

Agenda Item: 15.1
Source: Ericsson

Replaces TSGR3#6(99)925

Title: Replacement of NBAP Procedures for Radio Resource Management: Node B Restarted and RNC Restarted

Document for: Decision

1. INTRODUCTION

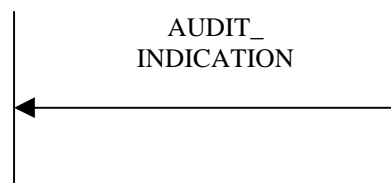
This contribution replaces the NBAP procedures Node B Restarted and RNC Restarted with Audit of Logical Resources, i.e. configuration of cells and common channels. The audit is to ensure that the configuration of the logical resources are the same in the RNC and Node B, after a link failure, NBAP message timeout, NBAP protocol reset, full or partial node restart.

2. DESCRIPTION

2.1 *Node B Restarted*

If Node B restarts, gets a NBAP message timeout or detects a link failure, it can indicate that it might have lost configuration data for the logical resources and/or that it has been unable to receive configuration data for a while. It is done by sending the NBAP common procedure AUDIT INDICATION from the Node B to the Controlling RNC. The CRNC initiates an audit of the status of the configuration of the logical resources by sending an AUDIT REQUEST message to Node B. See chapter 8.1.2.3 RNC Restarted.

Controlling RNC Node B



Node B initiated audit

The AUDIT INDICATION message contains the following mandatory information:

- Local Cell ID(s)

2.2 RNC Restarted

The NBAP common procedure Audit Logical Resources is used by the Controlling RNC to perform an audit if the RNC has experienced any event which requires a check of the RNC-Node B relations, e.g. a restart in the RNC, an outage of the Iub link or a NBAP-message timeout. It is also used if requested from Node B by the message AUDIT INDICATION.

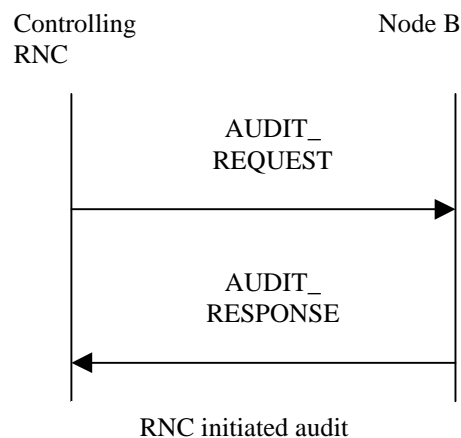
In order to minimize signalling, audit is performed on a Cell ID meaning that both the Cell and its connected common channels are treated as one auditable object. This is possible by having a Configuration Generation ID related to each Cell and its related common channels.

The RNC allocates a new Configuration Generation ID and includes it in messages each time when creating a cell, connecting common channels and changing attributes.

The Node B only saves the Configuration Generation ID after a successful procedure. The RNC shall save the new Configuration Generation ID when a successful response is received.

At audit, pairs of Cell ID and Configuration Generation ID sent by the RNC is compared with the Node B last stored Configuration Generation ID for the indicated Cell ID. Cell ID existing in Node B but not indicated in the audit request, shall be removed from the Node B including any related common channels. For each Cell ID where the Configuration Generation ID is matching, the Cell ID is included in the audit response message.

At audit response, the RNC compares the received Cell IDs with the its expected Cell IDs. Each missing Cell ID is marked as "configuration error" and proper recovery actions must be taken for the auditable object.



The AUDIT REQUEST message contains the following mandatory information:

- Cell Identity(s)
- Configuration Generation Identity(s)

The AUDIT RESPONSE message contains the following information:

- Cell Identity(s)

2.3 **Audit Indication**

This message is sent to inform the RNC that an event has occurred in Node B that requires a consistency audit for the indicated resources. All locally in Node B configured Local Cell Ids shall be indicated in the message.

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
<u>Local Cell ID parameters</u>		M
Local Cell ID		M

2.4 **Audit Request**

This message is sent to the Node B to perform a consistency audit of common resources related to the indicated Cell IDs.

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
<u>Cell ID parameters</u>		O
Cell ID		M
Configuration Generation Identity		M

2.5 **Audit Response**

This message is sent to the RNC indicating which Cell IDs in Node B which have the same Configuration Generation ID as the RNC.

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
<u>Cell ID parameters</u>		O
Cell ID		M

2.6 **Configuration Generation ID**

In order to minimise signalling, audit is performed on a Cell ID / Local Cell ID meaning that both the Cell and its connected common channels are treated as one auditable object. The Configuration Generation ID related to each Cell and its related common channels and is affected by the following messages:

- CELL SETUP REQUEST,
- COMMON TRANSPORT CHANNEL SETUP REQUEST,

- COMMON TRANSPORT CHANNEL SETUP REQUEST,
- COMMON TRANSPORT CHANNEL RECONFIGURATION REQUEST,
- RESOURCE STATUS INDICATION

If contribution R3-99B59 Cell Reconfigure is approved, the same information element is to be included in the message CELL RECONFIGURATION REQUEST.

For each of the above messages, the CRNC sends a new Configuration Generation ID. For successful configuration, Node B stores the new Configuration Generation ID and sends the corresponding RESPONSE message to the RNC. RNC sets the new Configuration Generation ID for the configuration of that cell. For unsuccessful configuration, Node B keeps the old Configuration Generation ID and sends the corresponding FAILURE message to the RNC. Also the RNC keeps the old Configuration Generation ID.

2.7 Configuration Generation ID

The Configuration Generation ID describes the generation of the configuration of logical resources in a cell.

3. PROPOSAL

Proposal 1

Replace the contents of chapters 8.1.2.2 Node B Restarted in 25.433 v1.2.0 NBAP Specification with the information in chapter 2.1 in this contribution.

Proposal 2

Replace the contents of chapters 8.1.2.3 RNC Restarted in 25.433 v1.2.0 NBAP Specification., with the information in chapter 2.2 in this.

Proposal 3

Add the contents of chapter 2.3 in this contribution to chapter 9.1.x Audit Indication in 25.433 v1.2.0 NBAP Specification.

Proposal 4

Add the contents of chapter 2.4 in this contribution to chapter 9.1.x+1 Audit Request in 25.433 v1.2.0 NBAP Specification.

Proposal 5

Add the contents of chapter 2.5 in this contribution to chapter 9.1.x+2 Audit Response in 25.433 v1.2.0 NBAP Specification.

Proposal 6

Add the mandatory information element 'Configuration Generation ID' in the messages that change the configuration of the logical resources, i.e.

- COMMON TRANSPORT CHANNEL SETUP REQUEST, chapter 9.1.32 in 25.433 v 1.2.0,
- COMMON TRANSPORT CHANNEL DELETION REQUEST, chapter 9.1.38 in 25.433 v 1.2.0,
- CELL SETUP REQUEST, chapter 9.1.14 in 25.433 v 1.2.0,
- RESOURCE STATUS INDICATION, chapter 9.1.30 in 25.433 v 1.2.0.

If contribution R3-99xxx Cell Reconfigure is approved, the same information element is to be included in the message CELL RECONFIGURATION REQUEST.

Proposal 7

Add the contents of chapter 2.7 in this contribution to chapter 9.2.x+1 Configuration Generation ID in 25.433 v1.2.0 NBAP Specification.

Proposal 8

Change the heading title for chapters 8.1.2.2 Node B Restarted in 25.433 v1.2.0 NBAP Specification to Audit Indication.

Proposal 9

Change the heading title for chapters 8.1.2.3 RNC Restarted in 25.433 v1.2.0 NBAP Specification to Audit Request.

4. REFERENCES

- [1] TS 25.433 V1.2.0 - NBAP Specification
- [2] Contribution R3-99B59 Proposed NBAP Procedure for Cell Configuration Management: Cell Reconfiguration