
45 Session Management Procedures

45.1 Definition and applicability

This clause is applicable for MS supporting GPRS.

45.2 PDP context activation

45.2.1 Initiated by the mobile station

45.2.1.1 Attach initiated by context activation/QoS Offered by Network is the QoS Requested

45.2.1.1.1 Conformance requirement

PDP context activation shall initiate GPRS Attach by the MS when the MS is GPRS Detached.

In order to request a PDP context activation, the MS sends an ACTIVATE PDP CONTEXT REQUEST message to the network. If the QoS offered by the network is the same as the QoS requested by the mobile, then upon receipt of the message ACTIVATE PDP CONTEXT ACCEPT the MS shall stop timer T3380 and shall initiate establishment of the logical link with the offered QoS.

Reference

GSM 04.08 sections 6.1.1 and 6.1.3.1.1

45.2.1.1.2 Test purpose

To check the MS initiates a GPRS ATTACH if one is not already active. To test the behaviour of the MS when the network responds to a PDP context activation request with the requested QoS.

45.2.1.1.3 Method of test

Related PICS/PIXIT statements

- GPRS Supported yes/no
- Method of context activation

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in GMM-state "GMM-DEREGISTERED, normal service" with valid P-TMSI and CKSN.

Test procedure

If the MS is attached a detach request is sent from the SS. A context activation is then requested by the user. On receipt of the ACTIVATE PDP CONTEXT REQUEST message a ACTIVATE PDP CONTEXT ACCEPT is returned by the SS with the same requested QoS. The contents of the ACTIVATE PDP CONTEXT REQUEST message shall then be checked. The SS then waits for T3380 +10% seconds to ensure T3380 has been stopped and no more ACTIVATE PDP

CONTEXT REQUEST messages are sent by the MS. The SS then sends a MODIFY PDP CONTEXT REQUEST message to which the MS shall reply with a MODIFY PDP CONTEXT ACCEPT message to ensure the context has been set up.

Maximum duration of test

5 mins

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	DETACH REQUEST	Only sent if the MS attaches at power-up, if not go to step 3.
2	MS -> SS	DETACH ACCEPT	MS accepts the detach
3	MS		Initiate a context activation
4	MS -> SS	ATTACH REQUEST	Request attach
5	SS -> MS	ATTACH ACCEPT	Accept attach
6	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Request a pdp context activation (with static PDP address)
7	SS -> MS	ACTIVATE PDP CONTEXT ACCEPT	Accept the pdp context activation
8	SS		Wait for T3380 +10% seconds to ensure no further activate request messages come from the MS
9	SS -> MS	MODIFY PDP CONTEXT REQUEST	Send a modify request for the activated context
10	MS -> SS	MODIFY PDP CONTEXT ACCEPT	Accept the modification request to show context is activated

Specific message contents

As default except:

Activate PDP Context Request

Information Element	Value/remark
Transaction identifier	In the range 0-6
Transaction identifier flag	0
NSAPI	In the range 5-15
Requested LLC SAPI	3, 5, 9 or 11
Requested QoS	Arbitrarily chosen
Requested PDP address	Arbitrarily chosen

Activate PDP Context Accept

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
Negotiated LLC SAPI	As above
Negotiated QoS	As above
Radio priority level	Arbitrarily chosen
Spare half octet	0

Modify PDP Context Request

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
Radio priority level	As above
Spare half octet	0
Requested LLC SAPI	As above
New QoS	As above

Modify PDP Context Accept

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	0

45.2.1.2 QoS Offered by Network is a lower QoS

45.2.1.2.1 QoS Accepted by MS

45.2.1.2.1.1 Conformance requirement

In order to request a PDP context activation, the MS sends an ACTIVATE PDP CONTEXT REQUEST message to the network. If the QoS offered by the network is acceptable to mobile, then upon receipt of the message ACTIVATE PDP CONTEXT ACCEPT the MS shall initiate establishment of the logical link with the offered QoS.

Reference

GSM 04.08 section 6.1.3.1.1

45.2.1.2.1.2 Test purpose

To test the behaviour of the MS when the network responds to a PDP context activation request with a lower QoS than that requested.

45.2.1.2.1.3 Method of test

Related PICS/PIXT statements

- GPRS Supported yes/no

- User setting of Minimum QoS supported yes/no
- Method of setting minimum QoS
- Method of context activation

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Test procedure

The requested QoS and Minimum QoS are set. A context activation is requested by the user. On receipt of the ACTIVATE PDP CONTEXT REQUEST message a ACTIVATE PDP CONTEXT ACCEPT is returned by the SS with a QoS lower than the requested but higher than or equal to the minimum. The SS then sends a MODIFY PDP CONTEXT REQUEST message and the MS shall respond with a MODIFY PDP CONTEXT ACCEPT message to confirm the context is active.

Maximum duration of test

5 mins

Expected sequence

Step	Direction	Message	Comments
1	MS		Initiate a context activation
2	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Request a pdp context activation
3	SS -> MS	ACTIVATE PDP CONTEXT ACCEPT	Accept a pdp context activation (with dynamic PDP address)
4	SS -> MS	MODIFY PDP CONTEXT REQUEST	Send a modify request for the activated context
5	MS -> SS	MODIFY PDP CONTEXT ACCEPT	Accept the modification request to show context is activated

Specific message contents

As default except:

Activate PDP Context Request

Information Element	Value/remark
Transaction identifier	In the range 0-6
Transaction identifier flag	0
NSAPI	In the range 5-15
Requested LLC SAPI	3, 5, 9 or 11
Requested QoS	Arbitrarily chosen

Activate PDP Context Accept

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
Negotiated LLC SAPI	As above
Negotiated QoS	At least one value lower than in above but higher than or equal to minimum
Radio priority level	Arbitrarily chosen
Spare half octet	0
PDP address	Arbitrarily chosen

Modify PDP Context Request

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
Radio priority level	As above
Spare half octet	0
Requested LLC SAPI	As above
New QoS	As above

Modify PDP Context Accept

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	0

45.2.1.2.2 QoS Rejected by MS

Applicability

This test may not be applicable to some mobiles which support all QoS and it is not possible to configure the mobile to reject any QoS.

45.2.1.2.2.1 Conformance requirement

In order to request a PDP context activation, the MS sends an ACTIVATE PDP CONTEXT REQUEST message to the network.

Upon receipt of the message ACTIVATE PDP CONTEXT ACCEPT offering a QoS which is not acceptable to the mobile, the MS shall initiate the PDP context deactivation procedure.

Reference

GSM 04.08 section 6.1.3.1.1

45.2.1.2.2.2 Test purpose

To test the behaviour of the MS when the QoS offered by the network in response to a PDP context activation request is not acceptable to the MS.

45.2.1.2.2.3 Method of test

Related PICS/PIXT statements

- GPRS Supported yes/no
- User setting of Minimum QoS supported yes/no
- Method of setting minimum QoS
- Method of context activation

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Test procedure

The requested QoS and Minimum QoS are set. A context activation is requested by the user. On receipt of the ACTIVATE PDP CONTEXT REQUEST message an ACTIVATE PDP CONTEXT ACCEPT message is returned by the SS with a QoS lower than the minimum. The MS shall then send a DEACTIVATE PDP CONTEXT REQUEST message. A DEACTIVATE PDP CONTEXT ACCEPT message will be sent in return by the SS.

Maximum duration of test

5 mins

Expected sequence

Step	Direction	Message	Comments
1	MS		Initiate a context activation
2	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Request a pdp context activation (with static PDP address)
3	SS -> MS	ACTIVATE PDP CONTEXT ACCEPT	Accept the pdp context activation
4	MS -> SS	DEACTIVATE PDP CONTEXT REQUEST	Deactivate the pdp context
5	SS -> MS	DEACTIVATE PDP CONTEXT ACCEPT	Accept the pdp context deactivation

Specific message contents

As default except:

Activate PDP Context Request

Information Element	Value/remark
Transaction identifier	In the range 0-6
Transaction identifier flag	0
NSAPI	In the range 5-15
Requested LLC SAPI	3, 5, 9 or 11
Requested QoS	Arbitrarily chosen
Requested PDP address	Arbitrarily chosen

Activate PDP Context Accept

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
Negotiated LLC SAPI	As above
Negotiated QoS	At least one value lower than in above and lower than minimum
Radio priority level	Arbitrarily chosen
Spare half octet	0

Deactivate PDP Context Request

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	0
SM cause	QoS not acceptable

Deactivate PDP Context Accept

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1

45.2.2 PDP context activation requested by the network, successful and unsuccessful

Applicability

This test needs to take into account the number of contexts supported by the MS to be able to test the response when all contexts are activated and the network tries to initiate a new context.

45.2.2.1 Conformance requirement

- 1) Upon receipt of a REQUEST PDP CONTEXT ACTIVATION message:
 - If the MS accepts the request the MS shall then initiate the PDP context activation procedure.
 - If the MS rejects the request, the MS shall send a REQUEST PDP CONTEXT ACTIVATION REJECT message with one of the following causes:

#26: insufficient resources;

#31: activation rejected, unspecified;

#40: feature not supported; or

#95 – 111: protocol errors.

- 2) The MS shall not ignore the request.
- 3) If the MS accepts the request, the ACTIVATE PDP CONTEXT REQUEST message sent by the MS shall contain the parameters requested by the network in the REQUEST PDP CONTEXT ACTIVATION message, except for the offered QoS which may be changed by the MS.
- 4) 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.

Reference

GSM 04.08 section 6.1.3.1.2, 6.1.3.1.4 & 8.3.2 (f).

45.2.2.2 Test purpose

To test the behaviour of the MS upon receipt of a context activation request from the network.

45.2.2.3 Method of test

Related PICS/PIXIT statements

- GPRS Supported yes/no
- Network requested pdp context activation supported yes/no
- Number of network initiated pdp contexts supported

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Case 1

For an MS that supports PDP Context Activation requested by the network.

Test procedure

A REQUEST PDP CONTEXT ACTIVATION message is sent by the SS. On receipt of the ACTIVATE PDP CONTEXT REQUEST message an ACTIVATE PDP CONTEXT ACCEPT message is returned by the SS. If all 7 contexts are supported then steps 5, 6 and 7 should not be performed. This is continued until the maximum number of contexts the MS supports are activated. When one more context is activated the MS shall return a REQUEST PDP CONTEXT ACTIVATION REJECT message with cause set to 'insufficient resources'. A REQUEST PDP CONTEXT ACTIVATION message is then sent using a currently activated context transaction identifier. The MS shall activate this context in place of the previous context.

Maximum duration of test

5 mins

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	REQUEST PDP CONTEXT ACTIVATION	Request a pdp context activation request
2	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Request a pdp context activation
3	SS -> MS	ACTIVATE PDP CONTEXT ACCEPT	Accept the pdp context activation
4	SS		Steps 1-3 are repeated for the number of Network Initiated contexts supported NOTE: If all 7 contexts are supported steps 5, 6 and 7 should not be performed
5	SS -> MS	REQUEST PDP CONTEXT ACTIVATION	Request a pdp context activation request
6	MS -> SS	REQUEST PDP CONTEXT ACTIVATION REJECT	The context activation request is rejected with cause 'insufficient resources'.
7	SS -> MS	REQUEST PDP CONTEXT ACTIVATION	Request a pdp context activation request for an existing context
8	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Request a pdp context activation to replace the existing context
9	SS -> MS	ACTIVATE PDP CONTEXT ACCEPT	Accept the pdp context activation

Case 2

For an MS that does not support PDP Context Activation requested by the network.

Test procedure

A REQUEST PDP CONTEXT ACTIVATION message is sent by the SS. The MS shall then send an REQUEST PDP CONTEXT ACTIVATION REJECT message.

Maximum duration of test

5 mins

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	REQUEST PDP CONTEXT ACTIVATION	Request a pdp context activation request
2	MS -> SS	REQUEST PDP CONTEXT ACTIVATION REJECT	Reject the pdp context activation request with cause 'insufficient resources' or 'service option not supported'.

Specific message contents

As default except:

Request PDP Context Activation

Information Element	Value/remark
Transaction identifier	In the range 0-6
Transaction identifier flag	0
Offered PDP address	Arbitrarily chosen

Activate PDP Context Request

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
NSAPI	In the range 5-15
Requested LLC SAPI	3, 5, 9 or 11
Requested QoS	Arbitrarily chosen
Requested PDP address	As above

Activate PDP Context Accept

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	0
Negotiated LLC SAPI	As above
Negotiated QoS	As above
Radio priority level	Arbitrarily chosen
Spare half octet	0

Request PDP Context Activation Reject

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
PDP address	As above
SM cause	

45.2.4 Abnormal cases

45.2.4.1 T3380 Expiry

45.2.4.1.1 Conformance requirement

- 1) On the first expiry of the timer T3380, the MS shall resend the PDP CONTEXT ACTIVATION REQUEST
- 2) On the second expiry of the timer T3380, the MS shall resend the PDP CONTEXT ACTIVATION REQUEST
- 3) On the third expiry of the timer T3380, the MS shall resend the PDP CONTEXT ACTIVATION REQUEST
- 4) On the fourth expiry of the timer T3380, the MS shall resend the PDP CONTEXT ACTIVATION REQUEST
- 5) On the fifth expiry of the 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.

Reference

GSM 04.08 section 6.1.3.1.5

45.2.4.1.2 Test purpose

To test the behaviour of the MS when the network does not reply to PDP CONTEXT ACTIVATION REQUEST

45.2.4.1.3 Method of test

Related PICS/PIXT statements

- GPRS Supported yes/no
- Method of activating a context

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Test procedure

A context activation is requested by the user. The MS shall send the ACTIVATE PDP CONTEXT REQUEST message five times with T3380 ±10% seconds between each message. After this no further ACTIVATE PDP CONTEXT REQUEST messages shall be sent by the MS.

Maximum duration of test

5 mins

Expected sequence

Step	Direction	Message	Comments
1	MS		Initiate a context activation
2	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Request a pdp context activation
3	SS		T3380 ±10% seconds
4	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Request a pdp context activation
5	SS		T3380 ±10% seconds
6	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Request a pdp context activation
7	SS		T3380 ±10% seconds
8	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Request a pdp context activation
9	SS		T3380 ±10% seconds
10	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Request a pdp context activation
11	SS		Wait for T3380 +10% seconds to ensure no further ACTIVATE PDP CONTEXT REQUEST messages are sent by the MS

Specific message contents

As default except:

Activate PDP Context Request

Information Element	Value/remark
Transaction identifier	In the range 0-6
Transaction identifier flag	0
NSAPI	In the range 5-15
Requested LLC SAPI	3, 5, 9 or 11
Requested QoS	Arbitrarily chosen
Requested PDP address	Arbitrarily chosen

45.2.4.2 Collision of MS initiated and network requested PDP context activation

45.2.4.2.1 Conformance requirement

In the event of collision between MS initiated and network initiated PDP context activation requests, the MS shall discard the REQUEST PDP CONTEXT ACTIVATION message and shall wait for an ACTIVATE PDP CONTEXT ACCEPT message.

Reference

GSM 04.08 section 6.1.3.1.5

45.2.4.2.2 Test purpose

To test the behaviour of the MS when there is a collision between an MS initiated and network requested PDP context activation.

45.2.4.2.3 Method of test

Related PICS/PIXIT statements

- GPRS Supported yes/no
- Method of pdp context activation

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Case 1

For an MS that supports PDP Context Activation requested by the network.

Test procedure

A context activation is requested by the user with a static PDP address. After receipt of the ACTIVATE PDP CONTEXT REQUEST message the SS sends a REQUEST PDP CONTEXT ACTIVATION message followed by an ACTIVATE PDP CONTEXT ACCEPT message in a time less than T3380 (Use T3380/2). The MS shall send no messages within this time.

Maximum duration of test

5 mins

Expected sequence

Step	Direction	Message	Comments
1	MS		Initiate a context activation
2	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Request a pdp context activation
3	SS -> MS	REQUEST PDP CONTEXT ACTIVATION	Request a pdp context activation request
4	SS		Wait for T3380/2 seconds to ensure MS does not resend ACTIVATE PDP CONTEXT REQUEST
5	SS -> MS	ACTIVATE PDP CONTEXT ACCEPT	Accept the pdp context activation

Case 2

For an MS that does not support PDP Context Activation requested by the network.

Test procedure

A context activation is requested by the user. After receipt of the ACTIVATE PDP CONTEXT REQUEST message the SS sends a REQUEST PDP CONTEXT ACTIVATION message. The MS shall send a REQUEST PDP CONTEXT ACTIVATION REJECT message with cause set to 'insufficient resources' or 'feature not supported'. The SS then sends an ACTIVATE PDP CONTEXT ACCEPT.

Maximum duration of test

5 mins

Expected sequence

Step	Direction	Message	Comments
1	MS		Initiate a context activation
2	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Request a pdp context activation
3	SS -> MS	REQUEST PDP CONTEXT ACTIVATION	Request a pdp context activation request
4	MS -> SS	REQUEST PDP CONTEXT ACTIVATION REJECT	Cause set to 'insufficient resources' or 'feature not supported'.
5	SS -> MS	ACTIVATE PDP CONTEXT ACCEPT	Accept the pdp context activation

Specific message contents

As default except:

Activate PDP Context Request

Information Element	Value/remark
Transaction identifier	In the range 0-6
Transaction identifier flag	0
NSAPI	In the range 5-15
Requested LLC SAPI	3, 5, 9 or 11
Requested QoS	Arbitrarily chosen
Requested PDP address	Arbitrarily chosen

Request PDP Context Activation

Information Element	Value/remark
Transaction identifier	In the range 0-6
Transaction identifier flag	0
Offered PDP address	As above

Activate PDP Context Accept

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
Negotiated LLC SAPI	As above
Negotiated QoS	As above
Radio priority level	Arbitrarily chosen
Spare half octet	0

Request PDP Context Activation Reject

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
PDP address	As above
SM cause	'insufficient resources' or 'feature not supported'

45.3 PDP context modification procedure

45.3.1 PDP context modification

Applicability

This test can only be performed if the minimum QoS can be set by the user.

45.3.1.1 Conformance requirement

- 1) Upon receipt of a MODIFY PDP CONTEXT REQUEST message
 - If the MS can accept the modification requested, the MS shall reply with the MODIFY PDP CONTEXT ACCEPT message.

- If the MS is unable to accept the modification requested, the MS shall initiate the PDP context deactivation procedure for the NSAPI that has been indicated in the message MODIFY PDP CONTEXT REQUEST - the reject cause IE value of the DEACTIVATE PDP CONTEXT REQUEST message shall indicate "QoS not accepted".
- 2) The MS shall either accept the modification request or deactivate the PDP context, it shall not ignore the modification request.

Reference

GSM 04.08 section 6.1.3.2

45.3.1.2 Test purpose

To test the behaviour of the MS upon receipt of a MODIFY PDP CONTEXT REQUEST message.

45.3.1.3 Method of test

Related PICS/PIXT statements

- GPRS Supported yes/no
- User setting of Minimum QoS supported yes/no
- Method of setting minimum QoS
- Method of activating a pdp context

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Test procedure

A PDP context is activated by the user and accepted by the SS. A MODIFY PDP CONTEXT REQUEST message is then sent to the MS with a QoS that is acceptable to the MS (higher than or equal to the minimum QoS set in the MS). The MS shall send a MODIFY PDP CONTEXT ACCEPT message in return. A MODIFY PDP CONTEXT REQUEST message is then sent to the MS with a QoS that is not acceptable to the MS (lower than the minimum QoS set in the MS). The MS shall send a DEACTIVATE PDP CONTEXT REQUEST message in return.

Maximum duration of test

5 mins

Expected sequence

Step	Direction	Message	Comments
1	MS		Initiate a context activation
2	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	SS -> MS	ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	SS -> MS	MODIFY PDP CONTEXT REQUEST	Request the modification of a pdp context
5	MS -> SS	MODIFY PDP CONTEXT ACCEPT	Accept the pdp context modification
6	SS -> MS	MODIFY PDP CONTEXT REQUEST	Request the modification of a pdp context
7	MS -> SS	DEACTIVATE PDP CONTEXT REQUEST	Reject the pdp context modification by deactivating the pdp context. Cause set to 'QoS not acceptable'
8	SS -> MS	DEACTIVATE PDP CONTEXT ACCEPT	Accept the pdp context deactivation

Specific message contents

As default except:

Activate PDP Context Request

Information Element	Value/remark
Transaction identifier	In the range 0-6
Transaction identifier flag	0
NSAPI	In the range 5-15
Requested LLC SAPI	3, 5, 9 or 11
Requested QoS	Arbitrarily chosen
Requested PDP address	Arbitrarily chosen

Activate PDP Context Accept

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
Negotiated LLC SAPI	As above
Negotiated QoS	As above
Radio priority level	Arbitrarily chosen
Spare half octet	0

Modify PDP Context Request (used in step 4)

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
Radio priority level	As above
Spare half octet	0
Requested LLC SAPI	As above
New QoS	Higher than or equal to the minimum QoS

Modify PDP Context Request (used in step 6)

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
Radio priority level	As above
Spare half octet	0
Requested LLC SAPI	As above
New QoS	Lower than the minimum QoS

Modify PDP Context Accept

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	0

Deactivate PDP Context Request

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	0
SM cause	QoS not acceptable

Deactivate PDP Context Accept

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1

45.4 PDP context deactivation procedure

45.4.1 PDP context deactivation initiated by the MS

45.4.1.1 Conformance requirement

The message contains the transaction identifier in use for the PDP context to be deactivated and a cause code that typically indicates one of the following causes:

- #26: insufficient resources;
- #36: regular PDP context deactivation; or
- #37: QoS not accepted.

Upon receipt of the DEACTIVATE PDP CONTEXT ACCEPT message, the MS shall stop timer T3390.

- 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 recognised 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 and remain in the PDP-INACTIVE state.

Reference

GSM 04.08 sections 6.1.3.3.1 & 8.3.2 (b)

45.4.1.2 Test purpose

To test the behaviour of the MS upon receipt of a DEACTIVATE PDP CONTEXT ACCEPT message from the network.

45.4.1.3 Method of test

Related PICS/PIXT statements

- GPRS Supported yes/no
- Method of activating a pdp context
- Method of deactivating the pdp context

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Test procedure

A PDP context is activated by the user and accepted by the SS. The context deactivation is then requested by the user. The MS shall send a DEACTIVATE PDP CONTEXT REQUEST message to the SS. The SS shall then reply with a DEACTIVATE PDP CONTEXT ACCEPT message. The SS shall then wait for T3390+10% seconds to ensure T3390 has been stopped and that no further messages are sent from the MS. The SS shall then send a MODIFY PDP CONTEXT REQUEST for the deactivated context and the MS shall reply with an SM STATUS message with cause #81 'transaction identifier not known'.

Maximum duration of test

5 mins

Expected sequence

Step	Direction	Message	Comments
1	MS		Initiate a context activation
2	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Activate a pdp context
3	SS -> MS	ACTIVATE PDP CONTEXT ACCEPT	Accept the pdp context
4	MS		Initiate a context deactivation
5	MS -> SS	DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a pdp context
6	SS -> MS	DEACTIVATE PDP CONTEXT ACCEPT	Accept the pdp context deactivation
7	SS		Wait for T3390 +10% seconds to ensure no further deactivate request messages are sent
8	SS -> MS	MODIFY PDP CONTEXT REQUEST	Send a modify request for the deactivated context.
9	MS -> SS	SM STATUS	Cause set to #81

Specific message contents

As default except:

Activate PDP Context Request

Information Element	Value/remark
Transaction identifier	In the range 0-6
Transaction identifier flag	0
NSAPI	In the range 5-15
Requested LLC SAPI	3, 5, 9 or 11
Requested QoS	Arbitrarily chosen
Requested PDP address	Arbitrarily chosen

Activate PDP Context Accept

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
Negotiated LLC SAPI	As above
Negotiated QoS	As above
Radio priority level	Arbitrarily chosen
Spare half octet	0

Deactivate PDP Context Request

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	0
SM cause	Regular Deactivation

Deactivate PDP Context Accept

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1

Modify PDP Context Request

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
Radio priority level	As above
Spare half octet	0
Requested LLC SAPI	As above
New QoS	As above

SM Status

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	0
SM Cause	#81

45.4.2 PDP context deactivation initiated by the network

45.4.2.1 Conformance requirement

The MS shall, upon receipt of the DEACTIVATE PDP CONTEXT REQUEST message, reply with a DEACTIVATE PDP CONTEXT ACCEPT message.

- 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 recognised 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 and remain in the PDP-INACTIVE state.

Reference

GSM 04.08 sections 6.1.3.3.2 & 8.3.2 (b)

45.4.2.2 Test purpose

To test the behaviour of the MS upon receipt of a DEACTIVATE PDP CONTEXT REQUEST message from the network.

45.4.2.3 Method of test

Related PICS/PIXT statements

- GPRS Supported yes/no
- Method of activating a pdp context

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Test procedure

A PDP context is activated by the user and accepted by the SS. A DEACTIVATE PDP CONTEXT REQUEST message is then sent by the SS. The MS shall reply with a DEACTIVATE PDP CONTEXT ACCEPT message. The SS shall then send a MODIFY PDP CONTEXT REQUEST for the deactivated context and the MS shall reply with an SM STATUS message with cause #81 'transaction identifier not known'.

Maximum duration of test

5 mins

Expected sequence

Step	Direction	Message	Comments
1	MS		Initiate a context activation
2	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	SS -> MS	ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	SS -> MS	DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a pdp context
5	MS -> SS	DEACTIVATE PDP CONTEXT ACCEPT	Accept the pdp context deactivation.
6	SS -> MS	MODIFY PDP CONTEXT REQUEST	Send a modify request for the deactivated context.
7	MS -> SS	SM STATUS	Cause set to #81

Specific message contents

As default except:

Activate PDP Context Request

Information Element	Value/remark
Transaction identifier	In the range 0-6
Transaction identifier flag	0
NSAPI	In the range 5-15
Requested LLC SAPI	3, 5, 9 or 11
Requested QoS	Arbitrarily chosen
Requested PDP address	Arbitrarily chosen

Activate PDP Context Accept

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
Negotiated LLC SAPI	As above
Negotiated QoS	As above
Radio priority level	Arbitrarily chosen
Spare half octet	0

Deactivate PDP Context Request

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
SM cause	Regular Deactivation

Deactivate PDP Context Accept

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	0

Modify PDP Context Request

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
Radio priority level	As above
Spare half octet	0
Requested LLC SAPI	As above
New QoS	As above

SM Status

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	0
SM Cause	#81

45.4.3 Abnormal cases

45.4.3.1 T3390 Expiry

45.4.3.1.1 Conformance requirement

- 1) On the first expiry of timer T3390, the MS shall resend the message DEACTIVATE PDP CONTEXT REQUEST
- 2) On the second expiry of timer T3390, the MS shall resend the message DEACTIVATE PDP CONTEXT REQUEST

- 3) On the third expiry of timer T3390, the MS shall resend the message DEACTIVATE PDP CONTEXT REQUEST
- 4) On the fourth expiry of timer T3390, the MS shall resend the message DEACTIVATE PDP CONTEXT REQUEST
- 5) On the fifth expiry of timer T3390, the MS shall release all resources allocated and shall erase the PDP context related data.

Reference

GSM 04.08 section 6.1.3.3.3

45.4.3.1.2 Test purpose

To test the behaviour of the MS when the network does not reply to a DEACTIVATE PDP CONTEXT REQUEST message from the MS.

45.4.3.1.3 Method of test

Related PICS/PIXIT statements

- GPRS Supported yes/no
- Method of activating a pdp context
- Method of deactivating a pdp context

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Test procedure

A PDP context is activated by the user and accepted by the SS. A context deactivation is then requested by the user. The MS shall send a DEACTIVATE PDP CONTEXT REQUEST message five times with $T3390 \pm 10\%$ seconds between each message. $T3390 + 10\%$ seconds after the fifth message the SS shall send a MODIFY PDP CONTEXT REQUEST message for the deactivated context and the MS shall reply with SM STATUS with cause set to #81 'Transaction identifier not known'.

Maximum duration of test

5 mins

Expected sequence

Step	Direction	Message	Comments
1	MS		Initiate a context activation
2	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	SS -> MS	ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	MS		Initiate a context deactivation
5	MS -> SS	DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a pdp context
6	SS		T3390 ±10% seconds
7	MS -> SS	DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a pdp context
8	SS		T3390 ±10% seconds
9	MS -> SS	DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a pdp context
10	SS		T3390 ±10% seconds
11	MS -> SS	DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a pdp context
12	SS		T3390 ±10% seconds
13	MS -> SS	DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a pdp context
14	SS		Wait T3390 +10% seconds
15	SS -> MS	MODIFY PDP CONTEXT REQUEST	Try to modify the deactivated context.
16	MS -> SS	SM STATUS	Cause set to #81

Specific message contents

As default except:

Activate PDP Context Request

Information Element	Value/remark
Transaction identifier	In the range 0-6
Transaction identifier flag	0
NSAPI	In the range 5-15
Requested LLC SAPI	3, 5, 9 or 11
Requested QoS	Arbitrarily chosen
Requested PDP address	Arbitrarily chosen

Activate PDP Context Accept

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
Negotiated LLC SAPI	As above
Negotiated QoS	As above
Radio priority level	Arbitrarily chosen
Spare half octet	0

Deactivate PDP Context Request

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	0
SM cause	Regular Deactivation

Modify PDP Context Request

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
Radio priority level	As above
Spare half octet	0
Requested LLC SAPI	As above
New QoS	As above

SM Status

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	0
SM Cause	#81

45.4.3.2 Collision of MS and network initiated PDP context deactivation requests

45.4.3.2.1 Conformance requirement

If the MS and the network initiated PDP context deactivation requests collide, the MS and the network shall each reply with the message DEACTIVATE PDP CONTEXT ACCEPT and shall stop timer T3390 and T3395, respectively.

Reference

GSM 04.08 section 6.1.3.3.3

45.4.3.2.2 Test purpose

To test the behaviour of the MS when there is a collision between an MS initiated and a network initiated context deactivation.

45.4.3.2.3 Method of test

Related PICS/PIXIT statements

- GPRS Supported yes/no
- Method of activating a pdp context
- Method of deactivating a pdp context

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Test procedure

A PDP context is activated by the user and accepted by the SS. A context deactivation is then requested by the user. Upon receipt of the DEACTIVATE PDP CONTEXT REQUEST message the SS sends a DEACTIVATE PDP CONTEXT REQUEST message. The MS shall reply with only one DEACTIVATE PDP CONTEXT ACCEPT message. Upon receipt of this message the SS sends a DEACTIVATE PDP CONTEXT ACCEPT message.

Maximum duration of test

5 mins

Expected sequence

Step	Direction	Message	Comments
1	MS		Initiate a context activation
2	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	SS -> MS	ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	MS		Initiate a context deactivation
5	MS -> SS	DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a pdp context
6	SS -> MS	DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a pdp context
7	MS -> SS	DEACTIVATE PDP CONTEXT ACCEPT	Accept the pdp context deactivation
8	SS -> MS	DEACTIVATE PDP CONTEXT ACCEPT	Accept the pdp context deactivation

Specific message contents

As default except:

Activate PDP Context Request

Information Element	Value/remark
Transaction identifier	In the range 0-6
Transaction identifier flag	0
NSAPI	In the range 5-15
Requested LLC SAPI	3, 5, 9 or 11
Requested QoS	Arbitrarily chosen
Requested PDP address	Arbitrarily chosen

Activate PDP Context Accept

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
Negotiated LLC SAPI	As above
Negotiated QoS	As above
Radio priority level	Arbitrarily chosen
Spare half octet	0

Deactivate PDP Context Request (used in step 5)

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	0
SM cause	Regular Deactivation

Deactivate PDP Context Request (used in step 6)

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
SM cause	Regular Deactivation

Deactivate PDP Context Accept (used in step 7)

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	0

Deactivate PDP Context Accept (used in step 8)

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1

45.5 Unknown or Unforeseen Transaction Identifier/Non-semantical Mandatory Information Element Errors

45.5.1 Error cases

45.5.1.1 Conformance requirement

The mobile station shall reject a session management message other than SM-STATUS received with TI value "111" by immediately sending an SM-STATUS message with TI value "111". For a session management message received with TI different from "111", the following procedures shall apply:

- 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 recognised 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 and remain in the PDP-INACTIVE state.
- When a REQUEST PDP CONTEXT ACTIVATION message is received with a transaction identifier flag set to "1", this message shall be ignored.

When on receipt of a message,

- an "imperative message part" error; or
- a "missing mandatory IE" error

is diagnosed or when a message containing:

- a syntactically incorrect mandatory IE; or
- an IE unknown in the message, but encoded as "comprehension required" or
- an out of sequence IE encoded as "comprehension required"

is received, the mobile station shall proceed as follows:

If the message was an SM message the SM-STATUS message with cause # 96 "invalid mandatory information" shall be returned.

If a mobile station receives a GMM message or SM message with message type not defined for the PD or not implemented by the receiver, it shall return a status message (GMM STATUS or SM STATUS depending on the protocol discriminator) with cause #97 'message type non-existent or not implemented'.

If the mobile station receives a message not compatible with the protocol state, the mobile station shall ignore the message except for the fact that when the message was a SM message the SM-STATUS message with cause #98 'Message type not compatible with protocol state' shall be returned.

Other syntactic errors

This section applies to the analysis of the value part of an information element. It defines the following terminology:

- An IE is defined to be syntactically incorrect in a message if it contains at least one value defined as 'reserved', or if its value part violates syntactic rules given in the specification of the value part. However it is not a syntactical error that a type 4 standard IE specifies in its length indicator a greater length than possible according to the value part specification: extra bits are ignored.

Reference

GSM 04.08 sections 8.3.2 and 8.5.

GSM 04.07 section 11.4.2

45.5.1.2 Test Purpose

To test the behaviour of the MS when messages with unknown or unforeseen transaction identifiers or non-semantic mandatory information element errors occur.

45.5.1.3 Method of test

Related PICS/PIXIT statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Test procedure

A PDP context activation is requested by the SS with the transaction identifier set to '1'. The MS shall not respond to this request.

A PDP context is then activated from the MS. An invalid accept message is then sent by the SS. The MS shall then send an SM STATUS message. After the MS has sent an ACTIVATE PDP CONTEXT REQUEST message the SS sends a MODIFY PDP CONTEXT REQUEST message with the same transaction identifier. The MS shall reply with an SM STATUS message with the cause set to #98 'Message type not compatible with protocol state'.

After $T3380 \pm 10\%$ seconds the MS shall send another ACTIVATE PDP CONTEXT REQUEST message. The SS sends back a Session Management message with an unknown message type. The MS shall reply with an SM STATUS message with the cause set to #97 'Message type non-existent or not implemented'.

After a further $T3380 \pm 10\%$ seconds another invalid accept message is sent by the SS.

After a further $T3380 \pm 10\%$ seconds a valid accept message with QoS length greater than 3 is sent by the SS. This shall be accepted by the MS

A deactivate message is then sent from the SS with the transaction identifier set to '111'. The MS shall reply with an SM STATUS message with transaction identifier set to '111'.

A deactivate message is then sent from the SS with a different transaction identifier to the one used in the activate request message sent by the MS. The MS shall reply with an SM STATUS message with cause #81 'invalid transaction identifier value'.

Two invalid modification messages are then sent to the MS in turn. The MS shall respond each time with an SM-STATUS message with cause # 96 "invalid mandatory information".

Maximum duration of test

5 mins

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	REQUEST PDP CONTEXT ACTIVATION	Request the activation of a PDP context with the transaction identifier flag set to "1"
2	SS		Wait 30 seconds to ensure MS does not request context activation
3	MS		Initiate a context request
4	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context from the MS
5	SS -> MS	ACTIVATE PDP CONTEXT ACCEPT	Unknown IE encoded as 'comprehension required'
6	MS -> SS	SM STATUS	Cause set to #96
7	SS		Wait T3380 seconds ±10%
8	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context from the MS (auto-generated)
9	SS -> MS	MODIFY PDP CONTEXT REQUEST	Request the modification of the PDP context
10	MS -> SS	SM STATUS	Cause set to #98 'Message type not compatible with protocol state'. Wait T3380 seconds ±10%
11	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context from the MS (auto-generated)
12	SS -> MS	UNKNOWN MESSAGE	Message with unknown message type
13	MS -> SS	SM STATUS	Cause set to #97 'message type non-existent or not implemented'. Wait T3380 seconds ±10%
14	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context from the MS (auto-generated)
15	SS -> MS	ACTIVATE PDP CONTEXT ACCEPT	Out of sequence IE encoded as 'comprehension required'
16	MS -> SS	SM STATUS	Cause set to #96
17	SS		Wait T3380 seconds ±10%
18	MS -> SS	ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context from the MS (auto-generated)
19	SS -> MS	ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
20	SS -> MS	DEACTIVATE PDP CONTEXT REQUEST	TI set to "111"
21	MS -> SS	SM STATUS	TI set to "111", cause value not checked
22	SS -> MS	DEACTIVATE PDP CONTEXT REQUEST	Try to deactivate the context with a different transaction identifier to that used to activate the context
23	MS -> SS	SM STATUS	Cause set to # 81
24	SS -> MS	MODIFY PDP CONTEXT REQUEST	Request the modification of the PDP context
25	MS -> SS	SM STATUS	Cause set to # 96
26	SS -> MS	MODIFY PDP CONTEXT REQUEST	Request the modification of the PDP context
27	MS -> SS	SM STATUS	Cause set to # 96

Specific message contents

As default except:

Request PDP Context Activation

Information Element	Value/remark
Transaction identifier	In the range 0-6
Transaction identifier flag	1
Offered PDP address	Arbitrarily chosen

Activate PDP Context Request

Information Element	Value/remark
Transaction identifier	In the range 0-6
Transaction identifier flag	0
NSAPI	In the range 5-15
Requested LLC SAPI	3, 5, 9 or 11
Requested QoS	Arbitrarily chosen
Requested PDP address	Arbitrarily chosen

Activate PDP Context Accept (used in step 5)

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
Negotiated LLC SAPI	As above
Negotiated QoS	As above
Radio priority level	Arbitrarily chosen
Spare half octet	0
PDP address	As above
'Comprehension required IE'	0Fh NOTE: first four bits encoded as 'comprehension required'

Activate PDP Context Accept (used in step 15)

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
Negotiated LLC SAPI	As above
Negotiated QoS	As above
Radio priority level	Arbitrarily chosen
Spare half octet	0
PDP address	As above
'Comprehension required IE'	0Fh NOTE: first four bits encoded as 'comprehension required'
Protocol configuration options	Minimum length with Configuration protocol of 'PPP'

Activate PDP Context Accept (used in step 19)

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
Negotiated LLC SAPI	As above
Negotiated QoS	As above but with length set to 5 and 2 extra octets set to 0 after the normal QoS octets
Radio priority level	Arbitrarily chosen
Spare half octet	0
PDP address	As above

Deactivate PDP Context Request (used in step 20)

Information Element	Value/remark
Transaction identifier	111
Transaction identifier flag	1
SM cause	24h, regular deactivation

Deactivate PDP Context Request (used in step 22)

Information Element	Value/remark
Transaction identifier	In the range 2-8, but different from the TI in the Activate PDP Context Request message
Transaction identifier flag	1
SM cause	24h, regular deactivation

Modify PDP Context Request (used in step 24)

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
Radio priority level	As above
Spare half octet	0
Requested LLC SAPI	As above
New QoS	This IE will NOT be present

Modify PDP Context Request (used in step 26)

Information Element	Value/remark
Transaction identifier	As above
Transaction identifier flag	1
Radio priority level	As above
Spare half octet	0
Requested LLC SAPI	0 NOTE: this is a reserved value
New QoS	Arbitrary value