TSGS#28(05)0294

Source: SA5 (Telecom Management)

Title: CR 32421-2-3 Subscriber and equipment trace

Document for: Approval

Agenda Item: 7.5.3

Doc-1st-Level	Spec__#_	CR__#	R	Phase	Subject	Cat	Ver-Cur	Doc-2nd-Level	Workitem
SP-050294	32.421	0010	-	Rel-6	BM-SC Network Element and Gmb interface addition for MBMS tracing	B	6.6.0	S5-058426	OAM-Trace
SP-050294	32.422	0007	-	Rel-6	Stage 2 modifications for MBMS tracing	B	6.2.0	S5-058427	OAM-Trace
SP-050294	32.422	0008	-	Rel-6	Management based activation of a Trace Session for MBMS	B	6.2.0	S5-058429	OAM-Trace
SP-050294	32.422	0009	-	Rel-6	Signalling based activation of a Trace Session for MBMS	B	6.2.0	S5-058430	OAM-Trace
SP-050294	32.422	0010	-	Rel-6	Management deactivation of a Trace Session for MBMS	B	6.2.0	S5-058431	OAM-Trace
SP-050294	32.422	0011	-	Rel-6	Signalling deactivation of a Trace Session for MBMS	B	6.2.0	S5-058432	OAM-Trace
SP-050294	32.422	0012	-	Rel-6	PS Domain Trace Recording Session starting mechanisms – Management Based	B	6.2.0	S5-058433	OAM-Trace
SP-050294	32.422	0013	-	Rel-6	PS Domain Trace Recording Session starting mechanisms – Signalling Based	B	6.2.0	S5-058434	OAM-Trace
SP-050294	32.422	0014	-	Rel-6	PS Domain Trace Recording Session stopping mechanisms – Management Based	B	6.2.0	S5-058435	OAM-Trace
SP-050294	32.422	0015	-	Rel-6	PS Domain Trace Recording Session stopping mechanisms – Signalling Based	B	6.2.0	S5-058436	OAM-Trace
SP-050294	32.422	0016	-	Rel-6	Correct figures titles	F	6.2.0	S5-058439	OAM-Trace
SP-050294	32.422	0017	-	Rel-6	Correcting Trace Session activation message names	F	6.2.0	S5-058438	OAM-Trace
SP-050294	32.423	0002	-	Rel-6	Stage 3 modifications for MBMS tracing	B	6.1.0	S5-058428	OAM-Trace

3GPP TSG-SA5 (Telecom Management) ***S5-058426***
Meeting #42, Montreal, CANADA, 09 - 13 May 2005

CR-Form-v7.1

CHANGE REQUEST

⌘ **32.421** **CR** **0010** ⌘ **rev** **-** ⌘ Current version: **6.6.0** ⌘

*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:	⌘	BM-SC Network Element and Gmb interface addition for MBMS tracing
Source:	⌘	SA5 Vodafone (Nico.Gabriele@vodafone.com)
Work item code:	⌘	OAM-Trace
Date:	⌘	13/05/2005
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one 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 one of the following releases:
Ph2 *(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)*
Rel-7 *(Release 7)*

Reason for change:	⌘	To be able to perform MBMS tracing.
Summary of change:	⌘	The BM-SC NE and Gmb interface are added in the requirements for Trace data.
Consequences if not approved:	⌘	MBMS tracing will not be possible. The operator will not be able to troubleshoot a possible subscription and equipment misoperation relating to MBMS services.

Clauses affected:	⌘	5.2			
Other specs affected:	⌘	**Y**	**N**		
			X	Other core specifications	⌘
			X	Test specifications	
		X		O&M Specifications	32.422 V6.2.0, 32.423 V6.1.0
Other comments:	⌘				

********** START OF MODIFICATIONS **********

5.2 Requirements for Trace data

The high level requirements for Trace data, common to both Management activation/deactivation and Signalling based activation/deactivation, are as follows:

- The Trace records have to contain Information Elements or signalling messages from control signalling and/or the characteristics of the user data. The following list contains the Network Elements and the Traceable interfaces in the NEs where tracing is needed:
  - MSC Server: A, Iu-CS, Mc and MAP (G, B, E, F, D, C) interfaces; CAP
  - MGW: Mc, Nb-UP, Iu-UP;
  - HSS: MAP (C, D, Gc, Gr) and Cx interfaces and location and subscription information;
  - SGSN: Gb, Iu-PS, Gn, MAP (Gr, Gd, Gf), CAP (Ge) and Gs interfaces;
  - GGSN: Gn, ~~and~~ Gi and Gmb interfaces;
  - S-CSCF: Mw, Mg, Mr and Mi interfaces;
  - P-CSCF: Gm and Go interfaces;
  - RNC: Iu-CS, Iu-PS, Iur, Iub and Uu interfaces;~~.~~
  - BM-SC: Gmb interface.
- A unique ID within a Trace Session shall be generated for each Trace Recording Session. This is called the Trace Recording Session Reference.

Changes to existing NEs and interfaces above may be required. These changes would be dependent upon various 3GPP working groups and possibly other non-3GPP industry groups for completion of Trace Session activation/deactivation.

For a detailed description of network elements and interfaces above see 3GPP TS 23.002 [4].

********** END OF MODIFICATIONS **********

Annex B (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Jun 2002	S_16	SP-020330	--	--	Submitted to SA #16 for Information	1.0.0	
Dec 2002	S_18	SP-020755	--	--	Submitted to SA #18 for Approval	2.0.0	6.0.0
Mar 2003	S_19	SP-030147	001	--	Corrections to Trace requirements - Align with SA2's 23.002	6.0.0	6.1.0
Dec 2003	S_22	SP-030612	002	--	Correction of IMS subscriber identification for Trace	6.1.0	6.2.0
Mar 2004	S_23	SP-040116	003	--	Correction in Trace high level architecture	6.2.0	6.3.0
Sep 2004	S_25	SP-040542	004	--	Removal of GERAN from Rel-6 32.42x series of Trace specifications	6.3.0	6.4.0
Dec 2004	SA_26	SP-040770	005	--	Remove requirement for having ASN.1 as Trace record format	6.4.0	6.5.0
Dec 2004	SA_26	SP-040770	006	--	Remove in Rel-6 the signalling based Trace in IMS due to missing SIP signalling support from CN1/IETF	6.4.0	6.5.0
Mar 2005	S_27	SP-050043	007	--	Remove ambiguity on the file format for trace data at the Network Elemets (NEs)	6.5.0	6.6.0
Mar 2005	S_27	SP-050043	008	--	Correction to the Scope	6.5.0	6.6.0
Mar 2005	S_27	SP-050043	009	--	Correct the list of interfaces trace parameter – Align with 32.422 and 32.423	6.5.0	6.6.0

3GPP TSG-SA5 (Telecom Management) ***Tdoc ⌘S5-058427***
Meeting #42, Montreal, CANADA, 09 - 13 May 2005

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CHANGE REQUEST

⌘ **32.422** **CR** **0007** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Stage 2 modifications for MBMS tracing
Source:	⌘	SA5 Vodafone (Nico.Gabriele@vodafone.com)
Work item code:	⌘	OAM-Trace
Date:	⌘	13/05/2005
Category:	⌘	**B**
Release:	⌘	Rel-6

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R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)
Rel-7 (Release 7)

Reason for change:	⌘	To be able to perform MBMS tracing.
Summary of change:	⌘	The Start triggering events and Stop triggering events are defined for MBMS tracing for the affected Network Elements (SGSN, GGSN, BM-SC). The BM-SC is defined amongst the NE types in which tracing can be activated. The new Gmb interface is defined between the various interfaces to be traced.
Consequences if not approved:	⌘	MBMS tracing will not be possible. The operator will not be able to troubleshoot a possible subscription and equipment misoperation relating to MBMS services.

Clauses affected:	⌘	5.1, 5.3, 5.4			
Other specs affected:	⌘	**Y**	**N**		
			X	Other core specifications	⌘
			X	Test specifications	
		X		O&M Specifications	32.421 v6.6.0, 32.423 v6.1.0
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.

********** START OF MODIFICATIONS **********

5.1 Triggering events (M)

This mandatory parameter defines when to start a Trace Recording Session and which message shall be recorded first, when to stop a Trace Recording Session and which message shall be recorded last respectively. The messages in the start triggering event tables indicate the transaction to be recorded first and the starting time of the Trace Recording Session within a Trace Session for the traced MS/subscriber in the given NE.

The messages in the stop triggering event tables indicate the transaction to be recorded last and the stopping time of the Trace Recording Session.

MSC Server	Start triggering events	Stop triggering events
Mobile Originated Call	Receipt of the CM SERVICE-REQUEST message with service type set to originating call establishment	Reception of CC-RELEASE COMPLETE or CM-SERVICE ABORT message
Mobile Terminated Call	Sending of PAGING REQUEST message	Reception of CC-RELEASE COMPLETE or CM-SERVICE ABORT message
Mobile Originated SMS	Receipt of the CM SERVICE-REQUEST message with service type set to Short Message service	Transmission of RP-ACK/RP-NACK message
Mobile Terminated SMS	Sending of PAGING REQUEST message	Reception of RP-ACK/RP-NACK message
IMSI Attach	Receipt of the MM-LOCATION UPDATING REQUEST message	Sending of MM-LOCATION-UPDATING ACCEPT or MM-LOCATION-UPDATING-REJECT message
Location Update	Receipt of the MM-LOCATION UPDATING REQUEST message	Sending of MM-LOCATION-UPDATING ACCEPT or MM-LOCATION-UPDATING-REJECT message
IMSI Detach	Receipt of the MM-IMSI DETACH INDICATION message	Reception of MM-IMSI DETACH INDICATION message
Handover	Receipt of the BSSMAP-HANDOVER-REQUIRED message in case of GSM or RANAP-RELOCATION-REQUIRED message in case of UMTS	Reception of BSSMAP-CLEAR COMPLETE message in case of GSM or RANAP-IU RELEASE COMPLETE message in case of UMTS or BSSMAP-HANDOVER FAILURE in case of GSM or RANAP-RELOCATION FAILURE in case of UMTS.
Supplementary Service	TBD	TBD

MGW	Start triggering events	Stop triggering events
Context	Reception of Megaco-ADD command, or reception of Megaco MODIFY command	Sending of Megaco- EXTRACT reply

SGSN	Start triggering events	Stop triggering events
PDP Context	Reception of SM-ACTIVATE PDP CONTEXT REQUEST or sending SM-REQUEST PDP CONTEXT ACTIVATION or reception of SM-MODIFY PDP CONTEXT REQUEST	Reception or sending of SM- DEACTIVATE PDP CONTEXT REQUEST or sending SM-ACTIVATE PDP CONTEXT REJECT
Mobile Originated SMS	Receipt of RP-DATA message	Transmission of RP-ACK/RP-NACK message
Mobile Terminated SMS	Transmission of RP-DATA message	Reception of RP-ACK/RP-NACK message
GPRS Attach	Reception of MM-ATTACH-REQUEST	Sending MM-ATTACH-ACCEPT or MM-ATTACH-REJECT
Routing Area Update	Reception of MM-ROUTING AREA UPDATE REQUEST	Sending MM-ROUTING AREA UPDATE ACCEPT or MM-ROUTING AREA UPDATE REJECT
GPRS Detach	Reception MM-DETACH REQUEST	Reception of MM-DETACH ACCEPT
MBMS Context	Sending SM-Request MBMS Context Activation or reception of SM-Update MBMS Context Request	Sending of SM-Deactivate MBMS Context Request or sending of SM-Activate MBMS Context Reject

GGSN	Start triggering events	Stop triggering events
PDP Context	Reception of GTP Create PDP context request or reception of GTP Update PDP context request	Sending of GTP Delete PDP context response
MBMS Context	Reception of GTP Create MBMS Context Request or reception of GTP Update MBMS Context Request	Sending of GTP Delete MBMS Context Response

S-CSCF	Start triggering events	Stop triggering events
SIP INVITE method	Reception of the initial SIP INVITE request	Sending of the SIP response to the SIP BYE request (sending or receiving) or any other error response
SIP REGISTER method	Reception of SIP REGISTER request	Sending the SIP response to the SIP REGISTER request
SIP MESSAGE method	Reception of SIP MESSAGE request	Sending the SIP response to the SIP MESSAGE request
SIP SUBSCRIBE method	Reception of SIP SUBSCRIBE request	Sending the SIP response to the final SIP NOTIFY request
other SIP methods	Reception of any other SIP requests (e.g. OPTIONS, REFER, INFO)	Sending the SIP response to the appropriate SIP request

P-CSCF	Start triggering events	Stop triggering events
SIP INVITE session	Reception of the initial SIP INVITE request	Sending of the SIP response to the SIP BYE request (sending or receiving) or any other error response
SIP REGISTER method	Reception of SIP REGISTER request	Sending the SIP response to the SIP REGISTER request
SIP MESSAGE method	Reception of SIP MESSAGE request	Sending the SIP response to the SIP MESSAGE request
SIP SUBSCRIBE method	Reception of SIP SUBSCRIBE request	Sending the SIP response to the final SIP NOTIFY request
other SIP methods	Reception of any other SIP requests (e.g. OPTIONS, REFER, INFO)	Sending the SIP response to the appropriate SIP request

BM-SC	Start triggering events	Stop triggering events
MBMS Multicast service activation	Reception of MBMS Authorization Request	Reception of Deactivation Indication for user deactivation or sending of Session Stop Request for service deactivation

Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1
MSC Server							
MGW							
SGSN							
GGSN							
~~Spare~~BM-SC							
spare							

MSC Server							
Bit 8	**Bit 7**	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**
spare		spare	SS	Handovers	LU, IMSI attach, IMSI detach	MO and MT SMS	MO and MT calls
spare							

MGW							
Bit 8	**Bit 7**	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**
spare						spare	Context

SGSN							
Bit 8	**Bit 7**	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**
spare				~~Spare~~MBMS Context	RAU, GPRS attach, GPRS detach	MO and MT SMS	PDP context
Reserved							

GGSN							
Bit 8	**Bit 7**	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**
spare						~~Spare~~MBMS Context	PDP Context

BM-SC							
Bit 8	**Bit 7**	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**
spare							MBMS Multicast service activation

If a bit is set to 1 the given event shall be traced, i.e. a Trace Recording Session shall be started for that event.

If a bit is set to 0 the given event should not be traced, i.e. Trace Recording Session should not be started.

5.2 Trace Depth (M)

This mandatory parameter defines how detailed information should be recorded in the Network Element. The following table describes the values of the Trace Depth parameter.

Trace Depth	Meaning
Minimum	Recording of some IEs in the signalling messages plus any vendor specific extensions to this definition, in decoded format.
Medium	Recording of some IEs in the signalling messages together with the radio measurement IEs plus any vendor specific extensions to this definition, in decoded format.
Maximum	Recording entire signalling messages plus any vendor specific extensions to this definition, in encoded format.

At least one of Minimum, Medium or Maximum trace Depth shall be supported depending on the NE type (see trace record description in TS 32.423 [3] for details).

Trace depth shall be an enumerated parameter with the following possible values:

1 - Minimum,

2 – Medium and

3 - Maximum

5.3 List of NE types (M)

This mandatory parameter defines the Network Element types where Trace Session activation is needed. This parameter has meaning only in the signalling based activation mechanism and it is used to determined whether the Trace Session Activation shall be propagated further to other Network Elements. In management based activation mechanism this parameter is not needed.

The following list contains the Network Element types:

- MSC Server
- MGW
- RNC
- SGSN
- GGSN
- BM-SC

Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1
spare	spare	~~Spare~~BM-SC	RNC	GGSN	SGSN	MGW	MSC-S
Spare							

If a bit is set to 1, Trace Session to that Network Element shall be activated.

If a bit is set to 0, Trace Session is not needed in that Network Element.

5.4 List of interfaces (O)

This is an optional parameter, which defines the interfaces to be recorded in the Network Element.

The following list contains the list of interfaces in each Network Element:

- MSC Server: A, Iu-CS, Mc and MAP (G, B, E, F, D, C) interfaces, CAP.
- MGW: Mc, Nb-UP, Iu-UP.
- RNC: Iu-CS, Iu-PS, Iur, Iub and Uu interfaces.
- SGSN: Gb, Iu-PS, Gn, MAP (Gr, Gd, Gf), CAP (Ge) and Gs interfaces.
- GGSN: Gn, ~~and~~ Gi and Gmb interfaces.
- S-CSCF: Mw, Mg, Mr and Mi interfaces.
- P-CSCF: Gm and Go interfaces.
- HSS: MAP (C, D, Gc, Gr) and Cx interfaces and location and subscription information.
- BM-SC: Gmb interface.

Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1
MSC Server							
MGW							
SGSN							
GGSN							
RNC							
~~Spare~~BM-SC							

MSC Server							
Bit 8	**Bit 7**	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**
CAP	MAP-F	MAP-E	MAP-B	MAP-G	Mc	Iu	A
spare						MAP-C	MAP-D

SGSN							
Bit 8	**Bit 7**	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**
Ge	Gs	MAP-Gf	MAP-Gd	MAP-Gr	Gn	Iu	Gb
spare							

MGW							
Bit 8	**Bit 7**	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**
spare					Iu-UP	Nb-UP	Mc

GGSN							
Bit 8	**Bit 7**	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**
spare					Gmb	Gi	Gn

RNC							
Bit 8	**Bit 7**	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**
spare				Uu	Iub	Iur	Iu

BM-SC							
Bit 8	**Bit 7**	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**
spare							Gmb

If a bit is set to 1, the interface should be traced in the given Network Element.

If a bit is set to 0, that interface should not be traced in the given Network Element.

********** END OF MODIFICATIONS **********

Annex A (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2004	S_23	SP-040117	--	--	Submitted to TSG SA#23 for Information	1.0.0	
Sep 2004	S_25	SP-040543	--	--	Submitted to TSG SA#25 for Approval	2.0.0	6.0.0
Dec 2004	SA_26	SP-040770	001	--	Remove IMS entities from the Signalling Based Activation of the Trace functionality	6.0.0	6.1.0
Dec 2004	SA_26	SP-040770	002	--	Align Management Based Activation for Trace with RAN3's 25.413 (UTRAN Iu interface RANAP signalling)	6.0.0	6.1.0
Mar 2005	S_27	SP-050043	003	--	Clarification on starting/stopping a Trace Recording Session in an RNC	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	004	--	Removal of Vendor Specific (VS) extensions from Trace control and configuration parameters	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	005	--	Correct the list of interfaces trace parameter	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	006	--	Clarify the Trace Session activation in CS/PS domain for SBA and MBA cases	6.1.0	6.2.0

3GPP TSG-SA5 (Telecom Management) ***S5-058428***
Meeting #42, Montreal, CANADA, 09 - 13 May 2005

CR-Form-v7.1

CHANGE REQUEST

⌘ **32.423** **CR** **0002** ⌘ **rev** **-** ⌘ Current version: **6.1.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Stage 3 modifications for MBMS tracing
Source:	⌘	SA5 Vodafone (Nico.Gabriele@vodafone.com)
Work item code:	⌘	OAM-Trace
Date:	⌘	13/05/2005
Category:	⌘	**B**
Release:	⌘	Rel-6

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R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*
Rel-7 *(Release 7)*

Reason for change:	⌘	To be able to perform MBMS tracing.
Summary of change:	⌘	In section 4.5 the new Gmb interface along with the related IEs and messages are specified for MBMS tracing in the GGSN. A new clause is added to specify all the information needed concerning the new Network Element BM-SC.
Consequences if not approved:	⌘	MBMS tracing will not be possible. The operator will not be able to troubleshoot a possible subscription and equipment misoperation relating to MBMS services.

Clauses affected:	⌘	4.5, a new clause is added which defines the tracing information for the BM-SC.

Other specs affected: ⌘	Y	N		⌘
		X	Other core specifications	
		X	Test specifications	
	X		O&M Specifications	32.421 v6.6.0, 32.422 v6.2.0

Other comments:	⌘	

********** FIRST MODIFIED SECTION **********

4.5 GGSN Trace Record Content

The following table describes the trace record content for minimum and medium trace depth for GGSN. The record content is same for management based activation and for signalling based activation.

For GGSN, the Minimum level of detail shall be supported.

Interface name	Prot. Name	IE name	MESSAGE NAME(S)	Trace depth		Notes
				Min	Med	
Gn	GTP	IMSI	CREATE PDP CONTEXT REQUEST UPDATE PDP CONTEXT REQUEST PDU NOTIFICATION REQUEST SEND ROUTEING INFORMATION FOR GPRS REQUEST SEND ROUTEING INFORMATION FOR GPRS RESPONSE FAILURE REPORT REQUEST NOTE MS PRESENT REQUEST MBMS NOTIFICATION REQUEST CREATE MBMS CONTEXT REQUEST UPDATE MBMS CONTEXT REQUEST DELETE MBMS CONTEXT REQUEST	**M**	**M**	TS 29.060
		RAI	CREATE PDP CONTEXT REQUEST UPDATE PDP CONTEXT REQUEST CREATE MBMS CONTEXT REQUEST UPDATE MBMS CONTEXT REQUEST	**M**	**M**	TS 29.060
		End User Address	CREATE PDP CONTEXT REQUEST CREATE PDP CONTEXT RESPONSE UPDATE PDP CONTEXT REQUEST PDU NOTIFICATION REQUEST PDU NOTIFICATION REJECT REQUEST MBMS NOTIFICATION REQUEST MBMS NOTIFICATION REJECT REQUEST CREATE MBMS CONTEXT REQUEST DELETE MBMS CONTEXT REQUEST MBMS REGISTRATION REQUEST MBMS DE-REGISTRATION REQUEST MBMS SESSION START REQUEST MBMS SESSION STOP REQUEST	**M**	**M**	TS 29.060
		Access Point Name	CREATE PDP CONTEXT REQUEST PDU NOTIFICATION REQUEST PDU NOTIFICATION REJECT REQUEST MBMS NOTIFICATION REQUEST MBMS NOTIFICATION REJECT REQUEST CREATE MBMS CONTEXT REQUEST DELETE MBMS CONTEXT REQUEST MBMS REGISTRATION REQUEST MBMS DE-REGISTRATION REQUEST MBMS SESSION START REQUEST MBMS SESSION STOP REQUEST	**M**	**M**	TS 29.060
		SGSN Address for signalling	CREATE PDP CONTEXT REQUEST UPDATE PDP CONTEXT REQUEST CREATE MBMS CONTEXT REQUEST UPDATE MBMS CONTEXT REQUEST	**M**	**M**	TS 29.060
		SGSN Address for user traffic	CREATE PDP CONTEXT REQUEST UPDATE PDP CONTEXT REQUEST MBMS SESSION START RESPONSE	**M**	**M**	TS 29.060
		MSISDN	CREATE PDP CONTEXT REQUEST CREATE MBMS CONTEXT REQUEST	**M**	**M**	TS 29.060
		Quality of Service Profile	CREATE PDP CONTEXT REQUEST CREATE PDP CONTEXT RESPONSE UPDATE PDP CONTEXT REQUEST UPDATE PDP CONTEXT RESPONSE MBMS SESSION START REQUEST	**M**	**M**	TS 29.060
		RAT Type	CREATE PDP CONTEXT REQUEST UPDATE PDP CONTEXT REQUEST	**M**	**M**	TS 29.060
		IMEI(SV)	CREATE PDP CONTEXT REQUEST	**M**	**M**	TS 29.060
		User Location Information	CREATE PDP CONTEXT REQUEST UPDATE PDP CONTEXT REQUEST	**M**	**M**	TS 29.060

		Cause	CREATE PDP CONTEXT RESPONSE UPDATE PDP CONTEXT RESPONSE DELETE PDP CONTEXT RESPONSE PDU NOTIFICATION RESPONSE PDU NOTIFICATION REJECT REQUEST PDU NOTIFICATION REJECT RESPONSE SEND ROUTEING INFORMATION FOR GPRS RESPONSE FAILURE REPORT RESPONSE NOTE MS GPRS PRESENT RESPONSE MBMS NOTIFICATION RESPONSE MBMS NOTIFICATION REJECT REQUEST MBMS NOTIFICATION REJECT RESPONSE CREATE MBMS CONTEXT RESPONSE UPDATE MBMS CONTEXT RESPONSE DELETE MBMS CONTEXT RESPONSE MBMS REGISTRATION RESPONSE MBMS DE-REGISTRATION RESPONSE MBMS SESSION START RESPONSE MBMS SESSION STOP RESPONSE	**M**	**M**	TS 29.060
		GGSN Address for Control Plane	CREATE PDP CONTEXT RESPONSE UPDATE PDP CONTEXT RESPONSE PDU NOTIFICATION REQUEST MBMS NOTIFICATION REQUEST CREATE MBMS CONTEXT RESPONSE UPDATE MBMS CONTEXT RESPONSE	**M**	**M**	TS 29.060
		GGSN Address for user traffic	CREATE PDP CONTEXT RESPONSE UPDATE PDP CONTEXT RESPONSE	**M**	**M**	TS 29.060
		MAP Cause	SEND ROUTEING INFORMATION FOR GPRS RESPONSE FAILURE REPORT RESPONSE	**M**	**M**	TS 29.060
		GSN Address	SEND ROUTEING INFORMATION FOR GPRS RESPONSE NOTE MS PRESENT REQUEST	**M**	**M**	TS 29.060
Gmb	Diameter Gmb	IMSI	MBMS AUTHORIZATION REQUEST (AAR) MBMS AUTHORIZATION RESPONSE (AAA)	**M**	**M**	TS 29.061
		RAI	MBMS AUTHORIZATION REQUEST (AAR)	**M**	**M**	TS 29.061
		Access Point Name	MBMS AUTHORIZATION REQUEST (AAR)	**M**	**M**	TS 29.061
		MSISDN	MBMS AUTHORIZATION REQUEST (AAR)	**M**	**M**	TS 29.061
		IMEI(SV)	MBMS AUTHORIZATION REQUEST (AAR)	**M**	**M**	TS 29.061
		IP Multicast Address	MBMS AUTHORIZATION REQUEST (AAR)	**M**	**M**	TS 29.061
		TMGI	MBMS AUTHORIZATION RESPONSE (AAA)	**M**	**M**	TS 29.061
		Result-Code	MBMS AUTHORIZATION RESPONSE (AAA) MBMS USER DEACTIVATION RESPONSE (STA) MBMS SESSION START-STOP INDICATION RESPONSE (RAA) MBMS SERVICE TERMINATION ANSWER (ASR)	**M**	**M**	TS 29.061
		Experimental-Result	MBMS AUTHORIZATION RESPONSE (AAA) MBMS SESSION START-STOP INDICATION RESPONSE (RAA)	**M**	**M**	TS 29.061
		Error-Reporting-Host	MBMS AUTHORIZATION RESPONSE (AAA) MBMS USER DEACTIVATION RESPONSE (STA) MBMS SESSION START-STOP INDICATION RESPONSE (RAA) MBMS SERVICE TERMINATION ANSWER (ASR)	**M**	**M**	TS 29.061

********** END OF FIRST MODIFICATIONS **********

4.10 BM-SC Trace Record Content

The following table describes the trace record content for minimum and medium trace depth for BM-SC. The record content is same for management based activation and for signalling based activation.

For BM-SC, the Minimum level of detail shall be supported.

Interface name	Prot. name	IE name	Message name(s)	Trace depth		Notes
				Min	Med	
Gmb	Diameter Gmb	IMSI	MBMS AUTHORIZATION REQUEST (AAR) MBMS AUTHORIZATION RESPONSE (AAA)	M	M	TS 29.061
		RAI	MBMS AUTHORIZATION REQUEST (AAR)	M	M	TS 29.061
		Access Point Name	MBMS AUTHORIZATION REQUEST (AAR)	M	M	TS 29.061
		MSISDN	MBMS AUTHORIZATION REQUEST (AAR)	M	M	TS 29.061
		IMEI(SV)	MBMS AUTHORIZATION REQUEST (AAR)	M	M	TS 29.061
		IP Multicast Address	MBMS AUTHORIZATION REQUEST (AAR)	M	M	TS 29.061
		TMGI	MBMS AUTHORIZATION RESPONSE (AAA)	M	M	TS 29.061
		Result-Code	MBMS AUTHORIZATION RESPONSE (AAA) MBMS USER DEACTIVATION RESPONSE (STA) MBMS SESSION START-STOP INDICATION RESPONSE (RAA) MBMS SERVICE TERMINATION ANSWER (ASR)	M	M	TS 29.061
		Experimental-Result	MBMS AUTHORIZATION RESPONSE (AAA) MBMS SESSION START-STOP INDICATION RESPONSE (RAA)	M	M	TS 29.061
		Error-Reporting-Host	MBMS AUTHORIZATION RESPONSE (AAA) MBMS USER DEACTIVATION RESPONSE (STA) MBMS SESSION START-STOP INDICATION RESPONSE (RAA) MBMS SERVICE TERMINATION ANSWER (ASR)	M	M	TS 29.061

********** END OF MODIFICATIONS **********

Annex E (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Sep 2004	S_25	SP-040544	--	--	Submitted to TSG SA#25 for Information	1.0.0	
Dec 2004	S_26	SP-040771	--	--	Submitted to TSG SA#26 for Approval	2.0.0	6.0.0
Mar 2005	S_27	SP-050043	001	--	Add missing Media GateWay (MGW) trace record for the Nb-UP and Iu-UP interfaces	6.0.0	6.1.0

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CHANGE REQUEST

⌘ **32.422** CR **0008** ⌘rev **-** ⌘ Current version: **6.2.0** ⌘

*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 **X**

Title:	⌘	Management based activation of a Trace Session for MBMS
Source:	⌘	SA5 Vodafone (Nico.Gabriele@vodafone.com)
Work item code:	⌘	OAM-Trace
Date:	⌘	13/05/2005
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one 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 one of the following releases:
Ph2 *(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)*
Rel-7 *(Release 7)*

Reason for change:	⌘	To be able to activate a Trace Session via the management system.
Summary of change:	⌘	In order to be able to perform MBMS tracing, the necessary mechanisms for the management based activation of a trace session need to be defined. The BM-SC network element is added in the figure representing the management based trace functionality within a PLMN.
Consequences if not approved:	⌘	MBMS tracing will not be possible. The operator will not be able to troubleshoot a possible subscription and equipment misoperation relating to MBMS services.

Clauses affected:	⌘	4.1.1.1, 4.1.1.3

Other specs affected: ⌘	Y	N		⌘
		X	Other core specifications	
		X	Test specifications	
	X		O&M Specifications	TS 32.421 v6.6.0, TS 32.423 v6.1.0

Other comments:	⌘	

.

********** MODIFIED CLAUSES **********

4 Trace activation and deactivation

4.1 Trace session activation / deactivation

4.1.1 Management activation

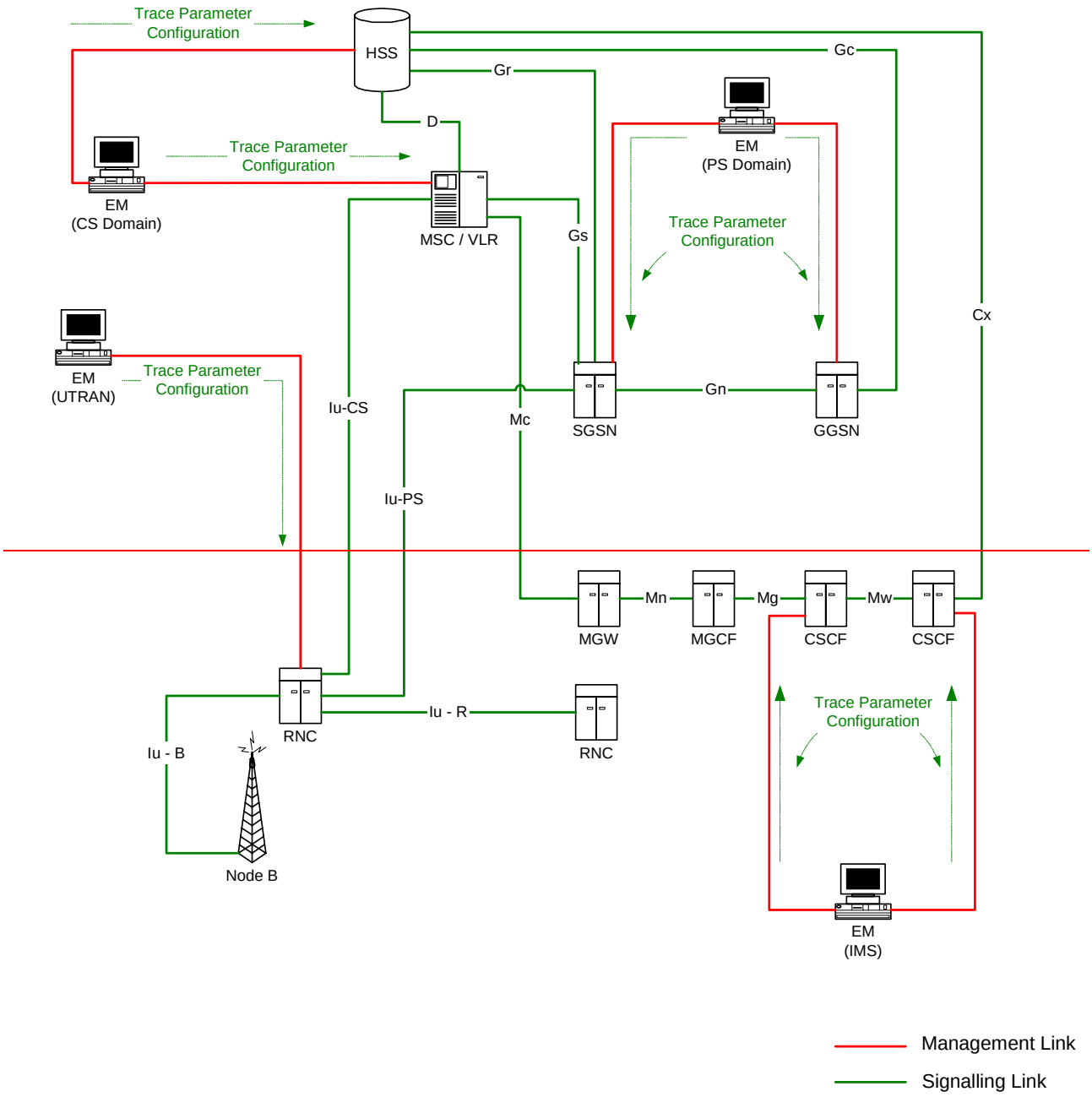
4.1.1.1 General

In Management activation, the Trace Control and Configuration parameters are sent directly to the concerned NE (by its EM). This NE shall not propagate the received data to any other NE's - whether or not it is involved in the actual recording of the call.

Once the parameters have been provided, the NE looks for the IMSI or IMEI (IMEISV) passing through it. If it does not have them, these shall be provided to the NE (that performs the trace recording) as part of traffic signalling by the CN.

The following figure represents the management based trace functionality within a PLMN. The figure represents a typical PLMN network. A dotted arrow with "Trace Parameter Configuration" represents the availability of the management based trace functionality at the EM for that domain.

NOTE: There is no propagation of trace parameters in management based trace activation.



~~Figure: Overview of management activation~~

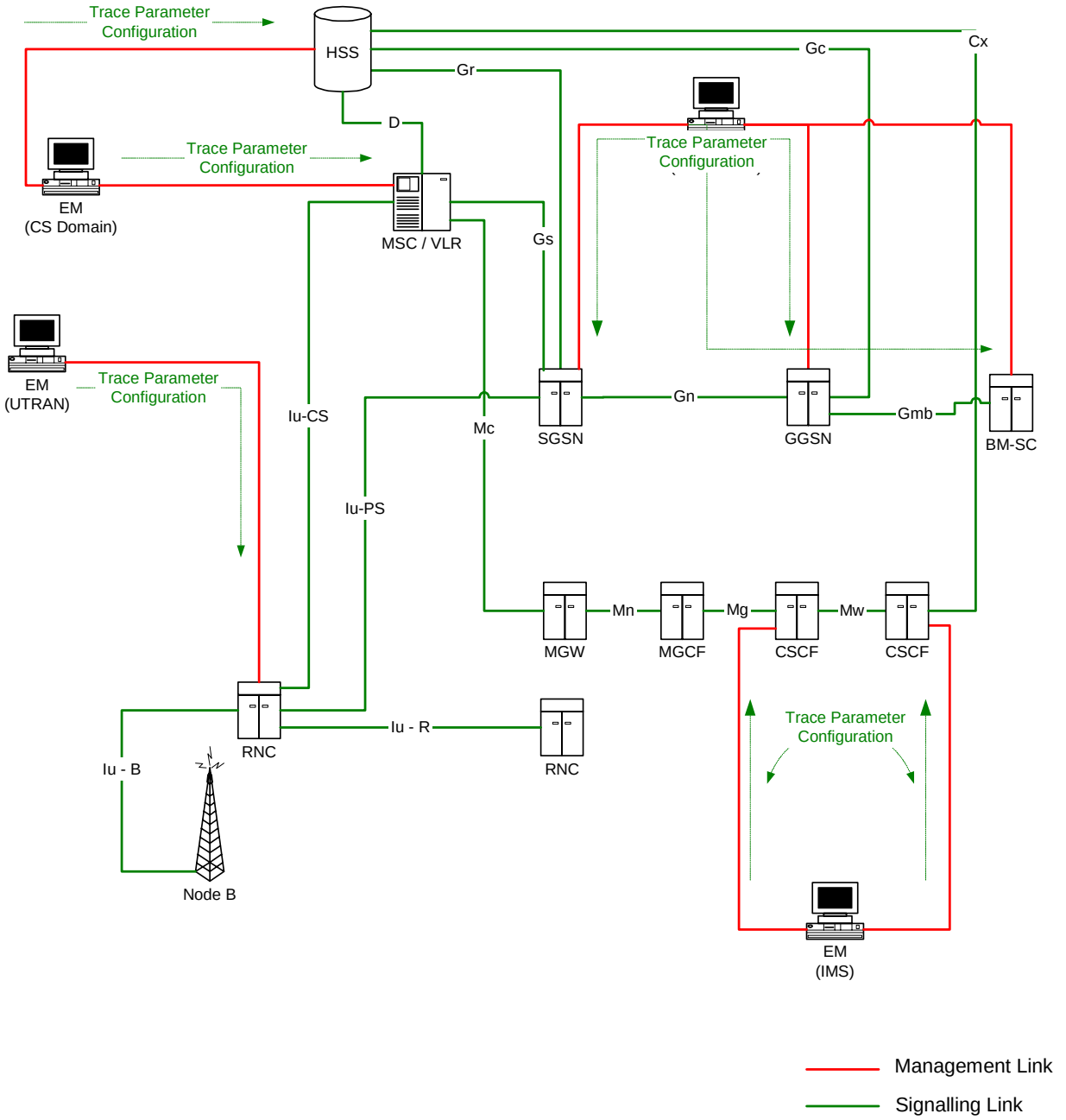


Figure: Overview of management activation

4.1.1.2 UTRAN activation mechanisms

When an RNC receives Trace Session activation from the EM it shall start a Trace Session. The trace control and configuration parameters of the Trace Session are received in Trace Session activation from the EM. The RNC shall not forward these trace control and configuration parameters to other nodes. The received trace control and configuration parameters shall be saved and used to determine when and how to start a Trace Recording Session. (Starting a Trace Recording Session is described in subclause 4.2.2.1). A Trace Session may be requested for a limited geographical area.

When the Trace session is requested for an IMEI(SV) or a list of IMEI(SV), the RNC shall send the requested IMEI(SV)/list of IMEI(SV)s in Uplink Information Transfer Indication to the interacting MSC Server(s) and SGSN(s). The MSC Servers and SGSNs shall store the requested IMEI(SV)s per RNC. For each subscriber/MS activity the MSC Servers and SGSNs shall request IMEI(SV), if it is not already provided. For each subscriber/MS activity the MSC server/SGSN shall check whether a trace request is active in an RNC for the IMEI(SV). If a match is found, the MSC Server/SGSN shall inform the RNC about the IMEI(SV) in CN Invoke Trace, so that the RNC can trace the control signalling according to the trace control and configuration parameters that are received from its EM.

If an Inter-MSC SRNS Relocation or an Inter-SGSN SRNS relocation occurs, the anchor MSC Server or source SGSN shall transfer the IMSI and IMEI(SV) for the subscriber/MS activity to the non anchor MSC Server or target SGSN. The non anchor MSC Server/target SGSN shall check whether it has received a trace request from the target RNC for the transferred IMEI(SV). If a match is found on the IMEI(SV) in the non anchor MSC Server/target SGSN, the MSC Server/SGSN shall inform the RNC about the IMEI(SV) in the CN Invoke Trace. The IMSI shall be transferred from the non anchor MSC Server/target SGSN to the target RNC in Relocation Request. The RNC can then trace the subscriber/MS activity according to the trace control and configuration parameters that are received from its EM.

4.1.1.3 PS Domain activation mechanisms

When a SGSN, ~~or~~ GGSN, or BM-SC receives Trace Session activation from the EM it shall start a Trace Session. The trace control and configuration parameters of the Trace Session are received in the Trace Session activation from the EM. The SGSN/GGSN/BM-SC shall not forward these trace control and configuration parameters to other nodes. The received trace control and configuration parameters shall be saved and used to determine when and how to start a Trace Recording Session. (Starting a Trace Recording Session is described in subclause 4.2.2.2)

********** END OF MODIFICATIONS **********

Annex A (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2004	S_23	SP-040117	--	--	Submitted to TSG SA#23 for Information	1.0.0	
Sep 2004	S_25	SP-040543	--	--	Submitted to TSG SA#25 for Approval	2.0.0	6.0.0
Dec 2004	SA_26	SP-040770	001	--	Remove IMS entities from the Signalling Based Activation of the Trace functionality	6.0.0	6.1.0
Dec 2004	SA_26	SP-040770	002	--	Align Management Based Activation for Trace with RAN3's 25.413 (UTRAN Iu interface RANAP signalling)	6.0.0	6.1.0
Mar 2005	S_27	SP-050043	003	--	Clarification on starting/stopping a Trace Recording Session in an RNC	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	004	--	Removal of Vendor Specific (VS) extensions from Trace control and configuration parameters	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	005	--	Correct the list of interfaces trace parameter	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	006	--	Clarify the Trace Session activation in CS/PS domain for SBA and MBA cases	6.1.0	6.2.0

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CHANGE REQUEST

⌘ **32.422** CR **0009** ⌘rev **-** ⌘ Current version: **6.2.0** ⌘

*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 **X**

Title:	⌘	Signalling based activation of a Trace Session for MBMS
Source:	⌘	SA5 Vodafone (Nico.Gabriele@vodafone.com)
Work item code:	⌘	OAM-Trace
Date:	⌘	13/05/2005
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one 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 one of the following releases:
Ph2 *(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)*
Rel-7 *(Release 7)*

Reason for change:	⌘	To be able to perform MBMS tracing.
Summary of change:	⌘	The signalling based activation mechanism for tracing is modified to include the MBMS service. The signalling based trace architecture now includes the BM-SC network element and its related Gmb interface. An example of trace for MBMS is described.
Consequences if not approved:	⌘	MBMS tracing will not be possible. The operator will not be able to troubleshoot a possible subscription and equipment misoperation relating to MBMS services.

Clauses affected:	⌘	4.1.2.2, 4.1.2.3, 4.1.2.5

Other specs affected: ⌘	Y	N		⌘
		X	Other core specifications	
		X	Test specifications	
	X		O&M Specifications	TS 32.421 v6.6.0, TS 32.423 v6.1.0

Other comments: ⌘

********** MODIFIED CLAUSE **********

4.1.2 Signalling activation

4.1.2.1 General

In Signalling activation, the Trace Activation shall be carried out from the Core Network EM only [EM (PS), EM (CS), and EM (HSS) are generally considered to be in the Core Network. A Core Network EM can be any of these or their combinations].

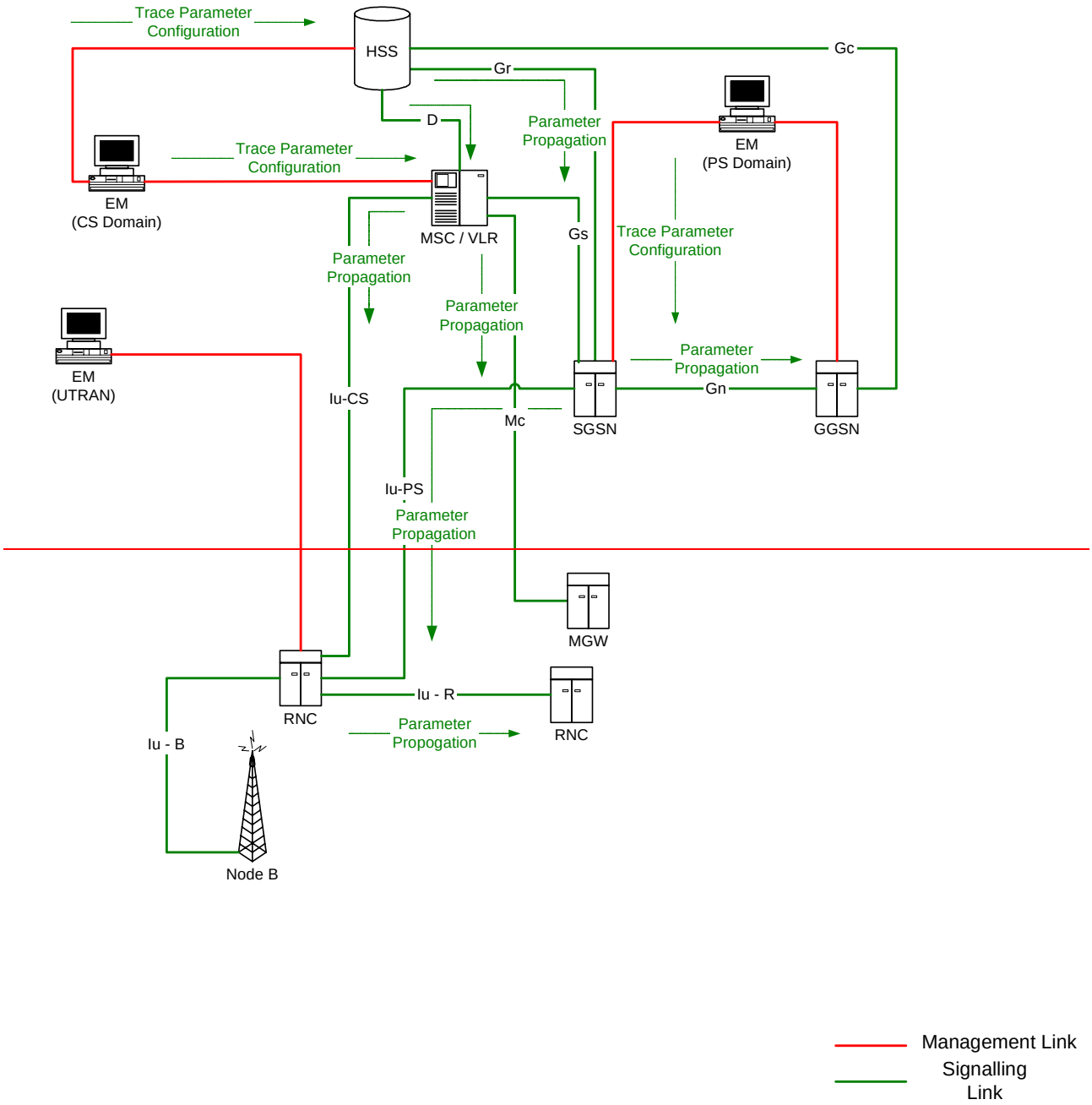
In case of home subscriber trace (i.e. in the HPLMN) the Trace Session activation shall go to the HSS / MSC Server / SGSN. Instances where the home subscriber is roaming in a VPLMN, the HSS may initiate a trace in that VPLMN. The VPLMN may reject such requests.

In case of foreign subscriber trace (i.e. the HPLMN operator wishes to trace foreign subscribers roaming in his PLMN) the Trace Session activation shall go the MSC Server/VLR or SGSN. Depending on the Trace Control and Configuration parameters received, the Core Network shall propagate the activation to selected NE's in the entire network – UTRAN and CN.

4.1.2.2 Intra PLMN signalling activation

The following figure represents the signalling based trace functionality within a PLMN. The figure represents a typical PLMN network. A dotted arrow with "Trace Parameter Configuration" represents the availability of the trace functionality at the EM for that domain. E.g. you cannot invoke a Signalling Trace at the EM (UTRAN) because there is no such arrow shown in the figure. You can however do it from the EM (CS Domain). Similarly "Trace Parameter Propagation" is allowed only for the interfaces indicated in the figure. E.g. there is no parameter propagation over Iu-B.

NOTE: For tracing on the basis of IMEI(SV), the signalling based activation can be only initiated from the MSC/VLR or SGSN.



~~Figure: Overview of Intra-PLMN Signalling Activation~~

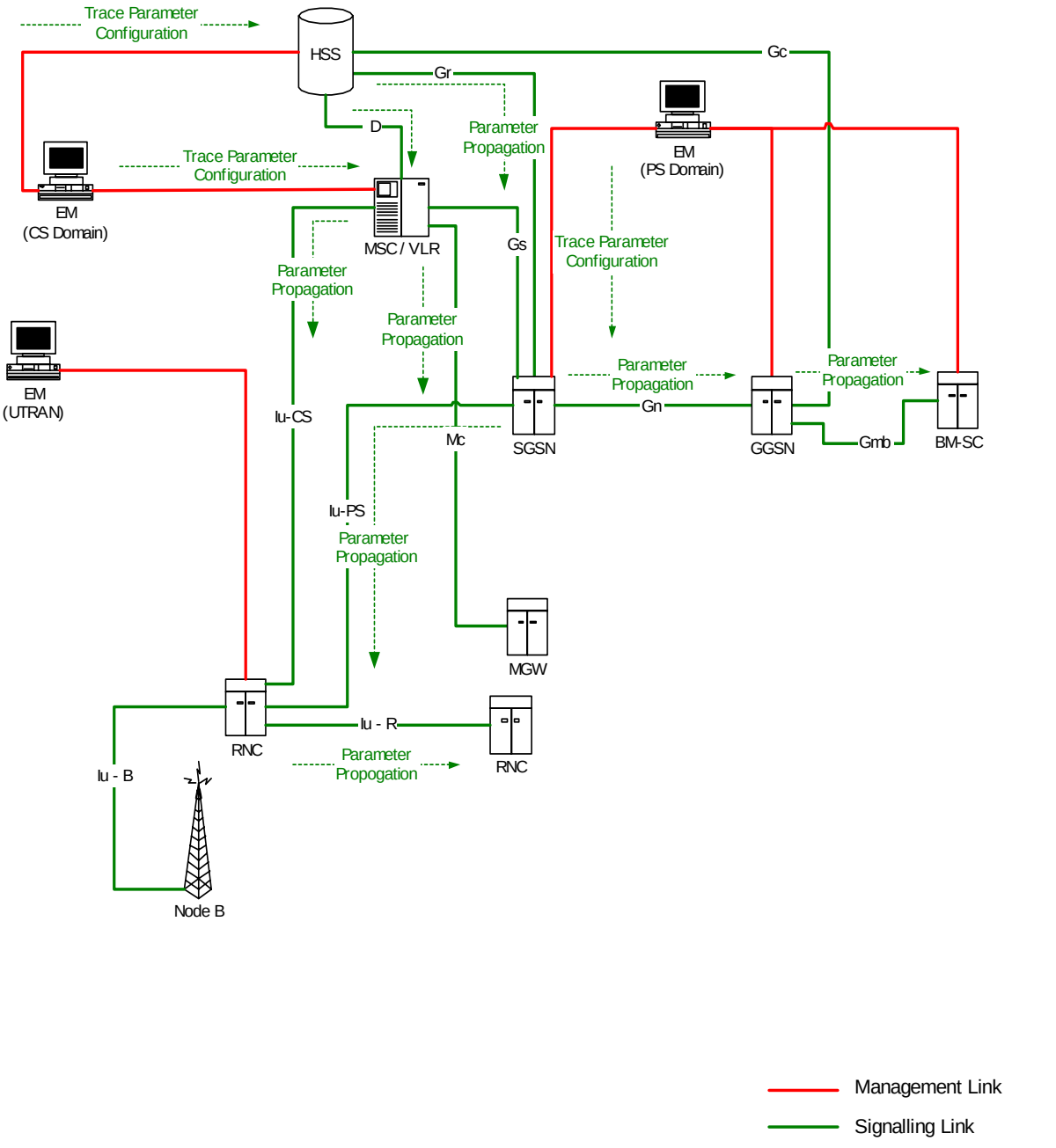
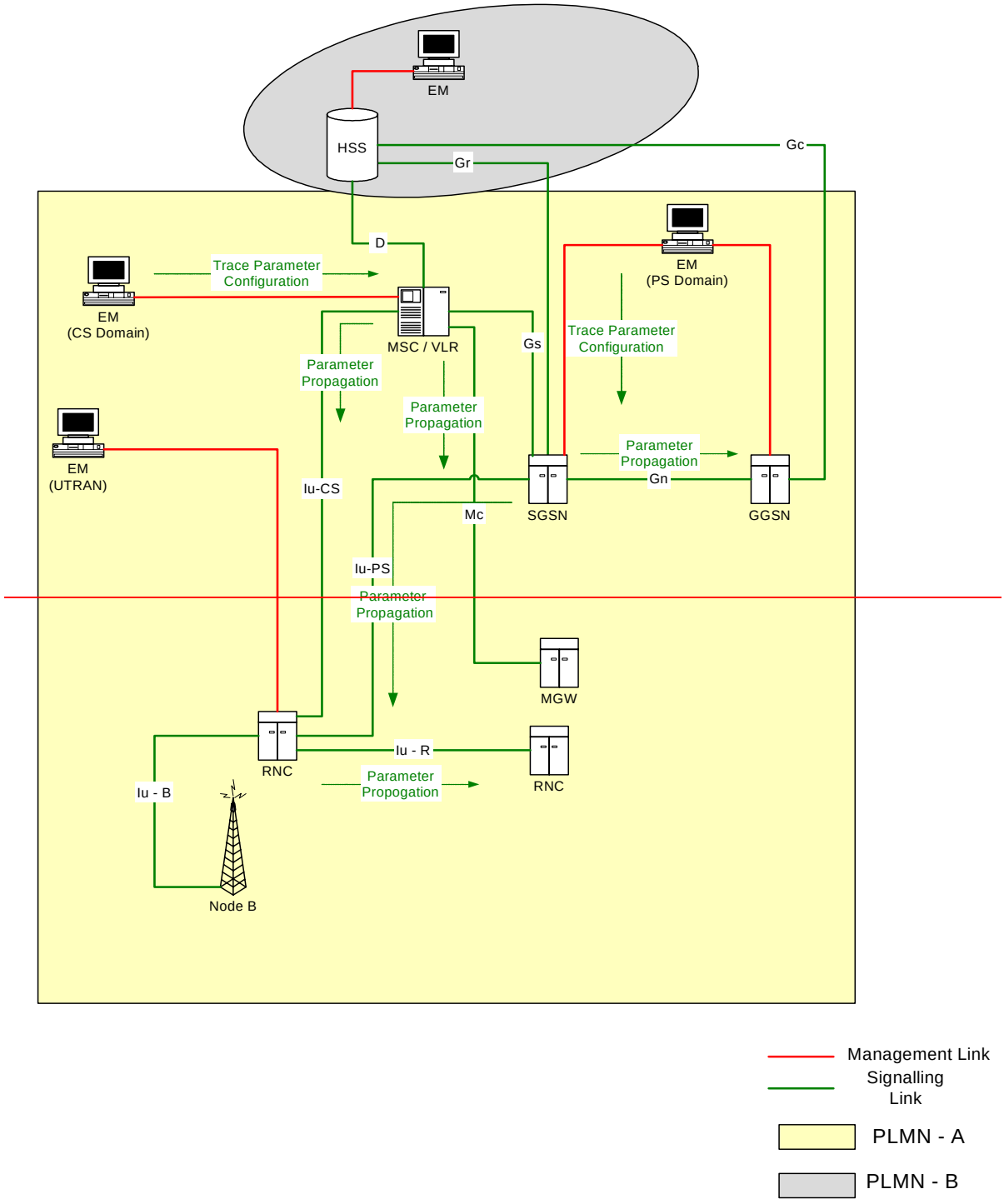


Figure: Overview of Intra-PLMN Signalling Activation

4.1.2.3 Inter PLMN Signalling Activation

The following figure represents the signalling based trace functionality between PLMNs. This is particularly useful when a roaming subscriber needs to be traced in a network. The figure represents a typical PLMN network and its connections with another PLMN's HSS. A dotted arrow with "Trace Parameter Configuration" represents the availability of the trace functionality at the EM for that domain. E.g. you cannot invoke a Signalling Trace at the EM (UTRAN) because there is no such arrow shown in the figure. You can however do it from the EM (CS Domain). Similarly "Trace Parameter Propagation" is allowed only for the interfaces indicated in the figure. E.g. there is no parameter propagation over Iu-B.

NOTE: There is no intention to allow tracing of a home subscriber roaming in a foreign network i.e. the trace function is limited to a single PLMN.



~~Figure: Overview of Inter-PLMN Signalling Activation~~

Figure: Overview of Inter-PLMN Signalling Activation

4.1.2.4 UTRAN activation mechanisms

See subclause 4.2.3.1.

4.1.2.5 PS Domain activation mechanisms

The following figure shows the Trace Session activation in the PS domain. The figure is an example of tracing PDP context.

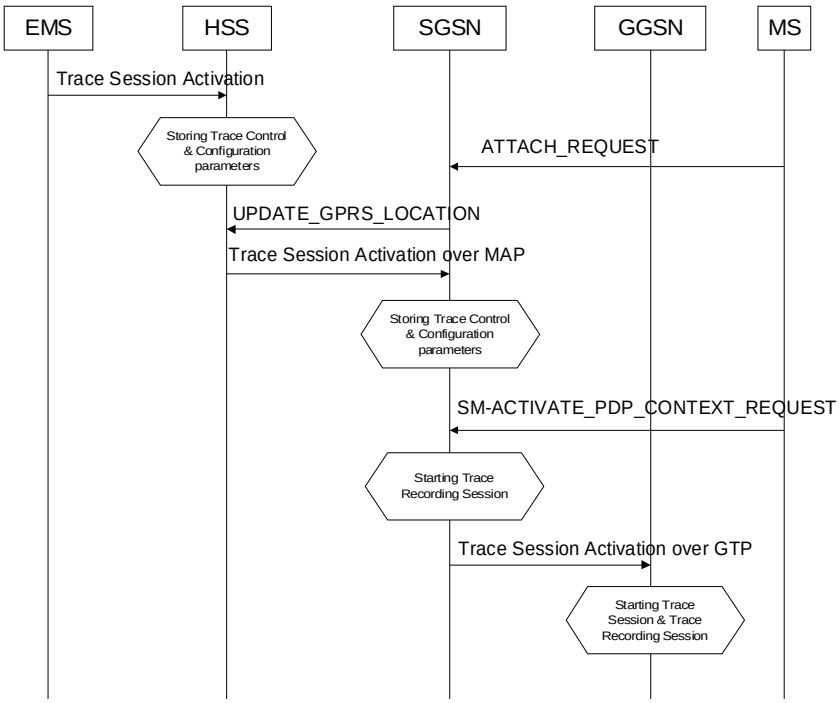


Figure: Trace session activation in PS domain for PDP Context

When HSS receives a Trace Session activation from its EMS, it shall store the received trace control and configuration parameters.. At this point a Trace Session shall be started in the HSS.

When a MS registers with the network by sending an ATTACH_REQUEST message to the SGSN, it updates the location information in the HSS by sending the UPDATE_GPRS_LOCATION message to the HSS. The HSS checks if the MS is being traced. If it is being traced, the HSS shall propagate the trace control and configuration parameters to the SGSN by sending a Trace Session Activation message to the SGSN. When an inter-SGSN routing area update occurs, HSS shall send the Trace Session Activation message to the new SGSN.

When SGSN receives the Trace Session activation message it shall store the trace control and configuration parameters and shall start a Trace Session.

When any of the triggering events defined in the trace control and configuration parameters occur, (e.g. PS session is started (i.e. a ACTIVATE PDP CONTEXT REQUEST message is received from the MS)) the SGSN shall propagate the trace control and configuration parameters to the GGSN and to the radio network by sending a Trace Session activation message, if it is defined in the trace control and configuration parameters (NE types to trace). The Trace Session activation to UTRAN is described in clauses 4.1.2.4.

When HSS sends the Trace Session activation message to SGSN it shall include the following parameters to the message:

- IMSI or IMEI (SV) (M).
- Trace reference (M).
- Triggering events for SGSN (M) and GGSN (M).
- Trace Depth for SGSN (M), GGSN (M) and RNC (M).
- List of NE types to trace (M).
- List of interfaces for SGSN (O), GGSN (O) and/or RNC (O).

When the SGSN sends the Trace Session activation message to GGSN it shall include the following parameters to the message:

- IMSI or IMEI (SV) (M).

- Trace reference (M).
- Trace Recording Session Reference (M).
- Triggering events for GGSN (M).
- Trace Depth for GGSN (M).
- List of interfaces for GGSN (O).

The following figure is an example of tracing for MBMS Context.

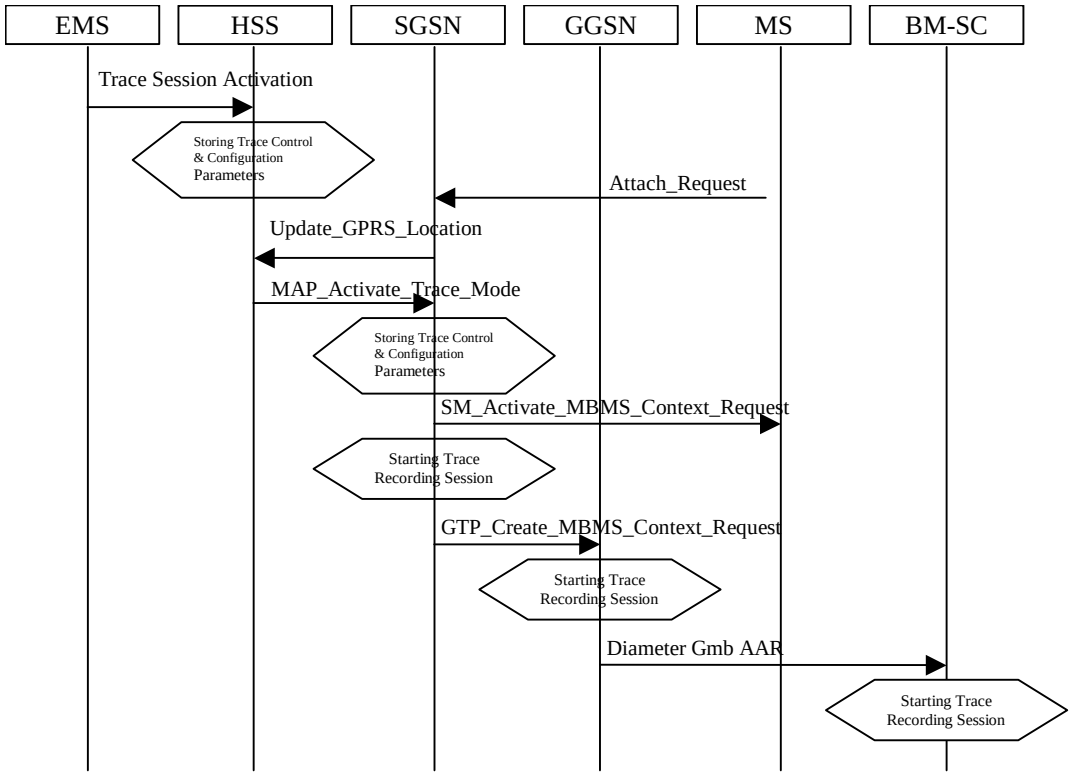


Figure: Trace session activation in PS domain for MBMSContext

When HSS receives a Trace Session activation from its EMS, it shall store the received trace control and configuration parameters. At this point a Trace Session shall be started in the HSS.

When a MS registers with the network by sending an ATTACH_REQUEST message to the SGSN, it updates the location information in the HSS by sending the UPDATE_GPRS_LOCATION message to the HSS. The HSS checks if the MS is being traced. If it is being traced, the HSS shall propagate the trace control and configuration parameters to the SGSN by sending a MAP-ACTIVATE_TRACE_MODE message to the SGSN. When an inter-SGSN routing area update occurs, HSS shall send the MAP-ACTIVATE_TRACE_MODE message to the new SGSN.

When SGSN receives the MAP-ACTIVATE_TRACE_MODE message it shall store the trace control and configuration parameters and shall start a Trace Session.

When any of the triggering events defined in the trace control and configuration parameters occur, (i.e. an ACTIVATE MBMS CONTEXT REQUEST message is sent to the MS)) the SGSN shall propagate the trace control and configuration parameters to the GGSN (by sending a GTP-CREATE_MBMS_CONTEXT_REQUEST message) and to the radio network (by sending a RANAP-CN_INVOKE_TRACE message), if it is defined in the trace control and configuration parameters (NE types to trace). The Trace Session activation to UTRAN is described in clauses 4.1.2.4.

The GGSN shall propagate the trace control and configuration parameters to the BM-SC (by sending a Diameter Gmb AAR message) if the BM-SC is defined in the trace control and configuration parameters (NE types to trace).

When HSS sends the MAP-ACTIVATE_TRACE_MODE message to SGSN it shall include the following parameters in the message:

- IMSI or IMEI (SV) (M).
- Trace reference (M).
- Triggering events for SGSN (M), GGSN (M) and BM-SC (M).
- Trace Depth for SGSN (M), GGSN (M), BM-SC (M) and RNC (M).
- List of NE types to trace (M).
- List of interfaces for SGSN (O), GGSN (O), BM-SC (O) and/or RNC (O).

When the SGSN sends the GTP-CREATE_MBMS_CONTEXT_REQUEST message to GGSN it shall include the following parameters in the message:

- IMSI or IMEI (SV) (M).
- Trace reference (M).
- Trace Recording Session Reference (M).
- Triggering events for GGSN (M) and BM-SC (M).
- Trace Depth for GGSN (M) and BM-SC (M).
- List of interfaces for GGSN (O) and BM-SC (O).

When the GGSN sends the Diameter Gmb AAR message to the BM-SC it shall include the following parameters in the message:

- IMSI or IMEI (SV) (M).
- Trace reference (M).
- Trace Recording Session Reference (M).
- Triggering events for BM-SC (M).
- Trace Depth for BM-SC (M).
- List of interfaces for BM-SC (O).

********** END OF MODIFICATIONS **********

Annex A (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2004	S_23	SP-040117	--	--	Submitted to TSG SA#23 for Information	1.0.0	
Sep 2004	S_25	SP-040543	--	--	Submitted to TSG SA#25 for Approval	2.0.0	6.0.0
Dec 2004	SA_26	SP-040770	001	--	Remove IMS entities from the Signalling Based Activation of the Trace functionality	6.0.0	6.1.0
Dec 2004	SA_26	SP-040770	002	--	Align Management Based Activation for Trace with RAN3's 25.413 (UTRAN Iu interface RANAP signalling)	6.0.0	6.1.0
Mar 2005	S_27	SP-050043	003	--	Clarification on starting/stopping a Trace Recording Session in an RNC	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	004	--	Removal of Vendor Specific (VS) extensions from Trace control and configuration parameters	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	005	--	Correct the list of interfaces trace parameter	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	006	--	Clarify the Trace Session activation in CS/PS domain for SBA and MBA cases	6.1.0	6.2.0

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CHANGE REQUEST

⌘ **32.422** CR **0010** ⌘rev **-** ⌘ Current version: **6.2.0** ⌘

*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:	⌘	Management deactivation of a Trace Session for MBMS
Source:	⌘	SA5 Vodafone (Nico.Gabriele@vodafone.com)
Work item code:	⌘	OAM-Trace
Date:	⌘	13/05/2005
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one 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 one of the following releases:
Ph2 (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)
Rel-7 (Release 7)

Reason for change:	⌘	To be able to deactivate a Trace Session via the management system.
Summary of change:	⌘	The BM-SC network element is added in the description of the PS Domain deactivation mechanisms.
Consequences if not approved:	⌘	MBMS tracing will not be possible. The operator will not be able to troubleshoot a possible subscription and equipment misoperation relating to MBMS services.

Clauses affected:	⌘	4.1.3.2

Other specs affected: ⌘	Y	N		⌘
		X	Other core specifications	
		X	Test specifications	
	X		O&M Specifications	TS 32.421 v6.6.0, TS 32.423 v6.1.0

Other comments: ⌘

.

********** MODIFIED CLAUSE **********

4.1.3 Management deactivation

4.1.3.1 UTRAN deactivation mechanisms

When last Trace session is requested to be ended for an IMEI(SV) or a list of IMEI(SV), the RNC shall send the requested IMEI(SV)/list of IMEI(SV)s in Uplink Information Transfer Indication to the interacting MSC Server(s) and SGSN(s). The MSC Servers and SGSNs shall remove the requested IMEI(SV)s for the RNC in question.

4.1.3.2 PS Domain deactivation mechanisms

When a SGSN, ~~or~~ GGSN or BM-SC receives a Trace Session Deactivation from its EM, the Trace Session identified by the Trace Reference, shall be deactivated in SGSN/GGSN/BM-SC.

If a Trace Recording Session is active at the time of receiving a Trace Session deactivation from the EM, the SGSN/GGSN/BM-SC may choose to continue the Trace Recording Session till it ends gracefully or may stop it immediately. In all cases, the SGSN/GGSN/BM-SC shall deactivate the requested Trace Session immediately at the end of the Trace Recording Session.

********** END OF MODIFIED CLAUSE **********

Annex A (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Mar 2004	S_23	SP-040117	--	--	Submitted to TSG SA#23 for Information	1.0.0	
Sep 2004	S_25	SP-040543	--	--	Submitted to TSG SA#25 for Approval	2.0.0	6.0.0
Dec 2004	SA_26	SP-040770	001	--	Remove IMS entities from the Signalling Based Activation of the Trace functionality	6.0.0	6.1.0
Dec 2004	SA_26	SP-040770	002	--	Align Management Based Activation for Trace with RAN3's 25.413 (UTRAN Iu interface RANAP signalling)	6.0.0	6.1.0
Mar 2005	S_27	SP-050043	003	--	Clarification on starting/stopping a Trace Recording Session in an RNC	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	004	--	Removal of Vendor Specific (VS) extensions from Trace control and configuration parameters	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	005	--	Correct the list of interfaces trace parameter	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	006	--	Clarify the Trace Session activation in CS/PS domain for SBA and MBA cases	6.1.0	6.2.0

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CHANGE REQUEST

⌘ **32.422** CR **0011** ⌘rev **-** ⌘ Current version: **6.2.0** ⌘

*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:	⌘	Signalling deactivation of a Trace Session for MBMS
Source:	⌘	SA5 Vodafone (Nico.Gabriele@vodafone.com)
Work item code:	⌘	OAM-Trace
Date:	⌘	13/05/2005
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one 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 one of the following releases:
Ph2 *(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)*
Rel-7 *(Release 7)*

Reason for change:	⌘	To be able to deactivate an MBMS Trace Session via the signalling system.
Summary of change:	⌘	The BM-SC network element is added in the description of the PS Domain deactivation mechanisms.
Consequences if not approved:	⌘	MBMS tracing will not be possible. The operator will not be able to troubleshoot a possible subscription and equipment misoperation relating to MBMS services.

Clauses affected:	⌘	4.1.4.3

Other specs affected: ⌘	Y	N		
		X	Other core specifications	⌘
		X	Test specifications	
	X		O&M Specifications	TS 32.421 v6.6.0, TS 32.423 v6.1.0

Other comments: ⌘

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********** MODIFIED CLAUSE **********

4.1.4 Signalling deactivation

4.1.4.1 General

In Signalling deactivation, the Trace Deactivation shall always be carried out from the Core Network EM only [EM (PS), EM (CS), and EM (HSS) are generally considered to be in the Core Network. A Core Network EM can be any of these or their combinations]. In case of home subscriber trace (i.e. in the HPLMN) the Trace Session deactivation shall go to the HSS, MSC Server/VLR, or SGSN. In case of foreign subscriber trace (i.e. the HPLMN operator wishes to deactivate tracing on foreign subscribers roaming in his PLMN) the Trace Session deactivation shall go the MSC Server/VLR or SGSN. The Management System shall deactivate the Trace Session in the same NE where it activated the Trace Session.

When an HSS receives a Trace Session deactivation from its Management system, it shall deactivate the active Trace Session corresponding to the Trace Reference received in the deactivation message. The HSS shall delete all trace control and configuration parameters associated with this Trace Session. If a Trace Recording Session is active at the time of receiving a Trace Session deactivation message from the EM, the HSS may choose to continue the Trace Recording Session till it ends gracefully or may stop it immediately. In all cases, the HSS shall deactivate the requested Trace Session immediately at the end of the Trace Recording Session.

4.1.4.2 UTRAN deactivation mechanisms

When RNC receives the CN_DEACTIVATE_TRACE message it shall deactivate the Trace Session for the indicated Trace Reference in the CN_DEACTIVATE_TRACE message. In case of simultaneous CS/PS connections, the trace session for the indicated trace reference shall be closed upon reception of the CN DEACTIVATE TRACE message from any of the CN domain, whether it was the one which initiated trace session activation or not.

The Trace Session is also deactivated in the RNC when the Iu connection to the Core Network is released.

If CN_INVOKE_TRACE message is received for only one Iu connection (either CS or PS) the Trace Session shall be deactivated in the RNC when the IU_RELEASE_COMMAND message is received from the Core Network for that Iu connection where the CN_INVOKE_TRACE message is sent.

The following figure shows this behaviour:

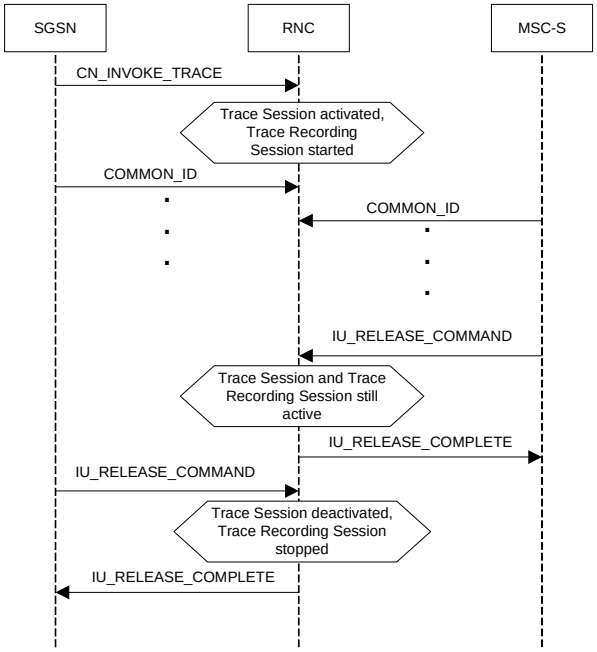

Figure: Trace session deactivation (Signalling) in UTRAN

If CN_INVOKE_TRACE message is received by the RNC for both Iu-CS and Iu-PS connection with the same Trace Reference number than the Trace Session shall not be deactivated in the RNC when any of the Iu connection is released (when the first IU_RELEASE_COMMAND message is received). The Trace Session shall be deactivated when the second Iu connection is released (the second IU_RELEASE_COMMAND message is received). The following figure shows the situation.

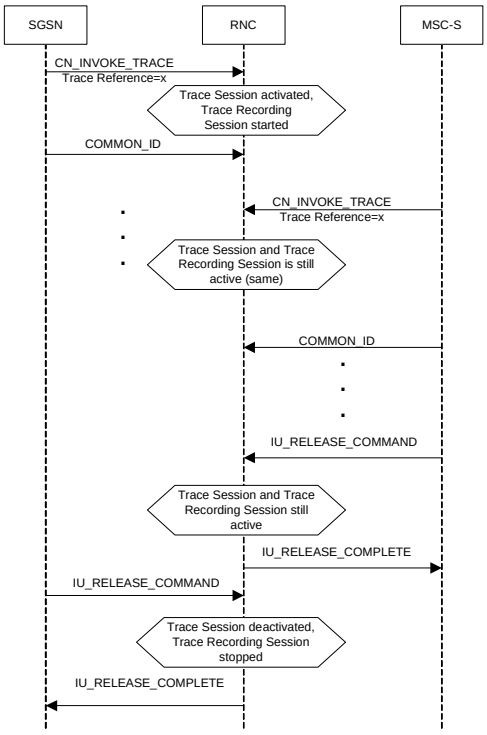

Figure: Trace session deactivation (Signalling) in PS Domain

Interaction with Soft-handover

The Trace Session should be deactivated in a Drift RNC when the DRNC receives the IUR_DEACTIVATE_TRACE message or the Iur connection is released.

When an RNC deactivates a Trace Session the Trace Recording Session shall also be stopped at the same time.

NOTE: In RNC the Trace Session and the Trace Recording Session always the same.

4.1.4.3 PS Domain deactivation mechanisms

When an HSS receives a Trace Session deactivation from the Management System it shall send a MAP_DEACTIVATE_TRACE_MODE message to the SGSN.

When the SGSN receives a MAP_DEACTIVATE_TRACE_MODE message it shall deactivate the Trace Session identified by the Trace reference received in the MAP_DEACTIVATE_TRACE_MODE message.

If a Trace Recording Session is active at the time of receiving a deactivation message, the SGSN (receiving it from the HSS) and/or the GGSN (receiving it from the SGSN) and/or the BM-SC (receiving it from the GGSN) may choose to continue the Trace Recording Session till it ends gracefully or may stop it immediately. In all cases, the SGSN/GGSN/BM-SC shall deactivate the requested Trace Session immediately at the end of the Trace Recording Session. When the SGSN deactivates the Trace Session, it shall delete all trace control and configuration parameters associated with the corresponding Trace Session.

If SGSN deactivates the Trace Session during the Trace Recording Session, the SGSN should deactivate the trace to the RNC by using the CN_DEACTIVATE_TRACE RANAP message and should deactivate the trace to the GGSN.

If the GGSN deactivates the Trace Session during the Trace Recording Session, the GGSN should deactivate the trace to the BM-SC (by sending a Diameter Gmb STR message).

4.1.4.4 CS Domain deactivation mechanisms

When an HSS receives Trace Session deactivation from the Management System it shall send a MAP_DEACTIVATE_TRACE_MODE message to the MSC Server.

When the MSC Server receives a MAP_DEACTIVATE_TRACE_MODE message it shall deactivate the Trace Session identified by the Trace reference received in the MAP_DEACTIVATE_TRACE_MODE message.

If a Trace Recording Session is active at the time of receiving a MAP_DEACTIVATE_TRACE_MODE message from the HSS, the MSC Server may choose to continue the Trace Recording Session till it ends gracefully or may stop it immediately. In all cases, the MSC Server shall deactivate the requested Trace Session immediately at the end of the Trace Recording Session. When the MSC Server deactivates the Trace Session it shall delete all trace control and configuration parameters associated with the corresponding Trace Session. .

If MSC Server deactivates the Trace Session during a Trace Recording Session, it should deactivate the trace to the RNC by sending the CN_DEACTIVATE_TRACE RANAP message and should deactivate the trace to the MGW.

4.1.4.5 Void

********** END OF MODIFIED CLAUSE **********

Annex A (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2004	S_23	SP-040117	--	--	Submitted to TSG SA#23 for Information	1.0.0	
Sep 2004	S_25	SP-040543	--	--	Submitted to TSG SA#25 for Approval	2.0.0	6.0.0
Dec 2004	SA_26	SP-040770	001	--	Remove IMS entities from the Signalling Based Activation of the Trace functionality	6.0.0	6.1.0
Dec 2004	SA_26	SP-040770	002	--	Align Management Based Activation for Trace with RAN3's 25.413 (UTRAN Iu interface RANAP signalling)	6.0.0	6.1.0
Mar 2005	S_27	SP-050043	003	--	Clarification on starting/stopping a Trace Recording Session in an RNC	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	004	--	Removal of Vendor Specific (VS) extensions from Trace control and configuration parameters	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	005	--	Correct the list of interfaces trace parameter	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	006	--	Clarify the Trace Session activation in CS/PS domain for SBA and MBA cases	6.1.0	6.2.0

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CHANGE REQUEST

⌘ **32.422** CR **0012** ⌘rev **-** ⌘ Current version: **6.2.0** ⌘

*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:	⌘	PS Domain Trace Recording Session starting mechanisms – Management Based
Source:	⌘	SA5 Vodafone (Nico.Gabriele@vodafone.com)
Work item code:	⌘	OAM-Trace
Date:	⌘	13/05/2005
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one 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 one of the following releases:
Ph2 *(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)*
Rel-7 *(Release 7)*

Reason for change:	⌘	To be able to start a Trace Recording Session via the management system.
Summary of change:	⌘	For the management based activation case, the BM-SC network element is added in the description of the PS Domain Trace Recording Session starting mechanisms.
Consequences if not approved:	⌘	MBMS tracing will not be possible. The operator will not be able to troubleshoot a possible subscription and equipment misoperation relating to MBMS services.

Clauses affected:	⌘	4.2.2.2			
Other specs affected:	⌘	**Y**	**N**		
			X	Other core specifications	⌘
			X	Test specifications	
		X		O&M Specifications	TS 32.421 v6.6.0, TS 32.423 v6.1.0
Other comments:	⌘				

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********** MODIFIED CLAUSE **********

4.2 Trace recording session Start / Stop triggering

4.2.1 General

Editor's Note: For further study.

The Trace Session activation contains the triggering events parameter. The actual start/stop triggering events corresponding to the values of the triggering events parameter are defined in triggering events tables in sub-clause 5.1 in the present document.

4.2.2 Starting a trace recording session - management based

4.2.2.1 UTRAN starting mechanisms

In an RNC, a Trace Recording Session should start after the reception of the CN_INVOKE_TRACE message from the CN and if some activities have been started on the interfaces that have been requested to be traced. The RNC shall record those signalling messages in the interfaces that are defined in the *list of interfaces* parameter. Trace depth defines whether entire signalling messages or just some IEs needs to be recorded.

The RNC may not start a Trace Recording Session if there are insufficient resources available for the recording.

When RNC starts a Trace Recording Session it shall assign a Trace Recording Session Reference for the Trace Recording Session.

4.2.2.2 PS Domain starting mechanisms

In a SGSN/GGSN/BM-SC, a Trace Recording Session should start after the reception of a Trace Session Activation from EM and if any of the defined *start triggering events* occur. During the Trace Recording Session, the SGSN/GGSN/BM-SC shall record those signalling messages in the interfaces that are defined in the *list of interfaces* parameter. The *Trace Depth* parameter defines whether entire signalling messages or just some IEs need to be recorded.

The IMSI and IMEISV shall be available in the SGSN, ~~and~~ in the GGSN and in the BM-SC for at least those connections which shall be traced.

The SGSN/GGSN/BM-SC may not start a Trace Recording Session if there are insufficient resources available for the recording.

If the SGSN/GGSN/BM-SC receives the Trace Session Activation during an established session (e.g. during an active PDP context or an active MBMS context), it *may* start the Trace Recording Session immediately. However, if any of the start triggering events occur in the SGSN/GGSN/BM-SC after receiving the Trace Session Activation, it shall start the Trace Recording Session.

When a Trace Recording Session is started, the SGSN/GGSN/BM-SC shall assign a Trace Recording Session Reference for the Trace Recording Session.

4.2.2.3 CS Domain starting mechanisms

In a MSC Server, a Trace Recording Session shall start after the reception of a Trace Session Activation from EM and if any of the defined *start triggering events* occur. During the Trace Recording Session, the MSC Server shall record those signalling messages in the interfaces that are defined in the *list of interfaces* parameter. The *Trace Depth* parameter defines whether entire signalling messages or just some IEs needs to be recorded.

The IMSI and the IMEISV shall be available in the MSC Server for at least those connections which shall be traced.

The MSC Server may not start a Trace Recording Session if there are insufficient resources available for the recording.

If the MSC Server receives the Trace Session Activation during an established call, it *may* start the Trace Recording Session immediately. However, if any of the start triggering events occurs in MSC Server after receiving the Trace Session Activation, it shall start the Trace Recording Session.

When a Trace Recording Session is started, the MSC Server shall assign a Trace Recording Session Reference for the Trace Recording Session.

4.2.2.4 IP Multimedia Subsystem starting mechanisms

Editor's Note: For further study.

********** END OF MODIFIED CLAUSE **********

Annex A (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2004	S_23	SP-040117	--	--	Submitted to TSG SA#23 for Information	1.0.0	
Sep 2004	S_25	SP-040543	--	--	Submitted to TSG SA#25 for Approval	2.0.0	6.0.0
Dec 2004	SA_26	SP-040770	001	--	Remove IMS entities from the Signalling Based Activation of the Trace functionality	6.0.0	6.1.0
Dec 2004	SA_26	SP-040770	002	--	Align Management Based Activation for Trace with RAN3's 25.413 (UTRAN Iu interface RANAP signalling)	6.0.0	6.1.0
Mar 2005	S_27	SP-050043	003	--	Clarification on starting/stopping a Trace Recording Session in an RNC	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	004	--	Removal of Vendor Specific (VS) extensions from Trace control and configuration parameters	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	005	--	Correct the list of interfaces trace parameter	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	006	--	Clarify the Trace Session activation in CS/PS domain for SBA and MBA cases	6.1.0	6.2.0

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CHANGE REQUEST

⌘ 32.422 CR 0013 ⌘rev - ⌘ Current version: 6.2.0 ⌘

*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:	⌘	PS Domain Trace Recording Session starting mechanisms – Signalling Based
Source:	⌘	SA5 Vodafone (Nico.Gabriele@vodafone.com)
Work item code:	⌘	OAM-Trace
Date:	⌘	13/05/2005
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one 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 one of the following releases:

Ph2	*(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)*
Rel-7	*(Release 7)*

Reason for change:	⌘	To be able to start a Trace Recording Session via the signalling system.
Summary of change:	⌘	For the signalling based activation case, the BM-SC network element is added in the description of the PS Domain Trace Recording Session starting mechanisms.
Consequences if not approved:	⌘	MBMS tracing will not be possible. The operator will not be able to troubleshoot a possible subscription and equipment misoperation relating to MBMS services.

Clauses affected:	⌘	4.2.3.2			
Other specs affected:	⌘	**Y**	**N**		
			X	Other core specifications	⌘
			X	Test specifications	
		X		O&M Specifications	TS 32.421 v6.6.0, TS 32.423 v6.1.0
Other comments:	⌘				

********** MODIFIED CLAUSE **********

4.2.3 Starting a trace recording session - signalling based

4.2.3.1 UTRAN starting mechanisms

In an RNC the Trace Recording Session will always be the same as the Trace Session as no triggering events are defined in UTRAN. Therefore a Trace Recording Session should be started in an SRNC when the SRNC receives the CN_INVOKE_TRACE message from the Core Network and if some activities have been started on the interfaces that have been requested to be traced. If the SRNC receives a second CN_INVOKE_TRACE message from the CN with the same Trace Reference that have been received in the first CN_INVOKE_TRACE message, a new Trace Recording Session should not be started as it is already started.

The CN_INVOKE_TRACE message that is received from the Core Network (MSC Server or SGSN) contains the following information:

- Trace Reference
- UE identity (IMSI or IMEI(SV)
- Trace Recording Session Reference
- Trace Depth for RNC
- List of interfaces for RNC

If the SRNC does not have enough resources it may not start a Trace Recording Session.

The Trace Recording Session Reference shall be the same as received in the CN_INVOKE_TRACE message.

In a DRNC the Trace Recording Session should be started when the DRNC receives the IUR_INVOKE_TRACE message. If the DRNC does not have enough resources it may not start a Trace Recording Session.

The Trace Session is activated to the RNC by sending a CN_INVOKE_TRACE message from the CN (MSC Server or SGSN). When RNC receives the CN_INVOKE_TRACE message it should immediately start a Trace Session and a Trace Recording Session according to the trace control and configuration parameters received in the CN_INVOKE_TRACE message.

If there are not enough resources in RNC to start a Trace Recording Session, the RNC may reject to start a Trace Recording Session. However the RNC shall start the Trace Session.

In the case RNC receives multiple CN INVOKE TRACE messages for the same subscriber or equipment (e.g. simultaneous CS/PS connections):

- If the Trace Reference is equal to an existing one, a new trace session and trace recording session shall not be started;
- If the Trace Reference is not equal to an existing one, a new trace session and trace recording session may be started.

The following figure shows an example for a CS call how the Trace Session is activated to RNC. In the example it is assumed that there is no PS connection at all during the CS call.

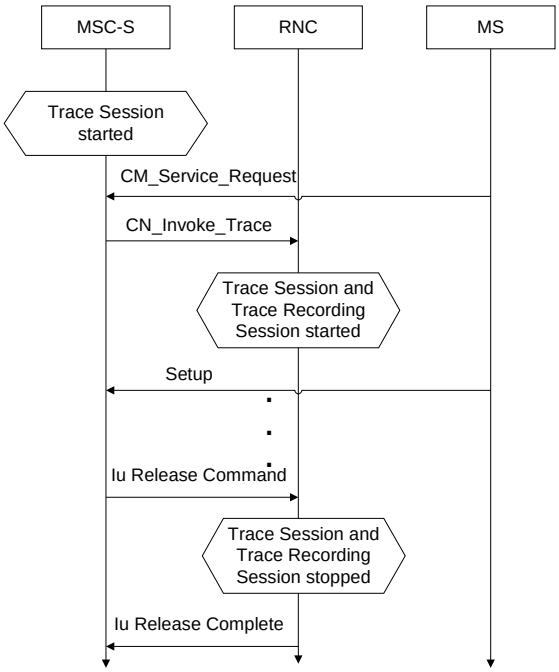

Figure: Starting a Trace Recording Session (Signalling) in UTRAN

Interaction with soft-handovers

If the subscriber or equipment, which is traced, makes a soft handover the SRNC should propagate the trace control and configuration parameters further to the DRNC by using the IUR_INVOKE_TRACE message. When the DRNC receives the IUR_INVOKE_TRACE message it should immediately start a Trace Session and a Trace Recording Session according to the trace control and configuration parameters received in the IUR_INVOKE_TRACE message.

If there are insufficient resources in the DRNC, the DRNC may not start a Trace Recording Session.

The Trace Recording Session Reference sent by the SRNC to the DRNC shall be the same what SRNC has received in the CN_INVOKE_TRACE message from the CN.

Interaction with Relocation

If the tracing shall continue also after the relocation has been performed, the CN Invoke Trace procedure shall be re-initiated from the CN towards the future SRNC after the Relocation Resource Allocation procedure has been executed successfully.

4.2.3.2 PS Domain starting mechanisms

In SGSN/GGSN/BM-SC a Trace Recording Session should start after the reception of a Trace Session Activation message and if any of the defined *start triggering events* occur. During the Trace Recording Session, the SGSN/GGSN/BM-SC shall record the signalling messages in the interfaces that are defined in the *list of interfaces* parameter. The *Trace Depth* parameter defines whether entire signalling messages or just some IEs need to be recorded.

The SGSN/GGSN/BM-SC may not start a Trace Recording Session if there are insufficient resources available for the recording.

In case of an established session, the SGSN may start the Trace Recording Session immediately after the reception of the Trace Session Activation message. However, if any of the start triggering events occurs in SGSN after receiving the Trace Session activation message, it shall start the Trace Recording.

When a Trace Recording Session is started in SGSN, it shall assign a Trace Recording Session Reference for the Trace Recording Session. When the SGSN propagates the Trace control and configuration parameters to GGSN or to UTRAN (I.e. activates a Trace Session in GGSN/UTRAN), it shall include the assigned Trace Recording Session Reference in the Trace Session Activation message. When an SGSN starts a Trace Recording Session and the list of NE types parameter requires GGSN tracing, it shall send the Trace Session activation message to GGSN. When a GGSN starts a

Trace Recording Session and the list of NE types parameter requires BM-SC tracing, it shall send a Diameter Gmb AAR message to the BM-SC in order to activate a Trace Session in the BM-SC. Also, when an SGSN starts a Trace Recording Session and the list of NE types parameter requires RNC tracing, it shall send the Trace Session activation message to the RNC. In both cases the Trace Session and the Trace Recording Session in the receiving NE should start at the same time.

In case of SRNS relocation the SGSN shall send the CN_INVOKE_TRACE message to the new SRNC after the successful Relocation Resource Allocation procedure.

SGSN has to find the identity of the mobile before it activates a Trace Session towards other NE. The IMEI(SV) can be got from the Mobile by using the Identification procedure on the Iu interface.

When the SGSN sends the Trace Session activation (CN_INVOKE_TRACE) message to RNC it shall include the following parameters to the message:

- IMSI or IMEI (SV) (M).
- Trace reference (M).
- Trace Recording Session Reference (M).
- Trace Depth (M).
- List of interfaces (O).

********** END OF MODIFICATIONS **********

Annex A (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Mar 2004	S_23	SP-040117	--	--	Submitted to TSG SA#23 for Information	1.0.0	
Sep 2004	S_25	SP-040543	--	--	Submitted to TSG SA#25 for Approval	2.0.0	6.0.0
Dec 2004	SA_26	SP-040770	001	--	Remove IMS entities from the Signalling Based Activation of the Trace functionality	6.0.0	6.1.0
Dec 2004	SA_26	SP-040770	002	--	Align Management Based Activation for Trace with RAN3's 25.413 (UTRAN Iu interface RANAP signalling)	6.0.0	6.1.0
Mar 2005	S_27	SP-050043	003	--	Clarification on starting/stopping a Trace Recording Session in an RNC	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	004	--	Removal of Vendor Specific (VS) extensions from Trace control and configuration parameters	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	005	--	Correct the list of interfaces trace parameter	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	006	--	Clarify the Trace Session activation in CS/PS domain for SBA and MBA cases	6.1.0	6.2.0

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CHANGE REQUEST

⌘ 32.422 CR 0014 ⌘rev - ⌘ Current version: 6.2.0 ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network X

Title:	⌘	PS Domain Trace Recording Session stopping mechanisms – Management Based
Source:	⌘	SA5 Vodafone (Nico.Gabriele@vodafone.com)
Work item code:	⌘	OAM-Trace
Date:	⌘	13/05/2004
Category:	⌘	B
Release:	⌘	Rel-6

Use one 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 one of the following releases:
Ph2 (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)
Rel-7 (Release 7)

Reason for change:	⌘	To be able to stop a Trace Recording Session via the management system.
Summary of change:	⌘	For the management based activation case, the BM-SC network element is added in the description of the PS Domain Trace Recording Session stopping mechanisms. A new figure, describing an example of stopping a Trace Recording Session for a MBMS Context, is added.
Consequences if not approved:	⌘	MBMS tracing will not be possible. The operator will not be able to troubleshoot a possible subscription and equipment misoperation relating to MBMS services.

Clauses affected:	⌘	4.2.4.2

Other specs affected:	⌘	Y	N		⌘
			X	Other core specifications	
			X	Test specifications	
		X		O&M Specifications	TS 32.421 v6.6.0, TS 32.423 v6.1.0

Other comments:	⌘	

********** MODIFIED CLAUSE **********

4.2.4 Stopping a trace recording session - management based

4.2.4.1 UTRAN stopping mechanisms

The Trace Recording Session in the RNC shall be stopped when the last connection, which belongs to the traced subscriber/mobile, is released.

4.2.4.2 PS Domain stopping mechanisms

In SGSN, ~~and~~ GGSN and BM-SC a Trace Recording Session shall be stopped when any of the defined stop triggering events occur. If Trace Session deactivation is received during the Trace Recording Session, the SGSN is allowed to finish tracing of the on-going procedures (e.g. session). In this case the Trace Recording Session shall be stopped between the reception of the Trace Session deactivation and the appropriate stop-triggering event.

The following figure illustrates the successful case in tracing a PDP context when a Trace Recording Session is stopped.

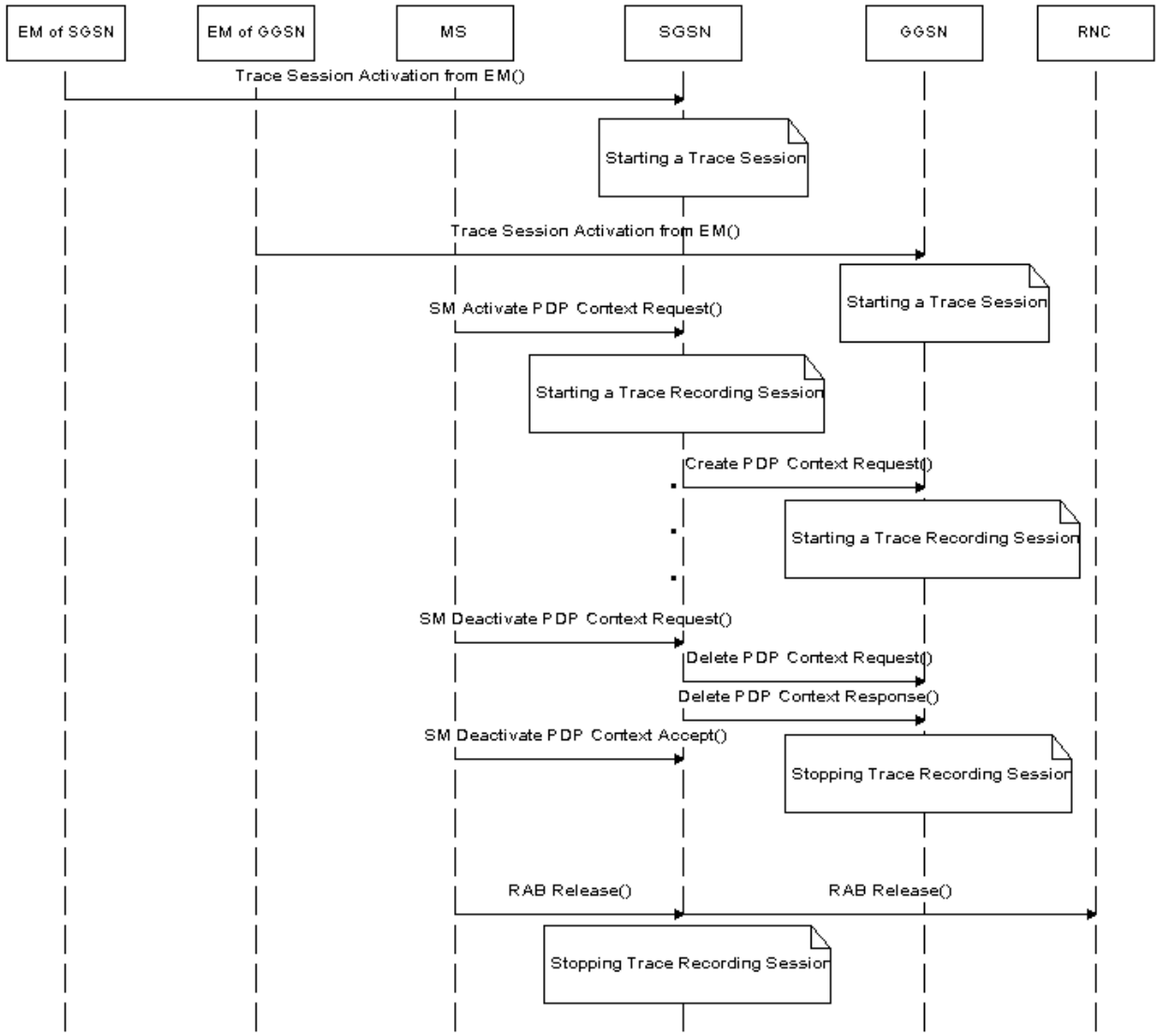

Figure: Stopping a Trace Recording Session for a PDP Context (Management Based) - PS domain

The following figure illustrates the successful case in tracing a MBMS context when a Trace Recording Session is stopped.

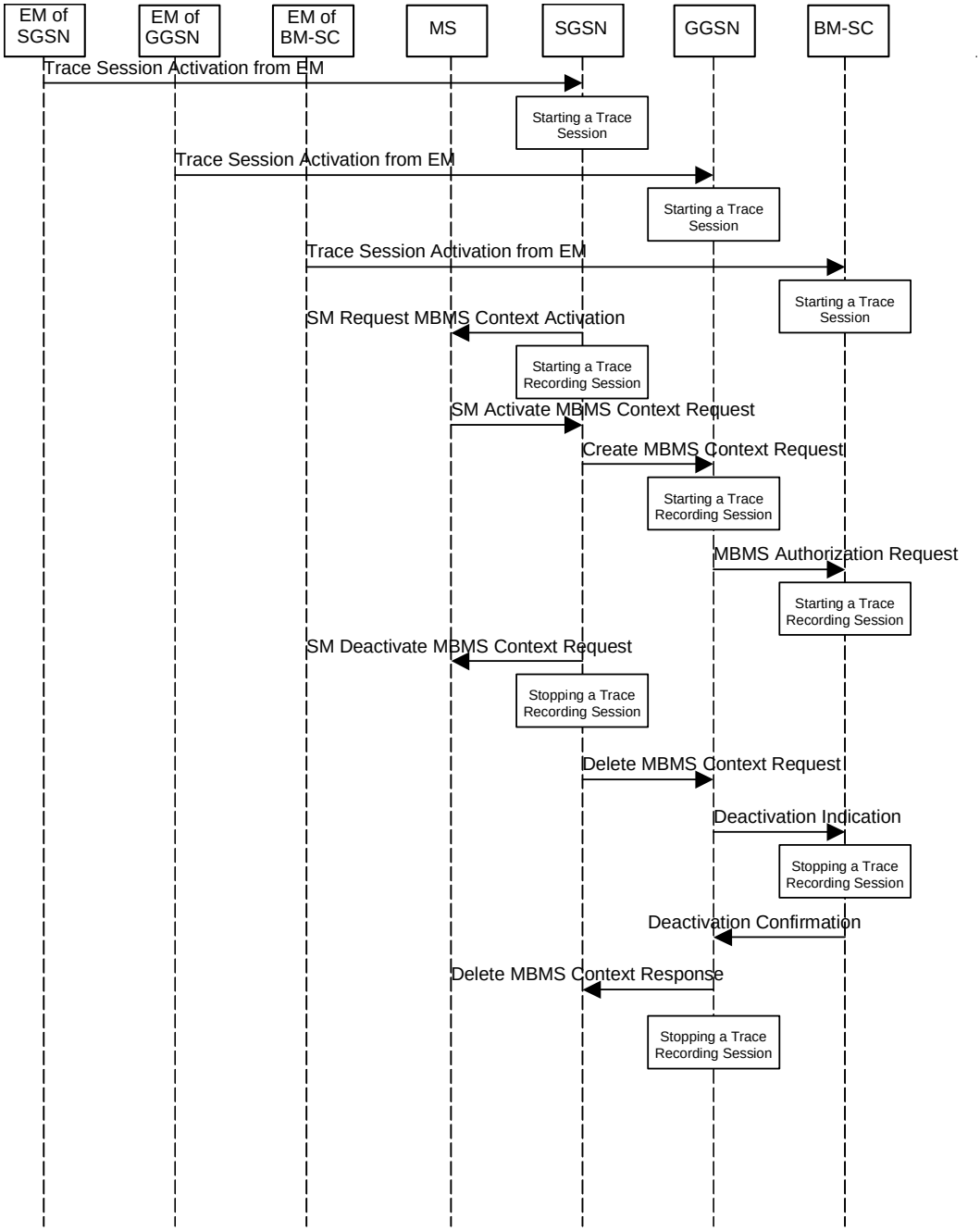

Figure: Stopping a Trace Recording Session for a MBMS Context (Management Based) - PS domain

********** END OF MODIFICATIONS **********

Annex A (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2004	S_23	SP-040117	--	--	Submitted to TSG SA#23 for Information	1.0.0	
Sep 2004	S_25	SP-040543	--	--	Submitted to TSG SA#25 for Approval	2.0.0	6.0.0
Dec 2004	SA_26	SP-040770	001	--	Remove IMS entities from the Signalling Based Activation of the Trace functionality	6.0.0	6.1.0
Dec 2004	SA_26	SP-040770	002	--	Align Management Based Activation for Trace with RAN3's 25.413 (UTRAN Iu interface RANAP signalling)	6.0.0	6.1.0
Mar 2005	S_27	SP-050043	003	--	Clarification on starting/stopping a Trace Recording Session in an RNC	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	004	--	Removal of Vendor Specific (VS) extensions from Trace control and configuration parameters	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	005	--	Correct the list of interfaces trace parameter	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	006	--	Clarify the Trace Session activation in CS/PS domain for SBA and MBA cases	6.1.0	6.2.0

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CHANGE REQUEST

⌘ **32.422** CR **0015** ⌘rev **-** ⌘ Current version: **6.2.0** ⌘

*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 **X**

Title:	⌘	PS Domain Trace Recording Session stopping mechanisms – Signalling Based
Source:	⌘	SA5 Vodafone (Nico.Gabriele@vodafone.com)
Work item code:	⌘	OAM-Trace
Date:	⌘	13/05/2005
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one 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 one of the following releases:
Ph2 *(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)*
Rel-7 *(Release 7)*

Reason for change:	⌘	To be able to stop a Trace Recording Session via the signalling system.
Summary of change:	⌘	A new reference to TS 23.246 needed for MBMS is added. For the signalling based activation case, the BM-SC network element is added in the description of the PS Domain Trace Recording Session stopping mechanisms. A new figure, describing an example of stopping a Trace Recording Session for a MBMS Context, is added.
Consequences if not approved:	⌘	MBMS tracing will not be possible. The operator will not be able to troubleshoot a possible subscription and equipment misoperation relating to MBMS services.

Clauses affected:	⌘	2, 4.2.5.2			
		Y	**N**		
Other specs affected:	⌘		**X**	Other core specifications	⌘
			X	Test specifications	
		X		O&M Specifications	TS 32.421 v6.6.0, TS 32.423 v6.1.0
Other comments:	⌘				

.

********** FIRST MODIFIED CLAUSE **********

2 References

The following documents contain provisions, which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document.*

[1] 3GPP TS 32.101: "Telecommunication management; Principles and high level requirements".

[2] 3GPP TS 32.421: "Telecommunication management; Subscriber and equipment trace: Trace concepts and requirements".

[3] 3GPP TS 32.423: "Telecommunication management; Subscriber and equipment trace: Trace data definition and management".

[4] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[5] 3GPP TS 52.008: "Telecommunication management; GSM subscriber and equipment trace".

[6] 3GPP TS 23.060: "General Packet Radio Service (GPRS) Service description; Stage 2".

[7] 3GPP TS 23.205: "Bearer-independent circuit-switched core network; Stage 2".

[8] 3GPP TS 23.108: "Mobile radio interface layer 3 specification core network protocols; Stage 2 (structured procedures)".

[X] 3GPP TS 23.246: "Multimedia Broadcast/Multicast Service (MBMS) Architecture and Functional Description".

NOTE: Overall management principles are defined in 3GPP TS 32.101 [1].

********** END OF FIRST MODIFICATIONS **********

********** NEXT MODIFIED CLAUSE **********

4.2.5 Stopping a trace recording session - signalling based

4.2.5.1 UTRAN stopping mechanisms

In an RNC the Trace Recording Session will always be the same as the Trace Session as no triggering events are defined in UTRAN. Therefore a Trace Recording Session shall always be stopped in an RNC when the RNC deactivates the Trace Session. For more information on Trace Session deactivation in UTRAN see subclause 4.1.4.2.

4.2.5.2 PS Domain stopping mechanisms

A Trace Recording Session shall be stopped when the SGSN/GGSN/BM-SC detect any of the stop triggering events.

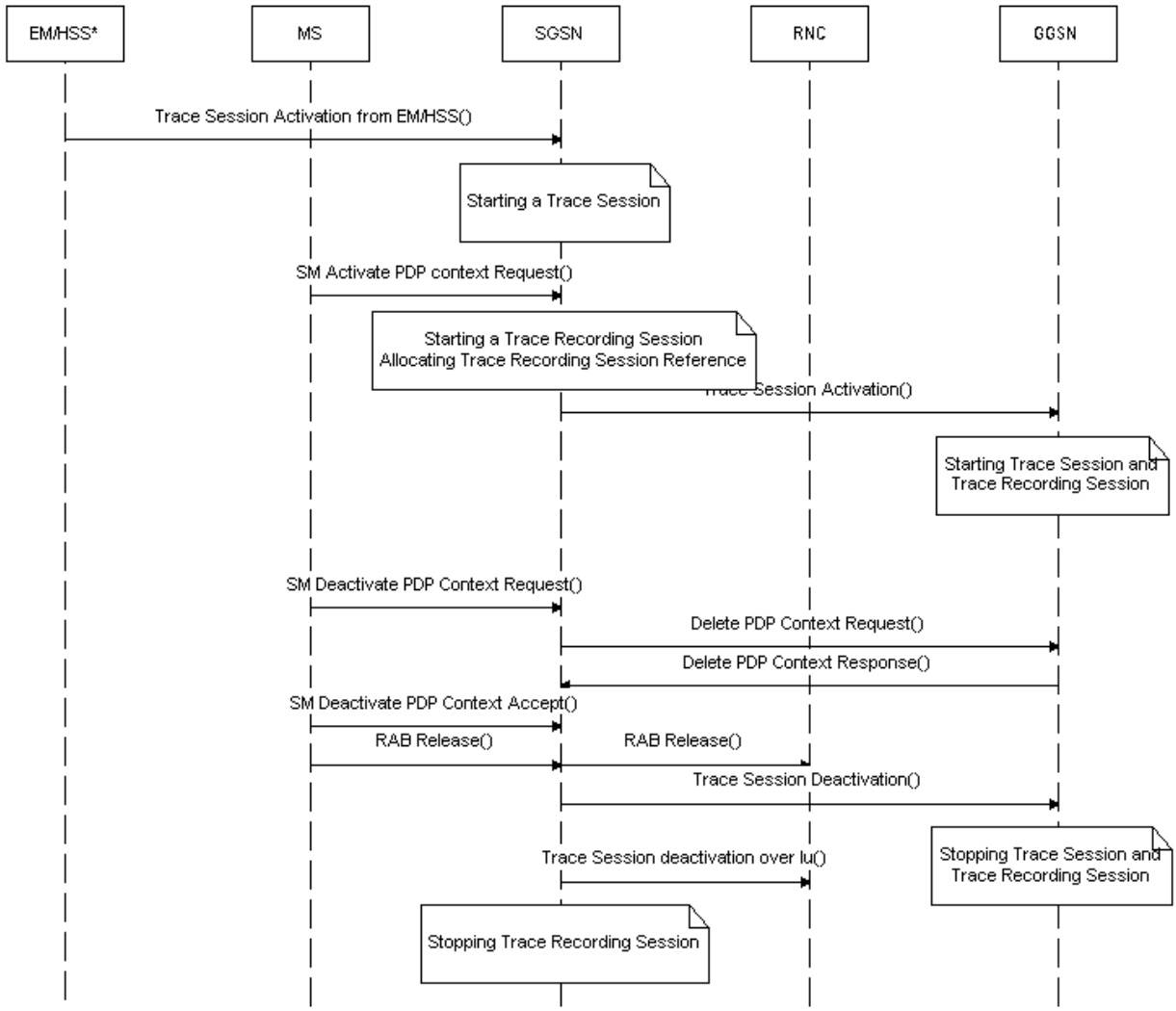
However, if a SGSN receives a Trace Session deactivation either from its EM (in case of tracing roaming subscribers) or from HSS (in case of tracing home subscribers) during an ongoing Trace Recording Session, it may stop it immediately or at any time until the occurrence of an appropriate stop-triggering event.

A GGSN shall stop a Trace Recording Session when it receives a Trace Session deactivation message from the SGSN or at any time until the occurrence of an appropriate stop-triggering event.

A BM-SC shall stop a Trace Recording Session when it receives a Diameter Gmb STR message from the GGSN or at any time until the occurrence of an appropriate stop-triggering event.

When a Trace Recording Session is stopped in a SGSN, the SGSN shall send a Trace Session deactivation message to the NEs where tracing was required, as defined in the "List of NE types" configuration parameter, received in the Trace Session activation message. The Trace Reference, used for the deactivation procedure, shall be the same as used in the SGSN for the activation of the Trace Session.

The following figure illustrates a successful case in tracing a PDP context, when a Trace Recording Session is stopped. (Reference 3GPP TS 23.060 [6].)



NOTE: The activation to SGSN can come from EM-SGSN (in the figure just EM) or from the HSS.

Figure: Stopping a Trace Recording Session for a PDP Context (Signalling based) - PS domain

The following figure illustrates a successful case in tracing a MBMS context, when a Trace Recording Session is stopped. (Reference 3GPP TS 23.246 [X].)

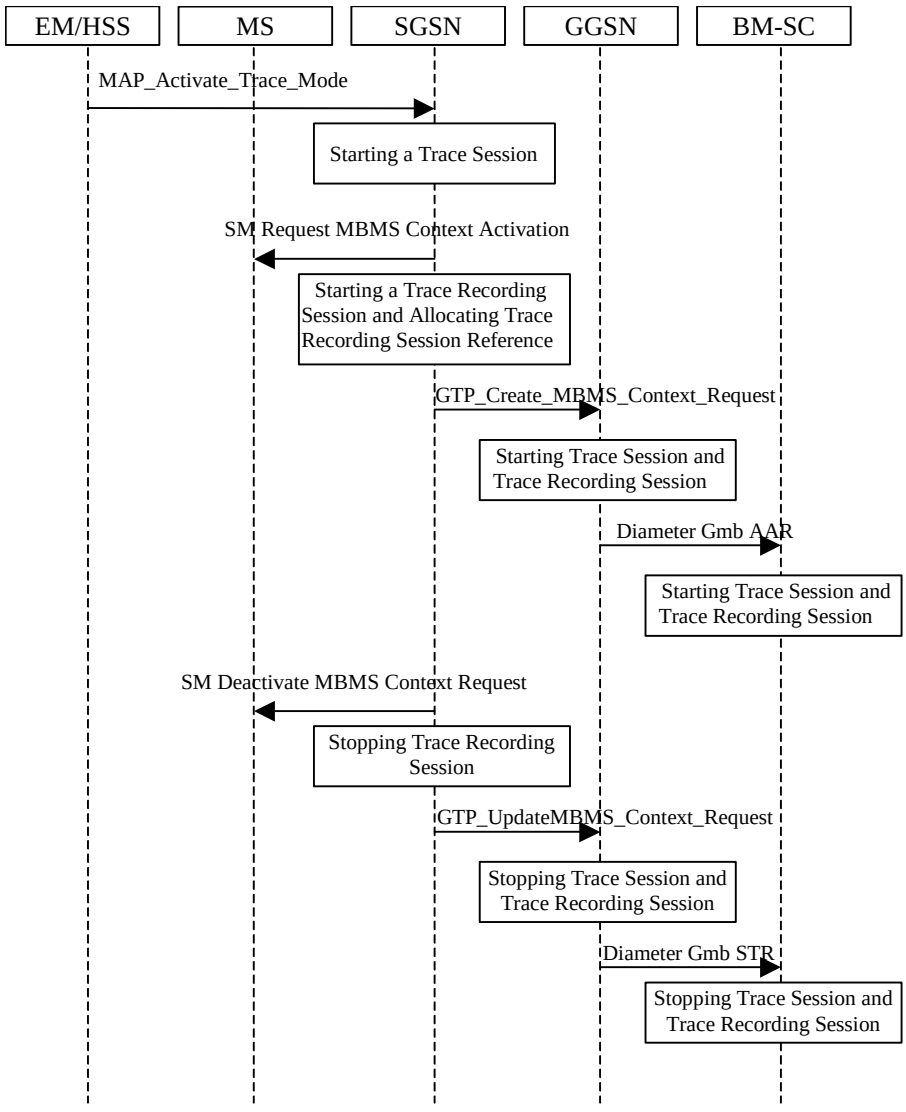


Figure: Stopping a Trace Recording Session for a MBMS Context (Signalling based) - PS domain

********** END OF MODIFICATIONS **********

Annex A (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2004	S_23	SP-040117	--	--	Submitted to TSG SA#23 for Information	1.0.0	
Sep 2004	S_25	SP-040543	--	--	Submitted to TSG SA#25 for Approval	2.0.0	6.0.0
Dec 2004	SA_26	SP-040770	001	--	Remove IMS entities from the Signalling Based Activation of the Trace functionality	6.0.0	6.1.0
Dec 2004	SA_26	SP-040770	002	--	Align Management Based Activation for Trace with RAN3's 25.413 (UTRAN Iu interface RANAP signalling)	6.0.0	6.1.0
Mar 2005	S_27	SP-050043	003	--	Clarification on starting/stopping a Trace Recording Session in an RNC	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	004	--	Removal of Vendor Specific (VS) extensions from Trace control and configuration parameters	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	005	--	Correct the list of interfaces trace parameter	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	006	--	Clarify the Trace Session activation in CS/PS domain for SBA and MBA cases	6.1.0	6.2.0

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CHANGE REQUEST

⌘ **32.422** CR **0017** ⌘rev **-** ⌘ Current version: **6.2.0** ⌘

*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 **X**

Title:	⌘	Correcting Trace Session activation message names
Source:	⌘	SA5 (Nokia – Gyula.bodog@nokia.com)
Work item code:	⌘	OAM-Trace
Date:	⌘	13/05/2005
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one 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 one of the following releases:
Ph2 *(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)*
Rel-7 *(Release 7)*

Reason for change:	⌘	To name the trace session activation messages as defined by CN4
Summary of change:	⌘	The exact signalling message names have been added for Trace Session activation for SBA.
Consequences if not approved:	⌘	The Specification remain ambigious

Clauses affected:	⌘	2, 4.1.2.5, 4.1.2.6

Other specs affected: ⌘

Y	N	
	X	Other core specifications
	X	Test specifications
	X	O&M Specifications

⌘

Other comments: ⌘

Change in Clause 2

[1] 3GPP TS 32.101: "Telecommunication management; Principles and high level requirements".

[2] 3GPP TS 32.421: "Telecommunication management; Subscriber and equipment trace: Trace concepts and requirements".

[3] 3GPP TS 32.423: "Telecommunication management; Subscriber and equipment trace: Trace data definition and management".

[4] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[5] 3GPP TS 52.008: "Telecommunication management; GSM subscriber and equipment trace".

[6] 3GPP TS 23.060: "General Packet Radio Service (GPRS) Service description; Stage 2".

[7] 3GPP TS 23.205: "Bearer-independent circuit-switched core network; Stage 2".

[8] 3GPP TS 23.108: "Mobile radio interface layer 3 specification core network protocols; Stage 2 (structured procedures)".

[x] 3GPP TS 29.232: “Media Gateway Controller (MGC) - Media Gateway (MGW); interface; Stage 3”

[y] 3GPP TS 29.002: “Mobile Application Part (MAP) specification;”

End of Change in Clause 2

Change in Clause 4.1.2.5

The following figure shows the Trace Session activation in the PS domain. The figure is an example of tracing PDP context.

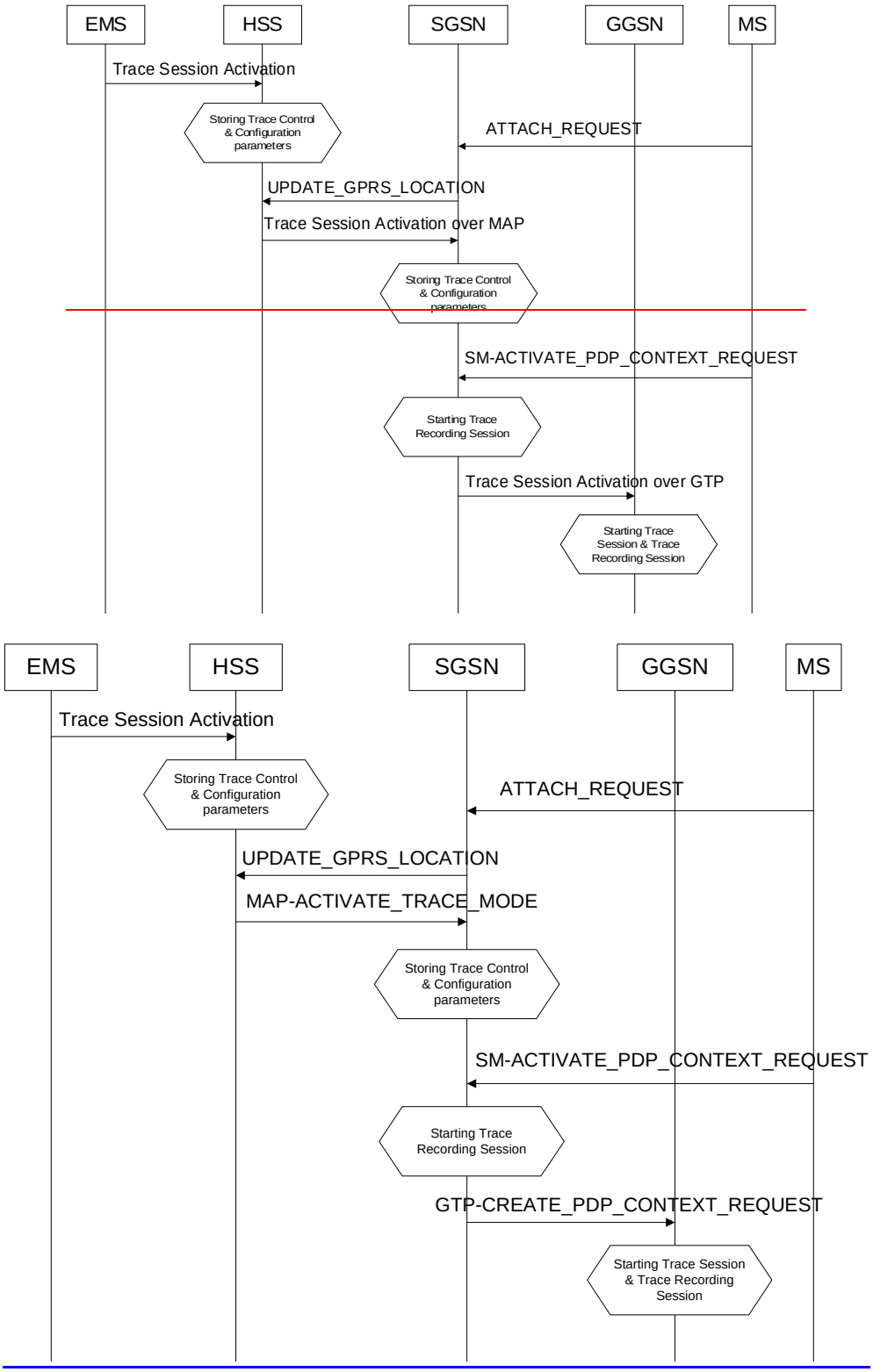


Figure: Trace session activation in PS domain

When HSS receives a Trace Session activation from its EMS, it shall store the received trace control and configuration parameters.. At this point a Trace Session shall be started in the HSS.

When a MS registers with the network by sending an ATTACH_REQUEST message to the SGSN, it updates the location information in the HSS by sending the UPDATE_GPRS_LOCATION message to the HSS. The HSS checks if the MS is being traced. If it is being traced, the HSS shall propagate the trace control and configuration parameters to the SGSN by sending a MAP-ACTIVATE_TRACE_MODE [y]~~Trace Session Activation~~ message to the SGSN. When

an inter-SGSN routing area update occurs, HSS shall send the MAP-ACTIVATE_TRACE_MODE~~Trace Session Activation~~ message to the new SGSN.

When SGSN receives the MAP-ACTIVATE_TRACE_MODE~~Trace Session activation~~ message it shall store the trace control and configuration parameters and shall start a Trace Session.

When any of the triggering events defined in the trace control and configuration parameters occur, (e.g. PS session is started (i.e. a ACTIVATE PDP CONTEXT REQUEST message is received from the MS)) the SGSN shall propagate the trace control and configuration parameters to the GGSN (by sending a GTP-CREATE_PDP_CONTEXT_REQUEST message) and to the radio network (by sending a RANAP-CN_INVOKE_TRACE message)~~ Trace Session activation message~~, if it is defined in the trace control and configuration parameters (NE types to trace). The Trace Session activation to UTRAN is described in clauses 4.1.2.4.

When HSS sends the MAP-ACTIVATE_TRACE_MODE ~~Trace Session activation~~ message to SGSN it shall include the following parameters to the message:

- IMSI or IMEI (SV) (M).
- Trace reference (M).
- Triggering events for SGSN (M) and GGSN (M).
- Trace Depth for SGSN (M), GGSN (M) and RNC (M).
- List of NE types to trace (M).
- List of interfaces for SGSN (O), GGSN (O) and/or RNC (O).

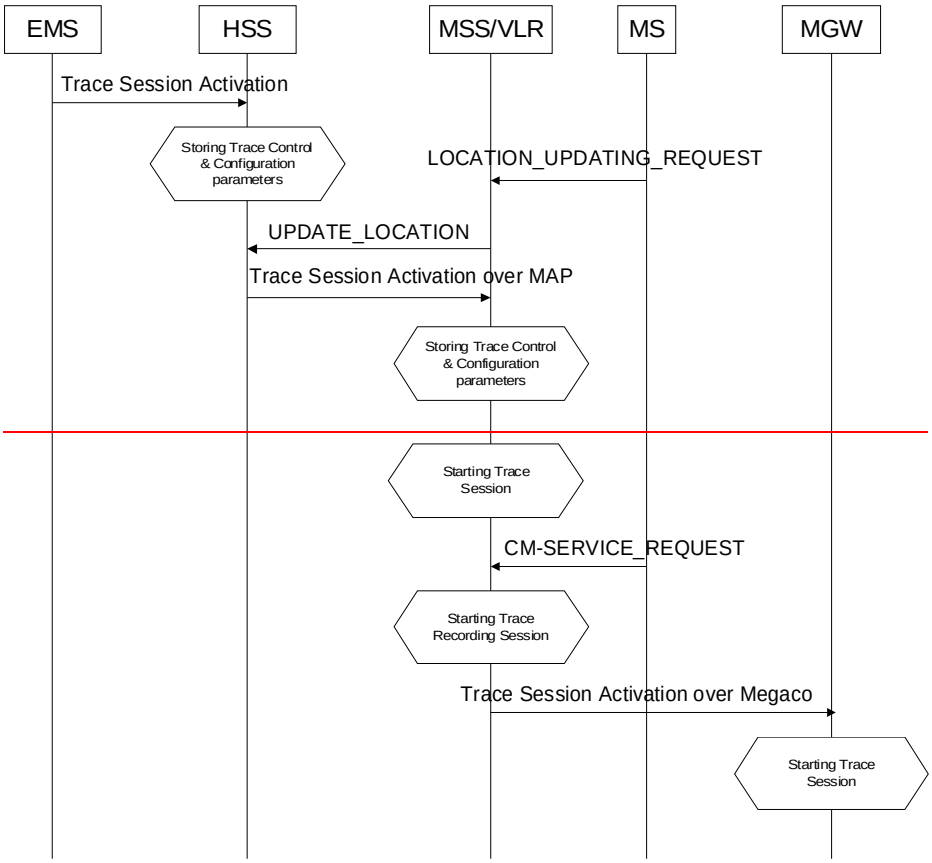
When the SGSN sends the GTP-CREATE_PDP_CONTEXT_REQUEST ~~Trace Session activation~~ message to GGSN it shall include the following parameters to the message:

- IMSI or IMEI (SV) (M).
- Trace reference (M).
- Trace Recording Session Reference (M).
- Triggering events for GGSN (M).
- Trace Depth for GGSN (M).
- List of interfaces for GGSN (O).

End of Change in Clause 4.1.2.5

Change in Clause 4.1.2.6

The following figure shows the Trace Session activation in the CS domain. The figure is an example of tracing Mobile Originating Call.



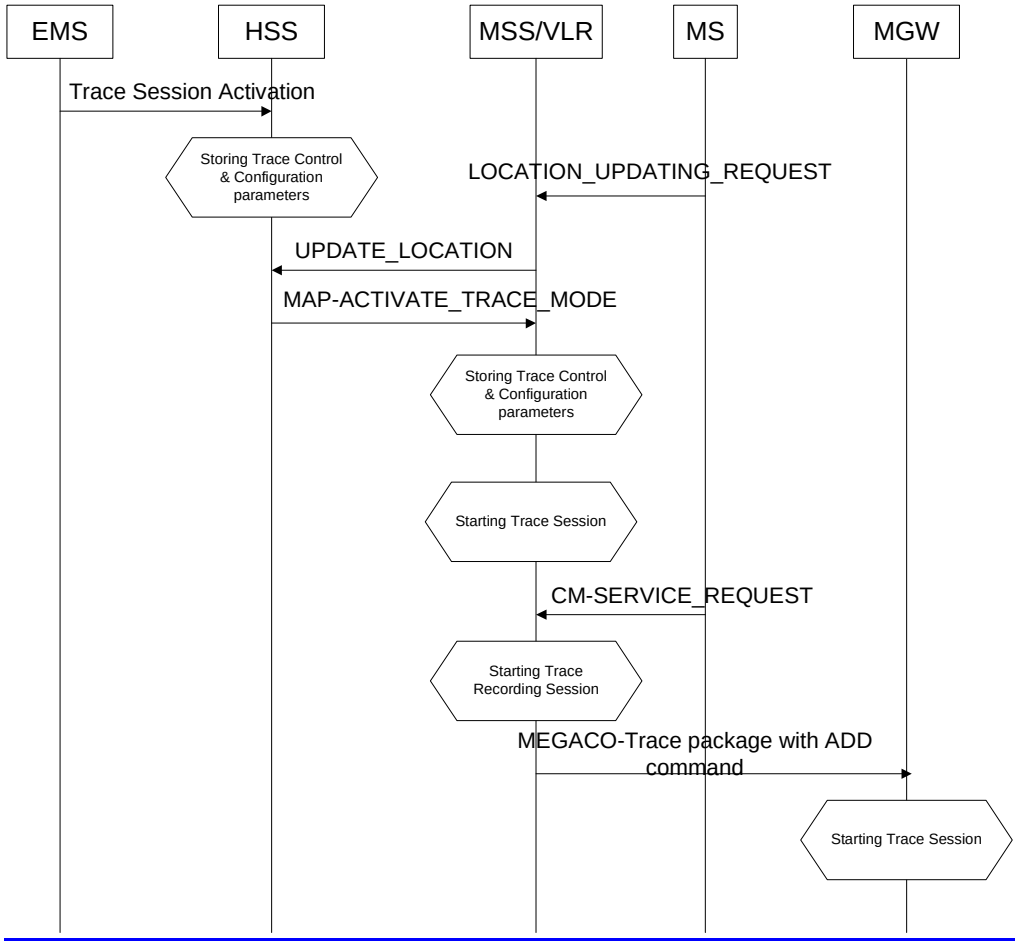


Figure: Trace Session Activation in CS domain

When HSS receives Trace Session activation from the EMS it should store the trace control and configuration parameters associated to the Trace Session.

If the MS registers to the network, by sending a LOCATION UPDATING REQUEST message to the MSC/VLR, the MSC Server/VLR updates the location information in the HSS by sending the MAP-UPDATE_LOCATION message to the HSS. After receiving the UPDATE_LOCATION message HSS shall propagate the trace control and configuration parameters by sending a MAP-ACTIVATE_TRACE_MODE ~~Trace Session Activation~~ message to the MSC Server/VLR.

When the MSC Server/VLR receives the MAP-ACTIVATE_TRACE_MODE~~a Trace Session activation~~ message from the HSS, it shall store the trace control and configuration parameters.

When any of the triggering event, defined in the trace control and configuration parameters, occurs (e.g. in case of Mobile Originating Call is started (i.e. the MSC Server receives the CM_SERVICE_REQUEST message with service type set to originating call establishment)) the MSC Server should propagate the trace control and configuration parameters to the MGW (by sending and ADD command with a trace package [x]) and to the radio network if it is defined in the trace control and configuration parameters (NE types to trace). Trace Session activation for UTRAN is described in clauses 4.1.2.4. In case of inter-MSC Server handover the MSC Server-A should propagate the trace control and configuration parameters to the MSC Server-B.

When HSS sends the MAP-ACTIVATE_TRACE_MODE~~Trace Session activation~~ message to MSC Server it shall include the following parameters to the message:

- IMSI or IMEI (SV) (M).
- Trace reference (M).
- Triggering events for MSC Server (M) and MGW (M) .
- Trace Depth for MSC Server (M), MGW (M) and RNC (M)..

- List of NE types to trace (M).
- List of interfaces for MSC Server (O), MGW (O) and/or RNC (O).

When the MSC Server sends the ADD command with trace package ~~Trace Session activation message~~ to MGW it shall include the following parameters to the message:

- IMSI or IMEI (SV) (M).
- Trace reference (M).
- Trace Recording Session Reference (M).
- Triggering events for MGW (M).
- Trace Depth for MGW (M).
- List of interfaces for MGW (O).

End of Change in Clause 4.1.2.6

Annex A (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2004	S_23	SP-040117	--	--	Submitted to TSG SA#23 for Information	1.0.0	
Sep 2004	S_25	SP-040543	--	--	Submitted to TSG SA#25 for Approval	2.0.0	6.0.0
Dec 2004	SA_26	SP-040770	001	--	Remove IMS entities from the Signalling Based Activation of the Trace functionality	6.0.0	6.1.0
Dec 2004	SA_26	SP-040770	002	--	Align Management Based Activation for Trace with RAN3's 25.413 (UTRAN Iu interface RANAP signalling)	6.0.0	6.1.0
Mar 2005	S_27	SP-050043	003	--	Clarification on starting/stopping a Trace Recording Session in an RNC	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	004	--	Removal of Vendor Specific (VS) extensions from Trace control and configuration parameters	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	005	--	Correct the list of interfaces trace parameter	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	006	--	Clarify the Trace Session activation in CS/PS domain for SBA and MBA cases	6.1.0	6.2.0

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CHANGE REQUEST

⌘ **32.422** **CR** **0016** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

*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 **X** Core Network **X**

Title:	⌘	Correct figures titles
Source:	⌘	SA5 CATT (wangxuelong@datangmobile.cn)
Work item code:	⌘	OAM-Trace
Date:	⌘	08/04/2005
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one 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 one of the following releases:
Ph2 *(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)*
Rel-7 *(Release 7)*

Reason for change:	⌘	The figure is titled for Trace session deactivation in PS domain, but, in fact, it is applicable to UTRAN Trace session deactivation.
Summary of change:	⌘	Correct figure titles
Consequences if not approved:	⌘	Ambiguity/source of confusion and errors

Clauses affected:	⌘	4.1.4.2

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	

Other comments:	⌘	

Change in Clause 4.1.4.2

4.1.4.2 UTRAN deactivation mechanisms

When RNC receives the CN_DEACTIVATE_TRACE message it shall deactivate the Trace Session for the indicated Trace Reference in the CN_DEACTIVATE_TRACE message. In case of simultaneous CS/PS connections, the trace session for the indicated trace reference shall be closed upon reception of the CN DEACTIVATE TRACE message from any of the CN domain, whether it was the one which initiated trace session activation or not.

The Trace Session is also deactivated in the RNC when the Iu connection to the Core Network is released.

If CN_INVOKE_TRACE message is received for only one Iu connection (either CS or PS) the Trace Session shall be deactivated in the RNC when the IU_RELEASE_COMMAND message is received from the Core Network for that Iu connection where the CN_INVOKE_TRACE message is sent.

The following figure shows this behaviour:

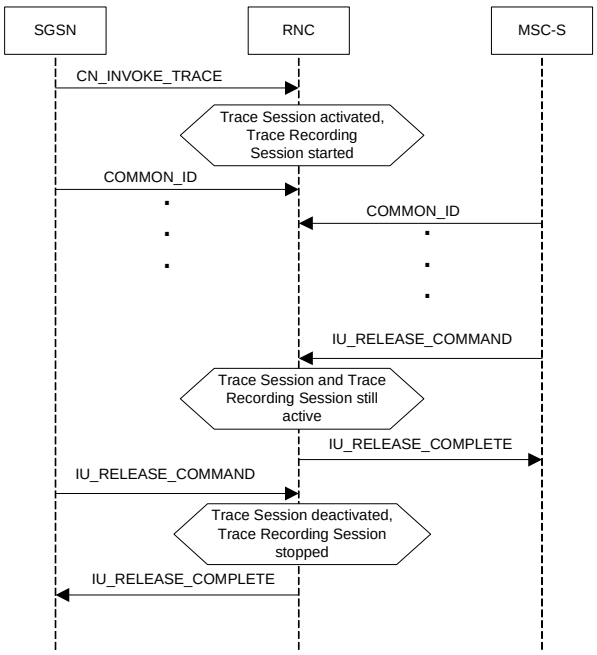

Figure: Trace session deactivation (Signalling) in UTRAN 1

If CN_INVOKE_TRACE message is received by the RNC for both Iu-CS and Iu-PS connection with the same Trace Reference number than the Trace Session shall not be deactivated in the RNC when any of the Iu connection is released (when the first IU_RELEASE_COMMAND message is received). The Trace Session shall be deactivated when the second Iu connection is released (the second IU_RELEASE_COMMAND message is received). The following figure shows the situation.

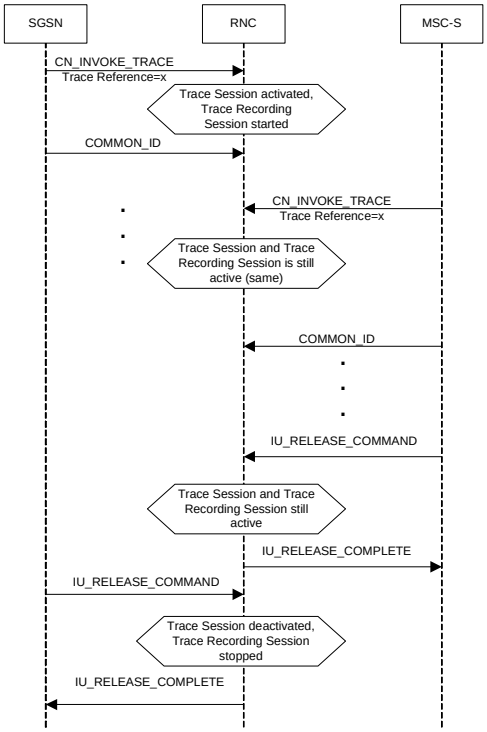

Figure: Trace session deactivation (Signalling) in ~~PS Domain~~ UTRAN 2

Interaction with Soft-handover

The Trace Session should be deactivated in a Drift RNC when the DRNC receives the IUR_DEACTIVATE_TRACE message or the Iur connection is released.

When an RNC deactivates a Trace Session the Trace Recording Session shall also be stopped at the same time.

NOTE: In RNC the Trace Session and the Trace Recording Session always the same.

End of Change in Clause 4.1.4.2

Annex A (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Mar 2005	S_27	SP-050043	004	--	Removal of Vendor Specific (VS) extensions from Trace control and configuration parameters	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	005	--	Correct the list of interfaces trace parameter	6.1.0	6.2.0
Mar 2005	S_27	SP-050043	006	--	Clarify the Trace Session activation in CS/PS domain for SBA and MBA cases	6.1.0	6.2.0