3GPP TSG CN Plenary **Tdoc NP-000662**
Meeting #10, Bangkok, Thailand
6th – 8th December 2000

Source: **TSG CN WG 1**

Title: **Output Liaison statements since TSGN_09**

Agenda item: **6.1.1**

Document for: **Information**

Introduction:

This document contains output liaison statements since TSGN_09, that have been agreed by **TSG CN WG1** and sent to the related working groups. They are forwarded to TSG CN Plenary meeting #10 for information.

Output Liaison Statements from TSG CN WG1 SIP_Ad-hoc#1 and TSGN WG1 meeting #20

The LSes from the SIP#1 Ad-hoc meeting were E-mail approved

Tdoc number N1-00	Title	WI	Attachments	To	Cc
N1-001107	Comments to WI Description on "Interworking between IM CN subsystem and IP networks	Interworking between IM CN subsystem and IP networks	N1-001105	3GPP TSG CN WG 3	-
N1-001111	Response to LS on Ungraceful session termination in the IM domain	SIP-CC	N1-001055	3GPP TSG SA WG2	-
N1-001112	LS on WID-Support of IP multimedia services	Support of IP multimedia services		3GPP TSG SA WG 1	-
N1-001113	LS on RTCP responsibility	SIP-CC		3GPP TSG CN WG 3	--
1214	LS out - Unsynchronized PDP contexts handling	GPRS	N1-001364, R2-00xxxx	RAN WG2	RAN WG3
1215	LS out - Unsynchronized PDP contexts handling	GPRS	N1-001364, R3-00xxxx	RAN WG3	RAN WG2
1310	Terminal Capability Negotiation.	MS Classmark	-	T WG2, SA WG2	SA WG1
1312	Response to LS on Information about current status in RAN2 on the interactions between RRC and upper layers	TEI/ Terminology	-	RAN WG2, GERAN WG2	RAN WG3

1313	Response to LS - UTRAN Initiated RAB Renegotiation/Reconfiguration	?	-	RAN WG3	-
1314	Range of CN specific DRX cycle length coefficient	-	N1-001398 N1-001399	RAN WG2, RAN WG3	-
1315	Response to Liaison on the usage of Paging Cause IE in a Paging message	-	-	RAN WG2, RAN WG3	-
1317	Response to Liaison Statement on IPT Basic Call Handling	SIP Call Control protocol for the IM subsyste m	N1-001386	SA WG2, CN WG2	CN WG4
1328	Reply to LS on Supported Codec Lists in TS 26.103	OoBTC	N1-001388	SA WG4	(TrFO/TFO works RAN WG3
1329	Response to LS on request to review timing requirements in Idle mode test cases	-	N1-001167	T WG1/SIG, T WG1/RF	TSG-T1, RAN WG WG2, GERAN W
1331	Response Liaison Statement on Emergency Call Indication in the network	Emergen cy call	-	T WG3	SA WG1
1371	Response to the LS from CN3 and CN4 on intersystem handover problem	GSM-UMTS interworki ng	N1-001372	CN WG3, CN WG4	-
1394	LCS Air Interface Protocol for PS domain	LCS		CN WG4	SA WG2
1407	Response to LS (R3-002198, R2-001817, S2-001526) on Behaviour in the “forward handover” scenario without an Iur in Release ‘99	GSM UMTS interworki ng	N1-001409, N1-001157, N1-001143, N1-001148	RAN WG3, TSG RAN WG2, TSG SA2	TSG GERAN
1411	LS on DL indication of the network interface	-	-	GERAN WG2	SA WG1, SA WG WG2
1427	Response “Re-establish Capability for Emergency call“ from SA1	CS based emergen cy call enhance ments	N1-001275	SA WG1	-

8 Requirements for support of RRM

8.1 General

8.2 Idle Mode Tasks

8.2.1 Introduction

8.2.2 RF Cell Selection Scenario

8.2.3 RF Cell Re-Selection Scenario

8.2.3.1 Cell Re-Selection single carrier multi cell case

8.2.3.2 Cell Re-Selection multi carrier multi cell case

8.2.3.3 Cell Re-Selection UTRAN to GSM

8.2.3.3.1 Definition and applicability

Test to verify that the UE is capable of re-selecting a GSM cell within [TBD: x] seconds from it becoming a cell to be reselected according to the cell re-selection criteria. The cells, which are possible to be re-reselected during the test are belonging to different location areas. The cell re-selection delay is then defined as a time from when radio conditions are changed to the moment in time when the UE starts sending the RR Channel Request message for Location Update message to GSM.

This test is applicable for UEs supporting UTRAN and GSM.

8.2.3.3.2 Conformance requirement

Cell re-selection shall be correct in more than [TBD: 90%] of the cases. Cell re-selection is correct if within [TBD: x] seconds the UE re-reselects a new cell, which fulfills the cell re-selection criteria. The confidence level is set to [Y%]. (Annex [FFS])

The reference for this requirement is [2] TS 25.133 subclause 4.3.3.1.2.

8.2.3.3.3 Test purpose

To verify that the UE meets the conformance requirement.

8.2.3.3.4 Method of test

8.2.3.3.4.1 Initial conditions

Parameters changed from default values in [FFS].

Table 8.2.5: Test parameters for Cell re-selection UTRAN to GSM (cell 1)

Parameter	Unit	Cell 1 (UTRA)	
		T1	T2
UTRA RF Channel Number		Channel 1	
CPICH_Ec/Ior	dB	-10	
PCCPCH_Ec/Ior	dB	-12	
SCH_Ec/Ior	dB	-12	
PICH_Ec/Ior	dB	-15	
OCNS_Ec/Ior	dB	-0.941	
$\hat{I}_{or}/I_{oc}$	dB	10.3	7.3
I_{oc}	dBm/3.84 MHz	–70	
CPICH_Ec/Io	dB	-13	-16
CPICH_RSCP	dBm	[L1]	[L2]
Propagation Condition		AWGN	
Cell_selection_and_reselection_quality_measure		CPICH E_c/N_0	
Qqualmin	dB	[ ]	
Qrxlevmin	dBm	[ ]	
UE_TXPWR_MAX_RACH	dBm	[ ]	
$Qoffset_{s,n}$	dB	C1, C2: [ ]	
Qhyst	dB	[ ]	
PENALTY_TIME	s	C2: [ ]	
TEMP_OFFSET	dB	C2: [ ]	
Treselection	s	[ ]	
$Ssearch_{RAT}$	dB	[ ]	

Table 8.2.6: Test parameters for Cell re-selection UTRAN to GSM (cell 2)

Parameter	Unit	Cell 2 (GSM)	
		T1	T2
Absolute RF Channel Number		ARFCN 1	
RXLEV	dBm	-70	-60
RXLEV_ACCESS_MIN	dBm	[ ]	
MS_TXPWR_MAX_CCH	dBm	[ ]	

Time T1 is X seconds and T2 is Y seconds.

Note: T1 and T2 need to be defined so that cell re-selection reaction time is taken into account.

8.2.3.3.4.2 Procedures

a) The SS activates cell 1 and 2 with T1 defined parameters and monitors cell 1 and 2 for RA requests from the UE

b) The UE is switched on

c) The SS waits for RA request from the UE on cell 1

d) After [T1] seconds from switch on, the parameters are changed as described for T2

e) The SS waits for RA request from the UE on cell 2

f) After [T2] seconds from switch on, the parameters are changed as described for T1

g) Repeat step c) to f) [TBD] times

8.2.3.3.5 Test requirements

1) In step c), the UE shall respond on cell 1 within [TBD] seconds

2) In step e), the UE shall respond on cell 2 within [TBD] seconds in more than [X%] of the cases.

[Editor's note: The test must be executed a number of times as indirectly set by the Conformance Requirement. The number is for FFS]

8 Requirements for support of RRM

8.1 General

8.2 Idle Mode Tasks

8.2.1 Introduction

8.2.2 RF Cell Selection Scenario

8.2.2.1 Cell Selection single carrier single cell case

8.2.2.1.1 Definition and applicability

Test to verify that the UE is capable of selecting a suitable cell within [5] seconds from switch on with stored information of the last registered PLMN. This cell selection delay is defined as the time the UE needs for sending RRC Connection Request for Location Registration to UTRAN after the power has been switched on with a valid USIM and PIN is disabled.

This test is applicable for all UE's.

8.2.2.1.2 Conformance requirement

Cell selection shall be correct in more than [X%] of the cases. Cell selection is correct if within [5] seconds the UE camps on the cell. The confidence level is set to [Y%]. (Annex [FFS])

The reference for this requirement is [2] TS 25.133 subclause 4.2.1.3.

8.2.2.1.3 Test purpose

To verify that the UE meets the conformance requirement.

8.2.2.1.4 Method of test

8.2.2.1.4.1 Initial conditions

The absolute signal level of each cell can be obtained from the values of $\hat{I}_{or}/I_{oc}$ in table 8.2.1.

Parameters changed from default values in table TS 34.123-1, 6.1.3.1.

Table 8.2.1: Test parameters for Cell selection single carrier single cell

Parameter	Unit	Cell 1
UTRA RF Channel Number		Channel 1
CPICH_Ec/Ior	dB	-10
PCCPCH_Ec/Ior	dB	-12
SCH_Ec/Ior	dB	-12
PICH_Ec/Ior	dB	-15
OCNS_Ec/Ior	dB	-0.941
$\hat{I}_{or}/I_{oc}$	dB	0
I_{oc}	dBm/3.84 MHz	-70
CPICH_Ec/Io	dB	-13
Propagation Condition		AWGN
Qmin	dB	[ ]
UE_TXPWR_MAX_RACH	dBm	[ ]

8.2.2.1.4.2 Procedures

a) The SS activates cell 1 and monitors cell 1 for RA-request from the UE

b) The UE is switched on

c) The SS waits for RA-request from the UE

d) The UE is switched off

e) The SS monitors cell 1 for RA-request from the UE

f) The UE is switched on

g) The SS waits for RA-request from the UE

h) Repeat step d) to g) [TBD] times

8.2.2.1.5 Test requirements

1) In step c), the UE shall respond on cell 1 within [FFS seconds]

[Editor's note: LS of proposed timeout values sent to CN1/RAN2 to get acceptance]

2) In step g), the UE shall respond on cell 1 within [5] seconds in more than [X%] of the cases.

[Editor's note: The test must be executed a number of times as indirectly set by the Conformance Requirement. The number is for FFS]

8.2.2.2 Cell Selection multi carrier multi cell case

8.2.2.2.1 Definition and applicability

Test to verify that the UE is capable of selecting a suitable cell within [5+x] seconds from switch on with stored information of the last registered PLMN. The cell is selected among a group of cells with different relative RF signal levels. The cell selection delay is defined as the time the UE needs for sending RRC Connection Request for Location Registration to UTRAN after the power has been switched on with a valid USIM and PIN is disabled.

This test is applicable for all UEs.

8.2.2.2.2 Conformance requirement

Cell selection shall be correct in more than [X%] of the cases. Cell selection is correct if within [5+x] seconds the UE camps on the cell, which fulfils the cell selection criteria. The confidence level is set to [Y%]. (Annex [FFS])

The reference for this requirement is [2] TS 25.133 subclause 4.2.2.3.

8.2.2.2.3 Test purpose

To verify that the UE meets the conformance requirement.

8.2.2.2.4 Method of test

8.2.2.2.4.1 Initial conditions

The relative RF signal to total interference ratio at the UE (*CPICH_Ec/Io*) between the cells is shown in Table 8.2.2 and shall be:

Cell 5 > Cell 1 > Cell 2 > Cell 4 > Cell 3 > Cell 6

The absolute signal level of each cell can be obtained from the values of $\hat{I}_{or}/I_{oc}$ in table 8.2.2.

Parameters changed from default values in table TS 34.123-1, 6.1.3.1.

Table 8.2.2: Test parameters for Cell selection multi carrier multi cell

Parameter	Unit	Cell 1	Cell 2	Cell 3	Cell 4	Cell 5	Cell 6
UTRA RF Channel Number		Channel 1	Channel 1	Channel 1	Channel 2	Channel 2	Channel 2
CPICH_Ec/Ior	dB	-10	-10	-10	-10	-10	-10
PCCPCH_Ec/Ior	dB	-12	-12	-12	-12	-12	-12
SCH_Ec/Ior	dB	-12	-12	-12	-12	-12	-12
PICH_Ec/Ior	dB	-15	-15	-15	-15	-15	-15
OCNS_Ec/Ior	dB	-0.941	-0.941	-0.941	-0.941	-0.941	-0.941
$\hat{I}_{or}/I_{oc}$	dB	5.3	2.3	-1.7	6.3	14.3	2.3
I_{oc}	dBm/3.84 MHz	-70			-70		
CPICH_Ec/Io	dB	-13	-16	-20	-19	-11	-23
Propagation Condition		AWGN			AWGN		
Qmin	dB	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
UE_TXPWR_MAX_RACH	dBm	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

8.2.2.2.4.2 Procedures

a) The SS activates cell 1-6 and monitors cell 5, 1 and 2 for RA-request from the UE

b) The UE is switched on.

c) The SS waits for RA-request from the UE

d) The UE is switched off.

e) The SS monitors cell 5, 1 and 2 for RA requests from the UE

f) The UE is switched on

g) The SS waits for RA-request from the UE

h) Repeat step d) to g) [TBD] times

8.2.2.2.5 Test requirements

1) In step c), the UE shall respond on cell 5 within [FFS seconds]

[Editor's note: LS of proposed timeout values sent to CN1/RAN2 to get acceptance]

2) In step g), the UE shall respond on cell 5 within [5+x] seconds in more than [X%] of the cases.

[Editor's note: The test must be executed a number of times as indirectly set by the Conformance Requirement The number is for FFS]

8.2.3 RF Cell Re-Selection Scenario

8.2.3.1 Cell Re-Selection single carrier multi cell case

8.2.3.1.1 Definition and applicability

Test to verify that the UE is capable of re-selecting a new cell within [5] seconds from it becoming a cell to be reselected according to the cell re-selection criteria. The cells, which are possible to be re-reselected during the test are belonging to different location areas. The cell re-selection delay is then defined as a time from when CPICH_Ec/Io is changed on cell 1 and 2 to the moment in time when the UE starts sending the RRC Connection request for Location Update message to the UTRAN.

This test is applicable for all UEs.

8.2.3.1.2 Conformance requirement

Cell re-selection shall be correct in more than [X%] of the cases. Cell re-selection is correct if within [5] seconds the UE re-reselects a new cell, which fulfils the cell re-selection criteria. The confidence level is set to [Y%]. (Annex [FFS])

The reference for this requirement is [2] TS 25.133 subclause 4.3.1.3.

8.2.3.1.3 Test purpose

To verify that the UE meets the conformance requirement.

8.2.3.1.4 Method of test

8.2.3.1.4.1 Initial conditions

The relative RF signal to total interference ratio at the UE (*CPICH_Ec/Io*) between the cells is shown in Table 8.2.3 and shall be:

T1: Cell 2 > Cell 1 > Cell 3 = Cell 4 = Cell 5 = Cell 6

T2: Cell 1 > Cell 2 > Cell 3 = Cell 4 = Cell 5 = Cell 6

The absolute signal level of each cell can be obtained from the values of $\hat{I}_{or}/I_{oc}$ in table 8.2.3.

Parameters changed from default values in table TS 34.123-1, 6.1.3.1.

Table 8.2.3: Test parameters for Cell re-selection single carrier multi cell

Parameter	Unit	Cell 1		Cell 2		Cell 3		Cell 4		Cell 5		Cell 6	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1		Channel 1		Channel 1		Channel 1		Channel 1		Channel 1	
CPICH_Ec/Ior	dB	-10		-10		-10		-10		-10		-10	
PCCPCH_Ec/Ior	dB	-12		-12		-12		-12		-12		-12	
SCH_Ec/Ior	dB	-12		-12		-12		-12		-12		-12	
PICH_Ec/Ior	dB	-15		-15		-15		-15		-15		-15	
OCNS_Ec/Ior	dB	-0.941		-0.941		-0.941		-0.941		-0.941		-0.941	
$\hat{I}_{or}/I_{oc}$	dB	7.3	10.27	10.27	7.3	0.27		0.27		0.27		0.27	
I_{oc}	dBm/ 3.84 MHz	–70											
CPICH_Ec/Io	dB	-16	-13	-13	-16	-23		-23		-23		-23	
Propagation Condition		AWGN											
Qoffset		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]	
Qhyst	dBm	[ ]		[ ]		[ ]		[ ]		[ ]		[ ]	
Treselection		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]	
Qintrasearch	dB	[ ]		[ ]		[ ]		[ ]		[ ]		[ ]	

Time T1 is X seconds and T2 is Y seconds.

Note: T1 and T2 need to be defined so that cell re-selection reaction time is taken into account.

8.2.3.1.4.2 Procedures

a) The SS activates cell 1-6 with T1 defined parameters and monitors cell 1 and 2 for RA requests from the UE

b) The UE is switched on

c) The SS waits for RA request from the UE cell 2

d) After [T1] seconds from switch on, the parameters are changed as described for T2

e) The SS waits for RA request from the UE on cell 1

f) After [T2] seconds from switch on, the parameters are changed as described for T1

g) Repeat step c) to f) [TBD] times

8.2.3.1.5 Test requirements

1) In step c), the UE shall respond on cell 2 within [FFS seconds]

[Editor's note: LS of proposed timeout values sent to CN1/RAN2 to get acceptance]

2) In step e), the UE shall respond on cell 1 within [5] seconds in more than [X%] of the cases.

[Editor's note: The test must be executed a number of times as indirectly set by the Conformance Requirement The number is for FFS]

8.2.3.2 Cell Re-Selection multi carrier multi cell case

8.2.3.2.1 Definition and applicability

Test to verify that the UE is capable of re-selecting a new cell within [TBD: Tres] seconds from it becoming a cell to be reselected according to the cell re-selection criteria. The cells, which are possible to be re-reselected during the test are transmitting on different frequencies and are belonging to different location areas. The cell re-selection delay is then defined as a time from when CPICH_Ec/Io is changed on cell 1 and 2 to the moment in time when the UE starts sending the RRC Connection request for Location Update message to the UTRAN.

This test is applicable for all UEs.

8.2.3.2.2 Conformance requirement

Cell re-selection shall be correct in more than [TBD: 90%] of the cases. Cell re-selection is correct if within [TBD: Nt] seconds the UE re-reselects a new cell, which fulfills the cell re-selection criteria. The confidence level is set to [Y%]. (Annex [FFS])

The reference for this requirement is [2] TS 25.133 subclause 4.3.2.3.

8.2.3.2.3 Test purpose

To verify that the UE meets the conformance requirement.

8.2.3.2.4 Method of test

8.2.3.2.4.1 Initial conditions

The relative RF signal to total interference ratio at the UE (*CPICH_Ec/Io*) between the cells is shown in Table 8.2.4 and shall be:

T1: Cell 2 > Cell 1 > Cell 3 = Cell 4 = Cell 5 = Cell 6

T2: Cell 1 > Cell 2 > Cell 3 = Cell 4 = Cell 5 = Cell 6

The absolute signal level of each cell can be obtained from the values of $\hat{I}_{or}/I_{oc}$ in table 8.2.4.

Parameters changed from default values in table TS 34.123-1, 6.1.3.1.

Table 8.2.4: Test parameters for Cell re-selection multi carrier multi cell

Parameter	Unit	Cell 1		Cell 2		Cell 3		Cell 4		Cell 5		Cell 6	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1		Channel 2		Channel 1		Channel 1		Channel 2		Channel 2	
CPICH_Ec/Ior	dB	-10		-10		-10		-10		-10		-10	
PCCPCH_Ec/Ior	dB	-12		-12		-12		-12		-12		-12	
SCH_Ec/Ior	dB	-12		-12		-12		-12		-12		-12	
PICH_Ec/Ior	dB	-15		-15		-15		-15		-15		-15	
OCNS_Ec/Ior	dB	-0.941		-0.941		-0.941		-0.941		-0.941		-0.941	
$\hat{I}_{or}/I_{oc}$	dB	-3.4	2.2	2.2	-3.4	-7.4	-4.8	-7.4	-4.8	-4.8	-7.4	-4.8	-7.4
I_{oc}	dBm/ 3.84 MHz	-70											
CPICH_Ec/Io	dB	-16	-13	-13	-16	-20		-20		-20		-20	
Propagation Condition		AWGN											
Qoffset		[0]		[0]		[0]		[0]		[0]		[0]	
Qhyst Treselection Qintersearch	dB dB	[2] [5] [-8]		[2] [5] [-8]		[2] [5] [-8]		[2] [5] [-8]		[2] [5] [-8]		[2] [5] [-8]	

Time T1 is X seconds and T2 is Y seconds.

Note: T1 and T2 need to be defined so that cell re-selection reaction time is taken into account.

8.2.3.2.4.2 Procedures

a) The SS activates cell 1-6 with T1 defined parameters and monitors cell 1 and 2 for RA requests from the UE

b) The UE is switched on

c) The SS waits for RA request from the UE cell 2

d) After [T1] seconds from switch on, the parameters are changed as described for T2

e) The SS waits for RA request from the UE on cell 1

f) After [T2] seconds from switch on, the parameters are changed as described for T1

g) Repeat step c) to f) [TBD] times

8.2.3.2.5 Test requirements

1) In step c), the UE shall respond on cell 2 within [FFS seconds]

[Editor's note: LS of proposed timeout values sent to CN1/RAN2 to get acceptance]

2) In step e), the UE shall respond on cell 1 within [TBD] seconds in more than [X%] of the cases.

[Editor's note: The test must be executed a number of times as indirectly set by the Conformance Requirement The number is for FFS]

8.2.3.3 Requirements for UTRAN to GSM Cell Re-Selection

8.2.3.3.1 Cell re-selection delay

8.2.3.3.2 Test Parameters

TSG-T1/SIG SWG meeting #12 *TSG T1S#12*(00)000124
Naantali, Finland, 28-30 August, 2000.

Agenda Item:

Source: **Ericsson**

Title: **Idle mode test cases**

Document for: **Approval**

Introduction

This document provides a proposal for updates of Idle mode test cases in TS 34.123-1.

It is a modification to T1S-000085r1 from T1-SIG meeting #11.

Summary of changes

1. Updated to new versions of

   TS 23.122, V3.3.0 (2000-06)

   TS 25.101, V3.3.1 (2000-06)

   TS 25.133, V3.2.0 (2000-06)

   TS 25.214, V3.3.0 (2000-06)

   TS 25.304, V3.3.0 (2000-06)

   TS 25.331, V3.3.0 (2000-06)

   GSM 05.08, V8.5.0 (Release 1999)
2. Values for RF parameters have been calculated
3. New test cases introduced:

   6.1.1.1 Manual mode PLMN selection / re-selection and UE indication of available PLMNs

   6.1.1.4 UE will transmit only if PLMN available

   6.1.3.6 Cell reselection due to UE rejection “LA not allowed”

   6.1.3.7 Cell reselection due to UE rejection “Roaming not allowed in this LA”

   6.2.2.3 Cell reselection timings; GSM to UTRAN
4. The following test cases have been removed, as they are merged into other tests:

   6.1.1.3 Manual mode PLMN reselection

   6.1.1.5 Automatic mode PLMN reselection

   6.2.1.2 Manual mode PLMN reselection (2G/3G)

   6.2.1.4 Automatic mode PLMN reselection (2G/3G)

   6.2.1.5 UE will transmit only if PLMN available (2G/3G)

3GPP TSG T1/SIG Meeting #12
Naantali, Finland, 28-30 August 2000

Document T1S-000124
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.

34.123-1	CR	001	Current Version:	3.0.0

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

For submission to: T1SIG#12 *list expected approval meeting # here ↑*	for approval	X	strategic		*(for SMG use only)*
	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 [ ]

Source: Ericsson **Date:** 2000-08-28

Subject: Idle mode test cases

Work item:

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 Idle mode test cases included in this CR have been modified according to new release of core specifications (2000-06). In addition, new test cases have been added.

Clauses affected: 6.1.1, 6.1.2, 6.1.3, 6.2.2

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:

help.doc

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

6 Idle mode operations

NOTE: Most of the default settings in the tables below will most likely be merged into TS 34.108, 6.1.

In the following paragraphs some explanatory text is given concerning the nature of the tests in this subclause and the general behaviour of the SS is described.

Since the conformance requirements of most of the tests in this subclause cannot be tested explicitly, testing is done implicitly by testing the UE behaviour from its responses to the SS.

The SS transmits one BCCH per cell as indicated in the initial conditions for each test. These are referred to as Cell 1, Cell 2, etc. Each of these cell control channels are non-combined with DCCHs. It is assumed that the SS can simultaneously transmit [seven] BCCH and monitor [three] random access channels. For inter-frequency tests it is assumed that at least one of the BCCH and one of the monitored random access channels is in a different frequency band from the others. In some cases, a test is performed in multiple stages in order that the requirements can be tested within the above constraints.

For any UE all the carriers are in its supported band(s) of operation.

Unless otherwise stated in the method of test, in all of the tests of this subclause:

- the SS is continuously paging the UE on all cells at the start of the test and does not respond to RACH requests from the UE. Where a test specifies that the UE is not paged in a particular cell, only idle paging is transmitted according to TS 24.008 (see subclause 3.2.2.2);
- the default values of the system information data fields given in table 6.1.3.1are used;
- the USIM is in the idle updated state in the default location area with a TMSI assigned at the beginning of each test;
- the [UTRA RF Channel Number list] used for the carriers in each test are chosen from those in table 6.1.3.1 with adjacent carriers separated by a minimum of three RF channels.

The absolute accuracy of the UE signal level measurements is assumed to be [±6 dB]. A difference of at least [8 dB] is allowed for cases of discrimination between cell selection criteria (S), immediate cell evaluation reselection criteria (S_n) and cell reselection criteria (S_n) values and 0.

The relative accuracy of the UE signal level measurements is assumed to be [±3 dB] for the signal levels used in the tests of this subclause.. A difference of at least [5 dB] is allowed for cases of discrimination between S or S_n values on different carriers.

NOTE 1: The accuracy of UE signal level measurements is specified in TS 25.101 for FDD and in TS 25.102 for TDD. For all of the tests in this subclause, the signal levels used are greater than [1 dB] above reference sensitivity level.

NOTE 2: The tolerance on timers specified in TS 25.304 is [±10 %] except for Treselection where it is [±2 seconds]. In the tests of this subclause, the test requirements include these tolerances. Consequently, the times stated in the test requirement sometimes differ from the corresponding timer in the conformance requirement.

Where pulsed signals are specified, the SS tolerance on pulse width is [±2 %] and the SS tolerance on power level [±1 dB].

Table 6.1.3.1: Default values of the system information fields

[Editor's Note: the table below needs further review and updates according to TS 25.331]

Parameter	TS 25.331 reference	Abbr.	Normal Setting
Cell channel description		-	Any values
MAX retrans		-	1
TX-integer		-	Any value
CELL_BAR_QUALIFY		CBQ	0
CELL_BAR_ACCESS		CBA	0 (not barred)
AC CN		AC	All 0
RE		RE	0 (re-establishment allowed)
NCC		NCC	Any value
Cell Identity		-	Any value
MCC, MNC		PLMN	MS Home PLMN
LAC		LAC	1111 (Hex)
ATT		-	0 (Attach/Detach not allowed)
BS_AG_BLKS_RES		-	Any values
CCCH_CONF		-	1 basic physical channel used for CCCH, non-combined with DCCHs.
T3212		-	Any values
BS_PA_MFRMS		BPM	5 frames
Cell Options		-	Any values
Qhyst		CRH	[4 dB]
P_MAX		MTMC	Max. output power of MS
UE_TXPWR_MAX_RACH			Max. TX power level an UE may use when accessing the cell on RACH (read in system information) (dBm)
Qmin		RAM	[-90] (dB or dBm)
$Qoffset_{s,n}$		CRO	0
[FFS: TEMPORARY_OFFSET]		TO	0
Treselection		PT	0
[FFS: Power Offset]		PO	0
[BA ARFCN]		BA	All 0 except:
			[List of radio channels to be broadcasted in system information TBD]
Cell_selection_and_ reselection_quality_measure		-	CPICH E_c/N_o
UE_TXPWR_MAX_RACH		-	21 dBm
Accepts intra-freq. cell selection		-	No

Editor's note: Note that the table has been extended with the parameters "Cell_selection_and_ reselection_quality_measure", "UE_TXPWR_MAX_RACH" and "Accepts intra-freq. cell selection"

Table 6.1.3.2: Downlink Physical Channels

Physical Channel	Power	NOTE
CPICH	CPICH_Ec/Ior = -10 dB	
PCCPCH	PCCPCH_Ec/Ior = -12 dB	
SCCPCH	SCCPCH_Ec/Ior = -12 dB	
AICH	AICH_Ec/Ior = -15 dB	
SCH	SCH_Ec/Ior = -12 dB	This power shall be divided equally between Primary and Secondary Synchronization channels
PICH	PICH_Ec/Ior = -15 dB	
DPCH	Test dependent power	
OCNS	Necessary power so that total transmit power spectral density of BS (Ior) adds to one	

Table 6.1.3.3: Default radio conditions

Parameter	Unit	Value
I_{oc}	dBm/3.84 MHz	-70
Propagation Condition		Static

6.1 In a pure 3GPP environment

6.1.1 PLMN selection and reselection

6.1.1.1 Manual mode PLMN selection / re-selection and UE indication of available PLMNs

Equivalent test case: GSM 11.10-1 clause 26.3.4

6.1.1.1.1 Definition

Test to verify that the UE can present the available PLMNs to the user when asked to do so in manual mode and that the displayed PLMNs can be selected. If a “PLMN not allowed” or a PLMN with “LA not allowed” is selected, the UE shall enter limited service.

6.1.1.1.2 Conformance requirement

1. 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 attempts to perform a Location Registration.

   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 either Automatic or Manual Network Selection Mode Procedure depending on its operating mode.

2. Manual mode - Here the MS indicates to the user which PLMNs are available. Only when the user makes a manual selection does the MS try to obtain normal service on the VPLMN.

3. 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.

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

   3.1 HPLMN;

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

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

3.4 Other PLMN/access technology combinations with received high quality signal in random order;

3.5 Other PLMN/access technology combinations in order of decreasing signal quality.

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.

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.

4. To prevent repeated attempts to have roaming service on a not allowed LA, when the MS is informed that an LA is forbidden, the LA is added to a list of "forbidden LAs for roaming" which is stored in the MS. This list is deleted when the MS is switched off or when the SIM is removed. Such area restrictions are always valid for complete location areas independent of possible subdivision into GPRS routing areas.

   If a "PLMN not allowed" message is received by an MS in response to an LR request from a VPLMN, that VPLMN is added to a list of "forbidden PLMNs" in the SIM and thereafter that VPLMN will not be accessed by the MS when in automatic mode. A PLMN is removed from the "forbidden" list if, after a subsequent manual selection of that PLMN, there is a successful LR. This list is retained when the MS is switched off or the SIM is removed. The HPLMN shall not be stored on the list of "forbidden PLMNs".

References

1. TS 23.122, 4.4.3.1
2. TS 23.122, 3.1
3. TS 23.122, 4.4.3.1.2
4. TS 23.122, 3.1

NOTE: TS 31.102 defines the USIM fields

6.1.1.1.3 Test purpose

1. To verify that if no RPLMN exists at power-on, the UE shall camp on any acceptable cell and enter the limited service state.
2. To verify that in Manual Network Selection Mode Procedure the UE presents PLMNs in a prioritized order.
3. To verify that if a PLMN with LA rejection “LA not allowed” or “PLMN not allowed” is selected, the UE enters limited service.

6.1.1.1.4 Method of test

Initial conditions

The UE is in manual mode.

The SIM fields $EF_{UPLMNsel}$ (UPLMN selector), $EF_{OPLMNsel}$ (OPLMN selector) and $EF_{PHPLMNAT}$ (Preferred HPLMN Access Technology) shall only contain UTRAN as the Access Technology Identifier.

The SIM fields $EF_{UPLMNsel}$ and $EF_{OPLMNsel}$ shall only contain one PLMN as indicated in the table.

PLMN 1 is the HPLMN (i.e. IMSI). There is no RPLMN stored in the SIM (i.e. field EF_{BCCH}).

The UE is equipped with a SIM containing default values except for those values listed in table [FFS].

Parameters changed from the default values in table 6.1.3.1 and table [FFS].

Parameter	Unit	Cell 1	Cell 2	Cell 3	Cell 4	Cell 5
$\hat{I}_{or}/I_{oc}$	dB	2.5	4.5	7.5		
CPICH_Ec/Io	dB	-18	-16	-13	[FFS: High Q signal]	[FFS: Not high Q signal]
CPICH RSCP	dBm	-78	-76	-73		
Qqualmin	dB	-20	-20	-20		
Qrxlevmin	dBm	-100	-100	-100		
Squal	dB	2	4	7		
Srxlev	dBm	22	24	27		
PLMN		PLMN 1	PLMN 2	PLMN 3	PLMN 4	PLMN 5
SIM field for storing PLMN		EF_{IMSI} (IMSI)	$EF_{UPLMNsel}$ (UPLMN selector)	$EF_{OPLMNsel}$ (OPLMN selector)	Other PLMN than on the SIM	Other PLMN than on the SIM

Test procedure

a) The SS activates cells 1-4

b) The UE is switched on

c) The SS waits until UE says “Emergency calls only”

d) The UE is requested to display the PLMN list. PLMN 1 is selected manually

e) The SS sends SYSTEM INFORMATION to the UE to inform it that PLMN 1 belongs to a “LA not allowed”

f) The SS waits until UE says “Emergency calls only”

g) Step d-g) is repeated except that in d), PLMN 2 is selected and in e), the UE is informed that PLMN 2 belongs to a “PLMN not allowed”

h) Step d-g) is repeated except that in d), PLMN 3 is selected and in e), the UE is informed that PLMN 3 belongs to a “LA not allowed”

i) Step d-g) is repeated except that in d), PLMN 4 is selected and in e), the UE is informed that PLMN 4 belongs to a “LA not allowed”

j) Step d-g) is repeated except that in d), PLMN 5 is selected and in e), the UE is informed that PLMN 5 belongs to a “LA not allowed”

6.1.1.1.5 Test Requirements

1) In step d), the selected PLMN shall be displayed as PLMN 1 within 2 min.

2) In step g), the selected PLMN shall be displayed as PLMN 2 within 2 min.

3) In step h), the selected PLMN shall be displayed as PLMN 3 within 2 min.

4) In step i), the selected PLMN shall be displayed as PLMN 4 within 2 min.

5) In step i), the selected PLMN shall be displayed as PLMN 5 within 2 min.

[Editor’s note: The time 2 min is taken from the GSM 11.10-1, test case 26.3.4]

[Editor’s note: It is assumed that the displayed PLMN reflects the cell camped on and that it is not necesary to test that the UE actually camps on that cell]

6.1.1.2 Manual mode PLMN selection / reselection; independence of RF level and preferred PLMN

Equivalent test case: GSM 11.10-1 clause 26.3.4

6.1.1.2.1 Definition

Test to verify that in Manual Network Selection Mode, the UE is able to obtain normal service on a PLMN which is neither the better nor a preferred PLMN and that it tries to obtain service on a VPLMN if and only if the user selects it manually.

6.1.1.2.2 Conformance requirement

1. 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 attempts to perform a Location Registration.

   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 either Automatic or Manual Network Selection Mode Procedure depending on its operating mode.

2. Manual mode - Here the MS indicates to the user which PLMNs are available. Only when the user makes a manual selection does the MS try to obtain normal service on the VPLMN.3. 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.

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

   1.1 HPLMN;

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

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

   1.4 Other PLMN/access technology combinations with received high quality signal in random order;

   1.5 Other PLMN/access technology combinations in order of decreasing signal quality.

   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.

References

1. TS 23.122, 4.4.3.1
2. TS 23.122, 3.1
3. TS 23.122, 4.4.3.1.2

NOTE: TS 31.102 defines the USIM fields

6.1.1.2.3 Test purpose

1. To verify that the selected PLMN at switch-on is the HPLMN
2. To verify that in Manual Network Selection Mode Procedure the UE tries to obtain service on a VPLMN if and only if the user selects it manually
3. To verify that the UE is able to obtain normal service on a PLMN which is neither the better nor a prefered PLMN.

6.1.1.2.4 Method of test

Initial conditions

The UE is in manual mode.

PLMN 1 is the HPLMN (i.e. IMSI). There is no RPLMN stored in the SIM (i.e. field EF_{BCCH}).

PLMN 2 is not contained in any preferred PLMN list on the SIM.

PLMN 3 is contained in the UPLMN selector list on the SIM and has a different MCC-MNC from PLMN 1.

The UE is equipped with a SIM containing default values except for those values listed in table [FFS].

Parameters changed from the default values in table 6.1.3.1 and table [FFS].

Parameter	Unit	Cell 1			Cell 2
		T1	T2	T3	
UTRA RF Channel Number		UARFCN 1			UARFCN 2
$\hat{I}_{or}/I_{oc}$	dB	-4.74	-	0.02	-7.25
CPICH_Ec/Io	dB	-16	OFF	-13	-18
CPICH RSCP	dBm	-85	-	-80	-87
Qqualmin	dB	-20	-	-20	-20
Qrxlevmin	dBm	-100	-	-100	-100
Squal	dB	4	-	7	2
Srxlev	dBm	15	-	20	13
PLMN		PLMN 1	-	PLMN 3	PLMN 2

Test procedure

a) The SS activates cells 1 and 2 with T1 defined parameters.

b) The UE is switched on.

c) PLMN 1 is selected

d) The SS waits for RRC CONNECTION REQUEST from the UE. A complete Location Update is done.

e) Cell 1 is switched off as described for T2.

f) The SS waits to see if there is any RRC CONNECTION REQUEST from the UE

g) Cell 1 is switched on and set according to T3

h) The SS waits to see if there is any RRC CONNECTION REQUEST from the UE

i) PLMN 2 is selected manually

j) The SS waits for RRC CONNECTION REQUEST from the UE. A complete Location Update is done.

k) Cell 2 is switched off

l) The SS waits to see if there is any RRC CONNECTION REQUEST from the UE

6.1.1.2.5 Test Requirements

1) In step d), there shall be a response on Cell 1 within 2 min. The selected PLMN shall be PLMN 1.

2) In step f), there shall be no response from the UE within 2 min.

3) In step h), there shall be no response from the UE within 2 min.

4) In step j), there shall be a response on Cell 2 within 2 min. The selected PLMN shall be PLMN 2.

5) In step l), there shall be no response from the UE within 2 min.

[Editor's note: The time 2 min is taken from the GSM 11.10-1, test case 26.3.4]

6.1.1.3 Automatic mode PLMN selection

No equivalent test case in GSM

6.1.1.3.1 Definition

Test to verify that in Automatic Network Selection Mode, the UE selects PLMNs in a prioritized order and that a "PLMN not allowed" or a PLMN with "LA not allowed" is not selected.

6.1.1.3.2 Conformance requirement

1. 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 attempts to perform a Location Registration.

   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 either Automatic or Manual Network Selection Mode Procedure depending on its operating mode.

2. Automatic Network Selection Mode Procedure:

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

   1.1 HPLMN (if not previously selected);

   1.2 Each PLMN in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order)

   1.3 Each PLMN in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order)

   1.4 Other PLMN/access technology combinations with received high quality signal in random order

   1.5 Other PLMN/access technology combinations in order of decreasing signal quality

   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.

3. To prevent repeated attempts to have roaming service on a not allowed LA, when the MS is informed that an LA is forbidden, the LA is added to a list of "forbidden LAs for roaming" which is stored in the MS. This list is deleted when the MS is switched off or when the SIM is removed. Such area restrictions are always valid for complete location areas independent of possible subdivision into GPRS routing areas.

   If a "PLMN not allowed" message is received by an MS in response to an LR request from a VPLMN, that VPLMN is added to a list of "forbidden PLMNs" in the SIM and thereafter that VPLMN will not be accessed by the MS when in automatic mode. A PLMN is removed from the "forbidden" list if, after a subsequent manual selection of that PLMN, there is a successful LR. This list is retained when the MS is switched off or the SIM is removed. The HPLMN shall not be stored on the list of "forbidden PLMNs".

References

1. TS 23.122, 4.4.3.1
2. TS 23.122, 4.4.3.1.1
3. TS 23.122, 3.1

NOTE: TS 31.102 defines the USIM fields

6.1.1.3.3 Test purpose

1. To verify that the selected PLMN at switch-on is the HPLMN if no RPLMN exists
2. To verify that in Automatic Network Selection Mode Procedure the UE selects PLMNs in a prioritized order.
3. To verify that a PLMN with LA rejection “LA not allowed” or “PLMN not allowed” is not selected

6.1.1.3.4 Method of test

Initial conditions

The UE is in automatic mode.The SIM fields $EF_{UPLMNsel}$ (UPLMN selector), $EF_{OPLMNsel}$ (OPLMN selector) and $EF_{PHPLMNAT}$ (Preferred HPLMN Access Technology) shall only contain UTRAN as the Access Technology Identifier.

The SIM fields $EF_{UPLMNsel}$ and $EF_{OPLMNsel}$ shall only contain one PLMN as indicated in the table.

PLMN 1 is the HPLMN (i.e. IMSI). There is no RPLMN stored in the SIM (i.e. field EF_{BCCH}).

The UE is equipped with a SIM containing default values except for those values listed in table [FFS].

Parameters changed from the default values in table 6.1.3.1 and table

Parameter	Unit	Cell 1	Cell 2	Cell 3	Cell 4	Cell 5
$\hat{I}_{or}/I_{oc}$	dB	2.5	4.5	7.5		
CPICH_Ec/Io	dB	-18	-16	-13	[FFS: High Q signal]	[FFS: Not high Q signal]
CPICH RSCP	dBm	-78	-76	-73		
Qqualmin	dB	-20	-20	-20		
Qrxlevmin	dBm	-100	-100	-100		
Squal	dB	2	4	7		
Srxlev	dBm	22	24	27		
PLMN		PLMN 1	PLMN 2	PLMN 3	PLMN 4	PLMN 5
SIM field for storing PLMN		EF_{IMSI} (IMSI)	$EF_{UPLMNsel}$ (UPLMN selector)	$EF_{OPLMNsel}$ (OPLMN selector)	Other PLMN than on the SIM	Other PLMN than on the SIM

Test procedure

a) The SS activates cells 1-4

b) The UE is switched on.

c) The SS waits until the selected PLMN is displayed

d) The SS sends SYSTEM INFORMATION to the UE to inform it that PLMN 1 belongs to a “LA not allowed”

e) Step c-d) is repeated except that in d) the UE is informed that PLMN 2 belongs to a “PLMN not allowed”

f) Step c-d) is repeated except that in d) the UE is informed that PLMN 3 belongs to a “LA not allowed”

g) Step c-d) is repeated except that in d) the UE is informed that PLMN 4 belongs to a “LA not allowed”

h) Step c-d) is repeated except that in d) the UE is informed that PLMN 5 belongs to a “LA not allowed”

i) The SS waits until “Emergency calls only” is shown

6.1.1.3.5 Test Requirements

1) In step c), the selected PLMN shall be displayed as PLMN 1 within 2 min.

2) In step e), the selected PLMN shall be displayed as PLMN 2 within 2 min.

3) In step f), the selected PLMN shall be displayed as PLMN 3 within 2 min.

4) In step g), the selected PLMN shall be displayed as PLMN 4 within 2 min.

5) In step h), the selected PLMN shall be displayed as PLMN 5 within 2 min.

6) In step i), the UE shall say “Emergency calls only” within 2 min.

[Editor’s note: The time 2 min is taken from the GSM 11.10-1, test case 26.3.4][Editor’s note: It is assumed that the displayed PLMN reflects the cell camped on and that it is not necesary to test that the UE actually camps on that cell]

6.1.1.4 UE will transmit only if PLMN available

Equivalent test case: GSM 11.10-1 clause 26.3.3

6.1.1.4.1 Definition

Test to verify that the UE will not produce any RF transmission if no PLMN is available.

6.1.1.4.2 Conformance requirement

The UE shall monitor the DPCCH quality in order to detect a loss of the signal on Layer 1, as specified in TS 25.214. The thresholds Q_{out} and Q_{in} specify at what DPCCH quality levels the UE shall shut its power off and when it may turn its transmitter on respectively. The thresholds are not defined explicitly, but are defined by the conditions under which the UE shall shut its transmitter off and turn it on.

References

1. TS 25.101, 6.4.4 and TS 25.214, 4

6.1.1.4.3 Test purpose

1. To verify that the UE does not give any “Service indication” when no PLMN is available
2. To verify that the UE will not produce any RF transmission when no PLMN is available

6.1.1.4.4 Method of test

Initial conditions

Parameters changed from the default values in table 6.1.3.1 and table [FFS].

Parameter	Unit	Cell 1	Cell 2	Cell 3
$\hat{I}_{or}/I_{oc}$	dB	7.5	4.5	2.5
CPICH_Ec/Io	dB	-13	-16	-18
CPICH RSCP	dBm	-73	-76	-78
Qqualmin	dB	-20	-20	-20
Qrxlevmin	dBm	-100	-100	-100
Squal	dB	7	4	2
Srxlev	dBm	27	24	22

Test procedure

a) The SS activates the cells 1-3 and monitors them for random access requests from the UE

b) The UE is switched on.

c) The SS waits for random access request from the UE

d) Cells 1-3 are switched off

e) The SS shall wait 20 sec. to allow the UE to detect the loss of cells

[Editor’s note: 20 sec. is taken from the equiv. GSM test case and must be confirmed]

f) By MMI, an attempt to originate a call is made

g) By MMI, an attempt to originate an emergency call is made (only if UE supports speech)

6.1.1.4.5 Test Requirements

1) In step c), there shall be a response on cell 1 within 2 min.

2) In step f) and g), the UE shall not produce any RF output, neither give any “service indication” within [TBD] seconds

[Editor’s note: 2 min. is taken from the equiv. GSM test case and must be confirmed]

6.1.2 Radio access mode selection and reselection

6.1.2.1 UE selects radio access mode (FDD/TDD) on request by the servicing network

Tests to verify that the UE selects the radio access mode requested by the servicing network.

FFS

6.1.3 Cell selection and reselection

6.1.3.1 Cell selection

Equivalent test case: GSM 11.10-1 clause 20.1

6.1.3.1.1 Definition

Test to verify that the UE is capable of selecting a cell that fulfils the "suitable" cell criteria. The test covers both Initial and Stored cell selection.

6.1.3.1.2 Conformance requirement

1. Cell selection procedure to find a suitable cell to camp on:

   1.1 Create a candidate list of potential cells to camp on, using:

      1.1.1 Initial Cell Selection procedure; or

      1.1.2 Stored Information Cell Selection procedure

   1.2 For each cell on the candidate list, measure the quality value, $Q_{meas,LEV}$

   1.3 For each cell on the candidate list calculate the cell selection value, Squal and Srxlev

   1.4 Rank the cells and select the best cell

   1.5 Select the cell that fulfils the criteria $Q_{map,n} > Q_{map,s} + Q_{offsets,n}$ best. Check if the selected cell fulfils all requirements for a suitable cell. If so, choose this cell to camp on. If this cell does not fulfil all requirements for a suitable cell, this cell and all cells on the same frequency shall be removed as candidates for cell selection in case the barred cell does not accept intra-frequency cell selection and re-selection. On the other hand, in case the barred cell accepts intra-frequency cell selection and re-selection, only the barred cell shall be removed as candidate for cell selection, and step 1.4 shall be repeated for the remaining cells.

2. A suitable cell must fulfil all the following requirements.

   2.1 The cell is part of the selected PLMN.

   2.2 The cell is not barred [details are FFS].

   2.3 The cell is not part of a forbidden registration area [details are FFS].

   2.4 The cell selection criteria are fulfilled (Squal>0 and Srxlev>0)

   2.5 The SoLSA criteria are fulfilled [FFS].

   2.6 The cell is not an operator-only cell, unless the UE has those access rights.

3. The UE shall be able to calculate correctly the cell selection criteria, Squal and Srxlev

References

1. TS 25.304, 5.2.2.1.1
2. TS 25.304, 4.3
3. TS 25.304, 5.2.2.1.2

6.1.3.1.3 Test purpose

Test to verify that the UE selects the correct cell according to the requirements for cell selection:

1. To verify that the UE selects suitable cells in descending order of received signal strength Q_{meas} according to conformance requirement 1.
2. To verify that:

   1.1 The UE does not select a cell of a PLMN, which is not the selected PLMN.

   1.2 The UE does not select a cell, which is barred.

   1.3 The UE does not select a cell with S<0.

   The conformance requirement 2.3 (forbidden registration area), 2.5 (SolSA) and 2.6 (operator-only cell) is not covered by the test.

6.1.3.1.4 Method of test

Initial conditions

The relative RF signal to total interference ratio at the UE (*CPICH_Ec/Io*) between the cells shall be:

Cell 1 (barred) > Cell 2 (S<0) > Cell 3 > Cell 4

Cell 1 must be on a different frequency than the other cells because it is barred (conformance requirement 1.4).

Parameters changed from the default values in table 6.1.3.1.

Parameter	Unit	Cell 1	Cell 2	Cell 3	Cell 4
UTRA RF Channel Number		UARFCN 1	UARFCN 2	UARFCN 2	UARFCN 2
$\hat{I}_{or}/I_{oc}$	dB	5.9	7.5	4.5	2.5
CPICH_Ec/Io	dB	-11	-13	-16	-18
CPICH RSCP	dBm	-74	-73	-76	-78
Qqualmin	dB	-20	-5	-20	-20
Qrxlevmin	dBm	-100	-100	-100	-100
Squal	dB	9	-8	4	2
Srxlev	dBm	26	27	24	22
CellBarred		1	0	0	0

Test procedure

a) The SS activates the cells 1-4 and monitors cell 2, 3 and 4 for random access requests from the UE

b) The UE is switched on.

c) The SS waits for random access request from the UE

d) The UE is switched off.

e) The SS monitors cell 1, 2 and 3 for random access requests from the UE.

f) The UE is switched on.

g) The SS waits to see if there is any random access requests from the UE.

h) The stored information cell selection list in the UE is deleted and the UE is switched off.

i) Step a-g) is repeated except that Cell 1 is set to belong to a different PLMN instead of being barred.

j) Step a-g) is repeated except that Qrxlevmin is set to -70 instead of being barred. Srxlev will be negative.

6.1.3.1.5 Test requirements

1) In step c), the first response from the UE shall be on cell 3 within 33 seconds. There shall be no response from the UE on cell 2 (Initial cell selection)

[Editor's note: The 33 seconds is taken from GSM as there is no requirement in UMTS to the initial cell selection time. UMTS should not have worse performance than GSM]

2) In step g), there shall be no response from the UE on cell 1 or 2 within 33 seconds (Stored cell selection)

[Editor's note: The 33 seconds is taken from GSM as there is no requirement in UMTS to the stored cell selection time. UMTS should not have worse performance than GSM]

3) In i) the responses shall be as in previous test requirements 1) and 2) with the same timing constraints.

4) In j) the responses shall be as in previous test requirements 1) and 2) with the same timing constraints.

6.1.3.2 Cell selection on release of DCCH and DTCH

FFS.

6.1.3.3 Cell reselection

Equivalent test case: GSM 11.10-1 clause 20.3

6.1.3.3.1 Definition

Test to verify that the UE performs the cell reselection correctly for intra/inter-frequency cells if the serving cell becomes barred or S<0.

6.1.3.3.2 Conformance requirement

1. While camped on a cell of the selected PLMN ("camped normally"), the UE may need to select a different cell ("normal cell reselection" state). The following events trigger a cell reselection:

   1.1 Time for cell re-selection evaluation

   1.2 Cell selection criterion S is not fulfilled

   1.3 Cell has become barred or forbidden

   In case 1.2 and 1.3, the parameters Qhyst and Treselection shall not be considered in the criteria.

2. The UE shall perform a cell reselection if a non-serving cell is evaluated to be better than the serving cell. The best cell is the cell with the highest cell-ranking criterion R and (Squal>0, Srxlev>0). The UE shall reselect the new cell, if the cell reselection criteria are fulfilled during a time interval Treselection.

3. Non-suitable cells (Squal>0 or Srxlev>0): If the best cell according to cell reselection criteria, does not fulfil all requirements for a suitable cell, that cell, together with all cells on that frequency shall be removed as candidate for cell re-selection.

4. Cell re-selection is correct if within Nt [FFS] seconds the UE re-reselects a new cell, which fulfils the cell re-selection criteria and stays steady on that cell until the channel conditions are changed again.

References

1. TS 25.304, 5.2.2.4.1

2. TS 25.304, 5.2.2.4.5

3. TS 25.304, 5.2.2.4.4

4. TS 25.133, 4.3.2.1.2

6.1.3.3.3 Test purpose

1. To verify that the UE meets conformance requirement 1.2 and 1.3

2. To verify that the UE meets conformance requirement 2

3. To verify that the UE meets conformance requirement 3

NOTE: Interfrequency cell reselection caused by a better cell being found (conformance requirement 1.1 and 4) is tested in TS 34.121, 8.2.3.2 Cell re-selection multi carrier multi cell case. Conformance requirement 4 applies also to the cell reselection criteria S<0.

6.1.3.3.4 Method of test

Initial conditions

Treselection, Qhyst, Qoffset, TEMP_OFFSET and PENALTY_TIME are not used, so the cell-ranking criterion R equals Q.

The relative RF signal to total interference ratio at the UE (*CPICH_Ec/Io*) between the cells shall be:

Cell 1 > Cell 2 > Cell 3 > Cell 4

Cells 1 and 2 are on a different frequency than the other cells (Cell 1 will become barred and therefore both cells 1 and 2 removed from the candidate list)

Parameters changed from the default values in table 6.1.3.1.

Parameter	Unit	Cell 1	Cell 2	Cell 3	Cell 4
UTRA RF Channel Number		UARFCN 1	UARFCN 1	UARFCN 2	UARFCN 2
$\hat{I}_{or}/I_{oc}$	dBm	4.4	2.4	-5.3	-7.3
CPICH_Ec/Io	dB	-13	-15	-17	-19
CPICH RSCP	dBm	-76	-78	-85	-87
Qqualmin	dB	-20	-20	-20	-20
Qrxlevmin	dBm	-100	-100	-100	-100
Squal	dB	7	5	3	1
Srxlev	dBm	24	22	15	13

Test procedure

a) The SS activates cells 1, 2, 3 and 4. The SS monitors cells 1, 2 and 3 for random access requests from the UE.

b) The UE is switched on.

c) The SS waits for random access request from the UE

d) The SS sets Cell 1 to be barred

e) The SS waits for random access request from the UE

f) The stored information cell selection list in the UE is deleted and the UE is switched off.

g) Step a-e) is repeated except that in step d), Qqualmin is increased to -10 dB, so S will become negative instead of the cell being barred while maintaining the same RF level.

f) The stored information cell selection list in the UE is deleted and the UE is switched off.

h) Step a-e) is repeated except that in step d), Cell 1 shall be on another PLMN while maintaining the same RF level.

6.1.3.3.5 Test requirements

1) In step c), the UE shall respond on Cell 1 within 33 seconds

[Editor's note: The 33 seconds is taken from GSM as there is no requirement in UMTS to the initial cell selection time. UMTS should not have worse performance than GSM]

2) In step e), the UE shall respond on Cell 3 within 12 seconds

NOTE 1: 1280 msec. for DRX cycle + 1280 msec. for system info scheduling + 5 sec. actual reselection time + 1280 msec. for reading neighbour BCCH + 25%. Allow 12 sec.

3) The responses in step g) shall first be a response on Cell 1 within [TBD] seconds and then a response on Cell 2 within [TBD seconds].

4) The responses in step h) shall first be a response on Cell 1 within [TBD seconds] and then a response on Cell 3 within [TBD seconds].

6.1.3.4 Cell reselection using reselection timing parameters

Equivalent test case: GSM 11.10-1 clause 20.4

6.1.3.4.1 Definition

Test to verify that the UE performs the cell reselection correctly if system information parameters Qoffset, Qhyst, TEMP_OFFSET, PENALTY_TIME and Treselection are applied for non-hierarchical cell structures.

6.1.3.4.2 Conformance requirement

1. While camped on a cell of the selected PLMN ("camped normally"), the UE may need to select a different cell ("normal cell reselection" state). The following events trigger a cell reselection:

   1.1 Time for cell re-selection evaluation

   1.2 Cell selection criterion S is not fulfilled

   1.3 Cell has become barred or forbidden

   In case 1.2 and 1.3, the parameters Qhyst and Treselection shall not be considered in the criteria.

2. The UE shall perform a cell reselection if a non-serving cell is evaluated to be better than the serving cell. The best cell is the cell with the highest cell-ranking criterion R and (Squal>0, Srxlev>0). The UE shall reselect the new cell, if the cell reselection criteria are fulfilled during a time interval Treselection.

3. The cell-ranking criterion R is calculated using the Qoffset, Qhyst, TEMP_OFFSET, PENALTY_TIME and Treselection parameters.

4. Cell re-selection is correct if within Nt [FFS] seconds the UE re-reselects a new cell, which fulfils the cell re-selection criteria and stays steady on that cell until the channel conditions are changed again.

References

1. TS 25.304, 5.2.2.4

2. TS 25.304, 5.2.2.4.5

3. TS 25.304, 5.2.2.4.5

4. TS 25.133, 4.3.2.1.2

6.1.3.4.3 Test purpose

1. To verify conformance requirement 1.1

2. To verify conformance requirement 2

3. To verify conformance requirement 3

NOTE: Interfrequency cell reselection caused by a better cell being found (conformance requirement 1.1 and 4) is tested in TS 34.121, 8.2.3.2 Cell re-selection multi carrier multi cell case. Conformance requirement 4 applies also to the cell reselection criteria S<0.

6.1.3.4.4 Method of test

Initial conditions

Serving cell: T1: Cell 1, T2: Cell 2, T3: Cell 3

Parameters changed from the default values in table 6.1.3.1.

Parameter	Unit	Cell 1		Cell 2		Cell 3	Cell 4
		T1	T2	T1	T2	T3	T3
UTRA RF Channel Number	dB	UARFCN 1		UARFCN 1		UARFCN 2	UARFCN 2
$\hat{I}_{or}/I_{oc}$	dB	-3.71	0.06	-5.71	3.06	5.87	5.87
CPICH_Ec/Io	dB	-16		-18	-13	-11	-11
CPICH RSCP	dBm	-84	-80	-86	-77	-74	-74
Qqualmin	dB	-20		-20		-20	-20
Qrxlevmin	dBm	-100		-100		-100	-100
Squal	dB	4		2	7	9	9
Srxlev	dBm	16	20	14	13	26	26
$Qhyst_s$	dB	4			0		
$Treselection_s$	sec	10			10		
$PENALTY\_TIME_n$	sec	-			-	40	60
$TEMP\_OFFSET_n$	dB	-			-	5	5
$Qoffset_{s,n}$	dB	n=1,2,3,4: 0			n=3,4: 1		
R_s	dB	-12			-13		
R_n	dB	n=2: -18	n=2: -13		n=3,4: -17 to -12		

Note 1: The initial cell selection, after the UE has been switched on, is based on a comparison of the active cells' Q value, not R.

Test procedure

a) The SS activates cells 1 and 2 with T1 defined parameters. The UE is not paged on Cell 1. The SS monitors Cell 2 for random access requests from the UE.

b) The UE is switched on.

c) The SS waits to see if there is any random access request from the UE

d) The SS increases the level of Cell 2 to –13 dB as described for T2.

e) The SS waits for random access request from the UE

f) The SS sets Qhyst to 2 dB so R_s will be –14 dB

g) The SS waits for random access request from the UE

h) When the SS receives a response on Cell 2, the SS stops paging in that cell. The SS activates cells 3 and 4 as described for T3 and continuously pages the UE on these cells. The SS monitors cells 3 and 4 for random access requests from the MS.

i) The SS waits for random access request from the UE

6.1.3.4.5 Test Requirements

1) In step c), there shall be no response from the UE on Cell 2 within 50 seconds

[Editor's note: The 50 seconds is taken from GSM as there is no requirement in UMTS to the initial cell selection time. UMTS should not have worse performance than GSM]

2) In step e), there shall be no response from the UE on Cell 2 within 50 seconds

3) In step g), the UE shall respond on Cell 2 within 20 seconds

NOTE 1: Actual reselection time of 5 sec. (due to changed RF conditions, conformance req. 4) + Treselection time of 10 sec. + 25%. Allow 20 sec.

4) In step i), there shall be no response from the UE on Cell 3 within 48 seconds of activating the cells but the UE shall respond on Cell 3 within 75 seconds The response on Cell 3 shall be before any response on Cell 4.

NOTE 2: Minimum time of 48 sec. set by PENALTY_TIME (cell 3) + Treselection time - 2 sec. tolerance. Maximum time of 75 sec. set by PENALTY_TIME (cell 3) + Treselection time + 1280 msec. for DRX cycle + 1280 msec. for system info scheduling + 5 sec. actual reselection time + 1280 msec. for reading neighbour BCCH + 25%.

6.1.3.5 Cell reselection if HCS is used

FFS.

6.1.3.6 Cell reselection due to UE rejection “LA not allowed”

Equivalent test case: GSM 11.10-1 clause 20.15

6.1.3.6.1 Definition

Test to verify that a UE camping on a cell which has a “Regionally restricted service” will select a different cell in order to fullfill the normal service state. This ensures that the UE is camped on a cell from which it can reliably decode downlink data and with which it has a high probability of communications on the uplink.

6.1.3.6.2 Conformance requirement

1. In response to a registration attempt, when receiving an LU reject with cause value "LA not allowed", the UE stores this LAI in a list of "forbidden LAIs for regional provision of service", to prevent repeated attempts to access a cell of the forbidden LA. This list is deleted when the MS is switched off or the SIM is removed. If the MS cannot find a suitable cell, the MS performs the PLMN selection procedure.

2. When the MS is camped on a cell, the LA of which belongs to the list of forbidden LA for regional provision of service, the MS is not allowed to initiate establishment of a CM connection except for an emergency call; it may respond to paging.

3. There are a number of situations in which the MS is unable to obtain normal service from a PLMN. These include:

   3.1 Failure to find a suitable cell of the selected PLMN;

   3.2 No SIM in the MS;

   3.3 A "PLMN not allowed" response to an LR;

   3.4 An "illegal MS", "illegal ME" or "IMSI unknown in HLR" response to an LR; (Any SIM in the ME is then considered "invalid".)

   Under any of these conditions, the MS attempts to camp on an acceptable cell, irrespective of its PLMN identity, so that emergency calls can be made if necessary. No LR requests are made until a valid SIM is present and either a suitable cell is found or a manual network reselection is performed.

4. The cell reselection procedure shall be triggered in the following cases:

   4.1 Time for cell re-selection evaluation;

4.2 Cell selection criterion S is not fulfilled;

4.3 Cell has become barred or forbidden.

In case 4.2 and 4.3, the parameters Qhyst and Treselection shall not be considered in the criteria.

5. Non-suitable cells (Squal > 0 or Srxlev > 0)): If the best cell according to cell reselection criteria, does not fulfil all requirements for a suitable cell, that cell, together with all cells on that frequency shall be removed as candidate for cell re-selection.

6. A new LU attempt shall only be performed when a new LA (or new PLMN) is entered according to the cell reselection procedure.

References

1. TS 23.122, 3.2
2. TS 23.122, 3.4.2
3. TS 23.122, 3.5
4. TS 25.304, 5.2.2.4.1
5. TS 25.304, 5.2.2.4.4
6. TS 23.122, Table 2

6.1.3.6.3 Test purpose

1. To verify that if an LU is rejected with cause "LA not allowed" that the LAI of that cell is written into a forbidden list which prevents the UE from performing LU onto another cell in that LA. This is verified indirectly in test purposes 2, 3 and 4.
2. To verify that cell reselection is triggered when the UE receives an LU reject with cause value "LA not allowed"
3. To verify that if no suitable cells exist, the UE will not reject a cell for camping on because that cell is part of a LA in the list of "forbidden LAIs for regional provision of service". This is verified indirectly by making the UE attempt an emergency call and checking that the RRC CONNECTION REQUEST is transmitted on the correct cell.
4. To verify that a new LU attempt will be performed when a new LA (or new PLMN) is entered.

6.1.3.6.4 Method of test

Initial conditions

Treselection, Qhyst, TEMP_OFFSET and PENALTY_TIME are not used.

The relative RF signal to total interference ratio at the UE (*CPICH_Ec/Io*) between the cells shall be:

Cell 1 > Cell 2 > Cell 3

Parameters changed from the default values in table 6.1.3.1 and table [FFS].

Parameter	Unit	Cell 1	Cell 2	Cell 3
$\hat{I}_{or}/I_{oc}$	dB	7.5	4.5	2.5
CPICH_Ec/Io	dB	-13	-16	-18
CPICH RSCP	dBm	-73	-76	-78
Qqualmin	dB	-20	-20	-20
Qrxlevmin	dBm	-100	-100	-100
Squal	dB	7	4	2
Srxlev	dBm	27	24	22
$Qoffset_{s,n}$	dB		4	
$R_n = Q_n - Qoffset_{s,n}$	dB		-20	
LAC		H1111	H2222	H1111
ATT		1	1	1

Test procedure

a) The SS activates cells 1 and 3. The SS monitors cells 1 and 3 for random access requests from the UE until step g) has been completed. Only idle-paging is sent on all channels.

[Editor's note: Idle paging in this case ?. The UE shall not be paged in any cell]

b) The UE is switched on.

c) The SS waits for random access request from the UE

d) When the UE performs an IMSI attach onto Cell 1 by sending a LOCATION UPDATING REQUEST, the SS shall reject it with cause "LA not allowed".

e) 30 seconds after the UE has returned to idle mode (RRC CONNECTION RELEASE after LU reject), the UE is manually commanded to set up an emergency call.

[Editor's note: The 30 seconds is taken from GSM as there is no requirement in UMTS. UMTS should not have worse performance than GSM]

f) The SS waits for RRC CONNECTION REQUEST from the UE

g) The SS rejects the CM service request from the UE, with a CM service reject message with cause value #17 (Network Failure).

NOTE: Cause values #4 (IMSI unknown in VLR) or #6 (Illegal ME) lead to unwanted behaviour of the mobile.

h) 10 seconds after the UE has returned to idle mode (channel release after CM service reject), the SS sets $Qoffset_{s,n}$ of Cell 2 to 0 so R_n becomes –16.

[Editor's note: The 10 seconds is taken from GSM as there is no requirement in UMTS. UMTS should not have worse performance than GSM]

i) The SS shall accept any LU on Cell 2.

6.1.3.6.5 Test requirements

1) In step c), the UE shall respond on Cell 1 within 33 sec. of switch-on.

[Editor's note: The 33 seconds is taken from GSM as there is no requirement in UMTS to the initial cell selection time. UMTS should not have worse performance than GSM]

2) In step f), the UE shall access on Cell 3 within 15 seconds of being commanded to set up the emergency call.

[Editor's note: The 15 seconds is taken from GSM as there is no requirement in UMTS. UMTS should not have worse performance than GSM]

3) In step i), the UE shall reselect and access onto Cell 2 requesting an LU within 30 seconds after having activated Cell 2.

[Editor's note: The 30 seconds is taken from GSM as there is no requirement in UMTS. UMTS should not have worse performance than GSM]

6.1.3.7 Cell reselection due to UE rejection "Roaming not allowed in this LA"

Equivalent test case: GSM 11.10-1 clause 20.18

6.1.3.7.1 Definition

Test to verify that a UE camping on a cell and receiving a "Roaming not allowed in this LA" will select a different cell in order to fullfill the normal service state. This ensures that the UE is camped on a cell from which it can reliably decode downlink data and with which it has a high probability of communications on the uplink.

6.1.3.7.2 Conformance requirement

1. To prevent repeated attempts to have roaming service on a not allowed LA, when the UE is informed that an LA is forbidden, the LA is added to a list of "forbidden LAs for roaming" which is stored in the UE.
2. If the LR response "Roaming not allowed in this LA" is received, the PLMN Automatic or Manual Mode Selection Procedure is followed, depending on whether the UE is in automatic or manual mode.
3. Cell selection procedure to find a suitable cell to camp on:

   3.1 Create a candidate list of potential cells to camp on, using:

      3.1.1 Initial Cell Selection procedure; or

      3.1.2 Stored Information Cell Selection procedure

   3.2 For each cell on the candidate list, measure the quality value, $Q_{meas,LEV}$

   3.3 For each cell on the candidate list calculate the cell selection value, Squal and Srxlev

   3.4 Rank the cells and select the best cell

   3.5 Select the cell that fulfils the criteria $Q_{map,n} > Q_{map,s} + Q_{offsets,n}$ best. Check if the selected cell fulfils all requirements for a suitable cell. If so, choose this cell to camp on. If this cell does not fulfil all requirements for a suitable cell, this cell and all cells on the same frequency shall be removed as candidates for cell selection in case the barred cell does not accept intra-frequency cell selection and re-selection. On the other hand, in case the barred cell accepts intra-frequency cell selection and re-selection, only the barred cell shall be removed as candidate for cell selection, and step 3.4 shall be repeated for the remaining cells.

4. A suitable cell must fulfil certain requirements, among those:

   - the cell is not part of a forbidden registration area [details are FFS].

5. A new LU attempt shall only be performed when a new LA (or new PLMN) is entered according to the cell reselection procedure.

References

1. TS 23.122, 3.1
2. TS 23.122, 4.4.5 and 4.3.3 L3

3. TS 25.304, 5.2.2.1.1
4. TS 25.304, 4.3
5. TS 23.122, Table 2

6.1.3.7.3 Test purpose

1. To verify that if an LU is rejected with cause "Roaming not allowed in this LA" that the LAI of that cell is written into a forbidden list which prevents the UE from camping onto any cell in that LA.
2. To verify that if the UE has received the cause "Roaming not allowed in this LA", in response to a LU attempt, the Network Selection Procedure is initiated. This is verified indirectly by test purpose 3, in that the new LA is accessed as part of cell selection.
3. To verify that if an LU is rejected, when attempting LU in a LA with LAI = LAI1, with cause "Roaming not allowed in this LA" and only cells of the selected PLMN are available, the UE will only camp and attempt LU in any LA with LAI <> LAI1.
4. To verify that a new LU attempt will be performed when a new LA (or new PLMN) is entered.

6.1.3.7.4 Method of test

Initial conditions

The relative RF signal to total interference ratio at the UE (*CPICH_Ec/Io*) between the cells shall be:

Cell 1 > Cell 2

[Editor's note: Do we need different carrier freq. for Cell 1 and 2 ? In the cell selection procedure, all cells on the same freq. as the non-suitable/rejected cell are removed. But in this case, the two cells belong to different LA, so is it still needed to have diff. freq. ?]

[Editor's note: Do both cells belong to the same PLMN ?]

Parameters changed from the default values in table 6.1.3.1 and table [FFS].

Parameter	Unit	Cell 1	Cell 2
$\hat{I}_{or}/I_{oc}$	dB	3.06	0.06
CPICH_Ec/Io	dB	-13	-16
CPICH_RSCP	dBm	-77	-80
Qqualmin	dB	-20	-20
Qrxlevmin	dBm	-100	-100
Squal	dB	7	4
Srxlevmin	dB	23	20
MNC		MNC <> HPLMN	MNC <> HPLMN
MCC		MCC of HPLMN	MCC of HPLMN
LAC		H1111	H2222
ATT		1	1

Test procedure

a) The SS activates cells 1 and 2 and monitors both cells for random access requests from the UE. Only Idle paging is sent on all channels.

[Editor's note: Idle paging in this case ? The UE shall not be paged in any cell]

b) The UE is switched on.

c) The SS waits for random access request from the UE

d) When the UE performs an IMSI attach onto Cell 1 by sending a LOCATION UPDATING REQUEST, the SS shall reject it with cause "Roaming not allowed in this LA".

e) The SS waits for random access request from the UE

f) The SS shall accept any LU on Cell 2.

g) The SS waits to see if there is any random access requests from the UE

6.1.3.7.5 Test requirements

1) In step c), the UE shall respond on Cell 1 within 33 sec. of switch-on.

[Editor's note: The 33 seconds is taken from GSM as there is no requirement in UMTS to the initial cell selection time. UMTS should not have worse performance than GSM]

2) In step e), the UE shall initiate the Network Selection Procedure and access onto Cell 2 as part of cell selection within 33 sec. from returning to idle mode after the LU reject.

[Editor's note: The 33 seconds is taken from GSM as there is no requirement in UMTS. UMTS should not have worse performance than GSM]

3) In step g), there shall be no response from the UE within [TBD] sec.

6.1.3.8 Emergency calls

Equivalent test case: GSM 11.10-1 clause 20.14

6.1.3.8.1 Definition

Test to verify that the UE shall be able to initiate emergency calls when no suitable cells of the selected PLMN are available, but at least one acceptable cell is available.

6.1.3.8.2 Conformance requirement

1. When in a limited service state, the UE shall be able to initiate emergency calls.

2. Select the cell that fulfils the $Q_{map,n} > Q_{map,s} + Q_{offsets,n}$ best. Check if the selected cell fulfils all requirements for a suitable cell. If so, choose this cell to camp on. If this cell does not fulfil all requirements for a suitable cell, this cell and all cells on the same frequency shall be removed as candidates for cell selection in case the barred cell does not accept intra-frequency cell selection and re-selection. On the other hand, in case the barred cell accepts intra-frequency cell selection and re-selection, only the barred cell shall be removed as candidate for cell selection, and the procedure shall be repeated for the remaining cells. The same applies in cell reselection.

3. If the UE is unable to find any suitable cell of selected PLMN using the Initial cell selection procedure, it shall attempt to camp on highest ranked acceptable cell and enter the Camped on any cell state, where it can only obtain limited service.

4. The UE shall perform a cell reselection if a non-serving cell is evaluated to be better than the serving cell. The best cell is the cell with the highest cell-ranking criterion R and (Squal>0, Srxlev>0). The UE shall reselect the new cell, if the cell reselection criteria are fulfilled during a time interval Treselection.

5. If no suitable cell is found, the UE shall attempt to find an acceptable cell of any PLMN, state *Any cell selection*. This state is also entered if a non-access stratum registration procedure is rejected, or if there is no USIM in the UE. If an acceptable cell is found, the UE shall camp on this cell and obtain limited service, state *Camped on any*

cell. In this state, the UE shall behave as specified for state *Camped normally*, but typically with a different PLMN. Additionally, the UE shall regularly attempt to find a suitable cell using stored information, trying all radio access technologies that are supported by the UE. If a suitable cell is found, the PLMN is reselected.

When a cell reselection is triggered, the UE shall evaluate the cell reselection criteria based on radio measurements, and if a better cell is found that cell is selected, procedure *Any cell reselection*. The change of cell may imply a change of radio access technology.

References

1. TS 25.304, 4.3
2. TS 25.304, 5.2.2.1.1 and 5.2.2.4.4
3. TS 25.304, 5.2.2.1.1
4. TS 25.304, 5.2.2.4.5
5. TS 25.304, 5.2.1

6.1.3.8.3 Test purpose

1. To verify that the UE shall be able to initiate emergency calls when no suitable cells of the selected PLMN are available, but at least one acceptable cell is available.
2. To verify that the UE selects a cell with S>0 (acceptable cell) and CellBarred = 0 when no suitable cells of the selected PLMN are available.
3. To verify that the UE ranks the cells according to the cell-ranking criterion R which in this test case equals Q as Qhyst, Qoffset, TEMP_OFFSET and PENALTY_TIME parameters are not used. Treselection is not used either.

6.1.3.8.4 Method of test

Initial conditions

The relative RF signal to total interference ratio at the UE (*CPICH_Ec/Io*) between the cells shall be:

Cell 2 (S<0) > Cell 1 (barred) > Cell 3

Parameters changed from Default values table 6.1.3.1.

Parameter	Unit	Cell 1	Cell 2	Cell 3
$\hat{I}_{or}/I_{oc}$	dB	4.5	7.5	2.5
CPICH_Ec/Io	dB	-16	-13	-18
CPICH_RSCP	dBm	-76	-73	-78
Qqualmin	dB	-20	-10	-20
Qrxlevmin	dBm	-100	-100	-100
Squal	dB	4	-3	2
Srxlev	dBm	24	27	22
CellBarred		1	0	0
PLMN		forbidden	forbidden	forbidden

NOTE: All the BCCH cells belong to the same PLMN, which is not the UE's home PLMN and is in the SIM's forbidden PLMN's list.

[Editor’s note: PLMN must be replaced with MNC, MCC values]

Test procedure

a) The SS activates the cells. The SS monitors for RA attempts from the UE on cells 1, 2 and 3 for the duration of the test.

b) The UE is switched on.

c) 50 seconds after switch on, an emergency call is initiated on the UE.

d) The SS waits for random access request from the UE.

e) The SS changes the CellBarred of Cell 1 to 0.

f) After 12 seconds an emergency call is initiated on the UE.

NOTE: 1280 msec. for DRX cycle + 1280 msec. for system info scheduling + 5 sec. actual reselection time + 1280 msec. for reading neighbour BCCH + 25%. Allow 12 sec.

g) The SS waits for random access request from the UE.

6.1.3.8.5 Test requirements

1) In step d), the first access from the UE shall be on Cell 3 within [TBD] seconds

2) In step g), the first access from the UE shall be on Cell 1 within [TBD] seconds

6.1.3.9 Immediate cell evaluation

No equivalent test case in GSM

6.1.3.9.1 Definition

Test to verify that the UE performs the Immediate cell evaluation procedure correctly and selects the best cell among the cells on the same frequency.

6.1.3.9.2 Conformance requirement

1. When UE leaves idle mode, state *Camped normally*, in order to enter connected mode, state *Connected mode*, the UE shall use the *Immediate cell evaluation* procedure (UTRA only) in order to select the best cell on the current frequency for the access attempt. This procedure allows the UE to reduce power consumption spent on radio measurements, still enabling the UE to select the best cell for access, thus minimising the interference in the system. If no suitable cell is found, the UE shall use the *Cell reselection* procedure.

2. The immediate cell evaluation shall be triggered prior to RACH transmission.

3. The transition to the UTRAN Connected Mode from the Idle Mode can only be initiated by the UE by transmitting a request for an RRC Connection. The event is triggered either by a paging request from the network or by a request from upper layers in the UE. When the UE receives a message from the network that confirms the RRC connection establishment, the UE enters the CELL_FACH or CELL_DCH state of UTRAN Connected Mode.

4. The following steps shall be carried out when an immediate cell evaluation has been triggered:

   4.1 The candidate list of potential cells to camp on consists of the cells in the current registration area listed for intra-frequency measurements in system information of the serving cell.

   4.2 For each cell on the candidate list, measure the quality value, $Q_{meas,LEV}$

   4.3 For each cell on the candidate list calculate the cell selection values, Squal and Srxlev

4.4 Rank the cells and select the best cell

4.5 Select the neighbouring cell that fulfils the $Q_{map,n} > Q_{map,s} + Qoffset_{s,n}$ criteria best.
If the best cell does not fulfil all other requirements for a suitable cell, UE shall trigger cell re-selection

5. If more than one neighbouring cell fulfils the criteria, the UE shall choose the cell where the difference between $Q_{map,n}$ and ($Q_{map,s}$ + Qoffset) is highest. If no neighbouring cell fulfils the criteria, the UE shall keep the serving cell.

References

1. TS 25.304, 5.2.1
2. TS 25.304, 5.2.2.2.1
3. TS 25.331, 9.2
4. TS 25.304, 5.2.2.2.1
5. TS 25.304, 5.2.2.2.2

6.1.3.9.3 Test purpose

To verify that

1. The UE meets conformance requirement 1.
2. The UE meets conformance requirement 4
3. The UE meets conformance requirement 5

6.1.3.9.4 Method of test

Initial conditions

The $Q_s + Qoffset_{s,n}$ difference between the cells shall be:

T1: Cell 4 (other freq.) > Cell 1 > Cell 2 > Cell 3

T2: Cell 4 (other freq.) > Cell 2 > Cell 1 > Cell 3

Offset parameters are applied to the cell-ranking criterion R to ensure normal cell reselection is not triggered but instead cell evaluation.

Parameters changed from the default values in table 6.1.3.1.

Parameter	Unit	Cell 1	Cell 2		Cell 3		Cell 4
			T1	T2	T1	T2	
UTRA RF Channel Number		UARFCN 1	UARFCN 1		UARFCN 1		UARFCN 2
$\hat{I}_{or}/I_{oc}$	dBm	7.5	4.5		2.5		5.87
CPICH_Ec/Io	dB	-13	-16		-18		-11
CPICH_RSCP	dBm	-73	-76		-78		-74
Qqualmin	dB	-20	-20		-20		-20
Qrxlevmin	dBm	-100	-100		-100		-100
Squal	dB	7	4		2		9
Srxlev	dBm	27	24		22		26
$Qhyst_s$	dB	20	20		20		20
$Treselection_s$	sec	-	-		-		-
$PENALTY\_TIME_n$	sec	-	-		-		-
$TEMP\_OFFSET_n$	dB	20	20		20		20
CellBarred		0	0		0		0
n		n=2,3:	n=1,3:		n=1,2:		n=1,2,3:
$Qoffset_{s,n}$	dB	0	0	4	0	4	0
$Q_s + Qoffset_{s,n}$	dB	-13	-16	-12	-18	-14	-11

Test procedure

a) The SS activates cell 1-4 according to T1. The SS monitors cells 1, 2 and 3 for random access requests from the UE.

b) The UE is switched on.

c) The SS waits for random access request from the UE

d) The parameters are changed as described for T2

e) A call is initiated on the UE

f) The UE transmits an RRC CONNECTION REQ and the SS sends a RRC CONNECTION CNF.

g) The SS waits for random access request from the UE

[Editor's note: How do we ensure that the cell is found is Immediate Cell Evaluation and not during Connected Mode ?]

6.1.3.9.5 Test Requirements

1) In step c), the UE shall respond on Cell 1 within 33 seconds (Initial cell selection in Idle mode)

[Editor's note: The 33 seconds is taken from GSM as there is no requirement in UMTS to the initial cell selection time. UMTS should not have worse performance than GSM]

2) In step g), the UE shall respond on Cell 2 within [TBD] seconds (Immediate Cell Evaluation)

6.1.3.10 Reading SIB prior to RACH transmission

FFS.

6.1.4 Location registration

UE location registration capabilities are tested under clause 9.4 ,.

6.2 Multi-mode environment (2G/3G case)

6.2.1 PLMN selection and reselection

6.2.2 Cell selection and reselection

6.2.2.1 Cell selection; UTRAN / GSM

No equivalent test case in GSM

6.2.2.1.1 Definition

Test to verify that the UE performs cell selection correctly when both a GSM and UTRA network is available.

6.2.2.1.2 Conformance requirement

1. Cell selection procedure to find a suitable cell to camp on:

   1.1 Create a candidate list of potential cells to camp on, using:

      1.1.1 Initial Cell Selection procedure; or

      1.1.2 Stored Information Cell Selection procedure

   1.2 For each cell on the candidate list, measure the quality value, $Q_{meas,LEV}$

   1.3 For each cell on the candidate list calculate the cell selection value, Squal and Srxlev 1.4 Rank the cells and select the best cell

   1.5 Select the cell that fulfils the criteria $Q_{map,n} > Q_{map,s} + Q_{offsets,n}$ best. Check if the selected cell fulfils all requirements for a suitable cell. If so, choose this cell to camp on. If this cell does not fulfil all requirements for a suitable cell, this cell and all cells on the same frequency shall be removed as candidates for cell selection in case the barred cell does not accept intra-frequency cell selection and re-selection. On the other hand, in case the barred cell accepts intra-frequency cell selection and re-selection, only the barred cell shall be removed as candidate for cell selection, and step 1.4 shall be repeated for the remaining cells.

2. Different types of measurements are used in different radio access technologies and modes for the cell selection and reselection (CPICH Ec/N0 or CPICH SIR in UTRA FDD, P-CCPCH RSCP in UTRA TDD, RXLEV in GSM). Whenever a direct comparison of these measurements is required, mapping functions shall be applied. Mapping functions are used for mapping a certain range of measurement values Q_{meas_LEV} (CPICH_EC/N0, CPICH_RSCP_LEV, P-CCPCH_RSCP_LEV, RXLEV) to a representing quality value Q_{map} (0..99, step size 1).

3. In the *Initial cell selection* procedure, the UE shall select one radio access technology and search for a suitable cell. If no suitable cell is found, the UE shall select another radio access technology and search for a suitable cell, and so on. In the *Stored information cell selection* procedure, the UE may use stored information about the selected PLMN. The information may contain information from several radio access technologies.

References

1. TS 25.304, 5.2.2.1.1
2. TS 25.304, 7.1
3. TS 25.304, 5.2.1

6.2.2.1.3 Test purpose

To verify that

1. The UE meets conformance requirement 1.
2. The UE meets conformance requirement 2
3. The UE meets conformance requirement 3

6.2.2.1.4 Method of test

Initial conditions

The relative RF signal to total interference ratio at the UE (*CPICH_Ec/Io*) between the cells shall be:

T1: Cell 1 < Cell 2 < Cell 3 < Cell 4 < Cell 5 < Cell 6

T2: Cell 1 > Cell 2 > Cell 3 > Cell 4 > Cell 5 > Cell 6

Cell 2 and 5 have S<0, Cell 3 and 6 are barred.

Parameters changed from the default values in table

Parameter	Unit	Cell 1 (UTRAN)		Cell 2 (UTRAN)		Cell 3 (UTRAN)	
		T1	T2	T1	T2	T1	T2
Channel Number		UARFCN 1		UARFCN 1		UARFCN 2	
$\hat{I}_{or}/I_{oc}$	dBm	-5.71	3.06	-3.71	0.06	0.02	-7.25
CPICH_Ec/Io	dB	-18	-13	-16	-16	-13	-18
CPICH RSCP	dBm	-86	-77	-84	-80	-80	-87
Qqualmin	dB	-20		-10			
Qrxlevmin	dBm	-100		-100		-100	
Squal	dB	2	7	-6	-6	7	2
Srxlev	dBm	14	23	16	20	20	13
CellBarred		0		0		1	

Parameter	Unit	Cell 4 (GSM)		Cell 5 (GSM)		Cell 6 (GSM)	
		T1	T2	T1	T2	T1	T2
Channel Number		ARFCN 1		ARFCN 2		ARFCN 3	
RF Signal Level	dBm	-70	-95	-60	-100	-50	-105
RXLEV_ACCESS_MIN	dBm	-100		-50		-110	
C1	dBm	30	5	-10	-50	60	5
CellBarred		0		0		1	

Test procedure

a) The SS activates the cells 1-6 according to T1 and monitors cell 1, 2 and 3 for random access request from the UE

b) The UE is switched on.

c) The SS waits for random access request from the UE

d) The UE is switched off.

e) The SS monitors cells 4, 5 and 6 for random access requests from the UE.

f) The UE is switched on.

g) The SS waits to see if there is any random access request from the UE.

h) The stored information cell selection list in the UE is deleted and the UE is switched off.

i) Step a-g) is repeated except that the cells are set according to T2 and Cell 1 is set to another PLMN

6.2.2.1.5 Test Requirements

1) In step c), the first response from the UE shall be on Cell 1 within 33 seconds. (Initial cell selection)

[Editor's note: The 33 seconds is taken from GSM as there is no requirement in UMTS to the initial cell selection time. UMTS should not have worse performance than GSM]

2) In step g), there shall be no response from the UE on either Cell 4, 5 or 6 within 33 seconds. (Stored Information cell selection)

[Editor's note: The 33 seconds is taken from GSM as there is no requirement in UMTS to the stored cell selection time. UMTS should not have worse performance than GSM]

3) In step i), the first response from the UE shall be on Cell 4 within [TBD] seconds (Initial cell selection) and no other responses within [TBD] seconds.

6.2.2.2 Cell reselection; UTRAN to GSM

No equivalent test case in GSM

6.2.2.2.1 Definition

Test to verify that the UE performs cell reselection correctly when both a GSM and UTRAN network is available and if the serving cell becomes barred or S<0.

6.2.2.2.2 Conformance requirement

1. While camped on a cell of the selected PLMN ("camped normally"), the UE may need to select a different cell ("normal cell reselection" state). The following events trigger a cell reselection:

   1.1 Time for cell re-selection evaluation

   1.2 Cell selection criterion S is not fulfilled

   1.3 Cell has become barred or forbidden

   In case 1.2 and 1.3 the parameters Qhyst and Treselection shall not be considered in the criteria.

2. The UE shall perform a cell reselection if a non-serving cell is evaluated to be better than the serving cell. The best cell is the cell with the highest cell-ranking criterion R and (Squal>0, Srxlev>0). The UE shall reselect the new cell, if the cell reselection criteria are fulfilled during a time interval Treselection.

3. Non-suitable cells (Squal > 0 or Srxlev >0): If the best cell according to cell reselection criteria, does not fulfil all requirements for a suitable cell, that cell, together with all cells on that frequency shall be removed as candidate for cell re-selection.

4. Different types of measurements are used in different radio access technologies and modes for the cell selection and reselection (CPICH Ec/N0 or CPICH SIR in UTRA FDD, P-CCPCH RSCP in UTRA TDD, RXLEV in

GSM). Whenever a direct comparison of these measurements is required, mapping functions shall be applied. Mapping functions are used for mapping a certain range of measurement values Q_{meas_LEV} (CPICH_EC/N0, CPICH_RSCP_LEV, P-CCPCH_RSCP_LEV, RXLEV) to a representing quality value Q_{map} (0..99, step size 1).

References

1. TS 25.304, 5.2.2.4.1
2. TS 25.304, 5.2.2.4.5
3. TS 25.304, 5.2.2.4.4.
4. TS 25.304, 7.1

6.1.2.2.3 Test purpose

1. To verify that the UE meets conformance requirement 1.2 and 1.4
2. To verify that the UE meets conformance requirement 2
3. To verify that the UE meets conformance requirement 3

NOTE: Cell reselection caused by a better cell being found (conformance requirement 2.1) is tested in TS 34.121, 8.2.3.3 Cell re-selection UTRAN to GSM.

6.2.2.2.4 Method of test

Initial conditions

Treselection, Qhyst, Qoffset, TEMP_OFFSET and PENALTY_TIME are not used, so the cell-ranking criterion R equals Q.

The relative RF signal to total interference ratio at the UE (*CPICH_Ec/Io*) between the cells shall be:

Cell 1 (UTRAN) > Cell 2 (GSM) > Cell 3 (GSM)

Parameters changed from the default values in table 6.1.3.1.

Parameter	Unit	Cell 1 (UTRAN)
Channel Number		UARFCN 1
$\hat{I}_{or}/I_{oc}$	dBm	5.87
CPICH_Ec/Io	dB	-11
CPICH RSCP	dBm	-74
Qqualmin	dB	-20
Qrxlevmin	dBm	-100
Squal	dB	9
Srxlev	dBm	26

Parameter	Unit	Cell 2 (GSM)	Cell 3 (GSM)
Channel Number		ARFCN 1	ARFCN 2
RF Signal Level	dBm	-80	-90
RXLEV_ACCESS_MIN	dBm	-100	-100
C1	dBm	20	10

Test procedure

a) The SS activates cells 1, 2, and 3. The SS monitors cells 1, 2 and 3 for random access requests from the UE.

b) The UE is switched on.

c) The SS waits for random access request from the UE

d) The SS sets Cell 1 to be barred

e) The SS waits for random access request from the UE

f) The stored information cell selection list in the UE is deleted and the UE is switched off.

g) Step a-e) is repeated except that in step d), Qqualmin is increased to -5 dB, so S will become negative instead of being barred

h) The stored information cell selection list in the UE is deleted and the UE is switched off.

i) Step a-e) is repeated except that in step d), Cell 1 shall be on another PLMN while maintaining the same RF level.

6.2.2.2.5 Test Requirements

1) In step c), the UE shall respond on Cell 1 within 33 seconds

[Editor's note: The 33 seconds is taken from GSM as there is no requirement in UMTS to the initial cell selection time. UMTS should not have worse performance than GSM]

2) In step e), the UE shall respond on Cell 2 within 12 seconds.

NOTE: 1280 msec. for DRX cycle + 1280 msec. for system info scheduling + 5 sec. actual reselection time + 1280 msec. for reading neighbour BCCH + 25%. Allow 12 sec.

3) The responses in step g) shall first be a response on Cell 1 within [TBD] seconds and then a response on Cell 2 within [TBD] seconds.

4) The responses in step i) shall first be a response on Cell 1 within [TBD] seconds and then a response on Cell 2 within [TBD] seconds.

6.2.2.3 Cell reselection timings; GSM to UTRAN

No equivalent test case in GSM

6.2.2.3.1 Definition

Test to verify that the UE meets the cell reselection timing requirements when both a GSM and UTRAN network is available.

6.2.2.3.2 Conformance requirement

1. If the broadcast neighbour cell list includes UTRAN cells or UTRAN frequencies (with or without scrambling code group information), the UE shall, at least every 5 seconds update the value RLA_C for the serving cell and each of the at least 6 strongest non serving GSM cells.

   1.1 The UE shall then reselect a suitable UTRAN cell if its measured RSCP value exceeds the value of RLA_C for the serving cell and all of the suitable non-serving GSM cells by the value XXX_Qoffset for a period of 5 seconds and, for FDD, the UTRAN cells measured Ec/No value is equal or greater than the value FDD_Qmin.

- Ec/No and RSCP are the measured quantities
- FDD_Qmin and XXX_Qoffset are broadcast on BCCH of the serving cell. XXX indicates other radio access technology/mode.

1.2 In case of a cell reselection occurring within the previous 15 seconds, XXX_Qoffset is increased by 5 dB.

1.3 Cell reselection to UTRAN shall not occur within 5 seconds after the UE has reselected a GSM from an UTRAN cell if a suitable GSM cell can be found.

1.4 If more than one UTRAN cell fulfils the above criteria, the UE shall select the cell with the greatest Qmeas value.

2. The UE shall be able to identify and select a new best UTRAN cell, which is part of the neighbour cell list, within 30 seconds after it has been activated under the condition that there is only one UTRAN frequency in the neighbour cell list. The allowed time is increased by 30 seconds for each additional UTRAN frequency in the neighbour cell list. However, multiple UTRAN cells on the same frequency in the neighbour cell list does not increase the allowed time.

NOTE: Definitions of measurements are in 3G TS 25.215 and 3G TS 25.101, 3.2 and GSM 05.08, 6.1.

References

1. GSM TS 05.08, 6.6.4
2. GSM TS 05.08, 6.6

6.1.2.3.3 Test purpose

1. To verify that

1.1 The UE meets conformance requirement 1.1 and additionally, that no reselection is performed if the period is less than 5 sec.

1.2 The UE meets conformance requirement 1.2

1.3 The UE meets conformance requirement 1.3

6.2.2.3.4 Method of test

Initial conditions

Parameter	Unit	Cell 1 (GSM)
Absolute RF Channel Number		ARFCN 1
RF Signal Level	dBm	-75
RXLEV_ACCESS_MIN	dBm	-100
MS_TXPWR_MAX_CCH	dBm	Max. output power of MS
FDD_Qmin	dBm	-20
XXX_Qoffset	dBm	5

Parameters changed from the default values in table 6.1.3.1.

Parameter	Unit	Cell 2 (UTRAN)
UTRA RF Channel Number		UARFCN 1
$\hat{I}_{or}/I_{oc}$	dB	-4.74
CPICH_Ec/Io	dB	-16
CPICH_RSCP	dBm	-85
Qqualmin	dB	-20
Qrxlevmin	dBm	-100
Squal	dB	4
Srxlevmin	dBm	15

Test procedure

NOTE: Step a-c): Test purpose 1.3. Step d-g): test purpose 1.1. Step h-k): test purpose 1.2

a) The SS activates the channels. The UE is not paged on any of the cells.

b) The UE is switched on.

c) After 50 seconds, the SS starts paging continuously on cells 1 and 2 for 20 seconds. The SS monitors cells 1 and 2 for random access requests from the UE.

d) The SS stops paging on cells 1 and 2 and waits for 20 seconds. (The UE should revert to Cell 1 due to cell reselection).

e) The SS starts paging continuously on Cell 2.

f) The SS decreases the transmit level of Cell 1 to –95dBm for a period of 4 s (RSCP will then exceed RXLEV by more than XXX_Qoffset) and then changes the level back to the original value.

g) The UE waits to see if there is any random access requests from the UE on Cell 2

h) The SS decreases the transmit level of Cell 1 to –95dBm and waits for the UE to access on Cell 2. The SS records the time t from the decrease in the level of Cell 1 to the first response from the UE.

i) The SS stops paging on Cell 2 and changes the transmit level of Cell 1 back to the original value.

j) The SS waits 20 seconds. (The UE should revert to Cell 1 due to cell reselection).

k) The SS decreases the transmit level of Cell 1 to –95dBm. After t+2 seconds, the SS starts paging continuously on Cell 1, changes the level of Cell 1 back to the original level and waits to see if there is any random access request on Cell 1.

6.2.2.3.5 Test Requirements

1) In step c), the UE shall transmit 2 random access requests on Cell 1 followed by 2 random access requests on Cell 2. Subsequent random access requests on Cell 1 shall not occur within 4,5 sec of the second random access request on Cell 1.

2) In step g), there shall be no access on Cell 2 within 34 seconds of decreasing the level of Cell 1.

3) In step h), the UE shall respond on Cell 2 within [TBD] seconds.

4) In step k), there shall be no response on Cell 1 within 11 seconds after the level of Cell 1 is changed back to the original level.

NOTE: The 11 seconds is derived from (t+15) seconds minimum cell reselection timer minus (t+2) seconds from the start of step k) up to the increase of the level of Cell 1. A further 2 seconds are subtracted to cover for any uncertainty introduced by the random access process occurring after step g).

6.2.3 Location registration

[FFS]

3GPP TSG-CN-WG1 SIP Ad-hoc #1
17-19 October, 2000
Sophia Antipolis/ France

Tdoc N1-001055

3GPP TSG SA2 #14 **Tdoc S2-001603**
Bristol, UK, September 4th – 8th, 2000

To: **3GPP TSG CN WG1**

CC:

Source: **3GPP TSG SA WG2**

Title: **Ungraceful session termination in the IM domain**

Contact: **Eskil Åhlin, Telia (eskil.a.ahlin@telia.se, +46 40 105177)**

Introduction

3GPP TSG SA WG2 has a identified the need for the S-CSCF to have a mechanism to detect ungraceful session termination :

"If an ungraceful session termination occurs (e.g. flat battery or mobile leaves coverage) when a stateful proxy server such as the S-CSCF is involved in a session memory leaks and eventually server failure can occur due to hanging state machines. To ensure stable S-CSCF operation and carrier grade service, a mechansim to handle the ungraceful session termination issue is required. This mechanism should be at the SIP protocol level in order to guarantee access independence for the IM domain."

TSG SA2 has briefly looked at the mechanism defined by the IETF to handle this issue, the SIP Session Timer [1], and would like to ask TSG CN1 to study this further.

The SIP Session Timer, description and technical discussion

The SIP session timer is described in detail in [1], it is as of yet an Internet draft and must be considered as work in progress.

The basic mechanism is very straightforward, a timer is negotiated at session set up and a re-INVITE must be sent within this timer interval or the stateful proxy server (S-CSCF) may flush its state for the call leg in question.

The way the negotiation is performed allows the SIP proxy server to insert or alter the session timer. It is not allowed to increase the timer, only lower it. This extension to SIP introduces a new header, "Session-Expires", that sets the size of the timer and a new option tag, "timer", to the Require- and Supported-header. The "Session-Expires" header is optional, and only allowed in, INVITE requests and responses. Figure 1 gives an example of how the timer is negotiated.

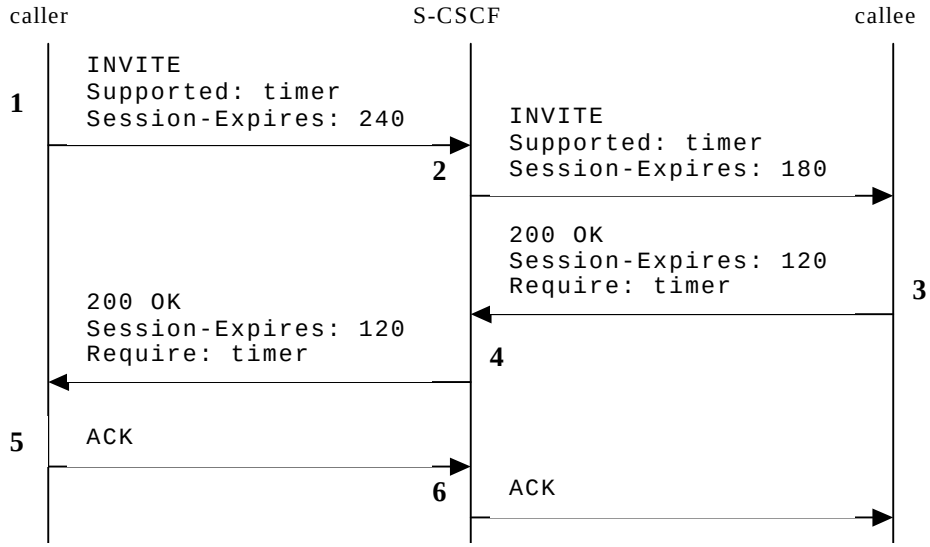

Figure 1, An example of negotiation of the SIP session timer

1. The caller sends an INVITE with a Session-Expires header indicating a timer length of 240 seconds. The Supported header must be present, optionally a Require header could be inserted to signal to the S-CSCF that the SIP session timer must be supported in order to process the call correctly.
2. The S-CSCF decides to shorten the timer length to 180 seconds and then passes the INVITE on to the callee.
3. The callee decides to further shorten the timer, sets it to 120 seconds and starts it. The 200 OK sent up stream must contain a Require header.
4. The S-CSCF starts the timer when receiving the 200 OK and passes on the message. The S-CSCF is not allowed to change the timer in a message going up stream.
5. The caller starts the timer and answers with an ACK following standard SIP procedure.
6. The ACK is forwarded by the S-CSCF to the callee.

The caller must now send a re-INVITE every 120 seconds, following the procedure depicted in Figure 1, or the S-CSCF and the callee may consider the session terminated.

The proper timer value for the IM domain is probably much higher than 120 seconds. However, the customer will not be billed for a terminated session during the time it takes the timer to expire since the charging function is handled by the standard PS domain procedures. The SIP session timer is to be seen as a protocol stability function to clear hanging state machines, and as such it could be set to a high value to minimise the amount of re-INVITE sent and decrease the signalling load on the radio interface.

The use of the SIP Session timer opens up an opportunity for DoS attacks. Since any node in the signalling path can shorten the timer and it can't be increased, there is a risk that a malicious node sets the timer to a very low value (e.g. 1 second) and thus causes a flood of re-INVITE messages to be sent over the radio interface. A way to work around this could be to add a new error code, e.g. "506 Bad Session Timer", that the S-CSCF could use to stop very short timers. This new error code would have to be accepted and approved by the IETF.

TSG SA2 would like to invite TSG CN1 to study this issue further in more detail.

References

[1] Donovan, Rosenberg, "The SIP Session Timer", <http://www.ietf.org/internet-drafts/draft-ietf-sip-session-timer-02.txt>, IETF, July 2000, Work in progress

3GPP TSG-CN-WG1 SIP Ad-hoc #1
17-19 October, 2000
Sophia Antipolis/ France

Tdoc N1-001105

3GPP TSG_CN **Tdoc NP-000466**
Plenary Meeting #9, Oahu, Hawaii
20th – 22nd September 2000.

Source: **TSG_N3**

Title: **Revised proposed work item description for interworking between IM CN subsystem and IP networks**

Document for: **APPROVAL**

3GPP TSG-CN3 Tdoc N3-000470
Meeting #12, Seattle, USA
28th August – 1st September 2000

Work Item Description

Title: Interworking between IM CN subsystem and IP networks.

1 3GPP Work Area

	Radio Access
X	Core Network
	Services

2 Linked work items

- Mapping of overall end to end QoS in each new interface
- End-to-end (re-)negotiation of QoS parameters (S2)
- Support of IP multimedia services (S1)
- An architecture for Call control and roaming to support IP-based multimedia services in UMTS (S2)

3 Justification

IP based multimedia services are a required feature of UMTS Release 2000, which will include IP telephony and real time service support with end to end QoS negotiation.

The Release 2000 architecture interworks with the wider IP networks through the GGSN and Gi reference point. This work item will define the solutions required to implement U plane and control plane interworking over this reference point. The interworking requirement may be especially true for IP based networks that do not support potential U Plane aspects which are specific for the mobile networks (e.g. those selected for radio resource optimisation reasons).

4 Objective

The objective of this work item is to specify bearer capabilities for provision of IP based multimedia services between IM CN subsystem of the UMTS and external IP networks.

Significant goals are to define the functionality required within the GGSN and CSCF to enable this service interworking, and to establish the protocols over the Gi and Mm reference points.

The areas addressed should encompass the transport protocol and signalling issues for negotiation and mapping of bearer capabilities and QoS information.

5 Service Aspects

None identified.

6 MMI-Aspects

None identified.

7 Charging Aspects

None identified.

8 Security Aspects

None identified.

9 Impacts

Affects:	USIM	ME	AN	CN	Others
Yes				X	
No	X	X	X		
Don't know					

10 Expected Output and Time scale (to be updated at each plenary)

New specifications						
Spec No.	Title	Prime rsp. WG	2ndary rsp. WG(s)	Presented for information at plenary#	Approved at plenary#	Comments
xx.xxx	Tech Report "Technical Requirements for IM to PS Interworking"	CN3	CN1 SA4	CN#12 (May 01)	CN#14 (Dec 01)	

Affected existing specifications				
Spec No.	CR	Subject	Approved at plenary#	Comments
29.061		Interworking between the PLMN supporting GPRS and PDNs	CN#14 (Dec 01)	

11 Work item raporteurs

Kevin Bye, BT Advanced Communication Engineering, Adastral Park

12 Work item leadership

CN3

13 Supporting Companies

3GPP TSG-CN-WG1 SIP Ad-hoc #1
17-19 October, 2000
Sophia Antipolis/ France

Tdoc N1-001105

BT, Motorola, Siemens

14 Classification of the WI (if known)

	Feature (go to 14a)
	Building Block (go to 14b)
X	Work Task (go to 14c)

14a The WI is a Feature: List of building blocks under this feature

N/A

14b The WI is a Building Block: parent Feature

N/A

14c The WI is a Work Task: parent Building Block

- End to end UMTS reservation and (re-)negotiation of QoS parameters
- Call control and roaming to support IP based multimedia services in UMTS
- Mapping of overall end to end QoS in each new interface

3GPP TSG-CN-WG1 SIP Ad-hoc #1
17-19 October, 2000
Sophia Antipolis/ France

Tdoc N1-001107

Title: **Comments to WI Description on "Interworking between IM CN subsystem and IP networks"**

Reference LS
(If available)

Source: **CN1 SIP Ad-hoc**

TO [1]: **CN3**

Cc:

WI: **Interworking between IM CN subsystem and IP networks**

Contact Person:
Name: **Sunil Chotai**
E-mail Address: **sunil.chotai@bt.com**
Tel. Number: **+44 1473 605603**

Attachments: **N1-001105**
(Please list documents numbers to be attached)

Date: **17 October 2000**

The CN1 SIP adhoc meeting has reviewed attached work item description (N1-001105) on Interworking between IM CN subsystem and IP networks, and would like to make the following comments:

- SIP protocol enhancements are agreed to be the responsibility of CN1 whereas the requirements at e.g. Mm reference point are within the CN3 remit. Thus any SIP protocol impacts at Mm reference point need to be done in co-operation between CN1 and CN3 (section 4: objectives).
- The ME will be impacted due to end-to-end QoS negotiation (section 9: impacts).

CN 3 is requested to reflect these comments when the work item description is updated.

[1] Please write any action required from the groups in a clear way.

3GPP TSG-CN-WG1 SIP Ad-hoc #1
17-19 October, 2000
Sophia Antipolis/ France

Tdoc N1-001111

Title: Response to LS on Ungraceful session termination in the IM domain

Reference LS N1-001055
(If available)

Source: 3GPP TSG CN WG1 SIP ad hoc #1

TO [1]: 3GPP TSG SA WG2

Cc:

WI: SIP Call Control

Contact Person:

Name: Nedko Ivanov
E-mail Address: Nedko.Ivanov@nokia.com
Tel. Number: +36 20 9369588

Attachments: N1-001055 = S2-001603
(Please list documents numbers to be attached)

Date: 19 Oct 2000

TSG CN WG1 SIP ad hoc #1 thanks the TSG SA WG2 for their LS (tdoc N1-001055/ S2-001603) on ungraceful session termination in the IM domain.

TSG CN WG1 SIP ad hoc #1 agree the problem analysis that SA2 has made. The problem needs to be solved.

However, it was found premature to commit to the proposed solution as an alternative way was seen by some delegations. The main concern regarding the TSG SA WG2 proposal was inefficiency of the procedure due to multiple retransmissions of INVITE messages over the radio interface, which is a limited resource in the wireless systems. Also, normal GPRS procedures leading to the same situation needs to be considered, for example, Network Initiated GPRS Detach or Routing Area Update refusal when the mobile roams to a restricted area. In case of lower layer failure (e.g. loss of radio connection) the information is available in the RNC and SGSN. How this information is made available to the SIP call control CSCF needs to be considered.

Therefore it is proposed that this issue should be investigated further in TSG CN WG1 considering other mechanisms as well. A possible solution would be to allow the lower layers to convey information of the loss of radio coverage to the SIP application layer. Additionally ungraceful session termination due to failure in IM CN Subsystem should be covered in the study.

[1] Please write any action required from the groups in a clear way.

3GPP TSG CN1 SIP Ad Hoc #1 **N1-001112**
Sophia Antipolis, France, October 17-19, 2000

To: 3GPP TSG SA WG 1

Source: 3GPP TSG CN WG 1 SIP Ad Hoc

Contact: Andrew Allen (caa019@email.mot.com) +1-847-435-0016

WI: Support of IP multimedia services

Title: LS on WID-Support of IP multimedia services

Date: 19th October 2000

At the CN1 SIP ad hoc meeting in Sophia Antipolis, CN1 reviewed the Work Item Descriptions related to the IM subsystem.

As a result of reviewing the WID-Support of IP multimedia services, CN1 ask SA1 to consider revisions to this Work Item Description as follows:

- The linked CN1-WI *SIP call control protocol for the IM subsystem* should be added to the list in section 2. Please note that this WI is scheduled for Rel 5.
- Since release R00 is no longer valid – is the completion of this WI scheduled for Rel 4 or Rel 5? Could SA1 confirm that this WI is a Rel 5 feature.
- Stage 2 and 3 milestones should be added to section 10
- New Documents TS22.228 and changes to document TS22.101 and other relevant CN1 and SA2 documents should be indicated in section 10
- CN1 note that this WI is now a feature within the project plan

3GPP TSG CN1 SIP Ad Hoc #1 **N1-001113**
Sophia Antipolis, France, October 17-19, 2000

To:	3GPP TSG CN WG 3
Source:	3GPP TSG CN WG 1 SIP Ad Hoc
Contact:	Andrew Allen (caa019@email.mot.com) +1-847-435-0016
WI:	SIP Call Control protocol for the IM Subsystem
Title:	LS on RTCP responsibility
Date:	19th October 2000

At the CN1 SIP ad hoc meeting in Sophia Antipolis, CN1 discussed their specification work responsibilities related to the IETF protocols associated with SIP including RTCP.

CN1 understand that any protocol specification work associated with RTCP, which is part of the RTP RFC 1889 will be part of the work to be performed by CN3 under the agreed work split. CN1 therefore do not plan on performing required specification work associated with RTCP and will leave this to CN3. Any interactions between SIP and RTCP will require joint specification work between CN1 and CN3.

CN1 requests CN3 to confirm that this is also their understanding of the work split responsibilities for the IM subsystem work.

3GPP TSG-CN-WG1, Meeting #14
20 - 24 November, 2000
Cardiff, Wales

Tdoc N1-001143

TSG-RAN Working Group 2 (Radio L2 and Radio L3) ***R2-001817***
Sophia Antipolis, France, 21 - 25 August 2000

Source:	**TSG-RAN WG2**
To:	**TSG-RAN WG3, TSG-SA WG2 and TSG-CN WG1**
Cc:	**TSG-GERAN**
Title:	**Response to LS (R3-002198) on Directed signalling connection re-establishment at RRC**
Contact:	Joakim Bergström, Ericsson Email: Joakim.Bergstrom@era.ericsson.se

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Introduction

In specification 25.832 ("Manifestations of handover and streamlining") a scenario is described for mobility without Iur. Currently this scenario is supported only for the network controlled handover case, but not in the UE initiated handover (forward handover) case.

Scenario

If a UE selects a cell under a DRNC that does not have an Iur connection to the SRNC, the DRNC may ignore the UE or send a RRC connection release message on CCCH. If the DRNC does not send a response to the UE, the UE will time out the RRC Connection and release it locally. In either of the above cases the UE will enter RRC idle mode.

If a higher layer service exist when this occurs the behaviour of the NAS layers in the UE is a bit different, depending on whether it is CS or PS domain.

- For **CS domain**, a call re-establishment is initiated "immediately". This leads to a request of a new signalling connection to the CN in order to carry the higher layer message for call re-establishment.
- In case of **PS domain**, the RRC connection does not need to exist continuously and a new signalling connection will be delayed until the next higher layer message is transmitted.

When the signalling connection to the CN is re-established, the initial NAS message from the UE carried in the re-establishment (e.g. RA Update or Service Request) will trigger the CN to handle the necessary mobility functions including release of the old UE context, packet forwarding etc.

Thus, in case of a delay of transmitting the initial NAS message, there is a risk that the old SRNC will detect that the UE has disappeared and request a release over Iu. How long it takes for this to happen depends on RRC state.

If the mobility scenario with no Iur is to be supported, an initial NAS message needing a signalling connection must be sent to the CN before the old SRNC will detect that the UE is lost.

In order to trigger a request for a signalling connection for this particular case, TSG.RAN WG2 has proposed to use a special cause value for the RRC connection release. This value "Directed signalling connection re-establishment" shall be used to distinguish this particular mobility case without Iur from a normal RRC connection release.

Questions

TSG-RAN WG2 would kindly like to ask if this mobility scenario is to be supported?

If it is, TSG-RAN WG2 would also like to ask if the proposed solution is feasable to be included in higher layer specifications?

3GPP TSG-CN-WG1, Meeting #14
20 - 24 November, 2000
Cardiff, Wales

Tdoc N1-001143

Specific answers to (R3-002198) LS on Questions on Behaviour in the "forward handover" scenario without an Iur in Release '99

1. *What is the behaviour that RAN WG2 and CN WG1 expect in the case where there is no Iur available to transfer the message received from the UE to the SRNC?*
   (Release of the RRC connection?, Iu Release in the SRNC after some "time-out"?, …?)

   TSG-RAN WG2 expect that the DRNC may either ignore the UE message or send a release message on CCCH. If the DRNC neglects the message, the UE will "time out" and enter idle mode after a specified number of retransmissions. If the DRNC instead sends a release message the UE will enter idle mode directly without any extra delay or unesecary transmissions on RACH.

   In both these cases the SRNC will not be notified that the RRC connection has been released by the UE. The SRNC will therefor depending on UE state (e.g. when periodic cell updates have not been received) perform a release over Iu.

2. *Is there any possibility for the services utilised by the UE to be re-established between the UE and the CN, e.g. in a way similar to call re-establishment in GSM?*

   As described in the above scenario TSG-RAN WG2 intends to use a separate cause value in the release message to destinguish a normal RRC connection release from a RRC connection release when there is no Iur. This is to trigger an immediate re-establishment from higher layers in the UE. This will make it possible to have a call re-establishment in a similar way as in GSM.

Attached is a discussion paper describing the problem/solution and CRs adding support for this mobility scenario in RRC. The LS from TSG-RAN WG3 has also been included for the convinience of TSG-SA WG2.


R2-001583.zip


R2-001784.zip


R2-001769.zip


R2-001731.zip

3GPP TSG-CN-WG1, Meeting #14
20 - 24 November, 2000
Cardiff, Wales

Tdoc N1-001148

TSG-RAN Working Group 3 Meeting #15 ***R3-002198***

Berlin, Germany, 21st – 25th August 2000

To: **RAN WG2 and CN WG1**

CC: **TSG GERAN**

Source: **RAN WG3**

Title: **Questions on Behaviour in the "forward handover" scenario without an Iur in Release '99**

Contact: Göran Rune, Ericsson Radio Systems
goran.rune@era.ericsson.se
+46 13 284200

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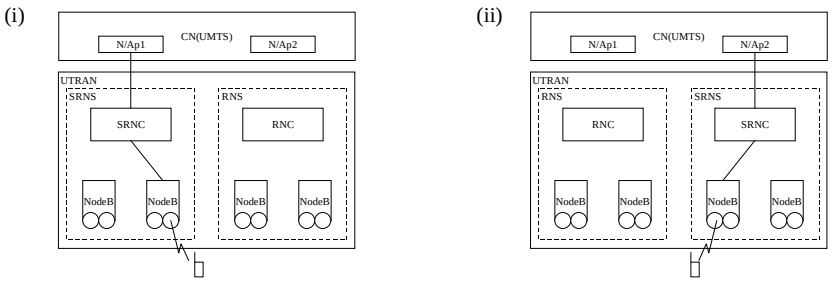
1 Introduction

In the current RAN WG3 specifications there is a handover scenario without Iur. The scenario is included below. Please see TR 25.832 (Manifestations of Handover and SRNS Relocation) v3.0.0 for further information on the supported scenarios.

Quoted from TR 25.832 v3.0.0:

5.2.3 Inter Node B (inter RNS, without Iur)

This scenario shows the case where there is no Iur interface between the RNSs. This scenario will be supported by UTRAN as hard handover only and may include a change of mode (TDD↔FDD). Steps (i) & (ii) show the situation before and after.



Inter RNS (Intra UTRAN)
No Iur

End of quotation from TR 25.832 v3.0.0.

In the above scenario there is full support in the RAN WG3 specifications for the network-initiated case by means of the Relocation procedures on the Iu interface. Please see TS 25.413 (UTRAN Iu Interface RANAP Signalling) v3.2.0 for detailed information on the Relocation procedures.

In the UE initiated case ("forward handover") there is currently no support within the RAN WG3 specifications. The UE initiated case is characterised by the RNC

receiving a message from the UE on the CCCH with the U-RNTI (SRNC-Id + S-RNTI) indicating that another RNC is the SRNC. If there was an Iur available the message would have been forwarded to the SRNC using the Uplink Signalling Transfer procedure on the Iur interface. The Uplink Signalling Transfer procedure is included in the Basic Mobility module of RNSAP. Please see TS 25.423 (UTRAN Iur Interface RNSAP Signalling) v3.2.0 for detailed information on the Uplink Signalling Transfer procedure.

The cases of no Iur available (not possible to send a message to the SRNC) could be the following:

- The operator has not configured the network with connectivity between the two concerned RNCs.
- There is congestion in the Transport Layer.
- The SRNC-Id is unknown (not possible to translate into an signalling address to be provided to the Transport Layer) to the DRNC.
- other

2 Questions

In relation to the UE initiated case where no Iur is available as described above, RAN WG3 would kindly like to as RAN WG2 and CN WG1 the following:

1. What is the behaviour that RAN WG2 and CN WG1 expect in the case where there is no Iur available to transfer the message received from the UE to the SRNC?
   (Release of the RRC connection?, Iu Release in the SRNC after some “time-out”?, …?)

2. Is there any possibility for the services utilised by the UE to be re-established between the UE and the CN, e.g. in a way similar to call re-establishment in GSM?

3GPP TSG-CN-WG1, Meeting #14
20 - 24 November, 2000
Cardiff, Wales

Tdoc N1-001157

TSG-SA Working Group 2 *s2-001526*
Bristol, UK, September 4-8 September 2000

Source:	**TSG-SA WG2**
To:	**TSG-RAN WG2, TSG-RAN WG3, and TSG-CN WG1**
Cc:	**TSG-GERAN**
Title:	**Response to LS (R2-001817) on Directed signalling connection re-establishment at RRC**
Contact:	Fredrik Rilde, Ericsson Email: Fredrik.Rilde@era.ericsson.se

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TSG-SA WG2 thanks TSG-RAN WG2 for their LS (R2-001817) on directed signalling connection re-establishment. TSG-SA WG2 has reviewed the LS and the related contributions.

Regarding the questions it is TSG-SA WG2 opinion that the related mobility scenario needs to be supported.

It is TSG-SA WG2 opinion that no updates are needed to higher layer specification (stage 2), already defined mechanisms can be re-used.

TSG-SA WG2 kindly ask the addressed TSGs to include this mobility scenario and to review their specification in order to see if any updates are needed.

3GPP TSG-CN-WG1, Meeting #14
20 - 24 November, 2000
Cardiff, Wales

Tdoc N1-001167

3GPP TSG T WG1 #8
Naantali, Finland
31 August - 1 September 2000

T1-000161

Title: LS on request to review timing requirements in Idle mode test cases

Source: TSG-T1/SIG and TSG-T1/RF
To: TSG-CN1
Cc: TSG-T1

Document for: Review

Contact: Jens Henrik Jensen (Ericsson), **jens.h.jensen@ericsson.dk**

Subject: Request for review of timing requirements in Idle mode test cases

At the TSG-T1/SIG SWG meeting #11 in Harpenden, UK 5-7 June 2000, there were questions on the timer values that were used in the Idle mode test cases. These constraints have been kept from GSM and are not in the UMTS specs. There is a danger that the tests are imposing specifications on the UE that were not intended by CN1.

It was therefore decided to ask CN1 if they agree to these timings, or to suggest alternatives.

There are three documents attached for CN1 to review:

1. "LS (T1S-000124)".
   T1S-000124 which was approved at the TSG-T1/SIG meeting #12 is an updated version of clause 6 of TS 34.123-1. Those timing requirements that shall be reviewed or estimated if not existing, are those highlighted in the clauses indicated below. The corresponding GSM test case is indicated if it exists for reference to GSM timer values.

   Clauses:
   6.1.1.1.5 - 6.1.1.2.5 - 6.1.1.3.5 - 6.1.1.4.4 ("Test procedure") – 6.1.1.4.5 – 6.1.3.1.5 – 6.1.3.3.5 – 6.1.3.4.5 – 6.1.3.6.4 ("Test procedure") – 6.1.3.6.5 – 6.1.3.7.5 – 6.1.3.8.4 ("Test procedure") – 6.1.3.8.5 – 6.1.3.9.5 – 6.2.2.1.5 – 6.2.2.2.5 – 6.2.2.3.4 ("Test procedure") – 6.2.2.3.5

2. "LS (34.121-310, 8.2)"
   In this document, only those timer values highlighted in the clauses indicated below, shall be estimated.

   Clauses:
   8.2.2.1.5 – 8.2.2.2.5 – 8.2.3.1.5 – 8.2.3.2.5

3. "LS (34.121, 8.2.3.3)"

3GPP TSG-CN-WG1, Meeting #14
20 - 24 November, 2000
Cardiff, Wales

Tdoc N1-001167

This document contains the test case “Cell Re-Selection UTRAN to GSM“ and has not yet been approved. However, T1/RF and T1/SIG would like the timer value highlighted in the clause below to be estimated in order to prepare for the approval of this test case.

Clause:
8.2.3.3.5

3GPP TSG-CN-WG1, Meeting #14
20-24 , 2000
Cardiff/UK

Tdoc N1-001214

Title: Unsynchronized PDP contexts handling

Reference LS
(If available)

Source: 3GPP TSG CN WG1 - #14

TO: 3GPP TSG RAN WG2

Cc: 3GPP TSG RAN WG3

WI: GPRS

Contact Person:

Name: Frank Schramm
E-mail Address: Frank.Schramm@icn.siemens.de
Tel. Number: +49 30 386-29371

Attachments: N1-001364, R2-00xxxx
(Please list documents numbers to be attached)

Date: 11 Nov 2000

The meeting CN1#14 regards the issue of unsynchronized PDP contexts as problem which needs to be resolved in R99. Please refer to the attached document N1-001211 which describes the problem as well as the proposed solution.

The solutions needs a change to 25.331 but it introduces no new concepts and uses already existing procedures. The CR on 25.331 is attached and CN1 would be pleased if this can be accepted by RAN2.

3GPP TSG-CN-WG1, Meeting #14
20-24 , 2000
Cardiff/UK

Tdoc N1-001215

Title: Unsynchronized PDP contexts handling

Reference LS
(If available)

Source: 3GPP TSG CN WG1 - #14

TO: 3GPP TSG RAN WG3

Cc: 3GPP TSG RAN WG2

WI: GPRS

Contact Person:

Name: Frank Schramm
E-mail Address: Frank.Schramm@icn.siemens.de
Tel. Number: +49 30 386-29371

Attachments: N1-001211, R3-00xxxx
(Please list documents numbers to be attached)

Date: 11 Nov 2000

The meeting CN1#14 regards the issue of unsynchronized PDP contexts as problem which needs to be resolved in R99. Please refer to the attached document N1-001211 which describes the problem as well as the proposed solution.

The solutions needs a change to 25.413 (in fact just a new cause) but it introduces no new concepts and uses already existing procedures. The CR on 25.413 is attached and CN1 would be pleased if this can be accepted by RAN3.

3GPP TSG-CN-WG1, Meeting #14
20 - 24 November, 2000
Cardiff, Wales

Tdoc N1-001275

Agenda Item: CS based emergency call enhancements

WI / Topic: CS based emergency call enhancements

Source: Ericsson L.M.

Title: Discussion on the emergency call back capability

Effected Specifications / Releases: TS 24.008 / Release 2000

Document for: Discussion and Approval

Date: 2000-11-06

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1. Background

The overview of the emergency call back capability was presented at the CN1 #11 Umea meeting (Tdoc N1-000432). However because it was proposed to be included in the R'99, it was not discussed at that time.

The re-establish capability for emergency calls has been approved as being a part of R'00 WI "Emergency Call Enhancement" at CN #8. (WI on CS based EC (379) &PS based EC (380)) and S1 have drafted a set of requirements.

2. Requirement

Draft requirements in LS S1-000651:

- It shall be possible for the emergency centers to re-establish communication with the user within the amount of time (e.g. 40 seconds in Japan) after end of the communication or accidental disconnection.
- The network shall be able to re-establish communication with the user by re-establish request from the emergency center.
- The re-establish request from the emergency center shall be treated as a top priority.
- ME shall support this capability for R00.
- It shall be applied for the case of emergency call without SIM/USIM.
- The user may be restricted to originate/terminate another call within this period.

2.1 Discussion

To start the technical investigation, we would like to clarify the requirements.

- We assume it is only applicable for the case when call is released by user, not when the call is released by the emergency center.
- We assume this requirement is only for UMTS and not for GSM.

- We don't think this requirement should apply to accidental disconnection (Radio Link Failure). This because existing procedures are already specified to cope with this case (RRC re-establishment procedure). These procedures should be implemented by operators that want to have a good reliability for the calls in case of Radio Link Failure. Adding another re-establishment for the Emergency Call on top of these existing procedures won't make it any more reliable. Therefore in the following only the normal disconnection case is discussed.

3. Technical Proposals

This paper describes one possible solution. When looking for possible solution, the following requirements were kept in mind:

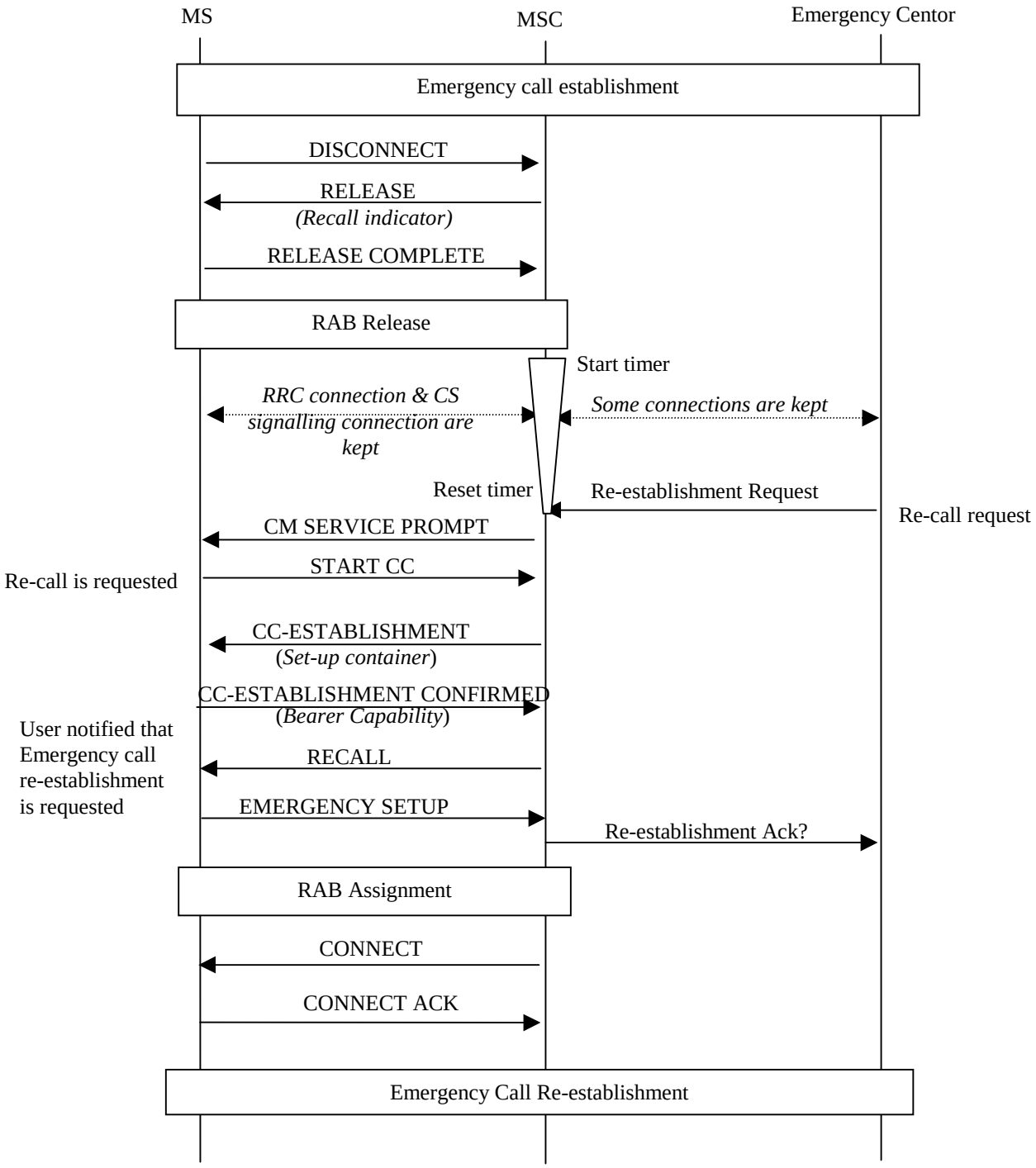
- Because the recall has to work without a SIM/UICC, the network needs to keep some connection with the mobile otherwise it would be impossible for the NW to find the MS for the MT recall.
- The RAB should be released. If the RAB is kept, it wastes resources and might cause congestion. In addition if the RAB is kept, RRC would have to have a way to associate the kept RAB and the Emergency recall.

Considering these two requirements:

- in UMTS, we need to keep the CS signalling connection between the MSC and the MS (and therefore the RRC connection)
- in GSM, no CS signalling connection exists so we cannot use the same mechanism and some change in MM and RR would be needed. As mentionned before we assume the requirement applies only to GSM. In the rest of the document we have not considered GSM.

3.1 NW initiated MO Emergency Call

It will be able to re-use parts of CCBS mechanism (but it will be different from CCBS). The main differences are RRC and signalling connection are kept and a paging is not needed.



Advantage: It is possible to re-use some parts of CCBS mechanism.

Disadvantage: Since the emergency call back is mandatory for the mobile station, all the mobile stations have to support parts of CCBS mechanism (optional today).

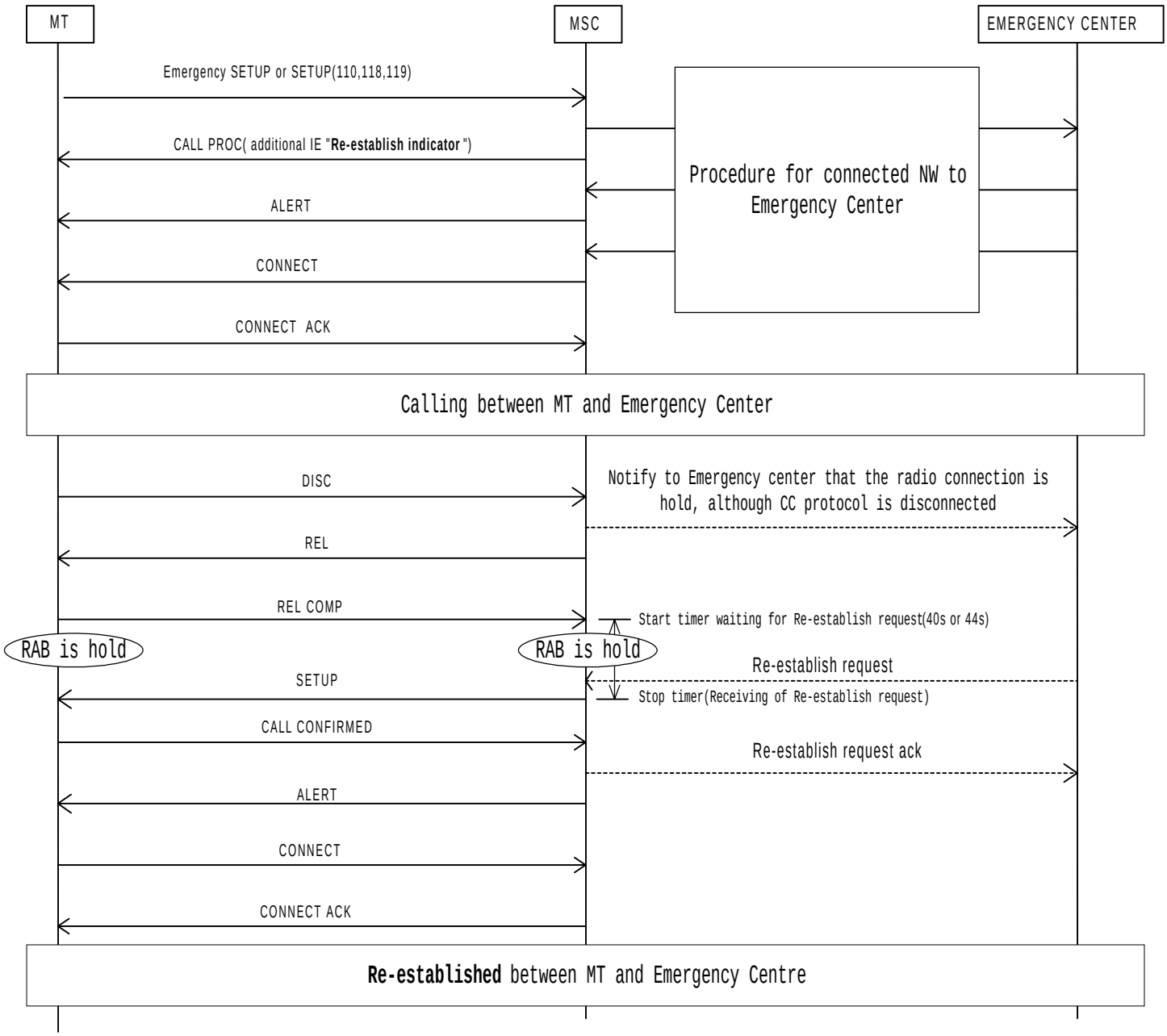
3.2 Impact

MMI	RRC	MM	CC
- Small impact (CCBS MMI is adapted to indicate “Emergency call back” to the user).	- No impact (the RRC connection will automatically be kept because the CS signalling connection is kept).	In the MSC: MM shall not enter the Idle state, even if all the calls are released, when receiving a Re-est. indicator IE from CC. MM has to keep the CS signalling connection for 40secs. Then on the 40secs timer expiry MM can release the signalling connection. In the MS: the timer T3240 (10sec) in the state WAIT FOR NETWORK COMMAND has to be removed or extended (>40sec) in that case	- Some modification is needed for CC-Establishment message. (add new IEs, modify facility IE to optional etc.) - In the MS, if EMERGENCY SETUP is contained in the CC ESTABLISHMENT message, the MS has to prioritise this recall over other possible active calls. - In the MSC, when the MO EMERGENCY SETUP is received the MSC has to realise somehow that this is the same call has the call originated from the Emergency center and merge the two calls together.

4. Conclusion

Our recommendation is to use a CCBS-like mechanism for the emergency call back facility and we would like to have the N1 opinion on this.

Annex: Current solution for the PDC networks



3GPP TSG-CN-WG1, Meeting #14
20 - 24 November, 2000
Cardiff, Wales

Tdoc N1-001310

Liaison Statement

Title: Terminal Capability Negotiation.

Reference LS: T2M000090

To: TSG-T2, SA2

CC: TSG-SA1

Source: TSG-CN1

Contact: Richard Brook, Samsung Electronics Research Institute.
E-mail: richardbrook39@aol.com
Phone : +44 7776 181555

CN1 thank T2 for their Liaison referenced above.

CN1 have briefly studied this Liaison from T2 and do not see that the use of the MS Classmark is suitable for the purpose described by T2.
The MS Classmark is used by the MSC and SGSN, as well as by several elements in the RAN.
Therefore CN1 recommends not mixing the cellular protocol and application specific classmark information.

The use of the W3C protocols suggested by T2 could be appropriate, but CN1 would also like to suggest that the SIP protocol currently under development may offer some of the functionality that T2 are looking for and that this should be kept in mind.

3GPP TSG-CN-WG1, Meeting #14
20 - 24 November, 2000
Cardiff, Wales

Tdoc N1-001312

Title: Response to LS on Information about current status in RAN2 on the interactions between RRC and upper layers

Reference LS **R2-002139 received as N1-001146**
(If available)

Source: **TSG-CN WG1**

TO [1]: **TSG-RAN WG2, TSG-GERAN WG2**

Cc: **TSG-RAN WG3**

WI:

Contact Person:

Name:	**Olivier Irac**
E-mail Address:	**olivier.irac@eml.ericsson.se**
Tel. Number:	**+44 1256 864865**

Attachments:

Date: **24/11/00**

CN1 thanks RAN2 for their liaison R2-002139 (received as N1-001146) on interaction between RRC and upper layers.

(Note for GERAN2: points 1 to 4 are for GERAN2 information only but point 5 needs an answer from GERAN2.)

1 Terminology on "connections"

Text quoted from the liaison:
"RAN2 has observed that in TS 24.007 the terms "PS signalling connection" and "RR connection" are used as names for, in RAN2 terminology, the signalling connections for the PS domain and the CS domain, respectively. To align the terminology, RAN2 would kindly suggest that N1 considers if the term "CS signalling connection" could be introduced in N1, since RAN2 does not use the term "RR connection" and since the name itself is very close to "RRC connection" which means something different."

CN1 acknowledges the problem and CRs were presented on TS 24.008 and TS 24.011 during the CN1#14 meeting to try to clarify the terminology "RR connection" vs. CS or PS signalling connection. However CN1 didn't agree on a common term to replace "RR connection" and a CN1 agreement on a new term is needed before the CN1 specifications can be updated.

2 Protocol architecture model

Text quoted from the liaison:
"Three types of SAPs [offered by RRC] are identified, based on the model defined in TS 23.110 and the tentative names are:

- *General Control SAP*

[1] Please write any action required from the groups in a clear way.

- *Notification SAP*
- *Dedicated control SAP*

The SAPs are however not specified in any detail in the RAN2 specifications. RAN2 has observed that N1 has started to define the SAPs in TS 24.007 also for "UMTS". RAN 2 would like that N1 takes the SAPs identified for RRC listed above into consideration, especially the Notification SAP, which is used for paging that is triggered by the upper layers. RAN2 would also like to be informed of the progress in N1 regarding the specification of the SAPs and is of course willing to assist N1 in the further work on the definition of these SAPs."

CN1 opinion is that introducing these three SAPs at NAS level introduces extra complexity in the NAS architecture model with little added value. Also introducing these SAPs would reveal the internal AS structure to the NAS which should be avoided in CN1 opinion.

A CR was presented to CN1 to introduce a unique AS-SAP in TS 24.007 between NAS and AS. This AS-SAP would include and replace the currently defined GMMAS-SAP and RABM-SAP and would also cover the CS domain (currently covered by the RR-SAP). However no agreement could be reached by CN1 on this issue and it is postponed. CN1 will let RAN2 know about the outcome of the discussion.

3 Paging and establishment causes

Text quoted from the liaison:
"RAN2 has defined a number of establishment and paging causes. In the appendinx of this LS the paging and establishment causes in TS 25.331 v3.4.1 are given and also an agreed CR on a modification of the establishment cause (note: a similar change is expected on the paging cause). RAN2 would like N1 to review the cause values. RAN2 assumes that the setting of these cause values is defined in the N1 specifications."

CN1 has reviewed the cause values and found that a paging cause for MT USSD is missing. Also CN1 would like to remove the words „e.g. SMS" and „e.g. USSD" from the names of the causes. CN1 believes these changes have already been done in the version of the CR presented to RAN2.

4 QoS differentiation on upper layer message transfer

Text quoted from the liaison:

"The RRC layer need then to translate "SAPI 0" to "High priority" and "SAPI 3" to "Low priority".

RAN2 would like to be informed if the assumptions made by RAN2 on the QoS classes needed for upper layer message transfer need to be changed."

CN1 confirms that the assumptions made by RAN2 are correct and do not need to be changed.

5 Duplication avoidance protocol

Text quoted from the liaison:

„RAN2 asks if it would be possible for N1 to include the full specification of the duplication avoidance protocol in the N1 set of specifications (such as 24.007 and/or 24.008). „

CN1 agrees that the description of the duplication avoidance protocol needs to be moved to the CN1 specifications.

However as the N(SD) protocol for GSM is currently defined as a RR sublayer service in GSM 04.18, **CN1 would like to ask for the GERAN WG2 opinion on moving the text from the GSM 04.18**.

3GPP TSG-CN-WG1, Meeting #14
20 - 24 November, 2000
Cardiff, Wales

Tdoc N1-001313

Title: **Response to LS - UTRAN Initiated RAB Renegotiation/Reconfiguration**

Reference LS : **N1-001149** (tdoc TSGR3#15(00)22639)
(If available)

Source: **TSG CN WG1**

TO [1]: **TSG RAN WG3**

Cc:

WI:

Contact Person:

Name: Frank Schramm
E-mail Address: frank.schramm@icn.siemens.de
Tel. Number: +49 30 386-29371

Attachments:

(Please list documents numbers to be attached)

RAN3: RAN WG3 is considering the possibility to do RAB renegotiation during a call based on a request from the UTRAN to the CN. If this procedure is in place, RAN WG3 could foresee the need for the CN to communicate QoS parameters directly with the UE for an ongoing call. ... but there is no such capability in the CC protocol for the CS domain.

There is an in-call modification procedure specified in TS 24.008 which can be used to change the call mode or to initiate a service level up- and downgrading. The usage of the latter applies to GSM only. It might be possible to adapt the in-call modification procedure to the purpose requested by RAN3.

However, CN1 needs more information on when the procedure requested by RAN3 can be invoked and what parameters can be changed, before it can decide about the possibility to use, a possibly adapted, existing procedure or if an entirely new procedure has to be designed.

CN1 would like to ask for the Rel4 WI for which this change is desired.

3GPP TSG-CN-WG1, Meeting #14
20 - 24 November, 2000
Cardiff, Wales

Tdoc N1-001314

Title: **Range of CN specific DRX cycle length coefficient**

Source: **3GPP TSG-CN WG1**

To: **3GPP TSG-RAN WG2, 3GPP TSG-RAN WG3**

Cc:

Contact: Fumihiko Yokota, Fujitsu limited
yokota@ss.ts.fujitsu.co.jp

TSG CN WG1 thanks TSG RAN WG2 and TSG RAN WG3 for their liaison statements [R2-002469, R3-002762] with regard to the range of CN specific DRX cycle length coefficient.

CN1 has agreed to change the range of CN specific DRX cycle length coefficient, which is defined in 24.008, from 2 – 12 to 6 – 9 in accordance with the request from RAN2 and RAN3. CN1 would like to inform RAN2 and RAN3 that relevant CRs to 24.008, N1-001398 for release 99 and N1-001399 for release 4, have been approved by CN1.

3GPP TSG-CN-WG1, Meeting #14
20 - 24 November, 2000
Cardiff, Wales

Tdoc N1-001315

Title: **Response to Liaison on the usage of Paging Cause IE in a Paging message**

Reference LS **R3-002861/N1-001154**
(If available)

Source: **TSG-CN WG1**

TO [1]: **TSG-RAN WG3, TSG-RAN WG2**

Cc:

WI:

Contact Person:

Name: **Janne Muhonen**
E-mail Address: **janne.m.muhonen@nokia.com**
Tel. Number: **+358-40-5559627**

Attachments:
(Please list documents numbers to be attached)

Date: **20 Nov 2000**

TSG-CN WG1 thanks TSG-RAN WG3 for their liaision statement (R3-002861/N1-001154) on on the usage of Paging Cause IE in a Paging message.

TSG-CN WG1 confirms the understanding of TSG-RAN WG3 that the paging cause may not always be available at the time of paging. Such a case may occur for example in CS domain with single numbering scheme, where requested bearer capability for mobile terminating call is not available at the time of paging. Another example is network requested PDP context activation where the cause cannot be indicated during the paging procedure.

Therefore TSG-CN WG1 would like to ask TSG-RAN WG3 to consider a solution that presence of the Paging Cause IE would be conditional in RANAP Paging message. The CN side would add the IE if the reason for paging is known, otherwise the IE is not present in the message.

Additionally TSG-CN WG1 would like to ask TSG-RAN WG2 whether there is any ongoing work to add new cause values to Paging Cause IE and Establishment Cause IE, e.g. a value to indicate that the reason for paging is unkown or to indicate a general mobile terminated transaction.

[1] Please write any action required from the groups in a clear way.

3GPP TSG-CN-WG1, Meeting #14
20 - 24 November, 2000
Cardiff, Wales

Tdoc N1-001317

Title: Response to Liaison Statement on IPT Basic Call Handling

Reference LS N1-001156 = S2-001515/S2-001388 = N2-000344
(If available)

Source: CN1

TO [1]: S2, CN2

Cc: CN4

WI: SIP Call Control protocol for the IM subsystem

Contact Person:

Name:	Sunil Chotai
E-mail Address:	sunil.chotai@bt.com
Tel. Number:	+44 1473 605603

Attachments: N1-001382
(Please list documents numbers to be attached)

Date: 22 November 2000

CN1 thank S2 and CN2 for their Liaisons referenced above.

CN1 agrees with CN2 that IP Multimedia (IM) equivalent specification of Basic Call Handling specified in 3G TS 23.018. would be needed.

CN1 would like to indicate that CN1 has initiated work on the development of a new specification on IP Multimedia Session Handling for Release 5.

A copy of the lastest draft version is attached for information.

[1] Please write any action required from the groups in a clear way.

3GPP TSG-CN-WG1, Meeting #14
20 - 24 November, 2000
Cardiff, Wales

Tdoc N1-001328

Title: **Reply to LS on Supported Codec Lists in TS 26.103**

Reference LS **S4-000528**
(If available)

Source: **TSG CN1**

TO [1]: **SA4**

(Cc: **(TrFO/TFO workshop), RAN3**

WI: **OoBTC**

Contact Person:

Name: **Robert Zaus**
E-mail Address: **Robert.Zaus@icn.siemens.de**
Tel. Number: **+49 722 26899**

Attachments: **N1-001388**
(Please list documents numbers to be attached)

Date: **24 November 2000**

CN1 would like to thank SA4 for their liaison statement and their CR to TS 26.103 concerning the inclusion of the Supported Codec List.

In reaction to the liaison statement, CN1 has agreed the attached change request to TS 24.008.

However, CN1 needs to highlight the fact that for reasons of backwards compatibility the Supported Codec List shall be used only for speech codec information belonging to UMTS radio access and future additional radio access technologies. Speech codecs for GSM radio access shall be indicated in octet 3a, etc. of the information element Bearer Capability as in release 99 and before.

CN1 has noticed that parts of the CR 26.103-004 approved by S4 are not in line with this. E.g. in section 4 of the specification a new statement was added that TS 26.103 **"... further specifies the coding of these Codec Lists for both radio access technologies, GSM and UMTS, to be used by the Core Network Protocols on the radio interface."**

CN1 kindly asks SA4 to correct this and to align their specification with TS 24.008.

[1] Please write any action required from the groups in a clear way.

3GPP TSG-CN-WG1, Meeting #14
20 - 24 November, 2000
Cardiff, Wales

Tdoc N1-001329

Title: Response to LS on request to review timing requirements in Idle mode test cases

Reference LS **T1-000161 received as N1-001167**
(If available)

Source: **TSG-CN WG1**

TO [1]: **TSG-T1/SIG, TSG-T1/RF**

Cc: **TSG-T1, TSG-RAN WG1, TSG-RAN WG2, TSG-GERAN WG2**

WI:

Contact Person:

Name: **Olivier Irac**
E-mail Address: **olivier.irac@eml.ericsson.se**
Tel. Number: **+44 1256 864865**

Attachments: N1-001167

Date: **24/11/00**

CN1 thanks T1 for their liaison T1-000161 (received as N1-001167) to request the review of timing requirements in idle mode.

CN1 has reviewed the timing requirements highlighted in the documents attached in the liaison received from T1. CN1 has introduced no new requirements in the TS 23.122 specification that would require the change of the timings highlighted for review but the introduction of GSM/UMTS dual RAT mobile means that these timings need reviewing. This is not only a CN1 issue but this also affects RAN1, RAN2 and GERAN2 as initial cell selection and cell reselection must be considered.

T1 should therefore request RAN1, RAN2 and GERAN2 working groups to review the timings.

The original T1 liaison and documents sent for review is attached to this liaison for reference.

[1] Please write any action required from the groups in a clear way.

3GPP TSG-CN1 Meeting #14
Cardiff, Wales, 20 - 24 November, 2000

N1-001331

Response Liaison Statement

on

Emergency Call Indication in the network

To: T3

CC: SA1

Source: CN1

Contact: Zdravko.Jukic@eed.ericsson.se

+49 173 299 5889

CN1 would like to thank T3 for their liaison statement on the Emergency Call Indication in the network (T3-000455).

CN1 confirm that the definition of the Emergency Service Category is in the TS 24.008.

For clarity, CN1 suggest using the same name, i.e. Emergency Service Category instead of Emergency Call Type Indicator.

3GPP TSG-CN-WG1, Meeting #14
20-24 , 2000
Cardiff/UK

Tdoc N1-001364

Agenda Item:

Source: Siemens AG

Title: Unsynchronized PDP contexts handling

Document for: Discussion

Date: 22/11/ 2000 Rev3

---

1. Introduction

The deactivation of PDP contexts (network or MS initiated) may be performed under certain condition (e.g. missing RRC signalling connection due to air interface problems) in MS and CN not in parallel. This leads to the circumstance that PDP contexts in MS and network are in different state (unsynchronized contexts).

This situation is very unlikely to happen in state PMM-CONNECTED due to repeated transmission of DEACTIVATE PDP CONTEXT REQUEST message for a context which shall be deactivated. If there is a break of radio connection that causes the loss of that messages then it can be assumed that the RNC either request the deactivation of one or several RABs via RAB Release Request procedure or it request the deactivation of the Iu-connection via Iu Release Request procedure anyway.

Unsynchronized contexts happens when a break of the radio connection did occur and the deactivation of PDP contexts has not been completed successfully on both sides.

There are then two possibilities:
1. MS has less PDP contexts in state PDP-ACTIVE (active contexts) then the network
2. Network has less PDP contexts in state PDP-ACTIVE then the MS

Both possibilities can happen in parallel and the problem should be corrected during re-establishment.

Case **1.)**
can be treated in that way that the re-establishment of an RAB is checked against the activated PDP contexts. This can be done easily since RAB-ID is synonym with NSAPI. If the PDP context for a specific NSAPI is not in state PDP-active then the Radio Bearer Setup is rejected which leads to the local deactivation of the context (see figure below).

Case **2**.)
This case can be sub-divided in to cases:
2.1 the network has no active context at all
2.2 the network has at least one active context and it is not possible to re-establish all of them due to resource problems
2.3 the network has at least one active context and it is possible to re-establish all of them

Case **2.1**)
Is handled already by sending Service Reject (#40 - No PDP context activated) and local deactivation of all PDP contexts in the MS.

Case **2.2.)**
In this case is to all PDP context, which can not be re-established due to resource problems, a PDP context deactivation or modification procedure applied. So the MS knows which PDP contexts has been deactivated currently.

So if the MS has now still locally active contexts for which it has neither received a MODIFY PDP CONTEXT REQUEST nor a DEACTIVATE PDP CONTEXT REQUEST message then it shall deactivate this PDP contexts after ~~a sufficient (implementation dependent) time~~ expiry of a timer whose value is set to 5*T3395 (T3386)

Case **2.3**)
If the MS has locally active contexts for which it has neither received a MODIFY PDP CONTEXT REQUEST nor a DEACTIVATE PDP CONTEXT REQUEST message then it shall deactivate this PDP contexts after ~~a sufficient (implementation dependent) time~~ expiry of a timer whose value is set to 5*T3395 (T3386).

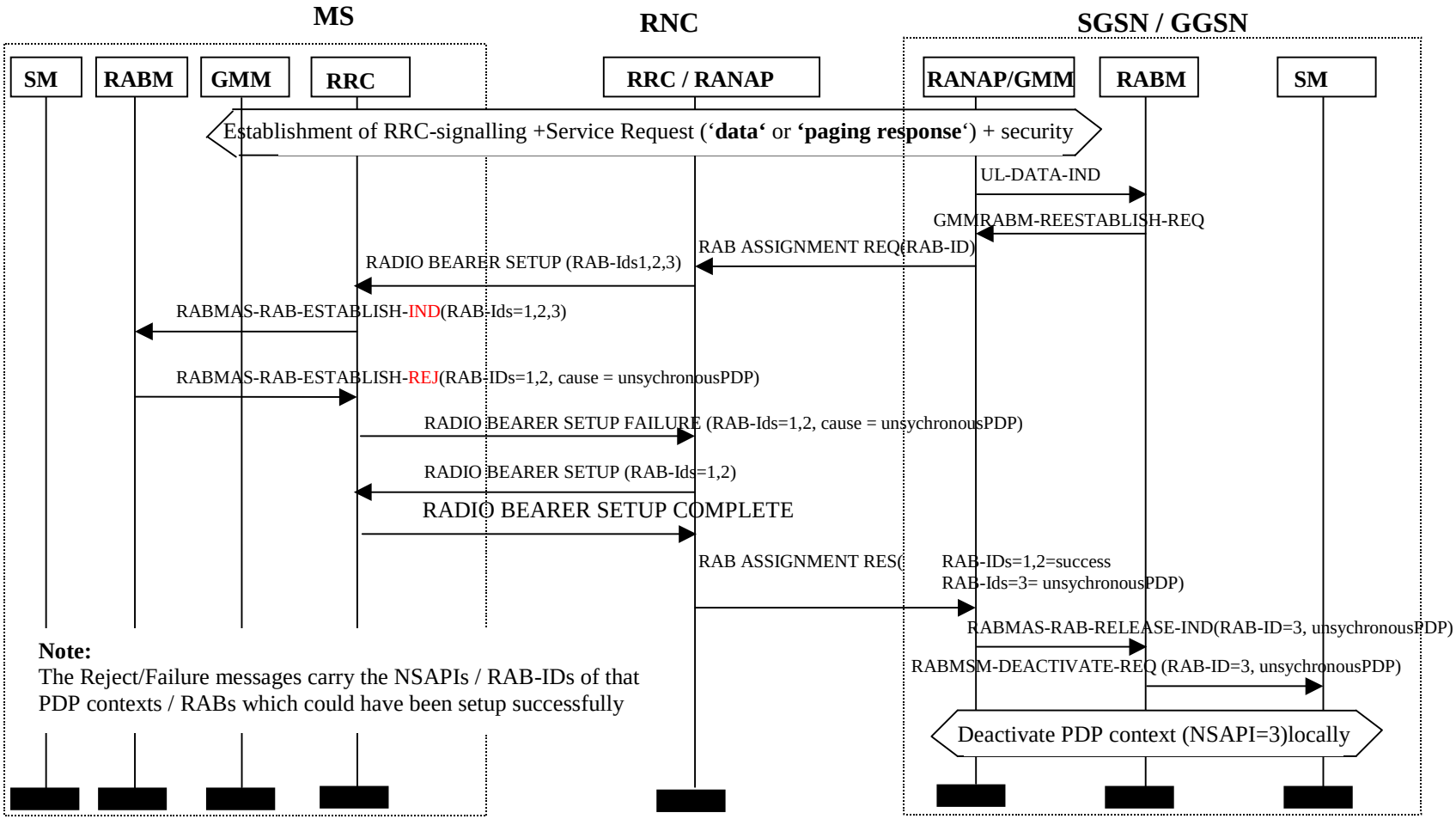


Figure 1: Handling of RAB-Setup when no corresponding context is active in MS

The cause = "unsychronousPDP" triggers the RNC to compare the bearer which could have been set up successfully (delivered in the RADIO BEARER SETUP FAILURE) with the bearer which have been requested for setup. If there are bearer which could have been setup successfully the RNC send a new RADIO BEARER SETUP with that RAB-IDs. The bearer are setup and the RNC reports towards the SGSN.

3GPP TSG-CN-WG1, Meeting #14
20-24 , 2000
Cardiff/UK

Tdoc N1-001364

Agenda Item:

Source: Siemens AG

Title: Unsynchronized PDP contexts handling

Document for: Discussion

Date: 22/11/ 2000 Rev3

---

1. Introduction

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Both possibilities can happen in parallel and the problem should be corrected during re-establishment.

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Is handled already by sending Service Reject (#40 - No PDP context activated) and local deactivation of all PDP contexts in the MS.

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In this case is to all PDP context, which can not be re-established due to resource problems, a PDP context deactivation or modification procedure applied. So the MS knows which PDP contexts has been deactivated currently.

So if the MS has now still locally active contexts for which it has neither received a MODIFY PDP CONTEXT REQUEST nor a DEACTIVATE PDP CONTEXT REQUEST message then it shall deactivate this PDP contexts after ~~a sufficient (implementation dependent) time~~ expiry of a timer whose value is set to 5*T3395 (T3386)

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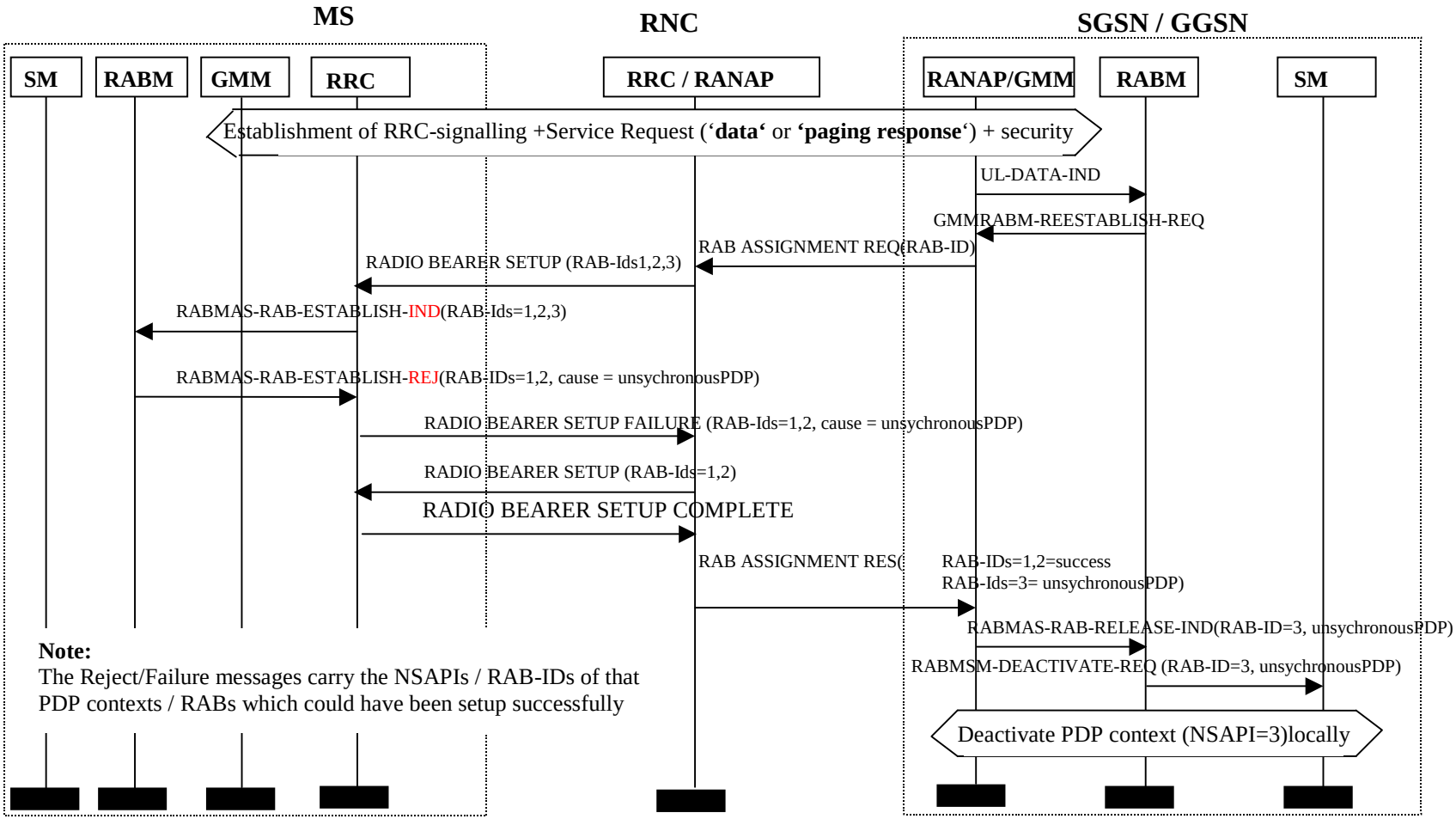

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3GPP TSG-CN-WG1, Meeting #14
20 - 24 November, 2000
Cardiff, Wales

Tdoc N1-001371

Title: Response to the LS from CN3 and CN4 on intersystem handover problem

Reference LS **N3-000549, N4-001077**

Source: **TSG_CN WG1**

TO [1]: **TSG_CN WG3, TSG_CN WG4**

Cc:

WI: GSM-UMTS interworking

Contact Person:
Name: Inmaculada Carrion
E-mail Address: Inmaculada.carrion-rodrigo@nokia.com
Tel. Number: +358503806481

Attachments: N1-001372

Date: **24.11.2000**

TSG CN WG1 thanks TSG CN WG3 and TSG CN WG4 for their Liaison Statements (Tdoc N4-001077 and Tdoc N3-000549) on the intersystem handover problem.

TSG CN WG1 has analyzed the refered Liasion Statements and agree on that this is already dealt with in the current stage 2 specification TS 23.009 (Handover procedures (Release 1999)).

Therefore TSG CN WG1 would like to inform TSG CN WG3 and TSG CN WG4 about the following:

- TSG CN WG1 confirms that their understanding of TS 23.009 regarding this problem is correct and
- TSG CN WG1 will include TSG CN WG4's proposal to use the BSSMAP Handover Performed message over MAP-E to cover the scenarios related to subsequent intersystem intra-MSC handover in 3G MSC-B, into TS 23.009. The CR N1-001372 which includes this proposal was approved in this meeting.

[1] Please write any action required from the groups in a clear way.

3GPP TSG-CN1 Meeting #14
Cardiff, Wales - 20 - 24 November, 2000

Tdoc N1-001372
Revised Tdoc N1-001320

CR-Form-v3

CHANGE REQUEST

⌘ **23.009** **CR** **020** ⌘ rev **1** ⌘ Current version: **3.4.0** ⌘

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

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

Title:	⌘	Indication of Intra-3G-MSC InterSystem handover, from 3G_MSC-B to MSC-A/3G_MSC-A
Source:	⌘	Nokia
Work item code:	⌘	GSM-UMTS interworking
Date:	⌘	22.11.2000
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change:	⌘	For 3G MSC-B to inform MSC-A or 3G MSC-A of a subsequent intersystem intra-3G-MSC handover after an inter-MSC handover, TSG CN WG4 agreed that it is preferable to use the BSSMAP Handover Performed message over MAP-E rather than to introduce a new MAP message. The Cell Identifier IE of the BSSMAP Handover Performed message should be used by MSC-A or 3G MSC-A to know whether the handover is to UTRAN (RNC Id given) or to GSM BSS (Cell identity), and the Chosen Channel IE should be used by the MSC-A or 3G MSC-A to know the channel type in case of handover to GSM BSS.
Summary of change:	⌘	Section 4.4.1 Role of 3G_MSC-B: 3G MSC-B notifies MSC-A or 3G MSC-A of intra 3G MSC-B InterSystem handover by using the A_HANDOVER_PERFORMED message. Section 4.2.1 Role of MSC-B: MSC-B notifies MSC-A or 3G MSC-A of successful intra -MSC-B handover completion by using the A_HANDOVER_PERFORMED message.
Consequences if not approved:	⌘	When an inter-MSC handover for CS data call is made, the used IWF resides with MSC-A/3G_MSC-A. When an intra-MSC intersystem handover is made within 3G_MSC-B, the IWF is not informed about the type of the GERAN channel. Consequently, the data transmission fails after the handover.

Clauses affected:	⌘	4.2.1, 4.4.1
Other specs	⌘ ☐	Other core specifications ⌘

affected:	☐ Test specifications ☐ O&M Specifications	
Other comments: ⌘		

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

Modified section

4.2 MSC-B

4.2.1 Role of MSC-B

In the Intra-MSC handover case, the MSC-B keeps the control of the whole Intra-MSC handover procedure.

~~MSC-A, or 3G_MSC-A in the case of a previous inter-system, is only notified on the successful completion of the Intra-MSC handover procedure.~~

MSC-B notifies MSC-A or 3G_MSC-A of successful intra -MSC-B handover completion by using the A_HANDOVER_PERFORMED message.

In the Inter-MSC handover case, the role of MSC-B (MSC-B') is only to provide radio resources control within its area. This means that MSC-B keeps control of the radio resources connection and release towards BSS-B. MSC-B will do some processing on the BSSMAP information received on the E-interface or A-interface whereas it will relay the DTAP information transparently between A-interface and E-interface. MSC-A initiates and drives a subset of BSSMAP procedures towards MSC-B, while MSC-B controls them towards its BSSs to the extent that MSC-B is responsible for the connections of its BSSs. The release of the dedicated resources between MSC-B and BSS-B is under the responsibility of MSC-B and BSS-B, and is not directly controlled by MSC-A. When clearing is to be performed due to information received from BSS-B, MSC-B shall transfer this clearing indication to MSC-A, to clear its connection with BSS-B, to terminate the dialogue with MSC-A through the E-interface, and to release its circuit connection with MSC-A, if any. In the same way, the release of the connection to its BSS-B, is initiated by MSC-B, when the dialogue with MSC-A ends normally and a release is received from the circuit connection with MSC-A, if any, or when the dialogue with the MSC-A ends abnormally.

When a release is received by MSC-B for the circuit connection with MSC-A then MSC-B shall release the circuit connection.

In the Inter-system Inter-MSC handover case, the role of MSC-B (MSC-B') is only to provide radio resources control within its area. This means that MSC-B keeps control of the radio resources connection and release towards BSS-B. MSC-B will do some processing on the BSSMAP information received on the E-interface or A-interface whereas it will relay the DTAP information transparently between A-interface and E-interface. 3G_MSC-A initiates and drives a subset of BSSMAP procedures towards MSC-B, while MSC-B controls them towards its BSSs to the extent that MSC-B is responsible for the connections of its BSSs. The release of the dedicated resources between MSC-B and BSS-B is under the responsibility of MSC-B and BSS-B, and is not directly controlled by 3G_MSC-A. When clearing is to be performed due to information received from BSS-B, MSC-B shall transfer this clearing indication to 3G_MSC-A, to clear its connection with BSS-B, to terminate the dialogue with 3G_MSC-A through the E-interface, and to release its circuit connection with 3G_MSC-A, if any. In the same way, the release of the connection to its BSS-B, is initiated by MSC-B, when the dialogue with 3G_MSC-A ends normally and a release is received from the circuit connection with MSC-A, if any, or when the dialogue with the MSC-A ends abnormally.

When a release is received by MSC-B for the circuit connection with 3G_MSC-A then MSC-B shall release the circuit connection.

Modified section

4.4 3G_MSC-B

For roles and functional composition of the 3G_MSC-B working as pure GSM MSC, please see previous clause ("MSC-B").

4.4.1 Role of 3G_MSC-B

In the Intra-3G_MSC handover/relocation case, the 3G_MSC-B keeps the control of the whole Intra-3G_MSC handover/relocation procedure. 3G_MSC-B notifies MSC-A or 3G_MSC-A of intra-3G_MSC-B InterSystem handover by using the A_HANDOVER_PERFORMED procedure.

The role of 3G_MSC-B is also to provide transcoder resources.

In the Inter-3G_MSC relocation case, the role of 3G_MSC-B (3G_MSC-B') is only to provide radio resources control within its area. This means that 3G_MSC-B keeps control of the radio resources connection and release towards RNS-B. 3G_MSC-B will do some processing on the RANAP information received on the E-interface or the RANAP information received on the Iu-interface whereas it will relay the Direct Transfer information transparently between Iu-interface and E-interface. 3G_MSC-A initiates and drives RANAP procedures towards 3G_MSC-B, while 3G_MSC-B controls them towards its RNSs to the extent that 3G_MSC-B is responsible for the connections of its RNSs. The release of the dedicated resources between 3G_MSC-B and RNS-B is under the responsibility of 3G_MSC-B and RNS-B, and is not directly controlled by 3G_MSC-A. When clearing is to be performed due to information received from RNS-B, 3G_MSC-B shall transfer this clearing indication to 3G_MSC-A, to clear its connection with RNS-B, to terminate the dialogue with 3G_MSC-A through the E-interface, and to release its circuit connection with 3G_MSC-A, if any. In the same way, the release of the connection to its RNS-B, is initiated by 3G_MSC-B, when the dialogue with 3G_MSC-A ends normally and a release is received from the circuit connection with 3G_MSC-A, if any, or when the dialogue with the 3G_MSC-A ends abnormally.

When a release is received by 3G_MSC-B for the circuit connection with 3G_MSC-A then 3G_MSC-B shall release the circuit connection.

In the Inter-system UMTS to GSM Inter-3G_MSC handover case, the role of 3G_MSC-B (3G_MSC-B') is only to provide radio resources control within its area. This means that 3G_MSC-B keeps control of the radio resources connection and release towards BSS-B. 3G_MSC-B will do some processing on the BSSMAP information received on the E-interface or the BSSMAP information received on the A-interface whereas it will relay the DTAP information transparently between A-interface and E-interface. 3G_MSC-A initiates and drives a subset of BSSMAP procedures towards 3G_MSC-B, while 3G_MSC-B controls them towards its BSSs to the extent that 3G_MSC-B is responsible for the connections of its BSSs. The release of the dedicated resources between 3G_MSC-B and BSS-B is under the responsibility of 3G_MSC-B and BSS-B, and is not directly controlled by 3G_MSC-A. When clearing is to be performed due to information received from BSS-B, 3G_MSC-B shall transfer this clearing indication to 3G_MSC-A, to clear its connection with BSS-B, to terminate the dialogue with 3G_MSC-A through the E-interface, and to release its circuit connection with MSC-A, if any. In the same way, the release of the connection to its BSS-B, is initiated by 3G_MSC-B, when the dialogue with 3G_MSC-A ends normally and a release is received from the circuit connection with 3G_MSC-A, if any, or when the dialogue with the MSC-A ends abnormally.

When a release is received by 3G_MSC-B for the circuit connection with 3G_MSC-A then 3G_MSC-B shall release the circuit connection.

In the Inter-system GSM to UMTS Inter-3G_MSC handover case, the role of 3G_MSC-B (3G_MSC-B') is only to provide radio resources control within its area. This means that 3G_MSC-B keeps control of the radio resources connection and release towards RNS-B. 3G_MSC-B will do some processing on the BSSMAP information received on the E-interface or the RANAP information received on the Iu-interface whereas it will relay the Direct Transfer information transparently between Iu-interface and E-interface. MSC-A initiates and drives a subset of BSSMAP procedures towards 3G_MSC-B, while 3G_MSC-B controls them towards its RNSs to the extent that 3G_MSC-B is responsible for the connections of its RNSs. The release of the dedicated resources between 3G_MSC-B and RNS-B is under the responsibility of 3G_MSC-B and RNS-B, and is not directly controlled by MSC-A. When clearing is to be performed due to information received from RNS-B, 3G_MSC-B shall transfer this clearing indication to MSC-A, to clear its connection with RNS-B, to terminate the dialogue with MSC-A through the E-interface, and to release its circuit connection with MSC-A, if any. In the same way, the release of the connection to its RNS-B, is initiated by 3G_MSC-B, when the dialogue with MSC-A ends normally and a release is received from the circuit connection with MSC-A, if any, or when the dialogue with the MSC-A ends abnormally.

When a release is received by 3G_MSC-B for the circuit connection with MSC-A then 3G_MSC-B shall release the circuit connection.

If 3G_MSC-B does not support the optional supplementary service Mutlicall (See TS 23.135) and 3G_MSC-A requests to relocate multiple bearers, 3G_MSC-B shall indicate that it does not support multiple bearers to 3G_MSC-A.

If 3G_MSC-B supports the optional supplementary service Multicall (See TS 23.135) and UE is engaged with multiple bearers the following description applies;

- In the basic relocation case, the 3G_MSC-B shall be able to allocate an Handover Number for each bearer. The 3G-MSC-B shall also be able to select some bearers so that the number of bearers will fulfill the maximum number of bearers supported by the 3G_MSC-B.

- In the Intra-3G_MSC relocation case, the 3G-MSC-B tries to relocate all bearers to a new RNS.

- In the subsequent relocation back to the 3G_MSC-A or to a third 3G_MSC-B' case, the 3G-MSC-B tries to request to the 3G_MSC-A to relocate all bearers to the 3G_MSC-A or to the 3G_MSC-B'.
- In the Intra-3G_MSC inter-system UMTS to GSM handover case and the subsequent inter-system UMTS to GSM handover back to the 3G_MSC-A or to a third MSC-B' case, the 3G_MSC-B shall be able to select one bearer to be handed over according to the priority level defined as RAB parameters in TS 25.413 and tries to handover the selected bearer.

3GPP TS 23.cde V0.2.0 (2000-11)

Technical Specification

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Contents

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

1 Scope

This 3GPP Technical Specification (TS) specifies the IP Multimedia (IM) Call Model for handling of an IP multimedia session origination and termination for an IP Multimedia subscriber.

This specification includes interactions between the Service Platform and IP multimedia sessions.

The IP Multimedia (IM) Subsystem stage 2 is specified in 3GPP TS 23.228 [8] and the signalling flows for the IP multimedia call control based on SIP and SDP are specified in 3GPP TS 24.228 [9].

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.

This specification may contain references to pre-Release-4 GSM specifications. These references shall be taken to refer to the Release 5 version where that version exists. Conversion from the pre-Release-4 number to the Release 4 (onwards) number is given in subclause 6.1 of 3GPP TR 41.001.

[<seq>] <doctype> <#>[([up to and including]{yyyy[-mm]|V<a[.b[.c]]>}[onwards])]: "<Title>".

[1] 3GPP TR 41.001: "GSM Release specifications".

[2] 3GPP TR 21.905: " Vocabulary for 3GPP Specifications ".

[3] 3GPP TS 23.003: "Numbering, addressing & identification".

[4] 3GPP TS 23.060: "General Packet Radio Service; Service description; Stage 2".

[5] 3GPP TS 23.078: "Customized Applications for Mobile network Enhanced Logic (CAMEL) - Phase 3; Stage 2".

[6] 3GPP TR 21.978: "Feasibility Technical Report – CAMEL Control of VoIP Services".

[7] 3GPP TS 23.097: "Multiple Subscriber Profile (MSP) - Stage 2 ".

[8] 3GPP TS 23.228: "IP Multimedia (IM) Subsystem –Stage 2".

[9] 3GPP TS 24.228: "Signalling flows for the IP multimedia call control based on SIP and SDP".

[10] 3GPP TS 24.229: "IP multimedia call control protocol based on SIP and SDP ".

[11] 3GPP TS 29.078: "CAMEL Application Part (CAP) specification - Phase 3".

[12] IETF RFC 2543bis "SIP: Session Initiation Protocol".

3 Definitions, symbols and abbreviations

Delete from the above heading those words which are not applicable.

Subclause numbering depends on applicability and should be renumbered accordingly.

3.1 Definitions

For the purposes of the present document, the [following] terms and definitions [given in ... and the following] apply.

IP Service Switching Function (ipSSF): functional entity that interfaces the CSCF to the gsmSCF. The concept of ipSSF is derived from the IN SSF, but uses different triggering mechanisms because of the nature of the mobile network. The ipSSF is similar to the gsmSSF and gprsSSF concepts defined for CAMEL (3GPP TS 23.078[5])

IP Multimedia Basic Call State Model (IM-BCSM): IM-BCSM provides a high-level model of CSCF activities required to establish and maintain communication paths for users. As such, it identifies a set of basic call activities in a CSCF and shows how these activities are joined together to process a basic call.

IP Multimedia CAMEL Subscription Information (IM-CSI): IM-CSI identifies the subscriber as having IP Multimedia CAMEL services.

IP Multimedia session: IP Multimedia session and IP Multimedia call are treated as equivalent in this specification.

Originating IP Multimedia Basic Call State Model (O-IM-BCSM): originating half of the IM-BCSM. The O-IM-BCSM corresponds to that portion of the IM-BCSM associated with the originating party.

Originating IP Multimedia CAMEL Subscription Information (O-IM-CSI): O-IM-CSI identifies the subscriber as having originating IP Multimedia CAMEL services.

Point In Association (PIA): PIAs identify CSCF activities associated with one or more basic association/connection states of interest to OSS service logic instances.

Service Key: Service Key identifies to the gsmSCF the service logic. The Service Key is administered by the HPLMN, and is passed transparently by the CSCF to the gsmSCF. The Service Key is a part of the T/O-IM-CSI.

Service Platform Gateway (SP GW): functional entity that interfaces the CSCF to an external Service Platform.

Terminating IP Multimedia Basic Call State Model (T-IM-BCSM): terminating half of the IM-BCSM. The T-IM-BCSM corresponds to that portion of the IM-BCSM associated with the terminating party.

Terminating IP Multimedia CAMEL Subscription Information (T-IM-CSI): T-IM-CSI identifies the subscriber as having terminating IP Multimedia CAMEL services.

3.2 Symbols

For the purposes of the present document, the following symbols apply:

Symbol format

<symbol> <Explanation>

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

BCSM	Basic Call State Model
CAMEL	Customized Applications for Mobile network Enhanced Logic
CAP	CAMEL Application Part
CSCF	Call State Control Function
DP	Detection Point
EDP	Event Detection Point
FTN	Forwarded To Number
GPRS	General Packet Radio Service
gprsSSF	GPRS Service Switching Function
gsmSCF	GSM Service Control Function
gsmSRF	GSM Specialised Resource Function

gsmSSF	GSM Service Switching Function
HPLMN	Home PLMN
HSS	Home Subscriber Server
IE	Information Element
IF	Information Flow
IP	Internet Protocol
I-CSCF	Interrogating CSCF
ipSSF	Internet Protocol Service Switching Function
IM	IP Multimedia
IM-BCSM	IP Multimedia Basic Call State Model
IM-CSI	IP Multimedia CAMEL Subscription Information
IPLMN	Interrogating PLMN
MGCF	Media Gateway Control Function
MO	Mobile Originating
MT	Mobile Terminating
NNI	Network Node Interface
O-IM-BCSM	Originating IP Multimedia Basic Call State Model
O-IM-CSI	Originating IP Multimedia CAMEL Subscription Information
OSA	Open Service Architecture
PIC	Point In Call
PLMN	Public Land Mobile Network
P-CSCF	Proxy CSCF
SIP	Session Initiation Protocol
S-CSCF	Serving CSCF
T-IM-BCSM	Terminating IP Multimedia Basic Call State Model
T-IM-CSI	Terminating IP Multimedia CAMEL Subscription Information
TDP	Trigger Detection Point
UNI	User Network Interface
VPLMN	Visited PLMN

4 Architecture and information flows for IM Multimedia session

Subclauses 4.1 and 4.2 show the architecture for handling a basic MO multimedia session and a basic MT multimedia session. A basic mobile-to-mobile multimedia session is treated as the concatenation of a MO multimedia session and a MT multimedia session.

Subclauses 4.3, 4.4 and 4.5 show the information flows for handling a basic MO multimedia session and a basic MT multimedia session.

4.1 Architecture for a Mobile Originated IP Multimedia session

This is specified in 3GPP TS 23.228 [8].

4.2 Architecture for a Mobile Terminated IP Multimedia session

This is specified in 3GPP TS 23.228 [8].

4.3 Information flow for a Mobile Originated IP Multimedia session

The information flow for a MO multimedia session is specified in 3GPP TS 24.228 [9].

4.4 Information flow for retrieval of routeing information for MobileTerminated IP Multimedia session

The information flow for retrieval of routeing information for a MT multimedia session is specified in 3GPP TS 24.228 [9]

4.5 Information flow for an Mobile Terminated IP Multimedia session

The information flow for a MT multimedia session is specified in 3GPP TS 24.228 [9].

5 Functional requirements of network entities

Editor's Note : The entities involved and the interfaces between them will be described in this clause.

The protocol used between the MS and CSCF is based on Session Initiation Protocol, which is specified in 3GPP TS 24.229[10].

The protocol used between two CSCF is also based on Session Initiation Protocol, which is specified in 3GPP TS 24.229[10].

Editor's Note: The protocol used between the CSCF and HSS is for further study.

Editor's Note: The protocol used between the CSCF and Service platform (e.g. CAMEL gsmSCF) is for further study.

Editor's Note: clause 6 of this document assumes a CAP interface between the CSCF and the Service Platform:

Editor's Note: clause 7 of this document assumes a SIP interface between the CSCF and the Service Platform:

5.1 Mobile Originated IP Multimedia session

5.1.1 Functional requirements of serving CSCF

Editor's Note : The functional behaviour of the CSCF will be specified here.

5.1.2 Functional requirements of proxy CSCF

Editor's Note : The functional behaviour of the CSCF will be specified here.

5.2 Retrieval of routeing information for Mobile Terminated IP Multimedia session

5.2.1 Functional requirements of Interrogating CSCF

5.2.2 Functional requirements of HSS

5.3 Mobile Terminated IP Multimedia session

5.2.1 Functional requirements of serving CSCF

5.2.2 Functional requirements of proxy CSCF

6 IP Multimedia session handling with a CAP based Service Platform

Editor's Note : The current IM subsystem stage 2 (3GPP TS 23.228 v1.2.0) mentions a CAP interface as a potential candidate for the CSCF to service platform interface. This assumes that the service platform is CAMEL gsmSCF .

Editor's Note : This clause applies when the Service Platform is based on CAMEL gsmSCF and supports the CAP interface

6.1 Architecture

This subclause describes the functional architecture needed to support CAMEL interactions with the CSCF in the IP Multimedia Subsystem

6.1.1 Functional Entities used for CAMEL at IP Multimedia Registration

Figure 6.1 shows the functional entities involved when an MS registers for IP Multimedia session requiring CAMEL support.

Subscriber data is transferred from the HSS to the CSCF during the SIP Registration. The subscriber data includes CAMEL related information.

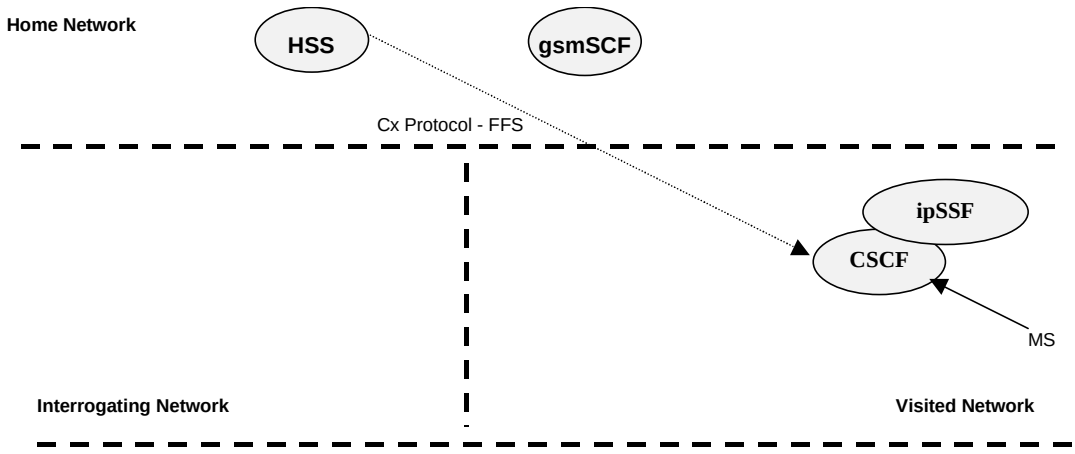

Figure 6.1: Functional architecture for support of CAMEL when mobile registers for IP Multimedia session

6.1.2 Functional Entities used for CAMEL for MO IP Multimedia session

Figure 6.2 shows the functional entities involved in a Mobile Originated IP Multimedia session requiring CAMEL support.

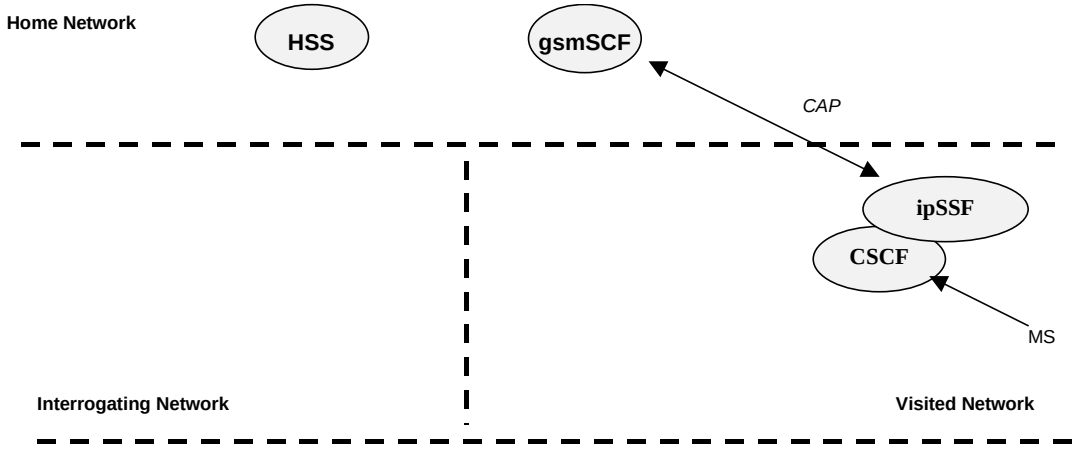

Figure 6.2: Functional architecture for support of CAMEL control of a MO IP Multimedia session

6.1.3 Functional Entities used for CAMEL for MT IP Multimedia session

Figure 6.3 shows the functional entities involved in a Mobile Terminated IP Multimedia session requiring CAMEL support.

6.2 Interfaces defined for a CAP based Service Platform

6.2.1 CSCF - ipSSF interface

This is an internal interface. The interface is described in the specification to make it easier to understand the handling of DPs (arming/disarming of DPs, DP processing etc.).

6.2.2 ipSSF - gsmSCF interface

This interface is used by the gsmSCF to control an IP Multimedia session in a certain ipSSF. Relationships between the ipSSF and the gsmSCF on this interface are opened as a result of the ipSSF sending a request for instructions to the gsmSCF. This interface shall be based on 3GPP TS 29.078[11].

6.2.3 HSS – CSCF interface

This interface is used to send CAMEL related subscriber data to a CSCF, e.g. IM-CSI.

6.3 Detection Points (DPs)

Certain basic call events may be visible to the GSM Service Control Function (gsmSCF). The DPs are the points in call at which these events are detected.

. Editor's Note: The DPs for Mobile Originated IP Multimedia session and Mobile Terminated IP Multimedia session will be described here

6.4 Description of CAMEL Subscriber Data

6.4.1 IP Multimedia CAMEL Subscription Information (IM-CSI)

This subclause defines the contents of the IP Multimedia CAMEL Subscription Information. This information shall be sent by the HSS to the CSCF via the Cx Interface.

6.4.1.1 gsmSCF Address

Address to be used to access the gsmSCF for a particular subscriber. The address shall be an E.164 number to be used for routeing.

6.4.1.2 Service Key

The Service Key identifies to the gsmSCF the service logic that shall apply.

6.4.1.3 Default IP Multimedia Handling

The Default IP Multimedia Handling indicates whether the IP Multimedia session shall be released or continued as requested in case of error in the ipSSF to gsmSCF dialogue.

6.4.1.4 TDP List

The TDP List indicates on which detection point triggering shall take place.

6.4.1.5 CAMEL Capability Handling

CAMEL Capability Handling indicates the phase of CAMEL which is asked by the gsmSCF for the service.

6.5 Description of CAMEL State Models

Editor's Note: This subclause is for further study.

IP Multimedia sessions are handled in the CSCF and the behaviour of the IP Multimedia sessions is modelled by a state model.

6.5.1 General Handling

The IP Multimedia Basic Call State Model (IM-BCSM) is used to describe the actions in a CSCF during processing of IP Multimedia sessions for originating or terminating calls

The IP Multimedia Basic Call State Model (IM-BCSM) identifies the points in basic IP Multimedia call processing when Operator Specific Service (OSS) logic instances (accessed through the gsmSCF) are permitted to interact with basic IP Multimedia session control capabilities.

6.5.2 Originating IP Multimedia Basic Call State Model (O-IM-BCSM)

6.5.2.1 Description of the O-IM-BCSM

Editor's Note: The O-IM-BCSM will be described here.

6.5.3 Relationship with SIP Call Model and CAMEL O-BCSM

Editor's Note: The relationship of the O-IM-BCSM with the SIP call model defined in IETF RFC2543bis[12] and the CAMEL O-BCSM specified in 3GPP TS 23.078[5] will be described here.

6.5.3.1 Description of the SIP Call Model

6.5.3.2 Description of the CAMEL O-BCSM

This is specified in 3GPP TS 23.078[5].

6.5.4 Terminating IP Multimedia Basic Call State Model (T-IM-BCSM)

6.5.4.1 Description of the T-IM-BCSM

Editor's Note: The T-IM-BCSM will be described here.

6.5.5 Relationship with SIP Call Model and CAMEL O-BCSM

Editor's Note: The relationship of the T-IM-BCSM with the SIP call model defined in IETF RFC2543bis[12] and the CAMEL T-BCSM specified in 3GPP TS 23.078[5] will be described here.

6.5.5.1 Description of the SIP Call Model

6.5.5.2 Description of the CAMEL T-BCSM

This is specified in 3GPP TS 23.078[5].

6.6 Procedures for Multimedia Session Handling with a CAP based Service Platform

6.6.1 Overall Architecture

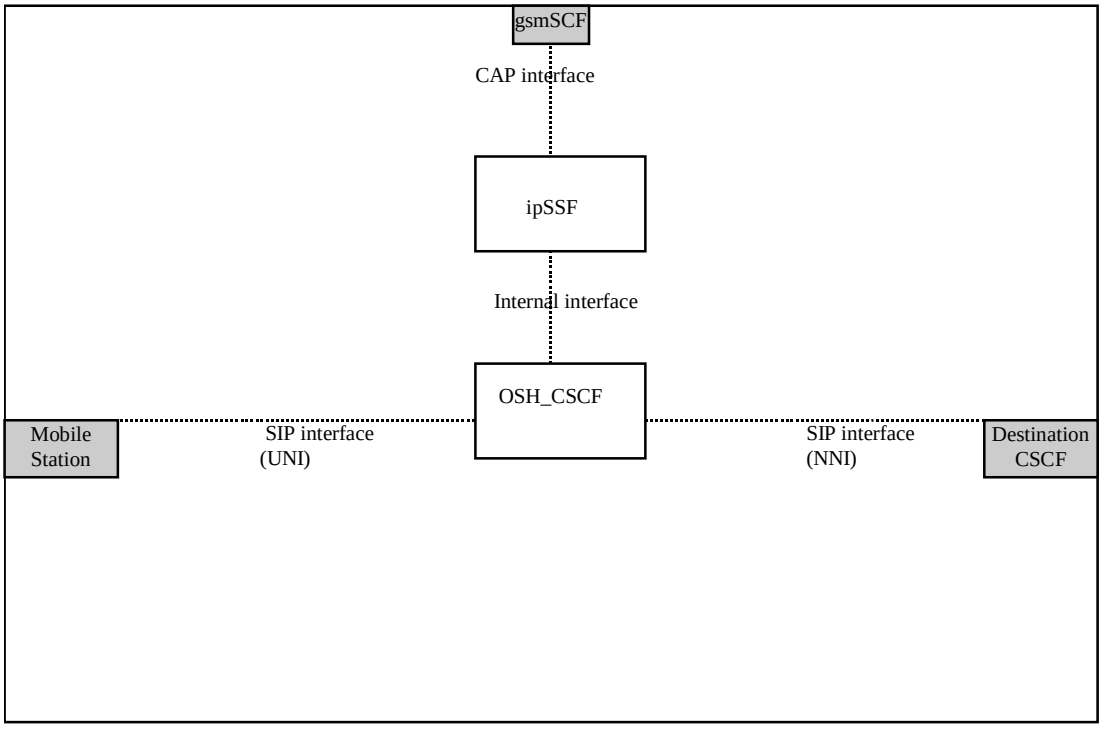

Figure 6.4: Mobile Originated case

6.6.2 Handling of mobile originated IP Multimedia calls

6.6.2.1 Handling of mobile originated IP Multimedia calls in the CSCF

6.6.3 Retrieval of routeing information

6.6.3.1 Handling of mobile terminated IP Multimedia calls in the CSCF

6.6.3.1 Handling of mobile terminated IP Multimedia calls in the HSS

6.6.4 Handling of mobile terminated IP Multimedia calls

6.6.4.1 Handling of mobile terminated IP Multimedia calls in the CSCF

6.6.5 CAMEL specific handling of SIP Registration and data restoration

Editor's Note: This subclause is for further study.

When requesting SIP registration or data restoration the CSCF shall indicate to the HSS which CAMEL phases it supports.

When SIP registration has been completed, the CSCF in which the subscriber is registered after the SIP registration process, shall check the IM-CSI. If a IP Multimedia registration notification to the gsmSCF is required for this subscriber, then the CSCF shall now send the notification to the gsmSCF.

6.7 Cross phase compatibility

To avoid a case by case fallback between the ipSSF and the gsmSCF, the gsmSSF shall use the CAP phase corresponding to the CAMEL phase negotiated on the HSS-CSCF interface when it opens a dialogue with the gsmSCF. The HSS-CSCF negotiation of CAMEL phase is per subscriber.

6.8 Description of CAMEL information flows message contents

The CAMEL information flows are specified in 3GPP TS 23.078[5]. These shall apply to IP Multimedia sessions as appropriate.

Note: CAMEL Information flow in TS23.078[5] refers to the message name and a list of Information Element the message contains.

6.8.1 ipSSF to gsmSCF information flows message contents

The gsmSSF to gsmSCF CAMEL information flows are specified in 3GPP TS 23.078[5]. These shall apply to IP Multimedia sessions as the ipSSF to gsmSCF CAMEL information flows. The ipSSF shall provide an equivalent capability to the gsmSSF.

Information flows associated with charging shall apply between ipSSF and gsmSCF as specified in 3GPP TS 23.078[5].

6.8.2 gsmSCF to ipSSF information flows message contents

The gsmSCF to gsmSSF CAMEL information flows are specified in 3GPP TS 23.078[5]. These shall apply to IP Multimedia sessions as the gsmSCF to ipSSF CAMEL information flows. The ipSSF shall provide an equivalent capability to the gsmSSF.

Information flows associated with charging shall apply between ipSSF and gsmSCF as specified in 3GPP TS 23.078[5].

7 IP Multimedia session handling with a SIP based Service Platform

Editor's Note : The current IM subsystem stage 2 (3GPP TS 23.228 v1.2.0) mentions a SIP interface as a potential candidate for the CSCF to service platform interface. This assumes that the service platform is not a CAMEL gsmSCF.

Editor's Note : This clause applies when the Service Platform supports the SIP interface

7.1 Architecture

This subclause describes the functional architecture needed to support interactions with the CSCF in the IP Multimedia Subsystem and the Service Platform.

7.1.1 Functional Entities used with a SIP based Service Platform at IP Multimedia Registration

Figure 7.1 shows the functional entities involved when a MS registers for IP Multimedia session requiring CAMEL support.

Subscriber data is transferred from the HSS to the CSCF during the SIP Registration. The subscriber data includes Service Platform related information.

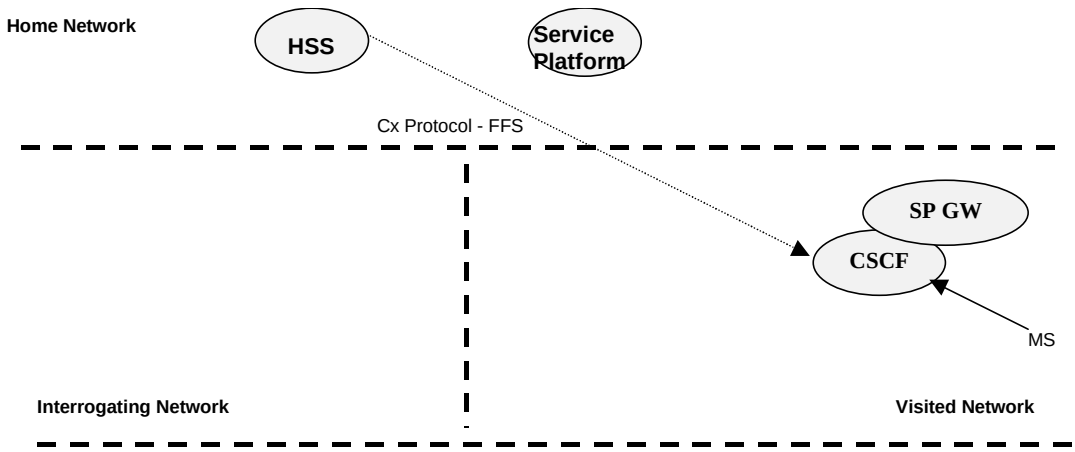

Figure 7.1: Functional architecture for support of a SIP based Service Platform when a mobile registers for IP Multimedia session

7.1.2 Functional Entities used with a SIP based Service Platform for MO IP Multimedia session

Figure 7.2 shows the functional entities involved in a Mobile Originated IP Multimedia session requiring CAMEL support.

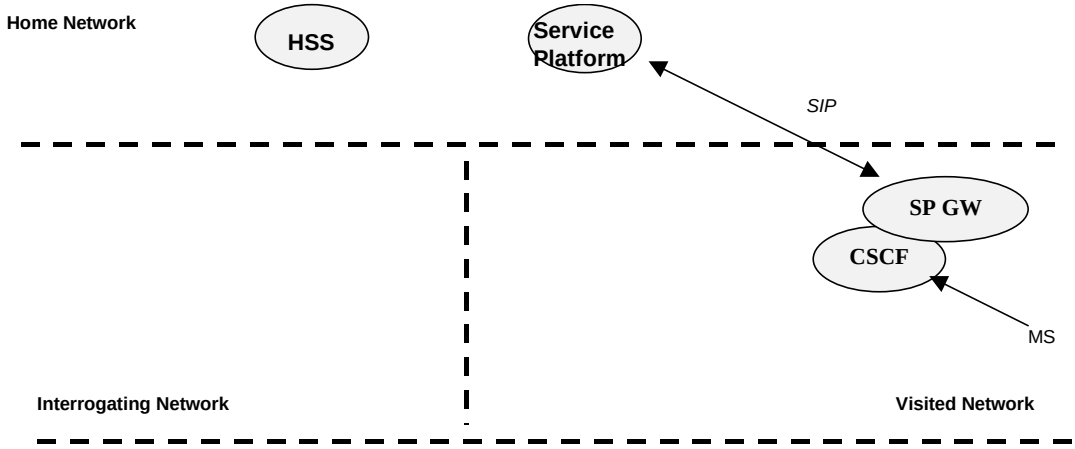

Figure 7.2: Functional architecture for a SIP based Service Platform for control of a MO IP Multimedia session

7.1.3 Functional Entities used for SIP for MT IP Multimedia session

Figure 7.3 shows the functional entities involved in a Mobile Terminated IP Multimedia session requiring support form a SIP based Service Platform

7.2 Interfaces defined for a SIP based Service Platform

7.2.1 CSCF – "SP G/W" interface

This is an internal interface. The CSCF needs to terminate the SIP interface to the external Service Platform. The functionality required for managing this is labelled "SP GW"(Service Platform Gateway).

Editor's Note: This is for further study.

7.2.2 CSCF – Service Platform interface

This interface is used by the external Service Platform to control a IP Multimedia session in a certain CSCF. Relationships between the CSCF and the external Service Platform on this interface are opened as a result of the CSCF sending a request for instructions to the Service Platform. This interface is based on SIP.

7.2.3 HSS – CSCF interface

This interface is used to send external Service Platform related subscriber data to a CSCF.

7.3 SIP Session Detection Points (DPs)

Certain basic call events may be visible to the Service Platform. The DPs are the points in call at which these events are detected.

Editor's Note : The DPs for Mobile Originated IP Multimedia session and Mobile Terminated IP Multimedia session will be described here.

.

7.4 Description of Service Platform related Subscriber Data

7.4.1 Service Platform Subscription Information

This subclause defines the contents of the Service Platform related Subscription Information. This information shall be sent by the HSS to the CSCF via the Cx Interface.

7.4.1.1 Service Platform Address

Address to be used to access the service platform for a particular subscriber.

7.4.1.2 Service Key

The Service Key identifies to the Service Platform the service logic that shall apply.

7.4.1.3 Default IP Multimedia Handling

The Default IP Multimedia Handling indicates whether the IP Multimedia session shall be released or continued as requested in case of error in the CSCF to Service Platform dialogue.

7.4.1.4 TDP List

The TDP List indicates on which detection point triggering shall take place.

7.4.1.5 Service Platform Capability Handling

Service Platform Capability Handling indicates the capability/version of SIP is asked by the Service Platform for the service.

7.5 Description of SIP Call State Models

Editor's Note: This subclause is for further study.

IP Multimedia sessions are handled in the CSCF and the behaviour of the IP Multimedia sessions is modelled by a call state model.

7.5.1 General Handling

The SIP call state model is used to describe the actions in a CSCF during processing of IP Multimedia sessions for originating or terminating calls.

The SIP call state model identifies the points in basic IP Multimedia call processing when Operator Specific Service (OSS) logic instances (accessed through the Service Platform) are permitted to interact with basic IP Multimedia session control capabilities.

7.5.2 Originating SIP Call State Model

7.5.2.1 Description of the Originating SIP State Call Model

Editor's Note: The Originating SIP Call State Model will be described here.

7.5.3 Terminating SIP Call State Model

7.5.3.1 Description of the Terminating SIP Call State Model

Editor's Note: The Terminating SIP Call State Model will be described here.

7.5 Procedures for Multimedia Session Handling with a SIP based Service Platform

7.5.1 Overall Architecture

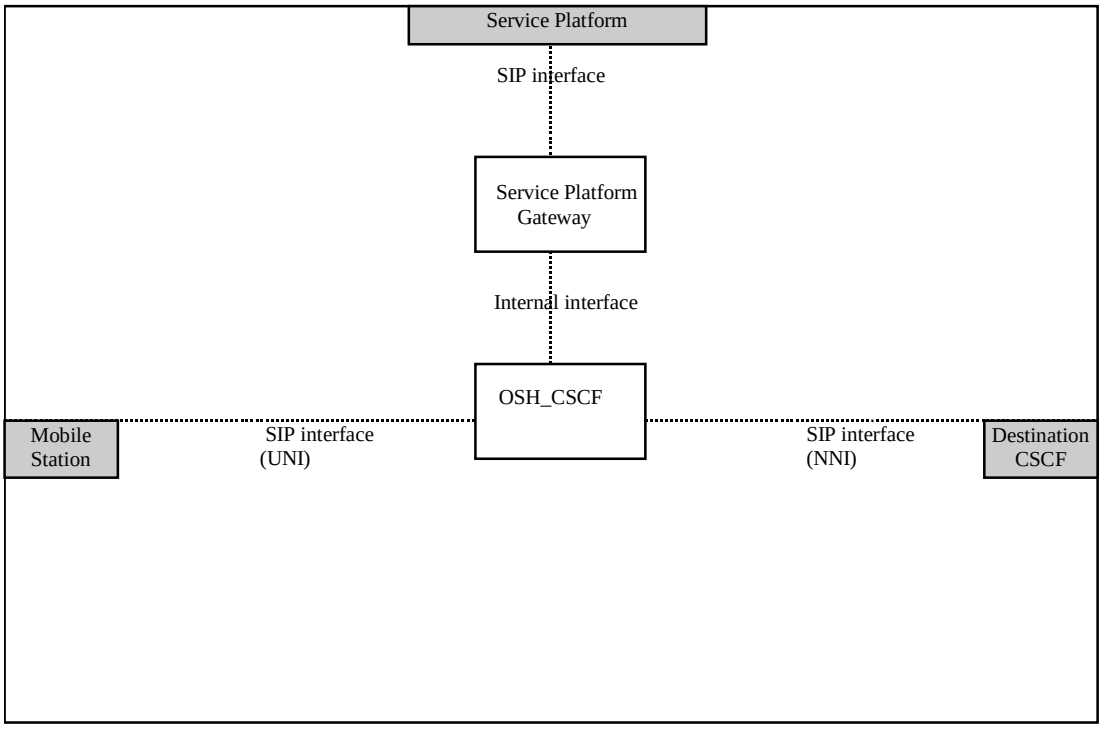

Figure 7.4: Mobile Originated case

7.5.2 Handling of mobile originated IP Multimedia calls

7.5.2.1 Handling of mobile originated IP Multimedia calls in the CSCF

7.5.3 Retrieval of routeing information

7.5.3.1 Handling of mobile terminated IP Multimedia calls in the CSCF

7.5.3.1 Handling of mobile terminated IP Multimedia calls in the HSS

7.5.4 Handling of mobile terminated IP Multimedia calls

7.5.4.1 Handling of mobile terminated IP Multimedia calls in the CSCF

7.5.5 Service Platform specific handling of SIP Registration and data restoration

Editor's Note: This subclause is for further study.

When requesting SIP registration or data restoration the CSCF shall indicate to the HSS which SIP version/phases it supports.

When SIP registration has been completed, the CSCF in which the subscriber is registered after the SIP registration process, shall check the Service Platform Subscription Information. If a IP Multimedia registration notification to the Service Platform is required for this subscriber, then the CSCF shall now send the notification to the Service Platform.

7.6 Cross phase compatibility

To avoid a case by case fallback between the CSCF and the Service Platform, the CSCF shall use the SIP version/phase corresponding to the SIP version/phase negotiated on the HSS-CSCF interface when it opens a dialogue with the Service Platform. The HSS-CSCF negotiation of the SIP version/phase is per subscriber.

7.7 Description of Service Platform information flows message contents

The CSCF - Service Platform information flows (the messages and associated Information Elements the message contains.) need to be specified. These shall apply to IP Multimedia sessions as appropriate.

Editor's Note: These are for further study.

7.7.1 CSCF to Service Platform information flows message contents

Information flows associated with charging shall apply between the CSCF and Service Platform. These shall provide the same level of functionality provided by the charging related information flows specified in 3GPP TS 23.078[5].

Editor's Note : The CSCF to Service Platform information flows need to be specified.

7.7.2 Service Platform to CSCF information flows message contents

Information flows associated with charging shall apply between the CSCF and Service Platform. These shall provide the same level of functionality provided by the charging related information flows specified in 3GPP TS 23.078[5].

Editor's Note : The Service Platform to CSCF information flows need to be specified.

8 IP Multimedia session handling with a OSA API based Service Platform

Editor's Note : The current IM subsystem stage 2 (3GPP TS 23.228 v1.2.0) mentions a OSA API interface as a potential candidate for the CSCF to service platform interface. The API interface provides all applications that are independent from the underlying network technology, and are delivered via the use of an open standardised API. This API maybe based on the OSA API but with additional enhancements for the multimedia service control handling. It is assumed with this case that the API from the CSCF will still be linked via a service control platform to provide framework, security and other such features in linking to the actual OSA API for third parties usage. The mapping of the OSA API to the underlying network capabilities is not subject to standardisation.

Editor's Note : This clause applies when the Service Platform supports a standardised API interface.

8.1 Architecture

This subclause describes the functional architecture needed to support interactions with the CSCF in the IP Multimedia Subsystem and the Service Platform.

8.2 Interfaces defined for a OSA API based Service Platform

9 Mapping between SIP procedures and CAMEL procedures

Editor's Note : This clause applies when the Service Platform is based on CAMEL gsmSCF and supports the CAP interface

.

9.1 Mapping between SIP Methods and CAMEL information flows

9.1.1 Mapping between SIP Invite Method and CAMEL Initial DP information flow

9.1.2 Mapping between SIP Ack Method and CAMEL Event Report BCSM information flow

9.1.3 Mapping between SIP Bye Method and CAMEL Event Report BCSM information flow

9.1.4 Mapping between SIP Response and CAMEL Event Report BCSM information flow

Editor's Note : The 183 (session Progress) response is used to convey information about the progress of the call. The Reason-Phrase may be used to convey more details about the call progress.

9.2 Mapping between CAMEL information flows and SIP Methods

9.2.1 Mapping between CAMEL Connect information flow and SIP Invite Method

9.2.2 Mapping between CAMEL Continue information flow and SIP Invite Method

9.2.3 Mapping between CAMEL Release Call information flow and SIP Bye Method

9.3 Mapping between SIP header fields and CAMEL information elements

9.3.1 Mapping between SIP Invite method header fields and CAMEL Initial DP information elements

9.4 Mapping between CAMEL information elements and SIP header fields

9.4.1 Mapping between CAMEL Connect information elements and SIP Invite header fields

Annexes are only to be used where appropriate:

Annex <A> (normative): <Normative annex title>

Annex <B> (informative): <Informative annex title>

Annexes are labeled A, B, C, etc. and designated either "normative" or "informative" depending on their content (informative annexes do not comprise requirements for the implementation of the specification).

B.1 Heading levels in an annex

Heading levels within an annex are used as in the main document, but for Heading level selection, the "A.", "B.", etc. are ignored. e.g. **B.1.2** is formatted using ***Heading 2*** style.

Bibliography

The Bibliography is optional. If it exists, it shall follow the last annex in the document.

The following material, though not specifically referenced in the body of the present document (or not publicly available), gives supporting information.

Bibliography format

- <Publication>: "<Title>".

OR

<Publication>: "<Title>".

Annex <X> (informative): Change history

It is usual to include an annex (usually the final annex of the document) for specifications under TSG change control which details the change history of the specification using a table as follows:

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Nov 2000		N1-001300			First draft created. Presented to CN1meeting #14.		
21/11/00		N1-001352			V 0.1.0 created based on discussion in CN1#14. Additional clause on OSA API added.		
22/11/00		N1-001386			V 0.2.0 created based on discussion in CN1#14. The clause on scope modified.		

Tdoc N1-001388
Tdoc N1-001301

3GPP TSG-CN WG1 Meeting #14
Cardiff, South Wales, 20 – 24 November 2000

CR-Form-v3

CHANGE REQUEST

⌘ **24.008** **CR** **310** ⌘ rev **1** ⌘ Current version: **4.0.0** ⌘

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

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

Title:	⌘	Change of reference to 26.103 for use of codec bitmap in the Supported Codec List
Source:	⌘	Ericsson
Work item code:	⌘	TRFO-OOBTC-CODNEG
Date:	⌘	13/11/2000
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	Reference to codec bitmap for Supported Codec List needs to be changed as now defined in 26.103. Related CRs are S4-000522 CR 004, and S4000551 CR 005.
Summary of change:	⌘	Change of reference and data, 3G TS 28.062 to 3G TS 26.103.
Consequences if not approved:	⌘	Not according to 3GPP TS 26.103.

Clauses affected:	⌘	2, 5.2.1.11, 10.5.4.32		
Other specs affected:	⌘	[X] Other core specifications [ ] Test specifications [ ] O&M Specifications	⌘	
Other comments:	⌘			

How to create CRs using this form:
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1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

2 Normative 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.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] 3GPP TS 01.02: "Digital cellular telecommunications system (Phase 2+); General description of a GSM Public Land Mobile Network (PLMN)".

[2] 3GPP TS 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

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[81] 3GPP TS 23.107: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; QoS Concept and Architecture"

[82] 3GPP TS 03.22: " Digital cellular telecommunications system (Phase 2+); Functions related to Mobile Station (MS) in idle mode and group receive mode".

[83] 3GPP TS 26.103: "3rd Generation Partnership Project; TSG-SA Codec Working Group; Speech Codec List for GSM and UMTS"

Next Paragraph Changed

5.2.1.11 Speech Codec Selection

The network can receive *Supported Codec List* IE in call establishment messages from the ME to inform the network of the codec types that it supports.

If the network does not receive *Supported Codec List IE* then default UMTS AMR speech version shall be assumed.

The network shall select a codec from the list of codecs and indicate this to the ME via RANAP and RRC protocol in NAS Synchronisation Indicator IE. See TS 25.413 and TS 25.331.

Coding of the codec type (CoID) shall be ~~according to the last 4 bits of the long form (CoID)~~, as defined in 3G TS ~~28.062~~26.103.

The network shall determine the preference for the selected codec type; codec type prioritisation is not provided by the ME.

The ME shall activate the codec type received in the NAS Synchronisation Indicator IE.

If the mobile station does not receive the NAS Synchronisation Indicator IE (RRC protocol) then it shall assume default UMTS AMR speech version.

For adaptive multirate codec types no indication of subsets of modes is supported in this protocol, from the ME or to the ME. It is a pre-condition that the support of such codec types by the ME implicitly includes all modes defined for that codec type.

Next Paragraph Changed

10.5.4.32 Supported codec list

The purpose of the *Supported Codec List* information element is to provide the network with information about the speech codecs supported by the mobile.

The *Supported Codec List* information element is coded as shown in figure 10.5.118c/TS 24.008.

The *Supported Codec List* information element is a type 4 information element with a minimum length of 5 octets and a maximum length of n octets.

Speech codec information belonging to a GSM radio access shall not be conveyed by this information element, but by the *Bearer Capability* information element.

8	7	6	5	4	3	2	1	
Supported Codec List IEI								octet 1
Length Of Supported Codec list								octet 2
System Identification 1 (~~System Id 1~~SysID 1)								octet 3
Length Of Bitmap for ~~System Id 1~~ SysID 1								octet 4
Codec Bitmap for ~~System Id 1~~ SysID 1, bits ~~0 to 7~~1 to 8								octet 5
Codec Bitmap for ~~System Id 1~~ SysID 1, bits ~~8 to 15~~9 to 16								octet 6
Codec Bitmap for ~~System Id 1~~ SysID 1, bits y to y+7								octet j
System Id 2 (SysID 2)								octet j+1
Length Of Bitmap for ~~System Id 2~~(SysID 2)								octet j+2
Codec Bitmap for ~~System Id 2~~(SysID 2), bits ~~0 to 7~~1 to 8								octet j+3
Codec Bitmap for ~~System Id 2~~(SysID 2), bits ~~8 to 15~~9 to 16								octet j+4
Codec Bitmap for ~~System Id 2~~(SysID 2), bits y to y+7								octet k
System Id x (SysID x)								octet m
Length Of Bitmap for ~~System Id x~~ SysID x								octet m+1
Codec Bitmap for ~~System Id x~~ SysID x, bits ~~0 to 7~~1 to 8								octet m+2
Codec Bitmap for ~~System Id x~~ SysID x, bits ~~8 to 15~~9 to 16								octet m+3
Codec Bitmap for ~~System Id x~~ SysID x, bits y to y+7								octet n

Figure 10.5.118c/TS 24.008 Supported codec list information element

Table 10.5.4.135c/TS 24.008: *Supported Codec List* information element

Octet 3, (j+1), m etc ~~System ID~~ SysID ~~-~~indicates the radio access ~~type~~ technology for which the proceeding codec types may be used. Coding of this Octet is defined ~~by the unprotected values used~~ in 3GPP TS ~~28.062~~26.103. Octet 4, (j+2), m+1 etc Length Of Codec Bitmap for ~~System ID~~ SysID indicates the number of octets included in the list for the given ~~System ID~~ SysID. Octets (5 to j), (j+3 to k), (m+2 to n) etc The coding of the Codec Bitmap is defined in 3GPP TS ~~28.062~~26.103.

3GPP TSG-CN-WG1, Meeting #14
20 - 24 November, 2000
Cardiff, Wales

Tdoc N1-001394

Title: **LCS Air Interface Protocol for PS domain**

Source: **3GPP TSG-CN WG1**

To: **3GPP TSG-CN WG4**

Cc: **3GPP TSG-SA WG2**

Contact: Fumihiko Yokota, Fujitsu limited
yokota@ss.ts.fujitsu.co.jp

TSG CN WG1 thanks TSG CN WG4 for their liaison statement regarding PS LCS protocol in air interface [N4-000846].

CN1 has discussed the issue and reached a working assumption that PS domain LCS should be supported applying SS protocol to PS domain. It is believed that this approach would be easy to standardize and most future proof.

Although some issues regarding protocol architecture still needs to be clarified in CN1, CN1 would like to ask CN4 to proceed with the necessary work under their responsibility to support PS domain LCS procedure using SS mechanism.

3GPP TSG-CN1 Meeting #14
Cardiff, Wales - 20 - 24 November, 2000

Tdoc N1-001398

CR-Form-v3

CHANGE REQUEST

⌘ **24.008** **CR** **320** ⌘ rev **-** ⌘ Current version: **3.5.0** ⌘

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

Title:	⌘	DRX parameter range correction
Source:	⌘	Fujitsu
Work item code:	⌘	GPRS
Date:	⌘	23/Nov/2000
Category:	⌘	**F** Critical correction
Release:	⌘	R99

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	The range of CN specific DRX cycle length is updated from 2 – 12 to 6 – 9 in 25.331 and 25.413. This CR is for the alinment of the specifications.
Summary of change:	⌘	CN specific DRX cycle length is updated from 2 – 12 to 6 – 9.
Consequences if not approved:	⌘	An MS migtht indicate the DRX cycle length value that may not be supported by UTRAN, and the network cannot page the MS correctly.

Clauses affected:	⌘	10.5.5.6
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications
	⌘	
Other comments:	⌘	

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

10.5.5.6 DRX parameter

The purpose of the *DRX parameter* information element is to indicate whether the MS uses DRX mode or not.

The *DRX parameter* is a type 3 information element with a length of 3 octets.

The value part of a *DRX parameter* information element is coded as shown in table 10.5.139/TS 24.008.

8	7	6	5	4	3	2	1	
DRX parameter IEI								octet 1
SPLIT PG CYCLE CODE								octet 2
CN Specific DRX cycle length coefficient				SPLIT on CCCH	non-DRX timer			octet 3

Figure 10.5.122/TS 24.008: DRX parameter information element

Table 10.5.139/TS 24.008: DRX parameter information element

SPLIT PG CYCLE CODE, octet 2
The octet contains the binary coded value of the SPLIT PG CYCLE CODE. The SPLIT PG CYCLE value is derived from the SPLIT PG CYCLE CODE as follows:

0	704 (equivalent to no DRX)
1 to 64	1 to 64, respectively
65	71
66	72
67	74
68	75
69	77
70	79
71	80
72	83
73	86
74	88
75	90
76	92
77	96
78	101
79	103
80	107
81	112
82	116
83	118
84	128
85	141
86	144
87	150
88	160
89	171
90	176
91	192
92	214
93	224
94	235
95	256
96	288
97	320
98	352

All other values are reserved and shall be interpreted as 1 by this version of the protocol.

SPLIT on CCCH, octet 3 (bit 4)

0	Split pg cycle on CCCH is not supported by the mobile station
1	Split pg cycle on CCCH is supported by the mobile station

non-DRX timer, octet 3

bit **3**	**2**	**1**	
0	0	0	no non-DRX mode after transfer state
0	0	1	max. 1 sec non-DRX mode after transfer state
0	1	0	max. 2 sec non-DRX mode after transfer state
0	1	1	max. 4 sec non-DRX mode after transfer state
1	0	0	max. 8 sec non-DRX mode after transfer state
1	0	1	max. 16 sec non-DRX mode after transfer state
1	1	0	max. 32 sec non-DRX mode after transfer state
1	1	1	max. 64 sec non-DRX mode after transfer state

CN Specific DRX cycle length coefficient, octet 3

bit **8**	**7**	**6**	**5**	UMTS specific
0	0	0	0	CN Specific DRX cycle length coefficient not specified by the MS, ie. the system information value 'CN domain specific DRX cycle length' is used. (Ref TS 25.331)
~~0~~	~~0~~	~~1~~	~~0~~	~~CN Specific DRX cycle length coefficient 2~~
~~0~~	~~0~~	~~1~~	~~1~~	~~CN Specific DRX cycle length coefficient 3~~
~~0~~	~~1~~	~~0~~	~~0~~	~~CN Specific DRX cycle length coefficient 4~~
~~0~~	~~1~~	~~0~~	~~1~~	~~CN Specific DRX cycle length coefficient 5~~
0	1	1	0	CN Specific DRX cycle length coefficient 6
0	1	1	1	CN Specific DRX cycle length coefficient 7
1	0	0	0	CN Specific DRX cycle length coefficient 8
1	0	0	1	CN Specific DRX cycle length coefficient 9
~~1~~	~~0~~	~~1~~	~~0~~	~~CN Specific DRX cycle length coefficient 10~~
~~1~~	~~0~~	~~1~~	~~1~~	~~CN Specific DRX cycle length coefficient 11~~
~~1~~	~~1~~	~~0~~	~~0~~	~~CN Specific DRX cycle length coefficient 12~~

All other values shall be interpreted as "CN Specific DRX cycle length coefficient not specified by the MS " by this version of the protocol.

Note: In UMTS this field (octet 3 bits 8 to 5) is used, but was spare in earlier versions of this protocol.

3GPP TSG-CN1 Meeting #14
Cardiff, Wales - 20 - 24 November, 2000

Tdoc N1-001399

CR-Form-v3

CHANGE REQUEST

⌘ **24.008** **CR** **321** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

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

Title:	⌘	DRX parameter range correction
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Work item code:	⌘	GPRS
Date:	⌘	23/Nov/2000
Category:	⌘	**A** Critical correction
Release:	⌘	REL-4

Use one of the following categories:
F *(essential correction)*
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B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
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Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
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REL-5	*(Release 5)*

Reason for change:	⌘	The range of CN specific DRX cycle length is updated from 2 – 12 to 6 – 9 in 25.331 and 25.413. This CR is for the alinment of the specifications.
Summary of change:	⌘	CN specific DRX cycle length is updated from 2 – 12 to 6 – 9.
Consequences if not approved:	⌘	An MS migtht indicate the DRX cycle length value that may not be supported by UTRAN, and the network cannot page the MS correctly.

Clauses affected:	⌘	10.5.5.6
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications
	⌘	
Other comments:	⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.
3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

10.5.5.6 DRX parameter

The purpose of the *DRX parameter* information element is to indicate whether the MS uses DRX mode or not.

The *DRX parameter* is a type 3 information element with a length of 3 octets.

The value part of a *DRX parameter* information element is coded as shown in table 10.5.139/TS 24.008.

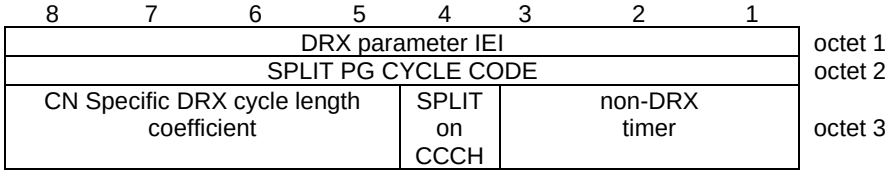


Figure 10.5.122/TS 24.008: DRX parameter information element

Table 10.5.139/TS 24.008: DRX parameter information element

SPLIT PG CYCLE CODE, octet 2
The octet contains the binary coded value of the SPLIT PG CYCLE CODE. The SPLIT PG CYCLE value is derived from the SPLIT PG CYCLE CODE as follows:

0	704 (equivalent to no DRX)
1 to 64	1 to 64, respectively
65	71
66	72
67	74
68	75
69	77
70	79
71	80
72	83
73	86
74	88
75	90
76	92
77	96
78	101
79	103
80	107
81	112
82	116
83	118
84	128
85	141
86	144
87	150
88	160
89	171
90	176
91	192
92	214
93	224
94	235
95	256
96	288
97	320
98	352

All other values are reserved and shall be interpreted as 1 by this version of the protocol.

SPLIT on CCCH, octet 3 (bit 4)

0	Split pg cycle on CCCH is not supported by the mobile station
1	Split pg cycle on CCCH is supported by the mobile station

non-DRX timer, octet 3

bit **3**	**2**	**1**	
0	0	0	no non-DRX mode after transfer state
0	0	1	max. 1 sec non-DRX mode after transfer state
0	1	0	max. 2 sec non-DRX mode after transfer state
0	1	1	max. 4 sec non-DRX mode after transfer state
1	0	0	max. 8 sec non-DRX mode after transfer state
1	0	1	max. 16 sec non-DRX mode after transfer state
1	1	0	max. 32 sec non-DRX mode after transfer state
1	1	1	max. 64 sec non-DRX mode after transfer state

CN Specific DRX cycle length coefficient, octet 3

bit **8**	**7**	**6**	**5**	UMTS specific
0	0	0	0	CN Specific DRX cycle length coefficient not specified by the MS, ie. the system information value 'CN domain specific DRX cycle length' is used. (Ref TS 25.331)
~~0~~	~~0~~	~~1~~	~~0~~	~~CN Specific DRX cycle length coefficient 2~~
~~0~~	~~0~~	~~1~~	~~1~~	~~CN Specific DRX cycle length coefficient 3~~
~~0~~	~~1~~	~~0~~	~~0~~	~~CN Specific DRX cycle length coefficient 4~~
~~0~~	~~1~~	~~0~~	~~1~~	~~CN Specific DRX cycle length coefficient 5~~
0	1	1	0	CN Specific DRX cycle length coefficient 6
0	1	1	1	CN Specific DRX cycle length coefficient 7
1	0	0	0	CN Specific DRX cycle length coefficient 8
1	0	0	1	CN Specific DRX cycle length coefficient 9
~~1~~	~~0~~	~~1~~	~~0~~	~~CN Specific DRX cycle length coefficient 10~~
~~1~~	~~0~~	~~1~~	~~1~~	~~CN Specific DRX cycle length coefficient 11~~
~~1~~	~~1~~	~~0~~	~~0~~	~~CN Specific DRX cycle length coefficient 12~~

All other values shall be interpreted as "CN Specific DRX cycle length coefficient not specified by the MS " by this version of the protocol.

Note: In UMTS this field (octet 3 bits 8 to 5) is used, but was spare in earlier versions of this protocol.

TSG-CN Working Group 1 Meeting #14 ***N1-001407***

Cardiff, Wales, 20th – 24th November 2000

To:	**TSG RAN WG3, TSG RAN WG2, TSG SA WG2**
CC:	**TSG GERAN**
Source:	**CN WG1**
Title:	**Response to LS (R3-002198, R2-001817, S2-001526) on Behaviour in the "forward handover" scenario without an Iur in Release '99**
Contact:	Sudeep Palat, Lucent Technologies spalat@lucent.com +44 1793 776993

CN1 thanks RAN2, RAN3 and S2 for the Liaison statements on "Forward handover" without Iur (R3-002198, R2-001817, S2-001526). This was discussed in CN1 (attached Tdoc N1-001409).

CN1 agrees with the comments in R3-002198 and the RAN2 response in R2-001817. CN1 also concluded that the this mobilty scenario can be supported using a Routing Area Update procedure on RRC failure with cause "No Iur" and will update its specifications accordingly.

CN1 asks S2 if it agrees with the proposed solution (N1-001409) and if it is feasible to include it in the stage 2 document.

Questions to RAN2 and RAN3

CN1 is evaluating whether the new RAU must be authenticated or if a Security Mode set up procedure is sufficiently authenticate the UE over the new Iu connection. CN1 has the following question to RAN2 and RAN3.

What is the expected RANAP response on integrity failure of an RRC Security Mode Complete message received from UE (see attached N1-001409 for details)? If the response is a RANAP Security Mode Reject, what is the cause value?

CN1 response to RAN3 questions:

1. What is the behaviour that RAN WG2 and CN WG1 expect in the case where there is no Iur available to transfer the message received from the UE to the SRNC?
   (Release of the RRC connection?, Iu Release in the SRNC after some "time-out"?, …?)

CN1 expects that the RRC connection will be released (with appropriate failure cause of No Iur)

2. Is there any possibility for the services utilised by the UE to be re-established between the UE and the CN, e.g. in a way similar to call re-establishment in GSM?

CN1 concluded that re-establishment is possible using NAS procedures (Routing Area Update).

3GPP TSG CN1 **Tdoc N1-001409~~370~~**
Plenary Session #14, Cardiff, Wales;
20th –24th November, 2000

Agenda Item: **R99 corrections**

Work Item: **GPRS**

Source: **Lucent Technologies, Ericsson**

Title: **Repetition of Service Request Message**

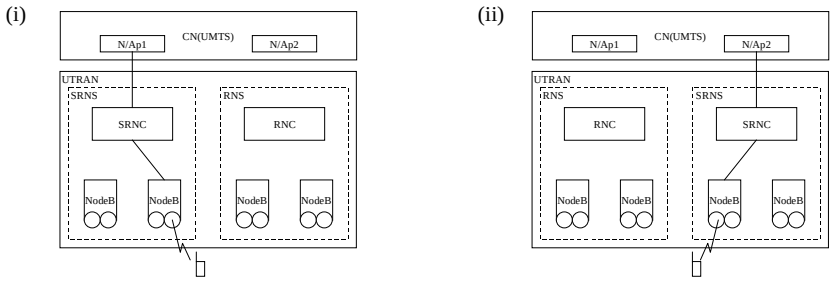
Document for: **Discussion and Decision**

1 Introduction

The case of forward handover when there is no Iur is not currently supported in the specifications. A UE moving outside of the coverage area of the SRNC will lose the RRC connection due to a failed (for e.g.) cell/URA update. RAN2 proposed the use of a cause value indicating the absence of Iur in the cell/URA update reject.

However, the SRNC or the CN is not aware of this failure and will continue to maintain the existing Iu connection to the SRNC until the RRC connection times out in the SRNC (e.g., due to cell/URA update timer expiry).

A recovery procedure needs to be decided for this case where the UE has moved to PMM idle state while the SGSN/SRNC believes the UE is still connected to the SRNC.



Inter RNS (Intra UTRAN)
No Iur

2 Uplink data/signalling

If in this state, the UE has any signalling or data to send, it will initiate a new connection. This will result in the SGSN having two Iu connections for the same UE.

The SGSN should validate the new signalling connection before releasing the old Iu connection to ensure that the new connection is originated by the authentic UE.

This can be done either by:
1) authenticating the UE over the new connection ~~or by performing a security mode command.~~
2) Use security mode command. The RNC is expected to return a security mode reject on integrity failure of the security mode set up in the UTRAN. This should be confirmed with RAN2/RAN3.

In either case, only after validating the new Iu connection is the previous Iu connection released by the SGSN. The SGSN should also continue to communicate over the old Iu connection while validating the new Iu connection. This is required to prevent denial of service attacks by fraudulent UEs.

3 Downlink data transmission

Two cases need to be considered here –

1) where the new cell of the UE is in another RA. This will force the UE to perform a RAU immediately after cell/URA update failure. This then follows the procedure of the uplink case above to trigger the recovery.

2) Where the UE is still in the same RA (for e.g., where the RA spans the two RNCs): In this case, the SGSN and RNC not aware that the UE has moved out of the RNC coverage area will try to send data/signalling over the old link.

A failure to communicate with the UE could result in the RNC releasing the Iu connection forcing the SGSN to page the UE over the RA and re-establish the connection. However, this can result in a large break of communication while the RNC times out and releases the Iu connection.

Alternatively, the UE can perform a RAU on receiving a cause value of "No Iur" in a Cell/URA update failure message. This will then trigger a recovery as indicated for the different RA case.

Note that the SGSN in this case will receive a regular RAU (not a periodic RAU) from the UE even though it hasn't changed the RA.

This may also require forwarding of data from old RNC to new RNC as in the case of SRNC relocation but is considered FFS.

4 Proposal

To ensure minimal disruption of service, it is proposed that the UE performs a RAU on a cell/URA update failure of cause No Iur~~.~~

It needs to be confirmed from RAN groups:
~~if the failure cause is implemented in cell/URA update failure~~

~~2)~~if security mode reject is to the CN sent on integrity check failure of RRC security mode set up procedure between RNC and UE.

3GPP TSG-CN-WG1, Meeting #14
20 - 24 November, 2000
Cardiff, Wales

Tdoc N1-001411

Title: **LS on DL indication of the network interface**

Source: **3GPP TSG CN WG1**

TO: **3GPP TSG GERAN WG2**

CC **TSG-SA WG1, TSG-SA WG2, TSG-R2**

Contact Person:
Name: Hannu Hietalahti
E-mail Address: hannu.hietalahti@nokia.com
Tel. Number: +358-40-5021724

Date: **21st November 2000**

CN1 thanks GERAN WG2 for their LS thanks CN1 for their LS in tdoc GP-000414 / N1-001131 on the exchange of the terms “in GSM“ and “in UMTS". We would like to make the following comments:

The understanding of TSG GERAN is that a terminology distinguishing between the RAN used may be needed, e.g., UTRAN (only) and GERAN (only). **Separately from this** a terminology distinguishing between the CN-RAN interfaced used may be needed, e.g., A/Gb, Iu; A, Iucs, Gb, Iups.

CN1 response:
Yes, CN1 agrees this to be the case with Rel 4. We would also like to point out that the complexity of both CN1 specifications and the UE implementations will grow exponentially with every new configuration that needs to be taken into account. Therefore CN1 would like to keep the number of configurations that are visible to CN at minimum.

However, in R99 the serving radio access network can always be taken as an indication of the A- or Iu- interface behind it.

Therefore CN1 and SA2 have agreed to proceed with the change of terms for R99 and understand that more work in this area will be needed for Rel 4.

GERAN would like to emphasize the two following points :

- the capacity left on common System Information is already low, and any new addition of information leads to increase the acquisition time (at switching time, after cell reselection)
- it is felt not desirable to broadcast some information that could lead to service based cell reselection, which has been rejected many times in the past and is still undesirable.

CN1 response:
CN1 confirm the GERAN assumption that additionally to the existing R99 criteria of the serving RAN a Rel 4 mobile may need to distinguish between different network architectures, i.e. whether there is an A/Gb interface or Iu interface behind the serving GERAN. The question is limited to GERAN case as UTRAN always links to CN via Iu interface.
CN1 does not want to reopen the discussion on service based cell selection or PLMN selection. But CN1 is not aware of any mechanism for the UE to know what kind of interface the serving network uses between the GERAN – CN. Until some other indication is given to the UE, the only distinction between A/Gb mode and Iu mode can be the serving RAN, just like it is in R99. CN1 continues to study the matter and depending on the outcome the matter of DL indication may need to be revisited.

3GPP TSG-CN-WG1, Meeting #14
20 - 24 November, 2000
Cardiff, Wales

N1-001427
Tdoc N1-001316

Title: **Response "Re-establish Capability for Emergency call" from SA1**

Reference LS **S1-000651a**
(If available)

Source: **CN WG1**

TO [1]: **SA WG1**

Cc:

WI: **CS based emergency call enhancements**

Contact Person:

Name: **Eiko Kato**
E-mail Address: eiko.kato@ecs.ericsson.se
Tel. Number: +46 46 231295

Attachments: **N1-001275**
(Please list documents numbers to be attached)

Date: **2000-11-23**

CN1 Thanks SA1 for the Liasion statement and CN1 would like to ask SA1 for the clarifiation of the requirements.

To start the technical investigation, we would like to clarify the requirements.

- We assume it is only applicable for the case when call is released by user, not when the call is released by the emergency center.
- We do not think this requirement should apply to accidental disconnection (Radio Link Failure). This because existing procedures are already specified to cope with this case (RRC re-establishment procedure). These procedures should be implemented by operators that want to have a good reliability for the calls in case of Radio Link Failure. Adding another re-establishment for the Emergency Call on top of these existing procedures will not make it any more reliable.
- We would like to avoid holding RAB within this period. Because it might cause congestion situations and it will occupy non-used Radio Resources.

[1] Please write any action required from the groups in a clear way.

3GPP TSG-CN1 Meeting #14
Cardiff, Wales - 20 - 24 November, 2000

Tdoc R2-00xxxx

CR-Form-v3

CHANGE REQUEST

⌘ **25.331** **CR** **???** ⌘ rev **-** ⌘ Current version: **3.4.1** ⌘

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

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

Title:	⌘	Unsynchronized PDP contexts handling - MS less
Source:	⌘	Siemens AG
Work item code:	⌘	GPRS
Date:	⌘	10.11.00
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	The MS and the core network may have a different view on what PDP contexts are in state PDP-ACTIVE. This problem is likely to happen due to break in radio connection and should be solved during re-establishment. Please see document N1-001211 for complete description of the situation and the proposal to solve the problem.
Summary of change:	⌘	
Consequences if not approved:	⌘	MS and core network can have a different view on PDP contexts in state PDP-ACTIVE which results in loss of data transmitted over air interface but dropped on the MS side or to buffer overflow in UL-direction on MS side.

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

8.2.1.3 Reception of a RADIO BEARER SETUP message by the UE

The UE shall be able to receive an RADIO BEARER SETUP message and perform a hard handover, even if no prior UE measurements have been performed on the target cell and/or frequency:

Upon reception of a RADIO BEARER SETUP message the UE shall perform actions as specified below:

- if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set, the UE shall:
    - include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable;

The UE shall store the received UE Information Elements, RB Information Elements, TrCH Information Elements and PhyCH information elements in the variable ORDERED_CONFIG.

The UE shall act upon all received information elements as specified in 8.6, unless specified otherwise in the following.

The UE shall:

- for the new radio bearer(s):
    - if the variable CIPHERING_STATUS is set to "Started":
        - initialise ciphering on the non-transparent radio bearers using the current START value. All transparent mode radio bearers have a common hyperframe number (MAC-d HFN), which is not incremented due to addition of new transparent radio bearer(s);
- in case of non-transparent mode radio bearers:
    - transmit the current START value to UTRAN in RADIO BEARER SETUP COMPLETE message;
- suspend data transmission on RB 3 and upward, if RLC-AM or RLC-UM is used on those radio bearers.
- if the IE "RAB information for setup" is included, the procedure is used to establish radio bearers belonging to a radio access bearer:
    - associate the new radio bearers that are defined by the IE(s) "RB information to setup" with the radio access bearer that is identified by the IE "RAB info";
    - check whether that radio access bearer exists in the variable ESTABLISHED_RABS.
        - if the radio access bearer exists:
            - store information about the radio bearer under the radio access bearer entry in the variable ESTABLISHED_RABS;
        - if the radio access bearer does not exist:
            - store information about the new radio access bearer in the variable ESTABLISHED_RABS;
            - store information about the radio bearer under the radio access bearer entry in the variable ESTABLISHED_RABS;
                - indicate the establishment of the radio access bearer to the upper layer entity using the IE "CN domain identity", forwarding the content of the IE "RAB identity";

- for each new radio bearer:
  - create a new RAB subflow for the radio access bearer;
  - number the RAB subflow in ascending order, assigning the smallest number to the RAB subflow which appear first in the RADIO BEARER SETUP message;
  - store the number of the RAB subflow in the variable ESTABLISHED_RABS;
  - optionally, check indicate to upper layer the establishment of the RAB and be prepared to receive and process the response which either directs to proceed with the establishment or to abort the activation for that RAB

8.2.1.4 Unsupported configuration in the UE

If UTRAN instructs the UE to use a configuration, which it does not support, the UE shall:

- transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC;
- set the IE "failure cause" to the cause value "configuration unsupported". If the radio bearer setup procedure affects several radio bearers, the UE may include the identities of the radio bearers for which the procedure would have been successful in the RADIO BEARER SETUP FAILURE message.

When the successful delivery of the RADIO BEARER SETUP FAILURE message has been confirmed by RLC, the UE shall resume data transmission on RB 3 and upwards if RLC-AM or RLC-UM is used on those radio bearers, the UE shall clear the variable ORDERED_CONFIG and the procedure ends.

When the upper layer indicate for one or several RABs to abort their activation then this has to be treated in the same way as an unsupported configuration. In this case is it required to included the identities of the radio bearers for which the procedure would have been successful in the RADIO BEARER SETUP FAILURE message and to set the IE "failure cause" to the cause value "unsynchronizedPDP".

********** Next change **********

8.2.1.7 Reception of RADIO BEARER SETUP FAILURE by the UTRAN

When UTRAN has received the RADIO BEARER SETUP FAILURE message, UTRAN may restore the old and delete the new configuration. Upper layers should be notified of the failure.

The procedure ends on the UTRAN side unless the IE "failure cause" is set to the cause value "unsynchronizedPDP".

If the later is the case then it has to be checked if there are any radio bearers which could have set up successfully and if there are any then the Radio bearer establishment procedure has to be repeated with that bearers. The upper layers are informed about the bearers which could not be setup with cause value "unsynchronizedPDP".

3GPP TSG-CN1 Meeting #14
Cardiff, Wales - 20 - 24 November, 2000

Tdoc R3-00xxxx

CR-Form-v3

CHANGE REQUEST

⌘ **25.413** **CR** **???** ⌘ rev **-** ⌘ Current version: **3.3.0** ⌘

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

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

Title:	⌘	Unsynchronized PDP contexts handling - MS less
Source:	⌘	Siemens AG
Work item code:	⌘	GPRS
Date:	⌘	10.11.00
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	The MS and the core network may have a different view on what PDP contexts are in state PDP-ACTIVE. This problem is likely to happen due to break in radio connection and should be solved during re-establishment. Please see document N1-001211 for complete description of the situation and the proposal to solve the problem.
Summary of change:	⌘	New cause "unsynchronizedPDP"
Consequences if not approved:	⌘	MS and core network can have a different view on PDP contexts in state PDP-ACTIVE which results in loss of data transmitted over air interface but dropped on the MS side or to buffer overflow in UL-direction on MS side.

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

9.2.1.4 Cause

The purpose of the *Cause* IE is to indicate the reason for a particular event for the RANAP protocol.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Choice **Cause**				
>Radio Network Layer Cause			INTEGER (RAB pre-empted(1), Trelocoverall Expiry(2), Trelocprep Expiry(3), Treloccomplete Expiry(4), Tqueing Expiry(5), Relocation Triggered(6), Unable to Establish During Relocation(8), Unknown Target RNC(9), Relocation Cancelled(10), Successful Relocation(11), Requested Ciphering and/or Integrity Protection Algorithms not Supported(12), Change of Ciphering and/or Integrity Protection is not supported(13), Failure in the Radio Interface Procedure(14), Release due to UTRAN Generated Reason(15), User Inactivity(16), Time Critical Relocation(17), Requested Traffic Class not Available(18),	Value range is 1 – 64.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Choice **Cause**				
			Invalid RAB Parameters Value(19), Requested Maximum Bit Rate not Available(20), Requested Maximum Bit Rate for DL not Available(33), Requested Maximum Bit Rate for UL not Available(34), Requested Guaranteed Bit Rate not Available(21), Requested Guaranteed Bit Rate for DL not Available(35), Requested Guaranteed Bit Rate for UL not Available(36), Requested Transfer Delay not Achievable(22), Invalid RAB Parameters Combination(23), Condition Violation for SDU Parameters(24), Condition Violation for Traffic Handling Priority(25), Condition Violation for Guaranteed Bit Rate(26), User Plane Versions not Supported(27), Iu UP Failure(28), TRELOCalloc Expiry (7), Relocation Failure in Target CN/RNC or Target System	

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Choice **Cause**				
			(29), Invalid RAB ID(30), No remaining RAB(31), Interaction with other procedure(32), Repeated Integrity Checking Failure(37), Requested Report Type not supported(38), Request superseded(39), Release due to UE generated signalling connection release(40), Resource Optimisation Relocation(41), Requested Information Not Available(42), Relocation desirable for radio reasons (43), Relocation not supported in Target RNC or Target system(44) …)	
>Transport Layer Cause			INTEGER (Logical Error: Unknown Iu Transport Association(65), …)	Value range is 65 – 80.
>NAS Cause			INTEGER (User Restriction Start Indication(81), User Restriction End Indication(82), Normal Release(83), UnsynchonizedPD	Value range is 81 – 96.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Choice **Cause**				
			P(84), …)	
>Protocol Cause			INTEGER (Transfer Syntax Error(97), Semantic Error (98), Message not compatible with receiver state (99), Abstract Syntax Error (Reject) (100), Abstract Syntax Error (Ignore and Notify) (101), Abstract Syntax Error (Falsely Constructed Message) (102), …)	Value range is 97 – 112.
>Miscellaneous Cause			INTEGER (O&M Intervention(113), No Resource Available(114), Unspecified Failure(115), Network Optimisation(116), …)	Value range is 113 – 128.
>Non-standard Cause			INTEGER (…)	Value range is 129 – 256.