Technical Specification Group Services and System Aspects **TSGS#19(03)0171**

Meeting #19, Birmingham, U.K., 17~20 March 2003

Source: **TSG SA WG2**
Title: **CRs on 23.221**
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 #19.
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.

Tdoc #	Title	Spec	CR #	cat	Version in	REL	WI	S2 meeting
S2-030940	Re-organization of IMS specifications to better reflect aspects of interoperability and commonality between IP Multimedia Systems using different IP-Connectivity Access Networks	23.221	39r1	D	5.7.0	6	IMSCOOP	S2-30

3GPP TSG-SA2 Meeting #30
Milan, Italy, 24th-28th

Tdoc ⌘S2-030940884

CR-Form-v7

CHANGE REQUEST

⌘ **23.221** **CR** **39** ⌘**rev** **1** ⌘ Current version: **5.7.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Re-organization of IMS specifications to better reflect aspects of interoperability and commonality between IP Multimedia Systems using different IP-Connectivity Access Networks
Source:	⌘	Ericsson, Lucent, Nokia, Nortel, Qualcomm, Siemens
Work item code:	⌘	IMSCOOP
Date:	⌘	24/02/2003
Category:	⌘	**D**
Release:	⌘	Rel-6

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

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	As the basic stage-2 IMS specification, TS 23.228 defines the architectural description for the IP Multimedia Core Network Subsystem (IMS). It also covers the Access Network functionality and GPRS aspects to the extent as they relate to providing IMS services. To better facilitate the documentation aspects of interoperability and commonality between IP Multimedia Systems using different IP-Connectivity Access Networks, there is a need to clearly separate the specification of Access Network (GPRS) specific functionality. Some of the Access Network specific functionality related to architectural requirements should be moved to TS 23.221.
Summary of change:	⌘	Requirements related to address management, P-CSCF-GGSN relationship have been moved from TS 23.228 to the corresponding clauses of TS 23.221.
Consequences if not approved:	⌘	The goal of specifying interoperability and commonality between IP Multimedia Systems using different "IP-connectivity Access Networks" required by the corresponding Work Item would be impossible to achieve.

Clauses affected:	⌘	5.1, 5.4, 8.1

Other specs affected:	⌘	Y	N		⌘	
		X		Other core specifications		TS 23.228
			X	Test specifications		
			X	O&M Specifications		

Other comments:	⌘	The text introduced by this CR are taken from clauses 1-5 related to address management , P-CSCF – GGSN relationship from TS 23.228. The corresponding

CR for TS 23.228 is contained in CR#280

How to create CRs using this form:

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

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

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

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

********** First set of changes **********

5.1 IP version issues

The UMTS/GSM architecture shall support IPv4 / IPv6 based on the statements below.

- IP transport between network elements of the IP Connectivity services (between RNC, SGSN and GGSN) and IP transport for the CS Domain: both IPv4 / IPv6 are options for IP Connectivity
- IM CN subsystem elements (UE to CSCF and the other elements e.g. MRF):
  - The architecture shall make optimum use of IPv6.
  - The IM CN subsystem shall exclusively support IPv6.
  - The UE shall exclusively support IPv6 for the connection to services provided by the IM CN subsystem.
  - According to the procedures defined in TS 23.060 [23], when a UE is assigned an IPv6 prefix, it can change the global IPv6 address it is currently using via the mechanism defined in RFC 3041 [16a], or similar means.
- Access to existing data services (Intranet, Internet,…):
- The UE can access IPv4 and IPv6 based services.

********** Second set of changes **********

5.4 IP addressing and routing for access to IM-subsystem services

This section deals with a UE accessing IM CN subsystem services via UMTS.

A UE accessing IM CN Subsystem services requires an IP address that is logically part of the IM CN subsystem IP Addressing Domain. This is established using an appropriate PDP-context. It is possible to connect to a GGSN either in the VPLMN or the HPLMN. For routing efficiency this context may benefit from being connected though a GGSN in the visited network. The connection between the UE and the IM CN subsystem (where the GGSN is either in the Home or the Visited network) is shown below:

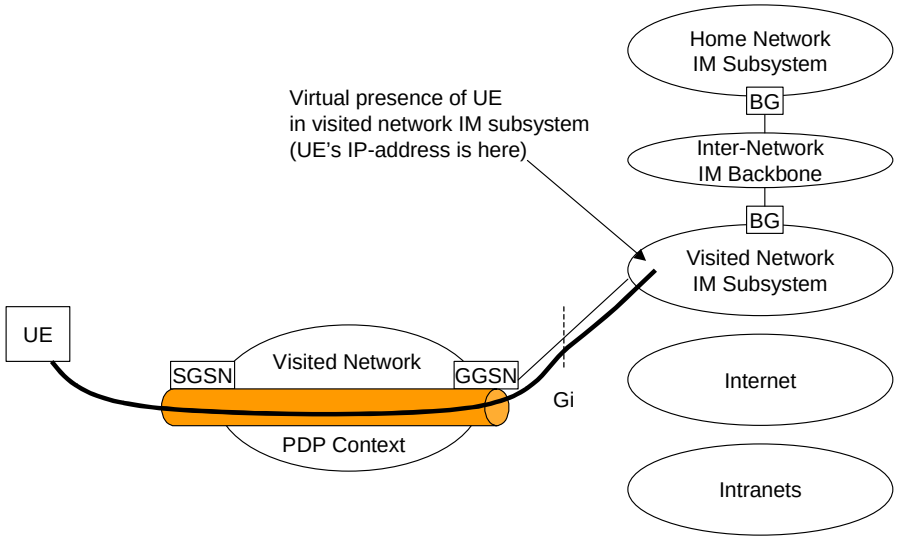

Figure 5-5 UE Accessing IM Subsystem Services with GGSN in the visited network

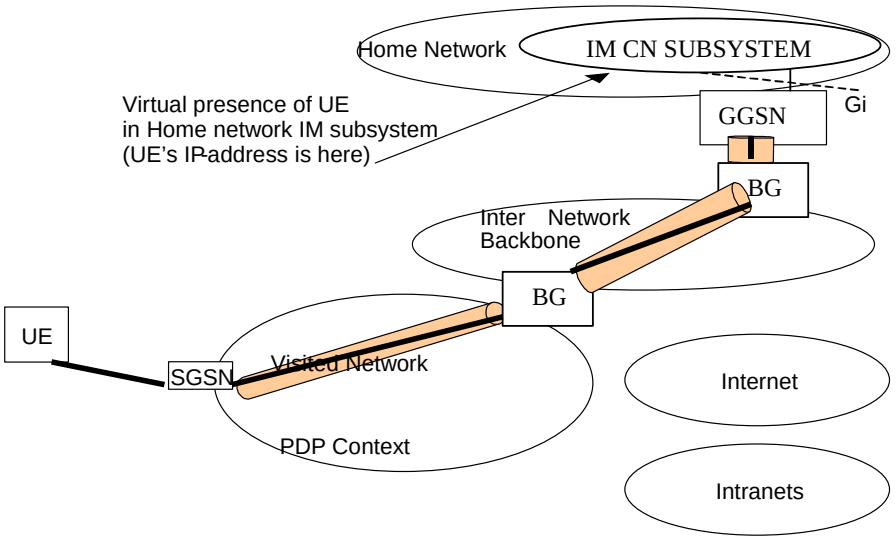

Figure 5-5a UE Accessing IM CN subsystem Services with GGSN in the Home network

The ability of the User plane and the Control Plane for a single IMS session being able to pass through different GGSNs is not defined in this release.

********** Third set of changes **********

8 Support of IM CN Subsystem services

8.1 Context activation and registration

The IP address is allocated to UE either by GPRS or some other means e.g. by DHCP The UE shall use IP addresses assigned to it for, but not limited to, the following:

- the exchange application level signalling (e.g., registration, CC) with the serving CSCF from the access network currently used,
- application level registration to IM CN subsystem as an address used to reach the UE
- an address used to reach the UE for multimedia calls.

In GPRS, the terminal is associated with an IP address when the primary PDP context is activated. The IP address used for the purpose described above can be:

- the IP address obtained by the UE during the activation of a primary PDP context (e.g. if the UE does not have any existing PDP context active or desires to use a different IP address)
- the IP address of one of the already active PDP contexts.

The Proxy-CSCF is located in the same network as the GGSN.

In the following, a description of the order in which the registration procedure is executed need and how the IP address is allocated is shown. Figure 8.1 shows what procedures and in which order they are performed during the registration.

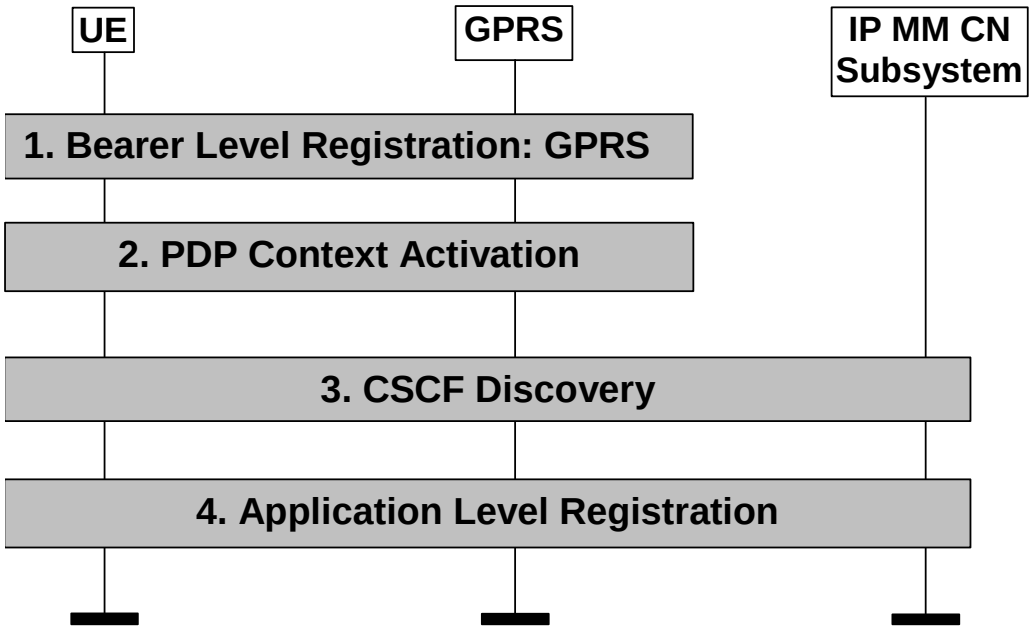

Figure 8.1: Registration

The following steps are performed:

1. the bearer level registration is performed (e.g. when the terminal is switched on or upon explicit indication from the user).

2. the PDP context activation is done. The UE has two options:

   - activate a primary PDP context and obtain a new IP address (e.g. if the UE does not have any existing PDP context active or desires to use a different IP address)

   - activate a secondary PDP context and re-use the IP address of one of the already active PDP contexts.

3. UE performs the CSCF discovery procedure, where the UE discovers a proxy CSCF [11].

There can be time gaps between these procedures and the following one. For instance, the UE may perform PDP context activation and the CSCF discovery, but not the application level registration. The UE may use the activated PDP context for other types of signalling, e.g. for CSCF discovery.

4. UE performs application level registration by providing the IP address obtained at step 2 to the CSCF selected at step 3. The IP address used for signalling purposes is allocated in association with PDP context activation and not on an incoming call basis.

   The discovered P-CSCF forwards the registration on to the UE's home network where a S-CSCF [11] is assigned and the registration takes place. This registration associates the P-CSCF with the UE.

   From the S-CSCF point of view, the P-CSCF is where the UE is reachable for mobile-terminated call control signalling and any other type of mobile terminated signaling.

Whether the procedures are activated individually by the UE or some of them are performed automatically depends on implementation of the terminal and on the UE’s configuration. For instance, the multimedia application in the UE could start the application level registration and steps 2-4 would have to be executed in response to support the operation initiated by the application. Interaction with the UE may happen during these step