Grouped	
861	Cause-Code	Integer32	
862	Node-Functionality	Enumerated	
863	Service-Specific-Data	UTF8String	
864	Originator	Enumerated	
865	PS-Furnish-Charging-Information	Grouped	
866	PS-Free-Format-Data	OctetString	
867	PS-Append-Free-Format-Data	Enumerated	
868	Time-Quota-Threshold	Unsigned32	
869	Volume-Quota-Threshold	Unsigned32	
870	Trigger-Type	Enumerated	
871	Quota-Holding-Time	Unsigned32	
872	Reporting-Reason	Enumerated	
873	Service-Information	Grouped	
874	PS-Information	Grouped	
875	WLAN-Information	Grouped	
876	IMS-Information	Grouped	
877	MMS-Information	Grouped	
878	LCS-Information	Grouped	
879	PoC-Information	Grouped	
880	MBMS-Information	Grouped	
881	Quota-Consumption-Time	Unsigned32	
882	Media-Initiator-Flag	Enumerated	
883	PoC-Server-Role	Enumerated	
884	PoC-Session-Type	Enumerated	
885	Number-Of-Participants	Unsigned32	
886	Originator-Address	Grouped	
887	Participants-Involved	UTF8String	
888	Expires	Unsigned32	
889	Message-Body	Grouped	
890	WAG-Address	Address	
891	WAG-PLMN-Id	OctetString	
892	WLAN-Radio-Container	Grouped	
893	WLAN-Technology	Unsigned32	
894	WLAN-UE-Local-IPAddress	Address	
895	PDG-Address	Address	
896	PDG-Charging-Id	Unsigned32	
897	Address-Data	UTF8String	
898	Address-Domain	Grouped	
899	Address-Type	Enumerated	
900	TMGI	OctectString	
901	Required-MBMS-Bearer-Capabilities	UTF8String	
902	MBMS-StartStop-Indication	Enumerated	
903	MBMS-Service-Area	OctectString	
904	MBMS-Session-Duration	Unsigned32	
905	Alternative-APN	UTF8String	
906	MBMS-Service-Type	Enumerated	
907	MBMS-2G-3G-Indicator	Enumerated	
908	MBMS-Session-Identity	OctetString	29.061 [13]
909	RAI	UTF8String	
910	Additional-MBMS-Trace-Info	OctetString	
911	MBMS-Time-To-Data-Transfer	Unsigned32	
912	MBMS-Session-Identity-Repetition-Number	Unsigned32	
913	MBMS-Required-QoS	UTF8String	
914	MBMS-Counting-Information	Enumerated	
915	MBMS-User-Data-Mode-Indication	Enumerated	
916	MBMS-GGSN-Address	UTF8String	
917	MBMS-GGSN-IPv6-Address	UTF8String	

918	MBMS-BMSC-SSM-IP-Address	UTF8String	
919	MBMS-BMSC-SSM-IPv6-Address	UTF8String	
920	MBMS-Flow-Identifier	OctetString	
921	CN-IP-Multicast-Distribution	Enumerated	
922	MBMS-HC-Indicator	Enumerated	
923	MBMS-Access-Indicator	Enumerated	
924	MBMS-GW-SSM-IP-Address	OctetString	
925	MBMS-GW-SSM-IPv6-Address	OctetString	
926	MBMS-BMSC-SSM-UDP-Port	OctetString	
927	MBMS-GW-UDP-Port	OctetString	
928	MBMS-GW-UDP-Port-Indicator	Enumerated	
Note: The AVP codes from 929 to 999 are reserved for TS 29.061			
1000	Bearer-Usage	Enumerated	29.212 [19]
1001	Charging-Rule-Install	Grouped	
1002	Charging-Rule-Remove	Grouped	
1003	Charging-Rule-Definition	Grouped	
1004	Charging-Rule-Base-Name	UTF8String	
1005	Charging-Rule-Name	OctetString	
1006	Event-Trigger	Enumerated	
1007	Metering-Method	Enumerated	
1008	Offline	Enumerated	
1009	Online	Enumerated	
1010	Precedence	Unsigned32	
1011	Reporting-Level	Enumerated	
1012	TFT-Filter	IPFilterRule	
1013	TFT-Packet-Filter-Information	Grouped	
1014	ToS-Traffic-Class	OctetString	
1016	QoS-Information	Grouped	
1018	Charging-Rule-Report	Grouped	
1019	PCC-Rule-Status	Enumerated	
1020	Bearer-Identifier	OctetString	
1021	Bearer-Operation	Enumerated	
1022	Access-Network-Charging-Identifier-Gx	Grouped	
1023	Bearer-Control-Mode	Enumerated	
1024	Network-Request-Support	Enumerated	
1025	Guaranteed-Bitrate-DL	Unsigned32	
1026	Guaranteed-Bitrate-UL	Unsigned32	
1027	IP-CAN-Type	Enumerated	
1028	QoS-Class-Identifier	Enumerated	
1029	QoS-Negotiation	Enumerated	
1030	QoS-Upgrade	Enumerated	
1031	Rule-Failure-Code	Enumerated	
1032	RAT-Type	Enumerated	
1033	Event-Report-Indication	Grouped	
1034	Allocation-Retention-Priority	Grouped	
1035	CoA-IP-Address	Address	
1036	Tunnel-Header-Filter	IPFilterRule	
1037	Tunnel-Header-Length	Unsigned32	
1038	Tunnel-Information	Grouped	
1039	CoA-Information	Grouped	
1040	APN-Aggregate-Max-Bitrate-DL	Unsigned32	
1041	APN-Aggregate-Max-Bitrate-UL	Unsigned32	
1042	Revalidation-Time	Time	
1043	Rule-Activation-Time	Time	
1044	Rule-DeActivation-Time	Time	
1045	Session-Release-Cause	Enumerated	
1046	Priority-Level	Unsigned32	
1047	Pre-emption-Capability	Enumerated	
1048	Pre-emption-Vulnerability	Enumerated	
1049	Default-EPS-Bearer-QoS	Grouped	
1050	AN-GW-Address	Address	
1051	QoS-Rule-Install	Grouped	
1052	QoS-Rule-Remove	Grouped	
1053	QoS-Rule-Definition	Grouped	
1054	QoS-Rule-Name	OctetString	

1055	QoS-Rule-Report	Grouped	
1056	Security-Parameter-Index	OctetString	
1057	Flow-Label	OctetString	
1058	Flow-Information	Grouped	
1059	Packet-Filter-Content	IPFilterRule	
1060	Packet-Filter-Identifier	OctetString	
1061	Packet-Filter-Information	Grouped	
1062	Packet-Filter-Operation	Enumerated	
1063	Resource-Allocation-Notification	Enumerated	
1064	Session-Linking-Indicator	Enumerated	
1065	PDN-Connection-ID	OctetString	
1066	Monitoring-Key	OctetString	
1067	Usage-Monitoring-Information	Grouped	
1068	Usage-Monitoring-Level	Enumerated	
1069	Usage-Monitoring-Report	Enumerated	
1070	Usage-Monitoring-Support	Enumerated	
1071	CSG-Information-Reporting	Enumerated	
1072	Packet-Filter-Usage	Enumerated	
1073	Charging-Correlation-Indicator	Enumerated	
1074	QoS-Rule-Base-Name	UTF8String	
1075	Routing-Rule-Remove	Grouped	
1076	Routing-Rule-Definition	Grouped	
1077	Routing-Rule-Identifier	OctetString	
1078	Routing-Filter	Grouped	
1079	Routing-IP-Address	Address	
1080	Flow-Direction	Enumerated	
1081	Routing-Rule-Install	Grouped	
Note: The AVP codes from 1082 to 1099 are reserved for TS 29.212			
1100	Served-User-Identity	Groupe	
1101	VASP-ID	UTF8Str	
1102	VAS-ID	UTF8String	
1103	Trigger-Event	Enumerated	
1104	Sender-Address	UTF8String	
1105	Initial-Recipient-Address	Grouped	
1106	Result-Recipient-Address	Grouped	
1107	Sequence-Number	Unsigned32	
1108	Recipient-Address	UTF8String	
1109	Routeing-Address	UTF8String	29.140 [16]
1110	Originating-Interface	Enumerated	
1111	Delivery-Report	Enumerated	
1112	Read-Reply	Enumerated	
1113	Sender-Visibility	Enumerated	
1114	Service-Key	UTF8String	
1115	Billing-Information	UTF8String	
1116	Status	Grouped	
1117	Status-Code	UTF8String	
1118	Status-Text	UTF8String	
Note: The AVP codes from 1119 to 1199 are reserved for TS 29.140			
1200	Domain-Name	UTF8String	
1201	Recipient-Address	Grouped	
1202	Submission-Time	Time	
1203	MM-Content-Type	Grouped	
1204	Type-Number	Enumerated	
1205	Additional-Type-Information	UTF8String	
1206	Content-Size	Unsigned32	
1207	Additional-Content-Information	Grouped	
1208	Addressee-Type	Enumerated	32.299 [5]
1209	Priority	Enumerated	
1210	Message-ID	UTF8String	
1211	Message-Type	Enumerated	
1212	Message-Size	Unsigned32	
1213	Message-Class	Grouped	
1214	Class-Identifier	Enumerated	
1215	Token-Text	UTF8String	
1216	Delivery-Report-Requested	Enumerated	

1217	Adaptations	Enumerated	
1218	Applic-ID	UTF8String	
1219	Aux-Applic-Info	UTF8String	
1220	Content-Class	Enumerated	
1221	DRM-Content	Enumerated	
1222	Read-Reply-Report-Requested	Enumerated	
1223	Reply-Applic-ID	UTF8String	
1224	File-Repair-Supported	Enumerated	
1225	MBMS-User-Service-Type	Enumerated	
1226	Unit-Quota-Threshold	Unsigned32	
1227	PDP-Address	Address	
1228	SGSN-Address	Address	
1229	PoC-Session-Id	UTF8String	
1230	Deferred-Location-Even-Type	UTF8String	
1231	LCS-Client-Name	UTF8String	
1232	LCS-Client-Id	Grouped	
1233	LCS-Client-Dialed-By-MS	UTF8String	
1234	LCS-Client-External-ID	UTF8String	
1235	LCS-Client-Name	Grouped	
1236	LCS-Data-Coding-Scheme	UTF8String	
1237	LCS-Format-Indicator	Enumerated	
1238	LCS-Name-String	UTF8String	
1239	LCS-Requestor-Id	Grouped	
1240	LCS-Requestor-Id-String	UTF8String	
1241	LCS-Client-Type	Enumerated	
1242	Location-Estimate	OctetString	
1243	Location-Estimate-Type	Enumerated	
1244	Location-Type	Grouped	
1245	Positioning-Data	UTF8String	
1246	WLAN-Session-Id	UTF8String	
1247	PDP-Context-Type	Enumerated	
1248	MMBox-Storage-Requested	Enumerated	
1249	Service-Specific-Info	Grouped	
1250	Called-Asserted-Identity	UTF8String	
1251	Requested-Party-Address	UTF8String	
1252	PoC-User-Role	Grouped	
1253	PoC-User-Role-IDs	UTF8String	
1254	PoC-User-Role-info-Units	Enumerated	
1255	Talk-Burst-Exchange	Grouped	
1256	Service-Generic-Information	Grouped	
1257	Service-Specific-Type	Unsigned32	
1258	Event-Charging-TimeStamp	Time	
1259	Participant-Access-Priority	Enumerated	
1260	Participant-Group	Grouped	
1261	PoC-Change-Conditions	Enumerated	
1262	PoC-Change-Time	Time	
1263	Access-Network-Information	OctetString	
1264	Trigger	Grouped	
1265	Base-Time-Interval	Unsigned32	
1266	Envelope	Grouped	
1267	Envelope-End-Time	Time	
1268	Envelope-Reporting	Enumerated	
1269	Envelope-Start-Time	Time	
1270	Time-Quota-Mechanism	Grouped	
1271	Time-Quota-Type	Enumerated	
1272	Early-Media-Description	Grouped	
1273	SDP-TimeStamps	Grouped	
1274	SDP-Offer-Timestamp	Time	
1275	SDP-Answer-Timestamp	Time	
1276	AF-Correlation-Information	Grouped	
1277	PoC-Session-Initiation-type	Enumerated	
1278	Offline-Charging	Grouped	
1279	User-Participating-Type	Enumerated	
1280	Alternate-Charged-Party-Address	UTF8String	
1281	IMS-Communication-Service-Identifier	UTF8String	

1282	Number-Of-Received-Talk-Bursts	Unsigned32	
1283	Number-Of-Talk-Bursts	Unsigned32	
1284	Received-Talk-Burst-Time	Unsigned32	
1285	Received-Talk-Burst-Volume	Unsigned32	
1286	Talk-Burst-Time	Unsigned32	
1287	Talk-Burst-Volume	Unsigned32	
1288	Media-Initiator-Party	UTF8String	
Note: The AVP codes from 1289 to 1399 are reserved for TS 32.299			
1400	Subscription-Data	Grouped	
1401	Terminal-Information	Grouped	
1402	IMEI	UTF8String	
1403	Software-Version	UTF8String	
1404	QoS-Subscribed	UTF8String	
1405	ULR-Flags	Unsigned32	
1406	ULA-Flags	Unsigned32	
1407	Visited PLMN Id	OctetString	
1408	Requested-EUTRAN-Authentication-Info	Grouped	
1409	Requested-UTRAN- GERAN-Authentication-Info	Grouped	
1410	Number-Of-Requested-Vectors	Unsigned32	
1411	Re-Synchronization-Info	OctetString	
1412	Immediate-Response-Preferred	Unsigned32	
1413	Authentication-Info	Grouped	
1414	E-UTRAN-Vector	Grouped	
1415	UTRAN-Vector	Grouped	
1416	GERAN-Vector	Grouped	
1417	Network-Access-Mode	Enumerated	
1418	HPLMN-ODB	Enumerated	
1419	Item-Number	Unsigned32	
1420	Cancellation-Type	Enumerated	
1421	DSR-Flags	Unsigned32	
1422	DSA-Flags	Unsigned32	
1423	Context-Identifier	Unsigned32	
1424	Subscriber-Status	Enumerated	
1425	Operator-Determined-Barring	Unsigned32	
1426	Access-Restriction-Data	UTF8String	
1427	APN-OI-Replacement	UTF8String	
1428	All-APN-Configurations-Included-Indicator	Enumerated	29.272 [21]
1429	APN-Configuration-Profile	Grouped	
1430	APN-Configuration	Grouped	
1431	EPS-Subscribed-QoS-Profile	Grouped	
1432	VPLMN-Dynamic-Address-Allowed	Enumerated	
1433	STN-SR	OctetString	
1434	Alert-Reason	Enumerated	
1435	AMBR	Grouped	
1436	CSG-Subscription-Data	Grouped	
1437	CSG-Id	Unsigned32	
1438	PDN-GW-Allocation-Type	Enumerated	
1439	Expiration-Date	Time	
1440	RAT-Frequency-Selection-Priority-ID	Unsigned32	
1441	IDA-Flags	Unsigned32	
1442	PUA-Flags	Unsigned32	
1443	NOR-Flags	Unsigned32	
1444	User-Id	UTF8String	
1445	Equipment-Status	Enumerated	
1446	Regional-Subscription-Zone-Code	OctetString	
1447	RAND	OctetString	
1448	XRES	OctetString	
1449	AUTN	OctetString	
1450	KASME	OctetString	
1451	Reserved	-	
1452	Trace-Collection-Entity	Address	
1453	Kc	OctetString	
1454	SRES	OctetString	
1455	Reserved	-	
1456	PDN-Type	Enumerated	

1457	Roaming-Restricted-Due-To-Unsupported-Feature	Enumerated	
1458	Trace-Data	Grouped	
1459	Trace-Reference	OctetString	
1460	Reserved	-	
1461	Reserved	-	
1462	Trace-Depth	Enumerated	
1463	Trace-NE-Type-List	OctetString	
1464	Trace-Interface-List	OctetString	
1465	Trace-Event-List	OctetString	
1466	OMC-Id	OctetString	
1467	GPRS-Subscription-Data	Grouped	
1468	Complete-Data-List-Included-Indicator	Enumerated	
1469	PDP-Context	Grouped	
1470	PDP-Type	OctetString	
1471	3GPP2-MEID	OctetString	
1472	Specific-APN-Info	Grouped	
1473	LCS-Info	Grouped	
1474	GMLC-Number	OctetString	
1475	LCS-PrivacyException	Grouped	
1476	SS-Code	OctetString	
1477	SS-Status	Grouped	
1478	Notification-To-UE-User	Enumerated	
1479	External-Client	Grouped	
1480	Client-Identity	OctetString	
1481	GMLC-Restriction	Enumerated	
1482	PLMN-Client	Enumerated	
1483	Service-Type	Grouped	
1484	ServiceTypeIdentity	Unsigned32	
1485	MO-LR	Grouped	
1486	Teleservice-List	Grouped	
1487	TS-Code	Enumerated	
1488	Call-Barring-Infor-List	Grouped	
1489	SGSN-Number	OctetString	
1490	IDR-Flags	Unsigned32	
1491	ICS-Indicator	Enumerated	
1492	IMS-Voice-Over-PS-Sessions-Supported	Enumerated	
1493	Homogeneous-Support-of-IMS-Voice-Over-PS-Sessions	Enumerated	
1494	Last-UE-Activity-Time	Time	
1495	EPS-User-State	Grouped	
1496	EPS-Location-Information	Grouped	
1497	MME-User-State	Grouped	
1498	SGSN-User-State	Grouped	
1499	User-State	Enumerated	
1500	Non-3GPP-User-Data	Grouped	
1501	Non-3GPP-IP-Access	Enumerated	
1502	Non-3GPP-IP-Access-APN	Enumerated	
1503	AN-Trusted	Enumerated	29.273 [20]
1504	ANID	UTF8String	
1505	Trace-Info	Grouped	
1506	MIP-FA-RK	OctetString	
1507	MIP-FA-RK-SPI	Unsigned32	
Note: The AVP codes from 1508 to 1599 are reserved for TS 29.273			
1600	MME-Location-Information	Grouped	
1601	SGSN-Location-Information	Grouped	
1602	E-UTRAN-Cell-Global-Identity	OctetString	
1603	Tracking-Area-Identity	OctetString	
1604	Cell-Global-Identity	OctetString	
1605	Routing-Area-Identity	OctetString	
1606	Location-Area-Identity	OctetString	29.272 [21]
1607	Service-Area-Identity	OctetString	
1608	Geographical-Information	OctetString	
1609	Geodetic-Information	OctetString	
1610	Current-Location-Retrieved	Enumerated	
1611	Age-Of-Location-Information	Unsigned32	

1612	Active-APN	Grouped	
1613	SIPTO-Permission	Enumerated	
1614	Error-Diagnostic	Enumerated	
1615	UE-SRVCC-Capability	Enumerated	
1616	MPS-Priority	Unsigned32	
1617	VPLMN-LIPA-Allowed	Enumerated	
1618	LIPA-Permission	Enumerated	
1619	Subscribed-Periodic-RAU-TAU-Timer	Unsigned32	
1620	Ext-PDP-Type	OctetString	
1621	Ext-PDP-Address	Address	
1622	MDT-Configuration	Grouped	
1623	Job-Type	Enumerated	
1624	Area-Scope	Grouped	
1625	List-Of-Measurements	Unsigned32	
1626	Reporting-Trigger	Unsigned32	
1627	Report-Interval	Enumerated	
1628	Report-Amount	Enumerated	
1629	Event-ThresholdRSRP	Unsigned32	
1630	Event-ThresholdRSRQ	Unsigned32	
1631	Logging-Interval	Enumerated	
1632	Logging-Duration	Enumerated	
1633	Relay-Node-Indicator	Enumerated	
1634	MDT-User-Consent	Enumerated	
1635	PUR-Flags	Unsigned32	
1636	Reserved	-	
1637	Reserved	-	
1638	CLR-Flags	Unsigned32	
Note: The AVP codes from 1639 to 1699 are reserved for TS 29.272.			
2000	SMS-Information	Grouped	
2001	Data-Coding-Scheme	Integer32	
2002	Destination-Interface	Grouped	
2003	Interface-Id	UTF8String	
2004	Interface-Port	UTF8String	
2005	Interface-Text	UTF8String	
2006	Interface-Type	Enumerated	
2007	SM-Message-Type	Enumerated	
2008	Originating-SCCP-Address	Address	
2009	Originator-Interface	Grouped	
2010	Recipient-SCCP-Address	Address	
2011	Reply-Path-Requested	Enumerated	
2012	SM-Discharge-Time	Time	
2013	SM-Protocol-ID	OctetString	
2014	SM-Status	OctetString	
2015	SM-User-Data-Header	OctetString	
2016	SMS-Node	Enumerated	
2017	SMSC-Address	Address	
2018	Client-Address	Address	32.299 [5]
2019	Number-of-Messages-Sent	Unsigned32	
2020	Low-Balance-Indication	Enumerated	
2021	Remaining-Balance	Grouped	
2022	Refund-Information	OctetString	
2023	Carrier-Select-Routing-Information	UTF8String	
2024	Number-Portability-Routing-Information	UTF8String	
2025	PoC-Event-Type	Enumerated	
2026	Recipient-Info	Grouped	
2027	Originator-Received-Address	Grouped	
2028	Recipient-Received-Address	Grouped	
2029	SM-Service-Type	Enumerated	
2030	MMTel-Information	Grouped	
2031	Service-Type	Unsigned32	
2032	Service-Mode	Unsigned32	
2033	Subscriber-Role	Enumerated	
2034	Number-Of-Diversions	Unsigned32	
2035	Associated-Party-Address	UTF8String	
2036	SDP-Type	Enumerated	

2037	Change-Condition	Integer32	
2038	Change-Time	Time	
2039	Diagnostics	Integer32	
2040	Service-Data-Container	Grouped	
2041	Start-Time	Time	
2042	Stop-Time	Time	
2043	Time-First-Usage	Time	
2044	Time-Last-Usage	Time	
2045	Time-Usage	Unsigned32	
2046	Traffic-Data-Volumes	Grouped	
2047	Serving-Node-Type	Enumerated	
2048	Supplementary-Service	Grouped	
2049	Participant-Action-Type	Enumerated	
2050	PDN-Connection-Id	Enumerated	
2051	Dynamic-Address-Flag	Enumerated	
2052	Accumulated-Cost	Grouped	
2053	AoC-Cost-Information	Grouped	
2054	AoC-Information	Grouped	
2055	AoC-Request-Type	Enumerated	
2056	Current-Tariff	Grouped	
2057	Next-Tariff	Grouped	
2058	Rate-Element	Grouped	
2059	Scale-Factor	Grouped	
2060	Tariff-Information	Grouped	
2061	Unit-Cost	Grouped	
2062	Incremental-Cost	Grouped	
2063	Local-Sequence-Number	Unsigned32	
2064	Node-Id	UTF8String	
2065	SGW-Change	Enumerated	
2066	Charging-Characteristic-Selection-Mode	Enumerated	
2067	SGW-Address	Address	
Note: The AVP codes from 2068 to 2099 are reserved for TS 32.299			
2100	reserved	-	32.299 [5]
2101	Application-Server-ID	UTF8String	
2102	Application-Service-Type	Enumerated	
2103	Application-Session-ID	Unsigned32	
2104	Delivery-Status	UTF8String	
2105	reserved	-	
2106	reserved	-	
2107	reserved	-	
2108	reserved	-	
2109	reserved	-	
2110	IM-Information	Grouped	
2111	Number-Of-Messages-Successfully-Exploded	Unsigned32	
2112	Number-Of-Messages-Successfully-Sent	Unsigned32	
2113	Total-Number-Of-Messages-Exploded	Unsigned32	
2114	Total-Number-Of-Messages-Sent	Unsigned32	
2115	DCD-Information	Grouped	
2116	Content-ID	UTF8String	
2117	Content-provider-ID	UTF8String	
Note: The AVP codes from 2118 to 2199 are reserved for TS 32.299			
2200	Subsession-Decision-Info	Grouped	29.215 [22]
2201	Subsession-Enforcement-Info	Grouped	
2202	Subsession-Id	Unsigned32	
2203	Subsession-Operation	Enumerated	
2204	Multiple-BBERF-Action	Enumerated	
Note: The AVP codes from 2205 to 2299 are reserved for TS 29.215			
2300	reserved	-	32.299 [5]
2301	SIP-Request-Timestamp-Fraction	Unsigned32	
2302	SIP-Response-Timestamp-Fraction	Unsigned32	
2303	Online-Charging-Flag	Enumerated	
2304	CUG-Information	OctetString	
2305	Real-Time-Tariff-Information	Grouped	
2306	Tariff-XML	UTF8String	
2307	MBMS GW-Address	Address	

2308	IMSI-Unauthenticated-Flag	Enumerated	
2309	Account-Expiration	Time	
2310	AoC-Format	Enumerated	
2311	AoC-Service	Enumerated	
2312	AoC-Service-Obligatory-Type	Grouped	
2313	AoC-Service-Type	Enumerated	
2314	AoC-Subscription-Information	Grouped	
2315	Preferred-AoC-Currency	Unsigned32	
2316	Reason-Code	Enumerated	
2317	CSG-Access-Mode	Enumerated	
2318	CSG-Membership-Indication	Enumerated	
2319	User-CSG-Information	Grouped	
2320	Outgoing-Session-Id	UTF8String	
2321	Initial-IMS-Charging-Identifier	UTF8String	
Note: The AVP codes from 2322 to 2399 are reserved for TS 32.299			
2400	LMSI	OctetString	
2401	Serving-Node	Grouped	
2402	MME-Name	DiameterIdentity	
2403	MSC-Number	OctetString	
2404	LCS-Capabilities-Sets	Unsigned32	29.173 [25]
2405	GMLC-Address	Address	
2406	Additional-Serving-Node	Grouped	
2407	PPR-Address	Address	
2408	MME-Realm	DiameterIdentity	
Note: The AVP codes from 2409 to 2499 are reserved for TS 29.173			
2500	Location-Type	Enumerated	
2501	LCS-EPS-Client-Name	Grouped	
2502	LCS-Requestor-Name	Grouped	
2503	LCS-Priority	Unsigned32	
2504	LCS-QoS	Grouped	
2505	Horizontal-Accuracy	Unsigned32	
2506	Vertical-Accuracy	Unsigned32	
2507	Vertical-Requested	Enumerated	
2508	Velocity-Requested	Enumerated	
2509	Response-Time	Enumerated	
2510	Supported-GAD-Shapes	Unsigned32	
2511	LCS-Codeword	UTF8String	
2512	LCS-Privacy-Check	Enumerated	29.172 [24]
2513	Accuracy-Fulfilment-Indicator	Enumerated	
2514	Age-Of-Location-Estimate	Unsigned32	
2515	Velocity-Estimate	OctetString	
2516	EUTRAN-Positioning-Data	OctetString	
2517	ECGI	OctetString	
2518	Location-Event	Enumerated	
2519	Pseudonym-Indicator	Enumerated	
2520	LCS-Service-Type-ID	Unsigned32	
2521	LCS-Privacy-Check-Non-Session	Grouped	
2522	LCS-Privacy-Check-Session	Grouped	
2523	LCS-QoS-Class	Enumerated	
Note: The AVP codes from 2524 to 2599 are reserved for TS 29.172			
2600	reserved	-	
2601	IMS-Application-Reference-Identifier	UTF8String	
2602	Low-Priority-Indicator	Enumerated	
2603	IP-Realm-Default-Indicator	Enumerated	32.299 [5]
2604	Local-GW-Inserted-Indicator	Enumerated	
2605	Transcoder-Inserted-Indicator	Enumerated	
Note: The AVP codes from 2606 to 2699 are reserved for TS 32.299			

8 Experimental result codes

The Diameter answer messages must carry either Result-Code AVP or Experimental-Result AVP. The values of Result-Code AVP are controlled by IANA. The Experimental-Result AVP is a grouped AVP containing the Vendor-Id AVP and Experimental-Result-Code AVP, thus the experimental result codes are controlled in a vendor-specific manner.

8.1 3GPP specific result codes

The 3GPP specific result codes are always transferred in the Experimental-Result AVP, which has the Vendor-Id with value of 3GPP"s vendor identifier. The 3GPP specific result codes shall follow the same classification as defined for the values of Result-Code AVP in IETF RFC 3588 [9]. That means, the result codes are grouped to following ranges:

- 1xxx (Informational)
- 2xxx (Success)
- 4xxx (Transient Failures)
- 5xxx (Permanent Failures)

8.1.1 Informational

The Informational result codes shall use the values from 1001 to 1999 in the Experimental-Result-Code AVP.

Editor"s note: No informational result codes have been yet defined in 3GPP.

8.1.2 Success

The Success result codes shall use the values from 2001 to 2999 in the Experimental-Result-Code AVP. The reserved 3GPP specific Success result codes are presented in the following table.

Table 8.1.2: 3GPP specific Success result codes

Experimental Result Code	Result text	Specified in the TS
2001	DIAMETER_FIRST_REGISTRATION	29.229 [2]
2002	DIAMETER_SUBSEQUENT_REGISTRATION	
2003	DIAMETER_UNREGISTERED_SERVICE	
2004	DIAMETER_SUCCESS_SERVER_NAME_NOT_STORED	
2005	*Deprecated value*	
Note: The Experimental Result Codes from 2006 to 2020 are reserved for the TS 29.229.		
2021	DIAMETER_PDP_CONTEXT_DELETION_INDICATION	29.061 [13]
Note: The Experimental Result Codes from 2022 to 2040 are reserved for the TS 29.061		
		29.109 [7]
Note: The Experimental Result Codes from 2401 to 2420 are reserved for the TS 29.109.		

8.1.3 Transient Failures

The Transient Failure result codes shall use the values from 4001 to 4999 in the Experimental-Result-Code AVP. The reserved 3GPP specific Transient Failure result codes are presented in the following table.

Table 8.1.3: 3GPP specific Transient Failure result codes

Experimental Result Code	Result text	Specified in the TS
4100	DIAMETER_USER_DATA_NOT_AVAILABLE	29.329 [4]
4101	DIAMETER_PRIOR_UPDATE_IN_PROGRESS	
Note: The Experimental Result Codes from 4102 to 4120 are reserved for the TS 29.329.		
4121	DIAMETER_ERROR_OUT_OF_RESOURCES	29.061 [13]
Note: The Experimental Result Codes from 4122 to 4140 are reserved for the TS 29.061.		
4141	DIAMETER_PCC_BEARER_EVENT	29.212 [19]
4142	DIAMETER_BEARER_EVENT	
Note: The Experimental Result Codes from 4142 to 4160 are reserved for the TS 29.212		
		32.299 [5]
Note: The Experimental Result Codes from 4161 to 4180 are reserved for the TS 32.299.		
4181	DIAMETER_AUTHENTICATION_DATA_UNAVAILABLE	29.272 [21]
Note: The Experimental Result Codes from 4182 to 4200 are reserved for the TS 29.272.		
4201	DIAMETER_ERROR_ABSENT_USER	29.173 [25]
Note: The Experimental Result Codes from 4202 to 4220 are reserved for the TS 29.173.		
4221	DIAMETER_ERROR_UNREACHABLE_USER	29.172 [24]
4222	DIAMETER_ERROR_SUSPENDED_USER	
4223	DIAMETER_ERROR_DETACHED_USER	
4224	DIAMETER_ERROR_POSITIONING_DENIED	
4225	DIAMETER_ERROR_POSITIONING_FAILED	
4226	DIAMETER_ERROR_UNKNOWN_UNREACHABLE LCS_CLIENT	
Note: The Experimental Result Codes from 4227 to 4240 are reserved for the TS 29.172.		

8.1.4 Permanent Failures

The Permanent Failure result codes shall use the values from 5001 to 5999 in the Experimental-Result-Code AVP. The reserved 3GPP specific Permanent Failure result codes are presented in the following table.

Table 8.1.4: 3GPP specific Permanent Failure result codes

Experimental Result Code	Result text	Specified in the TS
5001	DIAMETER_ERROR_USER_UNKNOWN	29.229 [2]
5002	DIAMETER_ERROR_IDENTITIES_DONT_MATCH	
5003	DIAMETER_ERROR_IDENTITY_NOT_REGISTERED	
5004	DIAMETER_ERROR_ROAMING_NOT_ALLOWED	
5005	DIAMETER_ERROR_IDENTITY_ALREADY_REGISTERED	
5006	DIAMETER_ERROR_AUTH_SCHEME_NOT_SUPPORTED	
5007	DIAMETER_ERROR_IN_ASSIGNMENT_TYPE	
5008	DIAMETER_ERROR_TOO_MUCH_DATA	
5009	DIAMETER_ERROR_NOT_SUPPORTED_USER_DATA	
5010	unassigned	
5011	DIAMETER_ERROR_FEATURE_UNSUPPORTED	
Note: The Experimental Result Codes from 5012 to 5020 are reserved for the TS 29.229.		
		32.299 [5]
Note: The Experimental Result Codes from 5021 to 5040 are reserved for the TS 32.299.		
5041	DIAMETER_ERROR_USER_NO_WLAN_SUBSCRIPTION	29.234 [6]
5042	DIAMETER_ERROR_W-APN_UNUSED_BY_USER	
5043	DIAMETER_ERROR_NO_ACCESS_INDEPENDENT_SUBSCRIPTION	
5044	DIAMETER_ERROR_USER_NO_W-APN_SUBSCRIPTION	
5045	DIAMETER_ERROR_UNSUITABLE_NETWORK	
Note: The Experimental Result Codes from 5046 to 5060 are reserved for the TS 29.234.		
5061	INVALID_SERVICE_INFORMATION	29.209 [8], 29.211 [17]
5062	FILTER_RESTRICTIONS	
Note: The Experimental Result Codes from 5063 to 5080 are reserved for TS 29.209 and TS 29.211.		
5100	DIAMETER_ERROR_USER_DATA_NOT_RECOGNIZED	29.329 [4]
5101	DIAMETER_ERROR_OPERATION_NOT_ALLOWED	
5102	DIAMETER_ERROR_USER_DATA_CANNOT_BE_READ	
5103	DIAMETER_ERROR_USER_DATA_CANNOT_BE_MODIFIED	
5104	DIAMETER_ERROR_USER_DATA_CANNOT_BE_NOTIFIED	
5105	DIAMETER_ERROR_TRANSPARENT_DATA OUT_OF_SYNC	
5106	DIAMETER_ERROR_SUBS_DATA_ABSENT	
5107	DIAMETER_ERROR_NO_SUBSCRIPTION_TO_DATA	
5108	DIAMETER_ERROR_DSAI_NOT_AVAILABLE	
Note: The Experimental Result Codes from 5109 to 5119 are reserved for the TS 29.329.		
5120	DIAMETER_ERROR_START_INDICATION	29.061 [13]
5121	DIAMETER_ERROR_STOP_INDICATION	
5122	DIAMETER_ERROR_UNKNOWN_MBMS_BEARER_SERVICE	
5123	DIAMETER_ERROR_SERVICE_AREA	
Note: The Experimental Result Codes from 5124 to 5139 are reserved for the TS 29.061.		
5140	DIAMETER_ERROR_INITIAL_PARAMETERS	29.212 [19]
5141	DIAMETER_ERROR_TRIGGER_EVENT	
5142	DIAMETER_PCC_RULE_EVENT	
5143	DIAMETER_ERROR_BEARER_NOT_AUTHORIZED	
5144	DIAMETER_ERROR_TRAFFIC_MAPPING_INFO_REJECTED	
5145	DIAMETER_QOS_RULE_EVENT	
5146	reserved	
5147	DIAMETER_ERROR_CONFLICTING_REQUEST	
Note: The Experimental Result Codes from 5144 to 5159 are reserved for the TS 29.212.		
5401	DIAMETER_ERROR_IMPI_UNKNOWN	29.109 [7
5402	DIAMETER_ERROR_NOT_AUTHORIZED	
5403	DIAMETER_ERROR_TRANSACTION_IDENTIFIER_INVALID	
Note: The Experimental Result Codes from 5404 to 5419 are reserved for the TS 29.109.		
5420	DIAMETER_ERROR_UNKNOWN_EPS_SUBSCRIPTION	29.272 [21]
5421	DIAMETER_ERROR_RAT_NOT_ALLOWED	
5422	DIAMETER_ERROR_EQUIPMENT_UNKNOWN	
5423	DIAMETER_ERROR_UNKNOWN_SERVING_NODE	
Note: The Experimental Result Codes from 5424 to 5449 are reserved for the TS 29.272.		

5450	DIAMETER_ERROR_USER_NO_NON_3GPP_SUBSCRIPTION	29.273 [20]
5451	DIAMETER_ERROR_USER_NO_APN_SUBSCRIPTION	
5452	DIAMETER_ERROR_RAT_TYPE_NOT_ALLOWED	
Note: The Experimental Result Codes from 5453 to 5469 are reserved for the TS 29.273.		
5470	DIAMETER_ERROR _SUBSESSION	29.215 [22]
Note: The Experimental Result Codes from 5471 to 5489 are reserved for the TS 29.215.		
5490	DIAMETER_ERROR_UNAUTHORIZED_REQUESTING_NETWORK	29.173 [25]
Note: The Experimental Result Codes from 5491 to 5509 are reserved for the TS 29.173.		

Annex A (informative): Assignment of the Diameter codes and identifiers in 3GPP

This annex defines the recommended assignment procedure of Diameter codes and identifiers within the 3GPP.

A.1 Application identifiers

If a working group detects it will require a new application identifier, it should contact the 3GPP TSG-CN WG 4 via a Liaison Statement. The LS shall contain the name of the Diameter application and a reference to the corresponding 3GPP TS. The 3GPP TSG-CN WG 4 will then request the application identifier from IANA. When the application identifier is received, the corresponding working group will be informed by 3GPP TSG-CN WG 4 and the table 4.1 in this specification will be updated.

According to RFC 3588 the creation of a new application should be avoided if at all possible and therefore it is recommended to use the existing application identifiers whenever possible.

A.2 Command codes

If a working group detects there is a need for a new command code(s) from the 3GPP"s range, it should contact the 3GPP TSG-CN WG 4 via an LS. The LS shall contain the reference to the 3GPP TS, which specifies the command(s). The 3GPP TSG-CN WG 4 will inform the assigned command code(s) to the corresponding working group and the table 5.1 in this specification will be updated.

It should be noted that the standard command codes allocated for 3GPP are scarce resource and getting new ones would require IETF specification work to be done. Therefore it is recommended to use the existing command codes whenever possible.

A.3 AVP codes

If a working group detects a Diameter application needs new 3GPP specific AVP codes, it should contact the 3GPP TSG-CN WG 4 via an LS. The LS shall contain the name of the Diameter application and a reference to the corresponding 3GPP TS. The 3GPP TSG-CN WG 4 will allocate a range of 100 AVP codes for the application. The range will be informed to the corresponding working group and the table 7.1 will be updated in this specification to show the reserved range. The working group can use the allocated range as a working assumption when defining the actual AVPs.

When the corresponding working group has specified the AVPs, and the specification has been approved and is under CR control, it should inform the AVPs to the 3GPP TSG-CN WG 4 via an LS. The LS should list the used AVP codes in the form of the table 7.1.

If there will be defined new AVPs for a Diameter application through the CR procedure, the assigned AVP range can be used, but the 3GPP TSG-CN WG 4 should be also informed about the new AVP codes via an LS.

Re-using of the existing AVPs is recommended, but special attention should be paid on the use of enumerated AVPs. Defining new values for an enumerated AVP should be agreed case by case with the working group responsible of the particular enumerated AVP. 3GPP TSG-CN WG 4 shall be informed via an LS about the new values assigned to the enumerated AVP.

A.4 Result codes

If a working group detects a Diameter application needs new 3GPP specific result codes, it should contact the 3GPP TSG-CN WG 4 via an LS. The LS shall contain the name of the Diameter application and a reference to the corresponding 3GPP TS. The 3GPP TSG-CN WG 4 will allocate a range of 20 result codes from each required result

code group for the application. The ranges will be informed to the corresponding working group and the tables in the chapter 8 of this specification will be updated to show the reserved ranges. The working group can use the allocated ranges as a working assumption when defining the actual result codes.

When the corresponding working group has specified the result codes, and the specification has been approved and is under CR control, it should convey the codes to the 3GPP TSG-CN WG 4 via an LS. The LS should list the used result codes in the form of the tables in chapter 8.

If there will be defined new result codes for a Diameter application through the CR procedure, the assigned result code ranges can be used, but the 3GPP TSG-CN WG 4 should be also informed about the new result codes via an LS.

Re-using of the existing result codes is recommended.

Annex B (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
2004-06	CN#24	NP-040292			Version 2.0.0 presented for information and approval	2.0.0	6.0.0
2004-09	CN#25	NP-040401	001		Correction of Charging application reference	6.0.0	6.1.0
2004-09	CN#25	NP-040401	002		Correction of the Application-Id code	6.0.0	6.1.0
2004-09	CN#25	NP-040401	003		Removal of User Data Request Type AVP	6.0.0	6.1.0
2004-09	CN#25	NP-040412	004	1	Re-numbering of 3GPP specific AVP codes.	6.0.0	6.1.0
2004-12	CN#26	NP-040579	006		Inclusion of missing Cx AVPs	6.1.0	6.2.0
2004-12	CN#26	NP-040580	007	1	Reservation of command code 310	6.1.0	6.2.0
2004-12	CN#26	NP-040579	009	1	Addition of Gmb interface	6.1.0	6.2.0
2004-12	CN#26	NP-040600	010	2	Documenting the Reuse of the 3GPP specific application identifier of Ro for Re on the Charging Interfaces	6.1.0	6.2.0
2004-12	CN#26	NP-040579	011		Gq interface allocations	6.1.0	6.2.0
2004-12	CN#26	NP-040579	012		Addition of Gx interface	6.1.0	6.2.0
2005-03	CN#27	NP-050047	040	1	WLAN Diameter AVP and result codes	6.2.0	6.3.0
		NP-050039	043		Allocations for Gx interface		
		NP-050039	045		Allocations for Gmb interface		
		NP-050039	046		Allocations for MMS, MM10 Interface		
2005-06	CT#28	CP-050088	0050		Gx interface allocation correction	6.3.0	6.4.0
		CP-050196	0051	1	Addition of Maximum-Number-Accesses AVP		
2005-09	CT#29	CP-050440	0052	1	Private identities on the Cx	6.4.0	6.5.0
		CP-050310	0053		Addition of Pr reference point to TS 29.230		
		CP-050310	0054		Error code cleanup		
		CP-050310	0056		Addition of Rx ref. point and renaming of Experimental Result Codes		
2005-09	CT#29	CP-050317	0055		Addition of GUSS timestamp AVP	6.5.0	7.0.0
2005-12	CT#30	CP-050624	0058		Addition of GBA-Type AVP	7.0.0	7.1.0
		CP-050612	0063		Additional Gmb AVP Allocation		
		CP-050612	0065		Reservation of AVP codes for 32.299		
		CP-050625	0066		Management of Sh subscriptions		
2006-03	CT#31	CP-060073	0069		Adding data type of some of WLAN-related AVPs	7.1.0	7.2.0
		CP-060084	0071		User-Data in the response to Sh-Subs-Notif		
		CP-060084	0072	1	New error indications for the Sh-Subs-Notif procedure		
2006-06	CT#32	CP-060302	0075		S-CSCF reselection removal	7.2.0	7.3.0
2006-09	CT#33	CP-060417	0077	3	New AVP Code	7.3.0	7.4.0
		CP-060417	0080		Errors to be sent in response to Sh-Notif		
		CP-060417	0081		Definition of specific Diameter codes for DSAI		
2006-12	CT#34	CP-060566	0085	1	Optimization of handling of Wildcarded PSIs	7.4.0	7.5.0
		CP-060562	0086		Addition of Diameter Error Code for Emergency Purposes		
		CP-060555	0087		Allocation of new AVP codes for Gmb		
		CP-060555	0089		AVP code allocations for Rf and Ro interfaces		
		CP-060566	0091		Allocation of Success Result Code Range for Gi Interface		
2007-03	CT#35	CP-070020	0093		C3 requested addition of new AVP code values to 3GPP TS 29.230	7.5.0	7.6.0
		CP-070020	0093		Allocation of new AVP code for DSAI-Tag AVP		
		CP-070020	0093		Allocation of Experimental-Result-Code AVP for Gi Interface		
2007-06	CT#36	CP-070318	0096		Diameter application ID for the Rel-7 Rx interface	7.6.0	7.7.0
		CP-070312	0098		Experimental-Result-Codes for Gmb interface		
		CP-070312	0100		Correction of Diameter AVP code allocation		
2007-09	CT#37	CP-070527	0102		Application ID for Gx protocol	7.7.0	7.8.0
2007-12	CT#38	CP-070743	0104		AVP code reservation for 32.299 in Rel-7	7.8.0	7.9.0
			0105		Allocation of 3GPP specific AVP codes and Experimental Result Codes for Gx protocol		
2007-12	CT#38	CP-070755	0101	4	AVP assignments to support SIP Digest Authentication	7.9.0	8.0.0
			0103		AVP code reservation for 32.299 in Rel-8		
2008-03	CT#39	CP-080015	0109		Correction of reference to TS 29.140	8.0.0	8.1.0
		CP-080019	0111		AVP code reservation for TS 32.299 in Rel-8		
		CP-080019	0107		Wildcarded Public User Identities		
		CP-080191	0112	1	Correction on AVP code allocation reservation for TS 32.299 in Rel-7		
		CP-080204	0113	1	Correction on AVP code allocation reservation for TS 32.299		
2008-06	CT#40	CP-080267	0117	1	A new Diameter Permanent Failure Code for Gx	8.1.0	8.2.0
2008-09	CT#41	CP-080456	0119		Emergency Public User Identity Removal	8.2.0	8.3.0
2008-09	CT#41	CP-080460	0121	1	Support of "Loose-Route" indication from HSS		
2008-09	CT#41	CP-080460	0122	1	STaMIP Application Id		
2008-09	CT#41	CP-080463	0123		Cx Impacts of IMS Restoration Procedures (New AVP Codes		

					Assignment)		
2008-09	CT#41	CP-080463	0124		New AVP Code Assignment for Forking Service Restoration	8.2.0	8.3.0
2008-12	CT#42	CP-080691	0127	2	Diameter Protocol Codes Assignments for S6a/S6d/S13	8.3.0	8.4.0
2008-12	CT#42	CP-080691	0128	1	Diameter code assignments for 3GPP TS 29.273	8.3.0	8.4.0
2009-03	CT#43	CP-090044	0130	1	Update for ReadyForSM	8.4.0	8.5.0
2009-03	CT#43	CP-090044	0131	1	Handling LCS Subscription Data	8.4.0	8.5.0
2009-03	CT#43	CP-090026	0132		Update for Restoration	8.4.0	8.5.0
2009-03	CT#43	CP-090024	0133		AppIds for Gxx and S9	8.4.0	8.5.0
2009-03	CT#43	CP-090033	0134	2	AppId and command code for Zpn	8.4.0	8.5.0
2009-03	CT#43	CP-090024	0137	1	AVP codes for S9 protocol	8.4.0	8.5.0
2009-03	CT#43	CP-090024	0138	1	Diameter AVP Code allocation	8.4.0	8.5.0
2009-03	CT#43	CP-090024	0140	1	Location of Permanent Failure result code range for the S9 application	8.4.0	8.5.0
2009-03	CT#43	CP-090024	0141		AVPs for TS 29.273	8.4.0	8.5.0
2009-03	CT#43	CP-090024	0142	1	Error code allocation for authentication failure	8.4.0	8.5.0
2009-06	CT#44	CP-090299	0129	4	Update of the AVP Codes	8.5.0	8.6.0
		CP-090299	0143		AVP code reservation for TS 32.299		
		CP-090299	0145		Diameter Command Codes for S6a/S6d/S13/S13"		
			0146		Removal of Requesting Node Type from AIR		
		CP-090299	0147		S6b Application ID		
2009-09	CT#45	CP-090530	0149		Allocation of Experimental-Result-Codes for S9 protocol	8.6.0	8.7.0
		CP-090530	0152		AVP code allocation for TS 29.212		
		CP-090531	0150		Update of the AVP type for the User-Id		
		CP-090531	0153		Trace Depth per session		
2009-09	CT#45	CP-090557	0148		AVP code range for charging	8.7.0	9.0.0
2009-12	CT#46	CP-090800	0154	1	ICS-Flag	9.0.0	9.1.0
		CP-091032	0156		From GMLC-Address to GMLC-Number		
			0160		Session-Priority AVP		
			0163	2	Introduction of SLh application related AVPs and Experimental Result codes		
			0166		Missing AVP error codes		
		CP-090797	0167	1	Introduction of SLg application related AVPs and Application Identifier		
2010-03	CT#47	CP-100031	0158	1	Wildcarded Public Identity	9.1.0	9.2.0
		CP-100034	0168	1	Correction on AVP code allocation reservation for TS 32.299 in Rel-9		
		CP-100046	0169	1	AVP code allocation for 29.172		
		CP-100036	0172		GPL_U support in TS 29.109		
		CP-100046	0173		Error codes in 29.172 for SLg		
		CP-100048	0174	1	AVPs in 29.272 for TADS support		
		CP-100040	0175		Error codes in 29.272 for Unknown MME		
		CP-100236	0176	4	EPS Subcsriber State and Location Information Request		
		CP-100033	0180		One time notification AVP allocation		
		CP-100046	0181		Addition of the LCS-QoS-Class attribute value		
		CP-100175	0182		Introduction of the LCS-Capabilities-Sets AVP in SLh interface		
2010-06	CT#48	CP-100263	0188	1	AVP Codes for PCC	9.2.0	9.3.0
			0183		EPS state and location retrieval		
		CP-100287	0186		SGmb Application ID		
		CP-100277	0190	1	New APVs in S6a protocol		
2010-09	CT#49	CP-100463	0197	1	Addition of Diameter codes and identifiers for the SLg and SLh interfaces	9.3.0	9.4.0
		CP-100464	0196		AVP Codes Allocation for PCC		
2010-09	CT#49	CP-100465	0193	1	SIPTO Permission Indicator	9.4.0	10.0.0
		CP-100466	0198	2	Location data including only serving node address		
		CP-100466	0199	1	AVP for Update-Eff feature		
2010-12	CT#50	CP-100699	0205		Enhanced SRVCC Subscriber Data	10.0.0	10.1.0
		CP-100687	0201	1	Allocate codes for AVPs on eMPS		
		CP-100683	0200	1	Allocate codes for AVPs on LIPA		
		CP-100688	0206	1	Periodic TAU/RAU timer in HSS subscription		
		CP-100846	0203	1	S6a Error Diagnostic		
2011-03	CT#51	CP-110051	0212		PDP-Address correction	10.1.0	10.2.0
		CP-110054	0215		Essential correction on the value type of the ELP Application AVPs		
		CP-110087	0207	2	Minimization of Drive Tests (MDT)		
		CP-110088	0209	1	Relay Node Indicator AVPs		
2011-06	CT#52	CP-110349	0219	2	Handling of RTR for Emergency Registration	10.2.0	10.3.0
		CP-110347	0231	1	Add AVPs from QSPEC cleanup		
		CP-110359	0226		MIPv4 security parameters on the STa and S6b interfaces		
		CP-110380	0216		MDT user consent		
		CP-110370	0223		AVP Code Allocation for Pre-paging		
		CP-110375	0227	1	PUR-Flags AVP		
2011-09	CT#53	CP-110559	0236	1	AVP code alignment with 29.212	10.3.0	10.4.0
		CP-110555	0239	1	AVP code alignment with 32.299		
		CP-110554	0244	1	AVP code alignment with 29.214		
		CP-110552	0249		Experimental Result Code Alignment with 29.061		

		CP-110555	0252		Failure code and AVP code alignment with 29.212		
		CP-110722	0257	2	Priviledged sender		
2011-12	CT#54	CP-110775	0261		New AVP codes for MBMS IP unicast encapsulation	10.4.0	10.5.0
		CP-110775	0264		New AVP codes for MBMS IP multicast encapsulation		
		CP-110786	0270	1	MME-Identity AVP code allocation		
		CP-110781	0280	1	Restoration of Wildcarded-IMPU AVP		
2012-03	CT#55	CP-120025	0292		Codes Allocation for AVPs on Initial Attach	10.5.0	10.6.0

History

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