

ETSI TS 132 299 V12.10.0 (2015-10)



**Digital cellular telecommunications system (Phase 2+);
Universal Mobile Telecommunications System (UMTS);
LTE;
Telecommunication management;
Charging management;
Diameter charging applications
(3GPP TS 32.299 version 12.10.0 Release 12)**



Reference

RTS/TSGS-0532299vca0

Keywords

GSM,LTE,UMTS

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
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Important notice

The present document can be downloaded from:

<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the only prevailing document is the print of the Portable Document Format (PDF) version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, please send your comment to one of the following services:

<https://portal.etsi.org/People/CommiteeSupportStaff.aspx>

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2015.

All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are Trade Marks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

GSM® and the GSM logo are Trade Marks registered and owned by the GSM Association.

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://ipr.etsi.org>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

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

The present document may refer to technical specifications or reports using their 3GPP identities, UMTS identities or GSM identities. These should be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between GSM, UMTS, 3GPP and ETSI identities can be found under <http://webapp.etsi.org/key/queryform.asp>.

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Contents

Intellectual Property Rights	2
Foreword.....	2
Modal verbs terminology.....	2
Foreword.....	12
1 Scope	13
2 References	14
3 Definitions, symbols and abbreviations	16
3.1 Definitions	16
3.2 Symbols.....	16
3.3 Abbreviations	16
4 Architecture considerations	18
4.1 High level architecture	18
4.1.0 General.....	18
4.1.1 Charging related transfer requirements.....	19
5 3GPP charging applications requirements.....	20
5.1 Offline charging scenarios.....	20
5.1.1 Basic principles.....	20
5.1.1.0 Introduction.....	20
5.1.1.1 Event based charging	21
5.1.1.2 Session based charging	22
5.1.2 Basic operation	24
5.2 Online charging scenarios	25
5.2.0 Introduction.....	25
5.2.1 Basic principles.....	25
5.2.2 Charging scenarios.....	26
5.2.2.0 Introduction	26
5.2.2.1 Immediate Event Charging (IEC)	27
5.2.2.1.1 Decentralized Unit Determination and Centralized Rating	27
5.2.2.1.2 Centralized Unit Determination and Centralized Rating	28
5.2.2.1.3 Decentralized Unit Determination and Decentralized Rating.....	29
5.2.2.1.4 Further options	30
5.2.2.2 Event Charging with Unit Reservation (ECUR)	31
5.2.2.2.1 Decentralized Unit Determination and Centralized Rating	31
5.2.2.2.2 Centralized Unit Determination and Centralized Rating	33
5.2.2.2.3 Decentralized Unit Determination and Decentralized Rating.....	35
5.2.2.3 Session charging with Reservation	37
5.2.2.3.1 Decentralized Unit Determination and Centralized Rating	37
5.2.2.3.2 Centralized Unit Determination and Centralized Rating	39
5.2.2.3.3 Decentralized Unit Determination and Decentralized Rating.....	41
5.2.3 Basic operations.....	43
5.3 Other requirements	46
5.3.1 Re-authorization	46
5.3.2 Threshold based re-authorization triggers.....	46
5.3.3 Termination action.....	46
5.3.4 Account expiration.....	46
6 3GPP charging applications – Protocol aspects	47
6.1 Basic principles for Diameter offline charging	47
6.1.0 Introduction.....	47
6.1.1 Event based charging	48
6.1.2 Session based charging	49
6.1.3 Offline charging error cases - Diameter procedures	51
6.1.3.1 CDF connection failure	51
6.1.3.2 No reply from CDF	51

6.1.3.3	Duplicate detection.....	51
6.1.3.4	CDF detected failure	51
6.2	Message contents for offline charging.....	52
6.2.1	Summary of offline charging message formats	52
6.2.1.1	General	52
6.2.1.2	Structure for the Accounting message formats	52
6.2.2	Accounting-Request message	53
6.2.3	Accounting-Answer (ACA) message	55
6.3	Basic principles for Diameter online charging	57
6.3.1	Online Specific Credit-Control application requirements.....	57
6.3.2	Diameter description on the Ro reference point	57
6.3.2.1	Basic principles	57
6.3.3	Immediate Event Charging (IEC)	58
6.3.4	Event Charging with Unit Reservation (ECUR).....	60
6.3.5	Session Charging with Unit Reservation (SCUR)	62
6.3.6	Error cases and scenarios	64
6.3.6.0	Introduction	64
6.3.6.1	Duplicate detection.....	64
6.3.6.2	Reserve Units / Debit Units operation failure	64
6.3.7	Support of tariff changes during an active user session.....	64
6.3.7.1	Support of tariff changes using the tariff switch mechanism	64
6.3.7.2	Support of tariff changes using Validity-Time AVP.....	64
6.3.8	Support of re-authorization	65
6.3.9	Support of failure handling	65
6.3.10	Support of failover	65
6.3.11	Credit pooling	65
6.4	Message formats for online charging	66
6.4.1	Summary of online charging message formats	66
6.4.1.1	General	66
6.4.1.2	Structure for the Credit-Control message formats.....	66
6.4.2	Credit-Control-Request message	67
6.4.3	Credit-Control-Answer message.....	72
6.4.4	Re-Auth-Request message	77
6.4.5	Re-Auth-Answer message	78
6.4.6	Capabilities-Exchange-Request message.....	78
6.4.7	Capabilities-Exchange-Answer message	78
6.4.8	Device-Watchdog-Request message.....	78
6.4.9	Device-Watchdog-Answer message	79
6.4.10	Disconnect-Peer-Request message	79
6.4.11	Disconnect-Peer-Answer message	79
6.4.12	Abort-Session-Request message.....	79
6.4.13	Abort-Session -Answer message	79
6.5	Other procedural description of the 3GPP charging applications.....	80
6.5.1	Re-Authorization	80
6.5.1.1	Idle timeout	80
6.5.1.2	Change of charging conditions.....	80
6.5.1.3	Reporting quota usage.....	80
6.5.1.4	Quota consumption	81
6.5.2	Threshold based Re-Authorization triggers	81
6.5.3	Termination action.....	81
6.5.4	Quota consumption time	82
6.5.5	Service termination	82
6.5.6	Envelope reporting.....	82
6.5.7	Combinational quota.....	83
6.5.8	Online control of offline charging information.....	83
6.5.9	Support of multiple service.....	83
6.6	Bindings of the operation to protocol application	84
6.6.0	General.....	84
6.6.1	Bindings of Charging Data Transfer to Accounting	84
6.6.2	Bindings of Debit / Reserve Units to Credit-Control.....	85
7	Summary of used Attribute Value Pairs.....	86

7.1	Diameter AVPs	86
7.1.0	General.....	86
7.1.1	Accounting-Input-Octets AVP.....	89
7.1.2	Void	89
7.1.3	Accounting-Output-Octets AVP.....	89
7.1.4	Void	89
7.1.5	Acct-Application-Id AVP.....	89
7.1.6	Auth-Application-Id AVP.....	89
7.1.7	Called-Station-Id AVP.....	89
7.1.8	Event-Timestamp AVP.....	89
7.1.9	Multiple-Services-Credit-Control AVP	89
7.1.10	Rating-Group AVP	90
7.1.11	Result-Code AVP	90
7.1.12	Service-Context-Id AVP.....	92
7.1.13	Service-Identifier AVP	92
7.1.14	Used-Service-Unit AVP	92
7.1.15	User-Name AVP.....	93
7.1.16	Vendor-Id AVP.....	93
7.1.17	User-Equipment-Info AVP	93
7.2	3GPP specific AVPs.....	94
7.2.0	General.....	94
7.2.1	Access-Network-Information AVP	102
7.2.1A	Access-Transfer-Information AVP	102
7.2.1B	Access-Transfer-Type AVP.....	102
7.2.2	Account-Expiration AVP.....	102
7.2.3	Accumulated-Cost AVP	102
7.2.4	Adaptations AVP	103
7.2.5	Additional-Content-Information AVP.....	103
7.2.6	Additional-Type-Information AVP	103
7.2.7	Address-Data AVP	103
7.2.8	Address-Domain AVP	103
7.2.9	Address-Type AVP.....	103
7.2.10	Addressee-Type AVP	104
7.2.11	AF-Correlation-Information AVP	104
7.2.12	Alternate-Charged-Party-Address AVP.....	104
7.2.12A	Announcing-UE-HPLMN-Identifier AVP.....	104
7.2.12B	Announcing-UE-VPLMN-Identifier AVP.....	104
7.2.13	AoC-Cost-Information AVP.....	104
7.2.14	AoC-Format AVP.....	105
7.2.15	AoC-Information AVP	105
7.2.16	AoC-Request-Type AVP	105
7.2.17	AoC-Service AVP	105
7.2.18	AoC-Service-Obligatory-Type AVP	105
7.2.19	AoC-Service-Type AVP	106
7.2.20	AoC-Subscription-Information AVP	106
7.2.21	Applic-ID AVP.....	106
7.2.22	Application-provided-Called-Party-Address AVP	106
7.2.23	Application-Server AVP.....	106
7.2.24	Application-Server-Information AVP.....	106
7.2.24A	Application-Specific-Data AVP	106
7.2.25	Associated-Party-Address AVP.....	107
7.2.26	Associated-URI AVP.....	107
7.2.27	Authorised-QoS AVP	107
7.2.28	Aux-Applic-Info AVP	107
7.2.29	Base-Time-Interval AVP	107
7.2.29A	Basic-Service-Code AVP	107
7.2.29B	Bearer-Capability AVP.....	107
7.2.30	Bearer-Service AVP	107
7.2.30A	BSSID AVP	107
7.2.31	Called-Asserted-Identity AVP.....	107
7.2.32	Called-Party-Address AVP.....	108
7.2.33	Calling-Party-Address AVP.....	108

7.2.34	Carrier-Select-Routing-Information AVP.....	108
7.2.35	Cause-Code AVP.....	109
7.2.36	CG-Address AVP.....	110
7.2.37	Change-Condition AVP.....	110
7.2.38	Change-Time AVP.....	111
7.2.38A	Charge-Reason-Code AVP.....	111
7.2.39	Charged-Party AVP.....	111
7.2.39A	Charging-Characteristics-Selection-Mode AVP.....	111
7.2.40	Class-Identifier AVP.....	111
7.2.41	Client-Address AVP.....	112
7.2.41A	CN-Operator-Selection-Entity AVP.....	112
7.2.42	Content-Class AVP.....	112
7.2.43	Content-Disposition AVP.....	112
7.2.44	Content-Length AVP.....	112
7.2.45	Content-Size AVP.....	112
7.2.46	Content-Type AVP.....	112
7.2.46aAa	Coverage-Info AVP.....	112
7.2.46Aa	Coverage-Status AVP.....	113
7.2.46A	CSG-Access-Mode AVP.....	113
7.2.46B	CSG-Membership-Indication AVP.....	113
7.2.47	Current-Tariff AVP.....	114
7.2.48	CUG-Information AVP.....	114
7.2.49	Data-Coding-Scheme AVP.....	114
7.2.50	DCD-Information AVP.....	114
7.2.51	Deferred-Location-Event-Type AVP.....	114
7.2.52	Delivery-Report-Requested AVP.....	114
7.2.53	Destination-Interface AVP.....	114
7.2.54	Diagnostics AVP.....	114
7.2.55	Domain-Name AVP.....	115
7.2.56	DRM-Content AVP.....	115
7.2.57	Dynamic-Address-Flag AVP.....	115
7.2.57A	Dynamic-Address-Flag-Extension AVP.....	115
7.2.58	Early-Media-Description AVP.....	116
7.2.59	Envelope AVP.....	116
7.2.60	Envelope-End-Time AVP.....	116
7.2.61	Envelope-Reporting AVP.....	117
7.2.62	Envelope-Start-Time AVP.....	117
7.2.62A	ePDG-Address AVP.....	117
7.2.63	Event AVP.....	117
7.2.64	Event-Charging-TimeStamp AVP.....	117
7.2.65	Event-Type AVP.....	117
7.2.66	Expires AVP.....	117
7.2.67	File-Repair-Supported AVP.....	118
7.2.67aA	Forwarding-Pending AVP.....	118
7.2.67A	From-Address AVP.....	118
7.2.68	GGSN-Address AVP.....	118
7.2.69	IM-Information AVP.....	118
7.2.70	Incremental-Cost AVP.....	118
7.2.70A	Instance-Id AVP.....	118
7.2.71	Interface-Id AVP.....	118
7.2.72	Interface-Port AVP.....	118
7.2.73	Interface-Text AVP.....	119
7.2.74	Interface-Type AVP.....	119
7.2.74A	IMS-Application-Reference-Identifier AVP.....	119
7.2.75	IMS-Charging-Identifier AVP.....	119
7.2.76	IMS-Communication-Service-Identifier AVP.....	119
7.2.76A	IMS-Emergency-Indicator AVP.....	119
7.2.77	IMS-Information AVP.....	120
7.2.77A	IMS-Visited-Network-Identifier AVP.....	121
7.2.78	IMSI-Unauthenticated-Flag AVP.....	121
7.2.79	Incoming-Trunk-Group-ID AVP.....	121
7.2.79A	Initial-IMS-Charging-Identifier AVP.....	121

7.2.80	Inter-Operator-Identifier AVP	121
7.2.80A	IP-Realm-Default-Indication AVP	121
7.2.80B	ISUP-Cause AVP	121
7.2.80C	ISUP-Cause-Diagnostics AVP	121
7.2.80D	ISUP-Cause-Location AVP	122
7.2.80E	ISUP-Cause-Value AVP	122
7.2.80F	ISUP-Location-Number AVP	122
7.2.80G	Layer-2-Group-ID AVP	122
7.2.81	LCS-APN AVP	122
7.2.82	LCS-Client-Dialed-By-MS AVP	122
7.2.83	LCS-Client-External-ID AVP	122
7.2.84	LCS-Client-ID AVP	122
7.2.85	LCS-Client-Name AVP	123
7.2.86	LCS-Client-Type AVP	123
7.2.87	LCS-Data-Coding-Scheme AVP	123
7.2.88	LCS-Format-Indicator AVP	123
7.2.89	LCS-Information AVP	123
7.2.90	LCS-Name-String AVP	123
7.2.91	LCS-Requestor-ID AVP	124
7.2.92	LCS-Requestor-ID-String AVP	124
7.2.92A	Local-GW-Inserted-Indication AVP	124
7.2.93	Local-Sequence-Number AVP	124
7.2.94	Location-Estimate AVP	124
7.2.95	Location-Estimate-Type AVP	124
7.2.95A	Location-Info AVP	124
7.2.96	Location-Type AVP	125
7.2.97	Low-Balance-Indication AVP	125
7.2.97A	Low-Priority-Indicator AVP	125
7.2.97B	MBMS-Charged-Party AVP	125
7.2.98	MBMS-GW-Address AVP	125
7.2.99	MBMS-Information AVP	125
7.2.100	MBMS-User-Service-Type AVP	126
7.2.101	Media-Initiator-Flag AVP	127
7.2.102	Media-Initiator-Party AVP	127
7.2.103	Message-Body AVP	127
7.2.104	Message-Class AVP	127
7.2.105	Message-ID AVP	127
7.2.106	Message-Size AVP	127
7.2.107	Message-Type AVP	128
7.2.108	MM-Content-Type AVP	128
7.2.109	MMBox-Storage-Requested AVP	128
7.2.110	MMS-Information AVP	129
7.2.111	MMTel-Information AVP	129
7.2.111A	MMTel-SService-Type AVP	129
7.2.111Aa	Monitored-PLMN-Identifier AVP	130
7.2.111Ab	Monitoring-UE-HPLMN-Identifier AVP	130
7.2.111Ac	Monitoring-UE-Identifier AVP	130
7.2.111Ad	Monitoring-UE-VPLMN-Identifier AVP	130
7.2.111B	MSC-Address AVP	130
7.2.111C	MTC-IWF-Address AVP	130
7.2.111D	Neighbour-Node-Address AVP	130
7.2.111E	Network-Call-Reference-Number AVP	130
7.2.112	Next-Tariff AVP	130
7.2.112A	NNI-Information AVP	131
7.2.112B	NNI-Type AVP	132
7.2.113	Node-Functionality AVP	132
7.2.114	Node-Id AVP	132
7.2.115	Number-Of-Diversions AVP	132
7.2.116	Number-Of-Messages-Sent AVP	132
7.2.117	Number-Of-Participants AVP	132
7.2.118	Number-Of-Received-Talk-Bursts AVP	133
7.2.119	Number-Of-Talk-Bursts AVP	133

7.2.120	Number-Portability-Routing-Information AVP.....	133
7.2.121	Offline-Charging AVP.....	133
7.2.122	Online-Charging-Flag AVP.....	133
7.2.123	Originating-IOI AVP.....	134
7.2.124	Originator AVP.....	134
7.2.125	Originator-Address AVP.....	134
7.2.126	Originator-Interface AVP.....	135
7.2.127	Originator-Received-Address AVP.....	135
7.2.128	Originator-SCCP-Address.....	135
7.2.128A	Outgoing-Session-Id AVP.....	135
7.2.129	Outgoing-Trunk-Group-ID AVP.....	135
7.2.130	Participants-Involved AVP.....	135
7.2.131	Participant-Group AVP.....	136
7.2.132	Participant-Access-Priority AVP.....	136
7.2.133	Participant-Action-Type AVP.....	136
7.2.134	Void.....	136
7.2.135	Void.....	136
7.2.135A	PC3-Control-Protocol-Cause AVP.....	136
7.2.135B	PC3-EPC-Control-Protocol-Cause AVP.....	136
7.2.136	PDN-Connection-Charging-ID AVP.....	137
7.2.137	PDP-Address AVP.....	137
7.2.137A	PDP-Address-Prefix-Length AVP.....	137
7.2.138	PDP-Context-Type AVP.....	137
7.2.139	PoC-Change-Condition AVP.....	137
7.2.140	PoC-Change-Time AVP.....	137
7.2.141	PoC-Controlling-Address AVP.....	137
7.2.142	PoC-Event-Type AVP.....	138
7.2.143	PoC-Group-Name AVP.....	138
7.2.144	PoC-Information AVP.....	138
7.2.145	PoC-Server-Role AVP.....	138
7.2.146	PoC-Session-Id AVP.....	138
7.2.147	PoC-Session-Initiation-Type AVP.....	139
7.2.148	PoC-Session-Type AVP.....	139
7.2.149	PoC-User-Role AVP.....	139
7.2.150	PoC-User-Role-IDs AVP.....	139
7.2.151	PoC-User-Role-info-Units AVP.....	139
7.2.152	Positioning-Data AVP.....	139
7.2.153	Preferred-AoC-Currency AVP.....	139
7.2.154	Priority AVP.....	140
7.2.154A	ProSe-3rd-Party-Application-ID AVP.....	140
7.2.154Aa	ProSe-Direct-Communication-Reception-Data-Container AVP.....	140
7.2.154B	ProSe-Direct-Communication-Transmission-Data-Container AVP.....	140
7.2.154C	ProSe-Direct-Discovery-Model AVP.....	141
7.2.154D	ProSe-Event-Type AVP.....	141
7.2.154E	ProSe-Function-IP-Address AVP.....	141
7.2.154F	ProSe-Function-PLMN-Identifier AVP.....	141
7.2.154G	ProSe-Functionality AVP.....	141
7.2.154H	ProSe-Group-IP-Multicast-Address AVP.....	141
7.2.154I	ProSe-Information AVP.....	141
7.2.154J	ProSe-Range-Class AVP.....	142
7.2.154K	ProSe-Reason-For-Cancellation AVP.....	142
7.2.154L	ProSe-Request-Timestamp AVP.....	143
7.2.154M	ProSe-Role-Of-UE AVP.....	143
7.2.154N	ProSe-Source-IP-Address AVP.....	143
7.2.154O	ProSe-UE-ID AVP.....	143
7.2.154P	Proximity-Alert-Indication AVP.....	143
7.2.154Q	Proximity-Alert-Timestamp AVP.....	143
7.2.154R	Proximity-Cancellation-Timestamp AVP.....	143
7.2.155	PS-Append-Free-Format-Data AVP.....	143
7.2.156	PS-Free-Format-Data AVP.....	144
7.2.157	PS-Furnish-Charging-Information AVP.....	144
7.2.158	PS-Information AVP.....	145

7.2.159	Quota-Consumption-Time AVP	146
7.2.160	Quota-Holding-Time AVP	146
7.2.160A	Radio-Frequency AVP	146
7.2.160B	Radio-Parameter-Set-Info AVP	146
7.2.160C	Radio-Parameter-Set-Values AVP	146
7.2.160D	Radio-Resources-Indicator AVP	146
7.2.161	Rate-Element AVP	147
7.2.162	Read-Reply-Report-Requested AVP	147
7.2.163	Void	147
7.2.164	Real-Time-Tariff-Information AVP	148
7.2.164A	Reason-Header AVP	148
7.2.165	Received-Talk-Burst-Time AVP	148
7.2.166	Received-Talk-Burst-Volume AVP	148
7.2.167	Recipient-Address AVP	148
7.2.168	Recipient-Info AVP	149
7.2.169	Recipient-Received-Address AVP	149
7.2.170	Recipient-SCCP-Address	149
7.2.171	Refund-Information AVP	149
7.2.171A	Relationship-Mode AVP	149
7.2.171B	Related-IMS-Charging-Identifier AVP	150
7.2.171C	Related-IMS-Charging-Identifier-Node AVP	150
7.2.172	Remaining-Balance AVP	150
7.2.173	Reply-Applic-ID AVP	150
7.2.174	Reply-Path-Requested AVP	150
7.2.175	Reporting-Reason AVP	151
7.2.176	Requested-Party-Address AVP	152
7.2.176A	Requested-PLMN-Identifier AVP	152
7.2.176B	Requestor-PLMN-Identifier AVP	152
7.2.177	Role-Of-Node AVP	152
7.2.177aA	Role-Of-ProSe-Function AVP	152
7.2.177A	Route-Header-Received AVP	152
7.2.177B	Route-Header-Transmitted AVP	152
7.2.178	Scale-Factor AVP	152
7.2.179	SDP-Answer-Timestamp AVP	153
7.2.180	SDP-Media-Component AVP	154
7.2.181	SDP-Media-Description AVP	154
7.2.182	SDP-Media-Name AVP	154
7.2.183	SDP-Offer-Timestamp AVP	154
7.2.184	SDP-Session-Description AVP	154
7.2.185	SDP-TimeStamps AVP	154
7.2.186	SDP-Type AVP	154
7.2.186A	Session-Direction AVP	155
7.2.187	Served-Party-IP-Address AVP	155
7.2.188	Void	155
7.2.189	Service-Data-Container AVP	155
7.2.190	Service-ID AVP	156
7.2.191	Service-Generic-Information AVP	156
7.2.192	Service-Information AVP	156
7.2.193	Service-Mode AVP	157
7.2.194	Service-Specific-Data AVP	157
7.2.195	Service-Specific-Info AVP	157
7.2.196	Service-Specific-Type AVP	157
7.2.197	Void	157
7.2.198	Serving-Node-Type AVP	158
7.2.199	SGSN-Address AVP	158
7.2.199A	SGW-Address AVP	158
7.2.200	SGW-Change AVP	158
7.2.201	SIP-Method AVP	158
7.2.202	SIP-Request-Timestamp AVP	158
7.2.203	SIP-Request-Timestamp-Fraction AVP	158
7.2.204	SIP-Response-Timestamp AVP	158
7.2.205	SIP-Response-Timestamp-Fraction AVP	158

7.2.205A	SM-Device-Trigger-Indicator AVP	159
7.2.205B	SM-Device-Trigger-Information AVP	159
7.2.206	SM-Discharge-Time AVP	159
7.2.207	SM-Message-Type AVP	159
7.2.208	SM-Protocol-Id AVP	159
7.2.208A	SM-Sequence-Number AVP	159
7.2.209	SM-Status AVP	160
7.2.210	SM-User-Data-Header AVP	160
7.2.211	SMS-Information AVP	160
7.2.212	SMS-Node AVP	160
7.2.212A	SMS-Result AVP	160
7.2.213	SM-Service-Type AVP	161
7.2.214	SMSC-Address AVP	161
7.2.214A	Start-of-Charging AVP	161
7.2.215	Start-Time AVP	161
7.2.215A	Status- AS-Code AVP	161
7.2.216	Stop-Time AVP	161
7.2.217	Submission-Time AVP	161
7.2.218	Subscriber-Role AVP	162
7.2.219	Supplementary-Service AVP	162
7.2.219A	TAD-Identifier AVP	162
7.2.220	Talk-Burst-Exchange AVP	162
7.2.221	Talk-Burst-Time AVP	162
7.2.222	Talk-Burst-Volume AVP	163
7.2.223	Tariff-Information AVP	163
7.2.224	Tariff-XML AVP	163
7.2.224A	Teleservice AVP	163
7.2.225	Terminating-IOI AVP	163
7.2.225A	Time-First-Reception AVP	164
7.2.225B	Time-First-Transmission AVP	164
7.2.226	Time-First-Usage AVP	164
7.2.227	Time-Last-Usage AVP	164
7.2.228	Time-Quota-Mechanism	164
7.2.229	Time-Quota-Threshold AVP	164
7.2.230	Time-Quota-Type AVP	164
7.2.231	Time-Stamps AVP	164
7.2.232	Time-Usage AVP	165
7.2.233	Traffic-Data-Volumes AVP	165
7.2.233C	Transmitter-Info AVP	165
7.2.233A	Transcoder-Inserted-Indication AVP	165
7.2.233B	Transit-IOI-List AVP	165
7.2.234	Token-Text AVP	165
7.2.235	Trigger AVP	166
7.2.236	Trigger-Type AVP	166
7.2.237	Trunk-Group-ID AVP	168
7.2.237A	Void	169
7.2.237B	Void	169
7.2.237C	TWAN-User-Location-Info AVP	170
7.2.238	Type-Number AVP	170
7.2.239	Unit-Cost AVP	170
7.2.240	Unit-Quota-Threshold AVP	170
7.2.240A	User-CSG-Information AVP	170
7.2.240B	Usage-Information-Report-Sequence-Number AVP	171
7.2.241	User-Participating-Type AVP	171
7.2.242	User-Session-Id AVP	171
7.2.242A	VCS-Information AVP	171
7.2.242B	VLR-Number AVP	171
7.2.243	Volume-Quota-Threshold AVP	171
7.2.244	Void	172
7.2.245	Void	172
7.2.246	Void	172
7.2.247	Void	172

7.2.248 Void172
7.2.249 Void172
7.2.250 Void172
7.3 3GPP2 access specific AVPs.....173
7.4 Fixed access specific AVPs.....173

Annex A (informative): Bibliography.....174
Annex B (informative): Change history176
History181

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:

Version x.y.z

where:

- x the first digit:
 - 1 presented to TSG for information;
 - 2 presented to TSG for approval;
 - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

1 Scope

The present document is part of a series of Technical Specifications (TSs) that specify charging functionality and charging management in GSM/UMTS networks. The GSM/UMTS core network-charging architecture and principles are specified in TS 32.240 [1], which provides an umbrella for other charging management documents that specify.

- The content of the CDRs' per domain and subsystem (offline charging);
- The content of real-time charging messages per domain / subsystem (online charging);
- The functionality of online and offline charging for those domains and subsystems;
- The interfaces that are used in the charging framework to transfer the charging information (i.e. CDRs or charging events).

The complete document structure for these TSs is defined in TS 32.240 [1].

The present document specifies in detail the Diameter based offline and online charging applications for 3GPP networks. It includes all charging parameters, scenarios and message flows..

All terms, definitions and, abbreviations used in the present document, that are common across 3GPP TSs, are defined in TR 21.905 [100]. Those that are common across charging management in GSM/UMTS domains, services or subsystems are provided in the umbrella document TS 32.240 [1] and are copied into clause 3 of the present document for ease of reading. Finally, those items that are specific to the present document are defined exclusively in the present document.

Furthermore, requirements that govern the charging work are specified in TS 22.115 [101].