Source:	**SA5 (Telecom Management)**
Title:	**Rel-5 CR 32.200 Fill-in the empty clauses with SA5-reviewed material from SA2's TR 23.815**
Document for:	**Decision**
Agenda Item:	**7.5.3**

Doc-1st-Level	Spec	CR	R	Phase	Subject	Cat	Vers.	Doc-2nd-L	Workitem
SP-040138	32.200	027	-	Rel-5	Fill-in the empty clauses with SA5-reviewed material from SA2's TR 23.815	F	5.5.0	S5-044109	OAM-CH

CR-Form-v7

CHANGE REQUEST

| ⌘ | **32.200** CR **027** | ⌘**rev** | **-** | ⌘ | Current version: | **5.5.0** | ⌘ |

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ [ ]   ME [ ] Radio Access Network [ ] Core Network **X**

Title: ⌘	Fill-in the empty clauses with SA5-reviewed material from SA2's TR 23.815	
Source: ⌘	SA5 (patrik.teppo@ericsson.com)	
Work item code: ⌘	OAM-CH	***Date:*** ⌘ 27/02/2004
Category: ⌘ **F**		***Release:*** ⌘ Rel-5

Use one of the following categories:
  F *(correction)*
  A *(corresponds to a correction in an earlier release)*
  B *(addition of feature),*
  C *(functional modification of feature)*
  D *(editorial modification)*
Detailed explanations of the above categories can
be found in 3GPP TR 21.900.

Use one of the following releases:
  2 (GSM Phase 2)
  R96 (Release 1996)
  R97 (Release 1997)
  R98 (Release 1998)
  R99 (Release 1999)
  Rel-4 (Release 4)
  Rel-5 (Release 5)
  Rel-6 (Release 6)

Reason for change: ⌘	In 32.200 (stage 2 specification), there are several epmty clauses regarding charging principles, charging correlation principles, etc. This causes stage 3 description leading to misunderstanding or misinterpretations.
Summary of change: ⌘	Specify the missing clauses in 32.200 based on the now available/stable SA2 TR23.815.
Consequences if not approved: ⌘	The principles of charging principles, the principles of charging related identities are still missing in the stage 2 charging specification 32.200. Thus causing misimplementation of charging correlation identities and leading to misimplementations

Clauses affected: ⌘	2, 7.1, 7.2

	Y	N		
Other specs affected: ⌘		X	Other core specifications ⌘	
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘	

How to create CRs using this form:

Start of Change in Clause 2

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2 References

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[8]   3GPP TS 22.086: "Advice of Charge (AoC) supplementary services; Stage 1".

[9]   3GPP TS 24.008: "Mobile radio interface Layer 3 specification; Core network protocols; Stage 3".

[10]   3GPP TR 23.815: "Charging implications of IMS architecture". Void.

[11]   Void.

End of Change in clause 2

Start of Change in Clause 7.1

7.1 Charging Principles

7.1.1 General Charging Requirements

1.   The IMS charging architecture and mechanisms shall allow different charging models as required by regulatory conditions and inter-network policies. At least the following charging models shall be possible in a network:
   -   The calling party incurs charging entirely for both the IMS session level charging and the transport level charging (e.g. charging done at GPRS) at calling and called party sides.

   -   The calling party incurs transport level charging on calling party's side only and the entire charges related to the IMS session level. In this charging model, a called party incurs the transport level charging associated with that session on called party's side.

2.   If the called party requests additional media components with regard to the initial request from calling party then called party can –depending on operational conditions of the service- be charged for these additional components.

3.   The A and B party's home networks shall be able to exchange information on the charging to be applied to the current session or to some media component of the session. The calling party's home network can then, according to the service and inter-operator agreement, apply appropriate charging.

4.   During session forwarding (e.g. A calls B and is "forwarded to C"), the initial calling party (A) incurs the charges from A to B while the forwarding party (B) incurs charges due to the "forwarded" session (e.g. from B to C).

5.   In case of roaming (A calls B that is roaming to IMS network C), the calling party (A) incurs charges up to the home network of B. The latter incurs additional charges due to roaming from home network B to network C.

6.   The IMS charging architecture shall allow the operator to support IMS Advice of Charge.

7.   The IMS charging architecture shall allow the operator to charge for the transport and/or for the session service and/or for the content.

8.   The IMS charging architecture shall allow the operator to charge per media component (e.g. voice, video).

9.   The IMS charging architecture shall allow the operator to provide a single pre-paid account for a subscriber. In this case, that account combines the charges incurred by services in CS, PS, IMS, and other domains.

10.   Charging indications received from the called network (such as free of charge) shall be taken into account by the Pre-paid mechanisms.

11.   The IMS charging architecture shall provide means to correlate charging information generated at transport, service and content charging levels by the network entities in PS domain and IMS.

NOTE: The full content of this subclause from TR 23.815 should be reviewed before integration in this document. The called network can be – depending on regulatory and operational / trust conditions – the same IMS network as calling's party network or another IMS network or a non IMS network as e.g. Internet / PSTN / ISDN / CS domain of a PLMN.

7.1.2 Correlation of Charging Information

7.1.2.1 Charging Correlation Levels

The following levels of correlation for IMS charging shall be considered:

1. Correlation within a session. A session may comprise a number of media components. It shall be possible to correlate the charging data of the different media components belonging to a session.
2. Correlation at media component level. For a session comprising several media components (such as audio and video), charging data is generated for each media component and needs to be correlated between network elements. For this, a component identifier shall be unique and shall clearly identify to which media flow of a session this charging information belongs to. This component identifier is not exchanged between network elements and is based on the ordering of media flows in the SDP. This ordering is the same as the one used in the binding information passed to the PS Domain. The multiple component identifiers within one PDP Context are not supported in this version of the document.

Correlation between the IMS and the PS domain shall take into account the above described levels.
NOTE: The full content of this subclause from TR 23.815 should be reviewed before integration in this document.

7.1.2.2 Charging Correlation Principles

To support the correlation of charging information, the following principles apply to both offline and online charging:

1) The correlation of charging information for an IMS session is based on the use of IMS Charging Identifiers.
2) The first IMS network entity within the SIP signalling path is responsible for assigning an ICID. This ICID shall then be passed along the whole SIP signalling path in an end-to-end manner. However, this shall not preclude further elements (CSCFs) along the session path generating additional identifiers to be passed along. When the AS is the initiator of the session, the AS is responsible for assigning the ICID.
3) The ICID is passed to all IMS network entities in the SIP signalling path. This is performed using SIP signalling.
4) For the charging correlation between the PS domain and the IMS, one or more GPRS Charging IDs, which identify the PDP contexts of the session [7], are passed from the PS domain to the IMS. More specifically, these identifiers need to be transferred from the GGSN to the P-CSCF. Also, the P-CSCF passes the ICID to the GGSN. The ICID is not passed to the SGSN
5) The GPRS Charging IDs (GCIDs) and GGSN Address are passed by the P-CSCF to the S-CSCF and the AS using SIP signalling. Along with the ICID, the S-CSCF passes the GCIDs and GGSN address to on-line and off-line charging functions. The GCIDs and GGSN address are not transferred from one Home IMS (e.g. of the A-Party) to another Home IMS (e.g. the one of the B-Party).
6) The ICID applies for the duration of the event with which it is associated. For example, an ICID assigned for session establishment is valid until session termination, etc.
7) The charging correlation identifiers (ICIDs, GCIDs) shall not be passed to the UE. They may however be passed to An Application server connected as an endpoint.

The detailed effects of certain complex scenarios (e.g. forking, multiparty sessions) to these charging correlation principles are for further study.
NOTE: The full content of this subclause from TR 23.815 should be reviewed before integration in this document.

7.1.3 Exchange of charging information between networks

7.1.3.1 Charging information flow between home IMS networks

The Charging information flow may support the following functionalities:
- Indication of who wants to subsidize whom (e.g. "A-party pays" or "reverse charge call")
- Indication of media resources to be subsidized (e.g. final SDP negotiated between A and B UEs)
The following mechanisms have been identified for charging information flow:
- Pre-arranged mechanism based on secure relation between networks
- Additionally, real-time negotiations on a per-session basis may be conducted:
NOTE: The full content of this subclause from TR 23.815 should be reviewed before integration in this document.

7.1.3.2 Identification of Operators for Charging

To enable the different operators involved in IMS sessions to identify each other, the Inter Operator Identification concept (IOI) is introduced. Inter Operator Identification allows operators involved with session signalling to identify each other by exchanging operator identification information within the SIP signalling. The IOI is composed of one pair of originating IOI and terminating IOI. The Inter Operator Identification (IOI) concept may help to support inter operator charging. The following requirements relate to the Inter Operator Identification concept:

- The Inter Operator Identification concept shall allow operators to uniquely identify each other for the SIP based requests; for example between A's HPLMN and B's HPLMN.
- The Inter Operator Identification concept can be used for inter operator accounting identification purposes.
- It shall be possible to prevent the information used for Inter Operator Identification from being passed to the UE.
- It shall be possible to apply the Inter Operator Identification concept on a peer to peer basis between operators. It shall be possible to use different identity values for operator identification between operators involved in IMS sessions.
- Inter Operator Identification identities shall be included within SIP signalling:
  - When a SIP request is passed out of a network the Inter Operator Identification identity of that network shall be included in the SIP signalling.

  - When a SIP response is returned the Inter Operator Identification identity of that responding network shall be included in the SIP signalling.

- Each network is responsible for including its own unique Inter Operator Identification Identity into the SIP signalling. The Inter Operator Identification Identity shall be unique for each operator (for example the Inter Operator Identification Identity of Home Operator A is different from Home Operator B).
- Inter Operator Identification Identities received in the session signalling shall be incorporated into the CDRs produced by the IMS network elements. The operator identification information may be used for inter operator accounting purposes.
- The allocation of the IOI values for the operators is outside the scope of 3GPP standardization.

NOTE: The relationship of the Inter Operator Identification concept with security aspects between operators is for further study.

NOTE: The full content of this subclause from TR 23.815 should be reviewed before integration in this document.

End of Change in clause 7.1

Start of Change in Clause 7.2

7.2 Off-line Charging Data Collection

7.2.1 Charging Data Record Creation

7.2.1.1 Off-line charging reference point IMS Network Entity – CCF (Rf)

Off-line charging between the CCF and each of the IMS network entities, i.e. I-CSCF, P-CSCF, S-CSCF, MGCF, MRFC, BGCF and AS is performed using the Rf reference point. Rf is an interface that is standardised in TS 32.225 [24]. The Rf reference point shall allow for at least the following features:

- Reliable transfer of Charging Information with acknowledgement mechanisms from the Network Element to the CCF.
- Support redundancy mechanisms.

NOTE: The full content of this subclause from TR 23.815 should be reviewed before integration in this document.

End of Change in clause 7.2
End of Document