Technical Specification Group Services and System Aspects
Meeting #28, 06 - 08 June 2005,
Quebec, Canada

TSGS#28(05)0332

Source: SA WG2

Title: CRs to TS 23.002: Missing MBMS Architecture entities and Addition of Flow Based Charging architecture (Rel-6)

Document for: Approval

Agenda Item: 7.2.3

SA Doc	TS No.	CR No	Rev	Rel	Cat	Subject	Vers Cur	SA2 Doc	WI	Clauses affected
SP-050332	23.002	0154	-	Rel-6	F	Missing MBMS Architecture entities	6.7.0	S2-050588	MBMS	2, 4a.14 (new section), 5.9 (new section), 6a.10 (new section)
SP-050332	23.002	0156	1	Rel-6	F	Addition of Flow Based Charging architecture	6.7.0	S2-051332	CH-FBC	2, 4a.11, 4a.14, 5.1, 6a.8, 6a.10

3GPP TSG-SA2 Meeting #45
Beijing, China, 4 – 8 April 2005

Tdoc ⌘S2-050588

CR-Form-v7.1

CHANGE REQUEST

⌘ **23.002** **CR** **0154** ⌘ **rev** **-** ⌘ Current version: **6.7.0** ⌘

*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:	⌘	Missing MBMS Architecture entities
Source:	⌘	Vodafone
Work item code:	⌘	MBMS
Date:	⌘	22/03/2005
Category:	⌘	**F**
Release:	⌘	Rel-6

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:
Ph2 *(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)*
Rel-7 *(Release 7)*

Reason for change:	⌘	The 3GPP architecture description is missing the MBMS specific entities/reference points
Summary of change:	⌘	Adds MBMS to architecture and links to TS 23.246
Consequences if not approved:	⌘	Inconsistent architecture descriptions across specifications.

Clauses affected:	⌘	2, 4a.14 (new section), 5.9 (new section), 6a.10 (new section)

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

⌘

Other comments: ⌘

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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] [void]

[1a] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 22.016: "International Mobile station Equipment Identities (IMEI)".

[2a] 3GPP TS 22.060: "General Packet radio Service (GPRS); Service description; Stage 1".

[2b] 3GPP TS 22.071: "Location Services (LCS); Service description; Stage 1".

[2c] 3GPP TS 22.078: "Customised Applications for Mobile network Enhanced Logic (CAMEL); Service description, Stage 1".

[3] 3GPP TS 23.003: " Numbering, addressing and identification".

[4] 3GPP TS 22.127: "Open Service Access (OSA)".

[5] 3GPP TS 23.008: "Organization of subscriber data".

[6] 3GPP TS 23.009: "Handover procedures".

[7] 3GPP TS 23.012: "Location Management Procedures".

[8] 3GPP TS 23.041: "Technical realization of Cell Broadcast Service (CBS)".

[9] [void]

[9a] 3GPP TS 23.060: "General Packet Radio Service (GPRS); Service description; Stage 2".

[10] [void]

[10a] 3GPP TS 43.064: "Digital cellular telecommunication system (Phase 2+); General Packet Radio service (GPRS); Overall description of the GPRS radio interface; Stage 2".

[10b] 3GPP TS 25.305: "Stage 2 Functional Specification of UE Positioning in UTRAN".

[10c] 3GPP TS 23.078: "Customised Applications for Mobile network Enhanced Logic (CAMEL) Phase 3 - Stage 2".

[10d] 3GPP TS 43.059: "Functional Stage 2 Description of Location Services in GERAN"[11]ITU-T Recommendation Q.1214 (05/1995): "Distributed Functional Plane for Intelligent Network CS-1".

[11a] 3GPP TS 23.101: "General UMTS Architecture".

[11b] 3GPP TS 23.110: "UMTS Access Stratum); Services and Functions".

[12] 3GPP TS 24.002: "GSM - UMTS Public Land Mobile Network (PLMN) access reference configuration".

[13] 3GPP TS 48.001: "Base Station System - Mobile-services Switching Centre (BSS - MSC) interface; General aspects".

[14] 3GPP TS 48.002: "Base Station System - Mobile-services Switching Centre (BSS - MSC) interface; Interface principles".

[14a] 3GPP TS 25.410: "UTRAN Iu Interface: general aspects and principles".

[15] 3GPP TS 48.004: "Base Station System - Mobile-services Switching Centre (BSS - MSC) interface Layer 1 specification".

[16] 3GPP TS 48.006: "Signalling transport mechanism specification for the Base Station System - Mobile-services Switching Centre (BSS - MSC) interface".

[17] 3GPP TS 48.008: "Mobile-services Switching Centre - Base Station System (MSC - BSS) interface; Layer 3 specification".

[18] [void]

[19] 3GPP TS 48.051: "Base Station Controller - Base Transceiver Station (BSC - BTS) interface; General aspects".

[20] 3GPP TS 48.052: "Base Station Controller - Base Transceiver Station (BSC - BTS) interface; Interface principles".

[21] 3GPP TS 48.054: "Base Station Controller - Base Transceiver Station (BSC - BTS) interface; Layer 1 structure of physical circuits".

[22] 3GPP TS 48.056: "Base Station Controller - Base Transceiver Station (BSC - BTS) interface; Layer 2 specification".

[23] 3GPP TS 48.058: "Base Station Controller - Base Transceiver Station (BSC - BTS) interface; Layer 3 specification".

[24] 3GPP TS 48.060: "In-band control of remote transcoders and rate adaptors for full rate traffic channels".

[25] 3GPP TS 48.061: "In-band control of remote transcoders and rate adaptors for half rate traffic channels".

[26] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[27] 3GPP TS 22.228: "Service requirements for the IP Multimedia Core Network Subsystem".

[28] [void]

[29] [void]

[30] [void]

[31] 3GPP TS 29.007: "General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".

[32] 3GPP TS 29.010: "Information element mapping between Mobile Station - Base Station System (MS – BSS) and Base Station System - Mobile-services Switching Centre (BSS - MSC); Signalling procedures and the Mobile Application Part (MAP)".

[33] 3GPP TS 29.011: "Signalling interworking for supplementary services".

[34] 3GPP TS 23.228: "IP Multimedia Subsystem (IMS); Stage 2".

[35] 3GPP TR 41.103: "GSM Release 5 specifications".

[36] 3GPP TR 43.051: "Technical Specification Group GSM/EDGE Radio Access Network; Overall description, Stage 2".

[37] 3GPP TS 23.226: "Global Text Telephony (GTT); Stage 2".

[38] 3GPP TS 26.226: "Cellular Text Telephone Modem; General Description".

[39] 3GPP TS 23.016:"Subscriber data management; Stage 2".

[40] 3GPP TS 23.066: "Support of Mobile Number Portability (MNP); Technical realization; Stage 2".

[41] 3GPP TS 43.068: "Voice Group Call Service (VGCS); Stage 2".

[42] 3GPP TS 43.069: "Voice Broadcast Service (VBS); Stage 2".

[43] 3GPP TS 23.205: "Bearer independent circuit switched core network; Stage 2".

[44] 3GPP TS 48.014: "Base Station System (BSS) – Serving GPRS Support Node (SGSN) interface; Gb interface Layer 1".

[45] 3GPP TS 48.016: "Base Station System (BSS) – Serving GPRS Support Node (SGSN) interface; Network service".

[46] 3GPP TS 48.018: "Base Station System (BSS) – Serving GPRS Support Node (SGSN); BSS GPRS Protocol (BSSGP)".

[47] 3GPP TS 48.031: "Serving Mobile Location Centre – Serving Mobile Location Centre (SMLC – SMLC); SMLCPP specification".

[48] 3GPP TS 29.016: "Serving GPRS Support Node (SGSN) – Visitor Location Register (VLR); Gs interface network service specification".

[49] 3GPP TS 29.018: "Serving GPRS Support Node (SGSN) – Visitor Location Register (VLR); Gs interface Layer 3 specification".

[50] 3GPP TS 49.031: "Network Location Services (LCS); Base Station System Application Part LCS extension (BSSAP-LE)".

[51] 3GPP TS 29.060: "GPRS Tunnelling Protocol (GTP) across the Gn and Gp Interface".

[52] ITU-T Recommendation H.248: "Gateway Control Protocol".

[53] ITU-T Recommendation E.164: "The International public telecommunication numbering plan".

[54] ITU-T Recommendation H.323: "Packet-based multimedia communications systems".

[55] 3GPP TS 44.071: "Mobile radio interface layer 3 Location Services (LCS) specification".

[56] 3GPP TS 23.271: "Functional stage 2 description of LCS".

[57] ITU-T Recommendation I.363-2 :"B-ISDN ATM Adaptation Layer (AAL) type 2 specification".

[58] ITU-T Recommendation H.245: "Control protocol for multimedia communication".

[59] IETF RFC768: "User Datagram Protocol".

[60] IETF RFC1889: "RTP: A Transport Protocol for Real-Time Applications".

[61] IETF RFC3261: "SIP: Session Initiation Protocol".

[62] LIF TS 101 "Mobile Location Protocol Specification"(Location Interoperability Forum 2001) [Available at http://www.openmobilealliance.org/tech/LIF/].

[63] 3GPP TS29.198: "Open Service Access (OSA) Application Programming Interface (API)".

[64] 3GPP TS 33.210: "3G Security; Network Domain Security; IP network layer security".

[65] 3GPP TS 23.236: "Intra Domain Connection of RAN Nodes to Multiple CN Nodes".

[66] 3GPP TS 25.453: "UTRAN Iupc interface PCAP signalling".

[67] 3GPP TS 23.234: "3GPP system to Wireless Local Area Network (WLAN) interworking".

[68] 3GPP TS 23.141: "Presence Service; Architecture and functional description".

[69] OMA Location Working Group "Inter-Location Server Interface Specification", http://www.openmobilealliance.org/.

[xx] 3GPP TS 23.246: "Multimedia Broadcast/Multicast Service (MBMS); Architecture and functional description"

**********ADDED SECTION *********

4a.13.5 Packet Data Gateway (PDG)

The Packet Data Gateway provides access to PS based services for a WLAN UE. It resides either in the home (for access to home services) or in the visited 3GPP network (for access to local services).

4.a.14 Multimedia Broadcast Multicast Service (MBMS) specific entities

4a.14.1 General

The Multimedia Broadcast Multicast Service (MBMS) is a point-to-multipoint service in which data is transmitted from a single source entity to multiple recipients. 3GPP TS 23.246 [xx] contains the technical realization of the service.

4a.14.2 Broadcast-Multicast Service Centre (BM-SC)

The Broadcast-Multicast Service Centre provides functions for MBMS user service provisioning and delivery. It may serve as an entry point for content provider MBMS transmissions, used to authorise and initiate MBMS Bearer Services within the PLMN and can be used to schedule and deliver MBMS transmissions.

******* NEXT ADDED SECTION *********

5.8 Configuration of Presence service

The reference architecture model, the reference points and the functional entities to support the Presence Service are described in TS 23.141 [68].

5.9 Configuration of MBMS entities

The configuration of the MBMS entities are represented in Figure x.

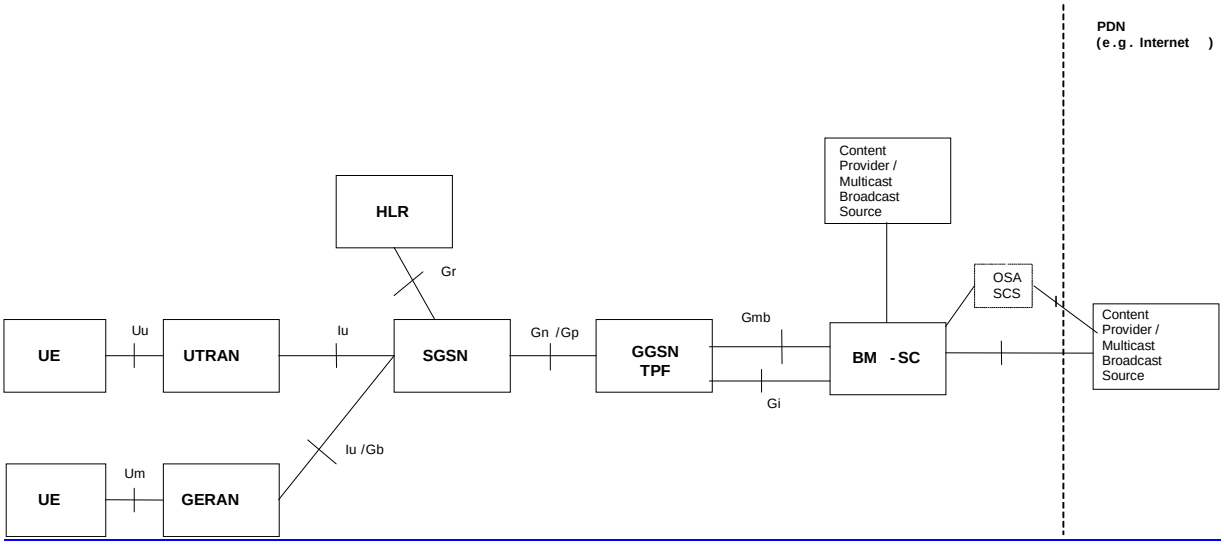

Figure x. Configuration of MBMS entities

******** NEXT ADDED SECTION **********

6a.9.12 Reference point 3GPP AAA Server - SLF (Dw reference point)

This reference point is between the 3GPP AAA Server and the SLF. The prime purpose of the protocol(s) crossing this reference point is to enable the 3GPP AAA Server to find the address of the HSS which holds the subscriber data for a given user identity in a configuration with multiple separately addressable HSSs.

6a.10 MBMS specific reference points

6a.10.1 Reference point GGSN – BM-SC (Gmb Reference Point)

This reference point is used to exchange signalling between GGSN and BM-SC. This represents the network side boundary of the MBMS Bearer Service from a control plane perspective. This includes user specific Gmb signalling and MBMS bearer service specific signalling. The details for this reference point are described in 3GPP TS 23.246 [xx]

********** END OF CHANGES **********

3GPP TSG-SA WG2 Meeting #46
Athens, Greece, 9th – 13th May 2005

Tdoc ⌘S2-051332

CR-Form-v7.1

CHANGE REQUEST

⌘ **23.002** **CR** **0156** ⌘ **rev** **1** ⌘ Current version: **6.7.0** ⌘

*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:	⌘	Addition of Flow Based Charging architecture
Source:	⌘	Siemens
Work item code:	⌘	CH-FBC
Date:	⌘	12/05/2005
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
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Use one of the following releases:

Ph2	*(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)*
Rel-7	*(Release 7)*

Reason for change:	⌘	The functionality and architecture for flow based charging was specified in Release 6. However, TS 23.002 has not been updated yet.
Summary of change:	⌘	Descriptions of the charging rules function and of the related reference points (Gx and Rx) are added. The description of the application function and the figure 1 is also updated accordingly. References to relevant stage 2 specifications are added for flow based charging and service based local policy.
Consequences if not approved:	⌘	The 3GPP architecture is not completely described in TS 23.002.

Clauses affected:	⌘	2, 4a.11, 4a.14, 5.1, 6a.8, 6a.10

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

Other comments:	⌘	

Start of 1st modified section

2 References

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[6] 3GPP TS 23.009: "Handover procedures".

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[8] 3GPP TS 23.041: "Technical realization of Cell Broadcast Service (CBS)".

[9] [void]

[9a] 3GPP TS 23.060: "General Packet Radio Service (GPRS); Service description; Stage 2".

[10] [void]

[10a] 3GPP TS 43.064: "Digital cellular telecommunication system (Phase 2+); General Packet Radio service (GPRS); Overall description of the GPRS radio interface; Stage 2".

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[26] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[27] 3GPP TS 22.228: "Service requirements for the IP Multimedia Core Network Subsystem".

[28] 3GPP TS 23.207: "End-to-end Quality of Service (QoS) concept and architecture". ~~[void]~~

[29] 3GPP TS 23.125: "Overall high level functionality and architecture impacts of flow based charging; Stage 2". ~~[void]~~

[30] [void]

[31] 3GPP TS 29.007: "General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".

[32] 3GPP TS 29.010: "Information element mapping between Mobile Station - Base Station System (MS – BSS) and Base Station System - Mobile-services Switching Centre (BSS - MSC); Signalling procedures and the Mobile Application Part (MAP)".

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[58] ITU-T Recommendation H.245: "Control protocol for multimedia communication".

[59] IETF RFC768: "User Datagram Protocol".

[60] IETF RFC1889: "RTP: A Transport Protocol for Real-Time Applications".

[61] IETF RFC3261: "SIP: Session Initiation Protocol".

[62] LIF TS 101 "Mobile Location Protocol Specification"(Location Interoperability Forum 2001) [Available at http://www.openmobilealliance.org/tech/LIF/].

[63] 3GPP TS29.198: "Open Service Access (OSA) Application Programming Interface (API)".

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[68] 3GPP TS 23.141: "Presence Service; Architecture and functional description".

[69] OMA Location Working Group "Inter-Location Server Interface Specification", http://www.openmobilealliance.org/.

End of 1st modified section

Start of 2nd modified section

4a.11 Application Function (AF)

The Application Function (AF) is an element offering applications that require the control of IP bearer resources or the control of flow based bearer charging ~~when required~~. The AF is capable of communicating with the PDF to transfer dynamic QoS-related service information and/or with the CRF to transfer dynamic charging-related service information.

One example of an AF is the P-CSCF of the IM CN subsystem.

End of 2nd modified section

Start of 3rd modified section

4a.14 Charging Rules Function (CRF)

The Charging Rules Function (CRF) acts as a controller for Flow Based Charging functionality. The CRF selects and provides the applicable charging rules to the GGSN.

End of 3rd modified section

Start of 4th modified section

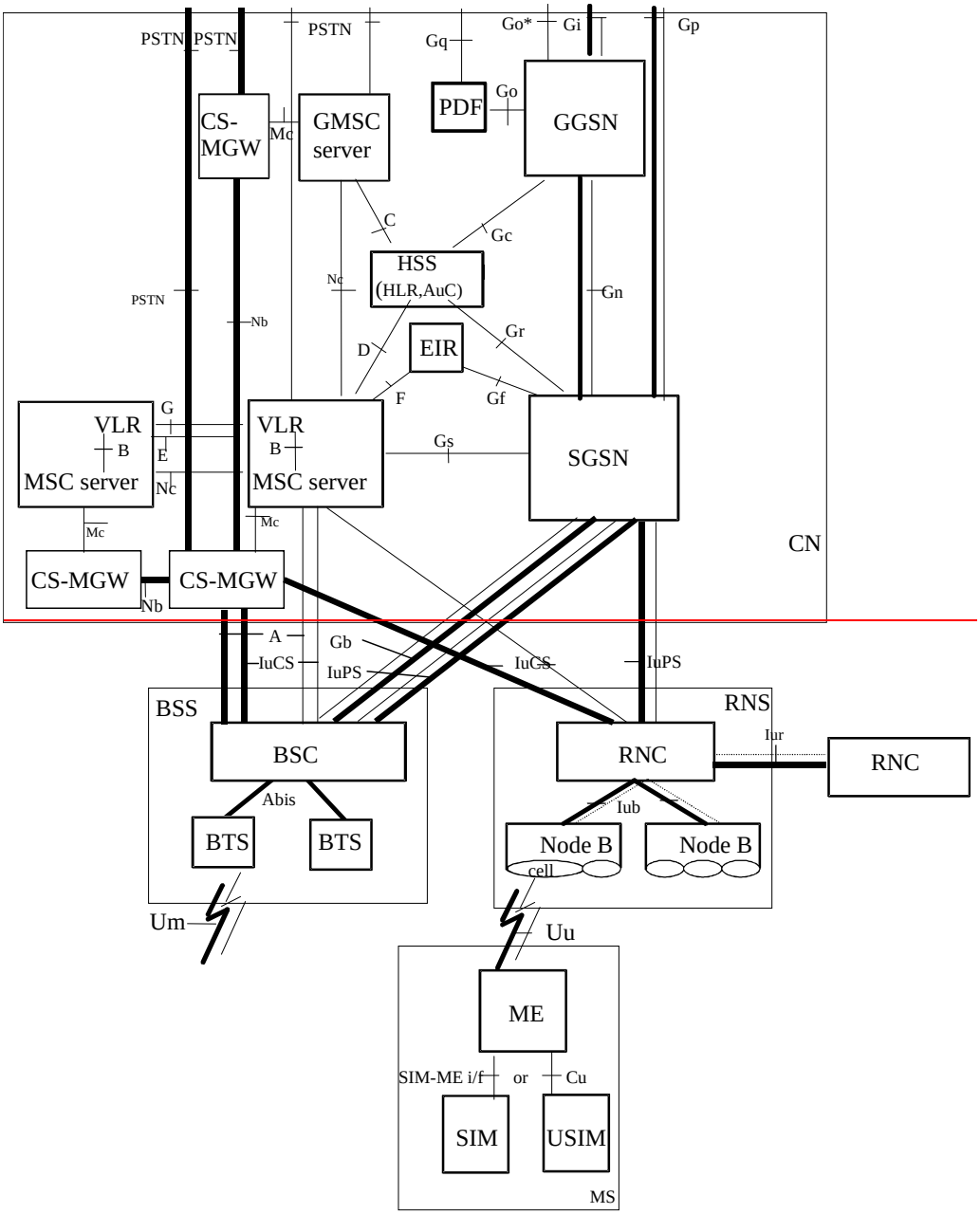
5.1 Basic configuration

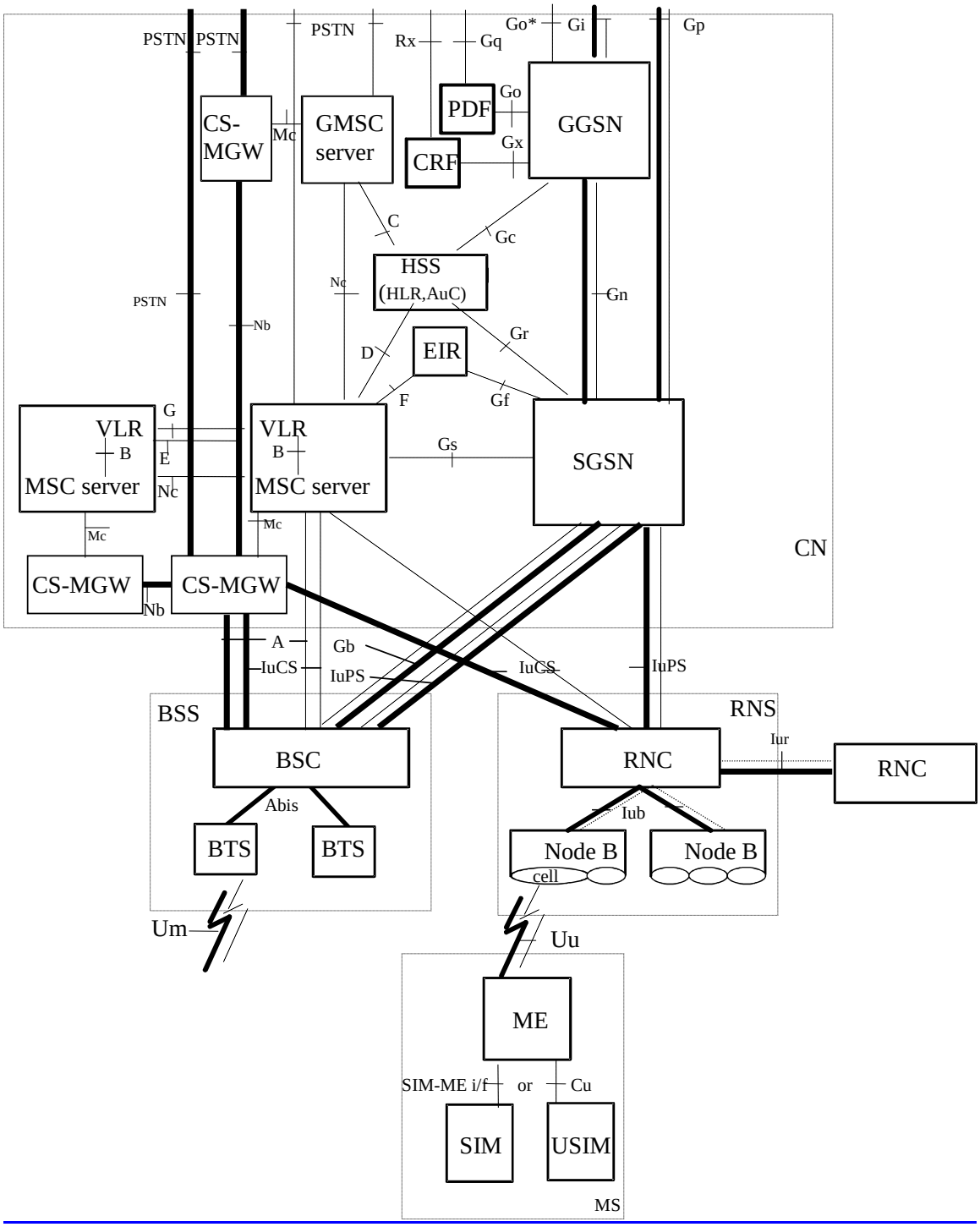
The basic configuration of a Public Land Mobile Network (PLMN) supporting GPRS and the interconnection to the PSTN/ISDN and PDN is presented in figure 1 and figure 1a. This configuration presents signalling and user traffic interfaces which can be found in a PLMN. Implementations may be different: some particular functions may be gathered in the same equipment and then some interfaces may become internal interfaces.

In the basic configuration presented in figure 1, all the functions are considered implemented in different equipments. Therefore, all the interfaces within PLMN are external. Interfaces A and Abis are defined in the 48-series ofTechnical Specifications. Interfaces Iu, Iur and Iub are defined in the 25.4xx-series of Technical Specifications. Interfaces B, C, D, E, F and G need the support of the Mobile Application Part of the signalling system No. 7 to exchange the data necessary to provide the mobile service. No protocols for the H-interface and for the I-interface are standardized. All

the GPRS-specific interfaces (G- series) are defined in the 23-series and 24-series of Technical Specifications. Interfaces Mc, Nb, and Nc are defined in TS 23.205 [43] and in the 29-series of Technical Specifications.

From this configuration, all the possible PLMN organisations can be deduced. In the case when some functions are contained in the same equipment, the relevant interfaces become internal to that equipment.


PSTN
PSTN
PSTN
Gq
Go*
Gi
Gp
CS-MGW
Mc
GMSC server
PDF
Go
GGSN
C
Gc
HSS (HLR,AuC)
Nc
Gn
PSTN
Nb
D
EIR
Gr
F
Gf
VLR
B
MSC server
G
E
Nc
VLR
B
MSC server
Gs
SGSN
Mc
Mc
CN
CS-MGW
CS-MGW
Nb
A
IuCS
Gb
IuPS
IuCS
IuPS
BSS
BSC
Abis
BTS
BTS
Um
RNS
RNC
Iur
RNC
Iub
Node B
cell
Node B
Uu
ME
SIM-ME i/f
or
Cu
SIM
USIM
MS



Legend:
Bold lines: interfaces supporting user traffic;
Dashed lines: interfaces supporting signalling.

NOTE 1: The figure shows direct interconnections between the entities. The actual links may be provided by an underlying network (e.g. SS7 or IP): this needs further studies.

NOTE 2: When the MSC and the SGSN are integrated in a single physical entity, this entity is called UMTS MSC (UMSC).

NOTE 3: A (G)MSC server and associated CS-MGW can be implemented as a single node: the (G)MSC.

NOTE 4: The Gn interface (between two SGSNs) is also part of the reference architecture, but is not shown for layout purposes only.

NOTE 5: The Go interface marked with a '*' has been included to this figure for backwards compatibility only, in order to support connecting to Release-5 IM CN Subsystem configurations

Figure 1: Basic Configuration of a PLMN supporting CS and PS services and interfaces

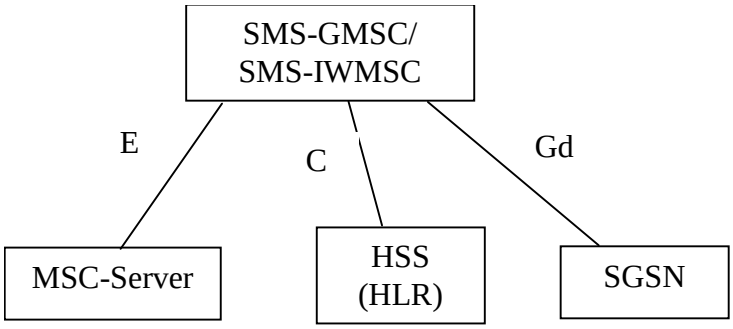


Figure 1a: Configuration for Short Message Service

End of 4th modified section

Start of 5th modified section

6a.8 Reference Points for Service Based Local Policy Control

6a.8.1 Reference Point GGSN – PDF (Go Reference Point)

This interface allows the Policy Decision Function (PDF) to apply policy to the bearer usage in the GGSN. For more information see 3GPP TS 23.207 [28].

6a.8.2 Reference Point PDF – Application Function (Gq Reference Point)

This interface allows for dynamic QoS-related service information to be exchanged between the Policy Decision Function (PDF) and the Application Function (AF). This information is used by the PDF for service based local policy decisions. For more information see 3GPP TS 23.207 [28].

End of 5th modified section

Start of 6th modified section

6a.10 Reference Points for Flow Based Charging

6a.10.1 Reference Point GGSN – CRF (Gx Reference Point)

This interface allows the Charging Rules Function (CRF) to control the Flow Based Charging functionality in the GGSN by means of providing the applicable charging rules. For more information see 3GPP TS 23.125 [29].

6a.10.2 Reference Point CRF – Application Function (Rx Reference Point)

This interface allows for dynamic charging-related service information to be exchanged between the Charging Rules Function (CRF) and the Application Function (AF). This information is used by the CRF for the selection and completion of charging rules. For more information see 3GPP TS 23.125 [29].

End of 6th modified section