

CHANGE REQUEST

⌘ 24.008 CR 397 ⌘ rev 1 ⌘ Current version: 3.7.0 ⌘

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

Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ Clarification to REQUEST PDP CONTEXT ACTIVATION		
Source:	⌘ Ericsson		
Work item code:	⌘ GPRS	Date:	⌘ 2001-06-11
Category:	⌘ F	Release:	⌘ R99
<i>Use one of the following categories:</i>		<i>Use one of the following releases:</i>	
F (essential correction)		2 (GSM Phase 2)	
A (corresponds to a correction in an earlier release)		R96 (Release 1996)	
B (Addition of feature),		R97 (Release 1997)	
C (Functional modification of feature)		R98 (Release 1998)	
D (Editorial modification)		R99 (Release 1999)	
Detailed explanations of the above categories can be found in 3GPP TR 21.900.		REL-4 (Release 4)	
		REL-5 (Release 5)	

Reason for change:	⌘ There is an unclear case in REQUEST PDP CONTEXT ACTIVATION procedure description.
Summary of change:	⌘ The MS sends in ACTIVATE PDP CONTEXT REQUEST message the same <u>PDP address IE</u> it received in REQUEST PDP CONTEXT ACTIVATION message, <u>even if no address information is present in the IE the MS instead sends a REQUEST PDP CONTEXT ACTIVATION REJECT message to the network with cause code 'Semantically incorrect message'</u> .
Consequences if not approved:	⌘ MS behaviour will be manufacturer dependent which may lead to inconsistency

Clauses affected:	⌘ <u>6.1.3.1.2, 6.1.3.1.5, 10.5.6.4</u>
Other specs affected:	⌘ <input type="checkbox"/> Other core specifications ⌘ <input type="checkbox"/> Test specifications <input type="checkbox"/> 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

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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.

6.1.3 Session Management procedures

6.1.3.1 PDP context activation

The purpose of this procedure is to establish a PDP context between the MS and the network for a specific QoS on a specific NSAPI. The PDP context activation may be initiated by the MS or the initiation may be requested by the network.

Each PDP address may be described by one or more PDP contexts in the MS or the network. The PDP Context Activation procedure is used to activate the first PDP context for a given PDP address and APN, whereas all additional contexts associated to the same PDP address and APN are activated with the secondary PDP context activation procedure. When more than one PDP contexts are associated to a PDP address, there shall be a Traffic Flow Template (TFT) for each or all but one context. If present, the TFT shall be sent transparently via the SGSN to the GGSN to enable packet classification and policing for downlink data transfer (see 3GPP TS 23.060).

6.1.3.1.1 Successful PDP context activation initiated by the mobile station

In order to request a PDP context activation, the MS sends an ACTIVATE PDP CONTEXT REQUEST message to the network, enters the state PDP-ACTIVE-PENDING and starts timer T3380. The message contains the selected NSAPI, PDP type, requested QoS and, if the MS requests a static address, the PDP address. The MS shall ensure that the selected NSAPI is not currently being used by another Session Management entity in the MS.

Upon receipt of an ACTIVATE PDP CONTEXT REQUEST message, the network selects a radio priority level based on the QoS negotiated and may reply with an ACTIVATE PDP CONTEXT ACCEPT message. Upon receipt of the message ACTIVATE PDP CONTEXT ACCEPT the MS shall stop timer T3380, shall enter the state PDP-ACTIVE. If the offered QoS parameters received from the network differ from the QoS requested by the MS, the MS shall either accept the negotiated QoS or initiate the PDP context deactivation procedure.

In GSM, the MS shall initiate establishment of the logical link for the LLC SAPI indicated by the network with the offered QoS and selected radio priority level if no logical link has been already established for that SAPI. If the offered QoS parameters received from the network differ from the QoS requested by the MS, the MS shall either accept the negotiated QoS or initiate the PDP context deactivation procedure. If the LLC SAPI indicated by the network can not be supported by the MS, the MS shall initiate the PDP context deactivation procedure.

In UMTS, both the network and the MS shall store the LLC SAPI and the radio priority in the PDP context. If a UMTS to GSM system change is performed, the new SGSN shall initiate establishment of the logical link using the negotiated QoS profile, the negotiated LLC SAPI, and selected radio priority level stored in the PDP context as in a GSM to GSM Routing Area Update.

An MS, which is capable of operating in both GSM and UMTS, shall use a valid LLC SAPI, while an MS which is capable of operating only in UMTS shall indicate the LLC SAPI value as "LLC SAPI not assigned" in order to avoid unnecessary value range checking and any other possible confusion in the network.

NOTE: The radio priority level and the LLC SAPI parameters, though not used in UMTS, shall be included in the messages, in order to support handover between UMTS and GSM networks.

6.1.3.1.2 Successful PDP context activation requested by the network

In order to request a PDP context activation, the network sends a REQUEST PDP CONTEXT ACTIVATION message to the MS and starts timer T3385. The message contains an offered PDP address IE that contains a PDP address. If available, the APN shall be included in the REQUEST PDP CONTEXT ACTIVATION message.

Upon receipt of a REQUEST PDP CONTEXT ACTIVATION message, the MS shall then either initiate the PDP context activation procedure as described in the previous section or shall reject the activation request by sending a REQUEST PDP CONTEXT ACTIVATION REJECT message as described in section 6.1.3.1.4. The value of the reject cause IE of the REQUEST PDP CONTEXT ACTIVATION

REJECT message shall indicate the reason for rejection, e.g. "insufficient resources to activate another context".

The ACTIVATE PDP CONTEXT REQUEST message sent by the MS in order to initiate the PDP context activation procedure shall contain the PDP address IE, ~~PDP Type~~ and APN IE requested by the network in the REQUEST PDP CONTEXT ACTIVATION message.

Upon receipt of the ACTIVATE PDP CONTEXT REQUEST message, the network shall stop timer T3385.

The same procedures then apply as described for MS initiated PDP context activation.

6.1.3.1.3 Unsuccessful PDP context activation initiated by the MS

Upon receipt of an ACTIVATE PDP CONTEXT REQUEST message the network may reject the MS initiated PDP context activation by sending an ACTIVATE PDP CONTEXT REJECT message to the MS. The message shall contain a cause code that typically indicates one of the following causes:

- # 26: insufficient resources;
- # 27: missing or unknown APN;
- # 28: unknown PDP address or PDP type;
- # 29: user authentication failed;
- # 30: activation rejected by GGSN;
- # 31: activation rejected, unspecified;
- # 32: service option not supported;
- # 33: requested service option not subscribed;
- # 34: service option temporarily out of order;
- # 35: NSAPI already used. The network shall not send this cause code (Note 1); or
- # 95 - 111: protocol errors.

NOTE 1: Pre-R99 network may send this cause code.

Upon receipt of an ACTIVATE PDP CONTEXT REJECT message, the MS shall stop timer T3380 and enter/remain in state PDP-INACTIVE.

6.1.3.1.4 Unsuccessful PDP context activation requested by the network

Upon receipt of the REQUEST PDP CONTEXT ACTIVATION message, the MS may reject the network requested PDP context activation by sending the REQUEST PDP CONTEXT ACTIVATION REJECT message to the network. The message contains the same TI as included in the REQUEST PDP CONTEXT ACTIVATION and an additional cause code that typically indicates one of the following causes:

- # 26: insufficient resources;
- # 31: activation rejected, unspecified;
- # 40: feature not supported; or
- # 95 - 111: protocol errors.

The network shall stop timer T3385 and enter state PDP-INACTIVE.

6.1.3.1.5 Abnormal cases

The following abnormal cases can be identified:

- a) Expiry of timers

In the mobile station:

On the first expiry of the timer T3380, the MS shall resend the ACTIVATE PDP CONTEXT REQUEST and shall reset and restart timer T3380. This retransmission is repeated four times, i.e. on the fifth expiry of timer T3380, the MS shall release all resources possibly allocated for this invocation and shall abort the procedure; no automatic PDP context activation re-attempt shall be performed.

On the network side:

On the first expiry of the timer T3385, the network shall resend the message REQUEST PDP CONTEXT ACTIVATION and shall reset and restart timer T3385. This retransmission is repeated four times, i.e. on the fifth expiry of timer T3385, the network shall release possibly allocated resources for this activation and shall abort the procedure.

b) Collision of MS initiated and network requested PDP context activation

Dynamic PDP address collision case:

If the MS uses dynamic PDP addressing that turns out to collide with the network requested PDP address, then there is no detection of collision specified but left for network implementation.

Static PDP address collision detected within the mobile station:

A collision of an MS initiated and a network requested PDP context activation procedure is identified by the MS if a REQUEST PDP CONTEXT ACTIVATION message is received from the network after the MS has sent an ACTIVATE PDP CONTEXT REQUEST message, and the MS has not yet received an ACTIVATE PDP CONTEXT ACCEPT or ACTIVATE PDP CONTEXT REJECT message.

NOTE: In general, the MS is unable to test if the PDP type, PDP address and APN in the REQUEST PDP CONTEXT ACTIVATION message are the same as those for the PDN to which it is attempting to activate a context. This is because the MS may have omitted one or more of the parameters in the ACTIVATE PDP CONTEXT REQUEST message, since it is relying on default values to be provided by the network.

- In the case of such a collision, the MS initiated PDP context activation shall take precedence over the network requested PDP context activation. If the MS is able to compare the PDP type, PDP address and APN requested in the ACTIVATE PDP CONTEXT REQUEST message with those requested in the REQUEST PDP CONTEXT ACTIVATION message and these parameters are equal, then the MS shall discard the REQUEST PDP CONTEXT ACTIVATION message and shall wait for the network response to its ACTIVATE PDP CONTEXT REQUEST message. If the MS is not able to compare the PDP type, PDP address, and APN requested in the ACTIVATE PDP CONTEXT REQUEST message with those requested in the REQUEST PDP CONTEXT ACTIVATION message, then the MS shall send a REQUEST PDP CONTEXT ACTIVATION REJECT message with the cause 'insufficient resources' to the network, and wait for an ACTIVATE PDP CONTEXT ACCEPT message.

Static PDP address collision detected on the network side:

A collision is detected by the network in the case where the PDP address, PDP type and APN derived (according to 23.060 annex A) from the ACTIVATE PDP CONTEXT REQUEST message received from the MS match those in the REQUEST PDP CONTEXT ACTIVATION message sent to the MS.

- In the case of such a collision, the MS initiated PDP context activation shall take precedence over the network requested PDP context activation. The network shall terminate the network requested PDP context activation procedure, and proceed with the MS initiated PDP context activation procedure

c) MS initiated PDP context activation request for an already activated PDP context (on the network side)

- i) If the network receives a ACTIVATE PDP CONTEXT REQUEST message with the same combination of APN, PDP type and PDP address as an already activated PDP context, the network shall deactivate the existing PDP context and, if any, all the linked PDP contexts (matching the combination of APN, PDP type and PDP address), locally without notification to the MS and proceed with the requested PDP context activation.
- ii) Alternatively (different combination of APN, PDP type and PDP address), if the NSAPI matches that of an already activated PDP context, then the network shall deactivate only the existing PDP context locally without notification to the MS and proceed with the requested PDP context activation.

It is an implementation option if the parameters used for comparison described in clause i) and ii) are the parameters provided in the (current and previous) ACTIVATE PDP CONTEXT REQUESTs or the parameters which are the result of the application of the selection rules defined in 3GPP TS23.060 Annex A.2.

The parameter provided in the current ACTIVATE PDP CONTEXT REQUEST can not be compared to the actually used parameters (result of application of selection rules defined in 3GPP TS23.060 Annex A.2) of the previously activated PDP contexts.

d) Network initiated PDP context activation request for an already activated PDP context (on the mobile station side)

If the MS receives a REQUEST PDP CONTEXT ACTIVATION message with the same combination of APN, PDP type and PDP address as an already activated PDP context, the MS shall deactivate the existing PDP context and, if any, all the linked PDP contexts (matching the combination of APN, PDP type and PDP address) locally without notification to the network and proceed with the requested PDP context activation.

e) Network initiated PDP context activation request with PDP address IE not containing a PDP address

If the MS receives a REQUEST PDP CONTEXT ACTIVATION message with a PDP address IE not containing a PDP address, it shall regard the message as semantically incorrect. Then the MS shall send a REQUEST PDP CONTEXT ACTIVATION REJECT message with the cause 'Semantically incorrect message' to the network.

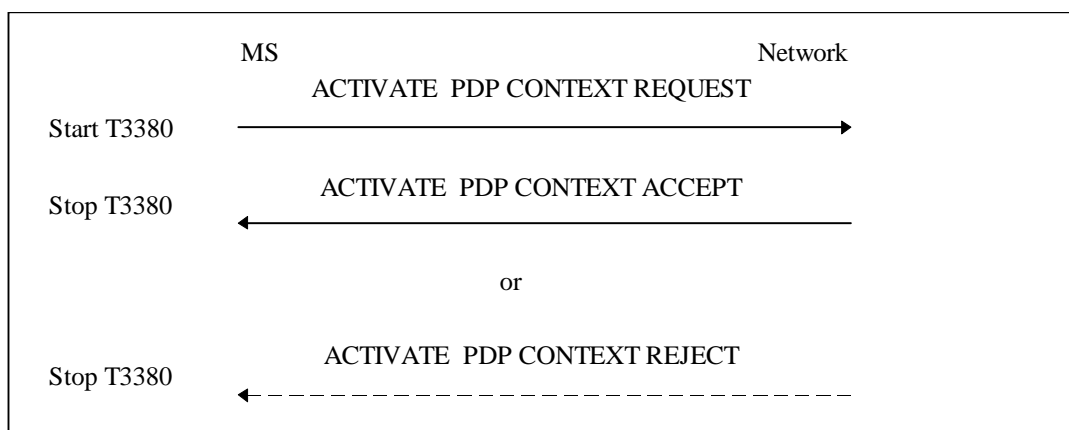


Figure 6.3/3GPP TS 24.008: MS initiated PDP context activation procedure

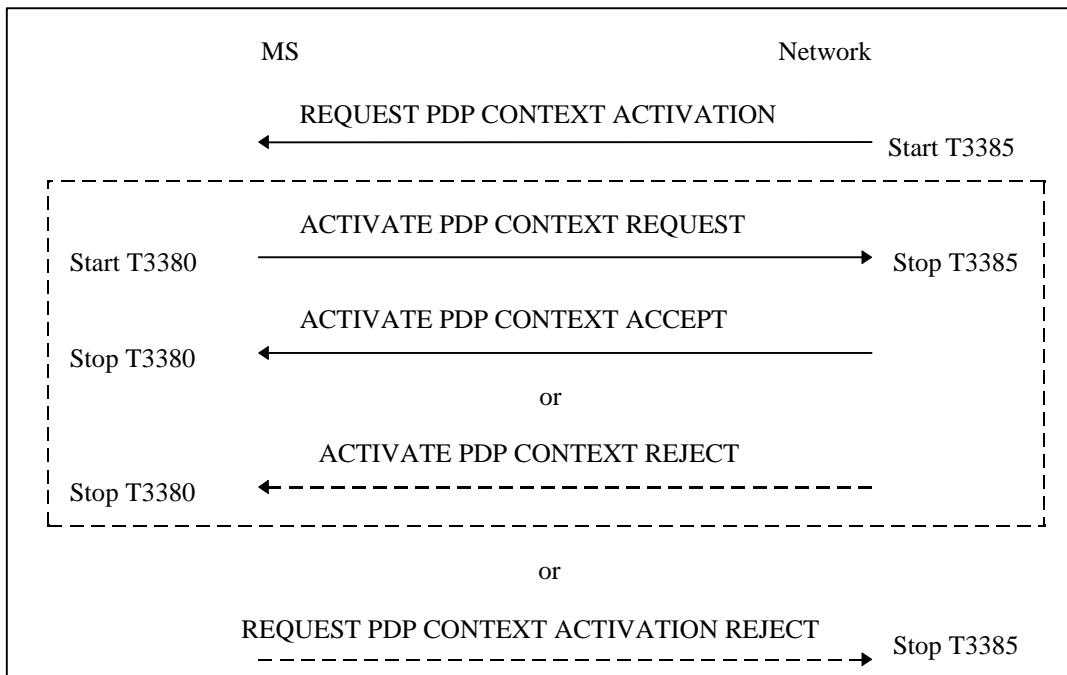


Figure 6.4/3GPP TS 24.008: Network initiated PDP context activation procedure

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10.5.6.4 Packet data protocol address

The purpose of the *packet data protocol address* information element is to identify an address associated with a PDP.

The *packet data protocol address* is a type 4 information element with minimum length of 4 octets and a maximum length of 20 octets.

The *packet data protocol address* information element is coded as shown in figure 10.5.137/3GPP TS 24.008 and table 10.5.155/3GPP TS 24.008.

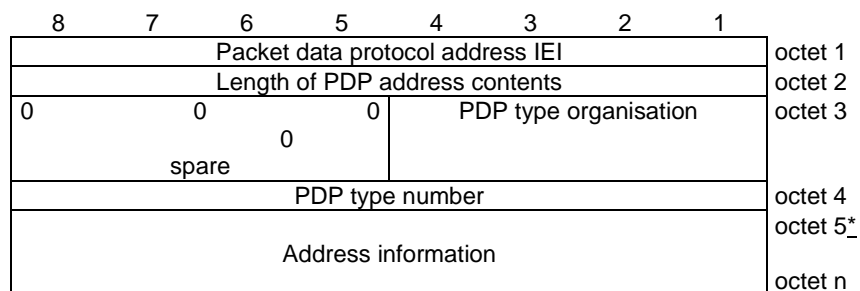


Figure 10.5.137/3GPP TS 24.008: Packet data protocol address information element

Table 10.5.155/3GPP TS 24.008: Packet data protocol address information element

Length of PDP address contents (octet 2)	
If the value of octet 2 equals 0000 0010, then :	
-	No PDP address is included in this information element; and
-	If the PDP type is IP, dynamic addressing is applicable.
NOTE : For PPP no address is required in this information element.	
PDP type organisation (octet 3)	
Bits	
4 3 2 1	
In MS to network direction :	
0 0 0 0	ETSI allocated address
0 0 0 1	IETF allocated address
1 1 1 1	Empty PDP type
All other values are reserved.	
In network to MS direction :	
0 0 0 0	ETSI allocated address
0 0 0 1	IETF allocated address
All other values are reserved.	
If bits 4,3,2,1 of octet 3 are coded 0 0 0 0	
PDP type number value (octet 4)	
Bits	
8 7 6 5 4 3 2 1	
0 0 0 0 0 0 0 0	Reserved, used in earlier version of this protocol
0 0 0 0 0 0 0 1	PDP-type PPP
All other values are reserved in this version of the protocol.	
If bits 4,3,2,1 of octet 3 are coded 0 0 0 1	
PDP type number value (octet 4)	
Bits	
8 7 6 5 4 3 2 1	
0 0 1 0 0 0 0 1	IPv4 address
0 1 0 1 0 1 1 1	IPv6 address
All other values shall be interpreted as IPv4 address in this version of the protocol.	
In MS to network direction:	
If bits 4,3,2,1 of octet 3 are coded 1 1 1 1	
PDP type number value (octet 4)	
bits 8 to 1 are spare and shall be coded all 0.	
Octet 3, bits 8, 7, 6, and 5 are spare and shall be coded all 0.	

If PDP type number indicates IPv4, the Address information in octet 5 to octet 8 contains the IPv4 address. Bit 8 of octet 5 represents the most significant bit of the IP address and bit 1 of octet 8 the least significant bit .

If PDP type number indicates IPv6, the Address information in octet 5 to octet 20 contains the IPv6 address. Bit 8 of octet 5 represents the most significant bit of the IP address and bit 1 of octet 20 the least significant bit.