TSGS#27(05)0043

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	Ca	VerCr	Doc-2nd-Level	Workitem
SP-050043	32.421	007	--	Rel-6	Remove ambiguity on the file format for trace data at the Network Elemets (NEs)	F	6.5.0	S5-058148	OAM-Trace
SP-050043	32.421	008	--	Rel-6	Correction to the Scope	F	6.5.0	S5-058153	OAM-Trace
SP-050043	32.421	009	--	Rel-6	Correct the list of interfaces trace parameter – Align with 32.422 and 32.423	F	6.5.0	S5-058175	OAM-Trace
SP-050043	32.422	003	--	Rel-6	Clarification on starting/stopping a Trace Recording Session in an RNC	F	6.1.0	S5-058155	OAM-Trace
SP-050043	32.422	004	--	Rel-6	Removal of Vendor Specific (VS) extensions from Trace control and configuration parameters	F	6.1.0	S5-058176	OAM-Trace
SP-050043	32.422	005	--	Rel-6	Correct the list of interfaces trace parameter	F	6.1.0	S5-058177	OAM-Trace
SP-050043	32.422	006	--	Rel-6	Clarify the Trace Session activation in CS/PS domain for SBA and MBA cases	F	6.1.0	S5-058178	OAM-Trace
SP-050043	32.423	001	--	Rel-6	Add missing Media GateWay (MGW) trace record for the Nb-UP and Iu-UP interfaces	F	6.0.0	S5-058179	OAM-Trace

3GPP TSG-SA5 (Telecom Management) ***Tdoc ⌘S5-058148***
Meeting #41, Lisbon, PORTUGAL, 24 - 28 January 2005

CR-Form-v7.1

CHANGE REQUEST

⌘ **32.421** **CR** **007** ⌘ **rev** **-** ⌘ Current version: **6.5.0** ⌘

*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:	⌘	Remove ambiguity on the file format for trace data at the Network Elemets (NEs)
Source:	⌘	**SA5** (XiongKangjian@zte.com.cn)
Work item code:	⌘	OAM-Trace
Date:	⌘	28/01/2005
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:	⌘	In clause 5.5 (bullet 2), there is an implicit requirement on the NEs to store Trace records in XML files. This puts a limitation on the vendor implementation for trace data transfer between the EM & NE for System Context A. It is felt that this is not the intention of that requirement.
Summary of change:	⌘	Clarify that the Trace records should be in XML files only on the Itf-N.
Consequences if not approved:	⌘	The specification remains ambiguous on the file format for trace data at the NEs and might lead to misinterpretations and wrong implementations.

Clauses affected:	⌘	5.5

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

⌘

Other comments: ⌘

Change in Clause 5.5

5.5 Requirements for Trace Data reporting

The high level requirements for Trace Data reporting, common to both Management activation/deactivation and Signalling based activation/deactivation, are as follows (Trace record contents, file formats and file transfer mechanisms are defined in 3GPP TS 32.423 [3]):

- Trace records should be generated in each NE where a Trace Session has been activated and a Trace Recording Session has been started.
- Format of the Trace records sent over Itf-N shall be XML based on the Schema in TS 32.423 [3].
- Trace records should be transferred on the Itf-N to the Network Manager using one of two approaches: direct transfer from NE to NM or transfer from NE to NM via EM.

For transfer of Trace records via Itf-N, FTP shall be used.

End of Change in Clause 5.5

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

3GPP TSG-SA5 (Telecom Management) ***Tdoc ⌘S5-058153***
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CHANGE REQUEST

⌘ **32.421** **CR** **008** ⌘ **rev** **-** ⌘ Current version: **6.5.0** ⌘

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

Title:	⌘	Correction to the Scope
Source:	⌘	SA5 (gyula.bodog@nokia.com)
Work item code:	⌘	OAM-Trace
Date:	⌘	28/01/2005
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 scope section contains incorrect references pointing to non-existing parts of the specification itself.
Summary of change:	⌘	Correct the references.
Consequences if not approved:	⌘	The specification is misleading and confusing.

Clauses affected:	⌘	1 (Scope)

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

Other comments: ⌘

Change in Clause 1

1 Scope

The present document describes the requirements for the management of Trace and the reporting of Trace data across UMTS networks as it refers to subscriber tracing (tracing of IMSI or Private ID) and MS tracing (tracing of IMEI or IMEISV). It defines the administration of Trace Session activation/deactivation by the Element Manager (EM) or the network itself via signalling, the generation of Trace results in the Network Elements (NEs) and the transfer of these results to one or more Operations Systems, i.e. EM(s) and/or Network Manager(s) (NM(s)).

The basic Subscriber and MS Trace concept that the present document is built upon is described in clause 4. The high level requirements for Trace data, Trace Session activation/deactivation and Trace reporting are defined in clause 5. Clause 5 also contains an overview of use cases for Trace (the use cases are described in Annex ~~B~~A). ~~Annex A provides a high level view of Trace functional architecture.~~ Trace control and configuration management are described in 3GPP TS 32.422 [2], and Trace data definition and management are described in 3GPP TS 32.423 [3].

End of Change in Clause 1
End of document

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

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CHANGE REQUEST

⌘ 32.422 CR 003 ⌘rev - ⌘ Current version: 6.1.0 ⌘

*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:	⌘	Clarification on starting/stopping a Trace Recording Session in an RNC
Source:	⌘	**SA5** (Gyula.bodog@nokia.com)
Work item code:	⌘	OAM-Trace
Date:	⌘	28/01/2005
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:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	There is no description when and how a Trace Recording Session should be started/stopped in UTRAN in case of MBA tracing.
Summary of change:	⌘	The missing information on starting/stopping Trace Recording Session in RNC is described
Consequences if not approved:	⌘	The specification will be ambigious for MBA tracing in the RNC.

Clauses affected:	⌘	Section 4.2.2.1, 4.2.3.1, 4.2.4.1

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

Other comments:	⌘	

Start Change

4.2.2.1 UTRAN starting mechanisms

~~Editor's Note: For further study.~~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 I~~e~~Es 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.

End of change

Start Change

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.

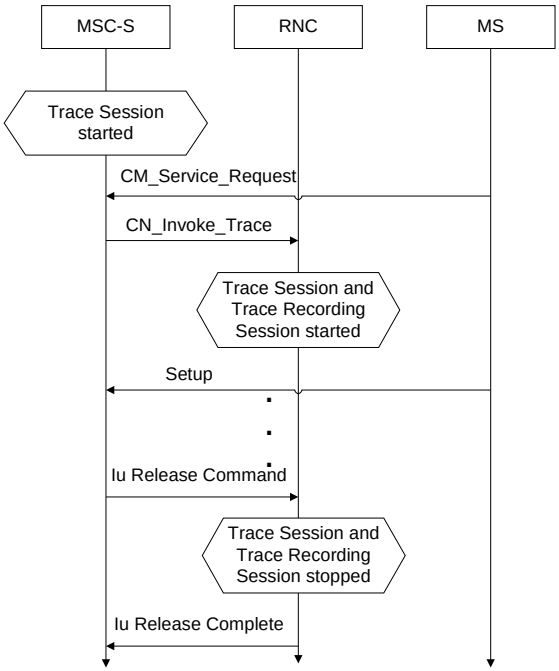

Figure 4.2.1: Starting a Trace Recording Session (Signalling) in UTRAN

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.

End of change

Start Change

4.2.4.1 UTRAN stopping mechanisms

~~Editor's Note: For further study.~~The Trace Recording Session in the RNC shall be stopped when the last connection, which belongs to the traced subscriber/mobile, is released.

End of change

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

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CHANGE REQUEST

⌘ 32.421 CR 009 ⌘rev - ⌘ Current version: 6.5.0 ⌘

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

Title:	⌘	Correct the list of interfaces trace parameter – Align with 32.422 and 32.423
Source:	⌘	**SA5** (Gyula.bodog@nokia.com)
Work item code:	⌘	OAM-Trace
Date:	⌘	28/01/2005
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:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	To get consistent specification with the TS 32.422 and TS 32.423.
Summary of change:	⌘	The interface to be traced has been modified to reflect the changes made in 32.422 and in 32.423.
Consequences if not approved:	⌘	The specification will not be consistent with the other trace specifications.

Clauses affected:	⌘	5.2

		Y	N			
Other specs affected:	⌘		X	Other core specifications	⌘	
			X	Test specifications		
		X		O&M Specifications		32.422 V6.1.0

Other comments:	⌘	

Change in Clause 5.2

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: ~~ATM, IP and TDM interfaces for user plane characteristics~~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 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.
- 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].

Change in Clause 5.2

Annex A (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

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CHANGE REQUEST

⌘ 32.422 CR 004 ⌘rev - ⌘ Current version: 6.1.0 ⌘

*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:	⌘	Removal of Vendor Specific (VS) extensions from Trace control and configuration parameters
Source:	⌘	**SA5** (Gyula.bodog@nokia.com)
Work item code:	⌘	OAM-Trace
Date:	⌘	28/01/2005
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:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	It's not clear how and for what purpose the VS field of the trace parameters should be used.
Summary of change:	⌘	Remove the VS fields from the Trace control and configuration parameters.
Consequences if not approved:	⌘	The specification is ambiguous on the meaning of VS extensions in case of different trace control and configuration parameters.

Clauses affected:	⌘	5

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

Other comments: ⌘

Change in Clause 5

5 Trace control and configuration parameters

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
~~Vendor Specific extensions~~	~~Vendor Specific extension~~	~~Vendor Specific extension~~

MGW	Start triggering events	Stop triggering events
Context	Reception of Megaco-ADD command, or reception of Megaco MODIFY command	Sending of Megaco- EXTRACT reply
~~Vendor specific extensions~~	~~Vendor specific extension~~	~~Vendor specific extension~~

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
~~Vendor specific extensions~~	~~Vendor specific extension~~	~~Vendor specific extension~~

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
~~Vendor specific extensions~~	~~Vendor specific extension~~	~~Vendor specific extension~~

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

Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1
MSC Server							
MGW							
SGSN							
GGSN							
spare							
spare							

MSC Server							
Bit 8	**Bit 7**	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**
spare		~~Vendor specific~~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						~~Vendor Specific~~spare	Context

SGSN							
Bit 8	**Bit 7**	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**
spare				~~Vendor Specific~~spare	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						~~Vendor Specific~~spare	PDP Context

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.
~~Vendor Specific data~~	~~Recording of any vendor specific trace data outside the scope of this specification.~~

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 ~~and~~

~~4 Vendor specific~~

End of Change in Clause 5

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

CR-Form-v7

CHANGE REQUEST

⌘ 32.422 CR 005 ⌘rev - ⌘ Current version: 6.1.0 ⌘

*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:	⌘	Correct the list of interfaces trace parameter
Source:	⌘	**SA5** (Gyula.bodog@nokia.com)
Work item code:	⌘	OAM-Trace
Date:	⌘	28/01/2005
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:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	To get consistent specification with the TS 32.421 and TS 32.423.
Summary of change:	⌘	The list of interfaces in Media GateWay (MGW) has been corrected.
Consequences if not approved:	⌘	The specification will not be consistent with the other trace specifications.

Clauses affected:	⌘	5.4				
		Y	**N**			
Other specs affected:	⌘		X	Other core specifications	⌘	
			X	Test specifications		
		X		O&M Specifications		32.421 V6.5.0
Other comments:	⌘					

Change in Clause 5.4

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: ~~ATM, IP and TDM interfaces for user plane characteristics~~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 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.

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

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						Gi	Gn

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

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 Change in Clause 5.4

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

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CHANGE REQUEST

⌘ 32.422 CR 006 ⌘rev - ⌘ Current version: 6.1.0 ⌘

*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:	⌘	Clarify the Trace Session activation in CS/PS domain for SBA and MBA cases
Source:	⌘	**SA5** (Gyula.bodog@nokia.com)
Work item code:	⌘	OAM-Trace
Date:	⌘	28/01/2005
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:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	To clarify the requirements needed for Trace Session activation/deactivation in CS and PS domain
Summary of change:	⌘	Trace paramters are defined more accurately for Trace Session activation and described when TS deactivation is needed towards GGSN, RNC, MGW.
Consequences if not approved:	⌘	The TS will not be clear enough for other 3GPP WGs.

Clauses affected:	⌘	4.1.3.5, 4.1.3.6, 4.1.5.3, 5.1.5.4, 4.2.2.2, 4.2.2.3.

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

Other comments: ⌘

Start Change

4.1.3.5 PS Domain activation mechanisms

Figure 4.1.5 shows the Trace Session activation in the PS domain. The figure is an example of tracing PDP context.

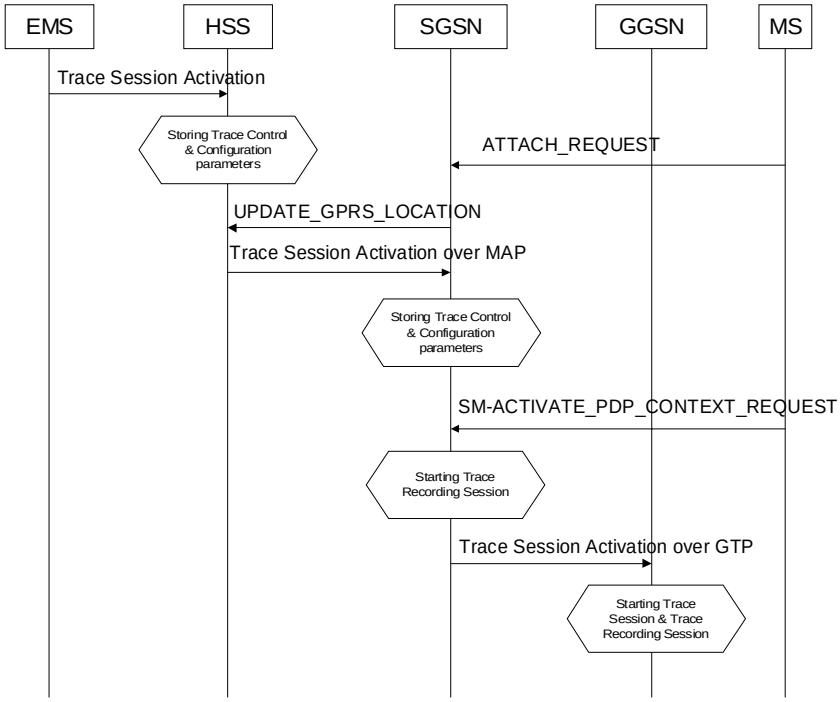

Figure 4.1.5: Trace session activation in PS domain

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 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 sub clauses 4.1.3.4.

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 ~~(M) at least for~~ SGSN (M) and~~,~~ GGSN (M) ~~and RNC~~.
- Trace Depth ~~(M) at least~~ for SGSN (M), GGSN (M) and RNC (M).

- List of NE types to trace (M).
- List of interfaces ~~(O) at least~~ 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 ~~(M)~~ for GGSN (M).
- Trace Depth ~~(M)~~ for GGSN (M).
- List of interfaces ~~(O)~~ for GGSN (O).

4.1.3.6 CS Domain activation mechanisms

Figure 4.1.6 shows the Trace Session activation in the CS domain. The figure is an example of tracing Mobile Originating Call.

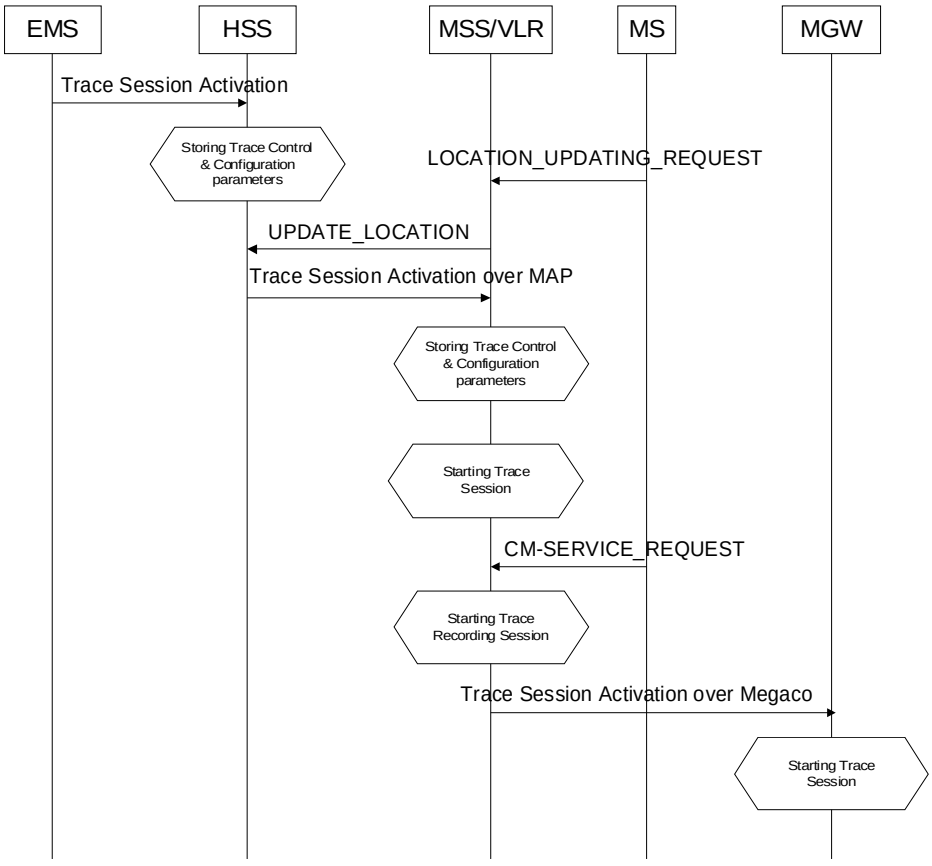

Figure 4.1.6: Trace Session Activation in CS domain

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 Trace Session Activation message to the MSC Server/VLR.

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

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 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 sub clauses 4.1.3.4. 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 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 ~~(M) at least~~ for MSC Server (M) and~~,~~ MGW (M) ~~and RNC~~.
- Trace Depth ~~(M) at least~~ for MSC Server (M), MGW (M) and RNC (M)..
- List of NE types to trace (M).
- List of interfaces ~~(O) at least~~ for MSC Server (O), MGW (O) and/or RNC (O).

When the MSC Server sends the 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 ~~(M)~~ for MGW (M).
- Trace Depth ~~(M)~~ for MGW (M).
- List of interfaces ~~(O)~~ for MGW (O).

End of change

Start Change

4.1.5.3 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) may choose to continue the Trace Recording Session till it ends gracefully or may stop it immediately. In all cases, the SGSN/GGSN 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.

4.1.5.4 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.

End of change

Start Change

4.2.2.2 PS Domain starting mechanisms

In a SGSN/GGSN, 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 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 for at least those connections, which shall be traced.

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

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

When a Trace Recording Session is started, the SGSN/GGSN 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.

End of change

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

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CHANGE REQUEST

⌘ 32.423 CR 001 ⌘rev - ⌘ Current version: 6.0.0 ⌘

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

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

Title:	⌘	Add missing Media GateWay (MGW) trace record for the Nb-UP and Iu-UP interfaces
Source:	⌘	**SA5** (Gyula.bodog@nokia.com)
Work item code:	⌘	OAM-Trace
Date:	⌘	28/01/2005
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:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Add the missing trace record data in MGW interfaces.
Summary of change:	⌘	Trace record is added for the concerned interfaces.
Consequences if not approved:	⌘	The specification will not be complete.

Clauses affected:	⌘	4.3

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

Other comments: ⌘

Change in Clause 4.3

4.3 MGW Trace Record Content

The following table describes the trace record content for minimum and medium trace depth for Megaco protocol in the Media GateWay (MGW)~~MGW~~.

Interface name	Prot. name	IE name	Procedure name(s)	Trace depth		Notes
				Min	Med	
Mc	Megaco	Context	Every procedure where it appears	M	M	TS 23.205
		Bearer Termination 1	Every procedure where it appears	M	M	TS 23.205
		Bearer Termination 2	Every procedure where it appears	M	M	TS 23.205
		Bearer Characteristics	Establish Bearer	M	M	TS 23.205
		Destination Binding Reference	Establish Bearer	M	M	TS 23.205
		Destination Bearer Address	Establish Bearer	M	M	TS 23.205
		Sender Binding Reference	Prepare Bearer	M	M	TS 23.205
		Sender Bearer Address	Prepare Bearer	M	M	TS 23.205
		Codec	Prepare Bearer Modify Bearer Characteristics	M	M	TS 23.205
		Release Cause	Release Bearer Bearer Released	M	M	TS 23.205
Iu-UP, Nb-UP		Error Cause value	Every NACK message	M	M	TS 25.415
Iu-UP, Nb-UP		RFCI indicators	Rate control procedure	M	M	TS25.415
Iu-UP, Nb-UP		Local_Channel_Type	TFO_TRANS	M	M	TS 28.062
Iu-UP, Nb-UP		Indication whether <ENQUIRY> character is received by the CTM receiver	CTM availability negotiation	M	M	TS 26.226

End of Change in Clause 4.3

Annex A (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