

TSG-SA Working Group 1 (Services) meeting #2 TSGS1#2(99)152
Edinburgh, Scotland 9th-12th March 1999

Agenda Item: 9.4.2
Source: Telecom Italia Mobile
Title: CR to 22.15
Document for: Approval

CHANGE REQUEST No :		A002	<small>Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.</small>
Technical Specification GSM		22.15	Version: 3.00
Submitted to SMG	For approval	Without presentation ("non-strategic")	
<small>list SMG plenary meeting no. here ↑</small>	for information	With presentation ("strategic")	X
<small>PT SMG CR cover form is available from: http://docbox.etsi.org/tech-org/smg/Document/smg/tools/CR_form/crf28_1.zip</small>			

Proposed change affects: SIM ME Network
(at least one should be marked with an X)

Work item: UMTS Charging and Billing

Source: Telecom Italia Mobile **Date:** 04/03/99

Subject: Upgrading of UMTS Charging and billing features

Category:	F Correction	<input type="checkbox"/>	Release:	Phase 2	<input type="checkbox"/>
	A Corresponds to a correction in an earlier release	<input type="checkbox"/>		Release 96	<input type="checkbox"/>
<small>(one category and one release only shall be marked with an X)</small>	B Addition of feature	<input type="checkbox"/>		Release 97	<input type="checkbox"/>
	C Functional modification of feature	<input checked="" type="checkbox"/>		Release 98	<input type="checkbox"/>
	D Editorial modification	<input type="checkbox"/>		Release 99	<input checked="" type="checkbox"/>

Reason for change: Additional CDRs requirements are needed in order to effectively support the provisioning of advanced services in a virtual home environment scenario.

Clauses affected: Section 5

Other specs affected:	Other releases of same spec	<input type="checkbox"/>	→ List of CRs:	
	Other core specifications	<input type="checkbox"/>	→ List of CRs:	
	MS test specifications / TBRs	<input type="checkbox"/>	→ List of CRs:	
	BSS test specifications	<input type="checkbox"/>	→ List of CRs:	
	O&M specifications	<input type="checkbox"/>	→ List of CRs:	

Other comments:



<----- double-click here for help and instructions on how to create a CR.

4 Requirements

The main new requirements for UMTS charging and accounting are:

- to provide a call detail record for all charges incurred and requiring settlement between the different commercial roles;
- to allow fraud control by the Home Environment and cost control by the User by providing CDRs to the Home Environment at short notice.
- to allow cost control based on a charge limit per user or per subscription.;
- to provide at the beginning of a chargeable event an indication to the charged party (if involved in the chargeable event) of the charges to be levied for this event;
- to allow itemised billing for all services charged to each subscription, including voice and data calls, and services offered by home environments

These new requirements will allow users more freedom to obtain service when roaming, whilst providing effective cost and credit control for the Home Environment and User.

5 Generation of Call Detail Records

The standard shall support the creation and transfer of charging records in order to facilitate:

- interworking with pre-UMTS systems (e.g. GSM);
- fraud management procedures;
- detailed itemised billing;

5.1 Call Detail Record Requirements

Call Detail Records shall be generated in either the Serving Network, the Home Environment or both to record chargeable User or Mobile Station activity and inter-carrier connections. Some of the information is provided by the user, other information is only available in the network element of the serving network.

Ancillary platforms performing value-added services can also output CDR's, which can be processed or matched with ordinary CDR's to charge for value-added services.

Depending on the type of chargeable event some of the information may not be available or might not be required.

5.1.1 Information provided by the user

The user incurring the charge shall provide the following information to the serving network:

- User identity used for authentication;
- Other user identities (e.g. IP address, Group Identity)
- Home environment identity;
- Terminal Identity and Terminal Class;
- Destination endpoint identifier for service requested (e.g. B number, alphanumeric address, IP address);

- Resource requested (e.g. bandwidth, connectionless);
- QoS parameters (e.g. maximum delay);
- Type of service requested (e.g. speech, data, multimedia, value added services, VHE related activities)
- Additional service details (e.g. e-mail, ftp, http, Value Added Service category, purchased services or goods)

Concerning Point-to-Multipoint services, the following additional information shall be provided by the service requester:

- Group identity for Point-To-Multipoint services
- Dimension of the group
- Broadcast geographical area
- Scheduling parameters

5.1.2 Information provided by the serving network

The serving network serving the user shall provide the following information to the home environment:

- All of the information listed in section above (Information provided by the user);
- Serving network identity;
- Recording network element identity;
- Universal Time (UT) at which the service request was initiated;
- Universal Time (UT) at which resources were provided for the service;
- Tariff type indicators
- Resource allocated to the user;
- Quantity of data transferred by the user in the uplink and downlink directions;
- QoS provided to the user;
- Usage of external data networks (amount of data sent/received to/from the external data network)
- Usage of the packet data protocol addresses (e.g. how long the MS has used the packet data protocol addresses) connected
- Activities performed by the user (e.g. Attach/Detach)
- List of changes in the conditions of the communication with timestamp (e.g. services added/subtracted to support multimedia, change of QoS, change in network conditions)
- Quantity of data retransmitted due to poor channel conditions
- Location of the user (definition of location is required) ;
- Environment type (e.g. satellite, fixed/cordless, rural, metropolitan, hot spots)
- Handover parameters (e.g. type of handovers, number of handovers)
- whether GSM Optimal Routing was applied;
- If IN or CAMEL services were applied, the service parameters and the actually used destination number and calling party number identification;

- Other signalling related parameters (e.g. signalling in terms of call attempts, alerting, registration, location updating, paging, supplementary services)
- VHE related activities (e.g. applications and services download , extra signalling)
- Time duration covered by this call record to an accuracy of at least 1 second;
- Charge accumulated for this call in the currency of the serving network.
- Unique identity of the chargeable event which allows the billing system to correlate all records belonging to the same chargeable event;
- Unique CDR identity (unique per network element in a period of about 100 days).

5.1.3 Charged Party

For subscription related chargeable events the CDR shall indicate the charged party, i.e. normally the calling party. As alternative it should be possible to apply reverse charging or to charge the event to a party not involved in the event itself (e.g. a company as VPN subscriber). It should be possible for multiple leg calls (e.g. forwarded, conference or roamed) to be charged to each party as if each leg was separately initiated. However, in certain types of call, the originating party may wish/be obliged to pay for other legs (e.g. SMS MO may also pay for the MT leg.).

Provision shall be made for the chargeable party to be changed during the life of the call.

In case of inter-network chargeable events, the CDR usually does not contain the charged party, but it can be derived from network configuration information contained in the CDR.

For each party to be charged for a chargeable event or parts of it a separate CDR shall be generated.

5.2 Special Cases

5.2.1 Long calls

The advent of packet data calls, which can extend for very long periods of time (days, weeks etc), although at low cost because charges are based on data throughput, may mean that billing records are only output at the end of very long periods. This ~~may~~ will require call records to be generated mid-call, either when some charge value is reached or some duration or both, to allow for both charging settlement and cost control.

5.2.2 Multimedia calls

During one call the user may invoke different services like speech, data transmission, video and audio, each leading to a separate CDR. The Unique identity of the chargeable event in each CDR shall allow the billing system to correlate these records and to indicate to the user on the bill that they belonged to one call.