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Contents

Foreword

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

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1 Scope

The present document is part of a series of Technical Specifications (TSs) that specify charging functionality and charging management in 3GPP networks. The 3GPP core network charging architecture and principles are specified in TS 32.240 [1], which provides an umbrella for other charging management TSs that specify:

- the content of the CDRs per domain / subsystem / service (offline and converged charging);
- the content of real-time charging messages per domain / subsystem / service (online and converged charging);
- the functionality of online, offline and converged charging for those domains / subsystems / services;
- 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 file based mechanism used to transfer the CDRs from the network to the operator's billing domain (e.g. the post-processing system or a mediation device).

The present document is related to other 3GPP charging TSs as follows:

- The common 3GPP charging architecture is specified in TS 32.240 [1];
- The parameters, abstract syntax and encoding rules for the CDRs are specified in TS 32.298 [51];
- A transaction based mechanism for the transfer of CDRs within the network is specified in TS 32.295 [54].
- The 3GPP Diameter application that is used for offline and online charging is specified in TS 32.299 [50].
- The services, operations and procedures of charging, using Service Based Interface are specified in TS 32.290 [57].
- The charging service of 5G system is specified in TS 32.291 [58].

All terms, definitions and abbreviations used in the present document, that are common across 3GPP TSs, are defined in the 3GPP Vocabulary, TR 21.905 [100]. Those that are common across charging management in 3GPP 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].

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 32.240: "Telecommunication management; Charging management; Charging architecture and principles".

[2] - [9] Void.

[10] 3GPP TS 32.250: "Telecommunication management; Charging management; Circuit Switched (CS) domain charging".

[11] 3GPP TS 32.251: "Telecommunication management; Charging management; Packet Switched (PS) domain charging".

[12] Void.

[13] 3GPP TS 32.253: "Telecommunication management; Charging management; Control Plane (CP) data transfer domain charging".

[14] 3GPP TS 32.254: "Telecommunication management; Charging management; Exposure function Northbound Application Program Interfaces (APIs) charging".

[15] 3GPP TS 32.255: "Telecommunication management; Charging management; 5G Data connectivity domain charging; stage 2".

[16] 3GPP TS 32.256: "Charging management; 5G connection and mobility domain charging; Stage 2".

[17] - [19] Void

[20] 3GPP TS 32.260: "Telecommunication management; Charging management; IP Multimedia Subsystem (IMS) charging".

[21] - [29] Void.

[30] 3GPP TS 32.270: "Telecommunication management; Charging management; Multimedia Messaging Service (MMS) charging".

[31] 3GPP TS 32.271: "Telecommunication management; Charging management; Location Services (LCS) charging".

[32] 3GPP TS 32.272: "Telecommunication management; Charging management; Push-to-talk over Cellular (PoC) charging".

[33] 3GPP TS 32.273: "Telecommunication management; Charging management; Multimedia Broadcast and Multicast Service (MBMS) charging".

[34] 3GPP TS 32.274: "Telecommunication management; Charging management; Short Message Service (SMS) charging".

[35] 3GPP TS 32.275: "Telecommunication management; Charging management; Multimedia Telephony (MMTel) charging".

[36] Void.

[37] 3GPP TS 32.277: "Telecommunication management; Charging management; Proximity-based Services (ProSe) Charging".

[38] 3GPP TS 32.278: "Telecommunication management; Charging management; Monitoring Event charging".

[39] - [49] Void.

[50] 3GPP TS 32.299: "Telecommunication management; Charging management; Diameter charging application".

[51] 3GPP TS 32.298: "Telecommunication management; Charging management; Charging Data Record (CDR) encoding rules description".

[52] Void.

[53] 3GPP TS 32.296: "Telecommunication management; Charging management; Online Charging System (OCS) applications and interfaces".

[54] 3GPP TS 32.295: "Telecommunication management; Charging management; Charging Data Record (CDR) transfer".

[55] - [56] Void.

[57] 3GPP TS 32.290: "Telecommunication management; Charging management; 5G system; Services, operations and procedures of charging using Service Based Interface (SBI)".

[58] 3GPP TS 32.291: "Telecommunication management; Charging management; 5G system; Charging service, stage 3".

[59] - [99] Void.

[100] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[101] 3GPP TS 22.115: "Service aspects; Charging and billing".

[102] - [199] Void.

[200] 3GPP TS 23.078: "Customised Applications for Mobile network Enhanced Logic (CAMEL); Stage 2".

[201] 3GPP TS 32.341: "Telecommunication management; File Transfer (FT) Integration Reference Point (IRP); Requirements".

[202] 3GPP TS 32.342: "Telecommunication management; File Transfer (FT) Integration Reference Point (IRP); Information Service (IS)".

[203] 3GPP TS 32.343: "Telecommunication management; File Transfer (FT) Integration Reference Point (IRP); Common Object Request Broker Architecture (CORBA) Solution Set (SS)".

[204] 3GPP TS 32.344: "Telecommunication management; File Transfer (FT) Integration Reference Point (IRP); Common Management Information Protocol (CMIP) Solution Set (SS)".

[205] - [299] Void

[300] 3GPP TS 28.201: "Charging management; Network slice performance and analytics charging in the 5G System (5GS); Stage 2".

[301] 3GPP TS 28.202: "Charging management; Network slice management charging in the 5G System (5GS); Stage 2

[302] - [399] Void

[400] IETF RFC 959 (1985): "File Transfer Protocol".

[401] ATIS-PP-0300075.1.200X "Usage Data Management for Packet-Based Services - Service Neutral Protocol Specification for Billing Applications"

[402] IPDR "IPDR/File Transfer Protocol".

[403] IPDR "IPDR/SP Protocol Specification".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [100], TS 32.240 [1] and the following apply:

Billing Domain: part of the operator network, which is outside the telecommunication network that receives and processes charging information from the core network charging functions. It includes functions that can provide billing mediation and billing or other (e.g. statistical) end applications. It is only applicable to offline charging (see "Online Charging System" for equivalent functionality in online charging).

charging: function within the telecommunications network and the associated OCS/BD components whereby information related to a chargeable event is collected, formatted, transferred and evaluated in order to make it possible to determine usage for which the charged party may be billed (offline charging) or the subscriber's account balance may be debited / credited (online charging).

Charging Data Record (CDR): formatted collection of information about one or more chargeable event(s) (e.g. time of call set-up, duration of the call, amount of data transferred, etc) for use in billing and accounting. For each party to be charged for parts of or all charges of the chargeable event(s) a separate CDR is generated, i.e. more than one CDR may be generated for a single chargeable event, e.g. because of its long duration, or because more than one charged party is to be charged.

charging function: entity inside the core network domain, subsystem or service that is involved in charging for that domain, subsystem or service.

circuit switched domain: domain within GSM / UMTS in which information is transferred in circuit switched mode.

domain: part of the 3GPP telecommunication network that provides network resources using a certain bearer technology.

GPRS: packet switched bearer and radio services for GSM and UMTS systems.

middle tier TS: term used for the 3GPP charging TSs that specify the domain / subsystem / service specific, online and offline, charging functionality. These are all the TSs in the numbering range from TS 32.250 [10] to TS 32.27x [3x]; e.g. TS 32.250 [10] for the CS domain, or TS 32.270 [30] for the MMS service. Currently, there is only one "tier 1" charging TS in 3GPP, which is TS 32.240 [1] that specifies the charging architecture and principles. Finally, there are a number of top tier charging TSs in the 32.29x [5x] numbering range that specify common charging aspects such as parameter definitions, encoding rules, the common billing domain interface or common charging applications.

near real-time: near real-time charging and billing information is to be generated, processed, and transported to a desired conclusion in less than one (1) minute.

offline charging: charging mechanism where charging information **does not** affect, in real-time, the service rendered.

online charging: charging mechanism where charging information **can** affect, in real-time, the service rendered and therefore a direct interaction of the charging mechanism with session/service control is required.

packet switched domain: domain in which data is transferred between core network elements.

real-time: real-time charging and billing information is to be generated, processed, and transported to a desired conclusion in less than 1 second.

3.2 Symbols

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

Bam	Reference point for the CDR file transfer from the 5G connection and mobility CGF to the BD.
Bc	Reference point for the CDR file transfer from the Circuit Switched CGF to the BD.
Bcp	Reference point for the CDR file transfer from the CP data transfer CGF to the BD.
Bd	Reference point for the CDR file transfer from the 5G Data Connectivity CGF to the BD.
Bea	Reference point for the CDR file transfer from the Exposure function API CGF to the BD.