

Table of Contents

- Preface** xi
- 1 Introduction**
 - 1.1 Background and Motivation 1-1
 - 1.2 Purpose and Scope 1-1
 - 1.3 Target Audience 1-2
 - 1.4 Relationship to Other Documents 1-2
 - 1.5 Structure and Use of This Document 1-2
 - 1.6 Telcordia, IETF, and 3GPP Reference Documents and Topics 1-3
 - 1.7 Highlights of Changes in GR-3058, Issue 7 1-3
 - 1.8 Requirements Terminology 1-4
 - 1.9 Requirement Labeling Conventions 1-4
 - 1.9.1 Numbering of Requirement and Related Objects 1-4
 - 1.9.2 Requirement, Conditional Requirement, and Objective Identification . . . 1-5
- 2 System Overview**
 - 2.1 NGN/VoP Functional Entities 2-3
 - 2.2 VoP Accounting Management System Architecture 2-4
 - 2.3 System Interfaces 2-6
 - 2.3.1 Rf Reference Point 2-6
 - 2.3.2 Ga Reference Point 2-7
 - 2.3.3 Bx Reference Point 2-7
 - 2.4 Charging Event Messages 2-7
 - 2.5 Assumptions 2-8
- 3 Call Event Accounting Management Generic Requirements**
 - 3.1 Introduction 3-1
 - 3.1.1 Overview 3-1
 - 3.1.2 Logical Architecture 3-2
 - 3.2 Usage Measurement Recording 3-2
 - 3.2.1 Charging Event Messages 3-2
 - 3.2.2 Correlation of Charging Event Messages 3-4
 - 3.3 Session-Based Call Recording Requirements and Guidelines 3-4
 - 3.3.1 Chargeable Event Determination 3-4
 - 3.3.2 Determination of Information to be Captured 3-5
 - 3.3.3 Formatting Session-Based Accounting Requests (ACRs) 3-6
 - 3.3.3.1 Diameter Protocol AVPs 3-6
 - 3.3.3.2 3GPP-Specific START_RECORD AVPs 3-8
 - 3.3.3.3 3GPP-Specific STOP_RECORD AVPs 3-8
 - 3.3.3.4 3GPP-Specific INTERIM_RECORD AVPs 3-9
 - 3.3.3.5 3GPP-Specific EVENT_RECORD AVPs for Unsuccessful
Session Requests 3-9
 - 3.3.4 Diameter AVPs to be Included in All ACRs 3-10
 - 3.3.4.1 Session-Id 3-11
 - 3.3.4.2 Origin-Host 3-11
 - 3.3.4.3 Origin-Realm 3-12

3.3.4.4 Destination-Realm	3-12
3.3.4.5 Accounting-Record-Type	3-12
3.3.4.6 Accounting-Record-Number	3-13
3.3.4.7 Acct-Application-Id	3-13
3.3.4.8 Acct-Multi-Session-Id	3-14
3.3.4.9 Acct-Interim-Interval	3-15
3.3.4.10 Event-Timestamp	3-15
3.3.4.11 Vendor/Service-Specific AVPs	3-15
3.4 Event-Based Usage Recording	3-16
3.4.1 Determination of Service and Events	3-17
3.4.2 Accounting Information Generation/No Generation Determination	3-17
3.4.3 Generation of EVENT_RECORD ACRs	3-18
3.5 ACR Message Transfer	3-18
3.5.1 ACR Transfer to the CDF	3-19
3.5.2 ACR Acknowledgement	3-19
3.6 Storage of Chargeable Event Data	3-20
3.7 Operations	3-20
3.7.1 Accounting Administration	3-21
3.7.2 System Management	3-21
3.7.2.1 Management Information Base (MIB) Support	3-21
3.7.2.2 Alarms	3-21
3.7.2.3 Timing Accuracy	3-21
3.7.2.3.1 Time-of-Day Clock	3-22
3.7.3 Security	3-22
3.7.4 Reliability	3-23
3.7.5 Performance	3-24

4 Charging Data Function (CDF)

4.1 Functional Overview	4-1
4.1.1 CDF Functionality	4-1
4.1.2 Logical Architecture	4-1
4.2 ACR Validation and Processing	4-2
4.2.1 Usage Data Integrity - General	4-2
4.2.2 ACR Receipt and Acknowledgement	4-3
4.2.3 Usage Assembly	4-3
4.2.4 Error Handling - Usage Assembly	4-3
4.2.4.1 Missing ACRs	4-4
4.2.4.2 Duplicate ACRs	4-5
4.3 Record Generation Decision	4-5
4.4 CDR Generation and Formatting	4-5
4.5 CDR Transfer	4-6
4.5.1 CDR Transfer Availability	4-6
4.5.2 CDR Transfer Initiation	4-6
4.5.3 Error Handling	4-6
4.5.3.1 Aborted CDRs	4-7
4.6 Operations	4-7
4.6.1 Accounting Administration	4-7
4.6.1.1 Administrative Parameters	4-7
4.6.1.2 Error Files	4-7
4.6.1.3 MIB Support	4-7

- 4.6.1.4 Alarms 4-8
- 4.6.2 Maintenance 4-8
- 4.6.3 Security 4-9
- 4.6.4 Reliability 4-10
- 4.6.5 Performance 4-10
- 5 Charging Gateway Function (CGF)**
- 5.1 CDR File Creation 5-1
 - 5.1.1 CDR File Priority 5-1
 - 5.1.2 CDR File Integrity Control 5-1
- 5.2 CDR File Delivery 5-2
- 5.3 Operations 5-2
- 6 CTF/CDF Interface**
- 6.1 Rf Reference Point and the Diameter Accounting Protocol 6-1
- 6.2 ACR Processing and Error Handling 6-1
- 7 CDF/CGF Interface**
- 8 CGF/Billing Domain Interface**
- Appendix A: Conversion of 3GPP CDRs to AMA Records**
- A.1 AMA Record Generation and Usage Data Processing A-1
 - A.1.1 Selection of CDRs for Input to AMA Records A-1
 - A.1.2 Record Generation Decision A-2
 - A.1.2.1 Originating Call Attempts A-3
 - A.1.2.2 Call Attempts Involving PSTN Interconnection A-3
 - A.1.2.3 Call Attempts Involving VoP Carrier Interconnection A-4
 - A.1.2.4 Service Events A-4
 - A.1.2.5 Long-Duration Calls A-5
 - A.1.2.6 No Record Generated A-7
 - A.1.3 Call Type Determination A-8
 - A.1.4 Call Duration and Timing Calculations A-12
 - A.1.4.1 Time Zone Determination A-12
 - A.1.4.2 Elapsed Time Calculation A-12
 - A.1.4.2.1 Normal Duration Calls A-12
 - A.1.4.2.2 Long-Duration Calls A-13
 - A.1.4.2.3 Incomplete Calls A-14
 - A.1.4.3 Time Rounding A-14
 - A.1.4.4 Timing Irregularities A-15
- A.2 Billing AMA Format (BAF) Recording A-16
 - A.2.1 BAF Structures A-16
 - A.2.1.1 BAF Structure Code 0001 A-16
 - A.2.1.2 BAF Structure Code 00625 A-21
 - A.2.1.3 BAF Structure 0360 A-29
 - A.2.1.4 BAF Structure 0364 A-31
 - A.2.1.5 BAF Structure Code 0588 A-31
 - A.2.2 BAF Modules A-33
 - A.2.2.1 BAF Module Code 000, Final Module A-33

A.2.2.2	BAF Module Code 022, Long Duration Connection	A-34
A.2.2.3	BAF Module Code 025, Circuit Release Module	A-35
A.2.2.4	BAF Module Code 164, E.164/X.121 Number Module	A-36
A.2.2.5	BAF Module Code 204, Service Indicator Module	A-38
A.2.2.6	BAF Module Codes 251, 252, and 253 (Generic Modules for Capturing EBCDIC Information)	A-38
A.2.2.7	BAF Module Code 255, IPv4 Binary Address	A-41
A.2.2.8	BAF Module Code 256, IPv6 Binary Address	A-43
A.2.2.9	BAF Module Code 263, Time Zone Indication	A-44
A.2.2.10	BAF Module Code 288, Correlation Identifier	A-45
A.2.2.11	BAF Module Codes 719 and 720, Local Number Portability (LNP) Modules	A-46
A.3	Recording of Additional Parameters in AMA	A-48

Appendix B: References

B.1	Telcordia Publications	B-1
B.1.1	Generic Requirements	B-1
B.2	Non-Telcordia Documents	B-2
B.2.1	Internet Engineering Task Force Documents:	B-2
B.2.2	3GPP Documents	B-4
B.2.3	ITU-T Recommendations	B-7
B.2.4	Alliance for Telecommunications Industry Solutions (ATIS) Specifications	B-7
B.2.5	Telemanagement Forum Documents	B-8
B.3	Telcordia Document Sets—Family of Requirements (FR) and Family of Documents (FD)	B-8
B.4	Telcordia Reference Notes	B-9
B.4.1	Contact Telcordia	B-9
B.4.2	Order Documents Online From the Telcordia Information SuperStore	B-9
B.4.3	Web Sites for Generic Requirements Information	B-10
B.4.4	Licensing Agreements for Telcordia Documents	B-10

Appendix C: Glossary

Requirement-Object Index

List of Figures

Figure 2-1	High-Level NGN/VoP Architecture	2-1
Figure 2-2	NGN Accounting Management Logical Architecture	2-5
Figure 3-1	Accounting Management Logical Architecture	3-2
Figure 3-2	Call-Related Charging Event Message Flow	3-3
Figure 4-1	CDF Logical Architecture	4-2
Figure A-1	Example CDR Call Type Decision Diagram Based on AS-CDR . . .	A-10
Figure A-2	Example of CDR Call Type Decision Diagram Based on IBCF-CDR	A-11

List of Tables

Table 3-1	Diameter Protocol AVPs for Session-Based ACRs	3-7
Table 3-2	Diameter AVPs	3-10
Table A-1	BAF Structure Code 0001	A-17
Table A-2	BAF Structure Code 00625	A-22
Table A-3	BAF Structure Code 0360	A-30
Table A-4	BAF Structure Code 0588	A-32
Table A-5	BAF Module Code 000	A-33
Table A-6	BAF Module Code 022	A-34
Table A-7	BAF Module Code 025	A-35
Table A-8	BAF Module Code 164	A-37
Table A-9	BAF Module Code 204	A-38
Table A-10	Generic Context Identifiers for BAF Modules 251, 252, and 253	A-39
Table A-11	BAF Module Code 251	A-40
Table A-12	BAF Module Code 252	A-40
Table A-13	BAF Module Code 253	A-41
Table A-14	Generic Context Identifiers for BAF Module Codes 255 and 256	A-42
Table A-15	BAF Module Code 255	A-43
Table A-16	BAF Module Code 256	A-43
Table A-17	BAF Module Code 263	A-44
Table A-18	BAF Module Code 288	A-46
Table A-19	BAF Module Code 719	A-47
Table A-20	SDP Parameter Mapping to BAF	A-49
Table B-1	Mapping to Telcordia Generic Requirements Documents	B-1
Table B-2	Mapping to IETF Documents	B-3
Table B-3	Mapping to 3GPP Documents	B-5