Technical Specification Group Services and System Aspects ***TSGS#11(01)0115***

Meeting #11, Palm Springs, USA, 19-22 March 2001

Source: **TSG SA WG2**
Title: **CRs on 23.002 v.4.1.0 and v.5.1.0**
Agenda Item: **7.2.3**

The following Change Requests (CRs) have been approved by TSG SA WG2 and are requested to be approved by TSG SA plenary #11.
Note: the source of all these CRs is now S2, even if the name of the originating company(ies) is still reflected on the cover page of all the attached CRs.

CRs applicable to both Release 4 and Release 5

SA2 meeting	S2 Tdoc #	Source	Title	Spec	CR #	cat	Rel	WI
S2#16	S2-010315	SA2	Clarification of the difference between MGW in BICCN and IMS	23.002	032r1	D	4	IMS
S2#16	S2-010316	SA2	Clarification of the difference between MGW in BICCN and IMS	23.002	033r1	D	5	IMS
S2#17	S2-010631	SA2	Missing Nc interface in basic configuration figure	23.002	040	F	4	CSSPLIT
S2#17	S2-010632	SA2	Missing Nc interface in basic configuration figure	23.002	041	A	5	CSSPLIT
S2#17	S2-010636	SA2	Resolution of editor's note in the MGW description	23.002	045	D	4	CSSPLIT
S2#17	S2-010637	SA2	Resolution of editor's note in the MGW description	23.002	046	A	5	CSSPLIT
S2#17	S2-010634	SA2	Signalling and User Traffic Interfaces	23.002	043	D	4	CSSPLIT
S2#17	S2-010635	SA2	Signalling and User Traffic Interfaces	23.002	050	A	5	CSSPLIT

CRs applicable to Release 4 only

SA2 meeting	S2 Tdoc #	Source	Title	Spec	CR #	cat	Rel	WI
S2#17	S2-010633	SA2	Removal of Iu for GERAN in Rel 4	23.002	042	F	4	GERAN
S2#17	S2-010638	SA2	Removal of an editor's note in GMSC description	23.002	047	D	4	CSSPLIT

CRs applicable to Release 5 only

SA2 meeting	S2 Tdoc #	Source	Title	Spec	CR #	cat	Rel	WI
S2#16	S2-010172	SA2	Introduction of Iu-CS and Iu-PS interfaces to BSS of type GERAN in the network architecture	23.002	034	A	5	GERAN
S2#16	S2-010367	SA2	CSCF-GGSN interface	23.002	035r1	B	5	IMS
S2#17	S2-010830	SA2	Clarification to the GGSN/PCF interface to the R5 reference architecture	23.002	044r2	F	5	IMS

3GPP TSG-SA2 Meeting #16
Los Angeles, USA, 22-26th January 2001

S2-010315

CR-Form-v3

CHANGE REQUEST

⌘ **23.002** **CR** **CR-32** ⌘ rev **-** ⌘ Current version: **4.1.1** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Clarification of the difference between MGW in BICCN and IMS
Source:	⌘	Lucent Technologies
Work item code:	⌘	IM MuMa, BICCN
Date:	⌘	22 January 2001
Category:	⌘	**D**
Release:	⌘	REL-4

Use one of the following categories:
F *(essential 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)

Reason for change:	⌘	The term MGW has been used for both the Bearer Independent CS CN (BICCN) and the IP Multimedia Subsystem (IMS). In the two subsystems, the functions of the MGW are subtly different. To ensure clarity of the specifications, it is proposed that the terms CS-MGW and IM-MGW be used within specifcations that cover both subsystems. This change is needed for REL-5 and a CR for this is in CR033. To ensure consistency, this CR uses the term CS-MGW in R4. Where the term MGW is used, its definition and functionality is limited by the scope of the specifcation e.g. in 23.205. In section 6.4.1.7 will apply to both CS-MGW and to IP-MGW in REL-5. To keep the text general, the term MGW has been kept. A reference to an IM subsystem element has been removed (section 6.4.1.7)
Summary of change:	⌘	The term MGW within the BICCN has been replaced by CS-MGW.
Consequences if not approved:	⌘	Confusion could arise between the R4 and R5 specifcations.

Clauses affected:	⌘	4.1.2, 5.1, 6.4.1.7, 6.4.1.9		
Other specs affected:	⌘	☒ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	23.221
Other comments:	⌘			

How to create CRs using this form:
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http://www.3gpp.org/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

4.1.1.7 Roaming Signalling Gateway Function (R-SGW)

The R-SGW performs the signalling conversion (both ways) at transport level between the SS7 based transport of signaling used in pre-Rel 4 networks, and the IP based transport of signalling possibly used in post-R99 networks (Sigtran SCTP/IP versus SS7 MTP). The R-SGW does not interpret the MAP / CAP messages but may have to interpret the underlying SCCP layer to ensure proper routing of the signaling.

For the support of pre-Rel 4 CS terminals, the services of the R-SGW are used to ensure transport interworking between the SS7 and the IP transport of MAP-E and MAP-G signalling interfaces with a pre-Rel 4 MSC/VLR.

4.1.2 Entities of the CS domain

4.1.2.1 The Mobile-services Switching Centre (MSC)

The Mobile-services Switching Centre (MSC) constitutes the interface between the radio system and the fixed networks. The MSC performs all necessary functions in order to handle the circuit switched services to and from the mobile stations.

In order to obtain radio coverage of a given geographical area, a number of base stations are normally required; i.e. each MSC would thus have to interface several base stations. In addition several MSCs may be required to cover a country.

The Mobile-services Switching Centre is an exchange which performs all the switching and signalling functions for mobile stations located in a geographical area designated as the MSC area. The main difference between a MSC and an exchange in a fixed network is that the MSC has to take into account the impact of the allocation of radio resources and the mobile nature of the subscribers and has to perform in addition, at least the following procedures:

- procedures required for the location registration (see TS 23.012);
- procedures required for handover (see TS 23.009).

NOTE: When this improves the readibility (e.g. when dealing with inter-releases handover), the term 2G-MSC can be used to refer to an MSC Release 98 or prior, and the term 3G-MSC can be used to refer to an MSC Release 99 or later.

When needed, the MSC can be implemented in two different entities: the MSC Server, handling only signalling, and the CS-MGW, handling user's data. A MSC Server and a CS-MGW make up the full functionality of a MSC.

4.1.2.1.1 MSC Server

The MSC Server mainly comprises the call control (CC) and mobility control parts of a MSC.

The MSC Server is responsible for the control of mobile originated and mobile terminated CC CS Domain calls. It terminates the user-network signalling and translates it into the relevant network – network signalling. The MSC Server also contains a VLR to hold the mobile subscriber's service data and CAMEL related data.

The MSC Server controls the parts of the call state that pertain to connection control for media channels in a CS-MGW.

4.1.2.1.2 Circuit Switched - Media Gateway Function (CS-MGW)

Note: In this document the term Media Gateway Function (MGW) is used when there is no need to differentiate between the CS domain entity and the IP Multimedia CN Subsystem entity. When refering specifically to the CS domain entity the term CS-MGW is used. When refering specifically to the IP Multimedia CN Subsystem entity, the term IM-MGW is used.

This component is PSTN/PLMN transport termination point for a defined network and interfaces UTRAN with the core network over Iu.

The functionality defined within CS-MGW should be consistent with existing/ongoing industry protocols/interfaces that will satisfy the requirements.

[editor's note: the above sentence is a general, meaningless statement: it should be either clarified or deleted. In the sentence bellow, DSO, RTP and bearer channel are not defined.].

A CS-MGW may terminate bearer channels from a switched circuit network (i.e., DSOs) and media streams from a packet network (e.g., RTP streams in an IP network). Over Iu, the CS-MGW may support media conversion, bearer control and payload processing (e.g. codec, echo canceller, conference bridge) for support of different Iu options for CS services (AAL2/ATM based as well as RTP/UDP/IP based).

The CS-MGW:

- Interacts with MSC server and GMSC server for resource control.
- Owns and handles resources such as echo cancellers etc.
- May need to have codecs.

The CS-MGW will be provisioned with the necessary resources for supporting UMTS/GSM transport media. Further tailoring (i.e packages) of the H.248 may be required to support additional codecs and framing protocols, etc.

The CS-MGW bearer control and payload processing capabilities will also need to support mobile specific functions such as SRNS relocation/handover and anchoring. It is expected that current H.248 standard mechanisms can be applied to enable this.

4.1.2.2 The Gateway MSC (GMSC)

If a network delivering a call to the PLMN cannot interrogate the HLR, the call is routed to an MSC. This MSC will interrogate the appropriate HLR and then route the call to the MSC where the mobile station is located. The MSC which performs the routing function to the actual location of the MS is called the Gateway MSC (GMSC).

The acceptance of an interrogation to an HLR is the decision of the operator.

The choice of which MSCs can act as Gateway MSCs is for the operator to decide (i.e. all MSCs or some designated MSCs).

If the call is a voice group/broadcast call, it is routed directly from the GMSC to the VBS/VGCS Anchor MSC, based on information (VBS/VGCS call reference) contained in the dialled number. See also GSM 03.68 and 03.69.

[*Editor's note: There is a need to consider possibilities that call incoming to the PLMN may be routed to entities other than the GMSC, e.g., for networks that do not deploy CS domain.]*

When needed, the GMSC can be implemented in two different entities: the GMSC Server, handling only signalling, as defined bellow, and the CS-MGW, defined above. A GMSC Server and a CS-MGW make up the full functionality of a GMSC.

4.1.2.2.1 Gateway MSC Server (GMSC Server)

The GMSC server mainly comprises the call control and mobility control parts of a GMSC.

********** Next Modified Section**********

For non-call related signalling (e.g. delivery of SMS), only cases 2 and 3 are applicable.

5 Configuration of a Public Land Mobile Network

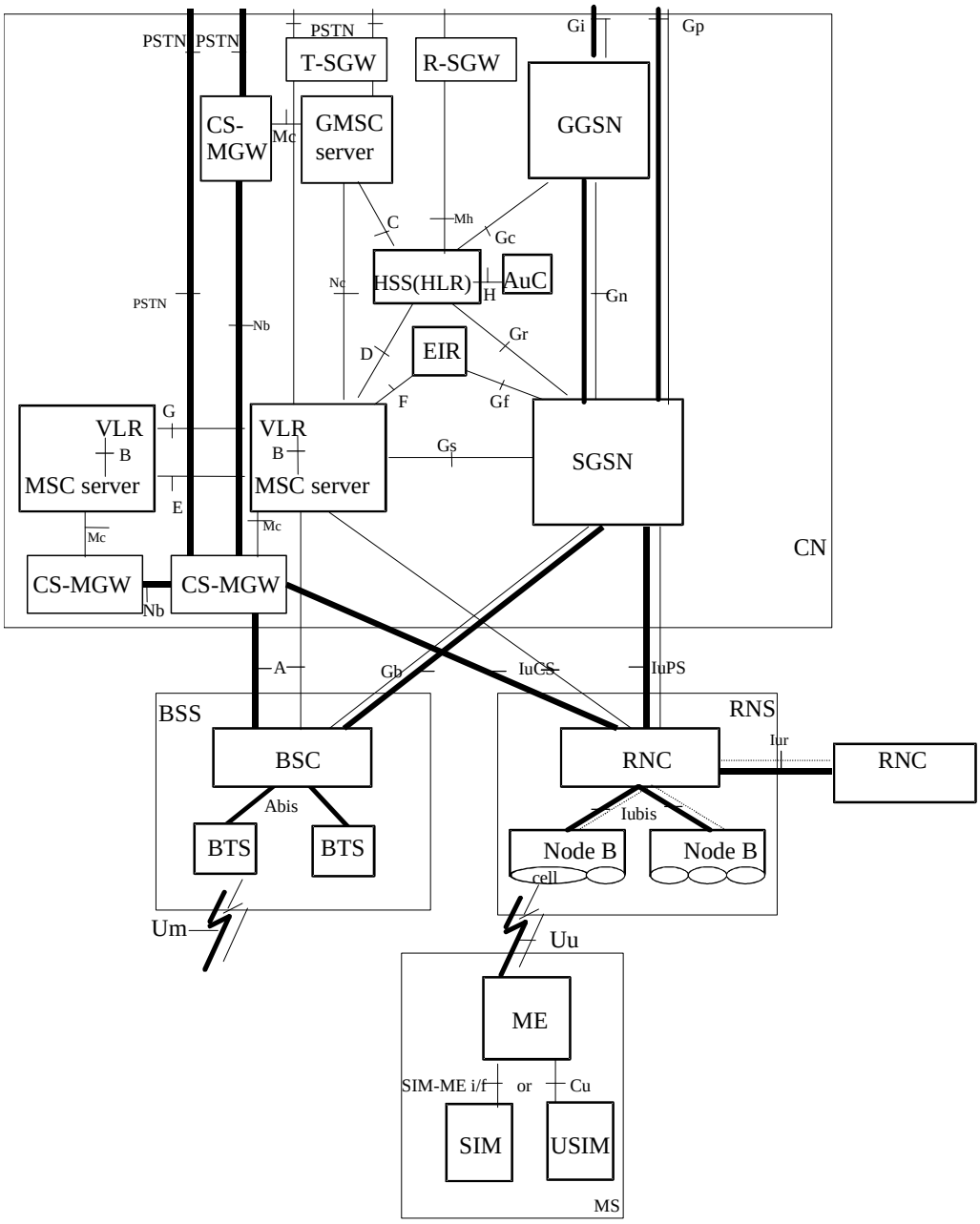
5.1 Basic configuration

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. This configuration presents signalling 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 GSM 08-series of Technical Specifications. Interfaces Iu, Iur and Iub are defined in the UMTS 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 UMTS 23-series and 24-series of Technical Specifications.

[editor's note: the Technical Specifications defining Interfaces Nb, Mc and Nc have not been started yet.]

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.



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 sever 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.

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

subscriber. The HLR then instructs the previous VLR to cancel the location registration of this subscriber. Exchanges of data may occur when the mobile subscriber requires a particular service, when he wants to change some data attached to his subscription or when some parameters of the subscription are modified by administrative means.

Signalling on this interface uses the Mobile Application Part (MAP), which in turn uses the services of Transaction Capabilities. See TS 29.002.

For CAMEL purposes, this interface is used to send the CAMEL related subscriber data to the visited PLMN and for provision of MSRN. The interface is also used for the other purposes described in 23.078, e.g. to retrieve subscriber status and location information of the mobile subscriber or to indicate suppression of announcement for a CAMEL service.

6.4.1.4 Interface between MSC servers (E-interface)

When a mobile station moves from one MSC area to another during a call, a handover procedure has to be performed in order to continue the communication. For that purpose the MSC servers have to exchange data to initiate and then to realise the operation.

After the handover operation has been completed, the MSC servers will exchange information to transfer A-interface signalling as necessary.

When a short message is to be transferred between a Mobile Station and Short Message Service Centre (SC), in either direction, this interface is used to transfer the message between the MSC server serving the Mobile Station and the MSC server which acts as the interface to the SC.

Signalling on this interface uses the Mobile Application Part (MAP), which in turn uses the services of Transaction Capabilities. See TS 29.002.

6.4.1.5 Interface between MSC server and EIR (F-interface)

This interface is used between MSC server and EIR to exchange data, in order that the EIR can verify the status of the IMEI retrieved from the Mobile Station.

Signalling on this interface uses the Mobile Application Part (MAP), which in turn uses the services of Transaction Capabilities. See TS 29.002.

6.4.1.6 Interface between VLRs (G-interface)

When a mobile subscriber moves from a VLR area to another Location Registration procedure will happen. This procedure may include the retrieval of the IMSI and authentication parameters from the old VLR.

Signalling on this interface uses the Mobile Application Part (MAP), which in turn uses the services of Transaction Capabilities. See TS 29.002.

6.4.1.7 Reference point (G)MSC server – CS-MGW (Mc Reference Point)

The Mc reference point describes the interfaces between the MSC Server and CS-MGW, and between the GMSC Server and CS-MGW. It has the following properties:

- full compliance with the H.248 standard, baseline work of which is currently carried out in ITU-T Study Group 16, in conjunction with IETF MEGACO WG.
- flexible connection handling which allows support of different call models and different media processing purposes not restricted to H.323 usage.
- open architecture where extensions/Packages definition work on the interface may be carried out.
- dynamic sharing of MGW physical node resources. A physical MGW can be partitioned into logically separate virtual MGWs/domains consisting of a set of statically allocated terminations.
- dynamic sharing of transmission resources between the domains as the MGW controls bearers and manage resources according to the H.248 protocols.

The functionality across the Mc reference point will need to support mobile specific functions such as SRNS relocation/handover and anchoring. It is expected that current H.248/IETF Megaco standard mechanisms can be applied to enable this.

6.4.1.8 Reference Point MSC Server – GMSC Server (Nc Reference Point)

Over the Nc reference point, the Network-Network based call control is performed. Examples of this are ISUP or an evolvement of ISUP for bearer independent call control (BICC). In the R'00 architecture different options for signalling transport on Nc shall be possible including IP.

6.4.1.9 Reference Point CS-MGW-CS-MGW (Nb Reference Point)

Over the Nb reference point the bearer control and transport are performed. The transport may be RTP/UDP/IP or AAL2 for transport of user data. In the R00 architecture different options for user data transport and bearer control shall be possible on Nb, for example: AAL2/Q.AAL2, STM/none, RTP/H.245.

6.4.2 Interfaces internal to the PS domain

6.4.2.1 Interface between SGSN and HLR (Gr-interface)

This interface is used to exchange the data related to the location of the mobile station and to the management of the subscriber. The main service provided to the mobile subscriber is the capability to transfer packet data within the whole service area. The SGSN informs the HLR of the location of a mobile station managed by the latter. The HLR sends to the SGSN all the data needed to support the service to the mobile subscriber. Exchanges of data may occur when the mobile subscriber requires a particular service, when he wants to change some data attached to his subscription or when some parameters of the subscription are modified by administrative means.

Signalling on this interface uses the Mobile Application Part (MAP), which in turn uses the services of Transaction Capabilities (TCAP). See TS 29.002.

6.4.2.2 Interface between SGSN and GGSN (Gn- and Gp-interface)

These interfaces are used to support mobility between the SGSN and GGSN. The Gn interface is used when GGSN and SGSN are located inside one PLMN. The Gp-interface is used if GGSN and SGSN are located in different PLMNs. The Gn/Gp interface also includes a part which allows SGSNs to communicate subscriber and user data, when changing SGSN.

Signalling on this interface uses the User Datagram Protocol, UDP/IP. The Gn/Gp interface is defined in TS 29.060.

6.4.2.3 Signalling Path between GGSN and HLR (Gc-interface)

This optional signalling path may be used by the GGSN to retrieve information about the location and supported services for the mobile subscriber, to be able to activate a packet data network address.

There are two alternative ways to implement this signalling path:

- if an SS7 interface is implemented in the GGSN, signalling between the GGSN and the HLR uses the Mobile Application Part (MAP), which in turn uses the services of Transaction Capabilities (TCAP). See TS 29.002;
- if there is *no* SS7 interface in the GGSN, any GSN in the same PLMN and which has an SS7 interface installed can be used as a GTP to MAP protocol converter, thus forming a signalling path between the GGSN and the HLR.

6.4.2.4 Interface between SGSN and EIR (Gf-interface)

This interface is used between SGSN and EIR to exchange data, in order that the EIR can verify the status of the IMEI retrieved from the Mobile Station.

Signalling on this interface uses the Mobile Application Part (MAP), which in turn uses the services of Transaction Capabilities (TCAP). See TS 29.002.

3GPP TSG-SA2 Meeting #16
Los Angeles, USA, 22-26th January 2001

S2-~~010168~~010316

CR-Form-v3

CHANGE REQUEST

⌘ **23.002** **CR** **CR-033** ⌘ rev **-** ⌘ Current version: **5.1.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network X

Title:	⌘	Clarification of the difference between MGW in BICCN and IMS
Source:	⌘	Lucent Technologies
Work item code:	⌘	IPMuMa, BICCN
Date:	⌘	22-jan-01
Category:	⌘	**D**
Release:	⌘	REL-5

Use one of the following categories:
F *(essential 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)*

Reason for change:	⌘	The term MGW has been used for both the Bearer Independent CS CN (BICCN) and the IP Multimedia Subsystem (IMS). In the two subsystems, the functions of the MGW are subtly different. To ensure clarity of the specifications, it is proposed that the terms CS-MGW and IM~~P~~-MGW be used within specifcations that cover both subsystems. Where the term MGW is used, its definition and functionality is limited by the scope of the specifcation e.g. in 23.205.
Summary of change:	⌘	Changes to include the term CS-MGW for R4 are handled in CR32. For the IM Subsystem, a new section is added to 4a.7 to include the definition of I~~P~~M-MGW. Section 6 is updated to ensure the erefernce points are clear. The reference point Mc is still labelled as being between the (G)MSC - CS-MGW and MGCF - ~~IP~~IM-MGW. Section 6a.7.3 has been cross referenced to section 6.4.17 to ensure that the two definitions of Mc do not diverge. As section 6.4.1.7 applie to both CS-MGW and to ~~IP~~IM-MGW in REL-5, the term MGW has been kept.
Consequences if not approved:	⌘	The specifcations will be unclear as to the requirements for the BICCN and the IM Subsystem.

Clauses affected:	⌘	4a.7, 5.5, 6a.7.3		
Other specs affected:	⌘	X Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	23.221
Other comments:	⌘			

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An IMEI may also be unknown to the EIR.

An EIR shall as a minimum contain a "white list" (Equipment classified as "white listed").

See also TS 22.016 on IMEI.

4.1.1.5 SMS Gateway MSC (SMS-GMSC)

The SMS Gateway MSC (SMS-GMSC) acts as an interface between a Short Message Service Centre and the PLMN, to allow short messages to be delivered to mobile stations from the Service Centre (SC).

The choice of which MSCs can act as SMS Gateway MSCs is a network operator matter (e.g. all MSCs or some designated MSCs).

4.1.1.6 SMS Interworking MSC

The SMS Interworking MSC acts as an interface between the PLMN and a Short Message Service Centre (SC) to allow short messages to be submitted from Mobile Stations to the SC.

The choice of which MSCs can act as SMS Interworking MSCs is a network operator matter (e.g. all MSCs or some designated MSCs).

4.1.1.7 Roaming Signalling Gateway Function (R-SGW)

The R-SGW performs the signalling conversion (both ways) at transport level between the SS7 based transport of signaling used in pre-Rel 4 networks, and the IP based transport of signalling possibly used in post-R99 networks (Sigtran SCTP/IP versus SS7 MTP). The R-SGW does not interpret the MAP / CAP messages but may have to interpret the underlying SCCP layer to ensure proper routing of the signaling.

For the support of pre-Rel 4 CS terminals, the services of the R-SGW are used to ensure transport interworking between the SS7 and the IP transport of MAP-E and MAP-G signalling interfaces with a pre-Rel 4 MSC/VLR.

4.1.2 Entities of the CS domain

4.1.2.1 The Mobile-services Switching Centre (MSC)

The Mobile-services Switching Centre (MSC) constitutes the interface between the radio system and the fixed networks. The MSC performs all necessary functions in order to handle the circuit switched services to and from the mobile stations.

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- procedures required for the location registration (see TS 23.012);
- procedures required for handover (see TS 23.009).

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The MSC Server controls the parts of the call state that pertain to connection control for media channels in a CS-MGW.

4.1.2.1.2 Circuit Switched - Media Gateway Function (CS-MGW)

Note: In this document the term Media Gateway Function (MGW) is used when there is no need to differentiate between the CS domain entity and the IP Multimedia CN Subsystem entity. When refering specifically to the CS domain entity the term CS-MGW is used. When refering specifically to the IP Multimedia CN Subsystem entity, the term IM-MGW is used.

This component is PSTN/PLMN transport termination point for a defined network and interfaces UTRAN with the core network over Iu.

A CS-MGW may terminate bearer channels from a switched circuit network (i.e., DSOs) and media streams from a packet network (e.g., RTP streams in an IP network). Over Iu, the CS-MGW may support media conversion, bearer control and payload processing (e.g. codec, echo canceller, conference bridge) for support of different Iu options for CS services (AAL2/ATM based as well as RTP/UDP/IP based).

The CS-MGW:

- Interacts with MSC server and GMSC server for resource control.
- Owns and handles resources such as echo cancellers etc.
- May need to have codecs.

The CS-MGW will be provisioned with the necessary resources for supporting UMTS/GSM transport media. Further tailoring (i.e packages) of the H.248 may be required to support additional codecs and framing protocols, etc.

The CS-MGW bearer control and payload processing capabilities will also need to support mobile specific functions such as SRNS relocation/handover and anchoring. It is expected that current H.248 standard mechanisms can be applied to enable this.

4.1.2.2 The Gateway MSC (GMSC)

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The acceptance of an interrogation to an HLR is the decision of the operator.

The choice of which MSCs can act as Gateway MSCs is for the operator to decide (i.e. all MSCs or some designated MSCs).

If the call is a voice group/broadcast call, it is routed directly from the GMSC to the VBS/VGCS Anchor MSC, based on information (VBS/VGCS call reference) contained in the dialled number. See also GSM 03.68 and 03.69.

[Editor's note: There is a need to consider possibilities that call incoming to the PLMN may be routed to entities other than the GMSC, e.g., for networks that do not deploy CS domain.]

When needed, the GMSC can be implemented in two different entities: the GMSC Server, handling only signalling, as defined bellow, and the CS-MGW, defined above. A GMSC Server and a CS-MGW make up the full functionality of a GMSC.

4.1.2.2.1 Gateway MSC Server (GMSC Server)

The GMSC server mainly comprises the call control and mobility control parts of a GMSC.

**********Next modified pages **********

4a.7 IP Multimedia (IM) Subsystem entities

4.a.7.1 Call State Control Function (CSCF)

The CSCF can act as Proxy CSCF (P-CSCF), Serving CSCF (S-CSCF) or Interrogating CSCF (I-CSCF). The P-CSCF is characterised by being the first contact point for the UE within the IM subsystem; the S-CSCF actually handles the session states in the network; the I-CSCF is mainly the contact point within an operator's network for all connections destined to a subscriber of that network operator. Further definitions of the P-, S- and I-CSCF are provided in [34].

The CSCF handles the following functionalities:

[editor's note: it may be appropriate to specify (in 23.002 or in 23.228) which functions are handled by which type of CSCF (P-, S- or I-CSCF). If this is going to be specified in 23.228, the following text should be summarised.]

- ICGW (Incoming call gateway)
- Acts as a first entry point and performs routing of incoming calls,
- Incoming call service triggering (e.g. call screening/call forwarding unconditional) may need to reside for optimisation purposes,
- Query Address Handling (implies administrative dependency with other entities)
- Communicates with HSS
- CCF (Call Control Function)
- Call set-up/termination and state/event management
- Interact with MRF in order to support multi-party and other services
- Reports call events for billing, auditing, intercept or other purpose
- Receives and process application level registration
- Query Address Handling (implies administrative dependency)
- May provide service trigger mechanisms (service capabilities features) towards Application & services network (VHE/OSA)
- May invoke location based services relevant to the serving network
- May check whether the requested outgoing communication is allowed given the current subscription.

[Comment: The role of the CCF (see below) with the Interrogating and Serving CSCF is for further study.]

- SPD (Serving Profile Database)
- Interacts with HSS in the home domain to receive profile information for the IM user and may store them depending on the SLA with the home domain
- Notifies the home domain of initial user's access (includes e.g. CSCF signalling transport address, user ID etc. needs further study)
- May cache access related information (e.g. terminal IP address(es) where the user may be reached etc.)
- AH (Address Handling)
- Analysis, translation, modification if required, address portability, mapping of alias addresses
- May do temporary address handling for inter-network routing.

4.a.7.2 Media Gateway Control Function (MGCF)

The MGCF:

- Controls the parts of the call state that pertain to connection control for media channels in a ~~IP~~IM-MGW.
- Communicates with CSCF.
- Selects the CSCF depending on the routing number for incoming calls from legacy networks.
- Performs protocol conversion between ISUP and the IM subsystem call control protocols.
- Out of band information assumed to be received in MGCF and may be forwarded to CSCF/ ~~IP~~IM-MGW.

4.a.7.3 IP Multimedia - Media Gateway Function (IM-MGW)

Note: In this document the term Media Gateway Function (MGW) is used when there is no need to differentiate between the CS domain entity and the IP Multimedia CN Subsystem entity. When refering specifically to the CS domain entity the term CS-MGW is used. When refering specifically to the IP Multimedia CN Subsystem entity, the term IM-MGW is used.

A IM-MGW may terminate bearer channels from a switched circuit network (i.e., DSOs) and media streams from a packet network (e.g., RTP streams in an IP network). The IM-MGW may support media conversion, bearer control and payload processing (e.g. codec, echo canceller, conference bridge), it:

- Interacts with the MGCF for resource control.
- Owns and handles resources such as echo cancellers etc.
- May need to have codecs.

The IM-MGW will be provisioned with the necessary resources for supporting UMTS/GSM transport media. Further tailoring (i.e packages) of the H.248 may be required to support additional codecs and framing protocols, etc.

4.a.7.~~3~~4 Transport Signalling Gateway Function (T-SGW)

The T-SGW:

- Maps call related signalling from/to PSTN/PLMN on an IP bearer and sends it to/from the MGCF.

Needs to provide PSTN/PLMN <-> IP transport level address mapping.

4.a.7.~~4~~5 Multimedia Resource Function (MRF)

The MRF:

- Performs multiparty call and multi media conferencing functions. MRF would have the same functions of an MCU in an H.323 network.
- Is responsible for bearer control (with GGSN and ~~IP~~IM-MGW) in case of multi party/multi media conference
- May communicate with CSCF for service validation for multiparty/multimedia sessions.

5 Configuration of a Public Land Mobile Network

5.1 Basic configuration

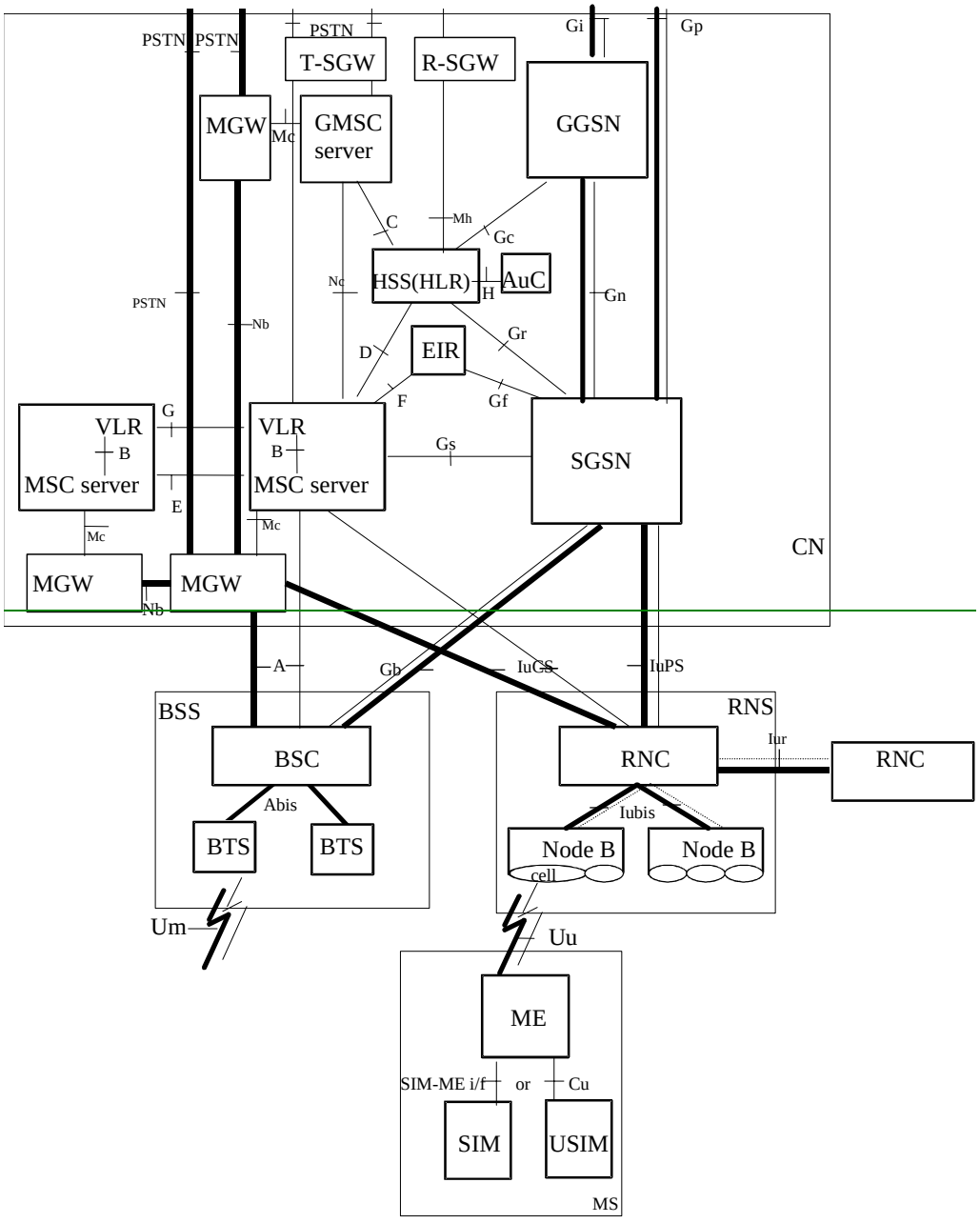
The basic configuration of a Public Land Mobile Network (PLMN) supporting GPRS and the interconnection to the PSTN/ISDN and PDN is presented in figure 1. This configuration presents signalling interfaces which can be found in a

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 GSM 08-series of Technical Specifications. Interfaces Iu, Iur and Iubis are defined in the UMTS 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 UMTS 23-series and 24-series of Technical Specifications.

[editor's note: the Technical Specifications defining Interfaces Nb, Mc and Nc have not been started yet.]

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
T-SGW
R-SGW
Gi
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MGW
Mc
GMSC server
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Mh
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HSS(HLR)
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AuC
Gn
PSTN
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EIR
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MSC server
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Mc
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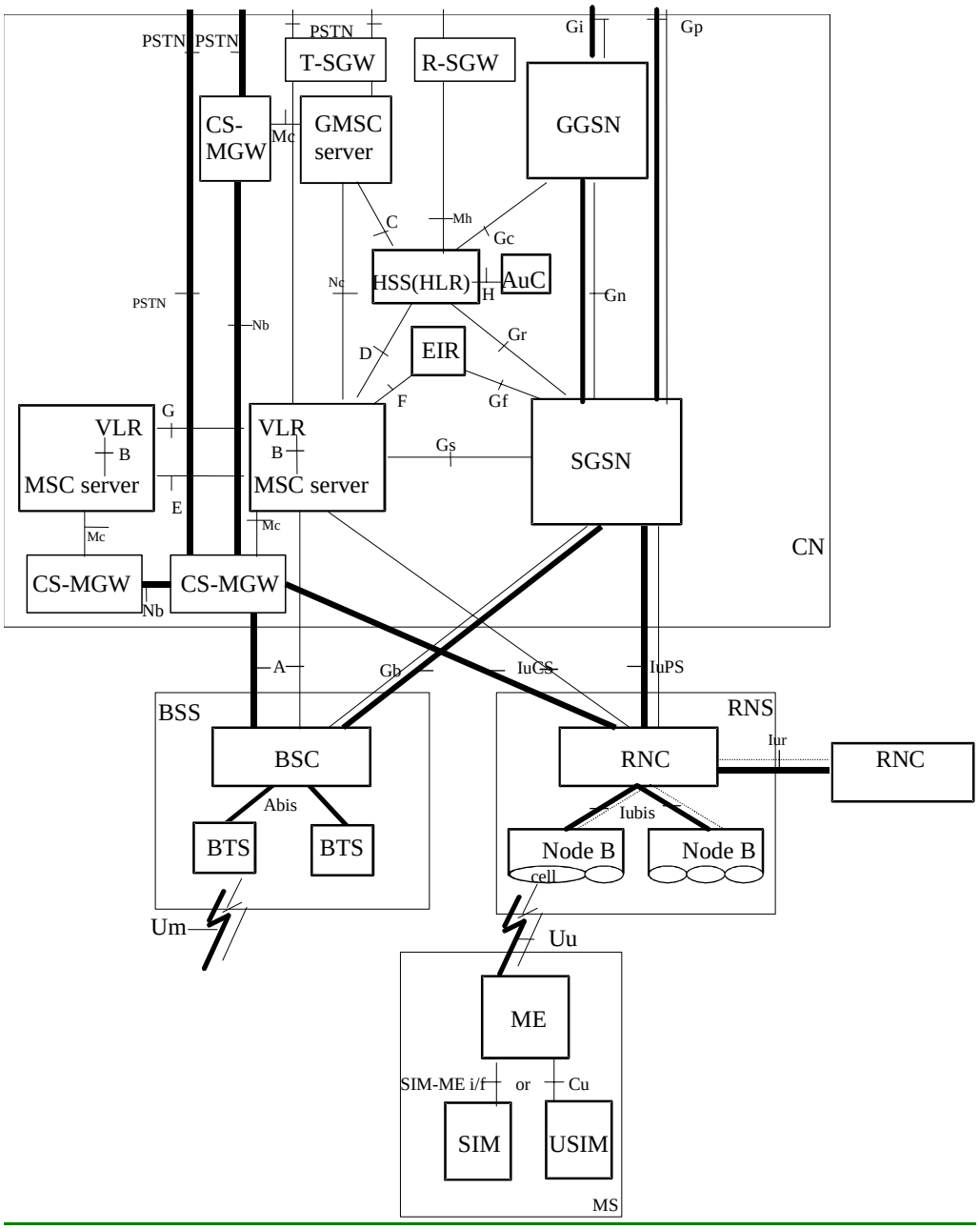


Legend:
Bold lines: interfaces supporting user traffic;
Dashed lines: interfaces supporting signalling.

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 sever 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.

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

**********next modified page **********

5.4 Configuration of CBS entities

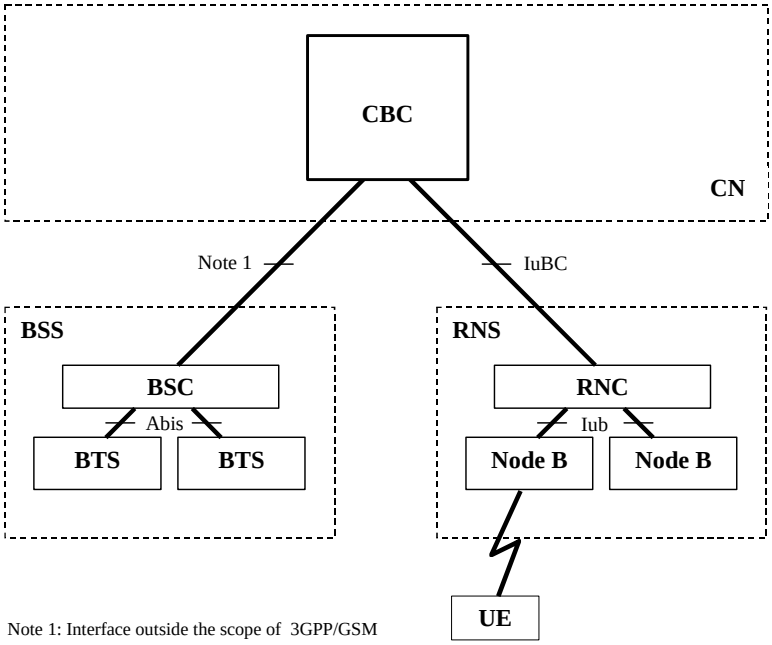


Figure 5: Configuration of a PLMN supporting Cell Broadcast Service entities

5.5 Configuration of IM Subsystem entities

The configuration of IM CN Subsystem entities is presented in figure 6. In the figure, all the functions are considered implemented in different logical nodes. If two logical nodes are implemented in the same physical equipment, the relevant interfaces may become internal to that equipment.

Only the interfaces specifically linked to the IM subsystem are shown, i.e. all the SGSN, GGSN and HSS interfaces depicted in figure 1 are still supported by these entities even if not shown.

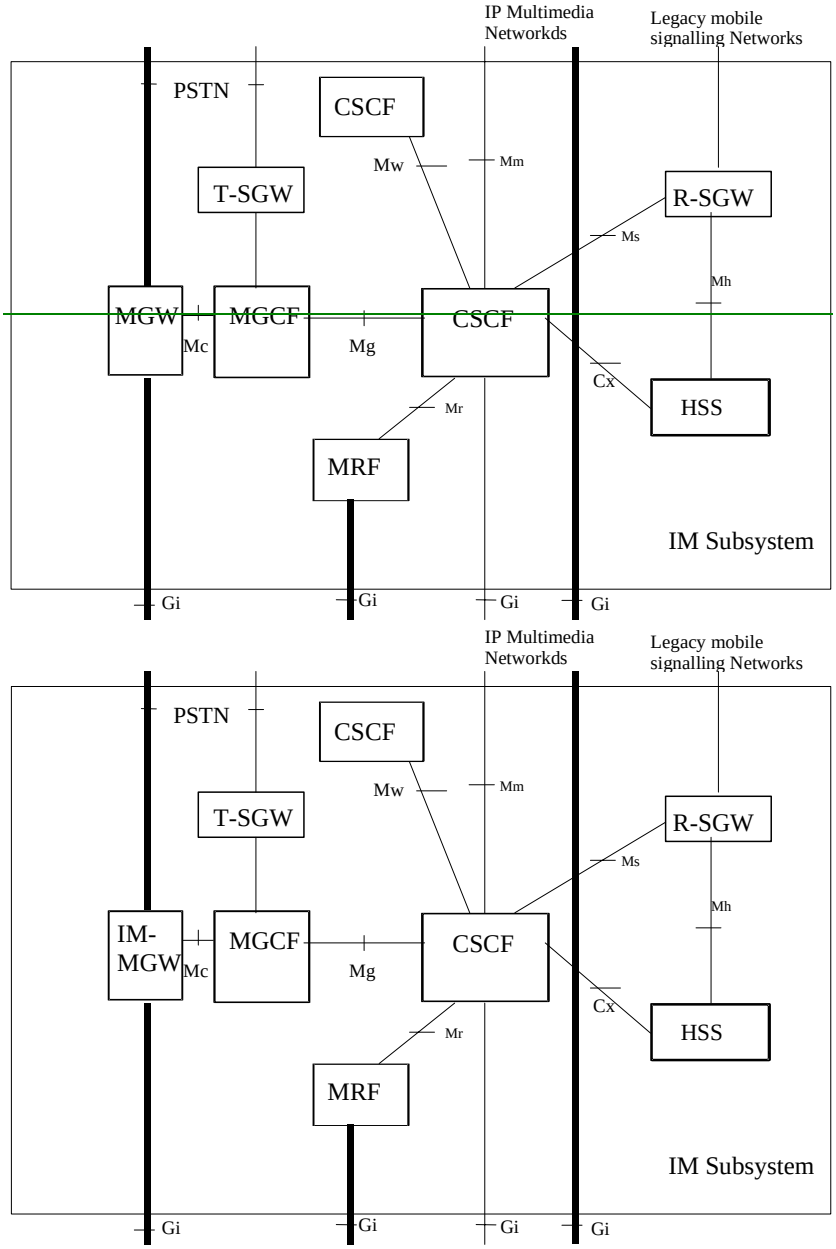


Figure 6: configuration of IM Subsystem entities

**********next modfied page **********Legend:

6.4.1.6 Interface between VLRs (G-interface)

When a mobile subscriber moves from a VLR area to another Location Registration procedure will happen. This procedure may include the retrieval of the IMSI and authentication parameters from the old VLR.

Signalling on this interface uses the Mobile Application Part (MAP), which in turn uses the services of Transaction Capabilities. See 3G TS 29.002.

6.4.1.7 Reference point (G)MSC server – CS-MGW (Mc Reference Point)

See also section 6a.7.3.

The Mc reference point describes the interfaces between the MGCF and ~~I~~IPIM-MGW, between the MSC Server and CS-MGW, and between the GMSC Server and CS-MGW. It has the following properties:

- full compliance with the H.248 standard, baseline work of which is currently carried out in ITU-T Study Group 16, in conjunction with IETF MEGACO WG.
- flexible connection handling which allows support of different call models and different media processing purposes not restricted to H.323 usage.
- open architecture where extensions/Packages definition work on the interface may be carried out.
- dynamic sharing of MGW physical node resources. A physical MGW can be partitioned into logically separate virtual MGWs/domains consisting of a set of statically allocated Terminations.
- dynamic sharing of transmission resources between the domains as the MGW controls bearers and manage resources according to the H.248 protocols.

The functionality across the Mc reference point will need to support mobile specific functions such as SRNS relocation/handover and anchoring. It is expected that current H.248/IETF Megaco standard mechanisms can be applied to enable this.

6.4.1.8 Reference Point MSC Server – GMSC Server (Nc Reference Point)

Over the Nc reference point, the Network-Network based call control is performed. Examples of this are ISUP or an evolvement of ISUP for bearer independent call control (BICC). In the R'00 architecture different options for signalling transport on Nc shall be possible including IP.

6.4.1.9 Reference Point CS-MGW- CS-MGW (Nb Reference Point)

Over the Nb reference point the bearer control and transport are performed. The transport may be RTP/UDP/IP or AAL2 for transport of user data. In the R00 architecture different options for user data transport and bearer control shall be possible on Nb, for example: AAL2/Q.AAL2, STM/none, RTP/H.245.

6.4.2 Interfaces internal to the PS domain

6.4.2.1 Interface between SGSN and HLR (Gr-interface)

This interface is used to exchange the data related to the location of the mobile station and to the management of the subscriber. The main service provided to the mobile subscriber is the capability to transfer packet data within the whole service area. The SGSN informs the HLR of the location of a mobile station managed by the latter. The HLR sends to the SGSN all the data needed to support the service to the mobile subscriber. Exchanges of data may occur when the mobile subscriber requires a particular service, when he wants to change some data attached to his subscription or when some parameters of the subscription are modified by administrative means.

Signalling on this interface uses the Mobile Application Part (MAP), which in turn uses the services of Transaction Capabilities (TCAP). See TS 29.002.

**********Next modified page**********

The main procedures that require information transfer between CSCF and HSS are

1) Procedures related to Serving CSCF assignment
2) Procedures related to routing information retrieval from HSS to CSCF
3) Procedures related to UE-HSS infromation tunneling via CSCF

6a.7.2 Reference Point CSCF – UE (Gm Reference Point)

This interface is to allow UE to communicate with the CSCF e.g.

- Register with a CSCF,
- Call origination and termination
- Supplementary services control.

The Gm reference point supports information transfer between UE and serving CSCF. The main procedures that require information transfer between UE and serving CSCF are

- Procedures related to Serving CSCF registration,
- Procedures related to User service requests to the serving CSCF,
- Procedures related to the Authentication of the Application/Service,
- Procedures related to the CSCF's request for Core Network resources in the Visited Network.

6a.7.3 Reference Point MGCF – IM-MGW (Mc Reference Point)

See also section 6.4.1.7.

The Mc reference point describes the interfaces between the MGCF and IM-MGW, between the MSC Server and CS-MGW, and between the GMSC Server and CS-MGW. It has the following properties:

- full compliance with the H.248 standard, baseline work of which is currently carried out in ITU-T Study Group 16, in conjunction with IETF MEGACO WG.
- flexible connection handling which allows support of different call models and different media processing purposes not restricted to H.323 usage.
- open architecture where extensions/Packages definition work on the interface may be carried out.
- dynamic sharing of MGW physical node resources. A physical MGW can be partitioned into logically separate virtual MGWs/domains consisting of a set of statically allocated Terminations.
- dynamic sharing of transmission resources between the domains as the MGW controls bearers and manage resources according to the H.248 protocols.

The functionality across the Mc reference point will need to support mobile specific functions such as SRNS relocation/handover and anchoring. It is expected that current H.248/IETF Megaco standard mechanisms can be applied to enable this.

6a.7.4 Reference Point MGCF – CSCF (Mg Reference Point)

The Mg reference point is based on external specifications, e.g. SIP

3GPP TSG-SA WG2 Meeting #16
Los Angeles, USA, 22-26 January, 2001

Tdoc S2-010172

CR-Form-v3

CHANGE REQUEST

⌘ **23.002** **CR** **034** ⌘ rev **-** ⌘ Current version: **5.1.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☒ Core Network ☒

Title:	⌘	Introduction of Iu-CS and Iu-PS interfaces to BSS of type GERAN in the network architecture for REL-5, according to the updates made for REL-4.
Source:	⌘	Ericsson
Work item code:	⌘	Release 5
Date:	⌘	2001-01-16
Category:	⌘	**A**
Release:	⌘	REL-5

Use one of the following categories:
F *(essential 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)*

Reason for change:	⌘	Update REL-5 according to the updates introduced for REL-4
Summary of change:	⌘	The updates introduced in REL 4 by the CR S2-002084 (at the S2#15 meeting) are introduced in REL-5
Consequences if not approved:	⌘	The updates made in the REL-4 version will be missing in the REL 5 version.

Clauses affected:	⌘	2, 4.2.1, 5.1, 6.2, 6.3.2		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘	Based on CR S2-002084		

First Change

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.

This specification may contain references to pre-Release-4 GSM specifications. These references shall be taken to refer to the **Error! No text of specified style in document.** version where that version exists. Conversion from the pre-Release-4 number to the Release 4 (onwards) number is given in subclause 6.1 of 3GPP TR 41.001.

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

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

[2] 3GPP TS 22.016: "Digital cellular telecommunications system (Phase 2+); International Mobile station Equipment Identities (IMEI)".

[2a] 3GPP TS 22.060: "Digital cellular telecommunications system (Phase 2+); General Packet radio Service (GPRS); Service Description; Stage 1".

[2b] 3GPP TS 22.071: "Digital cellular telecommunications system (Phase 2+); 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: "Digital cellular telecommunications system (Phase 2+); Numbering, addressing and identification".

[4] [void]

[5] 3GPP TS 23.008: "Digital cellular telecommunications system (Phase 2+); Organisation of subscriber data".

[6] 3GPP TS 23.009: "Digital cellular telecommunications system (Phase 2+); Handover procedures".

[7] 3GPP TS 23.012: "Digital cellular telecommunications system (Phase 2+); Location registration procedures".

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

[9] 3GPP TS 23.054: "Digital cellular telecommunications system (Phase 2+); Description for the use of a Shared Inter Working Function (SIWF) in a GSM PLMN".

[9a] 3GPP TS 23.060: "Digital cellular telecommunication system (Phase 2+); General Packet Radio Service (GPRS); Service Description; Stage 2".

[10] 3GPP TS 23.068: "Digital cellular telecommunications system (Phase 2+); Voice Group Call Service (VGCS) stage 2".

[10a] GSM 03.64: "Digital cellular telecommunication system (Phase 2+); Overall Description of the General Packet Radio Service (GPRS) Radio Interface; Stage 2".

[10b] 3GPP TS 23.071: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Functional Description; Stage 2".

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

[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: "Access Stratum (AS): Services and Functions".

[12] GSM 04.02 R98: "Digital cellular telecommunications system (Phase 2+); GSM Public Land Mobile Network (PLMN) access reference configuration".

[13] GSM 08.01: "Digital cellular telecommunications system (Phase 2+); Base Station System - Mobile-services Switching Centre (BSS - MSC) interface General aspects".

[14] GSM 08.02: "Digital cellular telecommunications system (Phase 2+); Base Station System - Mobile-services Switching Centre (BSS - MSC) interface Interface principles".

[14a] 3GPP TS 25.410: "UTRAN Iu Interface: General Aspects and Principles".

[14b] 3GPP TS 25.41x-series on definition of the Iu interface.

[15] GSM 08.04: "Digital cellular telecommunications system (Phase 1); Base Station System - Mobile-services Switching Centre (BSS - MSC) interface Layer 1 specification".

[16] GSM 08.06: "Digital cellular telecommunications system (Phase 2+); Signalling transport mechanism specification for the Base Station System - Mobile-services Switching Centre (BSS - MSC) interface".

[17] GSM 08.08: "Digital cellular telecommunications system (Phase 2+); Mobile Switching Centre - Base Station System (MSC - BSS) interface - Layer 3 specification".

[18] 3GPP TS 28.020: "Digital cellular telecommunications system (Phase 2+); Rate adaption on the Base Station System - Mobile-services Switching Centre (BSS - MSC) interface".

[19] GSM 08.51: "Digital cellular telecommunications system (Phase 2+); Base Station Controller - Base Transceiver Station (BSC - BTS) interface - General aspects".

[20] GSM 08.52: "Digital cellular telecommunications system (Phase 2+); Base Station Controller - Base Transceiver Station (BSC - BTS) interface - Interface principles".

[21] GSM 08.54: "Digital cellular telecommunications system (Phase 2+); Base Station Controller (BSC) to Base Transceiver Station (BTS) interface - Layer 1 structure of physical circuits".

[22] GSM 08.56: "Digital cellular telecommunications system (Phase 2+); Base Station Controller (BSC) to Base Transceiver Station (BTS) - Layer 2 specification".

[23] GSM 08.58: "Digital cellular telecommunications system (Phase 2+); Base Station Controller (BSC) to Base Transceiver Station (BTS) interface - Layer 3 specification".

[24] GSM 08.60: "Digital cellular telecommunications system (Phase 2+); Inband control of remote transcoders and rate adaptors".

[25] GSM 08.61: "Digital cellular telecommunications system (Phase 2+); Inband control of remote transcoders and rate adaptors (half rate)".

[26] 3GPP TS 29.002: "Digital cellular telecommunications system (Phase 2+); Mobile Application Part (MAP) specification".

[27] GSM 09.03 R98: "Digital cellular telecommunications system (Phase 2+); Signalling requirements on interworking between the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN) and the Public Land Mobile Network (PLMN)".

[28] 3GPP TS 29.004: "Digital cellular telecommunications system (Phase 2+); Interworking between the Public Land Mobile Network (PLMN) and the Circuit Switched Public Data Network (CSPDN)".

[29] 3GPP TS 29.005: "Digital cellular telecommunications system (Phase 2+); Interworking between the Public Land Mobile Network (PLMN) and the Packet Switched Public Data Network (PSPDN) for Packet Assembly/Disassembly facility (PAD) access".

[30] 3GPP TS 29.006: "Digital cellular telecommunications system (Phase 2+); Interworking between a Public Land Mobile Network (PLMN) and a Packet Switched Public Data Network/Integrated Services Digital Network (PSPDN/ISDN) for the support of packet switched data transmission services".

[31] 3GPP TS 29.007: "Digital cellular telecommunications system (Phase 2+); 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: "Digital cellular telecommunications system (Phase 2+); Information element mapping between Mobile Station - Base Station System and BSS - Mobile-services Switching Centre (MS - BSS - MSC) - Signalling procedures and the Mobile Application Part (MAP)".

[33] 3GPP TS 29.011: "Digital cellular telecommunications system (Phase 2+); Signalling interworking for supplementary services".

[34] 3GPP TS 23.228: “IP Multimedia (IM) Subsystem - Stage 2”.

[35] 3GPP TR 41.001: "GSM Release specifications".

[36] 3GPP TR 43.051: "GERAN Overall Description, Stage 2”.

Next Change

4.2.1 The Base Station System (BSS)

The Base Station System (BSS) is the system of base station equipments (transceivers, controllers, etc...) which is viewed by the MSC through a single A or Iu-CS -interface as being the entity responsible for communicating with Mobile Stations in a certain area. Similarly, in PLMNs supporting GPRS, the BSS is viewed by the SGSN through a single Gb or Iu-PS interface. The functionality for the A interface is described in GSM 08.02 and for the Gb interface in TS 23.060. The functionality for the Iu-CS interface is described in TS 25.410 and for the Iu-PS interface in TS 23.060.

The radio equipment of a BSS may support one or more cells. A BSS may consist of one or more base stations. Where an Abis-interface is implemented, the BSS consists of one Base Station Controller (BSC) and one or more Base Transceiver Station (BTS).

The split of functions between BSS and CN for a A/Gb interface is described in the 08-series of GSM Technical Specifications. The split of functions between BSS and CN for a Iu interface is desribed in the 25-series of UMTS Technical Specifications.

NOTE: The mobile station shall operate using **only the following modes:**

a. **A / G_b mode**, e.g. for pre-Release 4 terminals, for Release 4 terminals when connected to a BSS with no Iu interface towards the Core Network.

b. **Iu mode** (i.e. Iu-CS and Iu-PS), e.g. for Release 4 terminals when connected to a BSS with Iu interfaces towards the Core Network

No other modes (e.g. A/Iu-PS or Iu-CS/Gb) shall be allowed.

See also TS 43.051.

4.2.1.1 Base Station Controller (BSC)

A Base Station Controller (BSC) is a network component in the PLMN with the functions for control of one or more BTS.

4.2.1.2 Base Transceiver Station (BTS)

A Base Transceiver Station (BTS) is a network component which serves one cell.

Next Change

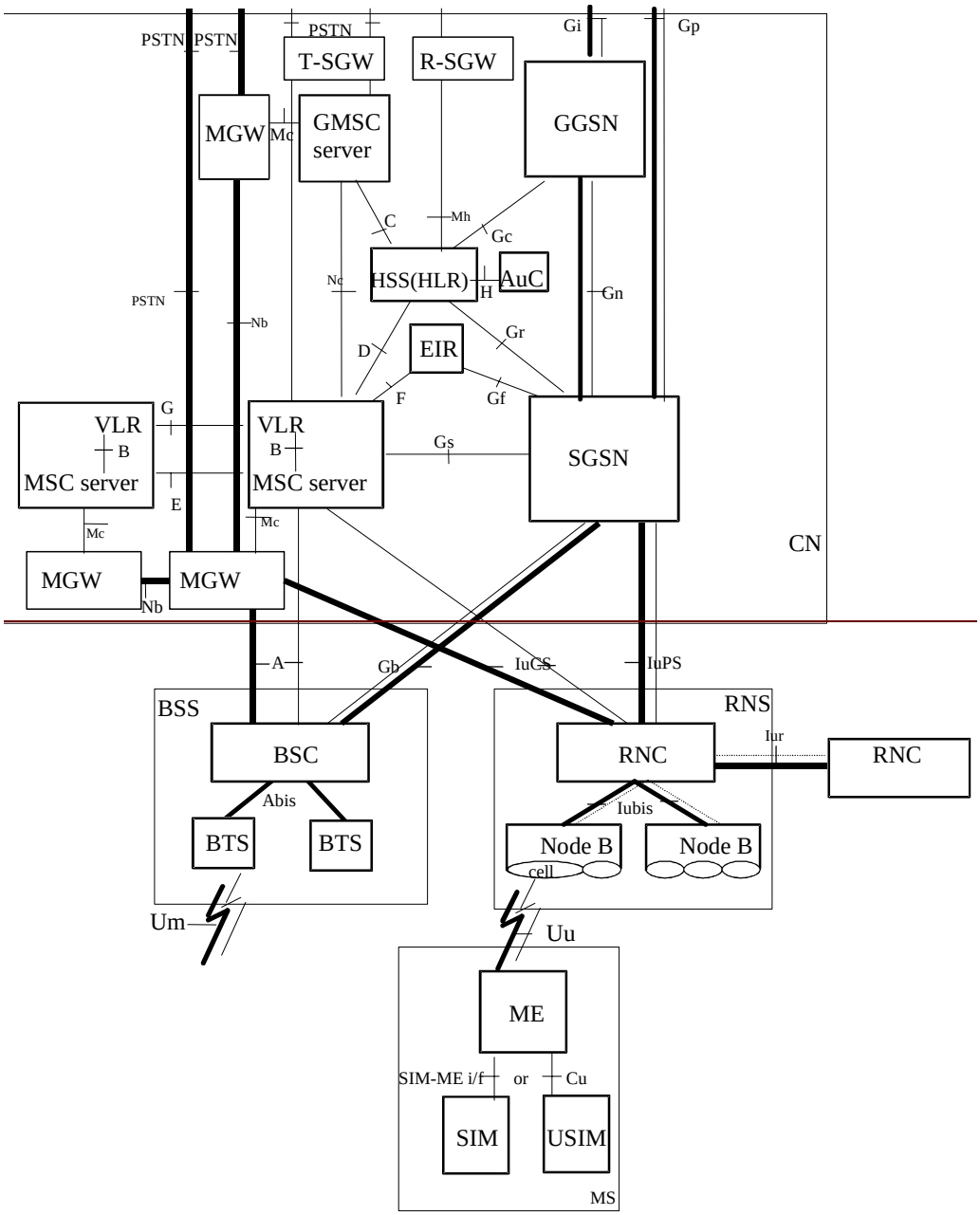
5.1 Basic configuration

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. This configuration presents signalling 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 GSM 08-series of Technical Specifications. Interfaces Iu, Iur and Iub~~is~~ are defined in the UMTS 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 UMTS 23-series and 24-series of Technical Specifications.

[editor's note: the Technical Specifications defining Interfaces Nb, Mc and Nc have not been started yet.]

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
T-SGW
R-SGW
Gi
Gp
MGW
Mc
GMSC server
GGSN
C
Mh
Gc
Nc
HSS(HLR)
H
AuC
Gn
PSTN
Nb
D
EIR
Gr
F
Gf
G
VLR
B
MSC server
VLR
B
MSC server
Gs
SGSN
E
Mc
Mc
CN
MGW
MGW
Nb
A
Gb
IuCS
IuPS
BSS
RNS
BSC
RNC
Iur
RNC
Abis
Iubis
BTS
BTS
Node B
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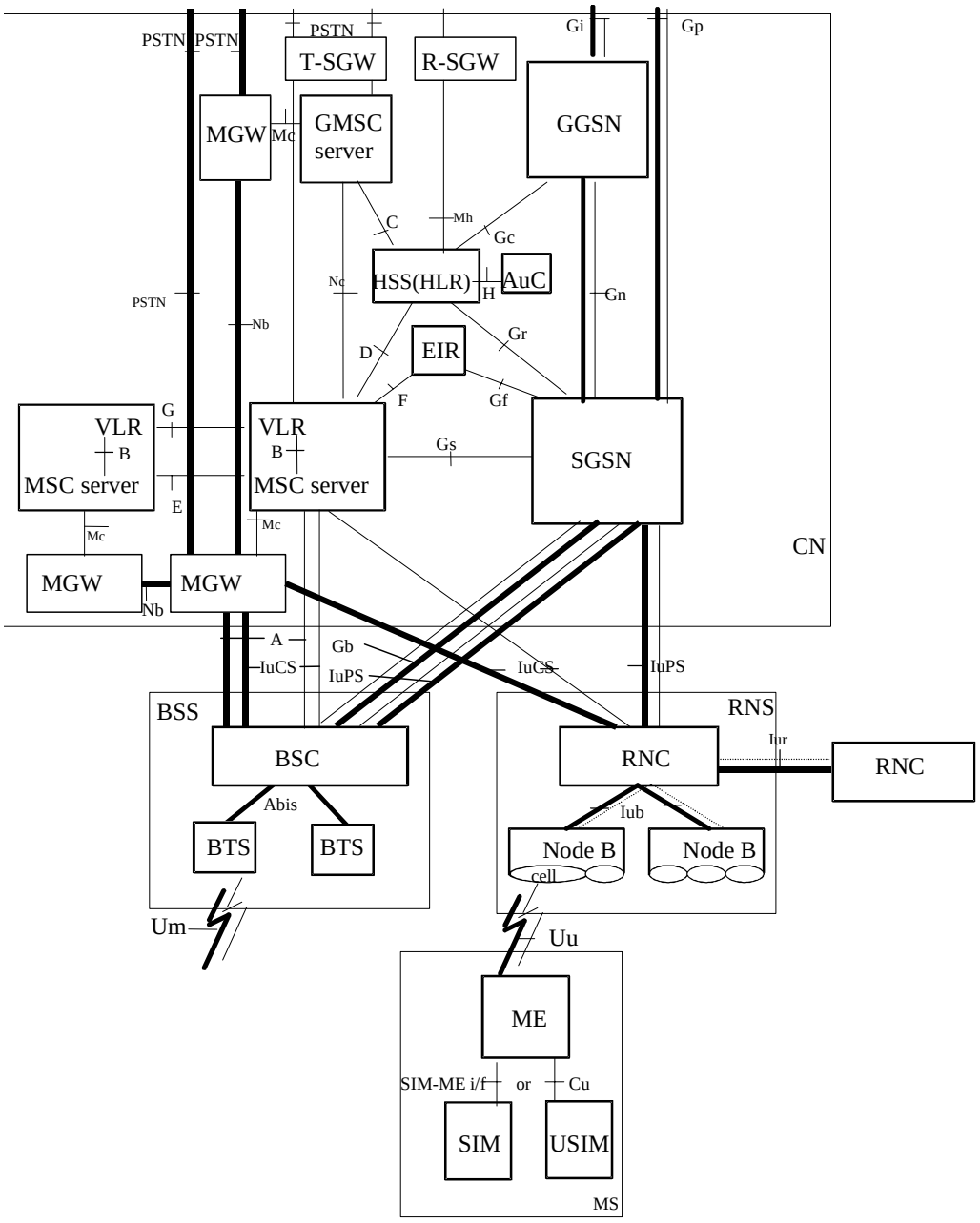
USIM
MS



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 sever and associated 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.

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

Next Change

6.2 Interface between the Core Network and the Access Network

6.2.1 Interfaces between the CS domain and the Access Network

6.2.1.1 Interface between the MSC and Base Station System (A-interface)

The interface between the MSC and its BSS is specified in the 08-series of GSM Technical Specifications.

The BSS-MSC interface is used to carry information concerning:

- BSS management;
- call handling;
- mobility management.

6.2.1.2 Interface between the MSC and Base Station System (Iu_CS interface)

The interface between the MSC and its BSS is specified in the 25.41x-series of UMTS Technical Specifications.

The BSS-MSC interface is used to carry information concerning:

- BSS management;
- call handling;
- mobility management;

6.2.1.~~3~~2 Interface between the MSC and RNS (Iu_CS interface)

The interface between the MSC and its RNS is specified in the 25.41x-series of UMTS Technical Specifications.

The RNS-MSC interface is used to carry information concerning:

- RNS management;
- call handling;
- mobility management.

6.2.2 Interfaces between the PS domain and the Access Network

6.2.2.1 Interface between SGSN and BSS (Gb-interface)

The BSS-SGSN interface is used to carry information concerning:

- packet data transmission;
- mobility management.

The Gb interface is defined in GSM 08.14, 08.16 and 08.18.

6.2.2.2 Interface between SGSN and BSS (Iu_PS-interface)

The BSS-SGSN interface is used to carry information concerning:

- packet data transmission;
- mobility management.

The Iu_PS interface is defined in the 25.41x-series of UMTS Technical Specifications.

6.2.2.~~3~~2 Interface between SGSN and RNS (Iu_PS-interface)

The RNS ~~3G~~-SGSN interface is used to carry information concerning:

- packet data transmission;
- mobility management.

The Iu_PS interface is defined in the 25.41x-series of UMTS Technical Specifications.

Next Change

6.3.2 Interface between RNC and Node B (Iub~~is~~-interface)

When the RNS consists of a Radio Netwok~~Base Station~~ Controller (RNC) and one or more Node B~~Base Transceiver Stations (BTS)~~, this interface is used between the RNC and Node B~~BTS~~ to support the services offered to the UMTS~~GSM~~ users and subscribers.

The interface also allows control of the radio equipment and radio frequency allocation in the Node B~~BTS~~.

The interface is specified in the 28.5x-series of UMTS~~GSM~~ Technical Specifications.

3GPP TSG-SA WG2 Meeting #16
Los Angeles, USA, Jan 22-26, 2001

Tdoc S2-010367~~249~~

CR-Form-v3

CHANGE REQUEST

⌘ **23.002** **CR** **035** ⌘ rev **-1** ⌘ Current version: **5.1.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Addition of GGSN/CSCF interface to the R5 reference architecture
Source:	⌘	Nokia
Work item code:	⌘	IMS
Date:	⌘	19.01.01
Category:	⌘	**B**
Release:	⌘	REL-5

Use one of the following categories:
F *(essential 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)

Reason for change:	⌘	This CR adds a new interface between GGSN and CSCF to the R5 reference architecture based on the discussion about the authorization of bearer usage and the resulting requirements which were captured e.g. in 23.228, section 4.2.6. (points 4 and 5) and Annex D as well as the agreed document S2-001778. The proposed name for the new interface is "Go".
Summary of change:	⌘	
Consequences if not approved:	⌘	

Clauses affected:	⌘			
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

5 Configuration of a Public Land Mobile Network

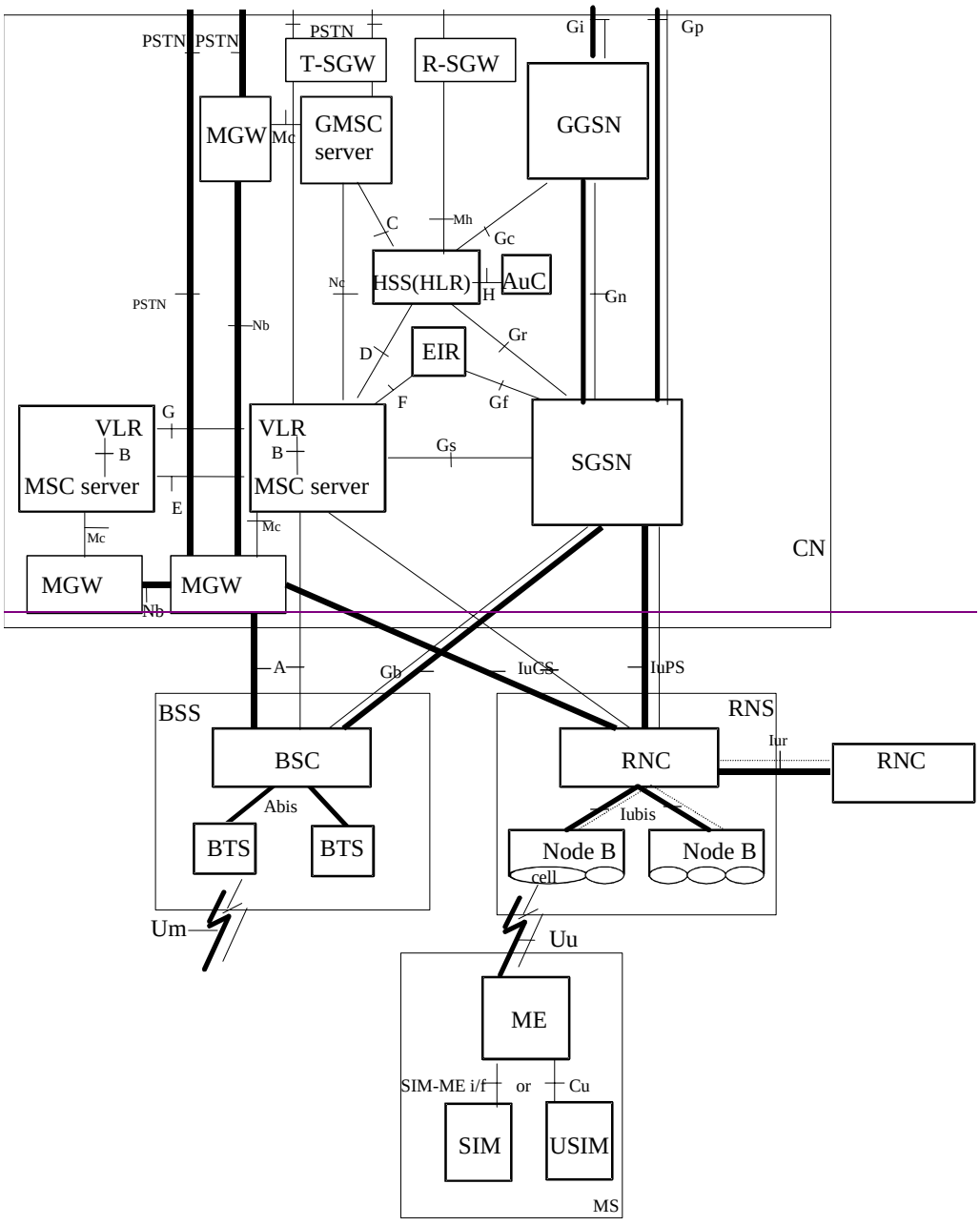
5.1 Basic configuration

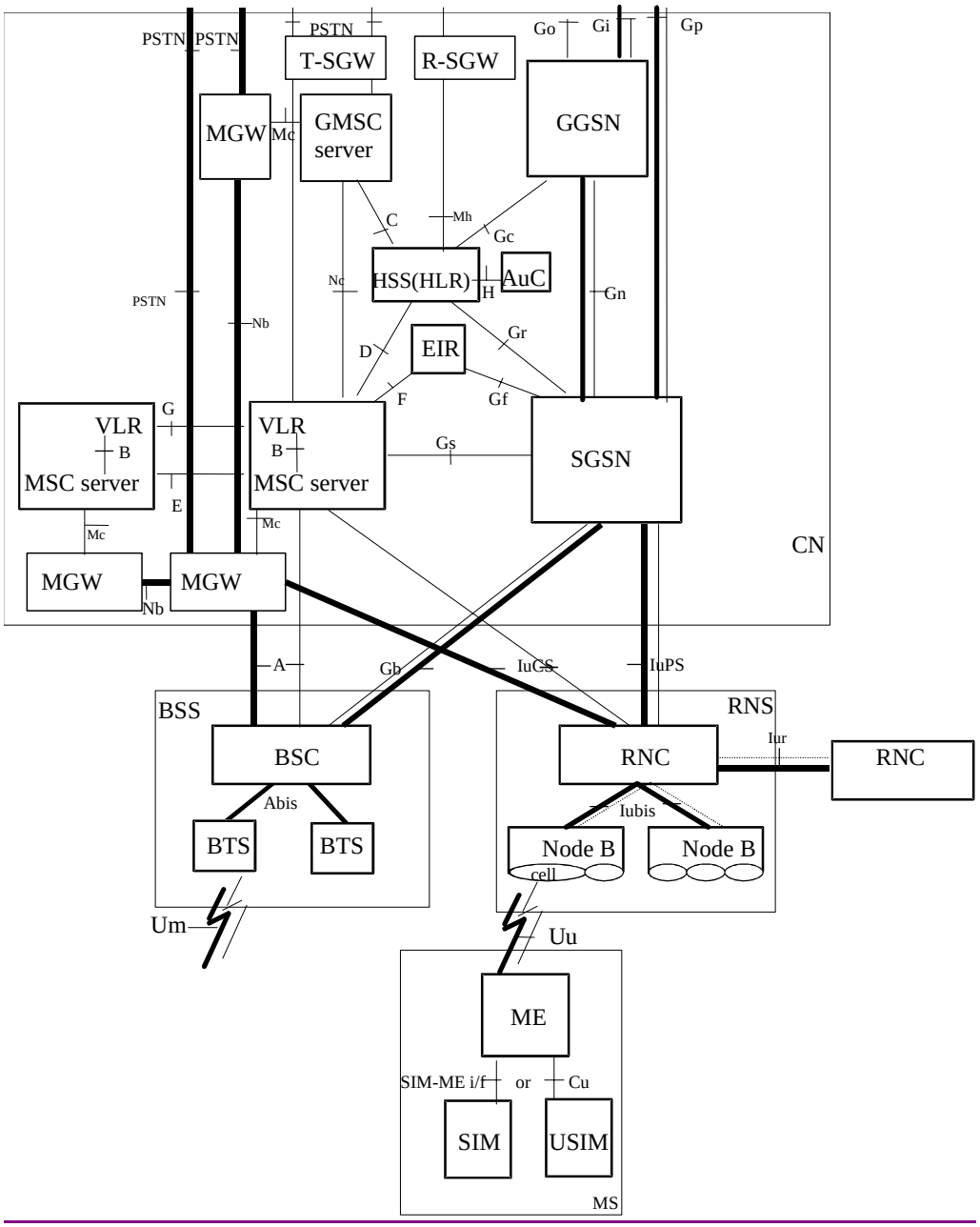
The basic configuration of a Public Land Mobile Network (PLMN) supporting GPRS and the interconnection to the PSTN/ISDN and PDN is presented in figure 1. This configuration presents signalling interfaces which can be found in a PLMN. Implementations may be different: some particular functions may be 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 GSM 08-series of Technical Specifications. Interfaces Iu, Iur and Iubis are defined in the UMTS 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 UMTS 23-series and 24-series of Technical Specifications.

[editor's note: the Technical Specifications defining Interfaces Nb, Mc and Nc have not been started yet.]

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
T-SGW
R-SGW
Gi
Gp
MGW
Mc
GMSC server
GGSN
C
Mh
Gc
Nc
HSS(HLR)
H
AuC
Gn
PSTN
Nb
D
EIR
Gr
F
Gf
G
VLR
B
MSC server
VLR
B
MSC server
Gs
SGSN
E
Mc
Mc
CN
MGW
MGW
Nb
A
Gb
IuCS
IuPS
BSS
RNS
BSC
RNC
Iur
RNC
Abis
Iubis
BTS
BTS
Node B
Node B
cell
Um
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 sever and associated 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.

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

5.5 Configuration of IM Subsystem entities

The configuration of IM CN Subsystem entities is presented in figure 6. In the figure, all the functions are considered implemented in different logical nodes. If two logical nodes are implemented in the same physical equipment, the relevant interfaces may become internal to that equipment.

Only the interfaces specifically linked to the IM subsystem are shown, i.e. all the SGSN, GGSN and HSS interfaces depicted in figure 1 are still supported by these entities even if not shown.

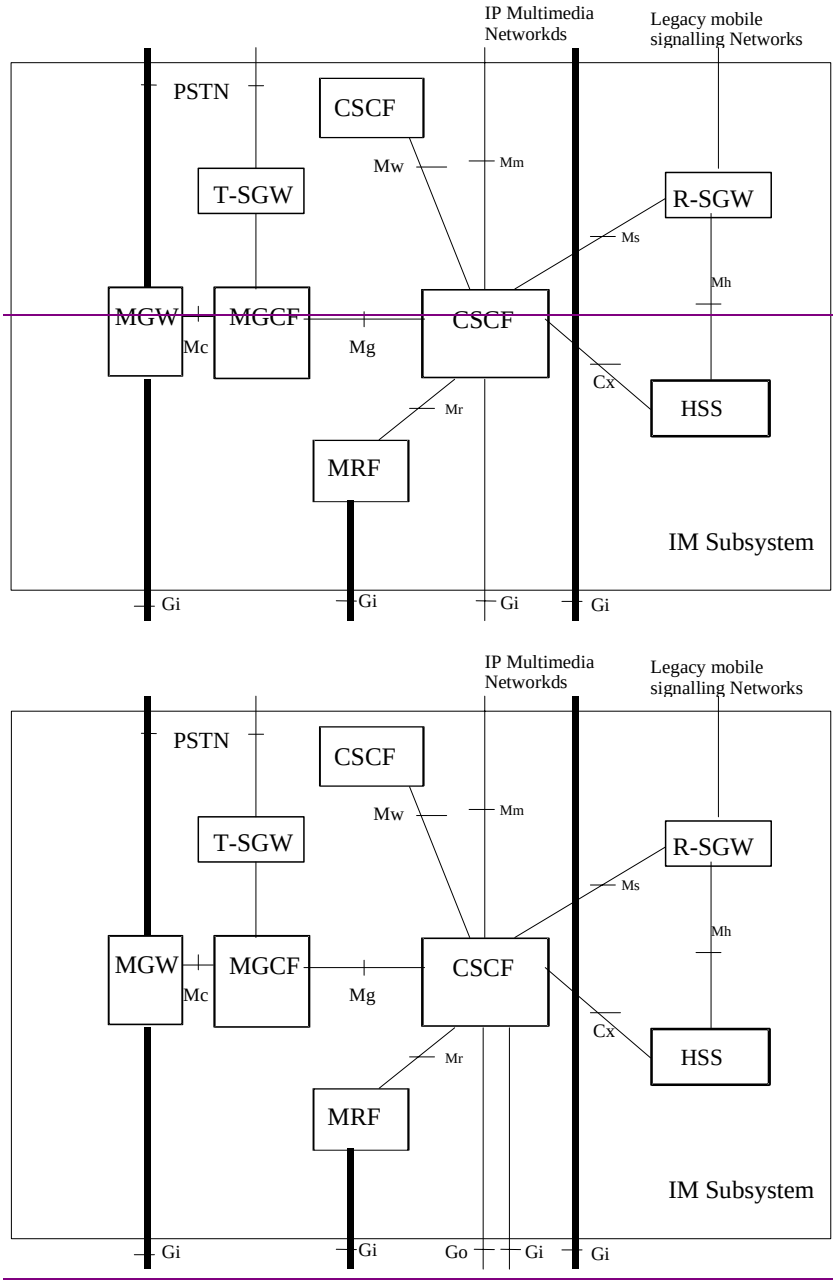


Figure 6: configuration of IM Subsystem entities

Legend:
Bold lines: interfaces supporting user traffic;
Dashed lines: interfaces supporting only signalling.
NOTE: The Gm interface (between CSCF and UE) is also part of the configuration, but is not shown for layout purposes only.

6a.7 IM Subsystem Reference Points

6a.7.1 Reference Point HSS – CSCF (Cx Reference Point)

The Cx reference point supports information transfer between CSCF and HSS.

The main procedures that require information transfer between CSCF and HSS are

1) Procedures related to Serving CSCF assignment
2) Procedures related to routing information retrieval from HSS to CSCF
3) Procedures related to UE-HSS infromation tunneling via CSCF

6a.7.2 Reference Point CSCF – UE (Gm Reference Point)

This interface is to allow UE to communicate with the CSCF e.g.

- Register with a CSCF,
- Call origination and termination
- Supplementary services control.

The Gm reference point supports information transfer between UE and serving CSCF. The main procedures that require information transfer between UE and serving CSCF are

- Procedures related to Serving CSCF registration,
- Procedures related to User service requests to the serving CSCF,
- Procedures related to the Authentication of the Application/Service,
- Procedures related to the CSCF's request for Core Network resources in the Visited Network.

6a.7.3 Reference Point MGCF – MGW (Mc Reference Point)

The Mc reference point describes the interfaces between the MGCF and MGW, between the MSC Server and MGW, and between the GMSC Server and MGW. It has the following properties:

- full compliance with the H.248 standard, baseline work of which is currently carried out in ITU-T Study Group 16, in conjunction with IETF MEGACO WG.
- flexible connection handling which allows support of different call models and different media processing purposes not restricted to H.323 usage.
- open architecture where extensions/Packages definition work on the interface may be carried out.
- dynamic sharing of MGW physical node resources. A physical MGW can be partitioned into logically separate virtual MGWs/domains consisting of a set of statically allocated Terminations.
- dynamic sharing of transmission resources between the domains as the MGW controls bearers and manage resources according to the H.248 protocols.

The functionality across the Mc reference point will need to support mobile specific functions such as SRNS relocation/handover and anchoring. It is expected that current H.248/IETF Megaco standard mechanisms can be applied to enable this.

6a.7.4 Reference Point MGCF – CSCF (Mg Reference Point)

The Mg reference point is based on external specifications, e.g. SIP

6a.7.5 Reference Point CSCF – Multimedia IP networks (Mm Reference Point)

This is an IP interface between CSCF and IP networks. This interface is used, for example, to receive a call request from another VoIP call control server or terminal.

6a.7.6 Reference Point CSCF - MRF (Mr Reference Point)

Allows the CSCF to control the resources within the MRF.

6a.7.7 Reference Point CSCF – R-SGW (Ms Reference Point)

This is an interface between the CSCF and R-SGW.

[editor's note: can be improved…]

6a.7.8 Reference Point CSCF – CSCF (Mw Reference Point)

The interface allows the Interrogating CSCF to direct mobile terminated calls to the Serving CSCF.

6a.7.9 Reference Points towards SCP

This includes the interfaces from the SGSN to the SCP, from the Serving CSCF (and possibly the Interrogating CSCF) to the SCP, from the MSC Server to the SCP, and the GMSC Server to the SCP.

The interface from the CSCF to the SCP is required to allow the support of existing CAMEL based services.

6a.7.10 Reference Point GGSN-CSCF (Go Reference Point)

This interface allows the Proxy-CSCF to apply policy to ~~control~~ the bearer usage in the GGSN.

3GPP TSG-SA WG2 Meeting #17 **S2-010631**
Gothenburg, Sweden, 26 February – 2 March 20001

CR-Form-v3

CHANGE REQUEST

⌘ **23.002** **CR** **040** ⌘ rev **-** ⌘ Current version: **4.1.1** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Missing Nc interface in basic configuration figure
Source:	⌘	Siemens
Work item code:	⌘	CSSPLIT
Date:	⌘	21.2.2001
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
F *(essential 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)

Reason for change:	⌘	Figure 5.1 in 23.002 shows an Nb interface between two MGWs without an associated Nc interface between the controlling MSC-servers.
Summary of change:	⌘	An Nc interface is added between the controlling MSC-servers. In addition, an editor's note on the status of Mc, Nb, Nc relevant specifications is resolved.
Consequences if not approved:	⌘	Figure 5.1 will remain incorrect, and an unresolved editor's note will remain in the specification.

Clauses affected:	⌘	-
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ 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/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

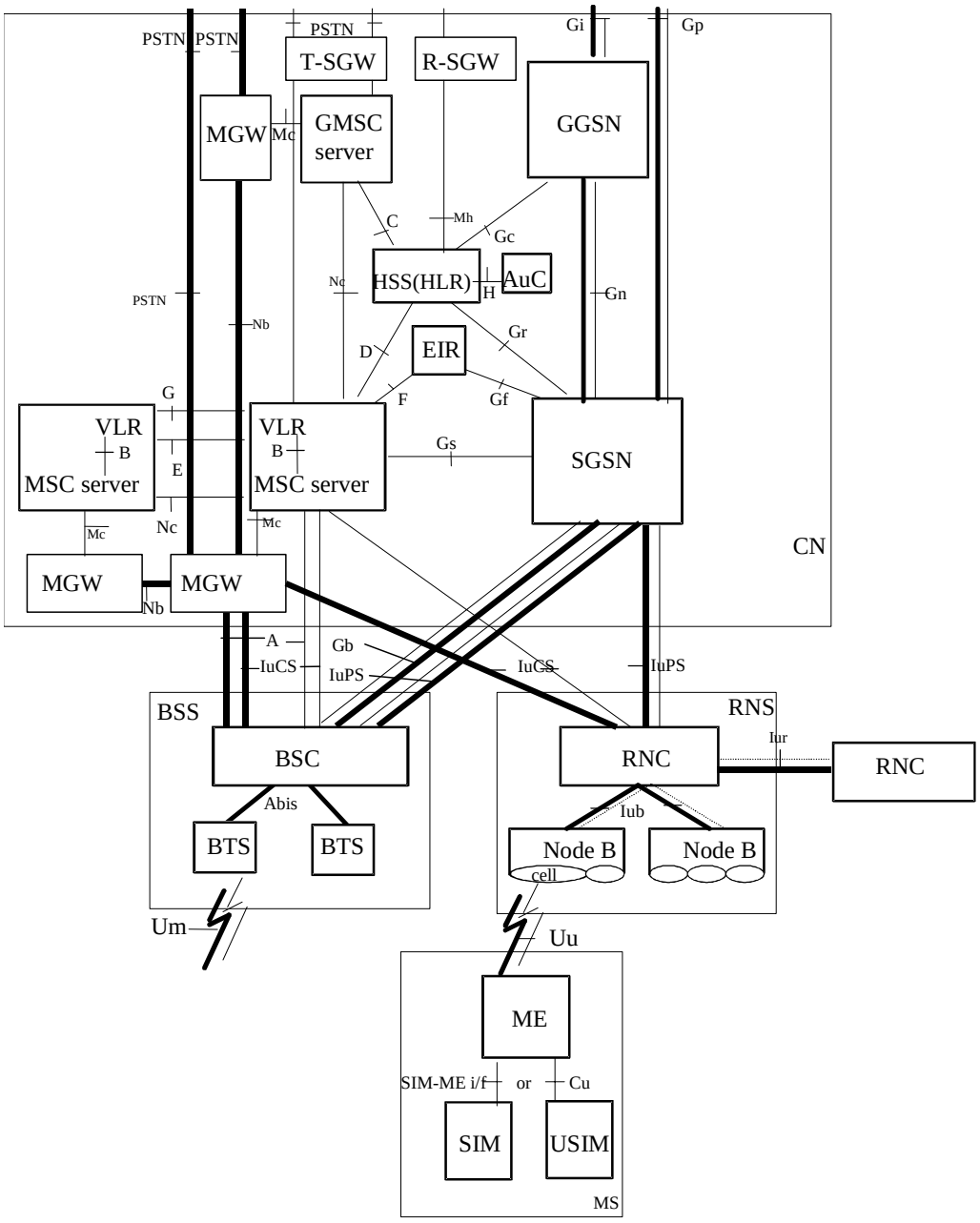
5 Configuration of a Public Land Mobile Network

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. This configuration presents signalling 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 GSM 08-series of Technical Specifications. Interfaces Iu, Iur and Iub are defined in the UMTS 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 UMTS 23-series and 24-series of Technical Specifications. Interfaces Mc, Nb, and Nc are defined in UMTS 23.205 and in the UMTS 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.



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 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.

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

3GPP TSG-SA WG2 Meeting #17 ***S2-010632***
Gothenburg, Sweden, 26 February – 2 March 20001

CR-Form-v3

CHANGE REQUEST

⌘ **23.002** **CR** **041** ⌘ rev **-** ⌘ Current version: **5.1.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Missing Nc interface in basic configuration figure
Source:	⌘	Siemens
Work item code:	⌘	CSSPLIT
Date:	⌘	21.2.2001
Category:	⌘	**A**
Release:	⌘	REL-5

Use one of the following categories:
F *(essential 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)

Reason for change:	⌘	Figure 5.1 in 23.002 shows an Nb interface between two MGWs without an associated Nc interface between the controlling MSC-servers.
Summary of change:	⌘	An Nc interface is added between the controlling MSC-servers. In addition, an editor's note on the status of Mc, Nb, Nc relevant specifications is resolved.
Consequences if not approved:	⌘	Figure 5.1 will remain incorrect, and an unresolved editor's note will remain in the specification.

Clauses affected:	⌘	-
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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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.

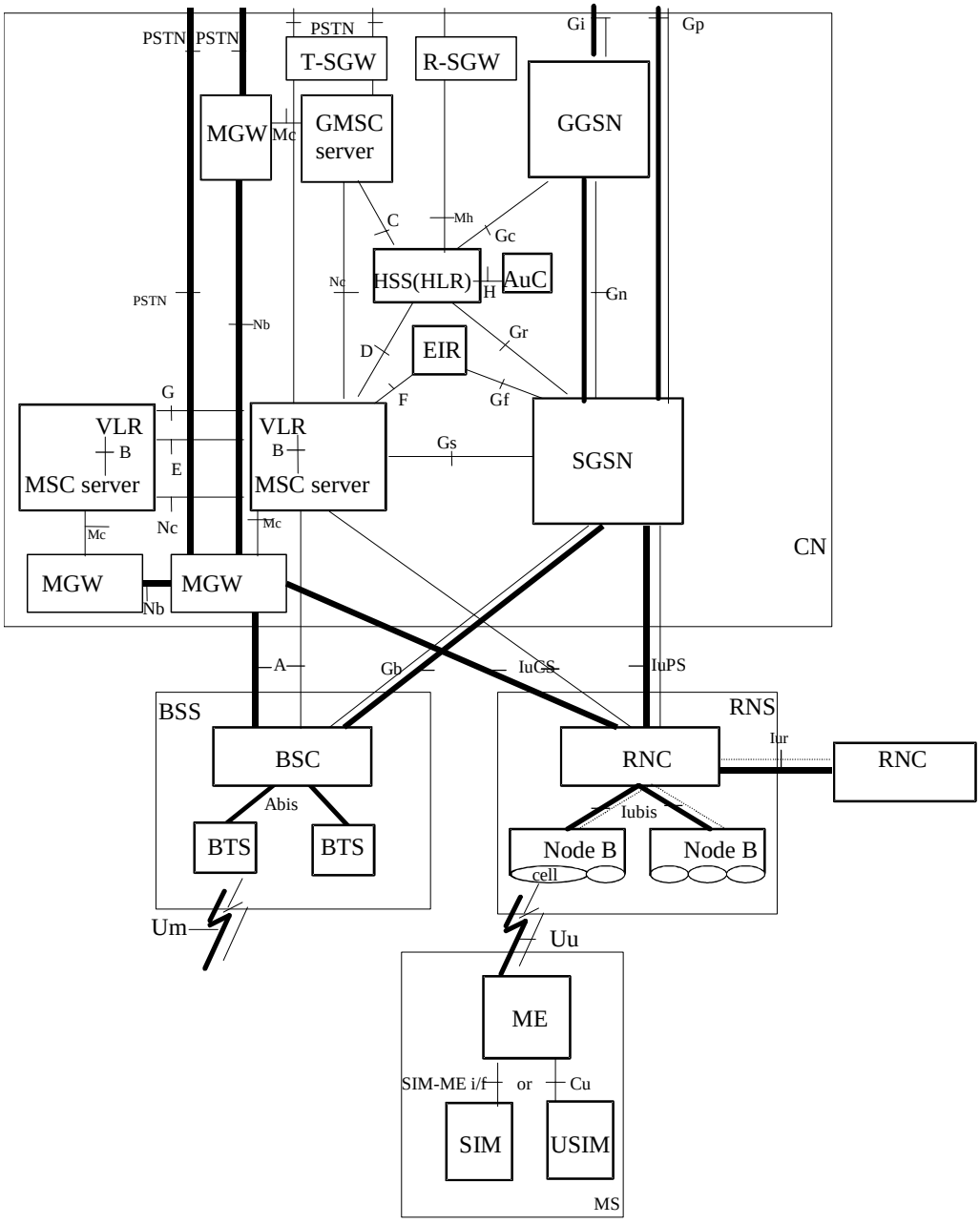
5 Configuration of a Public Land Mobile Network

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. This configuration presents signalling 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 GSM 08-series of Technical Specifications. Interfaces Iu, Iur and Iubis are defined in the UMTS 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 UMTS 23-series and 24-series of Technical Specifications. Interfaces Mc, Nb, and Nc are defined in UMTS 23.205 and in the UMTS 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.



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 sever and associated 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.

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

3GPP TSG-SA WG2 Meeting #17 **S2-010633**
Gothenburg, Sweden, 26.2.-2.3. 2001

CR-Form-v3

CHANGE REQUEST

⌘ **23.002** **CR** **042** ⌘ rev **-** ⌘ Current version: **4.1.1** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network **X** Core Network x

Title:	⌘	Removal of Iu for GERAN in Release 4
Source:	⌘	Siemens
Work item code:	⌘	***Date:*** ⌘ 21.2.2001
Category:	⌘ **F**	***Release:*** ⌘ REL-4

Use one of the following categories:
F *(essential 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)

Reason for change:	⌘	GERAN access via Iu has been shifted from Release 4 to Release 5. Therefore it needs to be removed from the Release 4 specification.
Summary of change:	⌘	Iu_cs and Iu_ps for a BSS are removed from - the BSS description, - the interface descriptions between BSS and the CN, - and from figure 1 showing the architecture.
Consequences if not approved:	⌘	Inconsistency in release 4 specifications.

Clauses affected:	⌘	4.2.1, 5.1., 6.2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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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.

4.2 The Access Network (AN) entities

Two different types of access network are used by the CN: the Base Station System (BSS) and the Radio Network System (RNS). The BSS offers a Time Division Multiple Access (TDMA) based technology to access the Mobile Station whereas the RNS offers a Wideband-Code Division Multiple Access (W-CDMA) based technology. The MSC (resp. SGSN) can connect to one of these Access Network type or to both of them.

4.2.1 The Base Station System (BSS)

The Base Station System (BSS) is the system of base station equipments (transceivers, controllers, etc...) which is viewed by the MSC through a single A ~~or Iu-CS~~ interface as being the entity responsible for communicating with Mobile Stations in a certain area. Similarly, in PLMNs supporting GPRS, the BSS is viewed by the SGSN through a single Gb ~~or Iu-PS~~ interface. The functionality for the A interface is described in GSM 08.02 and for the Gb interface in TS 23.060. The functionality for the Iu-CS interface is described in TS 25.410 and for the Iu-PS interface in TS 23.060.

The radio equipment of a BSS may support one or more cells. A BSS may consist of one or more base stations. Where an Abis-interface is implemented, the BSS consists of one Base Station Controller (BSC) and one or more Base Transceiver Station (BTS).

The split of functions between BSS and CN ~~for a A/Gb interface~~ is described in the 08-series of GSM Technical Specifications. ~~The split of functions between BSS and CN for a Iu interface is desribed in the 25-series of UMTS Technical Specifications.~~

~~NOTE: The mobile station shall operate using only the following modes:~~

~~a)A / Gb mode, e.g. for pre-Release 4 terminals, for Release 4 terminals when connected to a BSS with no Iu interface towards the Core Network.~~

~~b)Iu mode (i.e. Iu-CS and Iu-PS), e.g. for Release 4 terminals when connected to a BSS with Iu interfaces towards the Core Network~~

~~No other modes (e.g. A/Iu-PS or Iu-CS/Gb) shall be allowed.~~

~~See also TS 43.051.~~

[...]

5 Configuration of a Public Land Mobile Network

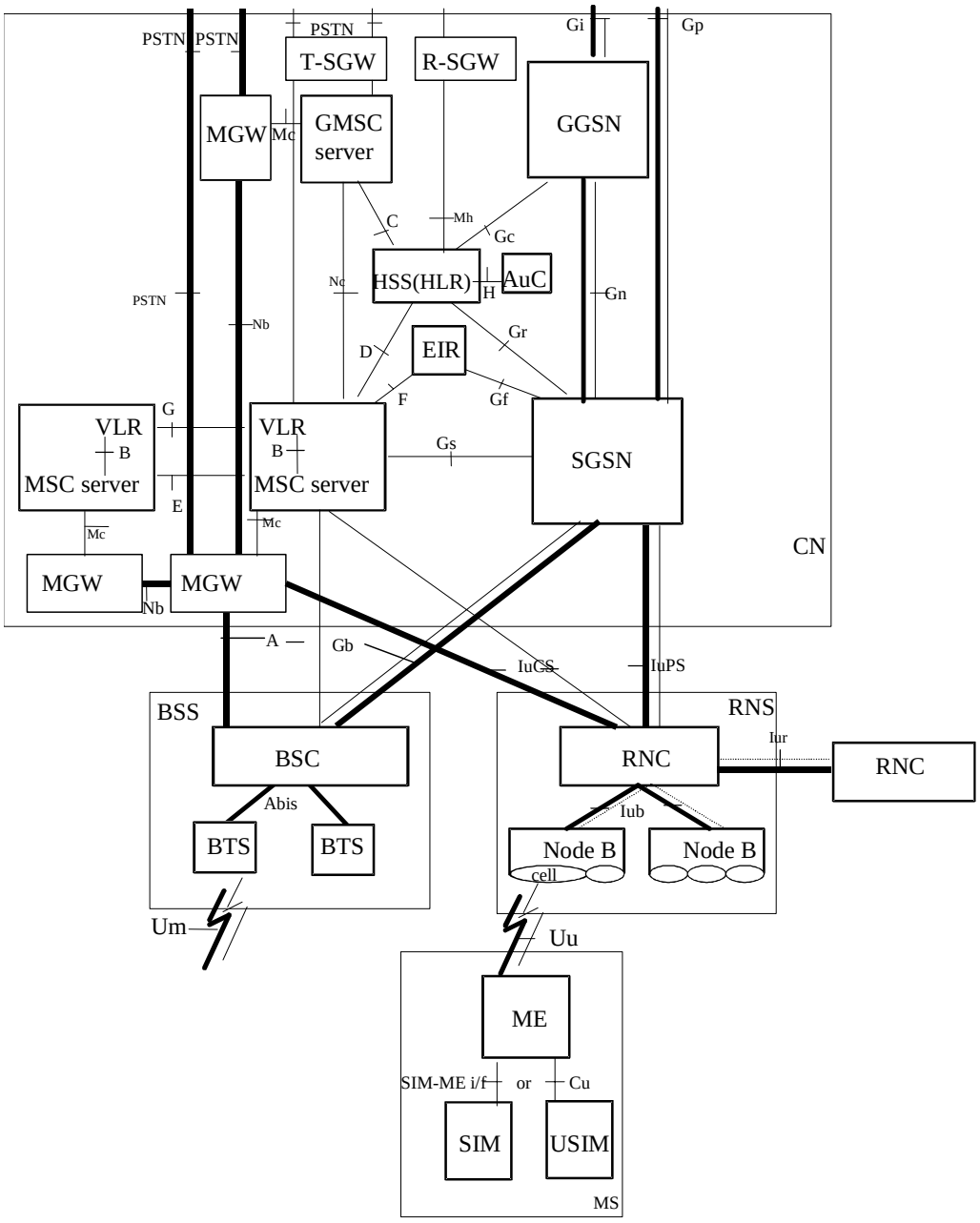
5.1 Basic configuration

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. This configuration presents signalling 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 GSM 08-series of Technical Specifications. Interfaces Iu, Iur and Iub are defined in the UMTS 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 UMTS 23-series and 24-series of Technical Specifications.

[editor's note: the Technical Specifications defining Interfaces Nb, Mc and Nc have not been started yet.]

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
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T-SGW
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Gi
Gp
MGW
Mc
GMSC server
GGSN
C
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Gc
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HSS(HLR)
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AuC
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MSC server
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MGW
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IuPS
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BSC
RNC
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or
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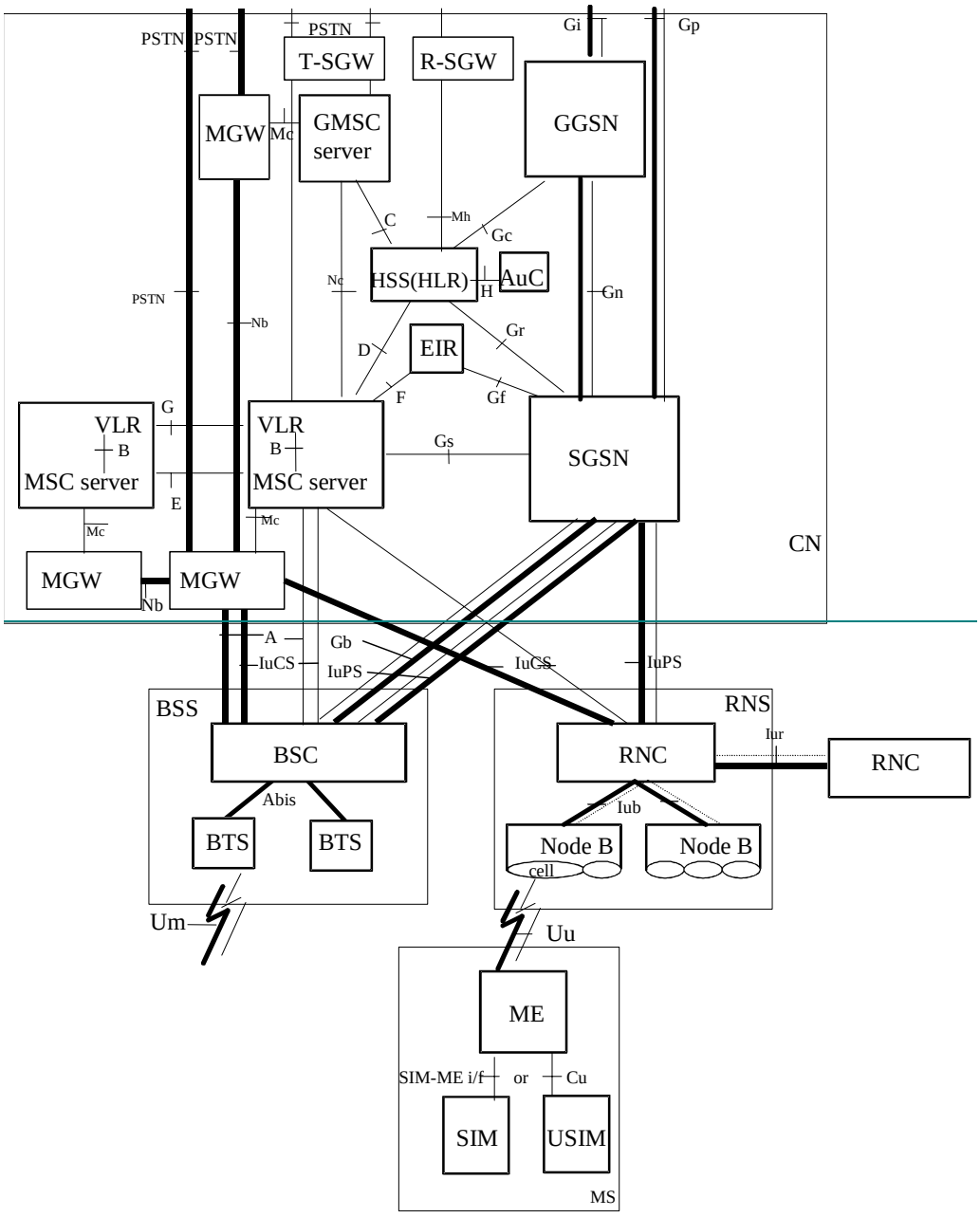


Legend:
Bold lines: interfaces supporting user traffic;
Dashed lines: interfaces supporting signalling.

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 sever and associated 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.

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

[...]

6.2 Interface between the Core Network and the Access Network

6.2.1 Interfaces between the CS domain and the Access Network

6.2.1.1 Interface between the MSC and Base Station System (A-interface)

The interface between the MSC and its BSS is specified in the 08-series of GSM Technical Specifications.

The BSS-MSC interface is used to carry information concerning:

- BSS management;
- call handling;
- mobility management.

~~6.2.1.1a Interface between the MSC and Base Station System (Iu_CS interface)~~

~~The interface between the MSC and its BSS is specified in the 25.41x-series of UMTS Technical Specifications.~~

~~The BSS-MSC interface is used to carry information concerning:~~

- ~~BSS management;~~
- ~~call handling;~~
- ~~mobility management;~~

6.2.1.2 Interface between the MSC and RNS (Iu_CS interface)

The interface between the MSC and its RNS is specified in the 25.41x-series of UMTS Technical Specifications.

The RNS-MSC interface is used to carry information concerning:

- RNS management;
- call handling;
- mobility management.

6.2.2 Interfaces between the PS domain and the Access Network

6.2.2.1 Interface between SGSN and BSS (Gb-interface)

The BSS-SGSN interface is used to carry information concerning:

- packet data transmission;
- mobility management.

The Gb interface is defined in GSM 08.14, 08.16 and 08.18.

~~6.2.2.1a Interface between SGSN and BSS (Iu_PS-interface)~~

~~The BSS-SGSN interface is used to carry information concerning:~~

- ~~packet data transmission;~~

~~- mobility management.~~

~~The Iu_PS interface is defined in the 25.41x-series of UMTS Technical Specifications.~~

6.2.2.2 Interface between SGSN and RNS (Iu_PS-interface)

The RNS-SGSN interface is used to carry information concerning:

- packet data transmission;
- mobility management.

The Iu_PS interface is defined in the 25.41x-series of UMTS Technical Specifications.

3GPP TSG-SA WG2 Meeting #17 **S2-010634**
Gothenburg, Sweden, 26.2.-2.3.2001

CR-Form-v3

CHANGE REQUEST

⌘ **23.002** **CR** **043** ⌘ rev **-** ⌘ Current version: **4.1.1** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network **X** Core Network x

Title:	⌘	Signalling and User Traffic Interfaces
Source:	⌘	Siemens
Work item code:	⌘	CSSPLIT
Date:	⌘	21.2.2001
Category:	⌘	**D**
Release:	⌘	REL-4

Use one of the following categories:
F *(essential 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)

Reason for change:	⌘	With the introduction of the bearer independent call control, there arises the need to distinguish between siganlling and user traffic interfaces. On the other hand, the term "signalling interfaces" becomes misleading if both signalling and user traffic interfaces are meant.
Summary of change:	⌘	Replace "signalling interfaces" by "signalling and user traffic interfaces".
Consequences if not approved:	⌘	Misunderstandings might occur.

Clauses affected:	⌘	5.1
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ 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/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

5 Configuration of a Public Land Mobile Network

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. 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 GSM 08-series of Technical Specifications. Interfaces Iu, Iur and Iub are defined in the UMTS 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 UMTS 23-series and 24-series of Technical Specifications.

3GPP TSG-SA WG2 Meeting #17
Gothenburg, Sweden, Feb 26- March 02, 2001

Tdoc S2-010796

CR-Form-v3

CHANGE REQUEST

⌘ **23.002** **CR** **044** ⌘ rev ~~-~~**2** ⌘ Current version: **5.1.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Clarification to the GGSN/PCF interface to the R5 reference architecture
Source:	⌘	~~Nortel Networks, AT&T, Cisco, Motorola~~ (rev -) ~~QoS ad-hoc group.~~ (rev 1) Nortel Networks, Nokia, Ericsson, Motorola, AT&T (rev 2)
Work item code:	⌘	IMS
Date:	⌘	29.02.01
Category:	⌘	**F**
Release:	⌘	REL-5

Use one of the following categories:
F *(essential 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)*

Reason for change:	⌘	This CR clarifies the new interface introduced in CR35. The interface will not be between the GGSN and the P-CSCF but between the GGSN and PCF. This is to be changed to the R5 reference architecture based on the recommendation by the QoS ad-hoc group. Based on contribution S2-010791 approved by the SA2#17 plenary, the exact wording of the recommendation has been updated in revison 2 of this CR. This CR will trigger similar changes in TS23.060. The proposed name for the new interface remains "Go".
Summary of change:	⌘	
Consequences if not approved:	⌘	

Clauses affected:	⌘			
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

5 Configuration of a Public Land Mobile Network

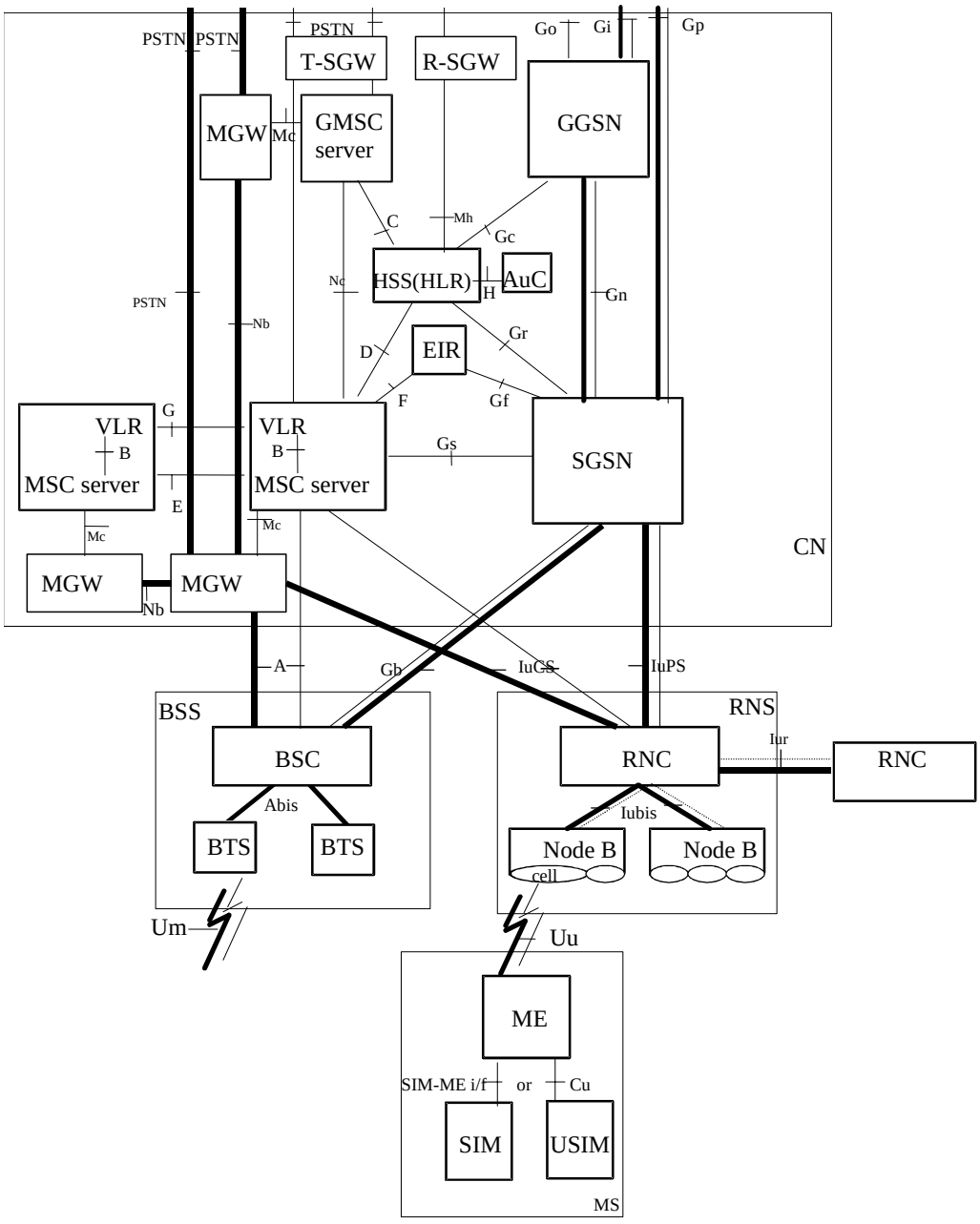
5.1 Basic configuration

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. This configuration presents signalling 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 GSM 08-series of Technical Specifications. Interfaces Iu, Iur and Iubis are defined in the UMTS 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 UMTS 23-series and 24-series of Technical Specifications.

[editor's note: the Technical Specifications defining Interfaces Nb, Mc and Nc have not been started yet.]

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.



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 sever and associated 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.

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

5.5 Configuration of IM Subsystem entities

The configuration of IM CN Subsystem entities is presented in figure 6. In the figure, all the functions are considered implemented in different logical nodes. If two logical nodes are implemented in the same physical equipment, the relevant interfaces may become internal to that equipment.

Only the interfaces specifically linked to the IM subsystem are shown, i.e. all the SGSN, GGSN and HSS interfaces depicted in figure 1 are still supported by these entities even if not shown.

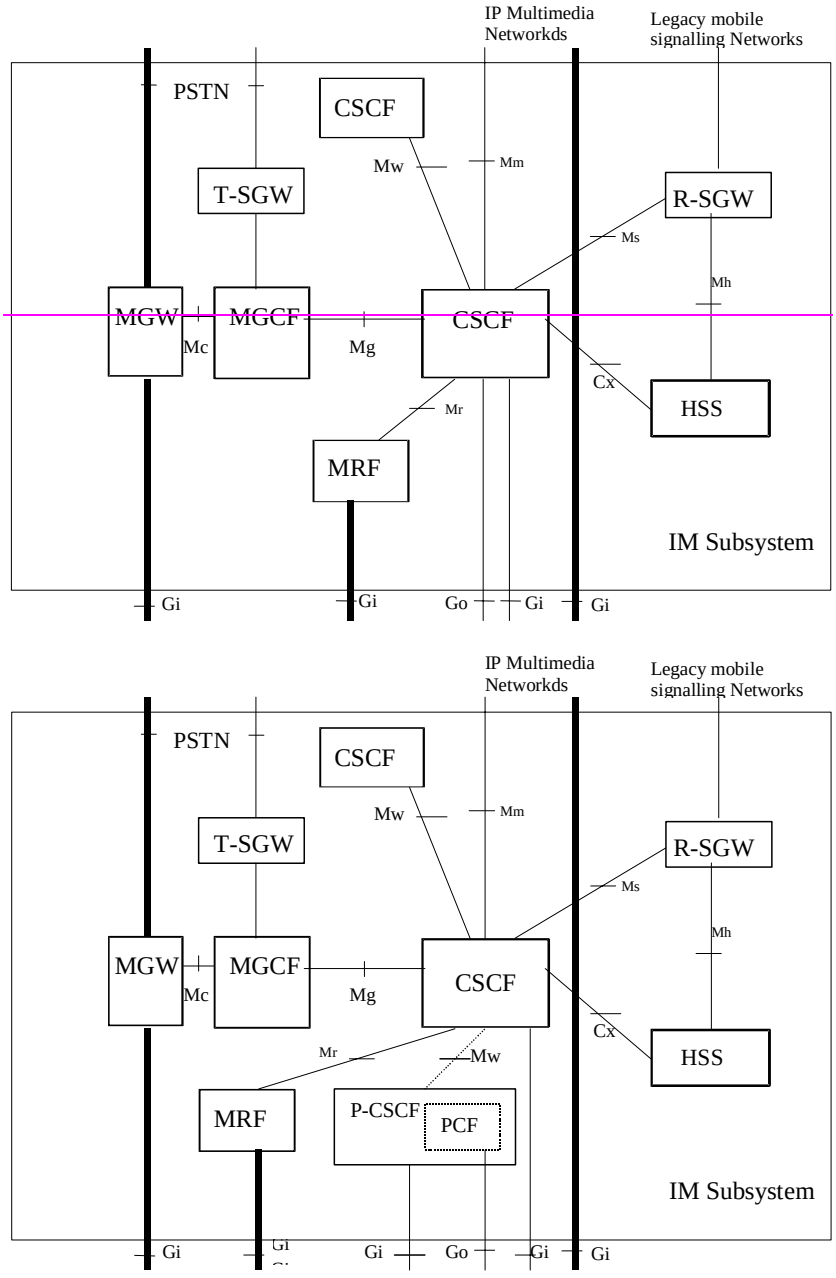


Figure 6: configuration of IM Subsystem entities

Legend:
Bold lines: interfaces supporting user traffic;
Dashed lines: interfaces supporting only signalling.
NOTE: The Gm interface (between CSCF and UE) is also part of the configuration, but is not shown for layout purposes only.

6a.7 IM Subsystem Reference Points

6a.7.1 Reference Point HSS – CSCF (Cx Reference Point)

The Cx reference point supports information transfer between CSCF and HSS.

The main procedures that require information transfer between CSCF and HSS are

1) Procedures related to Serving CSCF assignment
2) Procedures related to routing information retrieval from HSS to CSCF
3) Procedures related to UE-HSS infromation tunneling via CSCF

6a.7.2 Reference Point CSCF – UE (Gm Reference Point)

This interface is to allow UE to communicate with the CSCF e.g.

- Register with a CSCF,
- Call origination and termination
- Supplementary services control.

The Gm reference point supports information transfer between UE and serving CSCF. The main procedures that require information transfer between UE and serving CSCF are

- Procedures related to Serving CSCF registration,
- Procedures related to User service requests to the serving CSCF,
- Procedures related to the Authentication of the Application/Service,
- Procedures related to the CSCF's request for Core Network resources in the Visited Network.

6a.7.3 Reference Point MGCF – MGW (Mc Reference Point)

The Mc reference point describes the interfaces between the MGCF and MGW, between the MSC Server and MGW, and between the GMSC Server and MGW. It has the following properties:

- full compliance with the H.248 standard, baseline work of which is currently carried out in ITU-T Study Group 16, in conjunction with IETF MEGACO WG.
- flexible connection handling which allows support of different call models and different media processing purposes not restricted to H.323 usage.
- open architecture where extensions/Packages definition work on the interface may be carried out.
- dynamic sharing of MGW physical node resources. A physical MGW can be partitioned into logically separate virtual MGWs/domains consisting of a set of statically allocated Terminations.
- dynamic sharing of transmission resources between the domains as the MGW controls bearers and manage resources according to the H.248 protocols.

The functionality across the Mc reference point will need to support mobile specific functions such as SRNS relocation/handover and anchoring. It is expected that current H.248/IETF Megaco standard mechanisms can be applied to enable this.

6a.7.4 Reference Point MGCF – CSCF (Mg Reference Point)

The Mg reference point is based on external specifications, e.g. SIP

6a.7.5 Reference Point CSCF – Multimedia IP networks (Mm Reference Point)

This is an IP interface between CSCF and IP networks. This interface is used, for example, to receive a call request from another VoIP call control server or terminal.

6a.7.6 Reference Point CSCF - MRF (Mr Reference Point)

Allows the CSCF to control the resources within the MRF.

6a.7.7 Reference Point CSCF – R-SGW (Ms Reference Point)

This is an interface between the CSCF and R-SGW.

[editor's note: can be improved…]

6a.7.8 Reference Point CSCF – CSCF (Mw Reference Point)

The interface allows the Interrogating CSCF to direct mobile terminated calls to the Serving CSCF.

6a.7.9 Reference Points towards SCP

This includes the interfaces from the SGSN to the SCP, from the Serving CSCF (and possibly the Interrogating CSCF) to the SCP, from the MSC Server to the SCP, and the GMSC Server to the SCP.

The interface from the CSCF to the SCP is required to allow the support of existing CAMEL based services.

6a.7.10 Reference Point GGSN-PCF-~~P-CSCF~~ (Go Reference Point)

This interface allows the ~~Proxy CSCF~~ Policy Control Function (PCF) to apply policy to the bearer usage in the GGSN.

The Policy Control Function (PCF) is a logical entity of the P-CSCF. If the PCF is implemented in a separate physical node, the interface between the PCF and the P-CSCF is not standardized.

3GPP TSG-SA WG2 #17 **S2-010636**
Gothenburg, Sweden, 26.2.-2.3.2001

CR-Form-v3

CHANGE REQUEST

⌘ **23.002** **CR** **045** ⌘ rev **-** ⌘ Current version: **4.1.1** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Resolution of editor's note in the MGW description
Source:	⌘	Siemens
Work item code:	⌘	CSSPLIT ***Date:*** ⌘ 21.2.2001
Category:	⌘	**D** ***Release:*** ⌘ REL-4

Use one of the following categories:
F *(essential 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)

Reason for change:	⌘	An editor's note asks for clarification in the description of the MGW. Preferrably this editor's note should be resolved before approval of release 4.
Summary of change:	⌘	The editor's note proposes to remove a general and therefore meaningless statement. This viewpoint is supported by this CR, i.e. it is proposed to delete the sentence (as this was already done for release 5). Furthermore the editor's note states that DSOs are not defined. This is true, as DS0s are meant. However, DS0s do not apply to all 3GPP organisational partners, therefor it is proposed to remove the reference to DS0s. Finally the editor's note claims that RTP is undefined. This is not true, the abbreviation RTP already exists in 21.905.
Consequences if not approved:	⌘	An unresolved editor's note will remain in a release 4 specification. Release 4 and 5 specifications would not be aligned.

Clauses affected:	⌘	-
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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http://www.3gpp.org/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

4.1.2.1.2 Media Gateway Function (MGW)

This component is PSTN/PLMN transport termination point for a defined network and interfaces UTRAN with the core network over Iu.

~~The functionality defined within MGW should be consistent with existing/ongoing industry protocols/interfaces that will satisfy the requirements.~~

~~[editor's note: the above sentence is a general, meaningless statement: it should be either clarified or deleted. In the sentence bellow, DSO, RTP and bearer channel are not defined.].~~

A MGW may terminate bearer channels from a switched circuit network ~~(i.e., DSOs)~~ and media streams from a packet network (e.g., RTP streams in an IP network). Over Iu, the MGW may support media conversion, bearer control and payload processing (e.g. codec, echo canceller, conference bridge) for support of different Iu options for CS services (AAL2/ATM based as well as RTP/UDP/IP based).

3GPP TSG-SA WG2 #17 **S2-010637**
Gothenburg, Sweden, 26.2.-2.3.2001

CR-Form-v3

CHANGE REQUEST

⌘ **23.002** **CR** **046** ⌘ rev **-** ⌘ Current version: **5.1.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Resolution of editor's note in the MGW description
Source:	⌘	Siemens
Work item code:	⌘	CSSPLIT ***Date:*** ⌘ 21.2.2001
Category:	⌘	**A** ***Release:*** ⌘ REL-5

Use one of the following categories:
F *(essential 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)*

Reason for change:	⌘	An editor's note in version 4.1.1 asks for clarification in the description of the MGW.
Summary of change:	⌘	The editor's note states that DSOs are not defined. This is true, as DS0s are meant. However, DS0s do not apply to all 3GPP organisational partners, therefor it is proposed to remove the reference to DS0s. Finally the editor's note claims that RTP is undefined. This is not true, the abbreviation RTP already exists in 21.905.
Consequences if not approved:	⌘	An unresolved editor's note will remain in a release 4 specification. Release 4 and 5 specifications would not be aligned.

Clauses affected:	⌘	-
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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3GPP TSG-SA WG2 Meeting #17
Gothenburg, Sweden, 26.2.-2.3.2001

S2-010638

CR-Form-v3

CHANGE REQUEST

⌘ **23.002** **CR** **047** ⌘ rev **-** ⌘ Current version: **4.1.1** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Revomal of an editor's note in GMSC description
Source:	⌘	Siemens
Work item code:	⌘	***Date:*** ⌘ 21.2.2001
Category:	⌘	**D** ***Release:*** ⌘ REL-4

Use one of the following categories:
F *(essential 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)*

Reason for change:	⌘	The description of the GMSC contains an editor's note, which seems to address the issue of MT call routing between IMS and CS. Given that the IMS is a release 5 issue, this editor's note does not apply to release 4.
Summary of change:	⌘	Delete the editor's note from the GMSC description.
Consequences if not approved:	⌘	An unnecessary editor's note would remain in the specification.

Clauses affected:	⌘	4.1.2.2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

4.1.2.2 The Gateway MSC (GMSC)

If a network delivering a call to the PLMN cannot interrogate the HLR, the call is routed to an MSC. This MSC will interrogate the appropriate HLR and then route the call to the MSC where the mobile station is located. The MSC which performs the routing function to the actual location of the MS is called the Gateway MSC (GMSC).

The acceptance of an interrogation to an HLR is the decision of the operator.

The choice of which MSCs can act as Gateway MSCs is for the operator to decide (i.e. all MSCs or some designated MSCs).

If the call is a voice group/broadcast call, it is routed directly from the GMSC to the VBS/VGCS Anchor MSC, based on information (VBS/VGCS call reference) contained in the dialled number. See also GSM 03.68 and 03.69.

~~*[Editor's note: There is a need to consider possibilities that call incoming to the PLMN may be routed to entities other than the GMSC, e.g., for networks that do not deploy CS domain.]*~~

When needed, the GMSC can be implemented in two different entities: the GMSC Server, handling only signalling, as defined bellow, and the MGW, defined above. A GMSC Server and a MGW make up the full functionality of a GMSC.

3GPP TSG-SA WG2 Meeting #17 **S2-010635**
Gothenburg, Sweden, 26.2.-2.3.2001

CR-Form-v3

CHANGE REQUEST

⌘ **23.002** **CR** **050** ⌘ rev **-** ⌘ Current version: **5.1.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network **X** Core Network x

Title:	⌘	Signalling and User Traffic Interfaces
Source:	⌘	Siemens
Work item code:	⌘	CSSPLIT
Date:	⌘	21.2.2001
Category:	⌘	**A**
Release:	⌘	REL-5

Use one of the following categories:
F *(essential 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)*

Reason for change:	⌘	With the introduction of the bearer independent call control, there arises the need to distinguish between siganlling and user traffic interfaces. On the other hand, the term "signalling interfaces" becomes misleading if both signalling and user traffic interfaces are meant.
Summary of change:	⌘	Replace "signalling interfaces" by "signalling and user traffic interfaces".
Consequences if not approved:	⌘	Misunderstandings might occur.

Clauses affected:	⌘	5.1		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

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5 Configuration of a Public Land Mobile Network

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. 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 GSM 08-series of Technical Specifications. Interfaces Iu, Iur and Iub are defined in the UMTS 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 UMTS 23-series and 24-series of Technical Specifications.