3GPP TSG_CN **Tdoc NP-000443**
Plenary Meeting #9, Oahu, Hawaii
20th – 22nd September 2000.

Source: **TSG_N WG 1**

Title: **CRs to R99 Work Item GSM/ UMTS Interworking**

Agenda item: **8.16.1**

Document for: **APPROVAL**

Introduction:

This document contains 14 CRs on R99 Work Item GSM/ UMTS Interworking, that has been agreed by TSG_N WG1, and is forwarded to TSG_N Plenary meeting #9 for approval.

Spec	CR	R	Doc-2nd-Level	Phase	Subject	Cat	Ver_C	Ver_N
23.122	009	2	N1-001020	R99	Clarifications of the PLMN Selection procedures for UMTS and COMPACT.	F	3.3.0	3.40
24.007	019	1	N1-001015	R99	Correction of send sequence number method applied protocols	F	3.4.0	3.50
24.007	020		N1-000930	R99	Editorial corrections	F	3.4.0	3.5.0
24.007	018		N1-000880	R99	Protocol discriminator value for UE special conformance testing functions	F	3.4.0	3.5.0
24.007	013	3	N1-001032	R99	SAPs and Service primitives for UMTS, PS mode.	F	3.4.1	3.5.0
24.008	233	1	N1-000988	R99	DRX IE as mandatory IE for RAU	F	3.4.1	3.5.0
24.008	255	3	N1-001033	R99	Duplicated PDP context activation and clarification of TI related issues.	F	3.4.1	3.5.0
24.008	243		N1-000905	R99	Editorial correction of figure in QoS IE	F	3.4.1	3.5.0
24.008	248	1	N1-001016	R99	Editorial corrections	F	3.4.1	3.5.0
24.008	238	1	N1-001014	R99	Editorial Modification on SM state transition model	F	3.4.1	3.5.0
24.008	251	2	N1-001034	R99	Introduction of 3G Radio Access Technology capabilities in the MS Radio Access Capability IE	F	3.4.1	3.5.0
24.008	235		N1-000895	R99	New cause for Modify PDP Context Reject	F	3.4.1	3.5.0
24.008	229	1	N1-001012	R99	P-TMSI signature handling	F	3.4.1	3.5.0
24.008	236	2	N1-001042	R99	Reaction to duplicated PDP context activation	F	3.4.1	3.5.0

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Vancouver, Canada, 14-18 August 2000

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24.007	CR	018	Current Version:	3.4.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

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Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*

(U)SIM		ME	X	UTRAN / Radio		Core Network	

Source: TSGN1 **Date:** 2000-08-03

Subject: Protocol discriminator value for UE special conformance testing functions

Work item: GSM/UMTS Interworking

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: The protocol discriminator value “1111” as defined in table 11.2 of TS 24.007 is used to identify commands for control of UE special conformance testing functions both for GSM and for 3G. The special conformance testing functions are for GSM defined in GSM 04.14 (have been moved form GSM 11.10 to GSM 04.14) and for 3G in TS 34.109. The present CR corrects the GSM reference from GSM 11.10 to GSM 04.14 and adds the reference to TS 34.109 for the 3G case.

Clauses affected: 2, 11.2.3.1.1

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:

<START OF MODIFIED SECTION>

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.

[1] GSM 01.02: "Digital cellular telecommunications system (Phase 2+); General description of a GSM Public Land Mobile Network (PLMN)".

[1a] TS 21.905: "Vocabulary for 3GPP Specifications".

[2] GSM 03.01: "Digital cellular telecommunications system (Phase 2+); Network functions".

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

[3b] GSM 03.56: "Digital cellular telecommunications system (Phase 2+); GSM Cordless Telephony System (CTS), phase 1; CTS Architecture Description; Stage 2".

[3] GSM 04.01: "Digital cellular telecommunications system (Phase 2+); Mobile Station - Base Station System (MS - BSS) interface General aspects and principles".

[3b] GSM 03.71: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS) Functional Description; Stage 2".

[4] GSM 04.05: "Digital cellular telecommunications system (Phase 2+); Data Link (DL) layer General aspects".

[5] GSM 04.06: "Digital cellular telecommunications system (Phase 2+); Mobile Station - Base Station System (MS - BSS) interface Data Link (DL) layer specification".

[5a] GSM 04.14: “Digital cellular telecommunications system (Phase 2+); Individual equipment type requirements and interworking; Special conformance testing functions”.

[6] TS 24.008: "Mobile radio interface layer 3 specification Core Network Protocols-Stage 3".

[6a] TS 23.108: "Mobile Radio Interface Layer 3 specification Core Network Protocols stage 2 (structured procedures)".

[7] TS 24.010: "Mobile radio interface layer 3 Supplementary services specification General aspects".

[8a] GSM 04.71: "Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification; Location Services (LCS)".

[8] TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".

[9] TS 24.080: "Mobile radio interface layer 3 supplementary services specification Formats and coding".

[10] TS 24.081: "Line identification supplementary services - Stage 3".

[10a] GSM 04.60: "Digital cellular telecommunications system (Phase 2+);
General Packet Radio Services (GPRS); Mobile Station (MS) - Base Station System (BSS) interface; Radio Link Control and medium Access Control (RLS/MAC) layer specification".

[10b] GSM 04.56: "Digital cellular telecommunications system (Phase 2+);
GSM Cordless Telephony System (CTS), phase 1; CTS Radio Interface Layer 3 specification".

[11] TS 24.82: "Call Forwarding (CF) supplementary services - Stage 3".

[11a] GSM 04.64: "Digital cellular telecommunications system (Phase 2+); Mobile Station - GPRS support node (MS-SGSN) Logical Link Control Layer Specification".

[12] TS 24.083: "Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 3".

[12a] GSM 04.65: "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Mobile Station (MS) - Serving GPRS Support Node (SGSN); Subnetwork Dependent Convergence Protocol (SNDCP)".

[13] TS 24.084: "MultiParty (MPTY) supplementary services - Stage 3".

[14] TS 24.085: "Closed User Group (CUG) supplementary services - Stage 3".

[15] TS 24.086: "Advice of Charge (AoC) supplementary services - Stage 3".

[16] TS 24.088: "Call Barring (CB) supplementary services - Stage 3".

[17] TS 24.090: "Unstructured supplementary services operation - Stage 3".

[17a] TS 34.109: “Terminal logical test interface; Special conformance testing functions”.

[18] ITU-T Recommendation X.200: "Reference Model of Open systems interconnection for ITU-T Applications".

<END OF MODIFIED SECTION>

<START OF MODIFIED SECTION>

11.2.3.1.1 Protocol discriminator

Bits 1 to 4 of the first octet of a standard L3 message contain the protocol discriminator (PD) information element. The PD identifies the L3 protocol to which the standard layer 3 message belongs. The correspondence between L3 protocols and PDs is one-to-one.

For future evolution an extension mechanism is foreseen which allows the use of protocol discriminators with one octet length, where bits 4 to one are coded as 1 1 1 0. Messages of such protocols may not be standard L3 messages. In particular, the rest of the header may not respect the structure described in this sub-clause.

The PD can take the following values:

Table 11.2: Protocol discriminator values

bits 4 3 2 1	
0 0 0 0	group call control
0 0 0 1	broadcast call control
0 0 1 0	PDSS1
0 0 1 1	call control; call related SS messages
0 1 0 0	LLC messages
0 1 0 1	mobility management messages
0 1 1 0	radio resources management messages
1 0 0 0	GPRS mobility management messages
1 0 0 1	SMS messages
1 0 1 0	GPRS session management messages
1 0 1 1	non call related SS messages
1 1 0 0	Location services
1 1 1 0	reserved for extension of the PD to one octet length
1 1 1 1	reserved for tests procedures described in ~~GSM 11.10~~ [5a] GSM 04.14 and [17a] TS 34.109.

If the network receives, on a SAP where it expects standard L3 messages, a message with a protocol discriminator different from those specified in table 11.2, the network may ignore the message or initiate the channel release procedure defined in GSM 04.08.

If the Mobile Station receives, on a SAP where it expects standard L3 messages, a standard L3 message with a protocol discriminator different from those specified in table 11.2, or for a protocol that it does not support, the Mobile Station shall ignore the message.

<END OF MODIFIED SECTION>

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24.008	**CR**	**235**	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

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Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio		Core Network	X

Source: TSGN1 **Date:** 8 August 2000

Subject: New cause for Modify PDP Context Reject

Work item: GSM/UMTS Interwork

Category: *(only one category shall be marked with an X)*				**Release:**	
	F	Correction	X	Phase 2	
	A	Corresponds to a correction in an earlier release		Release 96	
	B	Addition of feature		Release 97	
	C	Functional modification of feature		Release 98	
	D	Editorial modification		Release 99	X
				Release 00	

Reason for change:
If a TFT is requested to set using Modify PDP Context Reject and the GGSN does not support the feature, it will reject with a cause value 'Service not supported'. To be mapped from the GTP cause, "Service option not supported" is added to possible cause list for Modify PDP Context Reject.

If this CR is not approved, an GTP cause cannot be mapped appropriately.

Clauses affected: 6.1.3.3.3

Other specs affected:			
Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

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6.1.3.3.3 MS initiated PDP Context Modification not accept by the network

Upon receipt of a MODIFY PDP CONTEXT REQUEST message, the network may reject the MS initiated PDP context modification request by sending a MODIFY PDP CONTEXT REJECT message to the MS. The message shall contain a cause code that typically indicates one of the following:

26: insufficient resources;

32: Service option not supported;

41: semantic error in the TFT operation;

42: syntactical error in the TFT operation;

44: semantic errors in packet filter(s);

45: syntactical errors in packet filter(s);

95 - 111: protocol errors.

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24.008	**CR**	**243**	Current Version:	3.4.1

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Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [ ] Core Network [X]

Source: TSGN1 **Date:** 8 August 2000

Subject: Editorial correction of figure in QoS IE

Work item: GSM/UMTS Interworking

Category: *(only one category shall be marked with an X)*

F	Correction	[ ]
A	Corresponds to a correction in an earlier release	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[X]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[X]
Release 00	[ ]

Reason for change: Figure of description in QoS IE is wrong so that it needs to be corrected.
We cannot reach 564kbps, if we increment maximum bit rate from 64kpbs in 8 kbps steps.

Clauses affected:

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:


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10.5.6.5 Quality of service

The purpose of the *quality of service* information element is to specify the QoS parameters for a PDP context.

The QoS IE is defined to allow backward compatibility to earlier version of Session Management Protocol.

The *quality of service* is a type 4 information element with a length of 13octets.

The *quality of service* information element is coded as shown in figure 10.5.138/TS 24.008 and table 10.5.156/TS 24.008.

8	7	6	5	4	3	2	1	
Quality of service IEI								octet 1
Length of quality of service IE								Octet 2
0 spare	0 spare	Delay class			Reliability class			octet 3
Peak throughput				0 spare	Precedence class			octet 4
0 spare	0 spare	0 spare	Mean throughput					octet 5
Traffic Class			Delivery order		Delivery of erroneous SDU			Octet 6
Maximum SDU size								Octet 7
Maximum bit rate for uplink								Octet 8
Maximum bit rate for downlink								Octet 9
Residual BER				SDU error ratio				Octet 10
Transfer delay						Traffic Handling priority		Octet 11
Guaranteed bit rate for uplink								Octet 12
Guaranteed bit rate for downlink								Octet 13

Figure 10.5.138/TS 24.008: *Quality of service* information element

Table 10.5.156/TS 24.008: *Quality of service* information element

Skipped

Maximum bit rate for uplink, octet 8
Bits
8 7 6 5 4 3 2 1
In MS to network direction:
0 0 0 0 0 0 0 0 Subscribed maximum bit rate for uplink
In network to MS direction:
0 0 0 0 0 0 0 0 Reserved
In MS to network direction and in network to MS direction :
0 0 0 0 0 0 0 1 The maximum bit rate is binary coded in 8 bits, using a granularity of 1 kbps
0 0 1 1 1 1 1 1 giving a range of values from 1 kbps to 63 kbps in 1 kbps increments.

0 1 0 0 0 0 0 0 The maximum bit rate is 64 kbps + ((the binary coded value in 8 bits –01000000) * 8 kbps)
0 1 1 1 1 1 1 1 giving a range of values from 64 kbps to ~~564~~ 568 kbps in 8 kbps increments.

1 0 0 0 0 0 0 0 The maximum bit rate is 576 kbps + ((the binary coded value in 8 bits –10000000) * 64 kbps)
1 1 1 1 1 1 1 0 giving a range of values from 576 kbps to 8640 kbps in 64 kbps increments.

1 1 1 1 1 1 1 1 0kbps

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24.007	CR	020	Current Version:	3.4.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

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Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio		Core Network	X

Source: TSGN1 **Date:** 1/08/00

Subject: Editorial corrections

Work item: GSM/UMTS interworking

Category: *(only one category shall be marked with an X)*				**Release:**		
	F	Correction	X		Phase 2	
	A	Corresponds to a correction in an earlier release			Release 96	
	B	Addition of feature			Release 97	
	C	Functional modification of feature			Release 98	
	D	Editorial modification	X		Release 99	X
					Release 00	

Reason for change: Clean up of redundant text in sec. 4.1 and some editorial corrections in sec. 6.5.1

Clauses affected: 4.1, 6.5.1

Other specs affected:			
Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

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4.1 General

Three models are defined for Layer 3, one model for non-GPRS services, one for GPRS services supporting Class C MSs only and one model for GPRS-services supporting Class A and Class B MSs. (The third model is a combination of the first two models listed).

The layer 3 for non-GPRS services provides the functions necessary:

- for Radio Resource (RR) management;
- for Mobility Management (MM); and
- for the Connection Management (CM) functions, i.e. functions for the control, provision, and support of services offered by the network; among which there are, e.g.:
  - the functions to establish, maintain and terminate circuit-switched connections across a GSM PLMN and other networks to which the GSM PLMN is connected;
  - supporting functions for supplementary services control;
  - supporting functions for short messages service control;
  - supporting functions for location services control.

The layer 3 for non-GPRS services is composed of three sublayers comprising:

- the Radio Resource Management (RR) functions;
- the Mobility Management (MM) functions; and
- the Connection Management (CM) functions.

When CTS services are added to non-GPRS services, the following functions are added:

- CTS Radio Resource Management (CTS-RR) functions to RR; and
- CTS Mobility Management (CTS-MM) functions to MM.

The layer 3 for GPRS services is composed of four sublayers comprising:

- the Radio Resource Management (RR) functions;
- the Mobility Management (GMM);
- for the Logical Link Control (LLC);
- the Connection Management (CM) functions;
- ~~Session Management (SM) functions to activate, modify and delete the contexts for packet data protocols (PDP);~~
- ~~supporting functions for short messages service control.~~

The Connection Management (CM) sublayer is composed of functional blocks for:

- Call Control (CC) for non-GPRS services;
- Short Message Service Support (SMS) for non-GPRS services;
- GPRS Short Message Service Support (GSMS) (for GPRS services supporting Class A, B and C MSs);
- Session Management (SM) (for GPRS services supporting Class A, B and C MSs);

- Supplementary Services Support (SS) for non-GPRS services;
- Group Call Control for non-GPRS services;
- Broadcast Call Control (BCC) for non-GPRS services;
- Connection Management of Packet Data on Signalling channels for non-GPRS services.
- Location Services support (LCS) for non-GPRS services.

Within the context of LCS, for GSM LCS, the services defined for an MS are equally applicable to a type A LMU, unless otherwise stated. The following is a list of services essential for a type A LMU.

The layer 3 for non-GPRS services provides the functions necessary:

- for Radio Resource (RR) management;
- for Mobility Management (MM); and
- supporting functions for location service control.

The layer 3 for non-GPRS services is composed of three sublayers comprising:

- the Radio Resource Management (RR) functions;
- the Mobility Management (MM) functions; and
- the Connection Management (CM) functions.

The Connection Management (CM) sublayer is composed of functional block for:

- location services support (LCS) for non-GPRS services.

The present document does not consider the distribution of signalling functions among the different network equipments. The signalling functions are described between two systems which represent the MS side and the network side of the radio interface of layer 3. Only the functions in the network for signalling communication with one MS is considered.

For GPRS services, in addition to the signalling functions also the user data transfer is included in this Technical Specification.

***** Next modified section *****

6.5.1 Session Management Services for SMREG-SAP

Table 6.5: Primitives and Parameters at SMREG-SAP - MS side

PRIMITIVE	PARAMETER (message, info elements of message, other parameters)	REFERENCE
SMREG-PDP-ACTIVATE-REQ	PDP address, QoS, NSAPI, APN, Protocol configuration options	6.5.1.1
SMREG-PDP-ACTIVATE-CNF	PDP address, QoS, NSAPI, Protocol configuration options	6.5.1.2
SMREG-PDP-ACTIVATE-REJ	Cause, NSAPI, Protocol configuration options	6.5.1.3
SMREG-PDP-ACTIVATE-IND	PDP address, APN	6.5.1.4
SMREG-PDP-ACTIVATE-REJ-RSP	Cause, PDP address, APN	6.5.1.14

SMREG-PDP-DEACTIVATE-REQ	NSAPI(s) tear down indicator, cause	6.5.1.5
SMREG-PDP-DEACTIVATE-CNF	NSAPI(s)	6.5.1.6
SMREG-PDP-DEACTIVATE-IND	NSAPI(s) (s), tear down indicator, cause	6.5.1.7
SMREG-PDP-MODIFY-IND	QoS, NSAPI	6.5.1.8
SMREG-PDP-MODIFY-REQ	QoS, NSAPI, TFT	6.5.1.18
SMREG-PDP-MODIFY-CNF	QoS, NSAPI	6.5.1.19
SMREG-PDP-MODIFY-REJ	Cause, NSAPI	6.5.1.20
SMREG-PDP-ACTIVATE-SEC-REQ	QoS, NSAPI, TFT, Primary NSAPI	6.5.1.15
SMREG-PDP-ACTIVATE-SEC-CNF	QoS, NSAPI	6.5.1.16
SMREG-PDP-ACTIVATE-SEC-REJ	Cause, NSAPI	6.5.1.17

6.5.1.1 SMREG-PDP-ACTIVATE-REQ

The MS initiates a primary PDP context activation. SM is requested to send the ACTIVATE PDP CONTEXT REQUEST message to the network. The PDP context is pending activation.

6.5.1.2 SMREG-PDP-ACTIVATE-CNF

The MS initiated primary PDP context activation succeeded. The network confirmed the PDP context activation, i.e. the ACTIVATE PDP CONTEXT ACCEPT message was received from the network. In GSM, this implies that SM has ordered SNDCP to establish the needed LLC link. In the UMTS case, this implies that the RLC link towards the RNC has been established and that the SM has been informed about this from the RABM service entity in the MS. (RABM- RAB Management service entity is FFS and could lead to update of the protocol architecture in figure 5.2 and 5.3) The PDP context is active.

6.5.1.3 SMREG-PDP-ACTIVATE-REJ

The PDP primary context activation failed, the PDP context is not activated. One reason for failure is that the network rejected the activation attempt, which means the ACTIVATE PDP CONTEXT REJECT message was received. Another reason is e.g. that it was not possible to establish the needed LLC link in the GSM case.

6.5.1.4 SMREG-PDP-ACTIVATE-IND

The network asked for a PDP context activation. The REQUEST PDP CONTEXT ACTIVATION message was received from the network. The MS reacts either by initiating a new primary PDP context activation or by rejecting the network's request.

6.5.1.5 SMREG-PDP-DEACTIVATE-REQ

The MS initiates a PDP context deactivation: SM is requested to send a DEACTIVATE PDP CONTEXT REQUEST message to the network. The PDP context is pending deactivation. Presence of the teardown indicator will lead to deactivation of all PDP contexts coupled to the identified PDP address. NSAPI(s) to be deallocated from the SNDCP entity via the SNSM-SAP for the GSM case, are included in the primitive.

6.5.1.6 SMREG-PDP-DEACTIVATE-CNF

The MS initiated PDP context deactivation has been done. The network confirmed the PDP context deactivation, i.e. the DEACTIVATE PDP CONTEXT ACCEPT message was received from the network. For GSM SM has ordered SNDCP to locally release not further needed LLC links. In the UMTS case, the release of the RLC link towards the RNC takes place as a result of a RAB release trigger from the network side. SM has been informed about this from the RABM service entity in the MS. (RABM- RAB Management service entity is FFS and could lead to update of the protocol architecture in figure 5.2 and 5.3) The PDP context has been deactivated.

6.5.1.7 SMREG-PDP-DEACTIVATE-IND

A network initiated PDP context deactivation has been performed. The DEACTIVATE PDP CONTEXT REQUEST message has been received from the network. The MS has acknowledged with the DEACIVATE PDP CONTEXT ACCEPT message. The PDP context has been deactivated, ~~Not~~ the related ~~further needed~~ LLC links in GSM or RLC links in UMTS were locally released. Presence of the teardown indicator will lead to deactivation of all PDP contexts coupled to the identified PDP address. NSAPI is included in the primitive to allow identification of the PDP context(s) needing deactivation.

6.5.1.8 SMREG-PDP-MODIFY-IND

A network initiated PDP context modification has been performed. The MODIFY PDP CONTEXT REQUEST message has been received from the network. The modification has been acknowledged by sending the MODIFY PDP CONTEXT ACCEPT message. One PDP context has been modified. LLC links is adjusted.

6.5.1.9 VOID

6.5.1.10 VOID

6.5.1.11 VOID

6.5.1.12 VOID

6.5.1.13 VOID

6.5.1.14 SMREG-PDP-ACTIVATE-REJ-RSP

The network requested PDP context activation failed.

6.5.1.15 SMREG-PDP-ACTIVATE-SEC-REQ

The MS initiates a secondary PDP context activation. SM is requested to send the ACTIVATE SECONDARY PDP CONTEXT REQUEST message to the network. The PDP context is pending activation.

6.5.1.16 SMREG-PDP-ACTIVATE-SEC-CNF

The MS initiated secondary PDP context activation succeeded. The network confirmed the PDP context activation, i.e. the ACTIVATE SECONDARY PDP CONTEXT ACCEPT message was received from the network. In GSM, this implies that SM has ordered SNDCP to establish the needed LLC link. In the UMTS case, this implies that the RLC link towards the RNC has been established and that the SM has been informed about this from the RABM service entity in the MS. (RABM- RAB Management service entity is FFS and could lead to update of the protocol architecture in figure 5.2 and 5.3) The PDP context connected to the same PDP address as the PDP context identified by the

primary NSAPI parameter in SMREG-PDP-ACTIVATE-SEC-REQ is active. (‘Primary NSAPI’ will point to any one of the other established PDP contexts for a given PDP address).

6.5.1.17 SMREG-PDP-ACTIVATE-SEC-REJ

The secondary PDP context activation failed, the PDP context is not activated. One reason for failure is that the network rejected the activation attempt, which means the ACTIVATE SECONDARY PDP CONTEXT REJECT message was received. Another reason is e.g. that it was not possible to establish the needed LLC link in the GSM case.

6.5.1.18 SMREG-PDP-MODIFY-REQ

An MS initiated PDP context modification is requested. The MODIFY PDP CONTEXT REQUEST message is sent to the network and pending acceptance. Affected PDP context is identified via the NSAPI value included in the primitive.

6.5.1.19 SMREG-PDP-MODIFY-CNF

An MS initiated PDP context modification has been accepted by the network. The modification is acknowledged from the network via the MODIFY PDP CONTEXT ACCEPT message. The addressed PDP context has been modified. LLC or RLC link is adjusted according to the QoS returned from the network.

6.5.1.20 SMREG-PDP-MODIFY-REJ

An MS initiated PDP context modification has been rejected by the network. The rejection is signalled from the network via the MODIFY PDP CONTEXT REJECT message with the cause code. The PDP context remains active without change of QoS.

The session management services provided at the service access point SMREG-SAP are illustrated in the state machines of figure 6.4 below. Note, that the state machine describes only one PDP context within the SM entity.

Figure 6.4: Session Management service states at the SMREG-SAP for GPRS PDP context handling - MS side

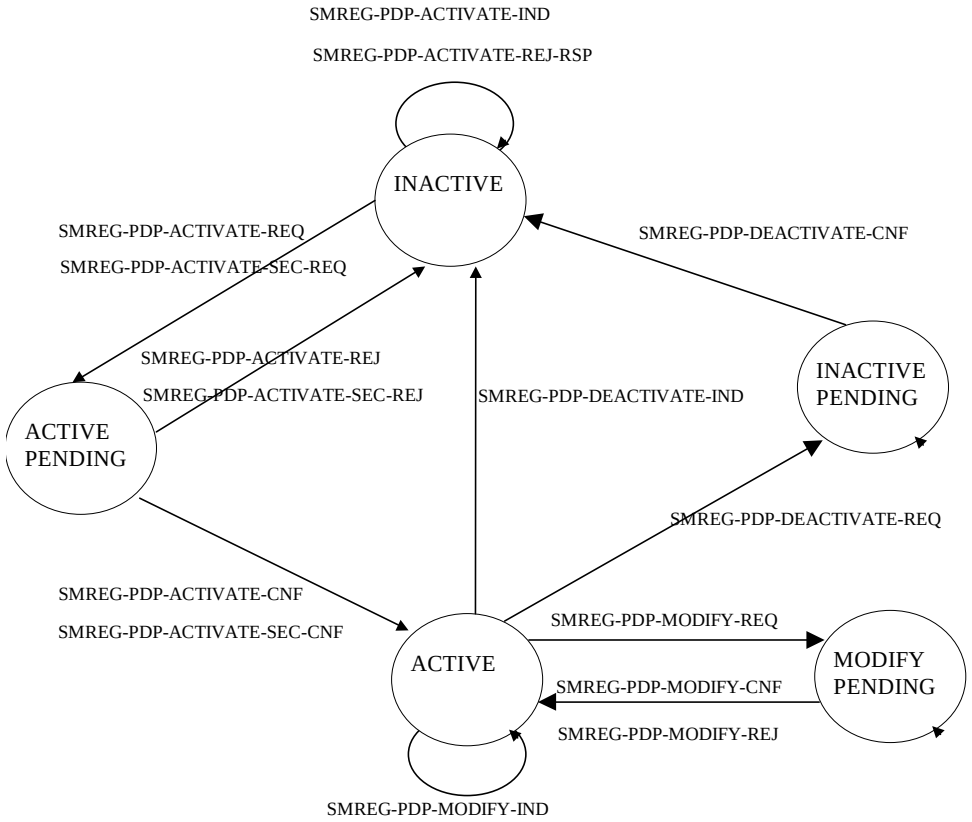

Figure 6.4: Session Management service states at the SMREG-SAP for GPRS PDP context handling - MS side

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Document N1-000988
Revised N1-000892
e.g. for 3GPP use the format TP-99xxx or for SMG, use the format P-99-xxx

CHANGE REQUEST

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24.008	CR	233 r1	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: TSGN#9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑	for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [ ] Core Network [X]

Source: TSGN1 **Date:** 2000-08-16

Subject: DRX IE as mandatory IE for RAU

Work item: GSM/UMTS interworking

Category: *(only one category shall be marked with an X)*

F	Correction	X
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change:

During inter-SGSN RAU's the DRX IE is transferred to another SGSN in the MM Context IE of the SGSN Context Response message (see 3G TS 29.060). Given the different meaning of octet 3 bits 8-5 (CN specific DRX cycle length coefficient,- for UMTS only. Which are spare in R97) of the DRX IE expected by 2G- and 3G-SGSN's this may result in incompatibility problems.

Considering the case where an R99 MS is attached to a 3G-SGSN and then roams into an area controlled by a 2G-SGSN. The 2G-SGSN will receive the DRX IE from the 3G-SGSN and does not understand the new values in octet 3. If later on the MS roams again into an area controlled by a 3G-SGSN, the latter will receive the DRX IE from the 2G-SGSN but with octet 3 bits 8-5 possibly set to all zeros. Hence the new features supported by the changed meaning of values will not be visible to the new 3G-SGSN. This can be characterized as a GSM/UMTS interoperability problem. It must be noted that this problem may be encountered in the future for other IE's as well, and has been corrected for MS network Capability IE.

To be backward compatible, and solve the problem of the already new values for UMTS, this CR proposes to change the DRX IE in the RAU REQUEST message from optional to mandatory. It is proposed to have the same behavior for a R99 MS regardless of Radio Access Network. (This has similarities to what was agreed for MS network Capability IE in Tdoc N1-000722.)

Clauses affected: 9.4.14

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

<--------- double-click here for help and instructions on how to create a CR.

9.4.14 Routing area update request

This message is sent by the MS to the network either to request an update of its location file or to request an IMSI attach for non-GPRS services. See table 9.4.14/TS 24.008.

Message type: ROUTING AREA UPDATE REQUEST

Significance: dual

Direction: MS to network

Table 9.4.14/TS 24.008: ROUTING AREA UPDATE REQUEST message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Skip indicator	Skip indicator 10.3.1	M	V	1/2
	Routing area update request message identity	Message type 10.4	M	V	1
	Update type	Update type 10.5.5.18	M	V	1/2
	GPRS ciphering key sequence number	Ciphering key sequence number 10.5.1.2	M	V	1/2
	Old routing area identification	Routing area identification 10.5.5.15	M	V	6
	MS Radio Access capability	MS Radio Access capability 10.5.5.12a	M	LV	6 - 52
19	Old P-TMSI signature	P-TMSI signature 10.5.5.8	O	TV	4
17	Requested READY timer value	GPRS Timer 10.5.7.3	O	TV	2
27	DRX parameter	DRX parameter 10.5.5.6	O	TV	3
9-	TMSI status	TMSI status 10.5.5.4	O	TV	1
18	P-TMSI	Mobile identity 10.5.1.4	O	TLV	7
31	MS network capability	MS network capability 10.5.5.12	O	TLV	4-10

9.4.14.1 Old P-TMSI signature

This IE is included by the MS if it was received from the network in an ATTACH ACCEPT or ROUTING AREA UPDATE ACCEPT message.

9.4.14.2 Requested READY timer value

This IE may be included if the MS wants to indicate a preferred value for the READY timer.

9.4.14.3 DRX parameter

This IE ~~may~~shall be included if the MS changes the access network from GSM to UMTS, or the MS wants to indicate new DRX parameters to the network.

9.4.14.4 TMSI status

This IE shall be included if the MS performs a combined routing area update and no valid TMSI is available.

9.4.14.5 P-TMSI (UMTS only)

This IE shall be included by the MS.

9.4.14.6 MS network capability

This IE shall be included by the MS to indicate it’s capabilities to the network.

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Document N1-001012
Rev of N1-000884

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24.008	CR	229r1	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG CN#8	For approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio		Core Network	X

Source: TSGN1 **Date:** 2000-08-16

Subject: P-TMSI signature handling

Work item: GSM-UMTS Interworking

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change:

In GSM, R97 and R98, the MS deletes the P-TMSI signature upon successful completion of the attach and routing area update procedure. The same rule shall apply for GSM R99.

In addition, this CR proposes to apply the same rules in UMTS.

Clauses affected: 4.7.1.3

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:

4.7.1.3 P-TMSI signature

The network may assign a P-TMSI signature to an MS in an attach, routing area update, or P-TMSI reallocation procedure. Only in combination with a valid P-TMSI, this P-TMSI signature is used by the MS for authentication and identification purposes in the subsequent attach , routing area update or detach procedure. If the MS has no valid P-TMSI it shall not use the P-TMSI signature in the subsequent attach, routing area update or detach procedure. Upon successful completion ~~completion~~ of the subsequent attach or routing area update procedure, the used P-TMSI signature shall be deleted. Upon completion ~~or~~ of the detach procedure, the used P-TMSI signature shall be deleted.

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24.008	CR	238r1	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: CN#9 *list expected approval meeting # here ↑*

for approval [ ]
for information [ ]

strategic [ ]
non-strategic [ ]
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Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [ ] Core Network [X]

Source: TSGN1 **Date:** 17 August 2000

Subject: Editorial Modification on SM state transition model

Work item: GSM/UMTS Interworking

Category: *(only one category shall be marked with an X)*

F	Correction	X
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change:

To correct the editorial mistake, SM state model is updated.

- An MS can reject a network initiated modification procedure sending Deactivate PDP Context Request according to the procedure description. However the SM state transition model is not implemented to support the case.
- Modify PDP Context Reject was not considered in the state model so that state model of both MS side and NW side take it into account.

Clauses affected: 6.1.2

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

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6.1.2 Session management states

In this section, the SM states are described for one SM entity (see TS24.007 [20]). Each SM entity is associated with one PDP context. Section 6.1.2.1 describes the SM states in the MS and section 6.1.2.2 describes the SM states on the network side.

6.1.2.1 Session management states in the MS

In this section, the possible states of an SM entity in the mobile station are described. As illustrated in figure 6.1/TS 24.008 there arefive SM states in the MS.

6.1.2.1.1 PDP-INACTIVE

This state indicates that no PDP context exists.

6.1.2.1.2 PDP-ACTIVE-PENDING

This state exists when PDP context activation was requested by the MS.

6.1.2.1.3 PDP-INACTIVE-PENDING

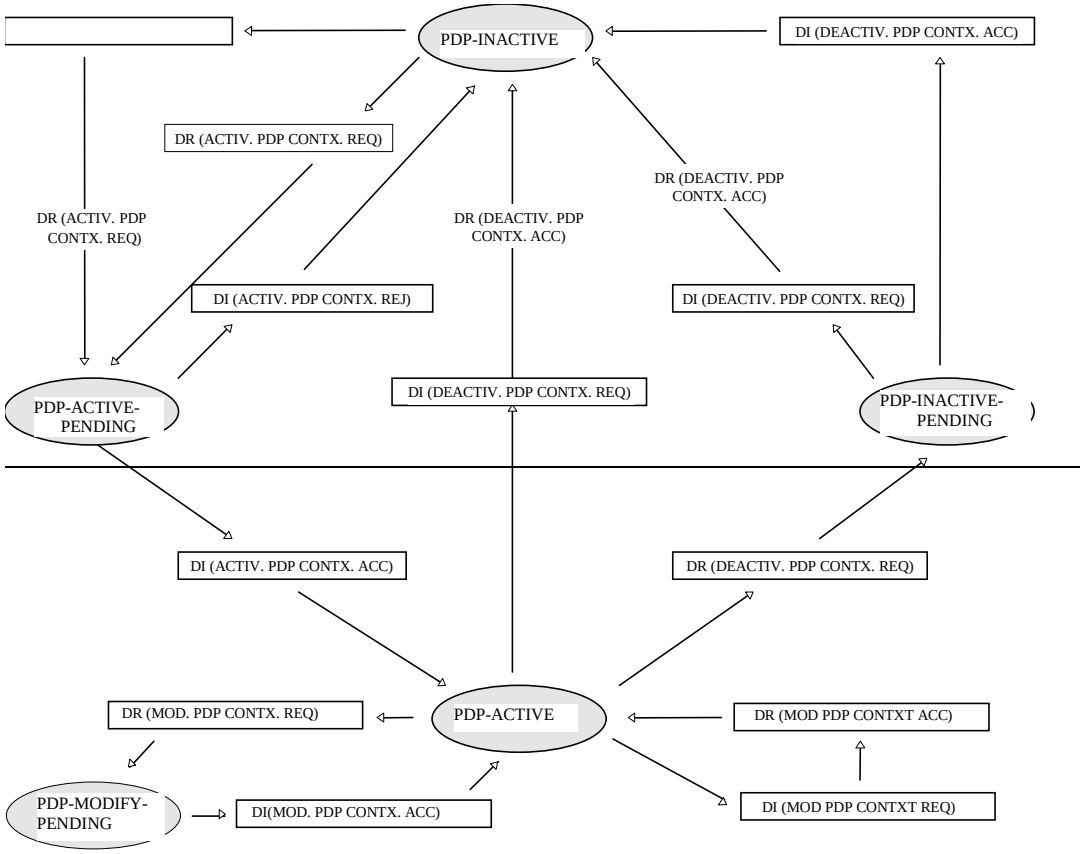
This state exists when deactivation of the PDP contexts was requested by the MS.

6.1.2.1.4 PDP-ACTIVE

This state indicates that the PDP context is active.

6.1.2.1.5 PDP-MODIFY_PENDING

This state exists when modification of the PDP context was requested by the MS.



DR: GMMSM-DATA-REQUEST (Message), i.e. message sent by an MS
DI: GMMSM-DATA-INDICATION (Message), i.e. message received by an MS

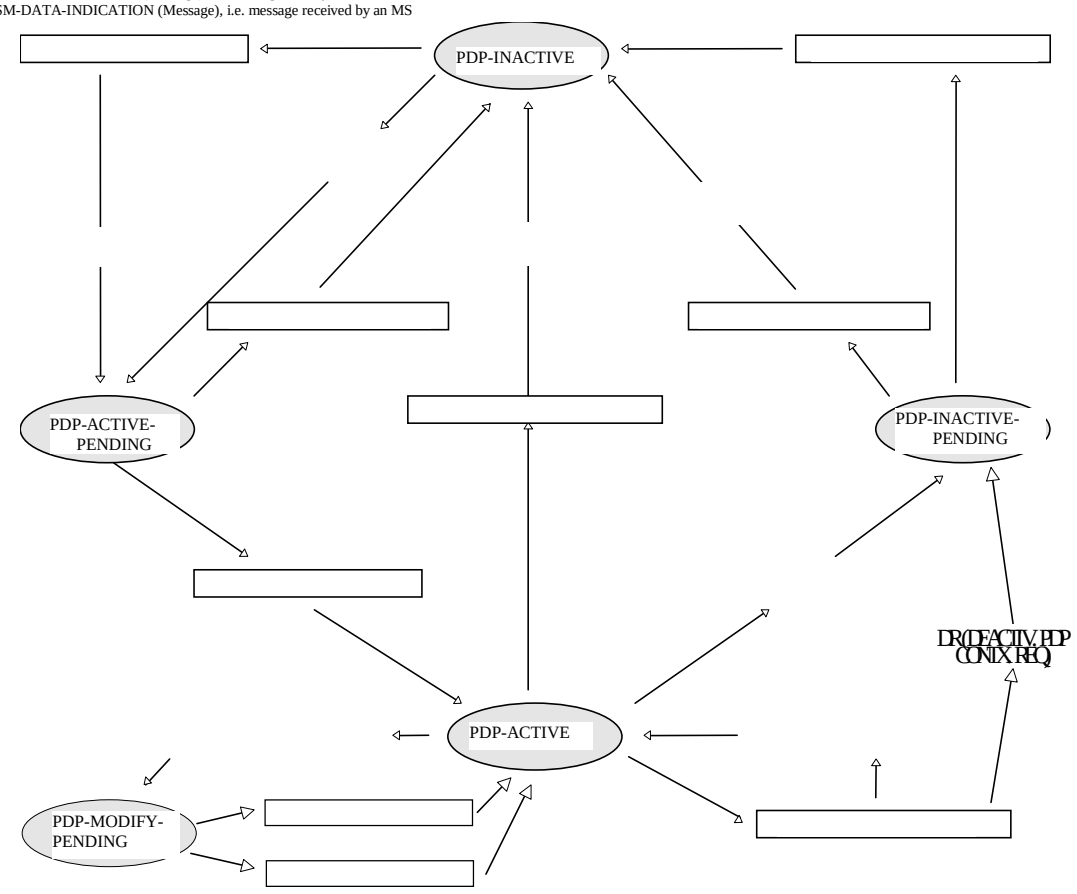


Figure 6.1/TS 24.008: Session management states in the MS (overview)

It shall be noted, that Figure 6.1/TS 24.008 applies to both the PDP context activation procedure and the secondary PDP context activation procedure, though the distinction in messages regarding the activation of PDP contexts is not shown here for simplicity.

6.1.2.2 Session management states on the network side

In this section, the possible states of an SM entity on the network side are described. As illustrated in figure 6.2/TS 24.008 there are five SM states on the network side.

6.1.2.2.1 PDP-INACTIVE

This state indicates that the PDP context is not active.

6.1.2.2.2 PDP-ACTIVE-PENDING

This state exists when the PDP context activation was initiated by the network.

6.1.2.2.3 PDP-INACTIVE-PENDING

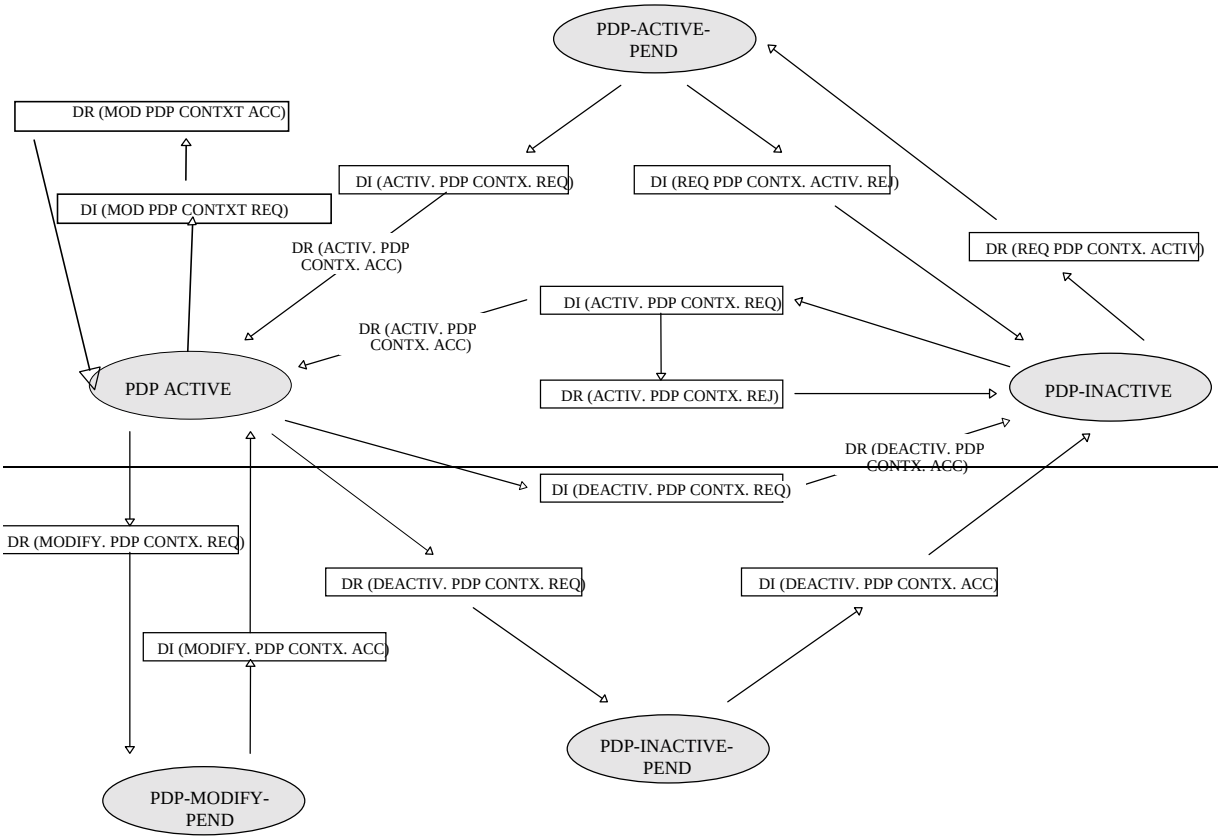
This state exists when deactivation of the PDP context was requested by the network.

6.1.2.2.4 PDP-ACTIVE

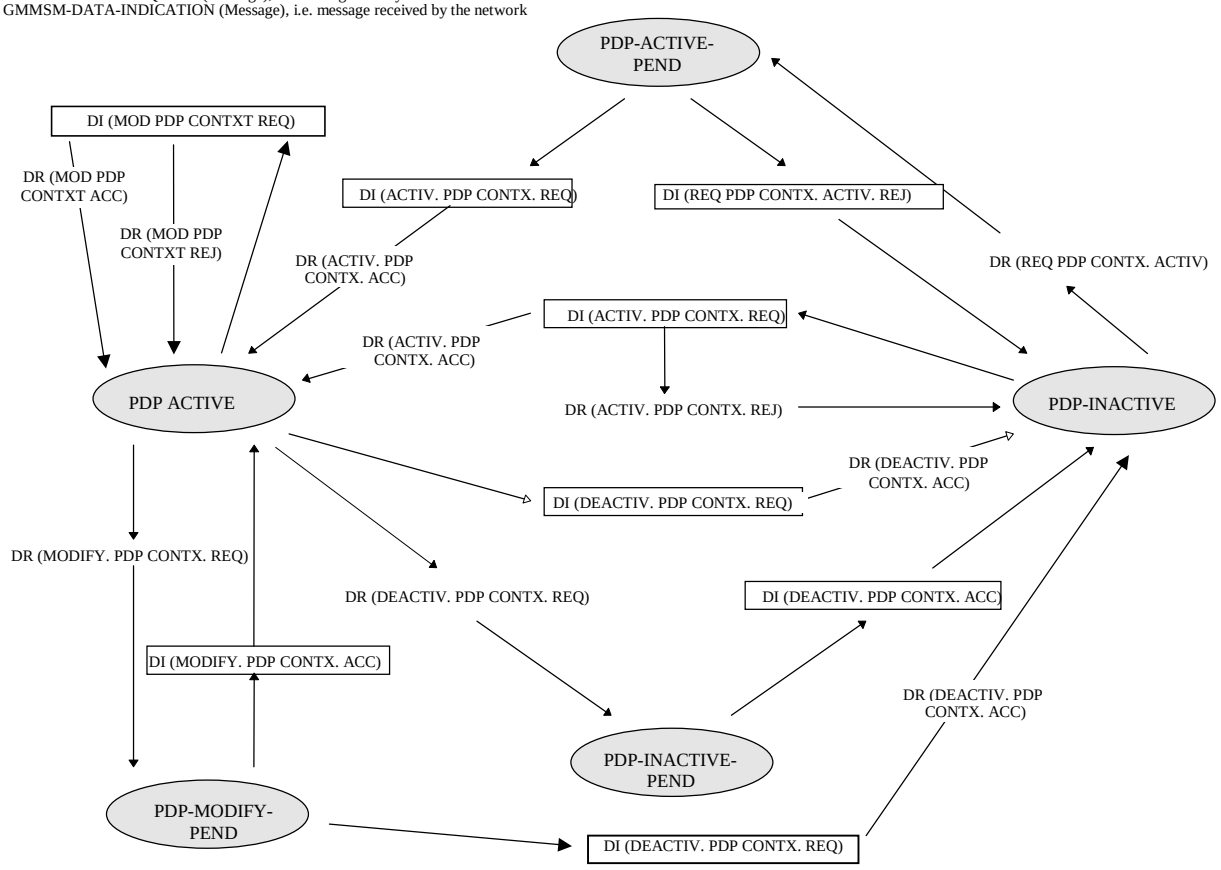
This state indicates that the PDP context is active.

6.1.2.2.5 PDP-MODIFY-PENDING

This state exists when modification of the PDP context was requested by the network.



DR: GMMSM-DATA-REQUEST (Message), i.e. message sent by network
DI: GMMSM-DATA-INDICATION (Message), i.e. message received by the network



DR: GMMSM-DATA-REQUEST (Message), i.e. message sent by network
DI: GMMSM-DATA-INDICATION (Message), i.e. message received by the network

Figure 6.2/TS 24.008: Session management states on the network side (overview)

It shall be noted, that Figure 6.2/TS 24.008 applies to both the PDP context activation procedure and the secondary PDP context activation procedure, though the distinction in messages regarding the activation of PDP contexts is not shown here for simplicity.

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Document ***N1-001015***
~~***N1-000903***~~
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24.007	**CR**	**019r1**	Current Version:	3.4.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: CN#9	for approval	X	strategic		(for SMG use only)
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Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio		Core Network	X

Source: TSGN1 **Date:** 8 August 00

Subject: Correction of send sequence number method applied protocols

Work item: GSM/UMTS Interwork

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification	X		Release 99	X
				Release 00	

Reason for change:
According to 04.18, only MM, CC, SS, GCC, BCC and RRLP protocol applies "send sequence number" mechanism. In 24.007, it is described that all other protocols than GMM and SM use the feature. This CR proposed to align 24.007 with 04.18.

And detail description of "send sequence number" is not found in 24.007 so that reference to 04.18 is added.

Clauses affected: 11.2.3.2.2

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:

[Quoted from 04.18 v.8.5.0]

3.1.4.3 Sequenced message transfer operation

Upper layer messages sent using the RR sub-layer transport service from the mobile station to the network can be duplicated by the data link layer in at least the following cases:

- a channel change of dedicated channels is required (assignment or handover procedure) and the last layer 2 frame has not been acknowledged by the peer data link layer before the mobile station leaves the old channel.

- a channel change from UMTS to GSM is performed and the UMTS layer 2 protocol has not acknowleged the layer 2 frames carrying one or more upper layer messages.

In this case, the mobile station does not know whether the network has received the message

correctly. Therefore, the mobile station has to send the message again after the new dedicated channel is established (see GSM 04.06).

The network must be able to detect the duplicated received message. Therefore, each concerned upper layer message must be marked with a send sequence number.

To allow for different termination points in the infrastructure of the messages of different PDs, the sequence numbering is specific to each PD. For historical reasons, an exception is that messages sent with the CC, SS and MM PDs share the same sequence numbering. In the following, the phrase **upper layer message flow** refers to a flow of messages sharing the same sequence numbering. The different upper layer flows are MM+CC+SS, GCC, BCC and RRLP. The GMM, SM and SMS protocols do not use layer 3 sequence numbering.


help.doc

<--------- double-click here for help and instructions on how to create a CR.

11.2.3.2.2 Message type octet (when accessing Release 99 and newer networks)

The message type octet is the second in a standard L3 message.

When a standard L3 message is expected, and a message is received that is less than 16 bit long, that message shall be ignored.

When the radio connection started with a core network node of a Release 99 network, the message type IE is coded as shown in figure 11.10b and 11.10c.

In messages of MM, CC, SS, GCC, BCC and RRLP protocol ~~ other than GMM and SM sent using the transmission functionality provided by the RR and/or RRC layer to upper layers, and~~ sent from the mobile station to the network , bits 7 and 8 of octet 2 are used for send sequence number, see GSM 04.18.~~by the RR and/or RRC protocol. (See GSM 04.18)~~

In all other standard layer 3 messages bits 7 and 8 are set to a default value. A protocol entity expecting a standard L3 message, and not using the transmission functionality provided by the RR and/or RRC layer, and receiving a message containing bit 7 or bit 8 of octet 2 encoded different to the default value shall diagnose a "message not defined for the PD" error and treat the message accordingly.

default value of 1.

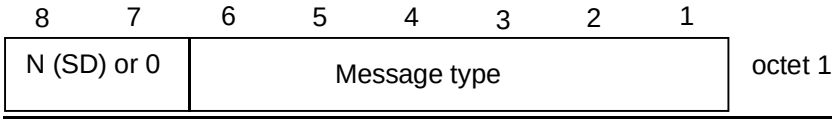

Figure 11.10b: Message type IE (MM, CC, SS, GCC, BCC and RRLP~~protocol other than GMM and SM~~)

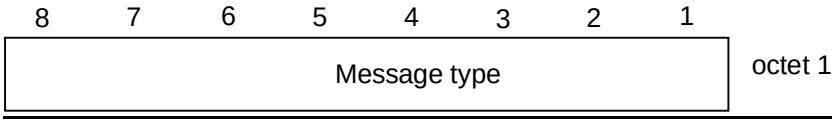

Figure 11.10c: Message type IE (protocol other than MM, CC, SS, GCC, BCC and RRLP~~GMM and SM~~)

Bit 1 to 6 of octet 2 of standard L3 messages contain the message type.

The message type determines the function of a message within a protocol in a given direction and for a given lower layer SAP. The meaning of the message type is therefore dependent on the protocol (the same value may have different meanings in different protocols), the direction (the same value may have different meanings in the same protocol, when sent from the Mobile Station to the network and when sent from the network to the Mobile Station) and the lower layer SAP (the same value may have different meanings, e.g., whether the message was sent on the SACCH or on the main DCCH).

Each protocol defines a list of allowed message types for each relevant SAP. A message received analysed as a standard L3 message, and with a message type not in the corresponding list leads to the diagnosis "message not defined for the PD". Some message types may correspond to a function not implemented by the receiver. They are then said to be non implemented by the receiver.

The reaction of a protocol entity expecting a standard L3 message and receiving a message with message type not defined for the PD or not implemented by the receiver and the reception conditions is defined in the relevant protocol specification. As a general rule, a protocol specification should not force the receiver to analyse the message further.

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Document N1-001016
N1-000931
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24.008	**CR**	**248rev1**	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: CN#9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑	for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [ ] Core Network [X]

Source: TSGN1 **Date:** 1/08/00

Subject: Editorial corrections

Work item: GSM/UMTS interworking

Category: *(only one category shall be marked with an X)*

F	Correction	X
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change: In sec 6.1.2.1 fig.6.1 the primitive MOD.PDP CONT. REJ has been added to the state diagram. In sec.9 a bullet description has been corrected with the right indentation and in sec. 10.5.6.5 a couple of editorial errors have been corrected

Clauses affected: 6.1.2.1, 6.1.3.3.2, 6.1.3.3.3, 9, 10.5.6.5

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

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***** Next modified section *****

6.1.3.3.2 MS initiated PDP Context Modification accepted by the network

In order to initiate the procedure, the MS sends the MODIFY PDP CONTEXT REQUEST message to the network, enters the state PDP-MODIFY-PENDING and starts timer T3381. The message may contain the requested new QoS and/or the TFT and the requested LLC SAPI (used in GSM).

Upon receipt of the MODIFY PDP CONTEXT REQUEST message, the network may reply with the MODIFY PDP CONTEXT ACCEPT message in order to accept the context modification. The reply message may contain the negotiated QoS and the radio priority level based on the new QoS profile and the negotiated LLC SAPI, that shall be used in GSM by the logical link.

Upon receipt of the MODIFY PDP CONTEXT ACCEPT message, the MS shall stop the timer T3381. If the offered QoS parameters received from the network differs from the QoS requested by the MS, the MS shall either accept the negotiated QoS or initiate the PDP context deactivation procedure.

Note: When modification of QoS was requested by the MS, if the network does not accept the MS request, being unable to provide the requested QoS, it should maintain the QoS negotiated as previously negotiated or propose a new QoS. Therefore, the network would not reject the MS initiated PDP context modification request due to the unavailability of the required QoS.

6.1.3.3.3 MS initiated PDP Context Modification not accepted by the network

Upon receipt of a MODIFY PDP CONTEXT REQUEST message, the network may reject the MS initiated PDP context modification request by sending a MODIFY PDP CONTEXT REJECT message to the MS. The message shall contain a cause code that typically indicates one of the following:

26: insufficient resources;

41: semantic error in the TFT operation;

42: syntactical error in the TFT operation;

44: semantic errors in packet filter(s);

45: syntactical errors in packet filter(s);

95 - 111: protocol errors.

The TFT in the request message is checked for different types of TFT IE errors as follows:

a) Semantic errors in TFT operations:

I. *TFT operation* = "Create a new TFT" when there is already an existing TFT for the PDP context.

II. When the *TFT operation* is an operation other than "Create a new TFT" and there is no TFT for the PDP context.

III. *TFT operation* = "Delete existing TFT" when there is already another PDP context without a TFT.

IV. *TFT operation* = "Delete packet filters from existing TFT" when it would render the TFT empty.

The network shall reject the activation request with cause "semantic error in the TFT operation".

b) Syntactical errors in TFT operations:

I. When the *TFT operation* is an operation other than "Delete existing TFT" and the packet filter list in the TFT IE is empty.

II. *TFT operation* = "Delete existing TFT" with a non-empty packet filter list in the TFT IE.

III. *TFT operation* = "Replace packet filters in existing TFT" when a to be replaced packet filter does not exist in the original TFT.

IV. *TFT operation* = "Delete packet filters from existing TFT" when a to be deleted packet filter does not exist in the original TFT.

V. *TFT operation* = "Delete packet filters from existing TFT" with a packet filter list including packet filters instead of packet filter identifiers.

VI. When there are other types of syntactical errors in the coding of the TFT IE, such as a mismatch between the number of packet filters subfield, and the number of packet filters in the packet filter list.

The network shall reject the activation request with cause "syntactical error in the TFT operation".

c) Semantic errors in packet filters:

When a packet filter consists of conflicting packet filter components which would render the packet filter ineffective, i.e., no IP packet will ever fit this packet filter. How the network determines a semantic error in a packet filter is outside the scope of this specification.

The network shall reject the activation request with cause "semantic errors in packet filter(s)".

d) Syntactical errors in packet filters:

I. When the *TFT operation* = "Create a new TFT" or "Add packet filters to existing TFT" and two or more packet filters in the resultant TFT would have identical packet filter identifiers.

II. When the *TFT operation* = "Create a new TFT" or "Add packet filters to existing TFT" or "Replace packet filters in existing TFT" and two or more packet filters in all TFTs associated with this PDP address would have identical packet filter precedence values.

III. When there are other types of syntactical errors in the coding of packet filters, such as the use of a reserved value for a packet filter component identifier.

The network shall reject the activation request with cause "syntactical errors in packet filter(s)".

Upon receipt of a MODIFY PDP CONTEXT REJECT message, the MS shall stop timer T3381 and enter the state PDP-ACTIVE.

***** Next modified section *****

9 Message functional definitions and contents

This section defines the structure of the messages of those layer 3 protocols defined in TS 24.008. These are standard L3 messages as defined in TS 24.007.

Each definition given in the present section includes:

a) a brief description of the message direction and use, including whether the message has:

1. Local significance, i.e. relevant only on the originating or terminating access;

2. Access significance, i.e. relevant in the originating and terminating access, but not in the network;

3. Dual significance, i.e. relevant in either the originating or terminating access and in the network; or

4. Global significance, i.e. relevant in the originating and terminating access and in the network.

b) a table listing the information elements known in the message and their order of their appearance in the message. In messages for circuit-switched call control also a *shift* information element shall be considered as known even if not included in the table. All information elements that may be repeated are explicitly indicated. (V and LV formatted IEs, which compose the imperative part of the message, occur before T, TV, and TLV formatted IEs which compose the non-imperative part of the message, cf. TS 24.007.) In a (maximal) sequence of consecutive information elements with half octet length, the first information element with half octet length occupies bits 1 to 4 of octet N, the second bits 5 to 8 of octet N, the third bits 1 to 4 of octet N+1 etc. Such a sequence always has an even number of elements.

For each information element the table indicates:

1. the information element identifier, in hexadecimal notation, if the IE has format T, TV, or TLV. Usually, there is a default IEI for an information element type; default IEIs of different IE types of the same protocol are different. If the IEI has half octet length, it is specified by a notation representing the IEI as a hexadecimal digit followed by a "-" (example: B-).

NOTE The same IEI may be used for different information element types in different messages of the same protocol.~~2.~~
~~the name of the information element (which may give an idea of the semantics of the element). The name of the information element (usually written in italics) followed by "IE" or "information element" is used in TS 24.008 as reference to the information element within a message.~~

2. the name of the information element (which may give an idea of the semantics of the element). The name of the information element (usually written in italics) followed by "IE" or "information element" is used in TS 24.008 as reference to the information element within a message.

3. the name of the type of the information element (which indicates the coding of the value part of the IE), and generally, the referenced subsection of section 10 of TS 24.008 describing the value part of the information element.

4. the presence requirement indication (M, C, or O) for the IE as defined in TS 24.007.

5. The format of the information element (T, V, TV, LV, TLV) as defined in TS 24.007.

6. The length of the information element (or permissible range of lengths), in octets, in the message, where "?" means that the maximum length of the IE is only constrained by link layer protocol, and in the case of the Facility IE by possible further conditions specified in TS 24.010. This indication is non-normative.

c) subsections specifying, where appropriate, conditions for IEs with presence requirement C or O in the relevant message which together with other conditions specified in TS 24.008 define when the information elements shall be included or not, what non-presence of such IEs means, and - for IEs with presence requirement C - the static conditions for presence and/or non-presence of the IEs (cf. TS 24.007).

***** Next modified section *****

10.5.6.5 Quality of service

…
Residual Bit Error Rate (BER), octet 10 (see TS 23.107)
Bits
8 7 6 5
In MS to network direction:
0 0 0 0 Subscribed residual BER
In network to MS direction:
0 0 0 0 Reserved
In MS to network direction and in network to MS direction :
The Residual BER value consists of 4 bits. The ranges is from $5*10^{-2}$ to $6*10^{-8}$. 4.
0 0 0 1 $5*10^{-2}$
0 0 1 0 $1*10^{-2}$
0 0 1 1 $5*10^{-3}$
0 1 0 0 $4*10^{-3}$
0 1 0 1 $1*10^{-3}$
0 1 1 0 $1*10^{-4}$
0 1 1 1 $1*10^{-5}$
1 0 0 0 $1*10^{-6}$
1 0 0 1 $6*10^{-8}$
1111 Reserved

The network shall map all other values not explicitly defined onto one of the values defined in this version of the protocol. The network shall return a negotiated value which is explicitly defined in this version of the protocol.

The MS shall consider all other values as reserved.

SDU error ratio, octet 10 (see TS 23.107)
Bits
4 3 2 1
In MS to network direction:
0 0 0 0 Subscribed SDU error ratio
In network to MS direction:
0 0 0 0 Reserved
In MS to network direction and in network to MS direction :
The SDU error ratio value consists of 4 bits. The ranges is from $1*10^{-1}$ to $1*10^{-6}$.
0 0 0 1 $1*10^{-2}$
0 0 1 0 $7*10^{-3}$
0 0 1 1 $1*10^{-3}$
0 1 0 0 $1*10^{-4}$
0 1 0 1 $1*10^{-5}$
0 1 1 0 $1*10^{-6}$
0 1 1 1 $1*10^{-1}$
1 1 1 1 Reserved

The network shall map all other values not explicitly defined onto one of the values defined in this version of the protocol. The network shall return a negotiated value which is explicitly defined in this version of the protocol.

The MS shall consider all other values as reserved.

3GPP-CN1 Meeting #13
Vancouver/Canada, 14-18 August 2000

Document N1-001020
Revision of N1-000976
Revision of N1-000938

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

23.122	CR	009 rev2	Current Version:	3.3.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	CN#9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: (U)SIM [ ] ME [X] UTRAN / Radio [ ] Core Network [ ]
(at least one should be marked with an X)

Source: TSGN1 **Date:** 08-08-2000

Subject: Clarifications of the PLMN Selection procedures for UMTS and COMPACT.

Work item: GSM / UMTS interworking

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: This CR clarifies parts of the text added by the CR003 (“Modification of PLMN Selection Procedures to support UMTS+COMPACT Network Selection”).

Clauses affected: See below

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

***** First modified section *****

2 General description of idle mode

When an MS is switched on, it attempts to make contact with a public land mobile network (PLMN). The particular PLMN to be contacted may be selected either automatically or manually.

The MS looks for a suitable cell of the chosen PLMN and chooses that cell to provide available services, and tunes to its control channel. This choosing is known as "camping on the cell". The MS will then register its presence in the registration area of the chosen cell if necessary, by means of a location registration (LR), GPRS attach or IMSI attach procedure.

If the MS loses coverage of a cell, or find a more suitable cell, it reselects onto the most suitable cell of the selected PLMN and camps on that cell. If the new cell is in a different registration area, an LR request is performed.

If the MS loses coverage of a PLMN, either a new PLMN is selected automatically, or an indication of which PLMNs are available is given to the user, so that a manual selection can be made.

Registration is not performed by MSs only capable of services that need no registration.

The purpose of camping on a cell in idle mode is fourfold:

a) It enables the MS to receive system information from the PLMN.

b) If the MS wishes to initiate a call, it can do this by initially accessing the network on the control channel of the cell on which it is camped (with the exceptions defined in TS 03.22 subclauses 3.5.3 and 3.5.4 and TS 25.304).

c) ~~c)~~ If the PLMN receives a call for the MS, it knows (in most cases) the registration area of the cell in which the MS is camped. It can then send a "paging" message for the MS on control channels of all the cells in the registration area. The MS will then receive the paging message because it is tuned to the control channel of a cell in that registration area, and the MS can respond on that control channel.

d) It enables the MS to receive cell broadcast messages.

If the MS is unable to find a suitable cell to camp on, or the SIM is not inserted, or if it receives certain responses to an LR request (e.g., "illegal MS"), it attempts to camp on a cell irrespective of the PLMN identity, and enters a "limited service" state in which it can only attempt to make emergency calls.

In GSM, if the CTS MS is in CTS mode only or in automatic mode with CTS preferred, it will start by attempting to find a CTS fixed part on which it is enrolled

The idle mode tasks can be subdivided into 4 processes:

- PLMN selection;
- Cell selection and reselection;
- Location registration;
- CTS fixed part selection (GSM only).

In GSM, to make this initial CTS fixed part selection, the MS shall be enrolled on at least one fixed part.

The relationship between these processes is illustrated in figure 1 in clause 5. The states and state transitions within each process are shown in figures 2 to 4 in clause 5.

***** Next modified section *****

4.4.3 PLMN selection

The registration on the selected PLMN and the location registration are only necessary if the MS is capable of services which require registration. Otherwise, the PLMN selection procedures are performed without registration.

The "HPLMN Selector with Access Technology", "User Controlled PLMN Selector with Access Technology" and "Operator Controlled PLMN Selector with Access Technology" data fields in the SIM include associated access technologies for each PLMN entry, see GSM 11.11 [32]. The PLMN/access technology combinations are listed in priority order. If an entry includes more than one access technology, then no priority is defined for the preferred access technology and the priority is an implementation issue.

The MS shall not use the PLMN codes contained in the "HPLMN Selector with Access Technology" data field.

NOTE: To allow provision for multiple HPLMN codes, the HPLMN access technologies are stored on the SIM together with PLMN codes.~~using the same format as the "User Controlled PLMN Selector with Access Technology" and "Operator Controlled PLMN Selector with Access Technology" data fields. It is assumed in this version of the specification that this "HPLMN Selector with Access Technology" data field should contain only one PLMN code identical to the HPLMN code included in the IMSI. Although this single code may be duplicated in the list if multiple access technologies with priority is defined.~~ This version of the specification does not support multiple HLPMN codes and the "HPLMN Selector with Access Technology" data field is only used by the MS to get the HPLMN access technologies. The HPLMN code is the PLMN code included in the IMSI.

NOTE: Different GSM frequency bands (eg. 900, 1800, 1900, 400) are all considered GSM access technology. An MS supporting more than one band should scan all the bands it's supports when scanning for GSM frequencies. However GSM COMPACT systems which use GSM frequency bands but with the CBPCCH broadcast channel are considered as a separate access technology from GSM.

4.4.3.1 At switch-on or recovery from lack of coverage

At switch on, the MS selects the registered PLMN (if it is available) using all access technologies that the MS is capable of and attempts to perform a Location Registration. The MS shall start its search using the access technology type stored in the "RPLMN Last Used Access Technology" ~~-~~data field on the SIM. If the "RPLMN Last Used Access Technology" is not available then an MS capable of GSM access technology shall start its search using GSM access technology.

On recovery from lack of coverage, the MS selects the registered PLMN (if it is available) using all access technologies that the MS is capable of and, if necessary (see subclause 4.5.2) attempts to perform a Location Registration.

EXCEPTION: In GSM or GSM COMPACT, an MS with voice capability~~, or an MS not supporting packet services~~ shall not search for CPBCCH carriers, unless the "RPLMN Last Used Access Technology" field is available in the SIM and indicates GSM COMPACT. In GSM or GSM COMPACT, an MS not supporting packet services shall not search for CPBCCH carriers.

If successful registration is achieved, the MS indicates the selected PLMN.

If there is no registered PLMN, or if registration is not possible due to the PLMN being unavailable or registration failure, the MS follows one of the following two procedures depending on its operating mode.

EXCEPTION: If registration is not possible on recovery from lack of coverage due to the registered PLMN being unavailable, a MS attached to GPRS services may, optionally, continue looking for the registered PLMN for an implementation dependent time.

NOTE 1: A MS attached to GPRS services should use the above exception only if one or more PDP contexts are currently active.

4.4.3.1.1 Automatic Network Selection Mode Procedure

The MS selects and attempts registration on other PLMNs, if available and allowable, in the following order:

~~i)~~ i) HPLMN (if not previously selected);

~~ii)~~ ii) each PLMN in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

~~iii)~~ iii) each PLMN in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

~~iv)~~ iv) other PLMN/access technology combinations with received high quality signal in random order;

~~v)~~ v) other PLMN/access technology combinations in order of decreasing signal quality.

When following the above procedure the following requirements apply:

a) In GSM or GSM COMPACT, an MS with voice capability shall ignore PLMNs for which the MS has identified at least one cell that do not offer voice service. (In GSM, this is indicated by the CELL_BAR_QUALIFY_2 parameter).

b) In GSM or GSM COMPACT, an MS with voice capability , or an MS not supporting packet services shall not search for CPBCCH carriers.

c) In ii and iii, the MS should limit its search for the PLMN to the access technology or access technologies associated with the PLMN –in the appropriate PLMN Selector with Access Technology list (User Controlled or Operator Controlled selector list). An MS using a SIM without access technology information storage (i.e. the "User Controlled PLMN Selector with Access Technology" and the "Operator Controlled PLMN Selector with Access Technology" data fields are not present) shall instead use the "PLMN Selector" data field~~;~~, for each PLMN in the "PLMN Selector" data field, the MS shall search for all access technologies it is capable of and shall assume GSM access technology as the highest priority radio access technology ~~for all PLMNs~~.

d) In iv and v, the MS shall search for all access technologies it is capable of, before deciding which PLMN to select.

e) In ~~i,~~ ii, and iii, a packet only MS which supports GSM COMPACT, but using a SIM without access technology information storage (i.e. the ~~HPLMN Selector with Access Technology,~~ "User Controlled PLMN Selector with Access Technology" and the "Operator Controlled PLMN Selector with Access Technology" data fields are not present) shall instead use the "PLMN Selector" data field~~;~~, for each PLMN in the "PLMN Selector" data field, the MS shall search for all access technologies it is capable of and shall assume GSM COMPACT access technology as the lowest priority radio access technology ~~for all PLMNs~~.

f) In i, the MS shall search for all access technologies it is capable of. The MS shall start its search using the access technologies stored in the "HPLMN Selector with Access Technology" data field on the SIM in priority order ~~,~~as defined in section 4.4.3 (i.e. the PLMN/access technology combinations are listed in priority order, if an entry includes more than one access technology then no priority is defined for the preferred access technology and the priority is an implementation issue).

g) In i, an MS using a SIM without access technology information storage (i.e. the "HPLMN Selector with Access Technology" data field is not present) ~~shall instead use the HPLMN code included in the IMSI, the MS~~ shall search for all access technologies it is capable of and shall assume GSM access technology as the highest priority radio access technology. A packet only MS which supports GSM COMPACT using a SIM without access technology information storage shall also assume GSM COMPACT access technology as the lowest priority radio access technology.

~~-~~NOTE: Requirements a) and b) apply also to requirement d), so a GSM voice capable MS should not search for GSM COMPACT PLMNs, even if capable of GSM COMPACT.

NOTE: Requirements a) and b) apply also to requirement f), so a GSM voice capable MS should not search for GSM COMPACT PLMNs, even if this is the only access technology on the "HPLMN Selector with Access Technology" data field on the SIM. Also PLMNs not offering voice services should be ignored by voice capable GSM mobiles.

NOTE: High quality signal is defined in the appropriate AS specification.

If successful registration is achieved, the MS indicates the selected PLMN.

If registration cannot be achieved because no PLMNs are available and allowable, the MS indicates "no service" to the user, waits until a new PLMN is available and allowable and then repeats the procedure.

If there were one or more PLMNs which were available and allowable, but an LR failure made registration on those PLMNs unsuccessful or an entry in a forbidden LAI list prevented a registration attempt, the MS selects the first such PLMN again and enters a limited service state.

4.4.3.1.2 Manual Network Selection Mode Procedure

The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes "Forbidden PLMNs" and PLMNs which only offer services not supported by the MS. An MS which supports GSM COMPACT shall also indicate GSM COMPACT PLMNs (which use PBCCH).

If displayed, PLMNs meeting the criteria above are presented in the following order:

~~i)~~ i) HPLMN;

~~ii)~~ ii) PLMNs contained in the " User Controlled PLMN Selector with Access Technology " data field in the SIM (in priority order);

~~iii)~~ iii) PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

~~iv)~~ iv) other PLMN/access technology combinations with received high quality signal in random order;

~~v)~~ v) other PLMN/access technology combinations in order of decreasing signal quality.

In ii and iii, an MS using a SIM without access technology information storage (i.e. the “User Controlled PLMN Selector with Access Technology” and the “Operator Controlled PLMN Selector with Access Technology” data fields are not present) shall instead present the PLMNs contained in the “PLMN Selector” data field in the SIM (in priority order).

In GSM or GSM COMPACT, if a PLMN does not support voice services then this shall be indicated to the user.

The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the forbidden LAI and PLMN lists.

NOTE: It is an MS implementation option whether to indicate access technologies to the user. If the MS does display access technologies, then the access technology used should be the access technology chosen by the user for that PLMN. If the MS does not display access technologies, then the access technology chosen for a particular PLMN should be the highest priority available access technology for that PLMN, if the associated access technologies have a priority order.

If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell and enter the limited service state.

NOTE: High quality signal is defined in the appropriate AS specification.

4.4.3.2 User reselection

At any time the user may request the MS to initiate reselection and registration onto an available PLMN, according to the following procedures, dependent upon the operating mode.

4.4.3.2.1 Automatic Network Selection Mode

The MS selects and attempts registration on PLMNs, if available and allowable, in all of its bands of operation in accordance with the following order:

~~i)~~ i) HPLMN;

~~ii)~~ii) ~~—~~ ii) PLMNs contained in the " User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order) excluding the previously selected PLMN;

iii) PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order) excluding the previously selected PLMN;

~~iii)~~iv) other PLMN/access technology combinations with the received high quality signal in random order excluding the previously selected PLMN;

~~iv)~~v) other PLMN/access technology combinations, excluding the previously selected PLMN in order of decreasing signal quality or, alternatively, the previously selected PLMN may be chosen ignoring its signal quality;

~~v)~~vi) The previously selected PLMN.

The previously selected PLMN is the PLMN which the MS has selected prior to the start of the user reselection procedure.

NOTE: If the previously selected PLMN is chosen, and registration has not been attempted on any other PLMNs, then the MS is already registered on the PLMN, and so registration is not necessary.

When following the above procedure the requirements a), b), c), e), f), g) in section 4.4.3.1.1 apply: Requirement d) shall apply as shown below:

d) In iv, v, and vi, the MS shall search for all access technologies it is capable of~~, with the exception of requirement b),~~ before deciding which PLMN to select.

NOTE: High quality signal is defined in the appropriate AS specification.

3GPP CN WG1 Meeting #13
Vancouver, Canada 14-18 August 2000

Document N1-001032
Rev of N1-000985
Rev of N1-000886

CHANGE REQUEST

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24.007	CR	013r3	Current Version:	3.4.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: CN#9 *list expected approval meeting # here ↑*

for approval [X]
for information [ ]

strategic [ ]
non-strategic [ ]

(for SMG use only)

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: TSGN1 **Date:** 2000-08-18

Subject: SAPs and Service primitives for UMTS, PS mode.

Work item: GSM/UMTS interworking

Category: *(only one category shall be marked with an X)*

F	Correction	[X]
A	Corresponds to a correction in an earlier release	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[ ]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[X]
Release 00	[ ]

Reason for change: To add SAPs and service primitives for UMTS to TS 24.007. A new entity RAB Manager (RABM) is introduced for UMTS that replaces the SNDCP entity used in GSM. In the MS the RABM entity keeps track of if a RAB exists for a specific NSAPI (PDP context) or not. The RABM entity in the MS initiates RAB re-establishment by triggering a service request (data) procedure in GMM.

Clauses affected: Figure 5.5, Ch. 6.5.2, 6.5.3(new), 9.3, 9.3.1, 9.3.2, 9.3.3(new), 9.3.4(new), 9.4, 9.5.5(new)

Other specs affected:

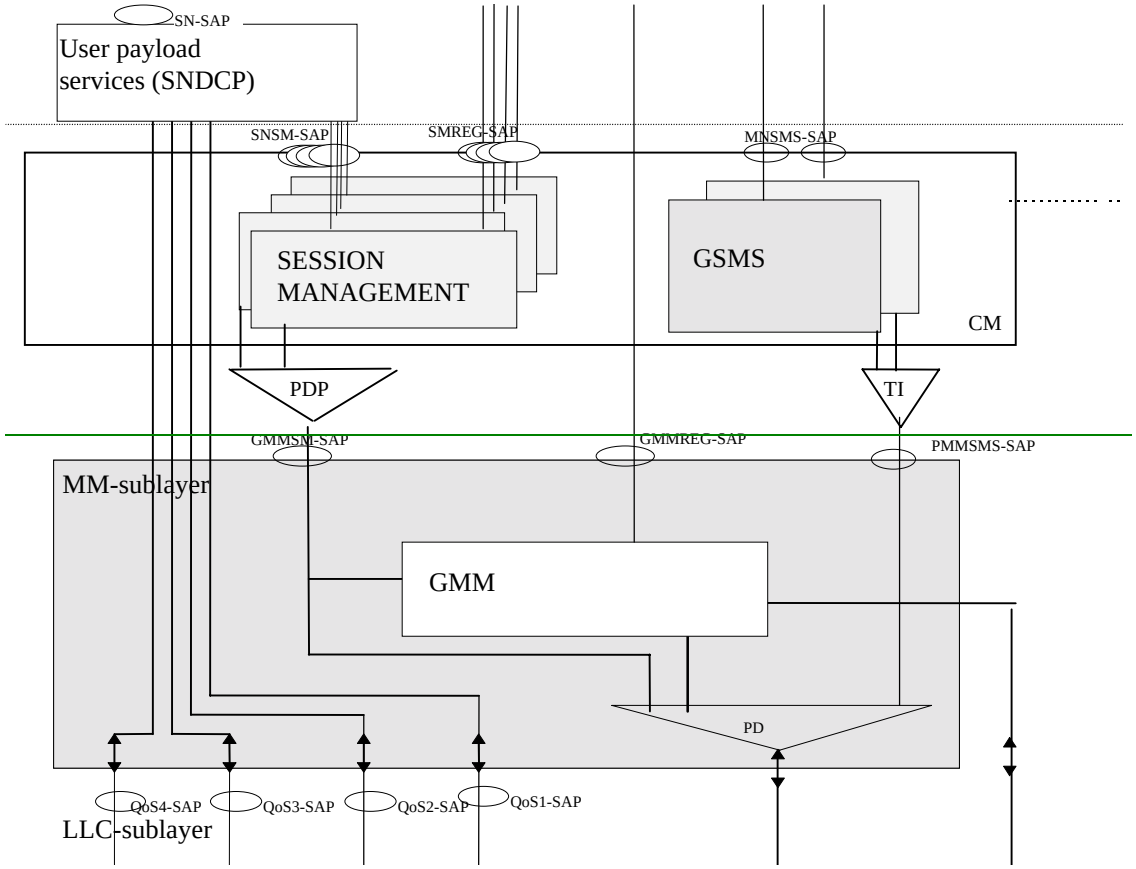
Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments: This CR covers only the PS mode of operation for UMTS on the MS side. GSM-UMTS intersystem change is not covered.

5.2 Protocol architecture

The protocol architecture is visualised for each of the three models:

- Figure 5.1/TS 24.007 shows the protocol architecture for a MS not supporting the GPRS service, restricting the representation of CM sublayer protocols to four paradigmatic examples, CC, LCS, SS, and SMS. Note that the protocol stack for a class C GPRS service may be present in the MS, but it is not active simultaneously.
- Figure 5.2 shows the protocol architecture for a MS supporting the Class C GPRS service. (Note that the protocol stack for a circuit switched services may be present in the MS, but it is not active simultaneously).
- Figure 5.3 shows the protocol architecture for non-GPRS and GPRS-services supporting Class A and Class B MSs.
- Figure 5.4 shows the protocol architecture for a MS supporting CTS services in addition to non-GPRS services.
- Figure 5.5 shows the protocol architecture for a MS supporting the PS mode of operation UMTS service.
- Figure 5.6 shows the protocol architecture for UMTS services supporting CS/PS mode of operation MSs.



~~Figure 5.5: Protocol architecture of Non Access Stratum supporting PS mode of operation MSs, MS - side~~

~~NOTE: SMS un-related parts of this figure e.g. SNDCP should be modified for UMTS~~

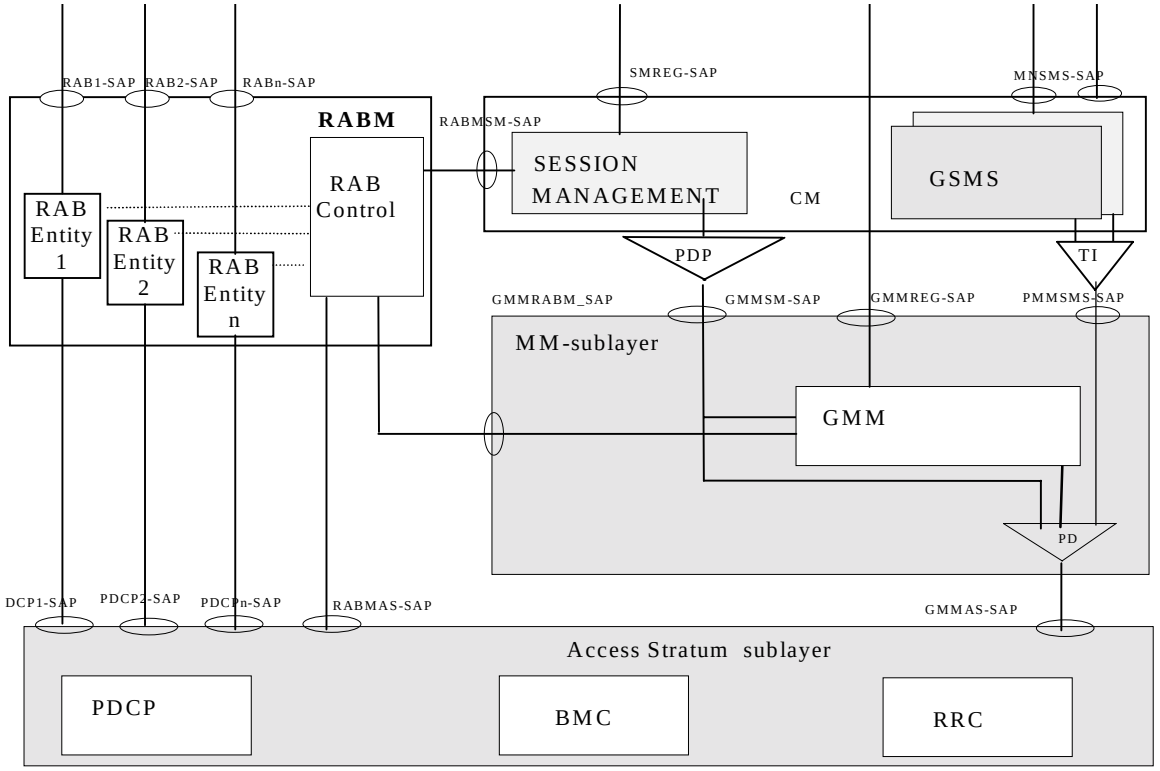


Figure 5.5 Protocol architecture of Non Access Stratum supporting PS mode of operation MSs, MS-side

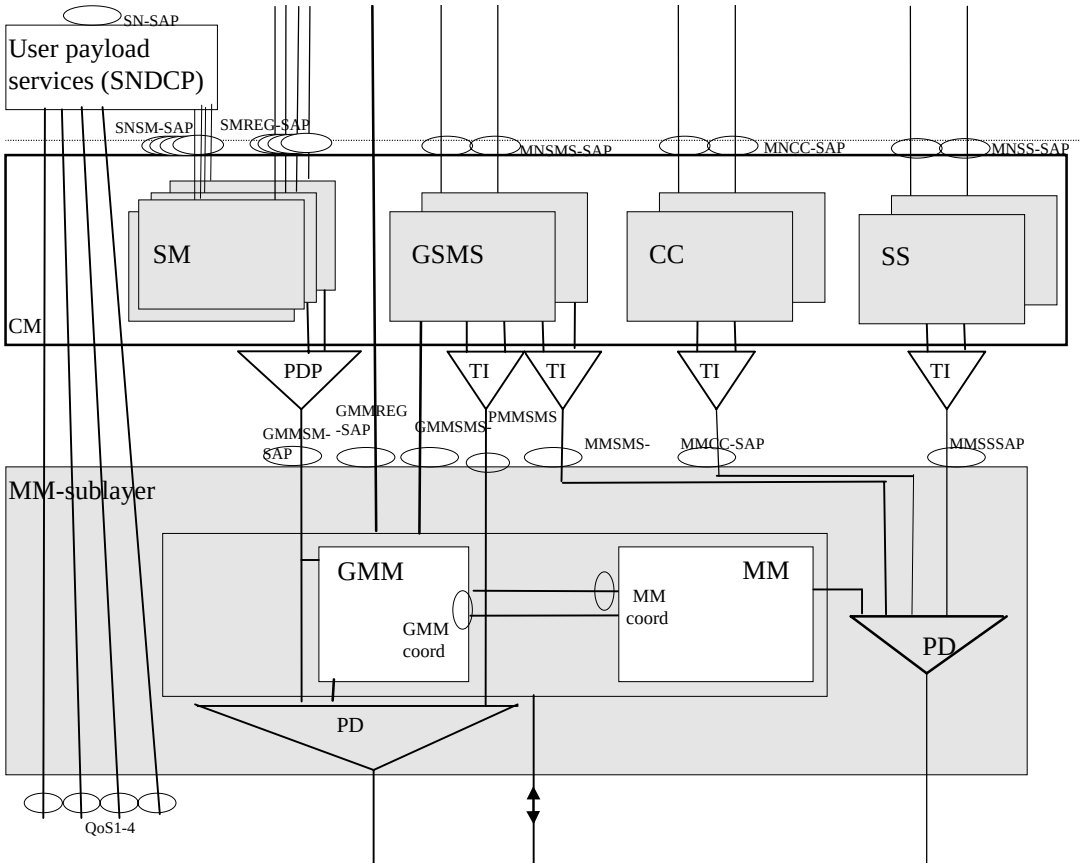


Figure 5.6/24.007: Protocol architecture of Non Access Stratum supporting CS/PS mode of operation MSs, MS – side

NOTE: SMS un-related parts of this figure, e.g. SNDCP should be modified for UMTS

As shown in figure 5.1 a hierarchy of 3 sublayers is defined:

- the RR sublayer provides services to the MM sublayer and utilizes the services of signalling layer 2;
- the MM sublayer provides common services to the entities of the Connection Management (CM) sublayer;
- the CM sublayer includes, among others, the CC, SS, and SMS entities, which are independent entities.

Figure 5.2 defines four sublayers for GPRS services supporting Class C MSs:

- the RR sublayer provides services to the MM and LLC sublayers;
- the LLC sublayer provides services to the MM sublayer, the SNDCP and GSMS entities and uses services of the RR sublayer;
- the MM sublayer provides services to the SM entities of the CM. The MM sublayer includes one GMM;
- the CM sublayer includes the SM and GSMS entities. The SM entity provides services to the SNDCP entity and uses services of the MM sublayer. The GSMS entity is identical to the SMS entity for non-GPRS services except it uses the services from the LLC sublayer.

Figure 5.3 defines four sublayers for non-GPRS and GPRS-services supporting Class A and Class B MSs:

- the RR sublayer provides services to the MM and LLC sublayers;
- the LLC sublayer provides services to the MM sublayer, the SNDCP and GSMS entities and uses services of the RR sublayer;
- the MM sublayer provides services to the SNDCP entity and to the entities of the Connection Management (CM) sublayer. In addition to the MM entity for non-GPRS services, the MM sublayer further includes one GMM

entity;

- the CM sublayer includes, among others, the CC, SS, GSMS and SM entities, which are independent entities.

- The SM entity provides services to the SNDCP entity and uses services of the MM sublayer.
  The GSMS entity is an extension of the SMS entity for non-GPRS services. For message transfer it uses the services both from the LLC sublayer and the MM entity of the MM sublayer. Furthermore it retrieves from the MM entity information about which transport service to use.

Figure 5.4 defines three sub-layers for CTS services:

- the RR sublayer provides services (including CTS services) to the MM sublayer and uses the services of signalling layer 2;

- the MM sublayer provides common services to the entities of the Connection Management (CM) sublayer; it provides also specific CTS services to the entities above CM;

- the CM sublayer includes, among others, the CC, SS, and SMS entities, which are independent entities.

Figure 5.5 defines ~~two~~ three sublayers for UMTS PS domain services supporting PS mode of operation:

- the Access Stratum (AS) sublayer provides services to the MM sublayer and the RAB Manager (RABM) entity.

- the MM sublayer provides services to the SM entities and GSMS entities of the CM. The MM sublayer includes one GMM entity;

- the CM sublayer includes the SM and GSMS entities. The SM entity provides services to the ~~PDCP~~ RABM entity and uses services of the MM sublayer. The GSMS entity is identical to the SMS entity for GPRS services in GSM except it uses the services from the GMM sublayer.

  The RABM entity replaces the “User payload services (SNDCP)” entity used in GSM.

Figure 5.6 defines two sublayers for UMTS CS domain services and UMTS PS domain services supporting CS/PS mode of operation MSs:

- the MM sublayer provides services to the entities of the Connection Management (CM) sublayer. In addition to the MM entity for CS domain services, the MM sublayer further includes one GMM entity;

- the CM sublayer includes, among others, the CC, SS, GSMS and SM entities, which are independent entities;

  The SM entity provides services to the PDCP entity and uses services of the MM sublayer.
  The GSMS entity is an extension of the SMS entity for CS domain services. For message transfer it uses the services both from the GMM entity of the MM sublayer and the MM entity of the MM sublayer. Furthermore it retrieves from the MM entity information about which transport service to use.

*** Next Modification ***

6.5.2 Session Management Services for SNSM-SAP (GSM only)

The SNSM-SAP service primitives are defined in GSM 04.65 [12a].

6.5.3 Session Management Services for RABMSM-SAP (UMTS only)

Table xx: Service primitives and parameters at RABMSM-SAP - MS side

PRIMITIVE	PARAMETER (message, info elements of message, other parameters)	Reference
RABMSM-ACTIVATE-IND	NSAPI, QoS	6.5.3.1
RABMSM-ACTIVATE-RSP	NSAPI	6.5.3.2

RABMSM-DEACTIVATE-IND	NSAPI	6.5.3.3
RABMSM-DEACTIVATE-RSP	NSAPI	6.5.3.4
RABMSM-DEACTIVATE-REQ	NSAPI	6.5.3.5
RABMSM-MODIFY-IND	NSAPI, QoS	6.5.3.6
RABMSM-MODIFY-RSP	-	6.5.3.7
RABMSM-STATUS-REQ	- Cause	6.5.3.8

6.5.3.1 RABMSM-ACTIVATE-IND

Indication used by the SM entity to inform the RABM entity that an NSAPI has been activated for data transfer (e.g. an activate PDP Context request has been sent to the network). It also informs the RABM entity about the requested QoS profile for this NSAPI. The indication is sent by SM towards RABM during an ongoing PDP context activation procedure.

6.5.3.2 RABMSM-ACTIVATE-RSP

Response used by the RABM entity to inform the SM entity that the indicated NSAPI is now in use and that a RAB for the indicated NSAPI is established.

6.5.3.3 RABMSM-DEACTIVATE-IND

Indication used by the SM entity to inform the RABM entity that an NSAPI has been de-allocated and cannot be used by the RABM entity anymore. The request is sent by SM towards RABM during an ongoing MS initiated as well as network initiated PDP context de-activation procedure.

6.5.3.4 RABMSM-DEACTIVATE-RSP

Response used by the RABM entity to inform the SM entity that the NSAPI indicated is no longer in use.

6.5.3.5 RABMSM-DEACTIVATE-REQ

This primitive is used by the RABM entity to inform the SM entity that the RAB for an NSAPI has been released.

6.5.3.6 RABMSM-MODIFY-IND

Indication used by the SM entity to indicate the change of the QoS for an NSAPI. The indication is sent by SM towards RABM during an ongoing PDP context modification procedure.

6.5.3.7 RABMSM-MODIFY-RSP

Response used by the RABM entity to inform the SM entity that the indicated NSAPI and QoS profile are now in use and the RAB for the NSAPI is established and/or released, if necessary.

6.5.3.8 RABMSM-STATUS-REQ

This primitive is used by the RABM entity to inform the SM entity that RABM cannot continue its operation due to errors at the lower layer (i.e. Access Stratum) or at the RABM layer. The Cause parameter indicates the cause of the error.

***** Next Modification *****

9.3 Services provided by radio resource management entity for GPRS services

This subclause is informative.

The service primitives for GSM are defined in TS 24.060 [10]. They are included here to provide a complete overview of the radio interface protocol architecture.

The service primitives for UMTS are defined in this document. The services provided by the Access Stratum (AS) are specified in TS 23.110.

9.3.1 Service primitives for GRR-SAP (GSM only)

***** Next Modification *****

9.3.2 Service primitives for GMMRR-SAP (GSM only)

***** Next Modification *****

9.3.3 Service primitives for RABMAS-SAP (UMTS only)

Table xx Primitives and parameters at RABMAS-SAP

PRIMITIVE	PARAMETER (message, info elements of message, other parameters)	REFERENCE
RABMAS-RAB-ESTABLISH-IND	RAB ID	9.3.3.1
RABMAS-RAB-ESTABLISH-RES	-	9.3.3.2
RABMAS-RAB-ESTABLISH-REJ	Cause	9.3.3.3
RABMAS-RAB-RELEASE-IND	RAB ID	9.3.3.4
RABMAS-RAB-RELEASE-RES	-	9.3.3.5
RABMAS-STATUS-IND	Cause	9.3.3.6

9.3.3.1 RABMAS-RAB-ESTABLISH-IND

Indication from the Access Stratum layer that radio access bearer setup for the indicated RAB ID (contains NSAPI) has commenced.

9.3.3.2 RABMAS-RAB-ESTABLISH-RES

Response (to RABMAS-RAB-ESTABLISH-IND) used by the RABM entity to inform the Access Stratum sublayer that the indicated NSAPI (in RAB ID) is currently or has been activated by the SM-layer and it is ok to set up the radio access bearer.

9.3.3.3 RABMAS-RAB-ESTABLISH-REJ

Response (to RABMAS-RAB-ESTABLISH-IND) used by the RABM entity to inform the Access Stratum sublayer that the indicated NSAPI (in RAB ID) has not been activated by the SM-layer and the attempt to setup the radio access bearer shall be rejected.

9.3.3.4 RABMAS-RAB-RELEASE-IND

Indication from the Access Stratum layer that a radio access bearer for the indicated NSAPI has been released.

9.3.3.5 RABMAS-RAB-RELEASE-RES

Response used by the RABM entity to inform the Access Stratum sublayer that the indicated RAB ID has been released in the RABM.

9.3.3.6 RABMAS-STATUS-IND

Indication used by the AS sublayer to transfer failures to the RABM.

9.3.4 Service primitives for GMMAS-SAP (UMTS only)

Table xx Service primitives and parameters at GMMAS-SAP - MS side

PRIMITIVE	PARAMETER (message, info elements of message, other parameters)	REFERENCE
GMMAS-SECURITY-IND		9.3.4.1
GMMAS-SECURITY-RES	CK, IK	9.3.4.2
GMMAS- ESTABLISH-REQ	GMM-PDU, Establishment cause, Priority, Protocol Discriminator, CN Domain Identity, MS Identity, LAI/RAI	9.3.4.3
GMMAS- ESTABLISH-CNF		9.3.4.4
GMMAS- ESTABLISH-REJ		9.3.4.5
GMMAS- RELEASE-REQ		9.3.4.6
GMMAS- RELEASE-IND		9.3.4.7
GMMAS- DATA-REQ	GMM-PDU, Priority	9.3.4.8
GMMAS- DATA-IND	GMM-PDU	9.3.4.9
GMMAS-PAGE-IND	MS Identity type, Paging Cause	9.3.4.10
GMMAS-STATUS-IND	Cause	9.3.4.11

9.3.4.1 GMMAS-SECURITY-IND

Indication from the AS sublayer that ciphering (and integrity protection) shall be started. The GMM sublayer uses this primitive as an indication of the completion of the service request procedure.

9.3.4.2 GMMAS-SECURITY-RES

Ciphering and integrity keys are assigned to the AS sublayer to enable ciphering (and integrity protection).

9.3.4.3 GMMAS-ESTABLISH-REQ

To establish a signalling connection and to carry the initial GMM-PDU over the radio interface.

9.3.4.4 GMMAS-ESTABLISH-CNF

Confirmation from the AS sublayer that a signalling connection has been established.

9.3.4.5 GMMAS-ESTABLISH-REJ

The attempt to establish a signalling connection was rejected by the network.

9.3.4.6 GMMAS- RELEASE-REQ

Request used by the MM-sublayer to request the release of the signalling connection.

9.3.4.7 GMMAS- RELEASE-IND

Indication from the AS sublayer that the signalling connection has been released.

9.3.4.8 GMMAS- DATA-REQ

Request used by the MM-sublayer for transfer of data.

9.3.4.9 GMMAS- DATA-IND

Indication used by the AS sublayer to transfer received data to MM sublayer.

9.3.4.10 GMMAS-PAGE-IND

A paging message has been received by the AS sublayer.

9.3.4.11 GMMAS-STATUS-IND

Indication used by the AS sublayer to transfer failures to the MM sublayer.

9.4 Services provided by the LLC entity for GPRS services (GSM only)

***** Next Modification *****

9.5.5 Service primitives for GMMRABM-SAP (UMTS only)

Table xx Service primitives and parameters at GMMRABM-SAP – MS side

PRIMITIVE	PARAMETER (message, info elements of message, other parameters)	REFERENCE
GMMRABM-REESTABLISH-REQ		9.5.5.1
GMMRABM-REESTABLISH-RSP		9.5.5.2
GMMRABM-REESTABLISH-REJ	Cause	9.5.5.3

Note: Confirmation to the RABMGMM-REESTABLISH-REQ is given to the RABM in the form of indications from the AS sublayer that establishment of RABs has commenced or been completed.

9.5.5.1 GMMRABM-REESTABLISH-REQ

This primitive is used by the RABM entity to inform the GMM sublayer that UL user data has been received for an NSAPI without an active RAB. GMM shall initiate a service request procedure to re-establish the RAB for the NSAPI(S).

9.5.5.2 GMMRABM-REESTABLISH-RSP

This primitive is used by the GMM sublayer to inform the RABM entity that the reception of the Service Request message has been acknowledged by the network.

9.5.5.3 GMMRABM-REESTABLISH-REJ

This primitive is used by the GMM sublayer to inform the RABM entity that the re-establishment of RABs by the service request procedure has failed.

3GPP-CN1 Meeting #13

Vancouver/Canada 14-18 August, 2000

Document N1-001033

Revision of N1-001024

e.g. for 3GPP use the format TP-99xxx or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

24.008	CR	255r3	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: CN#9					
list expected approval meeting # here ↑	for approval	X	strategic		*(for SMG use only)*
	for information		non-strategic	X	

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio		Core Network	X

Source: TSGN1 **Date:** 17 Aug 2000

Subject: Duplicated PDP context activation and clarification of TI related issues.

Work item: GSM/ UMTS Interworking

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change:

It has been agreed (N1-000507, N1-000756 and N1-000807) that if any duplication is identified (e.g. TI, NSAPI, APN + PDP address) regarding newly requested PDP context and existing one, then existing context shall be implicitly deactivated and new request shall be progressed, not rejecting new request. This CR proposes some clarifications regarding this matter.

It is also noted that pre-R99 network still may send case #35 to the MS.

Most importantly without modification to 8.3.2 the secondary PDP context activation shall always fail, because the ACTIVATE SECONDARY PDP CONTEXT REQUEST is always received by the network with an unique transaction identifier, and therefore TI cannot be recognized.

Clauses affected: 6.1.3.1; 6.1.3.4; 8.3.2

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

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 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. 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 than 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, PDP Type and APN 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.~~, not~~ The network shall not send this cause code (Note 1) ~~sent but can be received from a pre-R99 network~~; 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 all parameters of the new ACTIVATE PDP CONTEXT REQUEST message match with those of a previously activated PDP context and the context to be activated uses static PDP addressing, then the network may reply with an ACTIVATE PDP CONTEXT ACCEPT message immediately.
If dynamic PDP addressing is indicated for the new context then it is left for the implementation to decide if the PDP addresses match.

ii) Alternatively to i) above the network shall take the action described below:

- If t not all parameters (ie. NSAPI) but he combination of PDP Type, PDP address and APN matches with those of an already activated PDP context(s), the network shall deactivate all these existing PDP contexts, which match the combination of APN, PDP type and PDP address, locally without notification to the MS and proceed with the requested PDP context activation.

- If not all parameters but the NSAPI matches one of an already activated PDP context(s), then the network shall deactivate this PDP context and all the possible PDP contexts linked with this one locally without notification to the MS and proceed with the requested PDP context activation.

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

i) If the MS receives a REQUEST PDP CONTEXT ACTIVATION message with the combination of Access point name, PDP type and offered PDP address to which the MS has established a PDP context, the MS shall deactivate the existing PDP context and linked PDP contexts (if any) locally and proceed with the requested PDP context activation.

*** *Next Modification* ***

6.1.3.4 PDP context deactivation procedure

The purpose of this procedure is to deactivate an existing PDP context between the MS and the network. The PDP context deactivation may be initiated by the MS or by the network. The *tear down indicator* information element may be included in the DEACTIVATE PDP CONTEXT REQUEST message in order to indicate whether only the PDP context associated with this specific TI or all active PDP contexts sharing the same PDP address as the PDP context associated with this specific TI shall be deactivated. If the *tear down indicator* information element is not included in the DEACTIVATE PDP CONTEXT REQUEST message, only the PDP context associated with this specific TI shall be deactivated.

After successful PDP context deactivation, the associated NSAPI and TI values are released and can be reassigned to another PDP context.

*** *Next Modification* ***

8.3.2 Session Management

The mobile station and network shall ignore a session management message with TI EXT bit = 0. Otherwise, the following procedures shall apply:

a) Whenever any session management message except ACTIVATE PDP CONTEXT REQUEST, ACTIVATE SECONDARY PDP CONTEXT REQUEST, or SM-STATUS is received by the network specifying a transaction identifier which is not recognized as relating to an active context or to a context that is in the process of activation or deactivation or has been [recently] deactivated, the network shall~~ould~~ send a SM-STATUS message with cause #81 "invalid transaction identifier value" using the received transaction identifier value including the extension octet and remain in the PDP-INACTIVE state.

b) Whenever any session management message except REQUEST PDP CONTEXT ACTIVATION or SM-STATUS is received by the MS specifying a transaction identifier which is not recognized as relating to an active context or to a context that is in the process of activation or deactivation or has been [recently] deactivated, the MS shall send a SM-STATUS message with cause #81 "invalid transaction identifier value" using the received transaction identifier value including the extension octet and remain in the PDP-INACTIVE state

c) When REQUEST PDP CONTEXT ACTIVATION message is received with a transaction identifier flag set to "1", this message shall be ignored.

d) When an ACTIVATE PDP CONTEXT REQUEST message is received specifying a transaction identifier which is not recognized as relating to a context that is in the process of activation, and with a transaction identifier flag set to "1", this message shall be ignored.

e) Whenever an ACTIVATE PDP CONTEXT REQUEST message is received by the network specifying a transaction identifier relating to a PDP context not in state PDP-INACTIVE, the network shall deactivate the old PDP context relating to the received transaction identifier without notifying the MS. Furthermore, the network shall continue with the activation procedure of a new PDP context as indicated in the received message.

f) Whenever a REQUEST PDP CONTEXT ACTIVATION message is received by the MS specifying a transaction identifier relating to a PDP context not in state PDP-INACTIVE, the MS shall locally deactivate the old PDP context relating to the received transaction identifier. Furthermore, the MS shall continue with the activation procedure of a new PDP context as indicated in the received message.

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***Document* N1-001034**
Formerly N1-001003

CHANGE REQUEST

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24.008	CR	251r2	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG # 9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*

(U)SIM		ME	X	UTRAN / Radio		Core Network	X

Source: TSGN1 **Date:** 15-08-2000

Subject: Introduction of 3G Radio Access Technology Capabilities in the MS Radio Access Capability IE.

Work item: GSM-UMTS Interworking

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change:
To allow cell reselection from GPRS towards, for example, UMTS, the BSS needs to know if the UE supports the UMTS FDD, UMTS TDD or CDMA 2000 Radio Access Technologies.
Enhanced Measurement reporting has been defined mandatory for a Release '99 MS. However, a MS that support Enhanced Measurement Reporting may not support 3G. Hence one bit is also needed to indicate if the MS is Release '99 (will be used by the BSC to know if the MS supports Enhanced Measurement Reporting) or older.

A similar change for circuit switched GSM has already been agreed.

Clauses affected: Table 10.5.146 in sub-clause 10.5.5.12a.

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments: This CR also corrects a previous CR.


help.doc

<--------- double-click here for help and instructions on how to create a CR.

10.5.5.12a MS Radio Access capability

The purpose of the *MS RA capability* information element is to provide the radio part of the network with information concerning radio aspects of the mobile station. The contents might affect the manner in which the network handles the operation of the mobile station.

The *MS RA capability* is a type 4 information element, , with a maximum length of 52 octets.

The value part of a *MS RA capability* information element is coded a shown table 10.5.146/TS 24.008.

- SEMANTIC RULE : Among the three Access Type Technologies GSM 900-P, GSM 900-E and GSM 900-R only one shall be present.
- The MS shall indicate supported Access Technology Types. e.g. [450, 480, 900, 1800, UMTS] or [850, 1900] MHz bands during a single MM procedure.
- Error handling : If a received Access Technology Type is unknown to the receiver, it shall ignore all the corresponding fields;
- If within a known Access Technology Type a receiver recognizes an unknown field it shall ignore it.
- See more details about error handling of MS radio access capability in TS GSM 08.18.
- Due to shared radio frequency channel numbers between 1800 and 1900, the mobile should provide the relevant MS Radio Access capability for either 1800 band OR 1900 band, not both.

Table 10.5.146/TS 24.008 : *Mobile Station Radio Access Capability* Information Element

< MS Radio Access capability IE > ::=
<**MS Radio Access capability IEI** : 00100100 >
<**Length of MS RA capability**: <octet>> -- *length in octets of MS RA capability value part and spare bits*
<**MS RA capability value part** : < MS RA capability value part struct >>
<spare bits>**; -- *may be used for future enhancements*

<MS RA capability value part struct >::= --*recursive structure allows any number of Access technologies*
< **Access Technology Type**: bit (4) >
< **Access capabilities** : <Access capabilities struct> >
{ 0 | 1 <MS RA capability value part struct> } ;

< Access capabilities struct > ::=
< **Length** : bit (7) > -- length in bits of Content and spare bits
<Access capabilities : <Content>>
<spare bits>** ; -- expands to the indicated length
-- may be used for future enhancements

< Content > ::=
< **RF Power Capability** : bit (3) >
{ 0 | 1 <**A5 bits** : <A5 bits> > } -- *zero means that the same values apply for parameters as in the immediately preceeding Access capabilities field within this IE*
-- *The presence of the A5 bits is mandatory in the 1st Access capabilities struct within this IE.*
< **ES IND** : bit >
< **PS** : bit >
< **VGCS** : bit >
< **VBS** : bit >
{ 0 | 1 < **Multislot capability** : Multislot capability struct > } ; -- *zero means that the same values for multislot parameters as given in an earlier Access capabilities field within this IE apply also here*
{ 0 | 1 < **8PSK Power Capability** : bit(2) >} – *'1' also means 8PSK modulation capability in uplink.* < **COMPACT Interference Measurement Capability : bit >**
< **Revision Level Indicator** : bit >-
< **UMTS FDD Radio Access Technology Capability** : bit > -- *3G RAT*
< **UMTS TDD Radio Access Technology Capability** : bit > -- *3G RAT*
< **CDMA 2000 Radio Access Technology Capability** : bit > -- *3G RAT*
-- error: struct too short, assume features do not exist
-- error: struct too long, ignore data and jump to next Access technolgy

Table 10.5.146/TS 24.008 (continued): *Mobile Station Radio Access Capability* Information Element

< Multislot capability struct > ::=
{ 0 | 1 < **HSCSD multislot class** : bit (5) > }
{ 0 | 1 < **GPRS multislot class** : bit (5) > < **GPRS Extended Dynamic Allocation Capability** : bit > }
{ 0 | 1 < **SMS_VALUE** : bit (4) > < **SM_VALUE** : bit (4) > } ;
{ 0 | 1 **< ECSD multislot class** : bit (5) **>** }
{ 0 | 1 < **EGPRS multislot class** : bit (5) > < **EGPRS Extended Dynamic Allocation Capability** : bit > } ;

{0 | 1 <DTM Multi Slot Sub-Class : bit(2)>
<MAC Mode Support : bit>
<EGPRS Support : bit>} ;

<A5 bits> ::= < A5/1 : bit> <A5/2 : bit> <A5/3 : bit> <A5/4 : bit> <A5/5 : bit> <A5/6 : bit> <A5/7 : bit>; -- bits for circuit mode ciphering algorithms

Access Technology Type
This field indicates the access technology type to be associated with the following access capabilities.

Bits
4 3 2 1

0 0 0 0 GSM P
0 0 0 1 GSM E *--note that GSM E covers GSM P*
0 0 1 0 GSM R *--note that GSM R covers GSM E and GSM P*
0 0 1 1 GSM 1800
0 1 0 0 GSM 1900
0 1 0 1 GSM 450
0 1 1 0 GSM 480
0 1 1 1 GSM 850
All other values are treated as unknown by the receiver.

RF Power Capability
This field is coded as radio capability in Classmark 3 for the indicated band: it contains the binary coding of he power class associated (see GSM 05.05 paragraph 4.1 output power and paragraph 4.1.1 Mobile Station).

8PSK Power Capability
This field is coded according to the definition in GSM 05.05. The presence of this field indicates also 8PSK modulation capability in uplink.

A5/1
0 encryption algorithm A5/1 not available
1 encryption algorithm A5/1 available
A5/2
0 encryption algorithm A5/2 not available
1 encryption algorithm A5/2 available
A5/3
0 encryption algorithm A5/3 not available
1 encryption algorithm A5/3 available
A5/4
0 encryption algorithm A5/4 not available
1 encryption algorithm A5/4 available
A5/5
0 encryption algorithm A5/5 not available
1 encryption algorithm A5/5 available
A5/6
0 encryption algorithm A5/6 not available
1 encryption algorithm A5/6 available
A5/7
0 encryption algorithm A5/7 not available
1 encryption algorithm A5/7 available

ES IND – (Controlled early Classmark Sending)
0 "controlled early Classmark Sending" option is not implemented
1 "controlled early Classmark Sending" option is implemented

PS – (Pseudo Synchronisation)
0 PS capability not present
1 PS capability present

VGCS – (Voice Group Call Service)
0 no VGCS capability or no notifications wanted
1 VGCS capability and notifications wanted.

Table 10.5.146/TS 24.008 (concluded): *Mobile Station Radio Access Capability* Information Element

VBS – (Voice Broadcast Service)
0 no VBS capability or no notifications wanted
1 VBS capability and notifications wanted

HSCSD Multi Slot Class
The Multi Slot Class field is coded as the binary representation of the multislot class defined in TS GSM 05.02.
Range 1 to 18, all other values are reserved.

GPRS Multi Slot Class
The GPRS Multi Slot Class field is coded as the binary representation of the multislot class defined in TS GSM 05.02.

ECSD Multi Slot Class
The presence of this field indicates ECSD capability. Whether the MS is capable of 8-PSK modulation in uplink is indicated by the presence of 8-PSK Power Capability field. The Multi Slot Class field is coded as the binary representation of the multislot class defined in TS GSM 05.02.
Range 1 to 18, all other values are reserved.

EGPRS Multi Slot Class
The presence of this field indicates EGPRS capability. Whether the MS is capable of 8-PSK modulation in uplink is indicated by the presence of 8-PSK Power Capability field. The EGPRS Multi Slot Class field is coded as the binary representation of the multislot class defined in TS GSM 05.02.

GPRS Extended Dynamic Allocation Capability
0 Extended Dynamic Allocation Capability for GPRS is not implemented
1 Extended Dynamic Allocation Capability for GPRS is implemented
EGPRS Extended Dynamic Allocation Capability
0 Extended Dynamic Allocation Capability for EGPRS is not implemented
1 Extended Dynamic Allocation Capability for EGPRS is implemented

SMS_VALUE (Switch-Measure-Switch) (4 bit field)
The SMS field indicates the time needed for the mobile station to switch from one radio channel to another, perform a neighbor cell power measurement, and the switch from that radio channel to another radio channel.
Bits
4 3 2 1
0 0 0 0 1/4 timeslot (~144 microseconds)
0 0 0 1 2/4 timeslot (~288 microseconds)
0 0 1 0 3/4 timeslot (~433 microseconds)
. . .
1 1 1 1 16/4 timeslot (~2307 microseconds)
(SM_VALUE) Switch-Measure (4 bit field)
The SM field indicates the time needed for the mobile station to switch from one radio channel to another and perform a neighbour cell power measurement.
Bits
4 3 2 1
0 0 0 0 1/4 timeslot (~144 microseconds)
0 0 0 1 2/4 timeslot (~288 microseconds)
0 0 1 0 3/4 timeslot (~433 microseconds)
. . .
1 1 1 1 16/4 timeslot (~2307 microseconds)

DTM Multi Slot Sub-Class (2 bit field)
This field indicates the DTM capabilities of the MS. The DTM Multi Slot Sub-Class is independent from the Multi Slot Capabilities field.
Bits
2 1
0 0 Sub-Class 1 supported
0 1 Sub-Class 5 supported
1 0 Sub-Class 9 supported
1 1 Reserved for future extension. If received, the network shall interpret this as '00'
MAC Mode Support (1 bit field)
This field indicates whether the MS supports Dynamic and Fixed Allocation or only supports Exclusive Allocation
Bits
1
0 Dynamic and Fixed Allocation not supported
1 Dynamic and Fixed allocation supported
EGPRS Support (1 bit field)
This field indicates whether or not the MS supports EGPRS
Bit
1
0 EGPRS not supported
1 EGPRS supported

COMPACT Interference Measurement Capability
0 COMPACT Interference Measurement Capability is not implemented
1 COMPACT Interference Measurement Capability is implemented

Revision Level Indicator(1 bit field)
Bit
0 The ME is Release '98 or older
1 The ME is Release '99 onwards

UMTS FDD Radio Access Technology Capability (1 bit field)
Bit
0 UMTS FDD not supported
1 UMTS FDD supported

UMTS TDD Radio Access Technology Capability (1 bit field)
Bit
0 UMTS TDD not supported
1 UMTS TDD supported

CDMA 2000 Radio Access Technology Capability (1 bit field)
Bit
0 CDMA2000 not supported
1 CDMA2000 supported

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***Document* N1-001042**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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24.008	CR	236r2	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: CN#9 *list expected approval meeting # here ↑*

for approval [ ]
for information [ ]

strategic [ ]
non-strategic [ ]
(for SMG use only)

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [ ] Core Network [X]

Source: TSGN1 **Date:** 19 August 2000

Subject: Reaction to duplicated PDP context activation

Work item: GSM/UMTS Interworking

Category: *(only one category shall be marked with an X)*

F	Correction	X
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change:

1. Deletion of 6.1.3.1.5 c) i), 6.1.3.2.3 b) i)

The SGSN does not keep all the information about a PDP context. If the SGSN answers to Activate [Secondary] PDP Context Request after it finds all the parameters set in the request message and kept in the SGSN are same, it causes a problem that the GGSN may have other information that what is kept in SGSN, such as TFT.

2. Update of 6.1.3.1.5 c) ii)

In case NSAPI is duplicated, there is no necessity to deactivate other PDP contexts that are linked with duplicated one since there is a possibility that the MS has forgotten just the PDP context and linked PDP contexts may be still actived.

If PDP address of existing PDP context is dynamic and establishment of PDP context using dynamic PDP address is requested for the same APN, it shall be recognised as PDP context duplication since one APN allows only one dynamic PDP address for a PDP Type.

Clauses affected:

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments: Detail discussion is found in N1-000896.

help.doc

<---------- double-click here for help and instructions on how to create a CR.

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 all parameters of the new ACTIVATE PDP CONTEXT REQUEST message match with those of a previously activated PDP context and the context to be activated uses static PDP addressing, then the network may reply with an ACTIVATE PDP CONTEXT ACCEPT message immediately.~~

~~If dynamic PDP addressing is indicated for the new context then it is left for the implementation to decide if the PDP addresses match.~~

~~ii) Alternatively to i) above the network shall take the action described below:~~

- ~~If t not all parameters (ie. NSAPI) but the combination of PDP Type, PDP address and APN matches with those of an already activated PDP context(s), the network shall deactivate all these existing PDP contexts, which match the combination of APN, PDP type and PDP address, locally without notification to the MS and proceed with the requested PDP context activation.~~

- ~~If not all parameters but the NSAPI matches one of an already activated PDP context(s), then the network shall deactivate this PDP context and all the possible PDP contexts linked with this one locally without notification to the MS and proceed with the requested PDP context activation.~~

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.

Note: If PDP address of existing PDP context is dynamic and establishment of PDP context using dynamic PDP address is requested for the same APN, it shall be recognised as PDP context duplication since one APN allows only one dynamic PDP address for a PDP Type.

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.

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.

~~i) If the MS receives a REQUEST PDP CONTEXT ACTIVATION message with the combination of Access point name and offered PDP address to which the MS has established a PDP context, the MS shall deactivate the existing PDP context and linked PDP contexts (if any) locally and proceed with the requested PDP context activation.~~

6.1.3.2.3 Abnormal cases

The following abnormal cases can be identified:

a) Expiry of timers

On the first expiry of the timer T3380, the MS shall resent the ACTIVATE SECONDARY 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.

b) MS initiated secondary PDP context activation procedure for an already activated PDP context (On the network side)

If the NSAPI matches that of an already activated PDP context, the network shall deactivate the existing PDP context locally without notification to the MS and proceed with the requested PDP context activation.

~~i) If all parameters of the new ACTIVATE SECONDARY PDP CONTEXT REQUEST message match with those of a previously activated PDP context, the network may reply with an ACTIVATE SECONDARY PDP CONTEXT ACCEPT message immediately .~~

~~ii) Alternatively the network shall take the action described below:~~

~~— If the NSAPI matches one of an already activated PDP context, the network shall deactivate the existing one locally without notification to the MS and proceed with the requested PDP context activation.~~

Otherwise, the network shall check the parameters as follows: