

Technical Specification Group Services and System Aspects **TSGS#12(01)0511**

Meeting #13, Beijing, China, 24-27 September 2001

Source: TSG SA WG2
Title: CRs on 23.002
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 #13.

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.

CR #	Rev	Rel	Title	cat	Ver in	Ver out	S2 Tdoc #	WI
061	2	R5	CR on Introduction of Dx Reference Point in the IMS Reference Architecture”	F	5.3.0	5.4.0	S2-011691	IMS-CCR
063	1	R5	CR on “Update the IP MM Subsystem configuration to include the BGCF node”	F	5.3.0	5.4.0	S2-011679	IMS-CCR
068		R5	CR on “MRF functionality”	C	5.3.0	5.4.0	S2-011698	IMS-CCR

CR-Form-v3

CHANGE REQUEST

⌘ **23.002 CR 061** ⌘ rev **2** ⌘ Current version: **5.2.0** ⌘

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 Dx Reference Point in the IMS Reference Architecture		
Source:	⌘ Siemens		
Work item code:	⌘ IMS-CCR	Date:	⌘ 14.5.2001
Category:	⌘ F	Release:	⌘ REL-5
	Use <u>one</u> 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 <u>one</u> 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 Dx reference point, which was introduced to 23.228 at SA2#17, is not yet reflected in 23.002.
Summary of change:	⌘ A description of the SLF is added. The SLF and the Dx interface between the SLF and the CSCF are in the IMS reference architecture figure. The Dx reference point description is added
Consequences if not approved:	⌘ Inconsistencies between TS23.228 and TS23.002

Clauses affected:	⌘ 4a.7, 5.5, 6a.7	
Other specs affected:	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘
Other comments:	⌘ Please note, CR63 also affects the same picture (This CR considers the introduction of the Dx interface and the SLF)	

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.

4.a.7.3 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 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 MGW) in case of multi party/multi media conference
- May communicate with CSCF for service validation for multiparty/multimedia sessions.

4a.7.5 Subscription Locator Function (SLF)

The SLF:

- Is queried by the I-CSCF during the Registration and Session Setup to get the name of the HSS containing the required subscriber specific data. Furthermore the SLF is also queried by the S-CSCF during the Registration.
- Is accessed via the Dx interface

The SLF is not required in a single HSS environment. An example for a single HSS environment is a server farm architecture.

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.

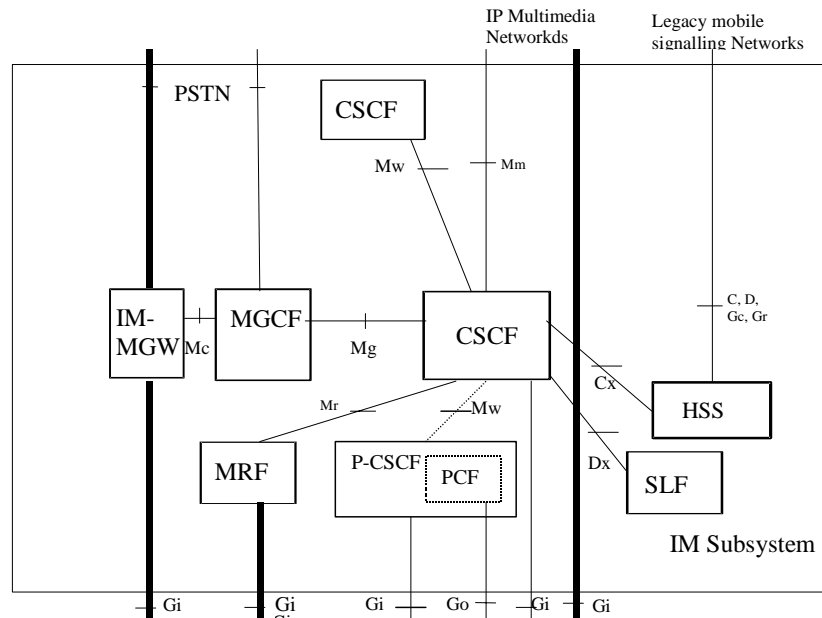


Figure 6: configuration of IM Subsystem entities

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.7.8 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 CSCF- SLF (Dx Reference Point)

This interface between CSCF and SLF is used to retrieve the address of the HSS which holds the subscription for a given user.

This interface is not required in a single HSS environment. An example for a single HSS environment is a server farm architecture.

CHANGE REQUEST

⌘ **23.002 CR 063** ⌘ rev **1** ⌘ Current version: **5.2.0** ⌘

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:	⌘ Update the IP MM Subsystem configuration to include the BGCF node		
Source:	⌘ Ericsson		
Work item code:	⌘ IMS-CCR	Date:	⌘ 2001-05-14
Category:	⌘ F	Release:	⌘ REL-5
	<p>Use <u>one</u> of the following categories:</p> <p>F (essential correction)</p> <p>A (corresponds to a correction in an earlier release)</p> <p>B (Addition of feature),</p> <p>C (Functional modification of feature)</p> <p>D (Editorial modification)</p> <p>Detailed explanations of the above categories can be found in 3GPP TR 21.900.</p>		<p>Use <u>one</u> of the following releases:</p> <p>2 (GSM Phase 2)</p> <p>R96 (Release 1996)</p> <p>R97 (Release 1997)</p> <p>R98 (Release 1998)</p> <p>R99 (Release 1999)</p> <p>REL-4 (Release 4)</p> <p>REL-5 (Release 5)</p>

Reason for change:	⌘ Update REL-5 according to the IP MM subsystem functions in TS 23.228		
Summary of change:	⌘ Update of acronym & descriptions & IP MM configuration for rel-5 nodes		
Consequences if not approved:	⌘ Wrong functional descriptions		

Clauses affected:	⌘ 4.a.7.1, 5.5		
Other specs affected:	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
Other comments:	⌘		

First Change

4a.7 IP Multimedia (IM) Subsystem entities

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.~~

4a.7.5 Breakout Gateway Control Function (BGCF)

The Breakout Gateway control function (BGCF) selects the network in which PSTN breakout is to occur. If the BGCF selects that the breakout is to occur in the same network, then the BGCF shall select a MGCF which will be responsible

for the interworking with the PSTN. If the break out is in another network, the BGCF will forward this session signalling to a BGCF, or an MGCF, depending on configuration, in the other network.

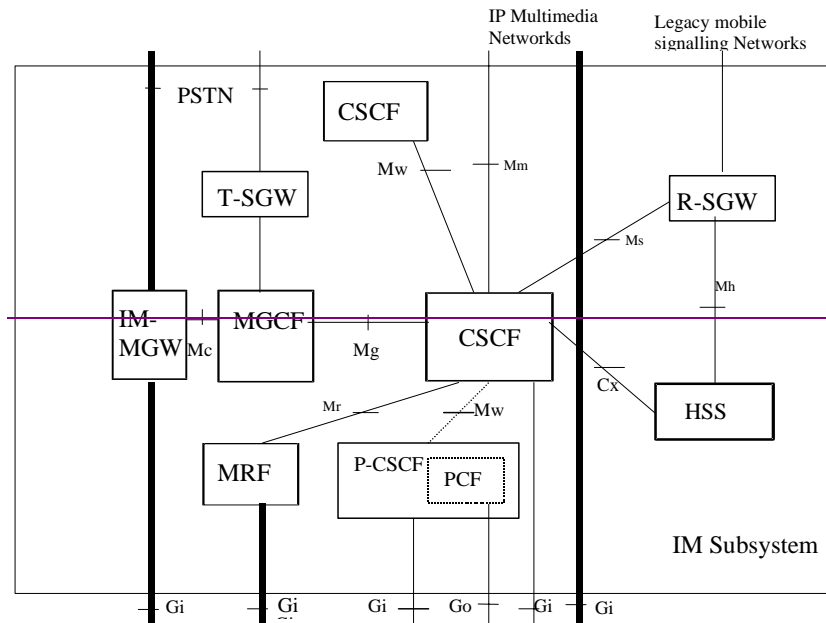
The BGCF may make use of information received from other protocols, or make use of information from operator input, when making the choice of which network to break out in.

Second Change

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.



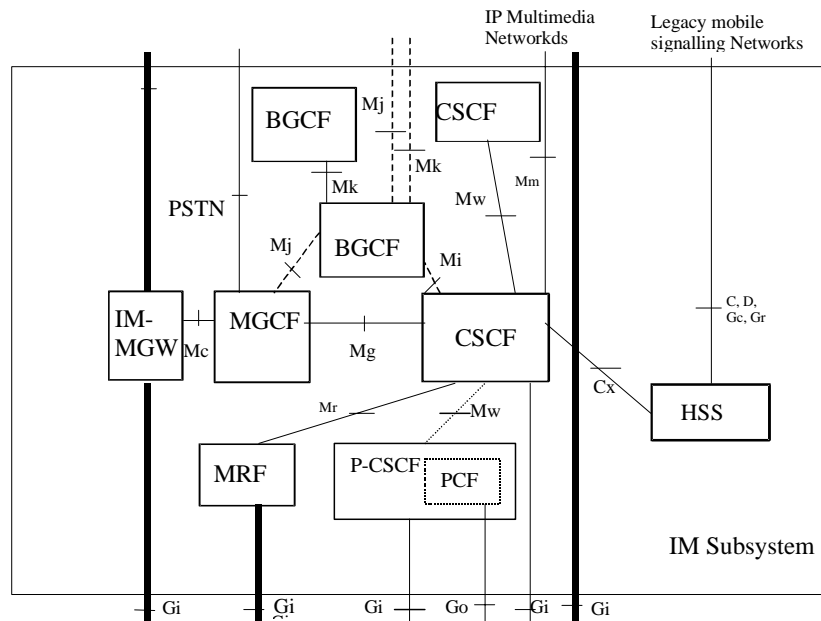


Figure 6: configuration of IM Subsystem entities

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.

Third Change

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 CSCF – BGCF (Mi reference point)

This reference point allows the Serving CSCF to forward the session to the Breakout Gateway Control Function for the purpose of interworking to the PSTN networks.

The Mi reference point is based on external specifications i.e. SIP

6a.7.11 Reference Point BGCF – MGCF (Mj reference point)

This reference point allows the Breakout Gateway Control Function to forward the session signalling to the Media Gateway Control Function for the purpose of interworking to the PSTN networks.

The Mj reference point is based on external specifications i.e. SIP

6a.7.12 Reference Point BGCF – BGCF (Mk reference point)

This reference point allows the Breakout Gateway Control Function to forward the session signalling to another Breakout Gateway Control Function.

The Mk reference point is based on external specifications i.e. SIP

CHANGE REQUEST

⌘ **23.002 CR 068** ⌘ ev **1** ⌘ Current version: **5.2.0** ⌘

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:	⌘ MRF functionality		
Source:	⌘ SA2 drafting		
Work item code:	⌘ IMS-CCR	Date:	⌘ 2001-06-28
Category:	⌘ C	Release:	⌘ REL-5
	<i>Use <u>one</u> of the following categories:</i> F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		<i>Use <u>one</u> of the following releases:</i> 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:	⌘ Clarification to the role of the MRF		
Summary of change:	⌘ Clarifying the functionalities and interfaces of the MRF		
Consequences if not approved:	⌘		

Clauses affected:	⌘ 4.a.7.5 6a.7.6		
Other specs affected:	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> 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.a.7.5 Multimedia Resource Function Controller (MRFC)

The MRFC:

- ~~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 IM-MGW) in case of multi-party/multi-media conference~~
- ~~May communicate with CSCF for service validation for multiparty/multimedia sessions.~~
- ~~Controls the media stream resources in the MRFP.~~
- ~~Interprets information coming from an AS and S-CSCF (e.g session identifier) and control MRFP accordingly.~~
- ~~Generates CDRs~~

4.a.7.x Multimedia Resource Function Processor (MRFP)

The MRFP:

- Controls bearers on the Gi interface.
- Provides resources to be controlled by the MRFC.
- Mixes incoming media streams (e.g. for multiple parties).
- Sources media streams (for multimedia announcements).
- Processes media streams (e.g. audio transcoding, media analysis).

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

This reference point allows interaction between an S-CSCF and an MRFC.

The protocol used for the Mr reference point is SIP (as defined by RFC 2543, other relevant RFC's, and additional enhancements introduced to support 3GPP's needs).

6a.7.x Reference Point MRFC - MRFP (Mp Reference Point)

The Mp reference point allows an MRFC to control media stream resources provided by an MRF.

The Mp reference point has the following properties:

- Full compliance with the H.248 standard.
- Open architecture where extensions (packages) definition work on the interface may be carried out.

6a.7.y Reference Point Application Server - MRFC (Sr Reference Point)

The details and functionality, if any, of the Sr interface are for further study.