



**MSF Implementation Agreement for the
3GPP defined
Offline Charging - Rf interface**

MSF-IA-BILLING.001-FINAL

MultiService Forum Implementation Agreement

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Abstract:

The MultiService Forum (MSF) is responsible for developing Implementation Agreements or Architectural Frameworks which can be used by developers and network operators to ensure interoperability between components from different vendors. MSF Implementation Agreements are formally ratified via a Straw Ballot and then a Principal Member Ballot.

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Draft Implementation Agreements may be revised before or during the full balloting process. The revised document is allocated a new major or minor number and is published. The original Draft Implementation Agreement or Architectural Framework remains published until the Technical Committee votes to withdraw it.

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The use of capitalization of the key words "MUST", "SHALL", "REQUIRED", "MUST NOT", "SHOULD NOT", "SHOULD", "RECOMMENDED", "NOT RECOMMENDED", "MAY" or "OPTIONAL" is as described in section V-B of the MSF Technical Committee Operating Procedures.

The goal of the MSF is to promote multi-vendor interoperability as part of a drive to accelerate the deployment of next generation networks. To this end the MSF looks to adopt pragmatic solutions in order to maximize the chances for early deployment in real world networks.

To date the MSF has defined a number of detailed Implementation Agreements and detailed Test Plans for the signaling protocols between network components and is developing additional Implementation Agreements and Test Plans addressing some of the other technical issues such as QoS and Security to assist vendors and operators in deploying interoperable solutions.

The MSF welcomes feedback and comment and would encourage interested parties to get involved in this work program. Information about the MSF and membership options can be found on the MSF website <http://www.msforum.org/>

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I. The MultiService Forum

The MultiService Forum (MSF) is a global association of service providers, system suppliers and other organizations committed to developing and promoting open-architecture, multiservice communication systems. Founded in 1998, the MSF is an open-membership organization comprised of the world's leading telecommunications companies.

The MSF's activities include developing implementation agreements, promoting worldwide compatibility and interoperability, and encouraging input to appropriate national and international standards bodies.

As part of MSF's effort to drive and promote interoperability, the MSF has created a number of programs geared toward accelerating real world network deployments:

1. Global MSF Interoperability (GMI) events. GMI events provide a real-world setting for vendors to test their solutions and provide evidence that vendor products meet the interoperability standards set forth by MSF Implementation Agreements. Each MSF GMI event is built around a set of capabilities defined for a given release of the MSF Architecture.
2. Next Generation Network (NGN) Test Bed. The NGN test bed provides a facility to enable carriers and vendors to perform in-depth testing of a specific interface as defined in a given release of the MSF architecture.
3. Certification Programs. For more mature technologies the MSF can provide Certification of compliance to a given Implementation Agreement where MSF members believe that it is of value to the industry to do so.

II. An introduction to MSF documentation and GMI 2008

This document is part of the MSF Release 4 set of architectural, protocol and test documentation.

The MSF Release 4 Architecture is a physical implementation of the functional architectures that have been proposed by the key Standards Development Organizations. As such the MSF Release 4 Architecture represents the current state of the industry and it identifies current open interfaces between physically separate network elements.

MSF Implementation Agreements define the protocols to be used over specific open interfaces. Where possible MSF Implementation Agreements are based on industry standard protocols augmented with additional information so as to ensure interoperability between communicating network elements. This level of interoperability is achieved by closing any gaps and tightening any optional capabilities in those industry standards to remove the danger of mutually incompatible selections by vendors. An MSF Implementation Agreement is targeted at a given release of the MSF architecture but can

be used in any circumstance where an operator wishes to deploy the open interface and its functionality within their own network.

The MSF Release 4 architecture and its associated implementation agreements are used as the basis for GMI 2008. GMI 2008 is a global test event executed to demonstrate multi-vendor, multi-service interoperability based around IMS and includes IPTV and web based services.

As part of GMI 2008 a number of detailed test scenarios have been developed and a number of test plans defined. Test plans contain the set of test cases required to demonstrate a given MSF Release 4 capability and serve to exercise and validate the set of Implementation Agreements required to realize the capability.

Following the completion of GMI 2008 the MSF Release 4 architecture and individual implementation agreements will be updated if the testing identifies any deficiencies in the documents.

For more information about the scope of GMI2008 please go to <http://www.msforum.org>

III. Impact on previously published MSF documents

This is a new specification for MSF Release 4 and GMI2008

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Introduction

1.1. Scope

This document defines the BI-1 interface in the MSF Release 4 architecture [1]. It is between the Charging Data Server (CDS) located in the Offline Charging Server (OFCS) and the network elements within the MSF Core architecture that support the BI-1 (Rf) interface as defined in the 3GPP charging architecture

It supports interactions between the OFCS and the MSF Core network elements to:

- Generate information for network resource usage by an IMS subscriber
- Transfer that information to a logical charging function for further processing.

The BI-1 reference point collects charging related data for network elements within the same network domain only.

This document is a profile of the 3GPP interface [2] defined in the 3GPP Architecture as the Rf reference point.

1.2. References

- [1] MSF Release 4 Architecture Overview (MSFR4-ARCH-OVERVIEW-FINAL)
- [2] 3GPP TS 32.360 V7.4.0; 3GPP Charging Management; IMS Charging Release 7
- [3] 3GPP TS 32.299 V7.7.0; 3GPP Charging Management; Diameter Charging Applications Release 7
- [4] 3GPP TS 32.240 V7.2.0; 3GPP Charging Management; Charging Architecture and Principles Release 7
- [5] IETF RFC 3588, "Diameter Base Protocol", September 2003"

1.3. Definitions and Abbreviations

1.3.1. Definitions

Transport Control Block	The part of the MSF overall architecture framework that generically represents the elements responsible to control the transport network, independent of its technology
Access Network Tile	A specification of the architecture for a specific access network technology or a grouping of similar access technologies.
MSF Core Architecture Block	The functionality contained in the Transport, Session and Common Blocks defines in the MSF Architecture [1]

1.3.2. Abbreviations

3GPP	3 rd Generation Partnership Project
ACA	Accounting-Answer
ACR	Accounting-Request
AF	Application Function
AS	Application Server
AVP	Application Value Pair
CCF	Charging Collection Function
CDF	Charging Data Function
CDR	Charging Data Record
CDS	Charging Data Server
CGF	Charging Gateway Function
CGS	Charging Gateway Server
DNS	Domain Naming Service
FQDN	Fully Qualifies Domain Name
IA	Implementation Agreement
IMS	IP Multimedia System
MRFC	Multimedia Resource Function Controller
PCRF	Policy and Charging Rules Function
P-CSC	Proxy – Call State Controller
OFCS	Offline Charging System
PDSN	Packet Data Serving Node
QoS	Quality of Service
RAA	Re-Auth Answer
RAN	Radio Access Network
SCTP	Stream Control Transmission Protocol
TCP	Transmission Control Protocol

2. Context for use of the BI-1 Interface

The MSF Release 4 architecture [1] incorporates access networks into its architectural framework. The generic interface between the MSF OFCS and the NSF Core network elements that support the 3GPP defined charging function are identified by BI-1.

Figure 1 shows the context of the BI-1 interface between the OFCS and the MSF Core components.

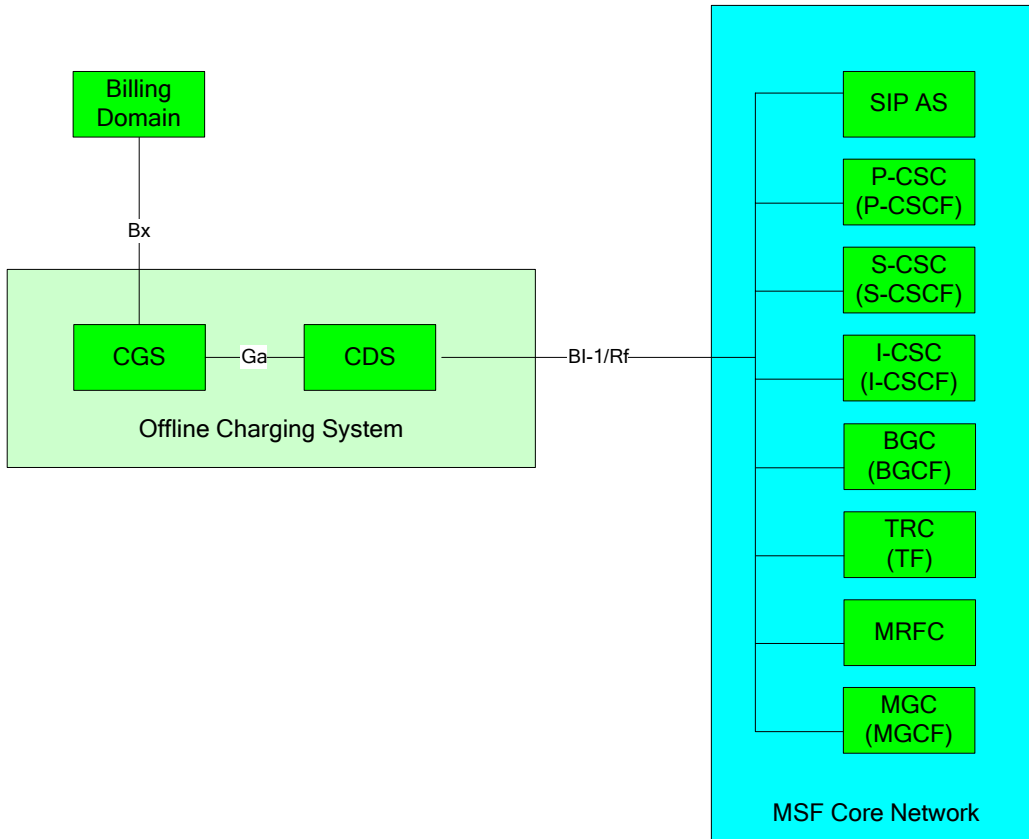


Figure 1: Context of the BI-1 Interface

It should be noted that Offline charging does not effect in real-time the service being used by the IMS subscriber.

It is the responsibility of the OFCS to generate the appropriate CDR that is eventually sent to the network operators Billing Domain over the Bx interface for the purposes of subscriber billing and inter-operator accounting.

2.1. Offline Charging Server (OFCS)

The OFCS also referred to as the Charging Collection Function (CCF) is composed of the;

1. Charging Gateway Server
2. Charging Data Server

The Charging Data Server (CDS) receives charging events from the MSF core elements via the BI-1 interface. This information is then used to construct CDR's

The Charging Gateway Server acts as a gateway between the IMS network and the Billing Domain. It receives CDR's generated by the Charging Data Server via the BI-2 interface and sends them to the Billing Domain over the Bx interface.

Note: The Bx / Ga interfaces are not covered in the MSF R4 architecture.

2.2. MSF Core network elements

The elements within the MSF Core shown above generate charging events based on network resource usage. These network elements are responsible to detect the charging event, collecting the information and assembling the information into a matching charging event and sending them to the Charging Data Server.

3. Overview of the BI-1 interface

Certain MSF R4 Core network elements shown in Figure 1 above support the BI-1 interface to the Offline Charging Server which is based on the 3GPP defined Rf interface. This interface uses the Diameter protocol and the Diameter commands defined in RFC 3588 [3] for connection establishment and management.

The BI-1 interface supports the following Diameter commands;

1. AC-Request / AC-Answer from MSF Core network element to the OFCS-CDS

Other commands SHOULD NOT be sent on the BI-1 interface and any responses that relate to these commands SHOULD be ignored by entities processing the BI-1 interface.

The BI-1 interface shall support the following capabilities

- Real-time transfer of events
- Stateless mode for event based charging
- Statefull mode for session based charging
- Reliability mechanism for retransmission of charging events
- Changeover to a secondary destination

Event based charging is a chargeable event that is recognized by the MSF Core network element and is mapped to a single charging event specified in the 3GPP charging specification. When transferred to the CDS over the BI-1 interface the CDS generates a matching CDR that is sent to the Billing Domain via the CGS. The I-CSC, TRC and MRFC support event based charging

Session based charging is a chargeable event that is recognized by the MSF core network element and has a start, interim and stop indication. The "Start" charging event generated by the MSF Core network element is stored by the CDS and it waits till it receives a "Stop" charging event for that subscriber (dependent on rules provisioned by the network operator). The MSF Core network elements can send "Interim" charging events for that subscriber. The CDS on receipt of the "Stop" charging event generates a CDR that is sent to the Billing domain via the CGS. The P/S-CSC, NGC, BGC support session based charging

4. Profiling of 3GPP TS 32.260 V7.4.0 [2]

The following is a profiling of the 3GPP standard 32.260 V7.4.0 [2], for the BI-1 interface showing the endorsements and changes to that document.

TS 32.260 Section	Profiling Information
4 Architecture Considerations	Endorsed
4.1 High Level IP Multimedia Subsystem (IMS) Architecture	Endorsed
4.2 IMS offline charging architecture	Endorsed
4.3 IMS online charging architecture	Endorsed
5 Charging Principles	
5.1 IMS Charging Principles	Endorsed
5.1.2 IMS Charging Correlation	Endorsed
5.1.2.1 Basic Principles for IMS Domain Correlation	Endorsed
5.1.2.2 IMS Charging Identifier (ICID)	Endorsed
5.1.2.3 Access network charging identifier	Endorsed
5.1.2.4 Inter Operator Identifier (IOI)	Endorsed
5.1.2.5 Void	Endorsed
5.2 IMS Offline Charging Principles	Endorsed
5.2.1 Basic Principles	Endorsed
5.2.2 Diameter Message Flows and Types	Endorsed
5.2.2.1 Message Flows - Successful Cases and Scenarios	Endorsed
5.2.2.1.1 Session Establishment - Mobile Origination	Endorsed
5.2.2.1.2 Session Establishment - Mobile Termination	Endorsed
5.2.2.1.3 Mid-Session Procedures	Endorsed
5.2.2.1.4 Session Release - Mobile Initiated	Endorsed
5.2.2.1.5 Session-Unrelated Procedures	Endorsed
5.2.2.1.6 Session Establishment - PSTN Initiated	Endorsed
5.2.2.1.7 Session Establishment - IMS Initiated	Endorsed
5.2.2.1.8 Session Release - PSTN Initiated	Endorsed
5.2.2.1.9 Session Release - IMS Initiated	Endorsed
5.2.2.1.10 Multi-Party Call	Endorsed
5.2.2.1.11 AS Related Procedures - AS Acting as a Redirect Server	Endorsed
5.2.2.1.12 AS Related Procedures - AS Acting as a Voice Mail Server	Endorsed
5.2.2.1.13 AS Related Procedures - AS Acting as a VCC AS	Endorsed
5.2.2.1.14 Initiating Alternate Charged Party Call	Endorsed
5.2.2.2 Message Flows - Error Cases and Scenarios	Endorsed
5.2.2.2.1 Session Related SIP Procedures- Reception of SIP error messages	Endorsed
5.2.2.2.2 Session Related SIP Procedures - SIP session failure	Endorsed
5.2.2.2.3 Session Unrelated SIP procedures	Endorsed
5.2.2.2.4 CDF Connection Failure	Endorsed
5.2.2.2.5 No Reply from CDF	Endorsed
5.2.2.2.6 Duplicate Detection	Endorsed
5.2.2.2.7 CDF Detected Failure	Endorsed
5.2.3 CDR generation	Endorsed
5.2.4 GTP' record transfer flows	Endorsed
5.2.5 Bi CDR file transfer	Endorsed
5.3 IMS Online Charging Scenarios	Not Applicable
5.3.1 Basic Principles	Not Applicable

TS 32.260 Section	Profiling Information
5.3.2 Diameter Message Flows and Types	Not Applicable
5.3.2.1 Immediate Event Charging (IEC)	Not Applicable
5.3.2.1.1 Message Flows - Successful Cases and Scenarios	Not Applicable
5.3.2.1.2 Message Flows - Error Cases and Scenarios	Not Applicable
5.3.2.2 Event Charging with Unit Reservation (ECUR) and Session Charging with Unit Reservation (SCUR)	Not Applicable
5.3.2.2.1 Message Flows - Successful Cases and Scenarios	Not Applicable
5.3.2.2.1.2 Expiration of Reservation Validity	Not Applicable
5.3.2.2.2 Message Flows - Error Cases and Scenarios	Not Applicable
5.3.2.3 IMS Service Termination by OCS	Not Applicable
5.3.2.3.1 Triggers on Ro interface which imply the termination of the IMS service	Not Applicable
5.3.2.3.2 Indication to the UE of the reason for IMS service release	Not Applicable
6 Definition of charging information	Endorsed
6.1 Data description for IMS offline charging	Endorsed
6.1.1 Rf Message contents	Endorsed
6.1.1.1 Charging Data-Request Message	Endorsed
6.1.1.2 Charging Data Response Message	Endorsed
6.1.2 GTP' message contents	Endorsed
6.1.3 CDR Description on the Bi Interface	Endorsed
6.1.3.1 CDR Field Types	Endorsed
6.1.3.2 CDR Triggers	Endorsed
6.1.3.2.1 Session Related CDRs	Endorsed
6.1.3.2.2 Session Unrelated CDRs	Endorsed
6.1.3.3 S-CSCF CDR Content	Endorsed
6.1.3.4 P-CSCF CDR Content	Endorsed
6.1.3.5 I-CSCF CDR Content	Endorsed
6.1.3.6 MRFC CDR Content	Endorsed
6.1.3.7 MGCF CDR Content	Endorsed
6.1.3.8 BGCF CDR Content	Endorsed
6.1.3.9 SIP AS CDR Content	Endorsed
6.2 Data description for IMS online charging	Not Applicable
6.2.1 Ro message contents	Not Applicable
6.2.1.1 Debit and Reserve Units Request Message	Not Applicable
6.2.1.2 Debit and Reserve Units Response Message	Not Applicable
6.3 IMS Charging Specific Parameters	Endorsed
6.3.1 Definition of IMS charging information	Endorsed
6.3.1.1 IMS charging information assignment for Service Information	Endorsed
6.3.1.2 Definition of the IMS Information	Endorsed
6.3.2 Detailed Message Format for offline charging	Endorsed
6.3.3 Detailed Message Format for online charging	Not Applicable
6.3.4 Formal IMS charging parameter description	Endorsed
6.3.4.1 IMS charging information for CDRs	Endorsed
6.3.4.2 IMS charging information for charging events	Endorsed
Annex A (informative): Bibliography	Endorsed
Annex B (informative): Message Flows for Service Termination by OCS	Endorsed
B.1 Scenario 1 - Session Related (SCUR): Service Termination on reception of an initial SIP INVITE Request	Endorsed
B.2 Scenario 2 - Session Related (SCUR): Service Termination triggered after an early SIP Dialog is established	Endorsed
B.3 Scenario 3 - Session Related (SCUR): Service Termination triggered after a confirmed SIP Dialog is established	Endorsed

TS 32.260 Section	Profiling Information
B.4 Scenario 4 - Session Unrelated (ECUR): Service Termination on reception of an initial SIP non-INVITE Request	Endorsed
B.5 Scenario 5 - Session Unrelated (IEC): Service Termination on reception of an initial SIP non-INVITE Request	Endorsed

5. Profiling of 3GPP TS 32.299 V7.7.0 [3]

The following is a profiling of the 3GPP standard 32.299 V7.7.0 [3], for the BI-1 interface showing the endorsements and changes to that document.

TS 32.299 Section	Profiling Information
4 Architecture Considerations	
4.1 High level architecture	Endorsed for Offline charging Architecture.
4.1.1 Charging related transfer requirements	Endorsed for Offline charging Architecture.
5 3GPP charging applications requirements	
5.1 Offline Charging Scenarios	Endorsed
5.1.1 Basic Principles	Endorsed
5.1.1.1 Event based charging	Endorsed
5.1.1.2 Session based charging	Endorsed
5.1.2 Basic Operation	Endorsed
5.2 Online Charging scenarios	Endorsed
5.3 Other requirements	Endorsed
5.3.1 Re-authorization	Endorsed
5.3.2 Threshold based re-authorization triggers	Endorsed
5.3.3 Termination action	Endorsed
6 3GPP Charging Applications – Protocol Aspects	
6.1 Basic Principles for Diameter Offline Charging	Endorsed
6.1.1 Event based charging	Endorsed
6.1.2 Session based charging	Endorsed
6.1.3 Offline charging error cases - Diameter procedures	Endorsed
6.1.3.1 CDF Connection Failure	Endorsed
6.1.3.2 No Reply from CDF	Endorsed
6.1.3.3 Duplicate Detection	Endorsed
6.1.3.4 CDF Detected Failure	Endorsed
6.2 Message Contents for Offline Charging	Endorsed
6.2.1 Summary of Offline Charging Message Formats	Endorsed
6.2.1.1 General	Endorsed
6.2.1.2 Structure for the Accounting Message Formats	Endorsed
6.2.2 Accounting-Request Message	Endorsed
6.2.3 Accounting-Answer Message	Endorsed
6.3 Basic Principles for Diameter Online charging	Not Applicable
6.4 Message formats for Online Charging	Not Applicable
6.5 Other procedural description of the 3GPP charging applications	Not Applicable
6.6 Bindings of the operation to protocol application	
6.6.1 Bindings of Charging Data Transfer to Accounting	Endorsed
6.6.2 Bindings of Debit / Reserve Units to Credit-Control	Not Applicable

TS 32.299 Section	Profiling Information
7 Summary of used Attribute Value Pairs	Endorsed for all the AVPs in “Table 7.1: Use Of IETF Diameter AVPs” related to ACR/ACA Message (off-line charging Interface)
7.1 Diameter AVPs	
7.1.1 Acct-Application-Id AVP	Endorsed
7.1.2 Auth-Application-Id AVP	Not Applicable
7.1.3 Event-Timestamp AVP	Endorsed
7.1.4 Multiple-Services-Credit-Control	Not Applicable
7.1.5 Rating-Group AVP	Not Applicable
7.1.6 Result-Code AVP	Endorsed
7.1.7 Service-Context-Id AVP	Endorsed
7.1.8 Service-Identifier AVP	Not Applicable
7.1.8A Used-Service-Unit AVP	Not Applicable
7.1.9 User-Name AVP	Endorsed
7.1.10 Vendor-Id AVP	Not Applicable
7.2 3GPP specific AVPs	Endorsed for all the AVPs in “Table 7.2: 3GPP specific AVPs” related to ACR/ACA Message (off-line charging Interface)
7.2.1 Adaptations AVP	Not Applicable
7.2.1A Access-Network-Information AVP	Endorsed
7.2.2 Additional-Content-Information AVP	Not Applicable
7.2.3 Additional-Type-Information AVP	Not Applicable
7.2.4 Address-Data AVP	Not Applicable
7.2.5 Address-Domain AVP	Not Applicable
7.2.6 Address-Type AVP	Not Applicable
7.2.7 Addressee-Type AVP	Not Applicable
7.2.8 Applic-ID AVP	Not Applicable
7.2.9 Additional-Content-Information AVP	Not Applicable
7.2.9A AF-Correlation-Information AVP	Not Applicable
7.2..9B Alternate-Charged-Party-Address AVP	Endorsed
7.2.10 Application-provided-Called-Party-Address AVP	Endorsed
7.2.11 Application-Server AVP	Endorsed
7.2.12 Application-Server-Information AVP	Endorsed
7.2.13 Associated-URI AVP	Endorsed
7.2.14 Authorised-QoS AVP	Endorsed
7.2.15 Aux-Applic-Info AVP	Not Applicable
7.2.15A Base-Time-Interval AVP	Not Applicable
7.2.16 Bearer-Service AVP	Endorsed
7.2.17 Called-Asserted-Identity AVP	Endorsed

TS 32.299 Section	Profiling Information
7.2.18 Called-Party-Address AVP	Endorsed
7.2.19 Calling-Party-Address AVP	Endorsed
7.2.20 Cause-Code AVP	Endorsed
7.2.21 CG-Address AVP	Endorsed
7.2.22 Charged-Party AVP	Endorsed
7.2.23 Void	Not Applicable
7.2.24 Class-Identifier AVP	Not Applicable
7.2.25 Content-Class AVP	Not Applicable
7.2.26 Content-Disposition AVP	Endorsed
7.2.27 Content-Length AVP	Endorsed
7.2.28 Content-Size AVP	Not Applicable
7.2.29 Content-Type AVP	Endorsed
7.2.30 Deferred-Location-Event-Type AVP	Not Applicable
7.2.31 Delivery-Report-Requested AVP	Not Applicable
7.2.32 Domain-Name AVP	Not Applicable
7.2.33 DRM-Content AVP	Not Applicable
7.2.33A Early-Media-Description AVP	Endorsed
7.2.33B Envelope AVP	Not Applicable
7.2.33C Envelope-End-Time AVP	Not Applicable
7.2.33D Envelope-Reporting AVP	Not Applicable
7.2.33E Envelope-Start-Time AVP	Not Applicable
7.2.34 Event AVP	Endorsed
7.2.34A Event-Charging-TimeStamp AVP	Not Applicable
7.2.35 Event-Type AVP	Endorsed
7.2.36 Expires AVP	Endorsed
7.2.37 File-Repair-Supported AVP	Endorsed
7.2.38 GGSN-Address AVP	Endorsed
7.2.39 IMS-Charging-Identifier (ICID) AVP	Endorsed
7.2.39A IMS-Communication-Service-Identifier (ICSI) AVP	Endorsed
7.2.40 IMS-Information AVP	Endorsed
7.2.41 Incoming-Trunk-Group-ID AVP	Endorsed
7.2.42 Inter-Operator-Identifier AVP	Endorsed
7.2.43 LCS-APN AVP	Not Applicable
7.2.44 LCS-Client-Dialed-By-MS AVP	Not Applicable
7.2.45 LCS-Client-External-ID AVP	Not Applicable
7.2.46 LCS-Client-ID AVP	Not Applicable
7.2.47 LCS-Client-Name AVP	Not Applicable
7.2.48 LCS-Client-Type AVP	Not Applicable
7.2.49 LCS-Data-Coding-Scheme AVP	Not Applicable
7.2.50 LCS-Format-Indicator AVP	Not Applicable
7.2.51 LCS-Information AVP	Not Applicable
7.2.52 LCS-Name-String AVP	Not Applicable
7.2.53 LCS-Requestor-ID AVP	Not Applicable
7.2.54 LCS-Requestor-ID-String AVP	Not Applicable
7.2.55 Location-Estimate AVP	Not Applicable
7.2.56 Location-Estimate-Type AVP	Not Applicable
7.2.57 Location-Type AVP	Not Applicable
7.2.58 MBMS-Information AVP	Endorsed
7.2.59 MBMS-User-Service-Type AVP	Endorsed
7.2.60 Media-Initiator-Flag AVP	Endorsed
7.2.60a Media-Initiator-Party AVP	Endorsed
7.2.61 Message-Body AVP	Endorsed

TS 32.299 Section	Profiling Information
7.2.62 Message-Class AVP	Not Applicable
7.2.63 Message-ID AVP	Not Applicable
7.2.64 Message-Size AVP	Not Applicable
7.2.65 Message-Type AVP	Not Applicable
7.2.66 MM-Content-Type AVP	Not Applicable
7.2.67 MMBBox-Storage-Requested AVP	Not Applicable
7.2.68 MMS-Information AVP	Not Applicable
7.2.69 Node-Functionality AVP	Endorsed
7.2.70 Number-Of-Participants AVP	Endorsed
7.2.70AA Number-Of-Received-Talk-Bursts AVP	Endorsed
7.2.70AB Number-Of-Talk-Bursts AVP	Endorsed
7.2.70A Offline-Charging AVP	Not Applicable
7.2.71 Originating-IOI AVP	Endorsed
7.2.72 Originator AVP	Endorsed
7.2.73 Originator-Address AVP	Not Applicable
7.2.74 Outgoing-Trunk-Group-ID AVP	Endorsed
7.2.75 Participants-Involved AVP	Endorsed
7.2.75A Participant-Group AVP	Endorsed
7.2.75B Participant-Access-Priority AVP	Endorsed
7.2.76 PDG-Address AVP	Endorsed
7.2.77 PDG-Charging-Id AVP	Endorsed
7.2.78 PDP-Address AVP	Not Applicable
7.2.79 PDP-Context-Type AVP	Not Applicable
7.2.80 PoC-Change-Condition AVP	Endorsed
7.2.81 PoC-Change-Time AVP	Endorsed
7.2.82 PoC-Controlling-Address AVP	Endorsed
7.2.83 PoC-Group-Name	Endorsed
7.2.84 PoC-Information AVP	Endorsed
7.2.85 PoC-Server-Role AVP	Endorsed
7.2.86 PoC-Session-Id AVP	Endorsed
7.2.86A PoC-Session-Initiation-Type AVP	Endorsed
7.2.87 PoC-Session-Type AVP	Endorsed
7.2.87A PoC-User-Role AVP	Endorsed
7.2.87B PoC-User-Role-IDs AVP	Endorsed
7.2.87C PoC-User-Role-info-Units AVP	Endorsed
7.2.88 Positioning-Data AVP	Not Applicable
7.2.89 Priority AVP	Not Applicable
7.2.90 PS-Append-Free-Format-Data AVP	Endorsed
7.2.91 PS-Free-Format-Data AVP	Endorsed
7.2.92 PS-Furnish-Charging-Information AVP	Endorsed
7.2.93 PS-Information AVP	Endorsed
7.2.94 Quota-Consumption-Time AVP	Not Applicable
7.2.95 Quota-Holding-Time AVP	Not Applicable
7.2.96 Read-Reply-Report-Requested AVP	Not Applicable
7.2.96A Received-Talk-Burst-Time AVP	Endorsed
7.2.96B Received-Talk-Burst-Volume AVP	Endorsed
7.2.97 Recipient-Address AVP	Not Applicable
7.2.98 Reply-Applic-ID AVP	Not Applicable
7.2.99 Reporting-Reason AVP	Not Applicable
7.2.100 Requested-Party-Address AVP	Endorsed
7.2.101 Role-of-node AVP	Endorsed
7.2.101A SDP-Answer-Timestamp AVP	Endorsed

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7.2.102 SDP-Media-Component AVP	Endorsed
7.2.103 SDP-Media-Description AVP	Endorsed
7.2.104 SDP-Media-Name AVP	Endorsed
7.2.104A SDP-Offer-Timestamp AVP	Endorsed
7.2.105 SDP-Session-Description AVP	Endorsed
7.2.105A SDP-TimeStamps AVP	Endorsed
7.2.106 Served-Party-IP-Address AVP	Endorsed
7.2.107 Service-ID AVP	Endorsed
7.2.107A Service-Generic-Information AVP	Endorsed
7.2.108 Service-Information AVP	Endorsed
7.2.109 Service-Specific-Data AVP	Endorsed
7.2.109A Service-Specific-Info AVP	Endorsed
7.2.109B Service-Specific-Type AVP	Endorsed
7.2.110 SGSN-Address AVP	Endorsed
7.2.111 SIP-Method AVP	Endorsed
7.2.112 SIP-Request-Timestamp AVP	Endorsed
7.2.113 SIP-Response-Timestamp AVP	Endorsed
7.2.114 Submission-Time AVP	Not Applicable
7.2.115 Talk-Burst-Exchange AVP	Endorsed
7.2.115A Talk-Burst-Time AVP	Endorsed
7.2.115B Talk-Burst-Volume AVP	Endorsed
7.2.116 Terminating-IOI AVP	Endorsed
7.2.116A Time-Quota-Mechanism	Not Applicable
7.2.117 Time-Quota-Threshold AVP	Not Applicable
7.2.117A Time-Quota-Type AVP	Not Applicable
7.2.118 Time-Stamps AVP	Endorsed
7.2.119 Token-Text AVP	Not Applicable
7.2.119A Trigger AVP	Not Applicable
7.2.120 Trigger-Type AVP	Not Applicable
7.2.121 Trunk-Group-ID AVP	Endorsed
7.2.122 Type-Number AVP	Not Applicable
7.2.123 Unit-Quota-Threshold AVP	Not Applicable
7.2.123A User-Participating-Type	Endorsed
7.2.124 User-Session-ID	Endorsed
7.2.125 Volume-Quota-Threshold	Not Applicable
7.2.126 WAG-Address	Endorsed
7.2.127 WAG-PLMN-Id	Endorsed
7.2.128 WLAN-Information	Endorsed
7.2.129 WLAN-Radio-Container	Endorsed
7.2.130 WLAN-Session-Id	Endorsed
7.2.131 WLAN-Technology	Endorsed
7.2.132 WLAN-UE-Local-IPAddress	Endorsed

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