

Source: TSG CN WG 1
Title: CRs to R99 (with mirror CRs) on Work Item TEI towards 24.008,-
pack 2
Agenda item: 7.11
Document for: APPROVAL

Introduction:

This document contains 8 CRs, R99 to Work Item "TEI", that have been agreed by TSG CN WG1, and are forwarded to TSG CN Plenary meeting #20 for approval.

Spec	CR	Rev	Cat	Phase	Subject	Version-Current	Version-New	Meeting-2nd-Level	Doc-2nd-Level
24.008	769		F	R99	Alignment on BC IE coding for FAX between TS24.008 and TS27.001	3.15.0	3.16.0	N1-30	N1-030655
24.008	770		A	Rel-4	Alignment on BC IE coding for FAX between TS24.008 and TS27.001	4.10.0	4.11.0	N1-30	N1-030656
24.008	771		A	Rel-5	Alignment on BC IE coding for FAX between TS24.008 and TS27.001	5.7.0	5.8.0	N1-30	N1-030657
24.008	772		A	Rel-6	Alignment on BC IE coding for FAX between TS24.008 and TS27.001	6.0.0	6.1.0	N1-30	N1-030661
24.008	781	1	F	R99	Clarification of the procedure for the change of DRX parameter	3.15.0	3.16.0	N1-30	N1-030827
24.008	782	1	A	Rel-4	Clarification of the procedure for the change of DRX parameter	4.10.0	4.11.0	N1-30	N1-030828
24.008	783	1	A	Rel-5	Clarification of the procedure for the change of DRX parameter	5.7.0	5.8.0	N1-30	N1-030829
24.008	784	1	A	Rel-6	Clarification of the procedure for the change of DRX parameter	6.0.0	6.1.0	N1-30	N1-030830

CHANGE REQUEST

⌘ **24.008 CR 769** ⌘ rev - ⌘ Current version: **3.15.0** ⌘

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

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

Title:	⌘ Alignment on BC IE coding for FAX between TS24.008 and TS27.001		
Source:	⌘ NTT DoCoMo		
Work item code:	⌘ TEI	Date:	⌘ 19/05/2003
Category:	⌘ F	Release:	⌘ R99
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	R96	2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R97	(Release 1996)
	B (addition of feature),	R98	(Release 1997)
	C (functional modification of feature)	R99	(Release 1998)
	D (editorial modification)	Rel-4	(Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .	Rel-5	(Release 4)
		Rel-6	(Release 5)
			(Release 6)

Reason for change:	⌘ The ITC in octet 3 is set to "3.1 kHz audio ex PLMN" in the TS24.008 ANNEX D.3.2. On the other hand, being set to "FAX" in TS27.001 ANNEX B.1.10. Comparing the description of the TS24.008 ANNEX D and TS27.001 AnnexB, TS24.008 is just example, and the TS27.001 ANNEX B is normative Annex. Therefore, TS24.008 ANNEX D needs to be aligned with TS27.001.
Summary of change:	⌘ ITC parameter setting of FAX is changed from 3.1kHz audio to facsimile group 3 on TS24.008 ANNEX D.3.2(Network to mobile station).
Consequences if not approved:	⌘ The contradiction between two specification is exist.

Clauses affected:	⌘										
Other specs affected:	<table border="1"> <tr> <td>Y</td> <td>N</td> </tr> <tr> <td>⌘</td> <td>X</td> </tr> <tr> <td>⌘</td> <td>X</td> </tr> <tr> <td>⌘</td> <td>X</td> </tr> </table>	Y	N	⌘	X	⌘	X	⌘	X	Other core specifications	⌘
Y	N										
⌘	X										
⌘	X										
⌘	X										
		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/specs/CR.htm>. Below is a brief summary:

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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.

Annex D (informative): Examples of bearer capability information element coding

This annex gives examples of the coding of bearer capability information elements for various telecommunication services. This annex is included for information purposes only. In the case of any inconsistency between this annex and 3GPP TS 27.001 [36], then 3GPP TS 27.001 shall take precedence over this annex.

D.3 An example of a coding for group 3 facsimile (9,6 kbit/s, transparent)

D.3.1 Mobile station to network direction

8	7	6	5	4	3	2	1	
0	0	0	0	0	1	0	0	octet 1
Bearer capability IEI								
0	0	0	0	0	1	1	1	octet 2
Length of the bearer capability contents								
1	0	1	0	0	0	1	1	octet 3
not ext	full rate only MS		GSM	circ. mode	facsimile group 3			
1	0	1	1	1	0	0	0	octet 4
not ext	comp-ress.	unstructured	full dupl.	pt to pt	no NIRR	de-mand		
1	0	0	0	0	0	0	1	octet 5
not ext	access id.		no rate adaption		I.440/450			
0	0	1	0	0	0	0	0	octet 6
ext	layer 1		default layer 1				sync	
0	0	0	1	0	1	0	1	octet 6a
ext	(syn)	no neg	(syn)	9.6 kbit/s				
0	1	1	0	0	0	1	1	octet 6b
ext	16 kbit/s inter. rate		no NICTx	no NICTrx	(parity) none			
1	0	0	0	0	0	1	1	octet 6c
not ext	transparent		none (modem type)					

D.3.2 Network to mobile station direction

8	7	6	5	4	3	2	1	
0	0	0	0	0	1	0	0	octet 1
Bearer capability IEI								
0	0	0	0	0	1	1	1	octet 2
Length of the bearer capability contents								
1 not ext	0 spare	1 spare	0 GSM	0 circ. mode	0 facsimile	1 group 33.1 kHz audio	01 ex-PLMN	octet 3
1 not ext	0 comp- ress.	1 unstructured		1 full dupl.	0 pt to pt	0 no NIRR	0 de- mand	octet 4
1 not ext	0 access id.		0 no rate adaption		0 1.440/450			octet 5
0 ext	0 1 layer 1		0 0 0 0 default layer 1				0 sync	octet 6
0 ext	0 (syn)	0 no neg	1 (syn)	0 1 0 1 9.6 kbit/s				octet 6a
0 ext	1 16 kbit/s inter. rate		0 no NICtx	0 no NICrx	0 1 1 (parity) none			octet 6b
1 not ext	0 0 transparent		0 0 0 0 0 none (modem type)					octet 6c

CHANGE REQUEST

⌘ **24.008 CR 770** ⌘ rev **-** ⌘ Current version: **4.10.0** ⌘

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

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

Title:	⌘ Alignment on BC IE coding for FAX between TS24.008 and TS27.001		
Source:	⌘ NTT DoCoMo		
Work item code:	⌘ TEI	Date:	⌘ 19/05/2003
Category:	⌘ A	Release:	⌘ R4
Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:	
F (correction)		2 (GSM Phase 2)	
A (corresponds to a correction in an earlier release)		R96 (Release 1996)	
B (addition of feature),		R97 (Release 1997)	
C (functional modification of feature)		R98 (Release 1998)	
D (editorial modification)		R99 (Release 1999)	
Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Rel-4 (Release 4)	
		Rel-5 (Release 5)	
		Rel-6 (Release 6)	

Reason for change:	⌘ The ITC in octet 3 is set to "3.1 kHz audio ex PLMN" in the TS24.008 ANNEX D.3.2. On the other hand, being set to "FAX" in TS27.001 ANNEX B.1.10. Comparing the description of the TS24.008 ANNEX D and TS27.001 AnnexB, TS24.008 is just example, and the TS27.001 ANNEX B is normative Annex. Therefore, TS24.008 ANNEX D needs to be aligned with TS27.001.
Summary of change:	⌘ ITC parameter setting of FAX is changed from 3.1kHz audio to facsimile group 3 on TS24.008 ANNEX D.3.2(Network to mobile station).
Consequences if not approved:	⌘ The contradiction between two specification is exist.

Clauses affected:	⌘											
Other specs affected:	⌘	<table border="1"> <tr> <td>Y</td> <td>N</td> </tr> <tr> <td></td> <td>X</td> </tr> <tr> <td></td> <td>X</td> </tr> <tr> <td></td> <td>X</td> </tr> </table>	Y	N		X		X		X	Other core specifications	⌘
	Y	N										
		X										
	X											
	X											
		Test specifications										
		O&M Specifications										
Other comments:	⌘											

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Annex D (informative): Examples of bearer capability information element coding

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D.3 An example of a coding for group 3 facsimile (9,6 kbit/s, transparent)

D.3.1 Mobile station to network direction

8	7	6	5	4	3	2	1	
0	0	0	0	0	1	0	0	octet 1
Bearer capability IEI								
0	0	0	0	0	1	1	1	octet 2
Length of the bearer capability contents								
1	0	1	0	0	0	1	1	octet 3
not ext	full rate only MS		GSM	circ. mode	facsimile group 3			
1	0	1	1	1	0	0	0	octet 4
not ext	comp-ress.	unstructured	full dupl.	pt to pt	no NIRR	de-mand		
1	0	0	0	0	0	0	1	octet 5
not ext	access id.		no rate adaption		I.440/450			
0	0	1	0	0	0	0	0	octet 6
ext	layer 1		default layer 1				sync	
0	0	0	1	0	1	0	1	octet 6a
ext	(syn)	no neg	(syn)	9.6 kbit/s				
0	1	1	0	0	0	1	1	octet 6b
ext	16 kbit/s inter. rate		no NICTx	no NICTrx	(parity) none			
1	0	0	0	0	0	1	1	octet 6c
not ext	transparent		none (modem type)					

D.3.2 Network to mobile station direction

8	7	6	5	4	3	2	1	
0	0	0	0	0	1	0	0	octet 1
Bearer capability IEI								
0	0	0	0	0	1	1	1	octet 2
Length of the bearer capability contents								
1 not ext	0 spare	1 spare	0 GSM	0 circ. mode	0 facsimile	1 group 33.1 kHz audio	01 ex-PLMN	octet 3
1 not ext	0 comp- ress.	1 unstructured		1 full dupl.	0 pt to pt	0 no NIRR	0 de- mand	octet 4
1 not ext	0 access id.		0 no rate adaption		0 1.440/450			octet 5
0 ext	0 1 layer 1		0 0 0 0 default layer 1				0 sync	octet 6
0 ext	0 (syn)	0 no neg	1 (syn)	0 1 0 1 9.6 kbit/s				octet 6a
0 ext	1 16 kbit/s inter. rate		0 no NICtx	0 no NICrx	0 1 1 (parity) none			octet 6b
1 not ext	0 0 transparent		0 0 0 0 0 none (modem type)					octet 6c

CHANGE REQUEST

⌘ **24.008 CR 771** ⌘ rev **-** ⌘ Current version: **5.7.0** ⌘

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

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

Title:	⌘ Alignment on BC IE coding for FAX between TS24.008 and TS27.001		
Source:	⌘ NTT DoCoMo		
Work item code:	⌘ TEI	Date:	⌘ 19/05/2003
Category:	⌘ A	Release:	⌘ R5
	Use <u>one</u> of the following categories: F (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 <u>one</u> 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) Rel-6 (Release 6)

Reason for change:	⌘ The ITC in octet 3 is set to "3.1 kHz audio ex PLMN" in the TS24.008 ANNEX D.3.2. On the other hand, being set to "FAX" in TS27.001 ANNEX B.1.10. Comparing the description of the TS24.008 ANNEX D and TS27.001 AnnexB, TS24.008 is just example, and the TS27.001 ANNEX B is normative Annex. Therefore, TS24.008 ANNEX D needs to be aligned with TS27.001.
Summary of change:	⌘ ITC parameter setting of FAX is changed from 3.1kHz audio to facsimile group 3 on TS24.008 ANNEX D.3.2(Network to mobile station).
Consequences if not approved:	⌘ The contradiction between two specification is exist.

Clauses affected:	⌘										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	⌘	X	⌘	X	⌘	X	Other core specifications ⌘ Test specifications ⌘ O&M Specifications ⌘	⌘
Y	N										
⌘	X										
⌘	X										
⌘	X										
Other comments:	⌘										

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D.3.1 Mobile station to network direction

8	7	6	5	4	3	2	1	
0	0	0	0	0	1	0	0	octet 1
Bearer capability IEI								
0	0	0	0	0	1	1	1	octet 2
Length of the bearer capability contents								
1	0	1	0	0	0	1	1	octet 3
not ext	full rate only MS		GSM	circ. mode	facsimile group 3			
1	0	1	1	1	0	0	0	octet 4
not ext	comp-ress.	unstructured	full dupl.	pt to pt	no NIRR	de-mand		
1	0	0	0	0	0	0	1	octet 5
not ext	access id.		no rate adaption		I.440/450			
0	0	1	0	0	0	0	0	octet 6
ext	layer 1		default layer 1				sync	
0	0	0	1	0	1	0	1	octet 6a
ext	(syn)	no neg	(syn)	9.6 kbit/s				
0	1	1	0	0	0	1	1	octet 6b
ext	16 kbit/s inter. rate		no NICTx	no NICTrx	(parity) none			
1	0	0	0	0	0	1	1	octet 6c
not ext	transparent		none (modem type)					

D.3.2 Network to mobile station direction

8	7	6	5	4	3	2	1	
0	0	0	0	0	1	0	0	octet 1
Bearer capability IEI								
0	0	0	0	0	1	1	1	octet 2
Length of the bearer capability contents								
1 not ext	0 spare	1 spare	0 GSM	0 circ. mode	0 facsimile group 33.1 kHz audio ex-PLMN	1	0 1	octet 3
1 not ext	0 comp- ress.	1 unstructured		1 full dupl.	0 pt to pt	0 no NIRR	0 de- mand	octet 4
1 not ext	0 access id.		0 no rate adaption		0 1.440/450			octet 5
0 ext	0 1 layer 1		0 0 0 0 default layer 1				0 sync	octet 6
0 ext	0 (syn)	0 no neg	1 (syn)	0 1 0 1 9.6 kbit/s				octet 6a
0 ext	1 1 16 kbit/s inter. rate		0 no NICtx	0 no NICrx	0 1 1 (parity) none			octet 6b
1 not ext	0 0 transparent		0 0 0 0 0 none (modem type)					octet 6c

CHANGE REQUEST

⌘ **24.008 CR 772** ⌘ rev - ⌘ Current version: **6.0.0** ⌘

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

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

Title:	⌘ Alignment on BC IE coding for FAX between TS24.008 and TS27.001		
Source:	⌘ NTT DoCoMo		
Work item code:	⌘ TEI	Date:	⌘ 19/05/2003
Category:	⌘ A	Release:	⌘ R6
Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:	
F (correction)		2 (GSM Phase 2)	
A (corresponds to a correction in an earlier release)		R96 (Release 1996)	
B (addition of feature),		R97 (Release 1997)	
C (functional modification of feature)		R98 (Release 1998)	
D (editorial modification)		R99 (Release 1999)	
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		Rel-5 (Release 5)	
		Rel-6 (Release 6)	

Reason for change:	⌘ The ITC in octet 3 is set to "3.1 kHz audio ex PLMN" in the TS24.008 ANNEX D.3.2. On the other hand, being set to "FAX" in TS27.001 ANNEX B.1.10. Comparing the description of the TS24.008 ANNEX D and TS27.001 AnnexB, TS24.008 is just example, and the TS27.001 ANNEX B is normative Annex. Therefore, TS24.008 ANNEX D needs to be aligned with TS27.001.
Summary of change:	⌘ ITC parameter setting of FAX is changed from 3.1kHz audio to facsimile group 3 on TS24.008 ANNEX D.3.2(Network to mobile station).
Consequences if not approved:	⌘ The contradiction between two specification is exist.

Clauses affected:	⌘						
Other specs affected:	<table border="1"> <tr> <td>Y</td> <td>N</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	⌘
Y	N						
<input type="checkbox"/>	<input checked="" type="checkbox"/>						
	<input checked="" type="checkbox"/>	Test specifications					
	<input checked="" type="checkbox"/>	O&M Specifications					
Other comments:	⌘						

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D.3 An example of a coding for group 3 facsimile (9,6 kbit/s, transparent)

D.3.1 Mobile station to network direction

8	7	6	5	4	3	2	1	
0	0	0	0	0	1	0	0	octet 1
Bearer capability IEI								
0	0	0	0	0	1	1	1	octet 2
Length of the bearer capability contents								
1	0	1	0	0	0	1	1	octet 3
not ext	full rate only MS		GSM	circ. mode	facsimile group 3			
1	0	1	1	1	0	0	0	octet 4
not ext	comp-ress.	unstructured	full dupl.	pt to pt	no NIRR	de-mand		
1	0	0	0	0	0	0	1	octet 5
not ext	access id.		no rate adaption		I.440/450			
0	0	1	0	0	0	0	0	octet 6
ext	layer 1		default layer 1				sync	
0	0	0	1	0	1	0	1	octet 6a
ext	(syn)	no neg	(syn)	9.6 kbit/s				
0	1	1	0	0	0	1	1	octet 6b
ext	16 kbit/s inter. rate		no NICTx	no NICTrx	(parity) none			
1	0	0	0	0	0	1	1	octet 6c
not ext	transparent		none (modem type)					

D.3.2 Network to mobile station direction

8	7	6	5	4	3	2	1	
0	0	0	0	0	1	0	0	octet 1
Bearer capability IEI								
0	0	0	0	0	1	1	1	octet 2
Length of the bearer capability contents								
1 not ext	0 spare	1 spare	0 GSM	0 circ. mode	0 facsimile	1 group 33.1 kHz audio	01 ex-PLMN	octet 3
1 not ext	0 comp- ress.	1 unstructured		1 full dupl.	0 pt to pt	0 no NIRR	0 de- mand	octet 4
1 not ext	0 access id.		0 no rate adaption		0 1.440/450			octet 5
0 ext	0 1 layer 1		0 0 0 0 default layer 1				0 sync	octet 6
0 ext	0 (syn)	0 no neg	1 (syn)	0 1 0 1 9.6 kbit/s				octet 6a
0 ext	1 1 16 kbit/s inter. rate		0 no NICtx	0 no NICrx	0 1 1 (parity) none			octet 6b
1 not ext	0 0 transparent		0 0 0 0 0 none (modem type)					octet 6c

CHANGE REQUEST

⌘ **24.008 CR 781** ⌘ rev **1** ⌘ Current version: **3.15.0** ⌘

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

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

Title:	⌘ Clarification of the procedure for the change of DRX parameter		
Source:	⌘ Ericsson, Siemens, Nokia		
Work item code:	⌘ TEI	Date:	⌘ 09/05/2003
Category:	⌘ F	Release:	⌘ R99
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	2	(GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R96	(Release 1996)
	B (addition of feature),	R97	(Release 1997)
	C (functional modification of feature)	R98	(Release 1998)
	D (editorial modification)	R99	(Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .	Rel-4	(Release 4)
		Rel-5	(Release 5)
		Rel-6	(Release 6)

Reason for change:	⌘ The possibility for the MS to change the DRX parameter during a routing area update procedure has been in the standard since R97. The possibility to use the routing area update procedure in order to only change the DRX parameter was explicitly introduced in Rel-5 with CR 632 rev1.
	The change of the DRX parameter is a critical operation, since the MS will no longer be reachable to paging if the change is performed only by one side. In order to ensure a synchronised change of the DRX parameter, the CRs clarify the point in time when the new DRX parameter is taken into use by the network and the MS.
	Furthermore, the purpose of this CR is to ensure that also pre-Rel-5 SGSN implementations support the change of the DRX parameter when this is the only parameter that changes during the routing area update. Otherwise interworking problems between Rel-5 MS and pre-Rel-5 SGSN implementations can be expected.
Summary of change:	⌘ Clarification when the new DRX parameter is taken into use by the network and the MS.
	Clarification that the routing area update procedure may be used in order to only change the DRX parameter (support of this procedure is optional for the MS).
Consequences if not approved:	⌘ If the change of the DRX parameter is not synchronised, the MS will miss subsequent paging messages.
	If a pre-Rel-5 SGSN implementation does not support the change of the DRX parameter when this is the only parameter that changes during the routing area

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Clauses affected:	⌘	4.7.5, 4.7.5.1.3, 4.7.5.2.1, 4.7.5.2.3										
Other specs affected:	⌘	<table border="1"><tr><th>Y</th><th>N</th></tr><tr><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td></tr><tr><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td></tr></table>	Y	N	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	⌘
		Y	N									
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		Test specifications										
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4.7.5 Routing area updating procedure

This procedure is used for:

- normal routing area updating to update the registration of the actual routing area of an MS in the network. This procedure is used by GPRS MSs in MS operation mode C and by GPRS MSs in MS operation modes A or B that are IMSI attached for GPRS and non-GPRS services if the network operates in network operation mode II or III;
- combined routing area updating to update the registration of the actual routing and location area of an MS in the network. This procedure is used by GPRS MSs in MS operation modes A or B that are IMSI attached for GPRS and non-GPRS services provided that the network operates in network operation mode I;
- periodic routing area updating. This procedure is used by GPRS MSs in MS operation mode C and by GPRS MSs in MS operation modes A or B that are IMSI attached for GPRS or for GPRS and non-GPRS services independent of the network operation mode;
- IMSI attach for non-GPRS services when the MS is IMSI attached for GPRS services. This procedure is used by GPRS MSs in MS operation modes A or B, if the network operates in network operation mode I;
- in GSM, resuming GPRS services when the RR sublayer indicated a resumption failure after dedicated mode was left, see 3GPP TS 04.18;
- in GSM, updating the network with the new MS Radio Access Capability IE when the content of the IE has changed. Normal or combined routing area updating procedure is used;
- updating the network with the new DRX parameter IE when the content of the IE has changed;

NOTE 1: Such changes can be used e.g. when the MS activates a PDP context with service requirements that cannot be met with the current DRX parameter. As PDP context(s) are activated and deactivated, the GMM context will be updated with an appropriate DRX parameter;

- UMTS to GSM and for GSM to UMTS intersystem change, see clause 4.7.1.7; or
- in UMTS, to re-synchronize the PMM mode of MS and network after RRC connection release with cause "Directed signalling connection re-establishment", see clause 4.7.2.5.

The routing area updating procedure shall also be used by a MS which is attached for GPRS services if a new PLMN is entered (see 3GPP TS 23.122 [14]).

Clause 4.7.5.1 describes the routing area updating procedures for updating the routing area only. The combined routing area updating procedure used to update both the routing and location area is described in clause 4.7.5.2.

The routing area updating procedure is always initiated by the MS. It is only invoked in state GMM-REGISTERED.

To limit the number of subsequently rejected routing area update attempts, a routing area updating attempt counter is introduced. The routing area updating attempt counter shall be incremented as specified in clause 4.7.5.1.5. Depending on the value of the routing area updating attempt counter, specific actions shall be performed. The routing area updating attempt counter shall be reset when:

- a GPRS attach procedure is successfully completed; or
- a routing area updating procedure is successfully completed;

and additionally when the MS is in substate ATTEMPTING-TO-UPDATE:

- a new routing area is entered;
- expiry of timer T3302; or
- at request from registration function.

The mobile equipment shall contain a list of "forbidden location areas for roaming", as well as a list of "forbidden location areas for regional provision of service". The handling of these lists is described in clause 4.4.1.

The Mobile Equipment shall contain a list of "equivalent PLMNs". The handling of this list is described in clause 4.4.1.

In GSM, user data transmission in the MS shall be suspended during the routing area updating procedure; user data reception shall be possible. User data transmission in the network shall be suspended during the routing area updating procedure, if a new P-TMSI is assigned.

In UMTS, user data transmission and reception in the MS shall not be suspended during the routing area updating procedure. User data transmission in the network shall not be suspended during the routing area updating procedure.

In UMTS, when a ROUTING AREA UPDATE REQUEST is received by the SGSN over a new PS signalling connection while there is an ongoing PS signalling connection (network is already in mode PMM-CONNECTED) for this UE, the network shall progress the routing area update procedure as normal and release the previous PS signalling connection when the routing area update procedure has been accepted by the network.

NOTE 2: The re-establishment of the radio bearers of active PDP contexts is done as described in clause "Service Request procedure".

4.7.5.1 Normal and periodic routing area updating procedure

Periodic routing area updating is used to periodically notify the availability of the MS to the network. The value of the update type IE in the ROUTING AREA UPDATE REQUEST message shall indicate "periodic updating". The procedure is controlled in the MS by timer T3312. When timer T3312 expires, the periodic routing area updating procedure is started. Start and reset of timer T3312 is described in clause 4.7.2.2.

In GSM, the normal routing area updating procedure is initiated

- ~~when the MS detects a change of the routing area in state GMM-REGISTERED;~~
- ~~when the MS determines that GPRS resumption shall be performed;~~
- ~~when the MS needs to update the network with the new MS Radio Access Capability IE;~~ or
- when the MS needs to update the network with the new DRX parameter IE.

The ROUTING AREA UPDATE REQUEST message shall always be the first data sent by the MS when a routing area border is crossed. The routing area identification is broadcast on the broadcast channel(s).

In UMTS, the normal routing area updating procedure is initiated when the MS detects a change of the routing area in state GMM-REGISTERED. The ROUTING AREA UPDATE REQUEST message shall always be the first GMM message sent by the MS when a routing area border is crossed.

A normal routing area updating shall abort any ongoing GMM procedure. Aborted GMM procedures may be repeated after the normal routing area updating procedure has been successfully performed. The value of the update type IE included in the message shall indicate "normal routing area updating".

4.7.5.1.1 Normal and periodic routing area updating procedure initiation

To initiate the normal routing area updating procedure, the MS sends the message ROUTING AREA UPDATE REQUEST to the network, starts timer T3330 and changes to state GMM-ROUTING-AREA-UPDATING-INITIATED. The message ROUTING AREA UPDATE REQUEST shall contain the P-TMSI signature when received within a previous ATTACH ACCEPT or ROUTING AREA UPDATE ACCEPT message.

In UMTS, if the MS wishes to prolong the established PS signalling connection after the normal routing area updating procedure, it may set a follow-on request pending indicator on.

4.7.5.1.2 GMM Common procedure initiation

The network may initiate GMM common procedures, e.g. the GMM authentication and ciphering procedure.

4.7.5.1.3 Normal and periodic routing area updating procedure accepted by the network

If the routing area updating request has been accepted by the network, a ROUTING AREA UPDATE ACCEPT message shall be sent to the MS. The network may assign a new P-TMSI and/or a new P-TMSI signature for the MS. If a new P-TMSI and/or P-TMSI signature have been assigned to the MS, it/they shall be included in the ROUTING AREA UPDATE ACCEPT message together with the routing area identification.

A GPRS MS in MS operation mode A shall initiate the combined routing area updating procedure with IMSI attach after the circuit-switched transaction has been released if a GPRS attach was performed during the circuit-switched transaction and provided that the network operates in network operation mode I.

A GPRS MS in MS operation mode A shall perform the normal routing area update procedure during an ongoing circuit-switched transaction.

In UMTS, if the MS wishes to prolong the established PS signalling connection after the normal routing area updating procedure when it is served under UMTS area, it may set a follow-on request pending indicator on.

In UMTS, when a ROUTING AREA UPDATE REQUEST is received by the SGSN over a new PS signalling connection while there is an ongoing PS signalling connection (network is already in mode PMM-CONNECTED) for this UE, the network shall progress the routing area update procedure as normal and release the previous PS signalling connection when the routing area update procedure has been accepted by the network .

NOTE: The re-establishment of the radio bearers of active PDP contexts is done as described in clause "Service Request procedure".

4.7.5.2.2 GMM Common procedure initiation

The network may initiate GMM common procedures, e.g. the GMM authentication and ciphering procedure.

4.7.5.2.3 Combined routing area updating procedure accepted by the network

Depending on the value of the update result IE received in the ROUTING AREA UPDATE ACCEPT message, two different cases can be distinguished:

- Case 1) The update result IE value indicates "combined RA/LA": Routing and location area updating is successful;
- Case 2) The update result IE value indicates "RA only": Routing area updating is successful, but —location area updating is not successful.

A ROUTING AREA UPDATE COMPLETE message shall be returned to the network if the ROUTING AREA UPDATE ACCEPT message contains:

- a P-TMSI and/or a TMSI; and/or
- Receive N-PDU Numbers (see 3GPP TS 04.65 [78] and 3GPP TS 25.322).

In the latter case, the Receive N-PDU Numbers that are valid in the MS shall be included in the ROUTING AREA UPDATE COMPLETE message.

In UMTS, the network should prolong the PS signalling connection if the mobile station has indicated a follow-on request pending in ROUTING AREA UPDATE REQUEST. The network may also prolong the PS signalling connection without any indication from the mobile terminal.

4.7.5.2.3.1 Combined routing area updating successful

The description for normal routing area update as specified in clause 4.7.5.1.3 shall be followed. In addition, the following description for location area updating applies.

The handling at the receipt of the ROUTING AREA UPDATE ACCEPT depends on the value received in the update result IE as specified below.

The TMSI reallocation may be part of the combined routing area updating procedure. The TMSI allocated is then included in the ROUTING AREA UPDATE ACCEPT message together with the location area identification (LAI). The network shall, in this case, change to state GMM-COMMON-PROCEDURE-INITIATED and shall start the timer T3350 as described in clause 4.7.6.

The MS, receiving a ROUTING AREA UPDATE ACCEPT message, stores the received location area identification, stops timer T3330, enters state MM IDLE, reset the location update attempt counter and sets the update status to U1 UPDATED. If the ROUTING AREA UPDATE ACCEPT message contains an IMSI, the mobile station is not allocated any TMSI, and shall delete any TMSI accordingly. If the ROUTING AREA UPDATE ACCEPT message contains a

TMSI, the MS shall use this TMSI as new temporary identity. The MS shall delete its old TMSI and shall store the new TMSI. In this case, an ROUTING AREA UPDATE COMPLETE message is returned to the network. If neither a TMSI nor an IMSI has been included by the network in the ROUTING AREA UPDATE ACCEPT message, the old TMSI, if any is available, shall be kept.

Any timer used for triggering the location updating procedure (e.g. T3211, T3212) shall be stopped if running.

The network receiving a ROUTING AREA UPDATE COMPLETE message stops timer T3350, changes to GMM-REGISTERED state and considers the new TMSI as valid.

4.7.5.2.3.2 Combined routing area updating successful for GPRS services only

The description for normal routing area update as specified in clause 4.7.5.1.3 shall be followed. In addition, the following description for location area updating applies.

The MS receiving the ROUTING AREA UPDATE ACCEPT message takes one of the following actions depending on the reject cause:

#2 (IMSI unknown in HLR);

The MS shall set the update status to U3 ROAMING NOT ALLOWED and shall delete any TMSI, LAI and ciphering key sequence number. The new MM state is MM IDLE. The SIM shall be considered as invalid for non-GPRS services until switching off or the SIM is removed.

#16 (MSC temporarily not reachable);

#17 (Network failure); or

#22 (Congestion)

The MS shall change to state GMM-REGISTERED.ATTEMPTING-TO-UPDATE-MM. Timer T3330 shall be stopped if still running. The routing area updating attempt counter shall be incremented. If the routing area updating attempt counter is less than 5, and the stored RAI is equal to the RAI of the current serving cell and the GMM update status is equal to GU1 UPDATED:

- the MS shall keep the GMM update status GU1 UPDATED and changes state to GMM-REGISTERED.ATTEMPTING-TO-UPDATE-MM. The MS shall start timer T3311. When timer T3311 expires the combined routing area update procedure indicating "combined RA/LA updating with IMSI attach" is triggered again.

If the routing area updating attempt counter is greater than or equal to 5:

- the MS shall start timer T3302 and shall change to state GMM-REGISTERED.ATTEMPTING-TO-UPDATE-MM;
- a GPRS MS operating in MS operation mode A shall then proceed with appropriate MM specific procedure; a GPRS MS operating in MS operation mode B may then proceed with appropriate MM specific procedures. The MM sublayer shall act as in network operation mode II as long as the combined GMM procedures are not successful and no new RA is entered. The new MM state is IDLE.

Other values are considered as abnormal cases. The combined routing area updating shall be considered as failed for GPRS and non-GPRS services. The specification of the MS behaviour in those cases is specified in clause 4.7.5.2.5.

***** SECTIONS ADDED FOR INFORMATION *****

9.4.14 Routing area update request

This message is sent by the MS to the network either to request an update of its location file or to request an IMSI attach for non-GPRS services. See table 9.4.14/3GPP TS 24.008.

Message type: ROUTING AREA UPDATE REQUEST

9.4.14.7 PDP context status

This IE should be included by the MS .

9.4.15 Routing area update accept

This message is sent by the network to the MS to provide the MS with GPRS mobility management related data in response to a *routing area update request* message . See table 9.4.15/3GPP TS 24.008.

Message type: ROUTING AREA UPDATE ACCEPT

Significance: dual

Direction: network to MS

Table 9.4.15/3GPP TS 24.008: ROUTING AREA UPDATE ACCEPT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Skip indicator	Skip indicator 10.3.1	M	V	1/2
	Routing area update accept message identity	Message type 10.4	M	V	1
	Force to standby	Force to standby 10.5.5.7	M	V	1/2
	Update result	Update result 10.5.5.17	M	V	1/2
	Periodic RA update timer	GPRS Timer 10.5.7.3	M	V	1
	Routing area identification	Routing area identification 10.5.5.15	M	V	6
19	P-TMSI signature	P-TMSI signature 10.5.5.8	O	TV	4
18	Allocated P-TMSI	Mobile identity 10.5.1.4	O	TLV	7
23	MS identity	Mobile identity 10.5.1.4	O	TLV	7-10
26	List of Receive N-PDU Numbers	Receive N-PDU Number list 10.5.5.11	O	TLV	4 - 19
17	Negotiated READY timer value	GPRS Timer 10.5.7.3	O	TV	2
25	GMM cause	GMM cause 10.5.5.14	O	TV	2
2A	T3302 value	GPRS Timer 2 10.5.7.4	O	TLV	3
8C	Cell Notification	Cell Notification 10.5.5.21	O	T	1
4A	Equivalent PLMNs	PLMN List 10.5.1.13	O	TLV	5-17

9.4.15.1 P-TMSI signature

This IE may be included to assign an identity to the MS's GMM context.

9.4.15.2 Allocated P-TMSI

This IE may be included to assign a P-TMSI to an MS in case of a GPRS or combined routing area updating procedure.

9.4.15.3 MS identity

This IE may be included to assign or unassign a TMSI to a MS in case of a combined routing area updating procedure.

9.4.15.4 List of Receive N-PDU Numbers

This IE shall be included in case of an inter SGSN routing area updating, if there are PDP contexts that have been activated in acknowledged transfer mode.

9.4.15.5 Negotiated READY timer value

This IE may be included to indicate a value for the READY timer.

9.4.15.6 GMM cause

This IE shall be included if IMSI attach was not successful for non-GPRS services during a combined GPRS routing area updating procedure.

9.4.15.7 T3302 value

This IE may be included to indicate a value for the T3302 timer.

9.4.15.8 Cell Notification (GSM only)

In GSM, this IE shall be included if by the SGSN in order to indicate the ability to support the Cell Notification.

9.4.15.9 Equivalent PLMNs

The *Equivalent PLMNs* information element is included if the network wants to inform the mobile station of equivalent PLMNs.

9.4.16 Routing area update complete

This message shall be sent by the MS to the network in response to a *routing area update accept message* if a P-TMSI and/or a TMSI has been assigned and/or if there are established LLC connections. See table 9.4.16/3GPP TS 24.008.

Message type: ROUTING AREA UPDATE COMPLETE

Significance: dual

Direction: MS to network

Table 9.4.16/3GPP TS 24.008: ROUTING AREA UPDATE COMPLETE message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Skip indicator	Skip indicator 10.3.1	M	V	1/2
	Routing area update complete message identity	Message type 10.4	M	V	1
26	List of Receive N-PDU Numbers	Receive N-PDU Number list 10.5.5.11	O	TLV	4 - 19

9.4.16.1 List of Receive N-PDU Numbers

This IE shall be included if the *routing area update accept message* contained this IE.

CHANGE REQUEST

⌘ **24.008 CR 782** ⌘ rev **1** ⌘ Current version: **4.10.0** ⌘

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

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

Title:	⌘ Clarification of the procedure for the change of DRX parameter		
Source:	⌘ Ericsson, Siemens, Nokia		
Work item code:	⌘ TEI	Date:	⌘ 09/05/2003
Category:	⌘ A	Release:	⌘ Rel-4
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
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Reason for change:	⌘ The possibility for the MS to change the DRX parameter during a routing area update procedure has been in the standard since R97. The possibility to use the routing area update procedure in order to only change the DRX parameter was explicitly introduced in Rel-5 with CR 632 rev1.
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	Furthermore, the purpose of this CR is to ensure that also pre-Rel-5 SGSN implementations support the change of the DRX parameter when this is the only parameter that changes during the routing area update. Otherwise interworking problems between Rel-5 MS and pre-Rel-5 SGSN implementations can be expected.
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Consequences if not approved:	⌘ If the change of the DRX parameter is not synchronised, the MS will miss subsequent paging messages.
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update, then such a desynchronisation can be expected to occur more frequently, once Rel-5 MSs are available.

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- IMSI attach for non-GPRS services when the MS is IMSI attached for GPRS services. This procedure is used by GPRS MSs in MS operation modes A or B, if the network operates in network operation mode I;
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- a routing area updating procedure is successfully completed;

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In UMTS, user data transmission and reception in the MS shall not be suspended during the routing area updating procedure. User data transmission in the network shall not be suspended during the routing area updating procedure.

In UMTS, when a ROUTING AREA UPDATE REQUEST is received by the SGSN over a new PS signalling connection while there is an ongoing PS signalling connection (network is already in mode PMM-CONNECTED) for this UE, the network shall progress the routing area update procedure as normal and release the previous PS signalling connection when the routing area update procedure has been accepted by the network.

NOTE 2: The re-establishment of the radio bearers of active PDP contexts is done as described in subclause "Service Request procedure".

The network informs the MS about the support of specific features, such as LCS-MOLR, in the "Network feature support" Information Element. The information is either explicitly given by sending the "Network feature support" IE or implicitly by not sending it. The handling in the network is described in subclause 9.4.15.11. The MS may use the indication to inform the user about the availability of the appropriate services and it shall not request services that have not been indicated as available.

4.7.5.1 Normal and periodic routing area updating procedure

Periodic routing area updating is used to periodically notify the availability of the MS to the network. The value of the update type IE in the ROUTING AREA UPDATE REQUEST message shall indicate "periodic updating". The procedure is controlled in the MS by timer T3312. When timer T3312 expires, the periodic routing area updating procedure is started. Start and reset of timer T3312 is described in subclause 4.7.2.2.

In GSM, the normal routing area updating procedure is initiated

- when the MS detects a change of the routing area in state GMM-REGISTERED; ~~or~~
- when the MS determines that GPRS resumption shall be performed; ~~or~~
- when the MS needs to update the network with the new MS Radio Access Capability IE; or
- when the MS needs to update the network with the new DRX parameter IE.

The ROUTING AREA UPDATE REQUEST message shall always be the first data sent by the MS when a routing area border is crossed. The routing area identification is broadcast on the broadcast channel(s).

In UMTS, the normal routing area updating procedure is initiated when the MS detects a change of the routing area in state GMM-REGISTERED. The ROUTING AREA UPDATE REQUEST message shall always be the first GMM message sent by the MS when a routing area border is crossed.

A normal routing area updating shall abort any ongoing GMM procedure. Aborted GMM procedures may be repeated after the normal routing area updating procedure has been successfully performed. The value of the update type IE included in the message shall indicate "normal routing area updating".

4.7.5.1.1 Normal and periodic routing area updating procedure initiation

To initiate the normal routing area updating procedure, the MS sends the message ROUTING AREA UPDATE REQUEST to the network, starts timer T3330 and changes to state GMM-ROUTING-AREA-UPDATING-INITIATED. The message ROUTING AREA UPDATE REQUEST shall contain the P-TMSI signature when received within a previous ATTACH ACCEPT or ROUTING AREA UPDATE ACCEPT message.

In UMTS, if the MS wishes to prolong the established PS signalling connection after the normal routing area updating procedure, it may set a follow-on request pending indicator on.

4.7.5.1.2 GMM Common procedure initiation

The network may initiate GMM common procedures, e.g. the GMM authentication and ciphering procedure.

4.7.5.1.3 Normal and periodic routing area updating procedure accepted by the network

If the routing area updating request has been accepted by the network, a ROUTING AREA UPDATE ACCEPT message shall be sent to the MS. The network may assign a new P-TMSI and/or a new P-TMSI signature for the MS. If a new P-TMSI and/or P-TMSI signature have been assigned to the MS, it/they shall be included in the ROUTING AREA UPDATE ACCEPT message together with the routing area identification.

If a new DRX parameter was included in the ROUTING AREA UPDATE REQUEST message, the network shall store the new DRX parameter and use it for the downlink transfer of signalling and user data.

In GSM the Cell Notification information element shall be included in the ROUTING AREA UPDATE ACCEPT message in order to indicate the ability of the network to support the Cell Notification.

The network shall change to state GMM-COMMON-PROCEDURE-INITIATED and shall start the supervision timer T3350 as described in subclause 4.7.6.

If the LAI or PLMN identity contained in the ROUTING AREA UPDATE ACCEPT message is a member of any of the "forbidden" lists then any such entry shall be deleted.

In UMTS, the network should prolong the PS signalling connection if the mobile station has indicated a follow-on request pending in ROUTING AREA UPDATE REQUEST. The network may also prolong the PS signalling connection without any indication from the mobile terminal.

If the PDP context status information element is included in ROUTING AREA UPDATE REQUEST message, then the network shall deactivate all those PDP contexts locally (without peer to peer signalling between the MS and the network), which are not in SM state PDP-INACTIVE on network side but are indicated by the MS as being in state PDP-INACTIVE.

Upon receipt of a ROUTING AREA UPDATE ACCEPT message, the MS stores the received routing area identification, stops timer T3330, shall reset the routing area updating attempt counter and sets the GPRS update status to GUI1 UPDATED. If the message contains a P-TMSI, the MS shall use this P-TMSI as new temporary identity for GPRS services and shall store the new P-TMSI. If no P-TMSI was included by the network in the ROUTING AREA UPDATING ACCEPT message, the old P-TMSI shall be kept. Furthermore, the MS shall store the P-TMSI signature if received in the ROUTING AREA UPDATING ACCEPT message. If no P-TMSI signature was included in the message, the old P-TMSI signature, if available, shall be deleted.

If the ROUTING AREA UPDATE REQUEST message was used to update the network with a new DRX parameter IE, the MS shall start using the new DRX parameter upon receipt of the ROUTING AREA UPDATE ACCEPT message.

If the PDP context status information element is included in ROUTING AREA UPDATE ACCEPT message, then the MS shall deactivate all those PDP contexts locally (without peer to peer signalling between the MS and network), which are not in SM state PDP-INACTIVE in the MS but are indicated by the network as being in state PDP-INACTIVE.

In GSM, if the ROUTING AREA UPDATE ACCEPT message contains the Cell Notification information element, then the MS shall start to use the LLC NULL frame to perform cell updates.

The network may also send a list of "equivalent PLMNs" in the ROUTING AREA UPDATE ACCEPT message. Each entry of the list contains a PLMN code (MCC+MNC). The mobile station shall store the list, as provided by the network, except that any PLMN code that is already in the "forbidden PLMN" list shall be removed from the "equivalent PLMNs" list before it is stored by the mobile station. In addition the mobile station shall add to the stored list the PLMN code of the network that sent the list. All PLMNs in the stored list shall be regarded as equivalent to each other for PLMN selection, cell selection/re-selection and handover. The stored list in the mobile station shall be replaced on each occurrence of the ROUTING AREA UPDATE ACCEPT message. If no list is contained in the message, then the stored list in the mobile station shall be deleted. The list shall be stored in the mobile station while switched off so that it can be used for PLMN selection after switch on.

A ROUTING AREA UPDATE COMPLETE message shall be returned to the network if the ROUTING AREA UPDATE ACCEPT message contained:

- a P-TMSI; and/or
- Receive N-PDU Numbers (see 3GPP TS 44.065 [78] and 3GPP TS 25.322).

In the latter case the Receive N-PDU Numbers values valid in the MS, shall be included in the ROUTING AREA UPDATE COMPLETE message.

NOTE: In UMTS, after a routing area updating procedure, the mobile station can initiate Service Request procedure to request the resource reservation for the active PDP contexts if the resources have been released by the network or send upper layer message (e.g. ACTIVATE PDP CONTEXT REQUEST) to the network via the existing PS signaling connection.

After that in UMTS, if the mobile station has indicated follow-on request pending and has a CM application request pending, it shall send an appropriate message (for example ACTIVATE PDP CONTEXT REQUEST) to the network.

***** **NEXT MODIFIED SECTION** *****

4.7.5.2 Combined routing area updating procedure

Within a combined routing area updating procedure the messages ROUTING AREA UPDATE ACCEPT and ROUTING AREA UPDATE COMPLETE carry information for the routing area updating and the location area updating.

4.7.5.2.1 Combined routing area updating procedure initiation

The combined routing area updating procedure is initiated only by a GPRS MS operating in MS operation modes A or B, if the MS is in state GMM-REGISTERED and MM-IDLE, and if the network operates in network operation mode I:

- when a GPRS MS that is IMSI attached for GPRS and non-GPRS services detects a change of the routing area in state GMM-REGISTERED and MM-IDLE;
- when a GPRS MS that is IMSI attached for GPRS services wants to perform an IMSI attach for non-GPRS services;
- after termination of a non-GPRS service via non-GPRS channels to update the association if the MS has changed the RA during that non-GPRS service transaction;
- after termination of non-GPRS service via non-GPRS channels to update the association if GPRS services were suspended during the non-GPRS service but no resume is received. See 3GPP TS 23.060 subclause 16.2.1;
- after a CM SERVICE REJECT message with cause value #4 is received by the mobile station (see subclause 4.5.1.1); in this case the update type IE shall be set to "Combined RA/LA updating with IMSI attach";
- when a GPRS MS needs to update the network with the new MS Radio Access Capability IE; ~~or~~
- when a GPRS MS needs to update the network with a new DRX parameter IE; or
- in UMTS, to re-synchronize the PMM mode of MS and network after RRC connection release with cause "Directed signalling connection re-establishment", see subclause 4.7.2.5.

In GSM, the routing and location area identification are broadcast on the broadcast channel(s). A combined routing area updating procedure shall abort any ongoing GMM procedure. Aborted GMM procedures shall be repeated after the combined routing area updating procedure has been successfully performed. The ROUTING AREA UPDATE REQUEST message shall always be the first message sent from the MS in the new routing area after routing area change.

In UMTS, the routing and location area identification are broadcast on the broadcast channel(s) or sent to the MS via the PS signaling connection. A combined routing area updating procedure shall abort any ongoing GMM procedure. Aborted GMM procedures may be repeated after the combined routing area updating procedure has been successfully performed. The ROUTING AREA UPDATE REQUEST message shall always be the first GMM message sent from the MS in the new routing area after routing area change.

To initiate a combined routing area updating procedure the MS sends the message ROUTING AREA UPDATE REQUEST to the network, starts timer T3330 and changes to state GMM-ROUTING-UPDATING-INITIATED and MM LOCATION UPDATING PENDING. The value of the update type IE in the message shall indicate "combined RA/LA updating". If for the last attempt to update the registration of the location area a MM specific procedure was performed, the value of the update type IE in the ROUTING AREA UPDATE REQUEST message shall indicate

"combined RA/LA updating with IMSI attach". Furthermore the MS shall include the TMSI status IE if no valid TMSI is available.

A GPRS MS in MS operation modes A or B that is in an ongoing circuit-switched transaction, shall initiate the combined routing area updating procedure after the circuit-switched transaction has been released, if the MS has changed the RA during the circuit-switched transaction and if the network operates in network operation mode I.

A GPRS MS in MS operation mode A shall initiate the combined routing area updating procedure with IMSI attach after the circuit-switched transaction has been released if a GPRS attach was performed during the circuit-switched transaction and provided that the network operates in network operation mode I.

A GPRS MS in MS operation mode A shall perform the normal routing area update procedure during an ongoing circuit-switched transaction.

In UMTS, if the MS wishes to prolong the established PS signalling connection after the normal routing area updating procedure when it is served under UMTS area, it may set a follow-on request pending indicator on.

In UMTS, when a ROUTING AREA UPDATE REQUEST is received by the SGSN over a new PS signalling connection while there is an ongoing PS signalling connection (network is already in mode PMM-CONNECTED) for this UE, the network shall progress the routing area update procedure as normal and release the previous PS signalling connection when the routing area update procedure has been accepted by the network.

NOTE: The re-establishment of the radio bearers of active PDP contexts is done as described in subclause "Service Request procedure".

4.7.5.2.2 GMM Common procedure initiation

The network may initiate GMM common procedures, e.g. the GMM authentication and ciphering procedure.

4.7.5.2.3 Combined routing area updating procedure accepted by the network

Depending on the value of the update result IE received in the ROUTING AREA UPDATE ACCEPT message, two different cases can be distinguished:

- Case 1) The update result IE value indicates "combined RA/LA": Routing and location area updating is successful;
- Case 2) The update result IE value indicates "RA only": Routing area updating is successful, but —location area updating is not successful.

A ROUTING AREA UPDATE COMPLETE message shall be returned to the network if the ROUTING AREA UPDATE ACCEPT message contains:

- a P-TMSI and/or a TMSI; and/or
- Receive N-PDU Numbers (see 3GPP TS 44.065 [78] and 3GPP TS 25.322).

In the latter case, the Receive N-PDU Numbers that are valid in the MS shall be included in the ROUTING AREA UPDATE COMPLETE message.

In UMTS, the network should prolong the PS signalling connection if the mobile station has indicated a follow-on request pending in ROUTING AREA UPDATE REQUEST. The network may also prolong the PS signalling connection without any indication from the mobile terminal.

CR-Form-v7

CHANGE REQUEST

⌘ **24.008 CR 783** ⌘ rev **1** ⌘ Current version: **5.7.0** ⌘

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

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

Title:	⌘ Clarification of the procedure for the change of DRX parameter		
Source:	⌘ Ericsson, Siemens, Nokia		
Work item code:	⌘ TEI	Date:	⌘ 09/05/2003
Category:	⌘ A	Release:	⌘ Rel-5
	<i>Use one of the following categories:</i> F (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 .		<i>Use one of the following releases:</i> 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘ The possibility to use the routing area update procedure in order to change only the DRX parameter was introduced in Rel-5 with CR 632 rev1. The change of the DRX parameter is a critical operation, since the MS will no longer be reachable to paging if the change is performed only be one side. In order to ensure a synchronised change of the DRX parameter, the CRs clarifies the point in time when the new DRX parameter is taken into use by the network and the MS. The sentence "Normal or combined routing area updating procedure is used" could be misinterpreted in such a way that the periodic updating procedure must not be used. It is proposed to delete this sentence, since DRX change during periodic update was already possible before CR 632 rev1. Furthermore, it is proposed to delete the corresponding sentence for the update of the MS Radio Access Capability, since there is no reason to forbid this during periodic update.
Summary of change:	⌘ Clarification when the new DRX parameter is taken into use by the network and the MS. Deletion of the sentence "Normal or combined routing area updating procedure is used".
Consequences if not approved:	⌘ If the change of the DRX parameter is not synchronised, the MS will miss subsequent paging messages.

Clauses affected:	⌘ 4.7.5, 4.7.5.1.3, 4.7.5.2.1, 4.7.5.2.3
	<input type="checkbox"/> Y <input type="checkbox"/> N

Other specs affected:	⌘	<input checked="" type="checkbox"/>	Other core specifications	⌘	
		<input checked="" type="checkbox"/>	Test specifications		
		<input checked="" type="checkbox"/>	O&M Specifications		
Other comments:	⌘				

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4.7.5 Routing area updating procedure

This procedure is used for:

- normal routing area updating to update the registration of the actual routing area of an MS in the network. This procedure is used by GPRS MSs in MS operation mode C and by GPRS MSs in MS operation modes A or B that are IMSI attached for GPRS and non-GPRS services if the network operates in network operation mode II or III;
- combined routing area updating to update the registration of the actual routing and location area of an MS in the network. This procedure is used by GPRS MSs in MS operation modes A or B that are IMSI attached for GPRS and non-GPRS services provided that the network operates in network operation mode I;
- periodic routing area updating. This procedure is used by GPRS MSs in MS operation mode C and by GPRS MSs in MS operation modes A or B that are IMSI attached for GPRS or for GPRS and non-GPRS services independent of the network operation mode;
- IMSI attach for non-GPRS services when the MS is IMSI attached for GPRS services. This procedure is used by GPRS MSs in MS operation modes A or B, if the network operates in network operation mode I;
- in GSM, resuming GPRS services when the RR sublayer indicated a resumption failure after dedicated mode was left, see 3GPP TS 44.018 [84];
- in GSM, updating the network with the new MS Radio Access Capability IE when the content of the IE has changed. ~~Normal or combined routing area updating procedure is used.;~~
- updating the network with the new DRX parameter IE when the content of the IE has changed. ~~Normal or combined routing area updating procedure is used.;~~

NOTE 1: Such changes can be used e.g. when the MS activates a PDP context with service requirements that cannot be met with the current DRX parameter. As PDP context(s) are activated and deactivated, the GMM context will be updated with an appropriate DRX parameter;

- UMTS to GSM and for GSM to UMTS intersystem change, see subclause 4.7.1.7; or
- in UMTS, to re-synchronize the PMM mode of MS and network after RRC connection release with cause "Directed signalling connection re-establishment", see subclause 4.7.2.5.

The routing area updating procedure shall also be used by a MS which is attached for GPRS services if a new PLMN is entered (see 3GPP TS 23.122 [14]).

Subclause 4.7.5.1 describes the routing area updating procedures for updating the routing area only. The combined routing area updating procedure used to update both the routing and location area is described in subclause 4.7.5.2.

The routing area updating procedure is always initiated by the MS. It is only invoked in state GMM-REGISTERED.

To limit the number of subsequently rejected routing area update attempts, a routing area updating attempt counter is introduced. The routing area updating attempt counter shall be incremented as specified in subclause 4.7.5.1.5. Depending on the value of the routing area updating attempt counter, specific actions shall be performed. The routing area updating attempt counter shall be reset when:

- a GPRS attach procedure is successfully completed; or
- a routing area updating procedure is successfully completed;

and additionally when the MS is in substate ATTEMPTING-TO-UPDATE:

- a new routing area is entered;
- expiry of timer T3302; or
- at request from registration function.

The mobile equipment shall contain a list of "forbidden location areas for roaming", as well as a list of "forbidden location areas for regional provision of service". The handling of these lists is described in subclause 4.4.1.

The Mobile Equipment shall contain a list of "equivalent PLMNs". The handling of this list is described in subclause 4.4.1.

In GSM, user data transmission in the MS shall be suspended during the routing area updating procedure; user data reception shall be possible. User data transmission in the network shall be suspended during the routing area updating procedure, if a new P-TMSI is assigned.

In UMTS, user data transmission and reception in the MS shall not be suspended during the routing area updating procedure. User data transmission in the network shall not be suspended during the routing area updating procedure.

In UMTS, when a ROUTING AREA UPDATE REQUEST is received by the SGSN over a new PS signalling connection while there is an ongoing PS signalling connection (network is already in mode PMM-CONNECTED) for this UE, the network shall progress the routing area update procedure as normal and release the previous PS signalling connection when the routing area update procedure has been accepted by the network.

NOTE 2: The re-establishment of the radio bearers of active PDP contexts is done as described in subclause "Service Request procedure".

The network informs the MS about the support of specific features, such as LCS-MOLR, in the "Network feature support" Information Element. The information is either explicitly given by sending the "Network feature support" IE or implicitly by not sending it. The handling in the network is described in subclause 9.4.15.11. The MS may use the indication to inform the user about the availability of the appropriate services and it shall not request services that have not been indicated as available.

4.7.5.1 Normal and periodic routing area updating procedure

Periodic routing area updating is used to periodically notify the availability of the MS to the network. The value of the update type IE in the ROUTING AREA UPDATE REQUEST message shall indicate "periodic updating". The procedure is controlled in the MS by timer T3312. When timer T3312 expires, the periodic routing area updating procedure is started. Start and reset of timer T3312 is described in subclause 4.7.2.2.

In GSM, the normal routing area updating procedure is initiated

- when the MS detects a change of the routing area in state GMM-REGISTERED;~~;- or-~~
- when the MS determines that GPRS resumption shall be performed;~~;- or-~~
- when the MS needs to update the network with the new MS Radio Access Capability IE; or
- when the MS needs to update the network with the new DRX parameter IE.

The ROUTING AREA UPDATE REQUEST message shall always be the first data sent by the MS when a routing area border is crossed. The routing area identification is broadcast on the broadcast channel(s).

In UMTS, the normal routing area updating procedure is initiated when the MS detects a change of the routing area in state GMM-REGISTERED. The ROUTING AREA UPDATE REQUEST message shall always be the first GMM message sent by the MS when a routing area border is crossed.

A normal routing area updating shall abort any ongoing GMM procedure. Aborted GMM procedures may be repeated after the normal routing area updating procedure has been successfully performed. The value of the update type IE included in the message shall indicate "normal routing area updating".

4.7.5.1.1 Normal and periodic routing area updating procedure initiation

To initiate the normal routing area updating procedure, the MS sends the message ROUTING AREA UPDATE REQUEST to the network, starts timer T3330 and changes to state GMM-ROUTING-AREA-UPDATING-INITIATED. The message ROUTING AREA UPDATE REQUEST shall contain the P-TMSI signature when received within a previous ATTACH ACCEPT or ROUTING AREA UPDATE ACCEPT message.

In UMTS, if the MS wishes to prolong the established PS signalling connection after the normal routing area updating procedure, it may set a follow-on request pending indicator on.

4.7.5.1.2 GMM Common procedure initiation

The network may initiate GMM common procedures, e.g. the GMM authentication and ciphering procedure.

4.7.5.1.3 Normal and periodic routing area updating procedure accepted by the network

If the routing area updating request has been accepted by the network, a ROUTING AREA UPDATE ACCEPT message shall be sent to the MS. The network may assign a new P-TMSI and/or a new P-TMSI signature for the MS. If a new P-TMSI and/or P-TMSI signature have been assigned to the MS, it/they shall be included in the ROUTING AREA UPDATE ACCEPT message together with the routing area identification.

If a new DRX parameter was included in the ROUTING AREA UPDATE REQUEST message, the network shall store the new DRX parameter and use it for the downlink transfer of signalling and user data.

In GSM the Cell Notification information element shall be included in the ROUTING AREA UPDATE ACCEPT message in order to indicate the ability of the network to support the Cell Notification.

The network shall change to state GMM-COMMON-PROCEDURE-INITIATED and shall start the supervision timer T3350 as described in subclause 4.7.6.

If the LAI or PLMN identity contained in the ROUTING AREA UPDATE ACCEPT message is a member of any of the "forbidden" lists then any such entry shall be deleted.

In UMTS, the network should prolong the PS signalling connection if the mobile station has indicated a follow-on request pending in ROUTING AREA UPDATE REQUEST. The network may also prolong the PS signalling connection without any indication from the mobile terminal.

If the PDP context status information element is included in ROUTING AREA UPDATE REQUEST message, then the network shall deactivate all those PDP contexts locally (without peer to peer signalling between the MS and the network), which are not in SM state PDP-INACTIVE on network side but are indicated by the MS as being in state PDP-INACTIVE.

Upon receipt of a ROUTING AREA UPDATE ACCEPT message, the MS stores the received routing area identification and, if supported by the SIM/USIM, the currently selected access technology, stops timer T3330, shall reset the routing area updating attempt counter and sets the GPRS update status to GU1 UPDATED. If the message contains a P-TMSI, the MS shall use this P-TMSI as new temporary identity for GPRS services and shall store the new P-TMSI. If no P-TMSI was included by the network in the ROUTING AREA UPDATING ACCEPT message, the old P-TMSI shall be kept. Furthermore, the MS shall store the P-TMSI signature if received in the ROUTING AREA UPDATING ACCEPT message. If no P-TMSI signature was included in the message, the old P-TMSI signature, if available, shall be deleted.

If the ROUTING AREA UPDATE REQUEST message was used to update the network with a new DRX parameter IE, the MS shall start using the new DRX parameter upon receipt of the ROUTING AREA UPDATE ACCEPT message.

If the PDP context status information element is included in ROUTING AREA UPDATE ACCEPT message, then the MS shall deactivate all those PDP contexts locally (without peer to peer signalling between the MS and network), which are not in SM state PDP-INACTIVE in the MS but are indicated by the network as being in state PDP-INACTIVE.

In GSM, if the ROUTING AREA UPDATE ACCEPT message contains the Cell Notification information element, then the MS shall start to use the LLC NULL frame to perform cell updates.

The network may also send a list of "equivalent PLMNs" in the ROUTING AREA UPDATE ACCEPT message. Each entry of the list contains a PLMN code (MCC+MNC). The mobile station shall store the list, as provided by the network, except that any PLMN code that is already in the "forbidden PLMN" list shall be removed from the "equivalent PLMNs" list before it is stored by the mobile station. In addition the mobile station shall add to the stored list the PLMN code of the network that sent the list. All PLMNs in the stored list shall be regarded as equivalent to each other for PLMN selection, cell selection/re-selection and handover. The stored list in the mobile station shall be replaced on each occurrence of the ROUTING AREA UPDATE ACCEPT message. If no list is contained in the message, then the stored list in the mobile station shall be deleted. The list shall be stored in the mobile station while switched off so that it can be used for PLMN selection after switch on.

A ROUTING AREA UPDATE COMPLETE message shall be returned to the network if the ROUTING AREA UPDATE ACCEPT message contained:

- a P-TMSI; and/or
- Receive N-PDU Numbers (see 3GPP TS 44.065 [78] and 3GPP TS 25.322).

In the latter case the Receive N-PDU Numbers values valid in the MS, shall be included in the ROUTING AREA UPDATE COMPLETE message.

NOTE 1: In UMTS, after a routing area updating procedure, the mobile station can initiate Service Request procedure to request the resource reservation for the active PDP contexts if the resources have been released by the network or send upper layer message (e.g. ACTIVATE PDP CONTEXT REQUEST) to the network via the existing PS signaling connection.

After that in UMTS, if the mobile station has indicated follow-on request pending and has a CM application request pending, it shall send an appropriate message (for example ACTIVATE PDP CONTEXT REQUEST) to the network.

The network may also send a list of local emergency numbers in the ROUTING AREA UPDATE ACCEPT, by including the Emergency Number List IE. The mobile equipment shall store the list, as provided by the network, except that any emergency number that is already stored in the SIM/USIM shall be removed from the list before it is stored by the mobile equipment. If there are no emergency numbers stored on the SIM/USIM, then before storing the received list the mobile equipment shall remove from it any emergency number stored permanently in the ME for use in this case (see 3GPP TS 22.101 [8]). The list stored in the mobile equipment shall be replaced on each receipt of a new Emergency Number List IE.

The emergency number(s) received in the Emergency Number List IE are valid only in networks with the same MCC as in the cell on which this IE is received. If no list is contained in the ROUTING AREA UPDATE ACCEPT message, then the stored list in the mobile equipment shall be kept, except if the mobile equipment has successfully registered to a PLMN with an MCC different from that of the last registered PLMN.

The mobile equipment shall use the stored list of emergency numbers received from the network in addition to the emergency numbers stored on the SIM/USIM or ME to detect that the number dialled is an emergency number.

NOTE 2: The mobile equipment may use the emergency numbers list to assist the end user in determining whether the dialled number is intended for an emergency service or for another destination, e.g. a local directory service. The possible interactions with the end user are implementation specific.

The list of emergency numbers shall be deleted at switch off and removal of the SIM/USIM. The mobile equipment shall be able to store up to ten local emergency numbers received from the network.

***** NEXT MODIFIED SECTION *****

4.7.5.2 Combined routing area updating procedure

Within a combined routing area updating procedure the messages ROUTING AREA UPDATE ACCEPT and ROUTING AREA UPDATE COMPLETE carry information for the routing area updating and the location area updating.

4.7.5.2.1 Combined routing area updating procedure initiation

The combined routing area updating procedure is initiated only by a GPRS MS operating in MS operation modes A or B, if the MS is in state GMM-REGISTERED and MM-IDLE, and if the network operates in network operation mode I:

- when a GPRS MS that is IMSI attached for GPRS and non-GPRS services detects a change of the routing area in state GMM-REGISTERED and MM-IDLE;
- when a GPRS MS that is IMSI attached for GPRS services wants to perform an IMSI attach for non-GPRS services;
- after termination of a non-GPRS service via non-GPRS channels to update the association if the MS has changed the RA during that non-GPRS service transaction;

- after termination of non-GPRS service via non-GPRS channels to update the association if GPRS services were suspended during the non-GPRS service but no resume is received. See 3GPP TS 23.060 subclause 16.2.1;
- after a CM SERVICE REJECT message with cause value #4 is received by the mobile station (see subclause 4.5.1.1); in this case the update type IE shall be set to "Combined RA/LA updating with IMSI attach";
- when a GPRS MS needs to update the network with the new MS Radio Access Capability IE; ~~or~~
- when a GPRS MS needs to update the network with a new DRX parameter IE; or
- in UMTS, to re-synchronize the PMM mode of MS and network after RRC connection release with cause "Directed signalling connection re-establishment", see subclause 4.7.2.5.

In GSM, the routing and location area identification are broadcast on the broadcast channel(s). A combined routing area updating procedure shall abort any ongoing GMM procedure. Aborted GMM procedures shall be repeated after the combined routing area updating procedure has been successfully performed. The ROUTING AREA UPDATE REQUEST message shall always be the first message sent from the MS in the new routing area after routing area change.

In UMTS, the routing and location area identification are broadcast on the broadcast channel(s) or sent to the MS via the PS signalling connection. A combined routing area updating procedure shall abort any ongoing GMM procedure. Aborted GMM procedures may be repeated after the combined routing area updating procedure has been successfully performed. The ROUTING AREA UPDATE REQUEST message shall always be the first GMM message sent from the MS in the new routing area after routing area change.

To initiate a combined routing area updating procedure the MS sends the message ROUTING AREA UPDATE REQUEST to the network, starts timer T3330 and changes to state GMM-ROUTING-UPDATING-INITIATED and MM LOCATION UPDATING PENDING. The value of the update type IE in the message shall indicate "combined RA/LA updating". If for the last attempt to update the registration of the location area a MM specific procedure was performed, the value of the update type IE in the ROUTING AREA UPDATE REQUEST message shall indicate "combined RA/LA updating with IMSI attach". Furthermore the MS shall include the TMSI status IE if no valid TMSI is available.

A GPRS MS in MS operation modes A or B that is in an ongoing circuit-switched transaction, shall initiate the combined routing area updating procedure after the circuit-switched transaction has been released, if the MS has changed the RA during the circuit-switched transaction and if the network operates in network operation mode I.

A GPRS MS in MS operation mode A shall initiate the combined routing area updating procedure with IMSI attach after the circuit-switched transaction has been released if a GPRS attach was performed during the circuit-switched transaction and provided that the network operates in network operation mode I.

A GPRS MS in MS operation mode A shall perform the normal routing area update procedure during an ongoing circuit-switched transaction.

In UMTS, if the MS wishes to prolong the established PS signalling connection after the normal routing area updating procedure when it is served under UMTS area, it may set a follow-on request pending indicator on.

In UMTS, when a ROUTING AREA UPDATE REQUEST is received by the SGSN over a new PS signalling connection while there is an ongoing PS signalling connection (network is already in mode PMM-CONNECTED) for this UE, the network shall progress the routing area update procedure as normal and release the previous PS signalling connection when the routing area update procedure has been accepted by the network.

NOTE: The re-establishment of the radio bearers of active PDP contexts is done as described in subclause "Service Request procedure".

4.7.5.2.2 GMM Common procedure initiation

The network may initiate GMM common procedures, e.g. the GMM authentication and ciphering procedure.

4.7.5.2.3 Combined routing area updating procedure accepted by the network

Depending on the value of the update result IE received in the ROUTING AREA UPDATE ACCEPT message, two different cases can be distinguished:

Case 1) The update result IE value indicates "combined RA/LA": Routing and location area updating is successful;

Case 2) The update result IE value indicates "RA only": Routing area updating is successful, but —location area updating is not successful.

A ROUTING AREA UPDATE COMPLETE message shall be returned to the network if the ROUTING AREA UPDATE ACCEPT message contains:

- a P-TMSI and/or a TMSI; and/or
- Receive N-PDU Numbers (see 3GPP TS 44.065 [78] and 3GPP TS 25.322).

In the latter case, the Receive N-PDU Numbers that are valid in the MS shall be included in the ROUTING AREA UPDATE COMPLETE message.

In UMTS, the network should prolong the PS signalling connection if the mobile station has indicated a follow-on request pending in ROUTING AREA UPDATE REQUEST. The network may also prolong the PS signalling connection without any indication from the mobile terminal.

****** Added for information ******

9.4.14 Routing area update request

This message is sent by the MS to the network either to request an update of its location file or to request an IMSI attach for non-GPRS services. See table 9.4.14/3GPP TS 24.008.

Message type: ROUTING AREA UPDATE REQUEST

Significance: dual

Direction: MS to network

Table 9.4.14/3GPP TS 24.008: ROUTING AREA UPDATE REQUEST message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Skip indicator	Skip indicator 10.3.1	M	V	1/2
	Routing area update request message identity	Message type 10.4	M	V	1
	Update type	Update type 10.5.5.18	M	V	1/2
	GPRS ciphering key sequence number	Ciphering key sequence number 10.5.1.2	M	V	1/2
	Old routing area identification	Routing area identification 10.5.5.15	M	V	6
	MS Radio Access capability	MS Radio Access capability 10.5.5.12a	M	LV	6 - 52
19	Old P-TMSI signature	P-TMSI signature 10.5.5.8	O	TV	4
17	Requested READY timer value	GPRS Timer 10.5.7.3	O	TV	2
27	DRX parameter	DRX parameter 10.5.5.6	O	TV	3
9-	TMSI status	TMSI status 10.5.5.4	O	TV	1
18	P-TMSI	Mobile identity 10.5.1.4	O	TLV	7
31	MS network capability	MS network capability 10.5.5.12	O	TLV	4-10
32	PDP context status	PDP context status 10.5.7.1	O	TLV	4
33	PS LCS Capability	PS LCS Capability 10.5.5.22	O	TLV	3

9.4.14.1 Old P-TMSI signature

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

9.4.14.2 Requested READY timer value

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

9.4.14.3 DRX parameter

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

9.4.14.4 TMSI status

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

9.4.14.5 P-TMSI (UMTS only)

This IE shall be included by the MS.

9.4.14.6 MS network capability

This IE shall be included by the MS to indicate its capabilities to the network.

9.4.14.7 PDP context status

This IE shall be included by the MS.

9.4.14.8 PS LCS Capability

This IE shall be included if the MS supports at least one positioning method for the provision of location services (LCS) via the PS domain in Gb-mode.

9.4.15 Routing area update accept

This message is sent by the network to the MS to provide the MS with GPRS mobility management related data in response to a *routing area update request* message. See table 9.4.15/3GPP TS 24.008.2nd

Message type: ROUTING AREA UPDATE ACCEPT

Significance: dual

Direction: network to MS

Table 9.4.15/3GPP TS 24.008: ROUTING AREA UPDATE ACCEPT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Skip indicator	Skip indicator 10.3.1	M	V	1/2
	Routing area update accept message identity	Message type 10.4	M	V	1
	Force to standby	Force to standby 10.5.5.7	M	V	1/2
	Update result	Update result 10.5.5.17	M	V	1/2
	Periodic RA update timer	GPRS Timer 10.5.7.3	M	V	1
	Routing area identification	Routing area identification 10.5.5.15	M	V	6
19	P-TMSI signature	P-TMSI signature 10.5.5.8	O	TV	4
18	Allocated P-TMSI	Mobile identity 10.5.1.4	O	TLV	7
23	MS identity	Mobile identity 10.5.1.4	O	TLV	7-10
26	List of Receive N-PDU Numbers	Receive N-PDU Number list 10.5.5.11	O	TLV	4 - 19
17	Negotiated READY timer value	GPRS Timer 10.5.7.3	O	TV	2
25	GMM cause	GMM cause 10.5.5.14	O	TV	2
2A	T3302 value	GPRS Timer 2 10.5.7.4	O	TLV	3
8C	Cell Notification	Cell Notification 10.5.5.21	O	T	1
4A	Equivalent PLMNs	PLMN List 10.5.1.13	O	TLV	5-17
32	PDP context status	PDP context status 10.5.7.1	O	TLV	4
B-	Network feature support	Network feature support 10.5.5.23	O	TV	1
34	Emergency Number List	Emergency Number List 10.5.3.13	O	TLV	5-50

9.4.15.1 P-TMSI signature

This IE may be included to assign an identity to the MS's GMM context.

9.4.15.2 Allocated P-TMSI

This IE may be included to assign a P-TMSI to an MS in case of a GPRS or combined routing area updating procedure.

9.4.15.3 MS identity

This IE may be included to assign or unassign a TMSI to a MS in case of a combined routing area updating procedure.

9.4.15.4 List of Receive N-PDU Numbers

This IE shall be included in case of an inter SGSN routing area updating, if there are PDP contexts that have been activated in acknowledged transfer mode.

9.4.15.5 Negotiated READY timer value

This IE may be included to indicate a value for the READY timer.

9.4.15.6 GMM cause

This IE shall be included if the combined GPRS routing area updating procedure was successful for GPRS services only.

9.4.15.7 T3302 value

This IE may be included to indicate a value for the T3302 timer.

9.4.15.8 Cell Notification (GSM only)

In GSM, this IE shall be included if by the SGSN in order to indicate the ability to support the Cell Notification.

9.4.15.9 Equivalent PLMNs

The *Equivalent PLMNs* information element is included if the network wants to inform the mobile station of equivalent PLMNs.

9.4.15.10 PDP context status

This IE shall be included by the NW.

9.4.15.11 Network feature support

This IE may be included to inform the MS of the support of certain features. If this IE is not included then the respective features are not supported.

9.4.15.12 Emergency Number List

This IE may be sent by the network. If this IE is sent, the contents of this IE indicates a list of emergency numbers valid within the same MCC as in the cell on which this IE is received.

9.4.16 Routing area update complete

This message shall be sent by the MS to the network in response to a *routing area update accept message* if a P-TMSI and/or a TMSI has been assigned and/or if there are established LLC connections. See table 9.4.16/3GPP TS 24.008.

Message type: ROUTING AREA UPDATE COMPLETE
 Significance: dual
 Direction: MS to network

Table 9.4.16/3GPP TS 24.008: ROUTING AREA UPDATE COMPLETE message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Skip indicator	Skip indicator 10.3.1	M	V	1/2
	Routing area update complete message identity	Message type 10.4	M	V	1
26	List of Receive N-PDU Numbers	Receive N-PDU Number list 10.5.5.11	O	TLV	4 - 19

9.4.16.1 List of Receive N-PDU Numbers

This IE shall be included if the *routing area update accept message* contained this IE.

CR-Form-v7

CHANGE REQUEST

⌘ **24.008 CR 784** ⌘ rev **1** ⌘ Current version: **6.0.0** ⌘

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

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

Title:	⌘ Clarification of the procedure for the change of DRX parameter		
Source:	⌘ Ericsson, Siemens, Nokia		
Work item code:	⌘ TEI	Date:	⌘ 09/05/2003
Category:	⌘ A	Release:	⌘ Rel-6
	<i>Use one of the following categories:</i> F (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 .		<i>Use one of the following releases:</i> 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘ The possibility to use the routing area update procedure in order to change only the DRX parameter was introduced in Rel-5 with CR 632 rev1. The change of the DRX parameter is a critical operation, since the MS will no longer be reachable to paging if the change is performed only be one side. In order to ensure a synchronised change of the DRX parameter, the CRs clarifies the point in time when the new DRX parameter is taken into use by the network and the MS. The sentence "Normal or combined routing area updating procedure is used" could be misinterpreted in such a way that the periodic updating procedure must not be used. It is proposed to delete this sentence, since DRX change during periodic update was already possible before CR 632 rev1. Furthermore, it is proposed to delete the corresponding sentence for the update of the MS Radio Access Capability, since there is no reason to forbid this during periodic update.
Summary of change:	⌘ Clarification when the new DRX parameter is taken into use by the network and the MS. Deletion of the sentence "Normal or combined routing area updating procedure is used".
Consequences if not approved:	⌘ If the change of the DRX parameter is not synchronised, the MS will miss subsequent paging messages.

Clauses affected:	⌘ 4.7.5, 4.7.5.1.3, 4.7.5.2.1, 4.7.5.2.3
	<input type="checkbox"/> Y <input type="checkbox"/> N

Other specs affected:	⌘	<input checked="" type="checkbox"/>	Other core specifications	⌘	
		<input checked="" type="checkbox"/>	Test specifications		
		<input checked="" type="checkbox"/>	O&M Specifications		
Other comments:	⌘				

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4.7.5 Routing area updating procedure

This procedure is used for:

- normal routing area updating to update the registration of the actual routing area of an MS in the network. This procedure is used by GPRS MSs in MS operation mode C and by GPRS MSs in MS operation modes A or B that are IMSI attached for GPRS and non-GPRS services if the network operates in network operation mode II or III;
- combined routing area updating to update the registration of the actual routing and location area of an MS in the network. This procedure is used by GPRS MSs in MS operation modes A or B that are IMSI attached for GPRS and non-GPRS services provided that the network operates in network operation mode I;
- periodic routing area updating. This procedure is used by GPRS MSs in MS operation mode C and by GPRS MSs in MS operation modes A or B that are IMSI attached for GPRS or for GPRS and non-GPRS services independent of the network operation mode;
- IMSI attach for non-GPRS services when the MS is IMSI attached for GPRS services. This procedure is used by GPRS MSs in MS operation modes A or B, if the network operates in network operation mode I;
- in GSM, resuming GPRS services when the RR sublayer indicated a resumption failure after dedicated mode was left, see 3GPP TS 44.018 [84];
- in GSM, updating the network with the new MS Radio Access Capability IE when the content of the IE has changed. ~~Normal or combined routing area updating procedure is used.;~~
- updating the network with the new DRX parameter IE when the content of the IE has changed. ~~Normal or combined routing area updating procedure is used.;~~

NOTE 1: Such changes can be used e.g. when the MS activates a PDP context with service requirements that cannot be met with the current DRX parameter. As PDP context(s) are activated and deactivated, the GMM context will be updated with an appropriate DRX parameter;

- UMTS to GSM and for GSM to UMTS intersystem change, see subclause 4.7.1.7; or
- in UMTS, to re-synchronize the PMM mode of MS and network after RRC connection release with cause "Directed signalling connection re-establishment", see subclause 4.7.2.5.

The routing area updating procedure shall also be used by a MS which is attached for GPRS services if a new PLMN is entered (see 3GPP TS 23.122 [14]).

Subclause 4.7.5.1 describes the routing area updating procedures for updating the routing area only. The combined routing area updating procedure used to update both the routing and location area is described in subclause 4.7.5.2.

The routing area updating procedure is always initiated by the MS. It is only invoked in state GMM-REGISTERED.

To limit the number of subsequently rejected routing area update attempts, a routing area updating attempt counter is introduced. The routing area updating attempt counter shall be incremented as specified in subclause 4.7.5.1.5. Depending on the value of the routing area updating attempt counter, specific actions shall be performed. The routing area updating attempt counter shall be reset when:

- a GPRS attach procedure is successfully completed; or
- a routing area updating procedure is successfully completed;

and additionally when the MS is in substate ATTEMPTING-TO-UPDATE:

- a new routing area is entered;
- expiry of timer T3302; or
- at request from registration function.

The mobile equipment shall contain a list of "forbidden location areas for roaming", as well as a list of "forbidden location areas for regional provision of service". The handling of these lists is described in subclause 4.4.1.

The Mobile Equipment shall contain a list of "equivalent PLMNs". The handling of this list is described in subclause 4.4.1.

In GSM, user data transmission in the MS shall be suspended during the routing area updating procedure; user data reception shall be possible. User data transmission in the network may be suspended during the routing area updating procedure.

In UMTS, user data transmission and reception in the MS shall not be suspended during the routing area updating procedure. User data transmission in the network shall not be suspended during the routing area updating procedure.

In UMTS, when a ROUTING AREA UPDATE REQUEST is received by the SGSN over a new PS signalling connection while there is an ongoing PS signalling connection (network is already in mode PMM-CONNECTED) for this UE, the network shall progress the routing area update procedure as normal and release the previous PS signalling connection when the routing area update procedure has been accepted by the network.

NOTE 2: The re-establishment of the radio bearers of active PDP contexts is done as described in subclause "Service Request procedure".

The network informs the MS about the support of specific features, such as LCS-MOLR, in the "Network feature support" Information Element. The information is either explicitly given by sending the "Network feature support" IE or implicitly by not sending it. The handling in the network is described in subclause 9.4.15.11. The MS may use the indication to inform the user about the availability of the appropriate services and it shall not request services that have not been indicated as available.

4.7.5.1 Normal and periodic routing area updating procedure

Periodic routing area updating is used to periodically notify the availability of the MS to the network. The value of the update type IE in the ROUTING AREA UPDATE REQUEST message shall indicate "periodic updating". The procedure is controlled in the MS by timer T3312. When timer T3312 expires, the periodic routing area updating procedure is started. Start and reset of timer T3312 is described in subclause 4.7.2.2.

In GSM, the normal routing area updating procedure is initiated

- when the MS detects a change of the routing area in state GMM-REGISTERED;~~or~~
- when the MS determines that GPRS resumption shall be performed;~~or~~
- when the MS needs to update the network with the new MS Radio Access Capability IE; or
- when the MS needs to update the network with the new DRX parameter IE.

The ROUTING AREA UPDATE REQUEST message shall always be the first data sent by the MS when a routing area border is crossed. The routing area identification is broadcast on the broadcast channel(s).

In UMTS, the normal routing area updating procedure is initiated when the MS detects a change of the routing area in state GMM-REGISTERED. The ROUTING AREA UPDATE REQUEST message shall always be the first GMM message sent by the MS when a routing area border is crossed.

A normal routing area updating shall abort any ongoing GMM procedure. Aborted GMM procedures may be repeated after the normal routing area updating procedure has been successfully performed. The value of the update type IE included in the message shall indicate "normal routing area updating".

4.7.5.1.1 Normal and periodic routing area updating procedure initiation

To initiate the normal routing area updating procedure, the MS sends the message ROUTING AREA UPDATE REQUEST to the network, starts timer T3330 and changes to state GMM-ROUTING-AREA-UPDATING-INITIATED. The message ROUTING AREA UPDATE REQUEST shall contain the P-TMSI signature when received within a previous ATTACH ACCEPT or ROUTING AREA UPDATE ACCEPT message.

In UMTS, if the MS wishes to prolong the established PS signalling connection after the normal routing area updating procedure, it may set a follow-on request pending indicator on.

4.7.5.1.2 GMM Common procedure initiation

The network may initiate GMM common procedures, e.g. the GMM authentication and ciphering procedure.

4.7.5.1.3 Normal and periodic routing area updating procedure accepted by the network

If the routing area updating request has been accepted by the network, a ROUTING AREA UPDATE ACCEPT message shall be sent to the MS. The network may assign a new P-TMSI and/or a new P-TMSI signature for the MS. If a new P-TMSI and/or P-TMSI signature have been assigned to the MS, it/they shall be included in the ROUTING AREA UPDATE ACCEPT message together with the routing area identification.

If a new DRX parameter was included in the ROUTING AREA UPDATE REQUEST message, the network shall store the new DRX parameter and use it for the downlink transfer of signalling and user data.

In GSM the Cell Notification information element shall be included in the ROUTING AREA UPDATE ACCEPT message in order to indicate the ability of the network to support the Cell Notification.

The network shall change to state GMM-COMMON-PROCEDURE-INITIATED and shall start the supervision timer T3350 as described in subclause 4.7.6.

If the LAI or PLMN identity contained in the ROUTING AREA UPDATE ACCEPT message is a member of any of the "forbidden" lists then any such entry shall be deleted.

In UMTS, the network should prolong the PS signalling connection if the mobile station has indicated a follow-on request pending in ROUTING AREA UPDATE REQUEST. The network may also prolong the PS signalling connection without any indication from the mobile terminal.

If the PDP context status information element is included in ROUTING AREA UPDATE REQUEST message, then the network shall deactivate all those PDP contexts locally (without peer to peer signalling between the MS and the network), which are not in SM state PDP-INACTIVE on network side but are indicated by the MS as being in state PDP-INACTIVE.

Upon receipt of a ROUTING AREA UPDATE ACCEPT message, the MS stores the received routing area identification and, if supported by the SIM/USIM, the currently selected access technology, stops timer T3330, shall reset the routing area updating attempt counter and sets the GPRS update status to GU1 UPDATED. If the message contains a P-TMSI, the MS shall use this P-TMSI as new temporary identity for GPRS services and shall store the new P-TMSI. If no P-TMSI was included by the network in the ROUTING AREA UPDATING ACCEPT message, the old P-TMSI shall be kept. Furthermore, the MS shall store the P-TMSI signature if received in the ROUTING AREA UPDATING ACCEPT message. If no P-TMSI signature was included in the message, the old P-TMSI signature, if available, shall be deleted.

If the ROUTING AREA UPDATE REQUEST message was used to update the network with a new DRX parameter IE, the MS shall start using the new DRX parameter upon receipt of the ROUTING AREA UPDATE ACCEPT message.

If the PDP context status information element is included in ROUTING AREA UPDATE ACCEPT message, then the MS shall deactivate all those PDP contexts locally (without peer to peer signalling between the MS and network), which are not in SM state PDP-INACTIVE in the MS but are indicated by the network as being in state PDP-INACTIVE.

In GSM, if the ROUTING AREA UPDATE ACCEPT message contains the Cell Notification information element, then the MS shall start to use the LLC NULL frame to perform cell updates.

The network may also send a list of "equivalent PLMNs" in the ROUTING AREA UPDATE ACCEPT message. Each entry of the list contains a PLMN code (MCC+MNC). The mobile station shall store the list, as provided by the network, except that any PLMN code that is already in the "forbidden PLMN" list shall be removed from the "equivalent PLMNs" list before it is stored by the mobile station. In addition the mobile station shall add to the stored list the PLMN code of the network that sent the list. All PLMNs in the stored list shall be regarded as equivalent to each other for PLMN selection, cell selection/re-selection and handover. The stored list in the mobile station shall be replaced on each occurrence of the ROUTING AREA UPDATE ACCEPT message. If no list is contained in the message, then the stored list in the mobile station shall be deleted. The list shall be stored in the mobile station while switched off so that it can be used for PLMN selection after switch on.

A ROUTING AREA UPDATE COMPLETE message shall be returned to the network if the ROUTING AREA UPDATE ACCEPT message contained:

- a P-TMSI; and/or
- Receive N-PDU Numbers (see 3GPP TS 44.065 [78] and 3GPP TS 25.322).

In the latter case the Receive N-PDU Numbers values valid in the MS, shall be included in the ROUTING AREA UPDATE COMPLETE message.

NOTE 1: In UMTS, after a routing area updating procedure, the mobile station can initiate Service Request procedure to request the resource reservation for the active PDP contexts if the resources have been released by the network or send upper layer message (e.g. ACTIVATE PDP CONTEXT REQUEST) to the network via the existing PS signaling connection.

After that in UMTS, if the mobile station has indicated follow-on request pending and has a CM application request pending, it shall send an appropriate message (for example ACTIVATE PDP CONTEXT REQUEST) to the network.

The network may also send a list of local emergency numbers in the ROUTING AREA UPDATE ACCEPT, by including the Emergency Number List IE. The mobile equipment shall store the list, as provided by the network, except that any emergency number that is already stored in the SIM/USIM shall be removed from the list before it is stored by the mobile equipment. If there are no emergency numbers stored on the SIM/USIM, then before storing the received list the mobile equipment shall remove from it any emergency number stored permanently in the ME for use in this case (see 3GPP TS 22.101 [8]). The list stored in the mobile equipment shall be replaced on each receipt of a new Emergency Number List IE.

The emergency number(s) received in the Emergency Number List IE are valid only in networks with the same MCC as in the cell on which this IE is received. If no list is contained in the ROUTING AREA UPDATE ACCEPT message, then the stored list in the mobile equipment shall be kept, except if the mobile equipment has successfully registered to a PLMN with an MCC different from that of the last registered PLMN.

The mobile equipment shall use the stored list of emergency numbers received from the network in addition to the emergency numbers stored on the SIM/USIM or ME to detect that the number dialled is an emergency number.

NOTE 2: The mobile equipment may use the emergency numbers list to assist the end user in determining whether the dialled number is intended for an emergency service or for another destination, e.g. a local directory service. The possible interactions with the end user are implementation specific.

The list of emergency numbers shall be deleted at switch off and removal of the SIM/USIM. The mobile equipment shall be able to store up to ten local emergency numbers received from the network.

***** NEXT MODIFIED SECTION *****

4.7.5.2 Combined routing area updating procedure

Within a combined routing area updating procedure the messages ROUTING AREA UPDATE ACCEPT and ROUTING AREA UPDATE COMPLETE carry information for the routing area updating and the location area updating.

4.7.5.2.1 Combined routing area updating procedure initiation

The combined routing area updating procedure is initiated only by a GPRS MS operating in MS operation modes A or B, if the MS is in state GMM-REGISTERED and MM-IDLE, and if the network operates in network operation mode I:

- when a GPRS MS that is IMSI attached for GPRS and non-GPRS services detects a change of the routing area in state GMM-REGISTERED and MM-IDLE;
- when a GPRS MS that is IMSI attached for GPRS services wants to perform an IMSI attach for non-GPRS services;
- after termination of a non-GPRS service via non-GPRS channels to update the association if the MS has changed the RA during that non-GPRS service transaction;

- after termination of non-GPRS service via non-GPRS channels to update the association if GPRS services were suspended during the non-GPRS service but no resume is received. See 3GPP TS 23.060 subclause 16.2.1;
- after a CM SERVICE REJECT message with cause value #4 is received by the mobile station (see subclause 4.5.1.1); in this case the update type IE shall be set to "Combined RA/LA updating with IMSI attach";
- when a GPRS MS needs to update the network with the new MS Radio Access Capability IE; ~~or~~
- when a GPRS MS needs to update the network with a new DRX parameter IE; or
- in UMTS, to re-synchronize the PMM mode of MS and network after RRC connection release with cause "Directed signalling connection re-establishment", see subclause 4.7.2.5.

In GSM, the routing and location area identification are broadcast on the broadcast channel(s). A combined routing area updating procedure shall abort any ongoing GMM procedure. Aborted GMM procedures shall be repeated after the combined routing area updating procedure has been successfully performed. The ROUTING AREA UPDATE REQUEST message shall always be the first message sent from the MS in the new routing area after routing area change.

In UMTS, the routing and location area identification are broadcast on the broadcast channel(s) or sent to the MS via the PS signaling connection. A combined routing area updating procedure shall abort any ongoing GMM procedure. Aborted GMM procedures may be repeated after the combined routing area updating procedure has been successfully performed. The ROUTING AREA UPDATE REQUEST message shall always be the first GMM message sent from the MS in the new routing area after routing area change.

To initiate a combined routing area updating procedure the MS sends the message ROUTING AREA UPDATE REQUEST to the network, starts timer T3330 and changes to state GMM-ROUTING-UPDATING-INITIATED and MM LOCATION UPDATING PENDING. The value of the update type IE in the message shall indicate "combined RA/LA updating". If for the last attempt to update the registration of the location area a MM specific procedure was performed, the value of the update type IE in the ROUTING AREA UPDATE REQUEST message shall indicate "combined RA/LA updating with IMSI attach". Furthermore the MS shall include the TMSI status IE if no valid TMSI is available.

A GPRS MS in MS operation modes A or B that is in an ongoing circuit-switched transaction, shall initiate the combined routing area updating procedure after the circuit-switched transaction has been released, if the MS has changed the RA during the circuit-switched transaction and if the network operates in network operation mode I.

A GPRS MS in MS operation mode A shall initiate the combined routing area updating procedure with IMSI attach after the circuit-switched transaction has been released if a GPRS attach was performed during the circuit-switched transaction and provided that the network operates in network operation mode I.

A GPRS MS in MS operation mode A shall perform the normal routing area update procedure during an ongoing circuit-switched transaction.

In UMTS, if the MS wishes to prolong the established PS signalling connection after the normal routing area updating procedure when it is served under UMTS area, it may set a follow-on request pending indicator on.

In UMTS, when a ROUTING AREA UPDATE REQUEST is received by the SGSN over a new PS signalling connection while there is an ongoing PS signalling connection (network is already in mode PMM-CONNECTED) for this UE, the network shall progress the routing area update procedure as normal and release the previous PS signalling connection when the routing area update procedure has been accepted by the network.

NOTE: The re-establishment of the radio bearers of active PDP contexts is done as described in subclause "Service Request procedure".

4.7.5.2.2 GMM Common procedure initiation

The network may initiate GMM common procedures, e.g. the GMM authentication and ciphering procedure.

4.7.5.2.3 Combined routing area updating procedure accepted by the network

Depending on the value of the update result IE received in the ROUTING AREA UPDATE ACCEPT message, two different cases can be distinguished:

Case 1) The update result IE value indicates "combined RA/LA": Routing and location area updating is successful;

Case 2) The update result IE value indicates "RA only": Routing area updating is successful, but —location area updating is not successful.

A ROUTING AREA UPDATE COMPLETE message shall be returned to the network if the ROUTING AREA UPDATE ACCEPT message contains:

- a P-TMSI and/or a TMSI; and/or
- Receive N-PDU Numbers (see 3GPP TS 44.065 [78] and 3GPP TS 25.322).

In the latter case, the Receive N-PDU Numbers that are valid in the MS shall be included in the ROUTING AREA UPDATE COMPLETE message.

In UMTS, the network should prolong the PS signalling connection if the mobile station has indicated a follow-on request pending in ROUTING AREA UPDATE REQUEST. The network may also prolong the PS signalling connection without any indication from the mobile terminal.