Technical Specification Group Services and System Aspects ***TSGS#12(01)0514***

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

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 #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
016		R5	Correction on CSCF discovery to align with 23.228	C	5.1.0	5.2.0	S2-012330	IMS-CCR
003	2	R5	CR on “Efficient use of the Radio Resource Technical Requirements”	B	5.1.0	5.2.0	S2-011674	IMS-CCR

3GPP TSG-SA2 Drafting IMS key issues
Dallas, USA, 25th-28th May 2001

Tdoc S2-011674

CR-Form-v3

CHANGE REQUEST

⌘ **TS 23.221 CR 003** ⌘ 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 **X** Radio Access Network **X** Core Network **X**

Title:	⌘	Efficient use of the Radio Resource Technical Requirements
Source:	⌘	Nortel Networks
Work item code:	⌘	IMS
Date:	⌘	25.6.2001
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:	⌘	SIP compression is required to meet radio requirements
Summary of change:	⌘	Addition of a clause on efficient use of radio resource
Consequences if not approved:	⌘	Call/session setup procedures when using SIP will take a long time to be completed and a (probably unacceptable) delay will occur at call establishment

Clauses affected:	⌘	X (new)
Other specs Affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

X Efficient use of radio resource

This clause captures the technical requirements to ensure efficient use of the radio resource in the UMTS access network. The radio resource is considered to be a scarce resource and therefore every opportunity shall be taken to optimize its use.

It shall be possible to re-apply PS domain pre-release 5 mechanisms for efficient use of radio resource.

Additional requirements for efficient use of the radio spectrum for release 5 SIP signalling include the following:

- UMTS shall support mechanisms to optimize transport of SIP signaling packets over the radio interface, typically by compressing the SIP signaling messages and by compressing the IP and transport layer protocol headers that carry these SIP messages.
- The chosen solution(s) shall be extensible to facilitate the incorporation of new and improved compression algorithms in a backward compatible way as they become available.
- The chosen solution(s) should work in roaming scenarios.
- Application specific compression shall minimize impacts on existing UMTS release e.g. it could be defined between the UE and associated application server, e.g. at the SIP Client and at the first SIP Proxy.

Usage of compression for SIP signalling can be left optional. However, if SIP signalling compression is used, a default algorithm shall be supported by the UE and the network elements involved in compression.

Editor's Note: The location of the compression/decompression for each application is for further study.

3GPP TSG-SA2 Meeting #19
Sophia Antipolis, France, 27-31st August 2001

Tdoc S2-01330

CR-Form-v4

CHANGE REQUEST

⌘ **23.221** **CR** **016** ⌘ ev **-** ⌘ 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 **X** Radio Access Network ☐ Core Network **X**

Title:	⌘	Correction on CSCF discovery to align with 23.228`
Source:	⌘	Lucent Technologies
Work item code:	⌘	IMS-CCR
Date:	⌘	27-Aug-01
Category:	⌘	**C**
Release:	⌘	REL-5

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

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

Reason for change:	⌘	In Section 8.1 the text in the first paragraph of step 4 talks about the "CSCF selected at step 3", and the second paragraph of step 4 indicates that the "selected CSCF becomes the serving-CSCF." This is incorrect since step 3 talks about CSCF discovery which applies to the P-CSCF and not the S-CSCF selection. Also the note in step 4 says the serving CSCF can be in either the home or visited networks.
Summary of change:	⌘	Section 8.1 step 3 and step 4 have been reworded.
Consequences if not approved:	⌘	This specification will be inconsistent with 23.228

Clauses affected:	⌘	8.1
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://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.

1) GSM/UMTS shall enable the provisioning of multimedia services and multivendor interworking between UE and network.

2) Handover and roaming to and from GSM shall be supported provided GSM is capable of supporting the ongoing media service.

3) For multimedia services the standardized multimedia protocol shall be run transparently via a PDP-context or a CS connection established using GSM SM/CC . This allows transparent hand-over and roaming between GSM and UMTS provided that GSM supports the QoS requirements.

4) SIP from the IETF shall be the multimedia call control supported over the PS domain, where the network functional entities for multimedia support are within the PLMN.

NOTE: Other multimedia protocols can be supported e.g. H.323 transparently over the PS domain . In these cases, the multimedia functional entities shall be outside of the PLMN. Support of terminating calls for these protocols are outside the scope of these specifications.

5) H.324M shall be supported within the CS domain.

Figure 7.1 illustrates the realisation of the multimedia service based on requirement 3. 'Multimedia Protocol' indicates the functionality either inside the communicating user's terminal or a server (e.g. SIP server). It is essentially a control function both for user plane and control plane for the multimedia communication.

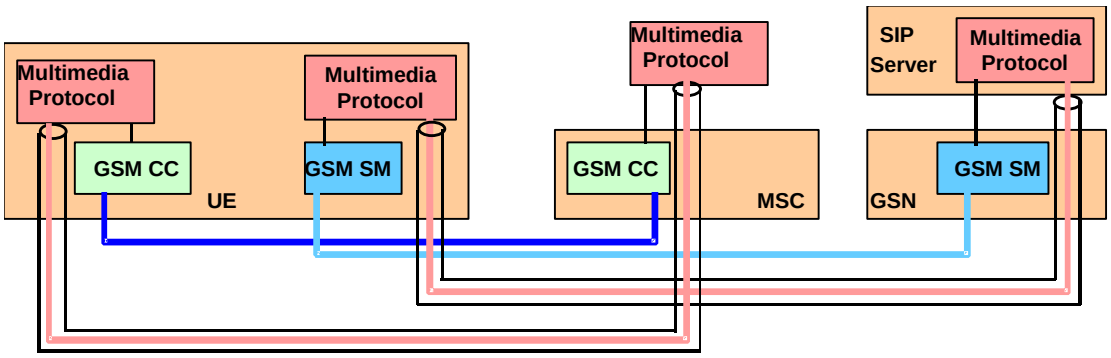

Figure 7.1: Support of multimedia making use of GSM SM/CC

7.2 Domain selection for mobile terminated calls from the PSTN

7.2.1 Calls directed to the CS domain

When the mobile terminated call set-up arrives at a G-MSC server or G-MSC, then the G-MSC Server or G-MSC interrogates the HSS for routing information. The HSS decides on the way the call shall be treated next (e.g. IM CN subsystem, CS domain (e.g. the subscriber is roaming in a legacy network), service platform involvement). According to the decision, the HSS returns information that will make the G-MSC progress the call towards an MGCF (for onward handling in the IMS), a VMSC or to provide further processing (e.g. invoke CAMEL G-MSC processing).

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

Editor's Note: The use of DNS names, NAI (Network Access Identifier RFC2486) and SIP URL instead of IP address for application level registration is FFS.

- 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.

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.

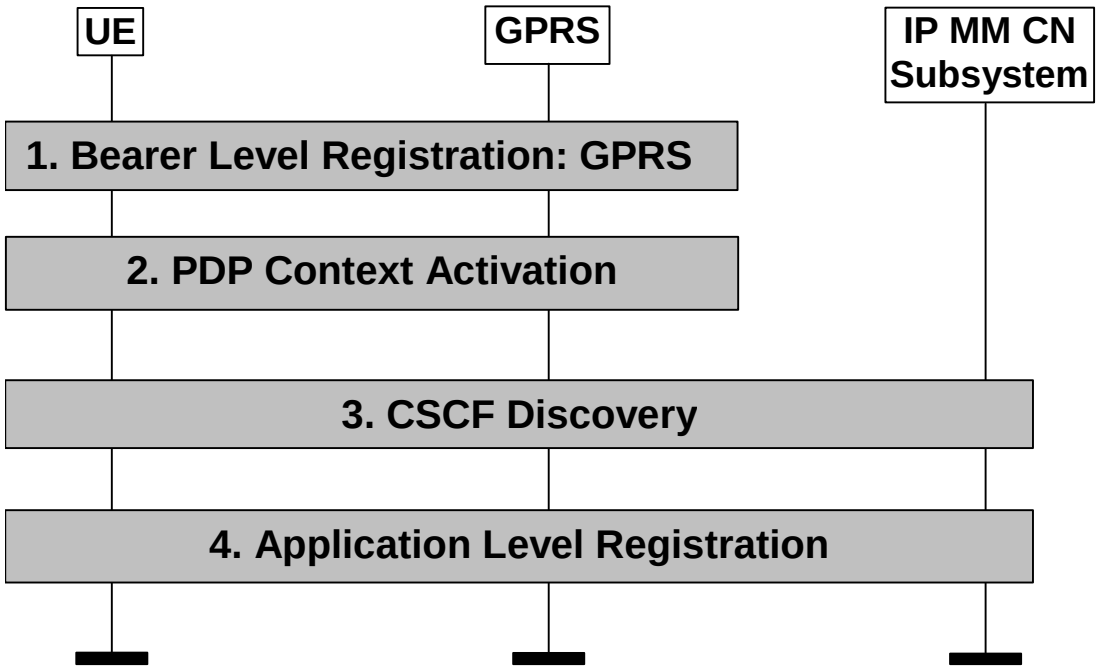

Figure 8.1: Registration

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 ~~local~~proxy CSCF [11] ~~to serve as a proxy performs a CSCF discovery to select the CSCF to register with~~.

~~Editor's note: Details regarding the CSCF discovery procedure are FFS.~~

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.

~~Editor's note: When and how often the UE should update application level registration is FFS.~~

~~The selected CSCF becomes the serving CSCF.~~ 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.

~~NOTE: The S-CSCF can be either in the home or visited network.~~

~~Editor's note: Where the association of the IP address used by the UE and application level identifier is held in the network is FFS.~~

From the S-CSCF point of view, the ~~IP address provided by the UE is the address where~~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 steps.

8.2 Location management

8.2.1 Registration concepts for a subscriber roaming into CS domain

Figure 8.2 shows the registration concept for a subscriber, who access IM services in the home network, roaming into a CS domain.

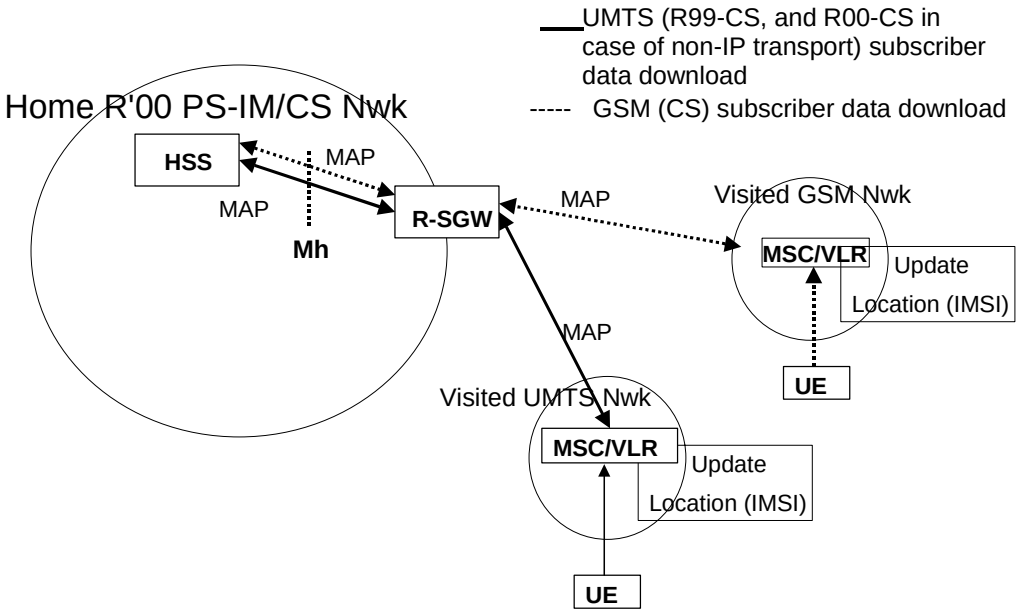

Figure 8.2: A roaming model for registration in a CS domain

The detailed message sequence chart for a subscriber roaming into a CS domain and accessing an IM application is shown in figure 8.3.