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| **Source:** | **SA5 (Telecom Management)** |
| **Title:** | **Rel-6 CR 32.421 Correction in Trace high level architecture** |
| **Document for:** | **Decision** |
| **Agenda Item:** | **7.5.3** |

| Doc-1st-Level | Spec | CR | Rev | Phase | Subject | Cat | Version-Current | Doc-2nd-Level | Workitem |
|---|---|---|---|---|---|---|---|---|---|
| SP-040116 | 32.421 | 003 | - | Rel-6 | Correction in Trace high level architecture | F | 6.2.0 | S5-042156 | OAM-Trace |

*CR-Form-v7*

# CHANGE REQUEST

| ⌘ | **32.421** CR **003** | ⌘**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:*** | ⌘ | Correction in Trace high level architecture |
| ***Source:*** | ⌘ | **SA5** (robert.petersen@ericsson.com, mohanr@lucent.com ) |

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|---|---|---|---|---|---|
| ***Work item code:*** ⌘ | OAM-Trace | | ***Date:*** ⌘ | 27/02/2004 | |

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|---|---|---|---|
| ***Category:*** | ⌘ | **F** | ***Release:*** ⌘  Rel-6 |

Use <u>one</u> of the following categories:
**F** *(correction)*
**A** *(corresponds to a correction in an earlier release)*
**B** *(addition of feature),*
**C** *(functional modification of feature)*
**D** *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use <u>one</u> of the following releases:
2        (GSM Phase 2)
R96      (Release 1996)
R97      (Release 1997)
R98      (Release 1998)
R99      (Release 1999)
Rel-4    (Release 4)
Rel-5    (Release 5)
Rel-6    (Release 6)

| | | |
|---|---|---|
| ***Reason for change:*** | ⌘ | The definition of management activation and signalling activation is ambiguous on the point of how activation is performed. That is partly described in an informative annex. |
| ***Summary of change:*** | ⌘ | The annex A is proposed to be normative and moved into the body of the specification. The Trace architecture is aligned with the Telecommunication management architecture in 32.101. |
| ***Consequences if not approved:*** | ⌘ | The specification is ambiguous so that different WGs in 3GPP may come up with different solution for the same activation type. |

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|---|---|---|
| ***Clauses affected:*** | ⌘ | 3.1, 4, 5.4.1, 5.4.2 and Annex A |

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

| | | |
|---|---|---|
| ***Other comments:*** | ⌘ | |

**How to create CRs using this form:**

# 3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

**Mobile Station (MS):** term indicating Mobile Station and comparable to the terms Equipment and User Equipment

**management activation/deactivation:** Trace Session is activated/deactivated in different NEs directly from the EM using the management interfaces of those NEs

**signalling based activation/deactivation:** Trace Session is activated/deactivated in different NEs using the signalling interfaces between those elements so that the NEs may forward the activation/deactivation originating from the EM

**System Context:** Two different realisations of the Ttelecommunication mManagement Aarchitecture. System Context A has the Itf-N between a Network Manager and an Element Manger. System Context B has the Itf-N between a Network Manager and a Network Element that has an embedded eElement mManager. See Reffigure 1 in TS 32.101 [1] (figure 1).

**Trace:** general term used for Subscriber and Equipment Trace

**Trace record:** in the NE a Trace record is a set of Traceable data collected as determined by the Trace control and configuration parameters

**Trace Recording Session:** time interval within a Trace Session while trace records are generated for the subscriber or MS being traced.
The triggering events starting and stopping a Trace Recording Session are defined in 3GPP TS 32.422 [2] (figure 1).

**Trace Recording Session Reference:** identifies a Trace Recording Session within a Trace Session (see figure 1)
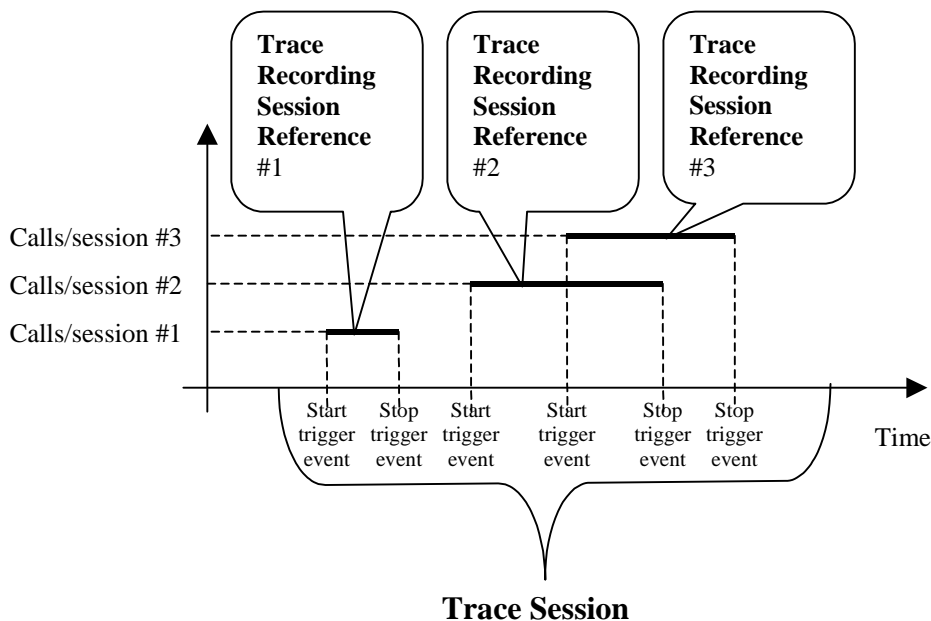


**Figure 1: Trace Recording Session**

**Trace Reference:** identifies a Trace Session and is globally unique (see figure 2)

**Trace Session:** time interval started with a Trace Session Activation and lasts until the Deactivation of that specific Trace Session (see figure 2)
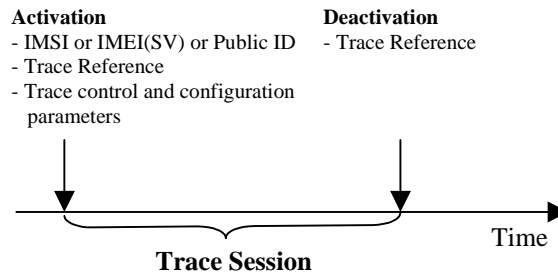
**Figure 2: Trace Session**

**Trace Parameter Configuration:** a technique whereby a request for tracing a certain subscriber or MS is sent by the EM to the network element for execution.

**Trace Parameter Propagation:** a technique by which the NE processes the trace configuration (received from the EM or another NE) and sends it to the relevant network element(s) via signaling interface(s).

**End of Change in Clause 3.1**

**Change in Clause 4**

# 4 Trace Concepts and High-level Architecture

## 4.1 Trace Concepts

The diversity of Trace requirements makes it difficult to identify and anticipate all the operator's specific needs. Thus, the objective of this TS is not to list an exhaustive set of information to meet all the requirements. Rather, Trace data is defined without any limitation on the 2 following dimensions:

- Trace scope: NEs and signalling interfaces to Trace.

- Trace depth: level of details of Trace data.

In order not to not have any limitation of Trace data, there are three levels of details defined: Maximum, Minimum and Medium. The Maximum Level allows all Trace data to be recorded. The Minimum and Medium Levels provide a decoded subset of the data in the Maximum Level and allow an operator the flexibility in selecting the appropriate Trace data to record.

The Trace Depth, specified at the Trace Session activation, is used to choose the level of detail of information to retrieve on the Itf-N.

The Maximum Level of detail allows for retrieval of signalling interface messages within the Trace Scope in encoded format (see figure 3).
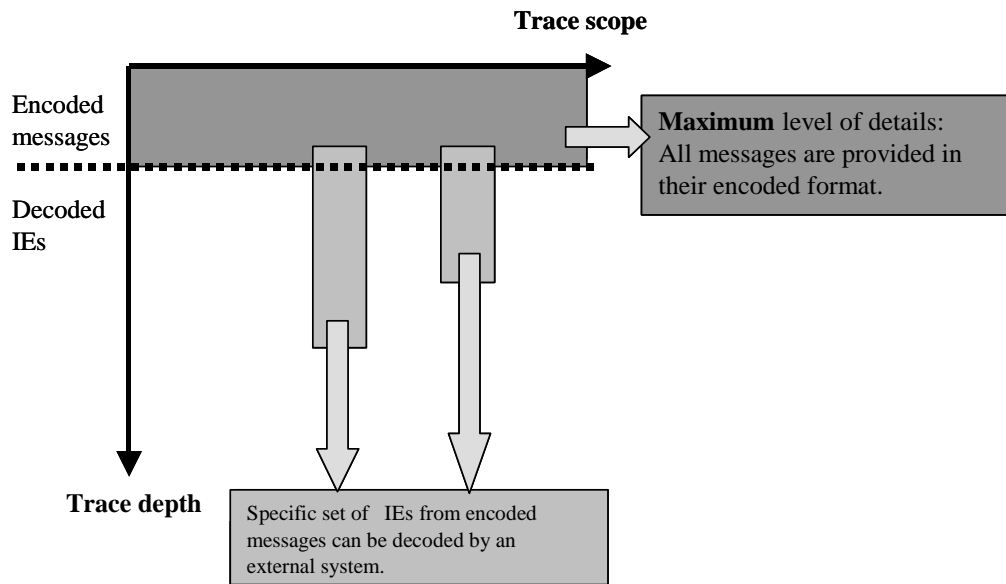
**Figure 3: Maximum Level of details of Trace**

The Minimum Level of detail allows for retrieval of a decoded subset of the IEs contained in the signalling interface messages (see figure 4).
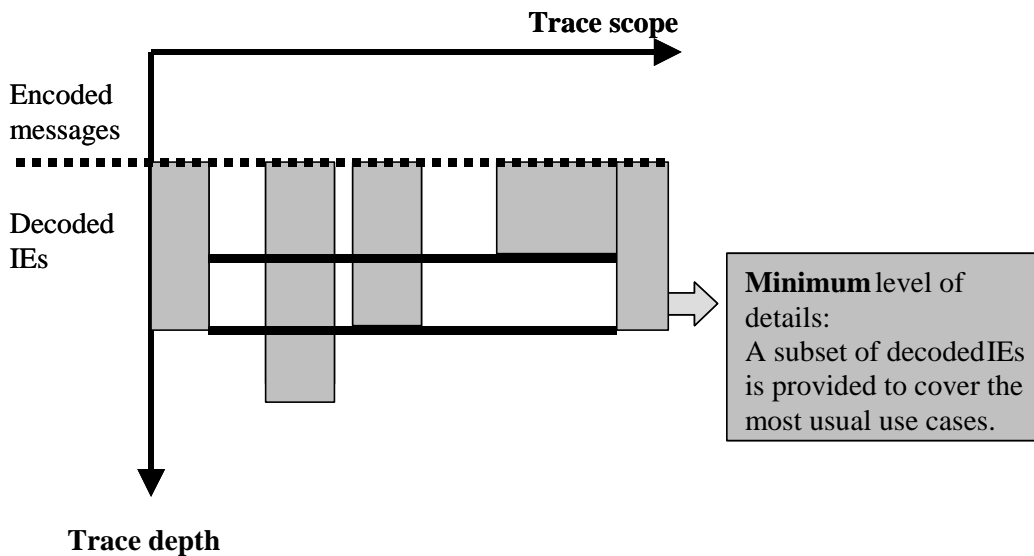


**Figure 4: Minimum Level of detail of Trace**

The Medium Level of detail allows for retrieval of the decoded subset of the IEs contained in the signalling interface messages in the Minimum Level plus a selected set of decoded radio measurement IEs.

The Trace data recorded at each Level is defined in 3GPP TS 32.423 [3].

# 4.2 Trace High Level Architecture

There are two types of activation, management based activation and signalling based activation.

Figure 4.A represents the high-level view of the architecture of Trace management based activation/deactivation. This figure is only showing the interfaces in principlea high-level view. Details of Trace activation/deactivation are defined in 3GPP TS 32.422 [2].
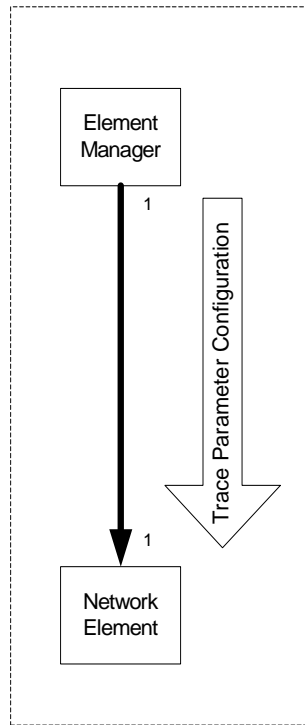
**Figure 4.A:  Architecture for Management Based Activation/Deactivation**

Figure 4.B represents the high-level view of the architecture of signalling based activation/deactivation. This figure is only showing the interfaces in principle. Details of Trace activation/deactivation are defined in 3GPP TS 32.422 [2].
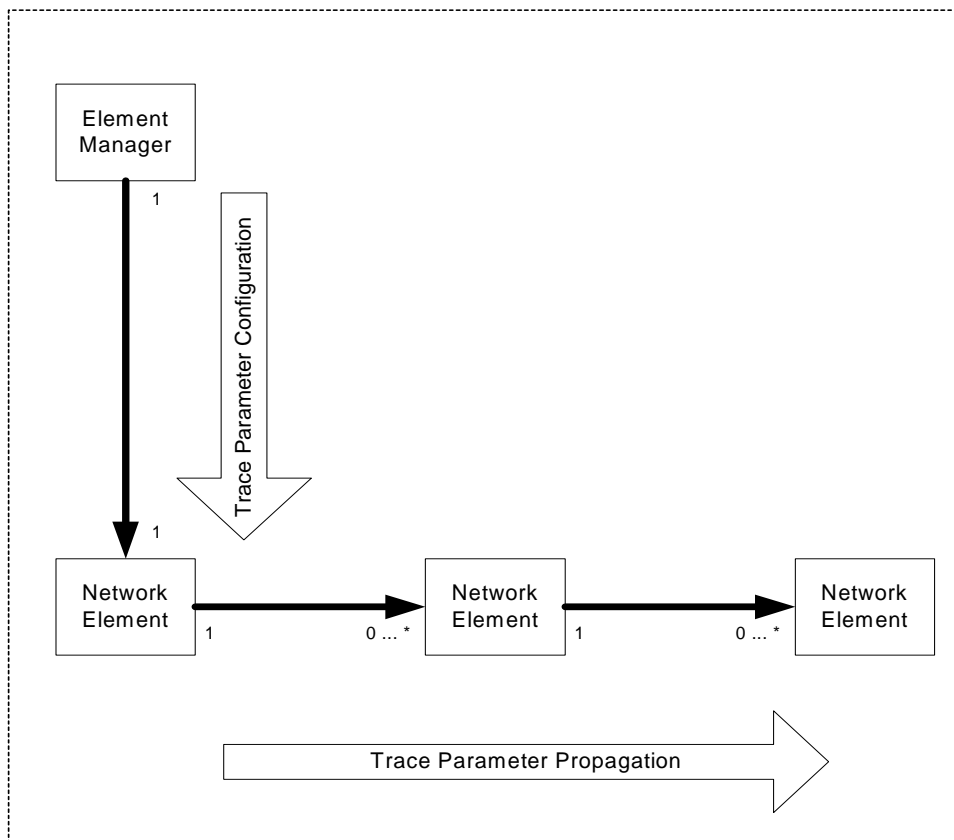
**Figure 4.B: Architecture for Signalling Based Activation/Deactivation**

Figure 5.A represents the high-level view of the architecture of Trace Reporting for System Context A. This figure is only showing the interfaces in principle.
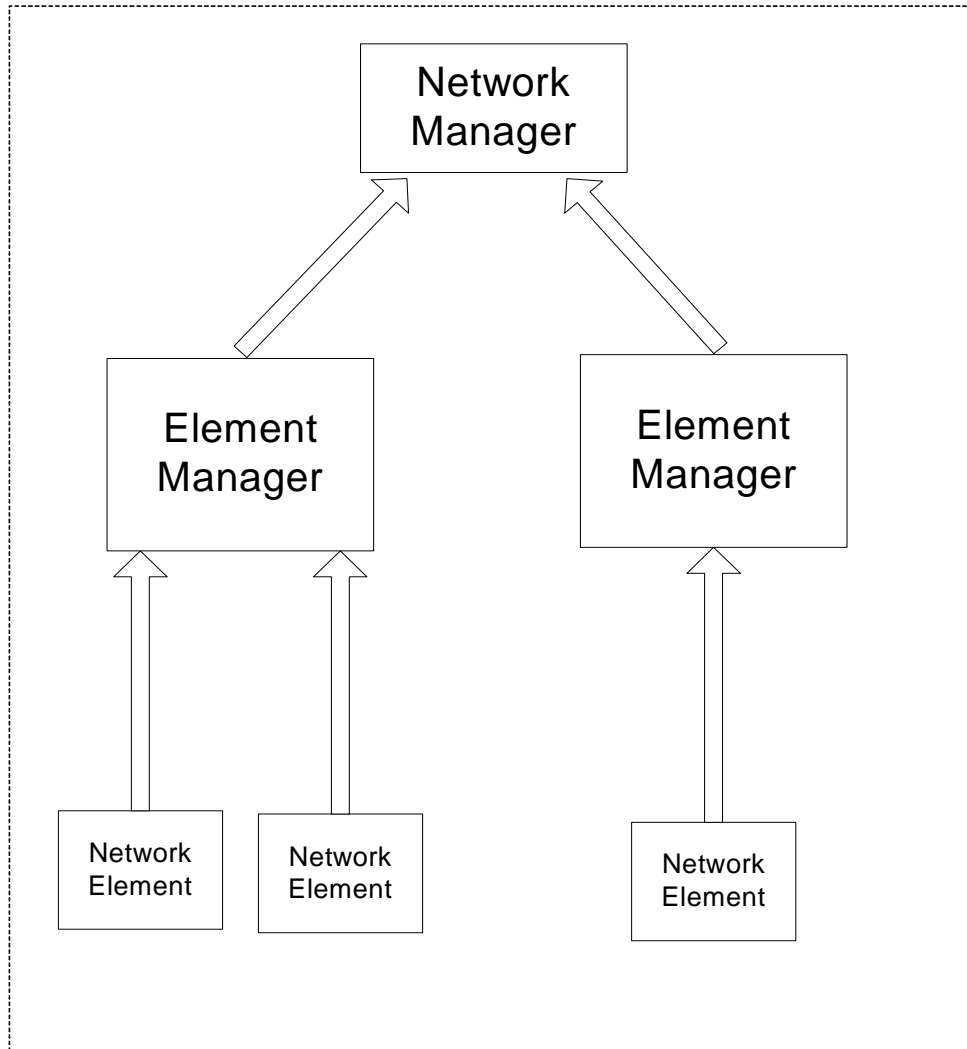


**Figure 5.A: Architecture for High-level view of Trace Reporting in System Context A**

Figure 5.B represents the high-level view of the architecture of Trace Reporting for System Context B. This figure is only showing the interfaces in principle.
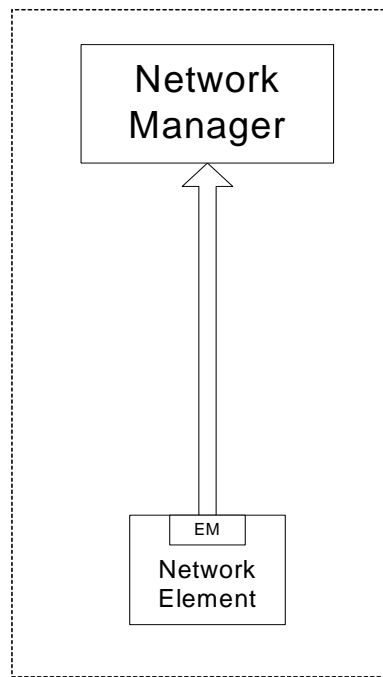
**Figure 5.B: Architecture for Trace Reporting in System Context B**

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**End of Change in Clause 4**

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**Change in Clause 5.4.1**

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## 5.4.1　Requirements for Trace Session Deactivation

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

- The Trace Session shall be deactivated using the Trace Reference specified for the Trace Session activation.

- The Trace Session shall be deactivated in all those NEs where it was activated.

- The deactivation of a Trace Session during a Trace Recording Session within a Network Element may take place anytime after the Network Element receives the deactivation request until the end of the current Trace Recording Session related to the traced Subscriber or MS.

- Trace Session deactivation in a NE could occur when two simultaneous signalling connections for a subscriber or MS exist. E.g. figure 5 shows NE 3 having two signalling connections (one of them or both of them are traced with the same Trace Reference) and a Trace deactivation message is received. The Trace Session shall be closed.
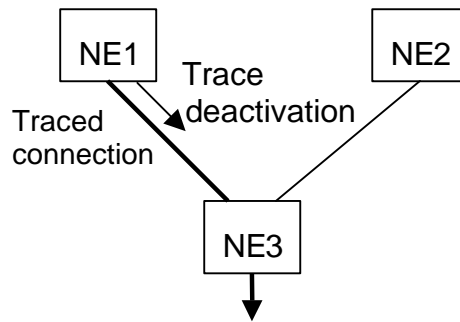
**Figure 5~~5~~6: Trace Session closure**

## 5.4.2 Requirements for Stopping a Trace Recording Session

The high level requirements for stopping a Trace Recording Session, common to both Management deactivation and Signalling based deactivation, are as follows:

- The Trace Recording Session should be stopped after appropriate stop trigger events are detected.

- Trace Session deactivation in a NE could occur when two simultaneous signalling connections for a subscriber or MS exist. E.g. figure 6 shows NE3 having two signalling connections, but only one connection is traced. If the non-traced connection is released, the Trace Recording Session shall be kept in NE3. If the traced connection is released the Trace Recording Session shall be closed.
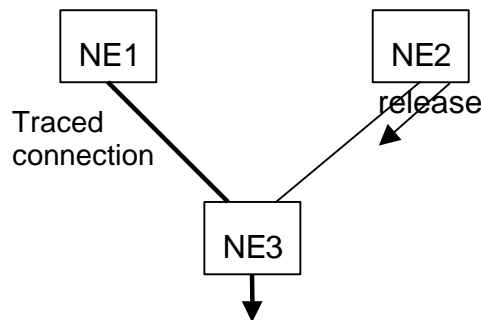


**Figure 6~~6~~7: Trace Recording Session closure**

The high level requirements for stopping a Trace Recording Session, specific to Signalling based deactivation, are as follows:

- The Trace Recording Session should be stopped after an NE receives the appropriate signalling deactivation message.

# Annex A (informative):

## (void)
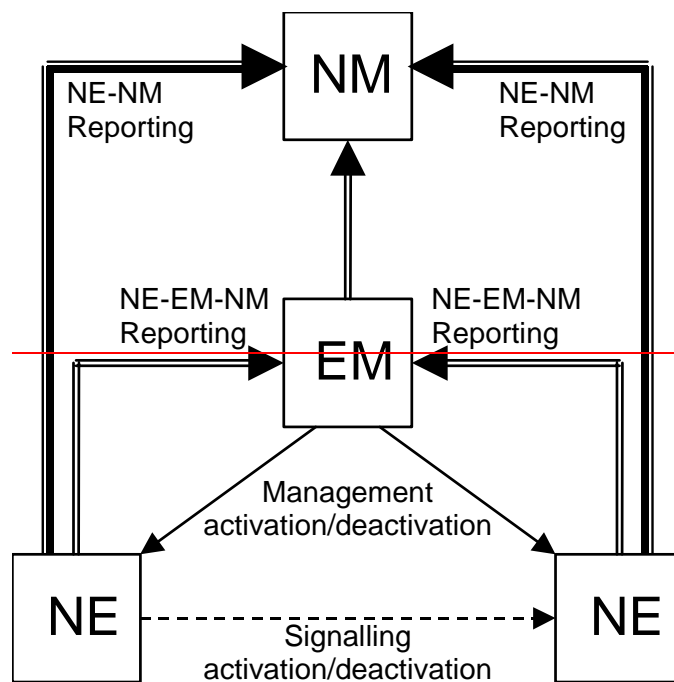## ~~Trace Functional Architecture: High-level View~~

~~Void. See subclause 4.2 Trace High Level Architecture.~~

## ~~A.1 Figure of Trace functional architecture~~

~~Figure A.1 represents the high-level view of the functional architecture of Trace. Note that Trace record reporting can be done directly from NE to NM or from NE to NM via EM, but not both simultaneously.~~



~~**Figure A.1: High-level view of Trace**~~

**End of Change in Annex A**

**End of Document**