TSG-RAN Working Group 3 (Meeting#8) **TSGR3#8(99) D66**
Abiko, JAPAN, 25th – 29th October 1999

Agenda Item: 16.3

Source: Motorola

Title: Usage of Configuration Generation ID and State Re-Sync
in Audit Procedures.

Document for: Decision

1   Introduction

The intent of this contribution is to clarify the use of the Configuration Generation ID in the Audit procedure between the RNC and the Node B. This paper restricts the use of the configuration generation id to configuration type procedures that are initiated by the RNC only. The audit procedure has also been updated to allow the RNC to synchronise the states of the logical resources associated with a cell at a Node B. This then removes the need of the configuration generation id in the resource status indication and allows the configuration generation id to be used for configuration procedures only. With the updated audit procedure, the RNC may now audit the configuration of the logical resources, the state of the logical resources, or both in the same procedure.

2   Discussion

2.1   Audit

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~~REQUIRED.

The RNC may audit the configuration and/or the state of the logical resources at a Node B. In order to minimize signalling, audit is performed on a UC-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. A Node B may not update or change a Configuration Generation ID without being instructed to do so by the RNC.

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.

When ~~At~~ auditing the configuration related to a UC-ID, pairs of UC-ID and Configuration Generation ID sent by the RNC is compared with the Node B last stored Configuration Generation ID for the indicated UC-ID. UC-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 UC-ID where the Configuration Generation ID is matching, the UC-ID is included in the audit response message.
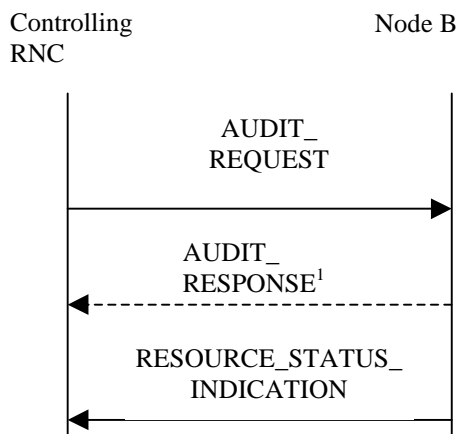
At audit response, the RNC compares the received UC-IDs with the its expected UC-IDs. Each missing UC-ID is marked as "configuration error" and proper recovery actions must be taken for the auditable object.

When auditing the states of the resources related to a UC-ID, the state re-sync flag associated with a UC-ID is set in the Audit Request message. The Node B will then send a Resource Status Indication to the RNC containing the states of all configured objects related to the

specified UC-ID. The Node B does not send the Audit Response message if the audit is only for the states of the logical resources.

Controlling RNC   Node B

AUDIT_
REQUEST
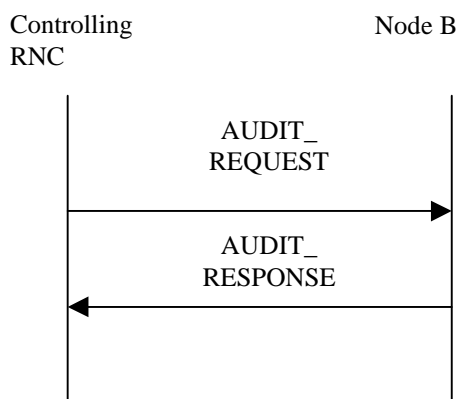
AUDIT_
RESPONSE

RNC initiated configuration audit

Controlling RNC   Node B

AUDIT_
REQUEST

AUDIT_
RESPONSE[1]

RESOURCE_STATUS_
INDICATION

RNC initiated state audit

1 The Audit Response message is only sent if the Audit Request was an audit for both state and configuration data.

The AUDIT REQUEST message contains the following ~~mandatory~~ information depending on the audit to be performed by the RNC:

- UC-ID(s)
- Configuration Generation Identity(s)
- State Re-Sync Flag(s)

The AUDIT RESPONSE message contains the following information:

- UC-ID(s)

2.2 Message Functional Definition and Content

2.2.1 AUDIT REQUEST

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

Information Element	Reference	Type
Message Discriminator		M
Message Type		M

Information Element		Type	
Transaction ID		M	
UC-ID parameters		O	
UC-ID		M	
Configuration Generation Identity		~~M~~C[1]	
State Re-Sync Flag		C[1]	

[1]   The inclusion of these elements depends on the type of audit to be performed. At least one of the elements must be paired with the UC-ID and both may be included.

1.1.2~~2.2.2~~ RESOURCE STATUS INDICATION

This message is sent from the Node B to the CRNC to notify the CRNC of the status of the resources at Node B.

Information Element	Reference	Type	
Message Discriminator		M	
Message Type		M	
Transaction ID		M	
Indication Type (FFS)		O	
~~Configuration Generation ID~~		~~M~~	
Resource Impact		**C[1]**	
Local Cell ID		**O**	
Resource Operational State		M	
Availability Status		M	
Add/Delete Indicator		O	
Number Channel Elements (FFS)		M	
Maximum DL Power Capability		M	
UC-Id		**O**	
New Maximum Power		M	
New Minimum Spreading Factor		M	
Resource Operational State		M	
Availability Status		M	
Communication Control Port ID		**O**	
Resource Operational State		M	
Availability Status		M	
BCH ID		**O**	
Resource Operational State		M	
Availability Status		M	
PCH ID		**O**	
Resource Operational State		M	
Availability Status		M	
PICH ID		**O (FFS)**	

[1] The information element is present when the Indication Type reflects service impact..

Resource Operational State			M
Availability Status			M
FACH ID			**O**
Resource Operational State			M
Availability Status			M
RACH ID			**O**
Resource Operational State			M
Availability Status			M
AICH ID			**O (FFS)**
Resource Operational State			M
Availability Status			M
DSCH ID			**O**
Resource Operational State			M
Availability Status			M
USCH ID			**O**
Resource Operational State			M
Availability Status			M
Cause			O

2.3   Information Element Functional Definition and Contents

This section defines the message types for the information elements introduced in section 2.2 that are not already defined in [1].

2.3.1 State Re-Sync Flag

The State Re-Sync Flag is used to indicate to a Node B that the states of the resources related to a UC-ID need to be synchronised with the RNC by sending a Resource Status Indication to the RNC for those resources.

3   Proposal

The following changes are proposed to TS 25.433 [1] –

1. Replace section 8.1.2.3.2 – Audit, with the updated contents of section 2.1.

2. Replace the message contents in section 9.1.61 – Audit Request, with the updated contents of section 2.2.1.

3. Replace the message contents in section 9.1.40 – Resource Status Indication, with the updated contents of section 2.2.2.

4. Add a new section 9.2.1.x – State Re-Sync Flag, with the contents of section 2.3.1.

4   References

[1] 3GPP TS 25.433 - NBAP Specification v1.3.1