Technical Specification Group Services and System Aspects ***TSGS#15(02)0135***

Meeting #15, Jeju-do, Korea, 5-14 March 2002

Source: **TSG SA WG2**
Title: **CRs on 23.221 v.5.3.0**
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 #15.
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**	**Rel**	**WI**
S2-020267	Renaming of R-SGW	23.221	026r1	F	5	IMS-CCR
S2-020765	Allocation of unique prefixes to IPv6 terminals	23.221	027r1	F	5	IMS-CCR
S2-020816	Compression use for SIP Signalling	23.221	028	C	5	IMS-CCR

3GPP TSG-SA2 Meeting #22
Phoenix, USA, 14-18.1.2002

S2-~~020024~~020267

CR-Form-v5

CHANGE REQUEST

⌘ **23.221** **CR** **026** ⌘ **rev** **-1** ⌘ Current version: **5.3.0** ⌘

*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:	⌘	Renaming of R-SGW
Source:	⌘	Nokia
Work item code:	⌘	IMS-CCR
Date:	⌘	09.01.2002
Category:	⌘	**F**
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:	⌘	The T-SGW and R-SGW function were combined into SGW. TS 23.221 still shows R-SGW in subsection 8.2. The Mh reference point is shown in the figure although it has been approved to remove the Mh reference point.
Summary of change:	⌘	The R-SGW function is replaced with SGW and a reference to TS 23.002 is added. In addition, the Mh interface is removed.
Consequences if not approved:	⌘	Inconsistent specifications.

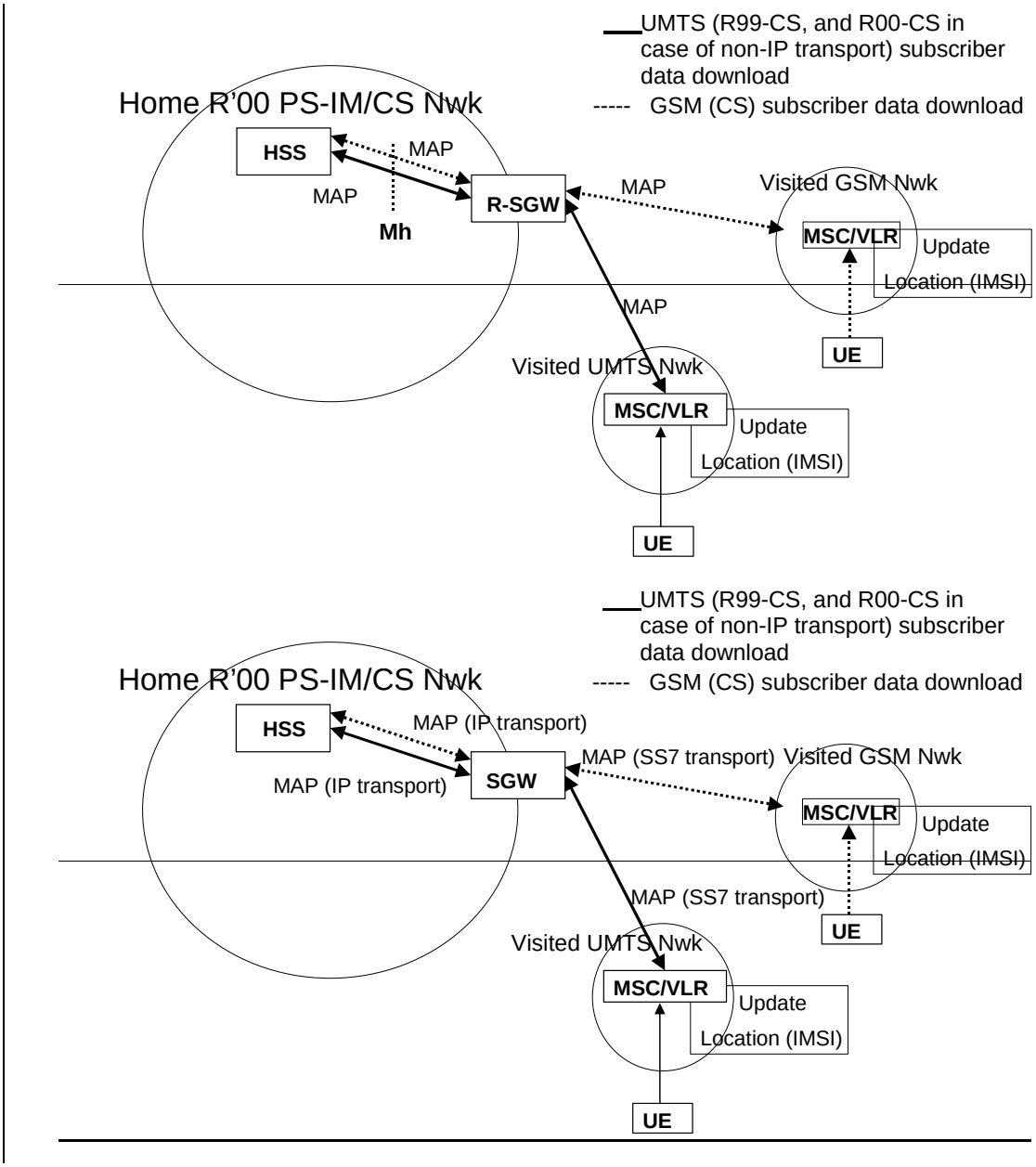
Clauses affected:	⌘	8.2.1
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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.

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.


UMTS (R99-CS, and R00-CS in case of non-IP transport) subscriber data download
GSM (CS) subscriber data download
Home R'00 PS-IM/CS Nwk
HSS
MAP
MAP
Mh
R-SGW
MAP
Visited GSM Nwk
MSC/VLR
Update Location (IMSI)
MAP
UE
Visited UMTS Nwk
MSC/VLR
Update Location (IMSI)
UE
UMTS (R99-CS, and R00-CS in case of non-IP transport) subscriber data download
GSM (CS) subscriber data download
Home R'00 PS-IM/CS Nwk
HSS
MAP (IP transport)
MAP (IP transport)
SGW
MAP (SS7 transport)
Visited GSM Nwk
MSC/VLR
Update Location (IMSI)
MAP (SS7 transport)
UE
Visited UMTS Nwk
MSC/VLR
Update Location (IMSI)
UE

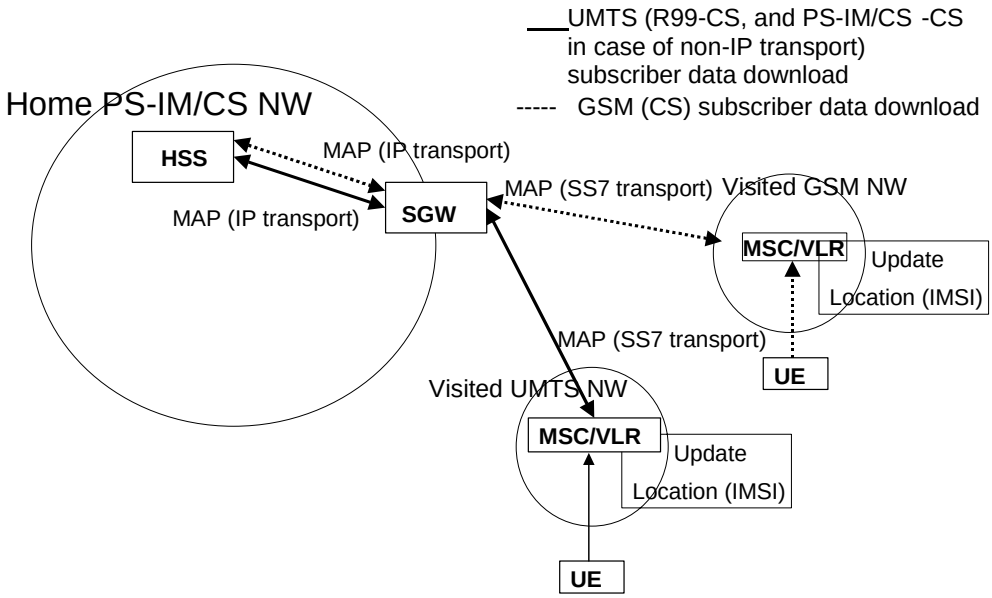


Figure 8.2: A roaming model for registration in a CS domain

Note: The above figure shows one configuration where the SGW is needed. Other configurations are possible as well [1].

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

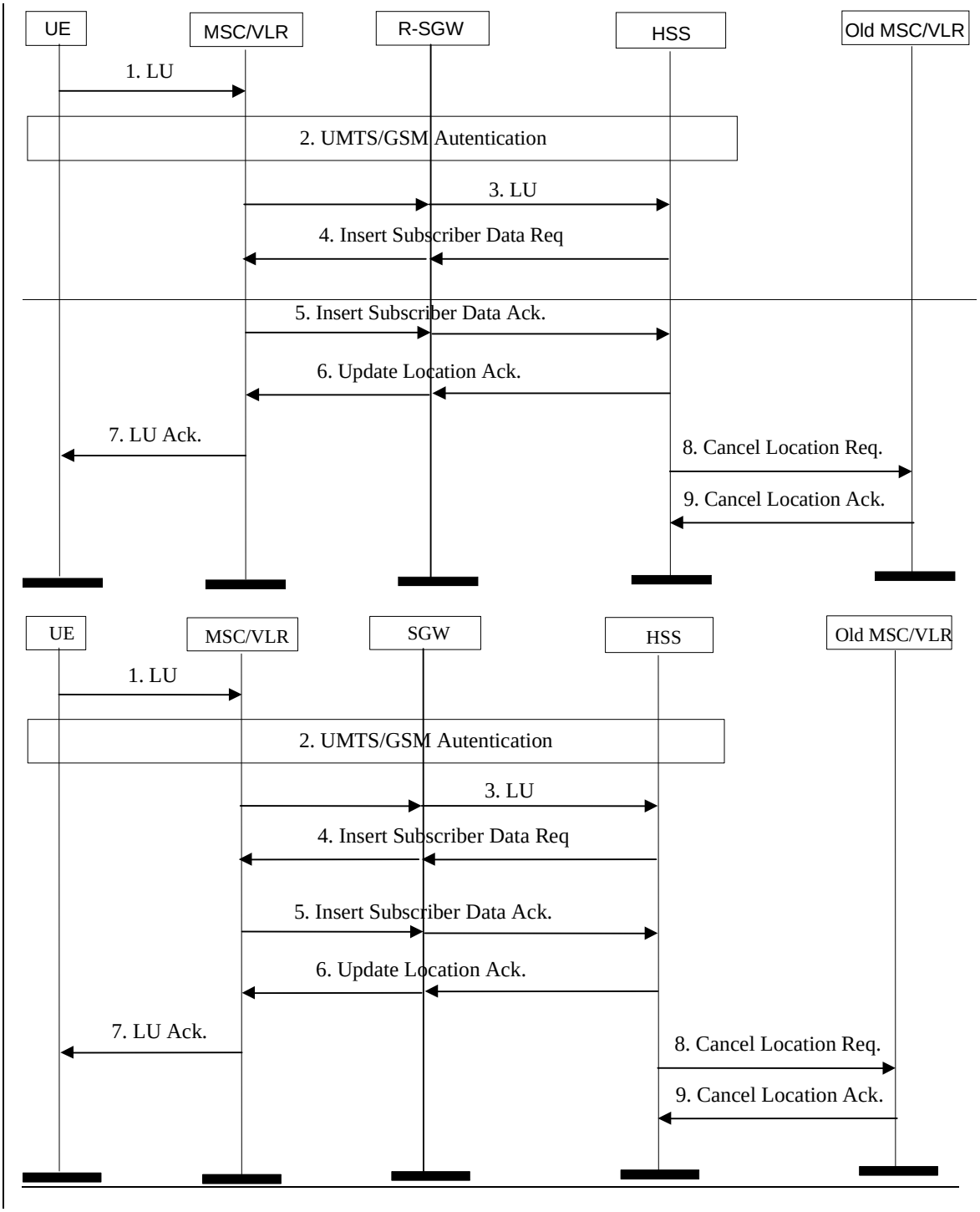


Figure 8.3: Message sequence for roaming into a CS domain

1. The UE initiates the Location Update procedure with the MSC/VLR of the visited network. The LU message contains the IMSI of the subscriber.

2. The authentication is performed as per the existing 3GPP specifications for the CS domain.

3. The MSC/VLR initiates the MAP Location Update procedure towards the HSS of the user via ~~R-~~SGW. The HSS stores the VLR address etc. The message contains IMSI and other parameters as defined in the 3GPP specifications for the CS domain. The ~~R-~~SGW performs SS7 transport to/from IP conversion.

4. The HSS provides the subscriber data for the roaming user to VLR by sending MAP Insert Subscriber Data message via ~~R-~~SGW. The message contains IMSI and other necessary parameters as defined in the 3GPP specification for both Iu and A/Gb mode. The message is passed through the ~~R-~~SGW transparently while the SS7 to/from IP conversion is performed in ~~R-~~SGW.

5. The serving VLR then acknowledges the receipt of the subscriber data to the HSS via ~~R-~~SGW.

6. The HSS acknowledges the completion of location updating procedure to the MSC/VLR via ~~R-~~SGW.

7. The MSC/VLR acknowledges the completion of location updating procedure to the UE.

8. The HSS sends the MAP Cancel Location message to the old MSC/VLR (optional procedure).

9. Location cancellation is acknowledged to the HSS by the old MSC/VLR.

NOTE 1: The steps 8 and 9 above assume that the UE was previously registered to a CS domain .

NOTE 2: The MAP messages between the MSC/VLR and HSS are passed transparently via ~~R-~~SGW. The ~~R-~~SGW does not interpret the MAP messages in anyway, but performs only the lower level conversion between SS7 and IP. This is in accordance with the ~~3GPP definition~~TS 23.002 for ~~R-~~SGW [1].

3GPP TSG-SA2 Meeting #23 ***Tdoc S2-020765***
Sophia Antipolis, France, February 18-22, 2002

CR-Form-v4

CHANGE REQUEST

⌘ **23.221** **CR** **027** ⌘ ev **1** ⌘ Current version: **5.3.0** ⌘

*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:	⌘	Allocation of unique prefixes to IPv6 terminals
Source:	⌘	Ericsson
Work item code:	⌘	IMS-CCR
Date:	⌘	21 February 2002
Category:	⌘	**F**
Release:	⌘	R5

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:	⌘	Alignment with 23.060 CR 286, introducing IPv6 prefix allocation to an MS and update the UE behaviour when RFC 3041 is used to change IPv6 address.
Summary of change:	⌘	Section 5.6 is updated to reflect that whenever a UE changes its IPv6 address, for instance according to RFC 3041, then the application may need to be updated with the new address of the UE. Also added RFC 3041 to the references.
Consequences if not approved:	⌘	Applications could have a wrong knowledge of the IPv6 address used by the UE and, for example, IMS sessions would not work.

Clauses affected:	⌘	2, 5.6
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document.*

[1] 3GPP TS 23.002: "Network Architecture".

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

[3] 3GPP TS 23.012: " Location management procedures"

[5] 3GPP TS 25.331: " Radio Resource Control (RRC) Protocol Specification"

[6] 3G TS 25.301: "Radio interface protocol architecture"

[7] 3G TS 25.303: "UE functions and inter-layer procedures in connected mode"

[8] 3GPP TR 21.905: "3G Vocabulary".

[9] 3GPP TS 25.413: " UTRAN Iu interface RANAP signalling"

[10] 3GPP TS 25.410: " UTRAN Iu Interface: General Aspects and Principles"

[11] 3G TS 23.228 "IP Multimedia Subsystem – Stage 2"

[12] 3G TS 43.051 "GERAN Overall Description"

[13] 3G TS 23.153 ,"Out of Band Transcoder Control - Stage 2".

[14] 3G TS 23.205, "Bearer Independent CS Core Network – Stage 2"

[15] 3G TR 25.931: " UTRAN Functions, examples on signalling procedures"

[16] RFC2766 "Network Address Translation - Protocol Translation (NAT-PT)", G. Tsirtsis, P. Srisuresh. February 2000.

[17] RFC2893 "Transition Mechanisms for IPv6 Hosts and Routers", R. Gilligan, E. Nordmark, August 2000.

[??] RFC 3041: "Privacy Extensions for Stateless Address Autoconfiguration in IPv6", T. Narten, R. Daves, January 2001.

[18] 3G TS 25.401 "UTRAN Overall Description"

[19] 3G TS 25.304: "UE Procedures in Idle Mode and Procedures for Cell Reselection in Connected Mode"

[20] 3G TS 45.008: "Radio subsystem link control"

[21] draft-manyfolks-ipv6-cellular-host-02.txt: "Minimum IPv6 Functionality for a Cellular Host", Work in progress

Editor's Note: The above reference will need to be updated to reference the assigned RFC number, once the draft achieves RFC status within the IETF.

**********Next Change **********

5.6 UE support of IPv6

The set of IPv6 functionality a 3GPP UE will require is dependent on the services (IMS, Packet Streaming etc.) it will use.

As a minimum, a 3GPP UE shall follow the guidelines for implementing IPv6 functionality as specified in the Core IPv6 group of specifications as defined in [21]. This Core IPv6 functionality is sufficient to provide IPv6 for IMS as well as compatibility towards IPv6 entities external to 3GPP.

A 3GPP UE shall follow the recommendations for the Security and the Mobility set of functions in [21] when a specific service requires such functions.

According to the procedures defined in TS 23.060 [2], 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 [??], or similar means, without updating the PS domain. Any application that requires full IP address knowledge shall provide a mechanism to get the latest IPv6 address when the IPv6 address in the UE has been changed. An example of such means is defined in TS 23.228 [11].

Editor's Note: [21] do not make any recommendations on preferred transition and interoperability mechanisms between IPv4 and IPv6. Any supports of such mechanisms needed by 3GPP UE(s) are FFS.

3GPP TSG-SA WG2 Meeting #23 ***Tdoc S2-020816***

Sophia Antipolis, 18th- 22 February 2002

CR-Form-v6.1

CHANGE REQUEST

⌘ **23.221** **CR** **28** ⌘ **rev** **-** ⌘ Current version: **5.3.0** ⌘

Spec Title: Technical Specification Group Services and System Aspects ⌘

*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:	⌘	Compression use for SIP Signalling
Source:	⌘	SA2
Work item code:	⌘	IMS-CCR
Date:	⌘	21 February, 2002
Category:	⌘	**C**
Release:	⌘	REL-5

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R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change:	⌘	Compression presence in the UE and P-CSCF and compression negociation are not clearly specified
Summary of change:	⌘	clarify that support of SIP compression and negotiation is mandatory in the UE and in the P-CSCF but that the usage of SIP Signalling compression is optional but highly preferable and subject to operator policies. The actual negotiation mechanism and default compression algorithm are subject to stage 3 decision.
Consequences if not approved:	⌘	

Clauses affected:	⌘	section 9		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

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9 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.

Support of sip signaling compression and negotiation is mandatory in the UE and PCSCF. The usage is optional but highly preferable and is subject to operator policies. ~~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. The actual negotiation mechanism and default compression algorithm is subject for stage 3 decision.