

**3GPP TSG CN Meeting #27**  
**9th - 11th March 2005. Tokyo, Japan.**

**NP-050102**

**Source:** CN3  
**Title:** CR to TS29.061 on Work Item TEI-6  
**Agenda item:** 9.21  
**Document for:** APPROVAL

---

**Introduction:**

This document contains 1 CR to Rel-6 on Work Item "TEI-6" that have been agreed by TSG CN WG3, and are forwarded to TSG CN Plenary for approval.

<b>WG_tdoc</b>	<b>Spec</b>	<b>CR</b>	<b>R</b>	<b>Cat</b>	<b>Title</b>	<b>Rel</b>	<b>C_Ver</b>	<b>Work Item</b>
N3-050142	29.061	155	1	F	Update of IETF related references	Rel-6	6.3.1	TEI-6

CR-Form-v7.1

## CHANGE REQUEST

⌘ **29.061 CR 155** ⌘ rev **1** ⌘ Current version: **6.3.1** ⌘

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

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

<b>Title:</b>	⌘ Update of IETF related references		
<b>Source:</b>	⌘ Huawei		
<b>Work item code:</b>	⌘ TEI6	<b>Date:</b>	⌘ 14/02/2005
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ Rel-6
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Use <u>one</u> of the following releases: Ph2 (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) Rel-7 (Release 7)

<b>Reason for change:</b>	⌘ RFC 2002 has been replaced by RFC 3344, therefore the references should be updated accordingly. At SA2 #44, a similar CR was approved for TS 23.060.
<b>Summary of change:</b>	⌘ References to obsoleted RFC 2002 are replaced by RFC 3344.
<b>Consequences if not approved:</b>	⌘ References to obsoleted RFC 2002 still remain in TS 29.061, and the Stage 3 specification will not match the Stage 2 specification.

<b>Clauses affected:</b>	⌘ 2, 11.2.1.4						
<b>Other specs affected:</b>	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Y</td> <td style="padding: 2px;">N</td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/></td> <td style="padding: 2px;"><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	⌘
	Y	N					
	<input type="checkbox"/>	<input checked="" type="checkbox"/>					
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Test specifications	⌘				
<input type="checkbox"/>	<input checked="" type="checkbox"/>	O&M Specifications	⌘				
<b>Other comments:</b>	⌘						

### 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.

---

## 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] Void.
- [2] 3GPP TS 22.060: "General Packet Radio Service (GPRS); Service Description; Stage 1".
- [3] 3GPP TS 23.060: "General Packet Radio Service (GPRS); Service Description; Stage 2".
- [4] Void.
- [5] Void.
- [6] Void.
- [7] Void.
- [8] Void.
- [9] Void.
- [10] 3GPP TS 27.060: "Packet Domain; Mobile Station (MS) supporting Packet Switched services".
- [11] ITU-T Recommendation E.164: "The international public telecommunication numbering plan".
- [12] Void.
- [13] Void.
- [14] Void.
- [15] IETF RFC 768 (1980): "User Datagram Protocol" (STD 6).
- [16] IETF RFC 791 (1981): "Internet Protocol" (STD 5).
- [17] IETF RFC 792 (1981): "Internet Control Message Protocol" (STD 5).
- [18] IETF RFC 793 (1981): "Transmission Control Protocol" (STD 7).
- [19] IETF RFC 1034 (1987): "Domain names - concepts and facilities" (STD 7).
- [20] Void.
- [21a] IETF RFC 1661 (1994): "The Point-to-Point Protocol (PPP)" (STD 51).
- [21b] IETF RFC 1662 (1994): "PPP in HDLC-like Framing".
- [22] IETF RFC 1700 (1994): "Assigned Numbers" (STD 2).
- [23] 3GPP TS 44.008: "Mobile radio interface layer 3 specification; Core Network protocols; Stage 3".
- [24] 3GPP TS 29.060: "General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP) across the Gn and Gp interface".

- [25] IETF RFC 2794 (2000): "Mobile IP Network Address Identifier Extension for IPv4", P. Calhoun, C. Perkins.
- [26] IETF RFC 2131 (1997): "Dynamic Host Configuration Protocol".
- [27] IETF RFC 1542 (1993): "Clarification and Extensions for the Bootstrap Protocol".
- [28] IETF RFC 2373 (1998): "IP Version 6 Addressing Architecture".
- [29] IETF RFC 2462 (1998): "IPv6 Stateless Address Autoconfiguration".
- [30] IETF RFC ~~2002~~[3344](#) (~~1996~~[2002](#)): "IP Mobility Support", C. Perkins.
- [31] IETF RFC 2486 (1999): "The Network Access Identifier", B. Aboba and M. Beadles.
- [32] IETF RFC 1112 (1989): "Host extensions for IP multicasting", S.E. Deering.
- [33] IETF RFC 2236 (1997): "Internet Group Management Protocol, Version 2", W. Fenner.
- [34] IETF RFC 2362 (1998): "Protocol Independent Multicast-Sparse Mode (PIM-SM): Protocol Specification", D. Estrin, D. Farinacci, A. Helmy, D. Thaler, S. Deering, M. Handley, V. Jacobson, C. Liu, P. Sharma, L. Wei
- [35] IETF RFC 1075 (1988): "Distance Vector Multicast Routing Protocol", D. Waitzman, C. Partridge, S.E. Deering.
- [36] IETF RFC 1585 (1994): "MOSPF: Analysis and Experience", J. Moy.
- [37] IETF RFC 2290 (1998): "Mobile-IPv4 Configuration Option for PPP IPCP", J. Solomon, S. Glass.
- [38] IETF RFC 2865 (2000): "Remote Authentication Dial In User Service (RADIUS)", C. Rigney, S. Willens, A. Rubens, W. Simpson.
- [39] IETF RFC 2866 (2000): "RADIUS Accounting", C. Rigney, Livingston.
- [40] 3GPP TS 23.003: "Numbering, addressing and identification".
- [41] IETF RFC 3576 (2003): "Dynamic Authorization Extensions to Remote Authentication Dial In User Service (RADIUS)", M.Chiba, M.Eklund, D.Mitton, B.Aboba.
- [42] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [43] Void.
- [44] IETF RFC 2461 (1998): "Neighbor Discovery for IP Version 6 (IPv6)", T. Narten, E. Nordmark, W. Simpson
- [45] IETF RFC 3118 (2001): "Authentication for DHCP Messages", R. Droms, W. Arbaugh.
- [46] IETF RFC 3315 (2003) "Dynamic Host Configuration Protocol for IPv6 (DHCPv6)", R. Droms, J. Bound, B. Volz, T. Lemon, C. Perkins, M. Carney.
- [47] 3GPP TS 24.229: "IP Multimedia Call Control Protocol based on SIP and SDP"
- [48] IETF RFC 2710 (1999): "Multicast Listener Discovery (MLD) for IPv6", S. Deering, W. Fenner, B. Haberman.
- [49] IETF RFC 2460 (1998): "Internet Protocol, Version 6 (IPv6) Specification", S.Deering, R.Hinden.
- [50] IETF RFC 3162 (2001): "RADIUS and IPv6", B. Adoba, G. Zorn, D. Mitton.
- [51] IETF RFC 2548 (1999): "Microsoft Vendor-specific RADIUS Attributes", G.Zorn.
- [52] 3GPP TS 23.228: "IP Multimedia Subsystem (IMS); Stage 2".
- [53] 3GPP TS 29.207: "Policy control over Go interface".
- [54] 3GPP TS 24.008: "Mobile radio interface layer 3 specification; Core Network protocols; Stage 3".

- [55] Void.
- [56] 3GPP TS 29.208: "End to end Quality of Service (QoS) signalling flows".
- [57] Void.
- [58] IETF RFC 1035 (1987): "Domain names - implementation and specification" (STD 13).
- [59] Void.
- [60] IETF RFC 1771 (1995): "A Border Gateway Protocol 4 (BGP-4)".
- [61] IETF RFC 1825 (1995): "Security Architecture for the Internet Protocol".
- [62] IETF RFC 1826 (1995): "IP Authentication Header".
- [63] IETF RFC 1827 (1995): "IP Encapsulating Security Payload (ESP)".
- [64] IETF RFC 2044 (1996): "UTF-8, a transformation format of Unicode and ISO 10646".
- [65] 3GPP TS 23.246: "Multimedia Broadcast/Multicast Service (MBMS) Architecture and Functional Description".
- [66] IETF RFC 3588 "Diameter Base Protocol".
- [67] draft-ietf-aaa-diameter-nasreq-17.txt: "Diameter Network Access Server Application", work in progress.

\*\*\*\*\*THE NEXT CHANGE\*\*\*\*\*

#### 11.2.1.4 Access to Internet, Intranet or ISP with Mobile IPv4

##### General

A way to allow users to roam from one environment to another, between fixed and mobile, between public and private as well as between different public systems is to use Mobile IP RFC [20023344](#) [30]. Mobile IP (MIP) is a mobility management protocol developed by IETF. The Mobile IP Foreign Agent (FA) RFC [20023344](#) [30] is located in the Core Network in the GGSN. MIP also uses a Home Agent (HA) RFC [20023344](#) [30] which may or may not be located in a PLMN network.

##### Interworking model for MIP

A FA is located in the GGSN. The interface between the GGSN and the FA will probably not be standardised as the GGSN/FA is considered being one integrated node. The mapping between these two is a matter of implementation. Each FA must be configured with at least one care-of address. In addition a FA must maintain a list that combines IP addresses with TEIDs of all the visiting MSs that have registered with the FA. IP packets destined for the MS are intercepted by the HA and tunneled to the MS's care-of address, i.e. the FA. The FA de-tunnels the packets and forwards the packets to the MS. Mobile IP related signalling between the MS and the FA is done in the user plane. MIP registration messages RFC [20023344](#) [30] are sent with UDP.

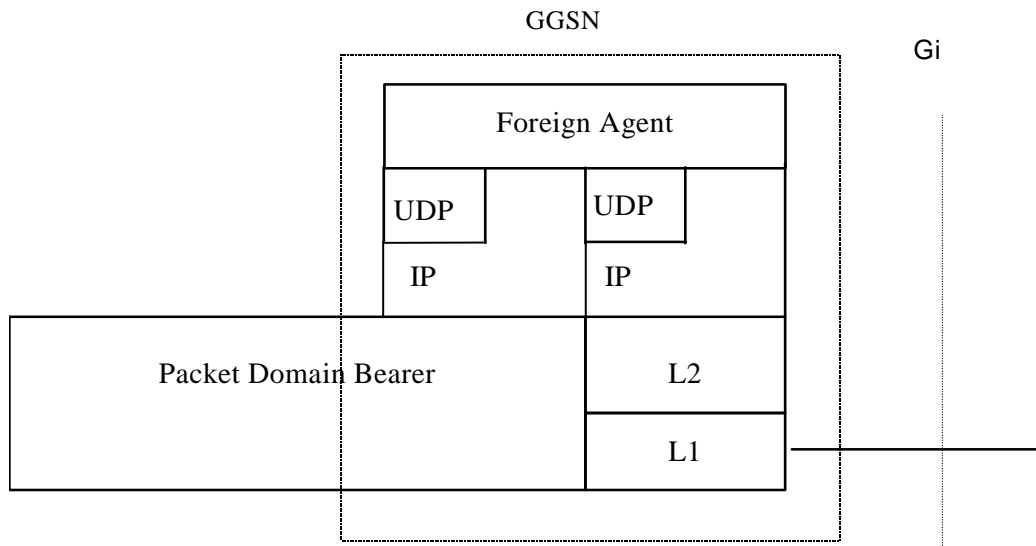


Figure 11c: The protocol stacks for the Gi IP reference point in the MIP signalling plane

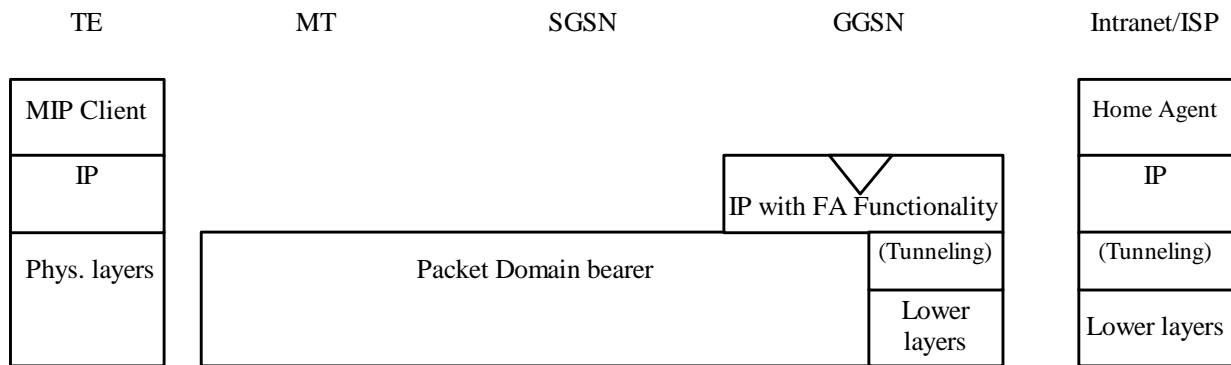


Figure 11d: Protocol stacks for user access with MIP

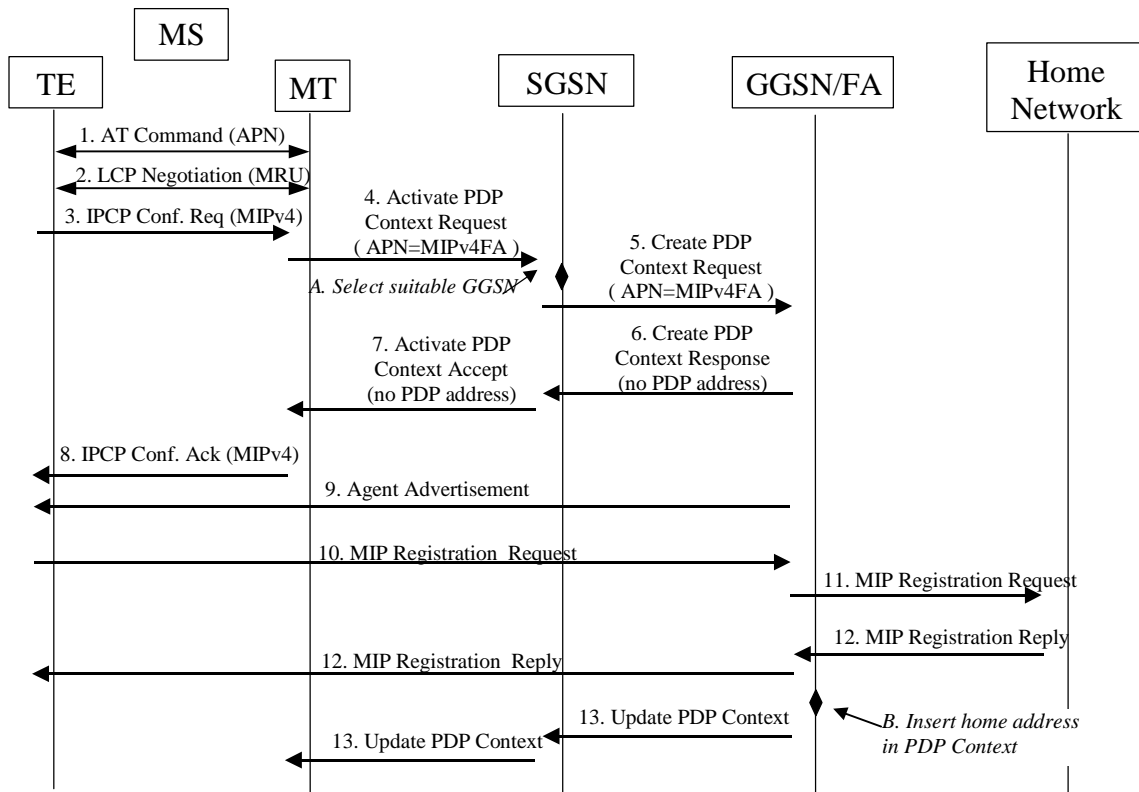
In figure 11d: "(Tunneling)" is intended to show asymmetric traffic flow. Tunneling (IP-in-IP) is only used in the direction from the ISP towards the MT.

Authentication of the user is supported in Mobile IPv4. This authentication mechanism may involve communication with an authentication server (e.g. RADIUS), although this is not shown in figure 11d.

Address allocation - at PDP context activation no IP address is allocated to the MS indicated by 0.0.0.0. in the "Requested PDP Address" field. If the MS does not have a static IP address which it could register with the HA, it will acquire a dynamic IP address from the HA RFC 2794 [25]. After completion of the PDP activation the SGSN is informed of the assigned IP address by means of the GGSN initiated PDP Context Modification Procedure.

An example of a signalling scheme, shown in figure 11e, is described below. In this example the MS is separated into a TE and MT, with AT commands and PPP used in-between (see 3GPP TS 27.060 [10]). The PS attach procedures have been omitted for clarity.

IPv4 - Registration UMTS/GPRS + MIP , FA care-of address



**Figure 11e: Example of PDP Context activation with Mobile IP registration (the PS attach procedure not included)**

1. The AT command carries parameters that the MT needs to request the PDP Context Activation. The important parameter here, is the APN (Access Point Name), see clause A below. The AT command is followed by a setup of the PPP connection between the MT and the TE.
2. As part of the PPP connection, LCP negotiates Maximum-Receive-Unit between the TE and the MT. No PPP authentication is required when using MIPv4.
3. As part of the PPP connection, the TE sends an IPCP Configure Request using the MIPv4 configuration option (see RFC 2290 [37]). The TE sends either its Home Address or a null address (i.e. 0.0.0.0) if the Network Address identifier is used (see RFC 2794 [25]).
4. The MT sends the "Activate PDP Context Request" to the SGSN. The message includes various parameters of which the "APN" (Access Point Name) and the "Requested PDP Address" are of interest here. The TE/MT may use APN to select a reference point to a certain external network or to select a service. APN is a logical name referring to the external packet data network or to a service that the subscriber wishes to connect to. The "Requested PDP Address" should be omitted for all MSs using Mobile IP. This is done irrespective of if the TE has a permanently assigned Mobile IP address from its Mobile IP home network, a previously assigned dynamic home address from its Mobile IP home network or if it wishes the Mobile IP home network to allocate a "new" dynamic home address.
  - A. The SGSN will base the choice of GGSN based on the APN that is given by the MS.
5. The SGSN requests the selected GGSN to set up a PDP Context for the MS. The PDP address and APN fields are the same as in the "Activate PDP Context Request" message.



6. A Create PDP Context Response is sent from the GGSN/FA to the SGSN. If the creation of PDP Context was successful, some parameters will be returned to the SGSN, if not, an error code will be returned. If the GGSN has been configured, by the operator, to use a Foreign Agent for the requested APN, the PDP address returned by the GGSN shall be set to 0.0.0.0, indicating that the PDP address shall be reset by the MS with a Home Agent after the PDP context activation procedure.
7. The Activate PDP Context Accept message is sent by the SGSN to the MT and contains similar information as the Create PDP Context Response message.
8. The MT sends an IPCP Configure Ack to the TE in order to terminate the PPP connection phase.
9. The Agent Advertisement RFC [20023344](#) [30] is an ICMP (Internet Control Message Protocol) Router Advertisement message with a mobility agent advertisement extension. The latter part contains parameters of the FA that the mobile node needs, among those are one or more care-of addresses that the FA offers. This message should be sent, in the Packet Domain user plane, as an IP limited broadcast message, i.e. destination address 255.255.255.255, however only on the TEID for the requesting MS to avoid broadcast over the radio interface.
10. The Mobile IP Registration Request is sent from the mobile node to the GGSN/FA across the Packet Domain backbone as user traffic. The mobile node includes its (permanent) home address as a parameter RFC [20023344](#) [30]. Alternatively, it can request a temporary address assigned by the home network by sending 0.0.0.0 as its home address, and include the Network Access Identifier (NAI) in a Mobile-Node-NAI Extension RFC 2794 [25] and RFC 2486 [31].
11. The FA forwards the Mobile IP Registration Request to the home network of the mobile node, where a home agent (HA) processes it. Meanwhile, the GGSN/FA needs to store the home address of the mobile node or the NAI and the local link address of the MS, i.e. the TEID (Tunnel Endpoint ID).
12. The Registration Reply is sent from the home network to the FA, which extracts the information it needs and forwards the message to the mobile node in the Packet Domain user plane. As the FA/GGSN knows the TEID and the NAI or home address, it can pass it on to the correct MS.
  - B. The GGSN/FA extracts the home address from the Mobile IP Registration Reply message and updates its GGSN PDP Context.
13. The GGSN triggers a "GGSN initiated PDP Context modification procedure" in order to update the PDP address in the SGSN and in the MT.