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Technical Specification

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NBAP Specification

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Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project, Technical Specification Group <TSG name>.

The contents of this TS may be subject to continuing work within the 3GPP and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released with an identifying change of release date and an increase in version number as follows:

Version m.t.e

where:

- m indicates [major version number]
- x the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- y the third digit is incremented when editorial only changes have been incorporated into the specification.

1 Scope

The present document specifies the standards for NBAP specification to be used over Iub Interface.

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.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] 25.401, UTRAN Overall Description

[2] 25.426 UTRAN I_{ur} and I_{ub} Interface Data Transport & Transport Signalling for DCH Data Streams

[3] CCITT Recommendation X.731 Information Technology – Open Systems Interconnection – Systems Management: State Management function (01/92)

[4] TS25.215 Physical layer – Measurements (FDD)

[5] TS25.225 Physical layer – Measurements (TDD)

[6] CCITT Recommendation X.731 Information Technology – Open Systems Interconnection – Systems Management: State Management function (01/92)

3 Definitions, symbols and abbreviations

[Editor's note: This chapter is almost stable]

3.1 Definitions

NBAP (Node B Application Part) is defined as Radio Network Layer Protocol applied the interface between Controlling RNC and NodeB, namely Iub Interface.

3.2 Symbols

3.3 Abbreviations

AAL2 ATM Adaptation Layer type 2

ASN.1 Abstract Syntax Notation One

ATM	Asynchronous Transfer Mode
BCCH	Broadcast Control Channel
CCPCH	Common Control Physical Channel
CFN	Connection Frame Number
CRNC	Controlling Radio Network Controller
DCH	Dedicated Channel
DL	Downlink
DPCCH	Dedicated Physical Control Channel
DPCH	Dedicated Physical Channel
DPDCH	Dedicated Physical Data Channel
DRNC	Drift Radio Network Controller
FDD	Frequency Division Duplex
FP	Frame Protocol
L1	Layer 1
L2	Layer 2
NBAP	Node B Application Part
O&M	Operation and Management
QoS	Quality of Service
RL	Radio Link
RNC	Radio Network Controller
RRC	Radio Resource Control
SRNC	Serving Radio Network Controller
TDD	Time Division Duplex
TFC	Transport Format Combination
TFCI	Transport Format Combination Indicator
TFCS	Transport Format Combination Set
TFS	Transport Format Set
UE	User Equipment
UL	Uplink
UTRAN	UMTS Terrestrial Radio Access Network

4 General

[Editor´s note: This chapter should describe requirements on protocol capabilities, principles, etc.]

Node B Application Part, NBAP, includes common procedures and dedicated procedures. It covers procedures for paging distribution, broadcast system information, request / complete / release of dedicated resources and management of logical resources (logical O&M [1]).

Note that the issue of transport layer addressing is FFS.

5 NBAP Services

The NBAP offers the following services:

[Editor's note: Contents are missing]

5.1 Parallel Transactions

Unless explicitly indicated in the procedure description, at any instance in time one protocol peer shall have initiated maximum one ongoing dedicated NBAP procedure related to a certain NodeB communication context.

6 Services expected from signalling transport

[Editor's note: Contents are missing]

7 Functions of NBAP

[Editor's note: This chapter is almost stable]

The following procedures are included in NBAP:

- Common Transport Channels Management
- Radio Resource Management
- Iub Link Management
- Radio Network Performance Management
- Cell Configuration Management
- Resource Event Management
- System Information Update
- Radio Link Setup
- Radio Link Addition
- Radio Link Reconfiguration (synchronised)
- Radio Link Reconfiguration (unsynchronised)
- Radio Link Deletion
- DL Power Control
- Measurement reporting
- Radio Link failure
- Radio Link Restore

[Editor's note: A couple of procedures for Logical O&M are probably missing]

8 Elementary NBAP procedures

NBAP procedures are divided into common procedures and dedicated procedures.

- NBAP common procedures are procedures that request initiation of a UE context for a specific UE in Node B or are not related to a specific UE. NBAP common procedures also incorporate logical O&M [1] procedures.
- NBAP dedicated procedures are procedures that are related to a specific UE context in Node B. This UE context is identified by a UE context identity.

The two types of procedures may be carried on separate signalling links.

8.1 NBAP Common Procedures

8.1.1 Common Transport Channels Management

This procedure provides the capability to activate common channel resources such as [cell broadcast channels and] random access channels. The ability to control, for example, paging retransmission should also be provided. Information on common channel performance (eg overload) should be provided by node B to the RNC. Any failures impacting on the common channel resources at Node B should be signalled to the RNC via the Resource Event Management procedure (section 8.1.6).

8.1.1.1 Common Transport Channel Configuration Procedures

The Procedures for Common Transport Channel Configuration:

- Common Transport Channel Setup (e.g. FACH, PCCH, BCCH, RACH, DSCH (TDD) and USCH(TDD))
- Common Transport Channel Reconfigure
- Common Transport Channel Delete

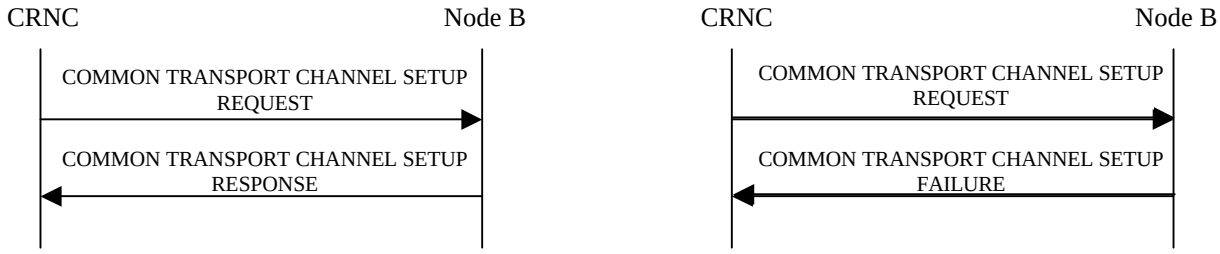
8.1.1.1.1 Common Transport Channel Setup

The RNC initiates a definition of common transport channels in a cell within Node B, which defines the ordered channels and takes them into service. This procedure also establishes the associated physical channel. The result is communicated back to the RNC.

For the procedure to be executed successfully the following is needed:

- The cell context, to which the common transport channels are to be defined, has to be defined within Node B, i.e. the cell Setup procedure has to be successfully executed for the cell in question.
- Node B equipment has previously been defined and configured to support the requested channels on the Implementation Specific O&M interface.
- A Node B control port is available for communication between the RNC and the Node B, for the procedure to be executed successfully.

This NBAP common procedure is used by the CRNC to request Node B to support the logical resources FACH, PCH, BCH, RACH, DSCH and USCH (TDD). This procedure is initiated by CRNC.



a) Successful case **b) Unsuccessful case**

The COMMON TRANSPORT CHANNEL SETUP REQUEST message contains the following mandatory information:

- Transaction ID (assumed unique in the RNC)
- UC-~~Id~~ID
- (UL or DL) Scrambling Code ~~Id~~ID
- Common Transport Control Channel ~~Id~~ID
- Common Transport Control Channel type
- Common Transport Control Channel data
- Configuration Generation ID (FFS)
- Transport Channel information for either FACH, BCH, PCH, PICH, RACH or AICH)

The COMMON TRANSPORT CHANNEL SETUP RESPONSE message contains the following mandatory information:

- Transaction ID
- Transport layer information~~address~~
    - Binding ID

The COMMON TRANSPORT CHANNEL SETUP FAILURE message contains the following mandatory information:

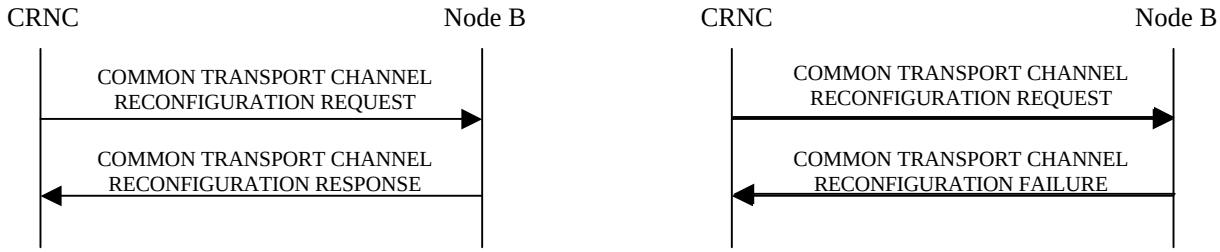
- Transaction ID
- Failure Cause

8.1.1.1.2 Common Transport Channel Reconfigure

The RNC initiates a change of the configuration of common transport channels in Node B, which reconfigures the channels. This procedure also reconfigures the associated physical channel. The result is communicated back to the RNC.

For the procedure to be executed successfully the following is needed:

- The transport common channel(s) exist in the cell within the Node B
- Node B equipment has previously been defined and configured to support the changed channels on the Implementation Specific O&M interface
- A Node B control port is available for communication between the RNC and the Node B, for the procedure to be executed successfully
- The RNC shall use the following procedure to re-configure a common transport channel



a) Successful case **b) Unsuccessful case**

The COMMON TRANSPORT CHANNEL RECONFIGURATION REQUEST message contains the following information:

- Transaction ID
- UC-~~Id~~ID (allows the Node B to reference the channel against the correct cell where a Node B supports multiple cells)
- Configuration Generation ID (FFS)
- Common channel type (e.g. FACH, BCCH, PCCH, RACH, DSCH (TDD), USCH (TDD)) and identifier
-
- DL power for the relevant transport channel and physical channel
- ~~TS (TDD)~~
- ~~Transaction Id (identifies the procedure)~~

The COMMON TRANSPORT CHANNEL RECONFIGURATION RESPONSE contains the following information:

- Transaction ~~Id~~ID (identifies the procedure)

The COMMON TRANSPORT CHANNEL RECONFIGURATION FAILURE contains the following information:

- Transaction ~~Id~~ID (identifies the procedure)
- Cause (cause value for the failure)

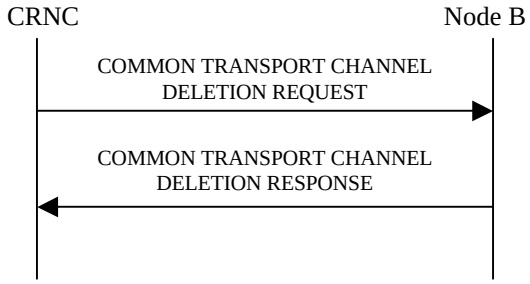
8.1.1.1.3 Common Transport Channel Delete

The RNC initiates the deletion of common transport channel(s) in a cell within Node B, which deletes the requested channels. The result is communicated back to the RNC.

For the procedure to be executed successfully the following is needed:

- The common transport channel(s) exist in the cell within the Node B.
- A Node B control port is available for communication between the RNC and the Node B.

This NBAP common procedure is used by the Controlling RNC to request Node B to delete Common Transport Channels. This procedure is initiated by CRNC.



The COMMON TRANSPORT CHANNEL DELETION message contains the following mandatory information:

- Transaction ID
- Common Transport Control Channel ~~Id~~ID
- Configuration Generation ID (FFS)

The COMMON TRANSPORT CHANNEL DELETION RESPONSE message contains the following mandatory information:

- Transaction ID

8.1.2 Radio Resource Management

When a procedure is executed at Node B or at the RNC, the result may be an impact on the logical radio resources supported. Under these conditions, for optimisation of the radio resource algorithms the RNC and Node B must be able to interact functionally, in order that both Nodes can co-ordinate and execute measures to compensate for such scenarios. Such conditions may also arise when Implementation Specific procedures are executed at Node B or the RNC (e.g. restarts or software updates). Therefore the Radio Resource Management procedures should provide the means for the Node B and RNC to interact on the management of the Logical Resources supported by Node B.

The Procedures for Radio Resource Management:

- Block Resource
- Node B Restarted
- RNC Restarted

8.1.2.1 Block Resource

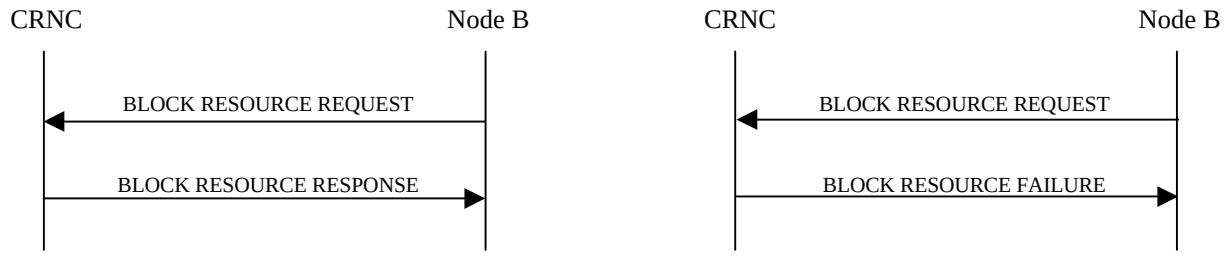
Node B requests that logical resources in the RNC are taken out of service, due to an O&M action (i.e. manual

intervention for example due to that a piece of equipment, that supports a logical resource in the RNC, shall be upgraded). The RNC answers when the logical resource is taken out of service and the O&M action can continue in Node B.

For the procedure to be executed successfully the following is needed:

- A configured cell exists in Node B (downlink and uplink common channels can be defined in the cell).
- A Node B control port is available for communication between the RNC and the Node B.

The Node B shall use the following procedure to request a logical resource block from the RNC:



a) Successful case **b) Unsuccessful case**

The BLOCK RESOURCE REQUEST message contains the following information:

- Transaction ID
- UC-~~Id~~ID (allows the Node B to block a resource in the correct cell where a Node B supports multiple cells)

~~- Resource Identifier (e.g. resource type and identifier)~~

- Priority Indicator (enables the Node B to request an immediate block instead of allowing the RNC the option to suspend)~~ – definition FFS~~
- Shutdown timer (This parameter is only needed if the Priority indicator is either class 2 or 3)
- ~~Transaction Id (identifies the procedure)~~

- The BLOCK RESOURCE RESPONSE message contains the following information:
- Transaction ~~Id~~ID (identifies the procedure)

- The BLOCK RESOURCE FAILURE message contains the following information:
- Transaction ~~Id~~ID (identifies the procedure)
- Failure Cause

8.1.2.2 Node B Restarted

8.1.2.2.1 NodeB Restart Indication

The Node B informs the RNC that the Node B has restarted.

For the procedure to be executed successfully the following is needed:

- A Node B control port is available for communication between the RNC and the Node B.

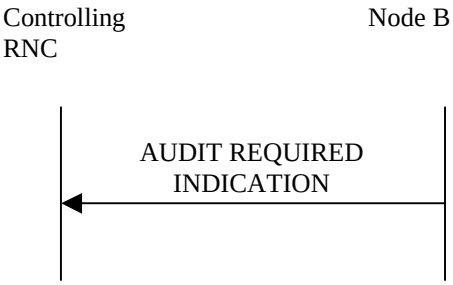
The Node B shall use the following procedure to advise the RNC of a Node B restart:

The NODE B RESTART INDICATION message contains the following information:

- Transaction ID
- Node B ~~Id~~ID (an ~~Id~~ID unique to a Node B on a given C-RNC, known by both RNC and Node B via initial configuration)
- Cause (cause value for the Node B restart trigger)
- ~~Transaction Id (identifies the procedure) FFS~~

8.1.2.2.2 Audit Required

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 REQUIRED INDICATION from the Node B to the CRNC. 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 8.1.2.3.2.



Node B initiated audit

The AUDIT REQUIRED INDICATION message contains the following mandatory information:

- Local Cell ID(s)

8.1.2.3 RNC Restarted

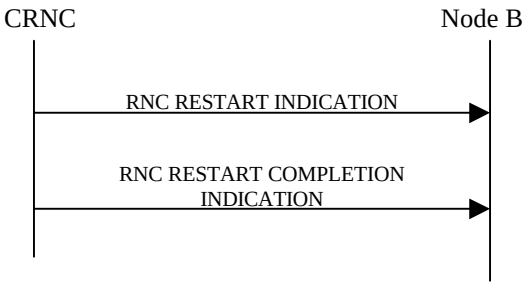
8.1.2.3.1 RNC Restart Indication

The RNC informs the Node B that the RNC has restarted.

For the procedure to be executed successfully the following is needed:

- A Node B control port is available for communication between the RNC and the Node B.

The RNC shall use the following procedure to advise the Node B of an RNC restart:



The RNC RESTART INDICATION message contains the following information:

- ~~Service Impact~~ Availability Status ~~Level~~ (indicates the grade of the service degradation i.e. total loss or degradation, also may indicate whether the fault is permanent or temporary (FFS))
- Transaction ~~Id~~ID (identifies the procedure)

The RNC RESTART COMPLETION INDICATION message contains the following information:

- Transaction ~~Id~~ID (identifies the procedure)

(Editor's NOTE: The use of this procedure for partial restarts is ffs).

8.1.2.3.2 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 REQUIRED INDICATION.

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.

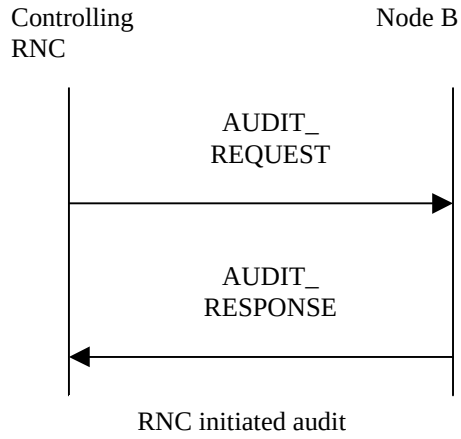
The RNC allocates a new Configuration Generation ID and includes it in messages each time when creating a cell, connecting common channels and changing attributes.

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 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.

Editor's note: The concept of Configuration Generation ~~Id~~IDs is ffs.



RNC initiated audit

The AUDIT REQUEST message contains the following mandatory information:

- UC-ID(s)
- Configuration Generation ID(s)

The AUDIT RESPONSE message contains the following information:

- UC-ID(s)

8.1.3 Iub Link Management

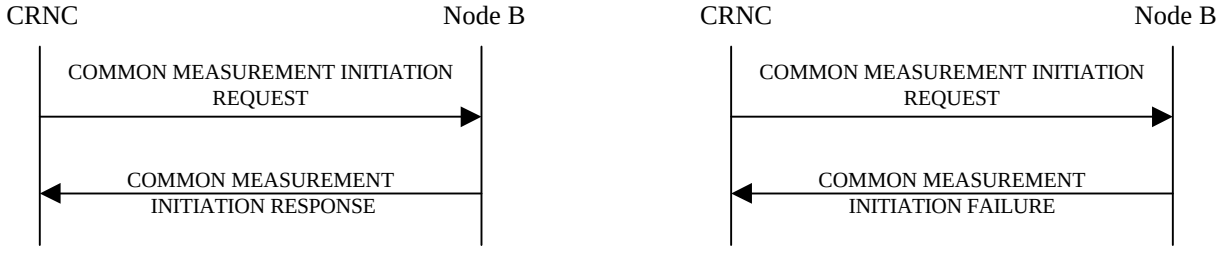
(~~[~~Editor's note~~]~~: The necessity of Link Management within the NBAP protocol is F.F.S.)

This procedure shall deal with the management of the Iub link. This will address not only initial link establishment, but also the ongoing monitoring of link health, link recovery, load sharing and distribution.

8.1.4 Radio Network Performance Measurement

8.1.4.1 Common Measurement Initiation Request

For requesting measurements, the RNC use the following procedure:



a) Successful case **b) Unsuccessful case**

Common Measurement Initiation Request Procedure

The COMMON MEASUREMENT INITIATION REQUEST message includes the following information:

- **Measurement ~~Id~~ID:** This is a RNC defined identifier that uniquely identifies the measurement.
- **Measurement Object:** This defines on which resource the measurement should be performed. For example might this identifier point out a cell or a carrier within the Node B.
- **Measurement Type:** This defines what measurement that should be performed. This could for example ~~be~~

~~"interference on the uplink", "Undecoded RACH frames", or "DL Cell Power Load".~~

- **RSSI** ~~(for FDD)~~ See [4],[5]
- **Total Transmitted Power**~~(for FDD)~~: See [4],[5]
- **Not received RA messages**~~(for FDD)~~: The number of detected random access tries during a certain time interval, for which the message part was not possible to decode.
- **Received Interference Signal Code Power (RxISCP)** (for TDD). See [5]

- **Measurement Characteristics:** This defines how the measurements should be performed. ~~For example measurement frequency, timing information, filtering information. *The exact structure and contents of this parameter is dependent on the Measurement Type and is FFS.*~~Possible measurement characteristics are:

- **Measurement Frequency**
- **Averaging Duration**

- **Report Characteristics:** The reporting could be any of the following classes:

~~**Periodic:** Reports should be delivered in a periodic matter with some frequency. In this case the update frequency have to be specified.~~

~~**Event Triggered:** Reports should be delivered upon a specific event in Node B e.g Performance threshold crossing. In this case the event have to be specified.~~

~~**Immediate Reporting:** A report should be delivered immediately. Only one measurement report should be sent and after that the measurement is automatically cancelled.~~

On-Demand

Name	On-Demand
Definition	Node B shall as soon as possible respond with a measurement report containing the requested measurement. The response time should mainly depend on the time it takes to measure the entity.
Additional Parameters	None

Periodic

Name	Periodic
Definition	Node B shall schedule and measure the entity so that a measurement report is delivered periodically.
Additional Parameters	Reporting Frequency

A periodic report shall be sent until CRNC issues a COMMON MEASUREMENT TERMINATION REQUEST or until the NodeB issues a COMMON MEASUREMENT FAILURE INDICATION

Event-Triggered

Name	Event-Driven Type A
Definition	Node B shall report when the measured entity rises above an absolute threshold and stays there for the hysteresis time.
Additional Parameters	Absolute Threshold (Mandatory) Hysteresis Time (Optional)

Name	Event-Driven Type B
Definition	Node B shall report when the measured entity falls below an absolute threshold and stays there for the hysteresis time.
Additional Parameters	Absolute Threshold (Mandatory) Hysteresis Time (Optional)

Name	Event-Driven Type C
Definition	Node B shall report when the measured entity increases more than the threshold within the rising time.
Additional Parameters	Relative Threshold (Mandatory) Rising Time (Mandatory)

Name	Event-Driven Type D
Definition	Node B shall report when the measured entity decreases more than the threshold within the fall time.
Additional Parameters	Relative Threshold (Mandatory) Fall Time (Mandatory)

Name	Event-Driven Type E
Definition	Node B shall report when the measured entity rises above absolute threshold 1 and stays there for the hysteresis time (Event 1). In addition, after event 1, Node B shall report when the measured entity falls below the absolute threshold 2 and stays there for the hysteresis time (event 2). If absolute threshold 2 has not been specified, absolute threshold 1 is used for event 2 as well. If a reporting frequency has been specified, the Node B shall send periodic reports between the events 1 and 2. Periodic reports shall be sent until event 2 occurs or the measurement is terminated. If no periodicity is specified, only two measurement reports will result. Note: If at start of the measurement, the measured entity is already above absolute threshold 1 and stays there for the hysteresis time, an immediate report of event 1 shall be sent.
Additional Parameters	Absolute Threshold 1 (Mandatory) Absolute Threshold 2 (Optional) Hysteresis Time (Optional) Reporting Frequency (Optional)

Name	Event-Driven Type F
Definition	Node B shall report when the measured entity falls below absolute threshold 1 and stays there for the hysteresis time (Event 1). In addition, after event 1, Node B shall report when the measured entity rises above the absolute threshold 2 and stays there for the hysteresis time (event 2). If absolute threshold 2 has not been specified, absolute threshold 1 is used for event 2 as well. If a reporting frequency has been specified, the Node B shall send periodic reports between the events 1 and 2. Periodic reports shall be sent until event 2 occurs or the measurement is terminated. If no periodicity is specified, only two measurement reports will result. Note: If at start of the measurement, the measured entity is already below absolute threshold 1 and stays there for the hysteresis time, an immediate report of event 1 shall be sent.
Additional Parameters	Absolute Threshold 1 (Mandatory) Absolute Threshold 2 (Optional) Hysteresis Time (Optional) Reporting Frequency (Optional)

The possibility to request several measurements for the same event is FFS.

The COMMON MEASUREMENT INITIATION RESPONSE~~REQUEST~~ message is used to accept a requested measurement and it includes the following information:

- **Measurement ~~Id~~ID:** This is the same ~~Id~~ID that was used in the request.

The COMMON MEASUREMENT INITIATION FAILURE message is used to reject a requested measurement and it includes the following information:

- **Measurement ~~Id~~ID:** This is the same ~~Id~~ID that was used in the request.

- **Cause:** This states the cause for the reject. ~~*The exact content of this parameter is FFS.*~~
  - **Processor overload**
  - **Hardware failure**
  - **Measurement not supported**
  - **Unspecified failure**

8.1.4.2 Common Measurement Termination initiated by RNC

For termination of previously requested measurements, the RNC use the following procedure:

Measurement Termination Procedure

The COMMON MEASUREMENT TERMINATION REQUEST message includes the following information:

- **Measurement ~~Id~~ID:** This is the same ~~Id~~ID that was used in the request.

8.1.4.3 Common Measurement Termination initiated by NodeB

For termination of previously requested measurements from NodeB, the NodeB use the following procedure:

Measurement Failure Indication Procedure

The COMMON MEASUREMENT FAILURE INDICATION message includes the following information:

- **Measurement ~~Id~~ID:** This is the same ~~Id~~ID that was used in the request.
- **Cause:** This states the reason for the termination. *Following reasons are possible:*
  - Processor overload
  - Hardware failure
  - O&M intervention
  - Unspecified break off~~*The exact content of this parameter is F.F.S.*~~

8.1.4.4 Common Measurement Report

To report a previously requested measurement, Node B uses the following procedure:

Measurement Report Procedure

The COMMON MEASUREMENT REPORT message includes the following information:

- **Measurement ~~Id~~ID**: This is the same id that was used in the request.
- **Time Reference**: This is a time reference showing the time of the measurement. *The accuracy of this is FFS.*
- **Value**

The possibilities for including several values and/or several measurements in the same report are FFS.

8.1.5 Cell Configuration Management

This procedure provides the means for the RNC to configure the cell related parameters of the node B and also the means for the node B to transfer the values of these and other parameters back to the RNC. Examples are: RF parameters, system information parameters and, channel configuration data. The overall Cell Configuration Management procedure should support a set of individual procedures which allow specific areas of the cell configuration to be updated independently. This will reduce the signalling on the Iub in the case where individual parameters need to be updated.

The following procedures should form part of the overall Cell Configuration Management procedure (*the inclusion of further procedures is FFS*).

The Procedures for cell configuration management are:

- Cell Setup
- Cell Reconfiguration
- Cell Delete

~~*[Editor's note] It is F.F.S. whether Cell Reconfiguration procedures is required or not.*~~

8.1.5.1 Cell Setup

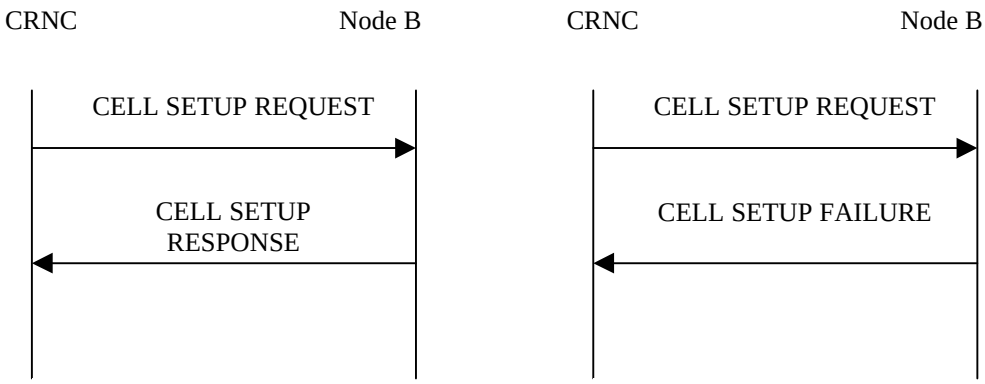
This NBAP common procedure is used to configure one cell in a Node B. This procedure is initiated by the Controlling RNC.

The CRNC initiates cell configuration, by sending the message CELL SETUP REQUEST to Node B. Node B creates and configures a cell context. In FDD it creates and configures two synchronisation channels (Primary SCH and Secondary SCH). In TDD it configure the PSCH (Physical Synch Channel) that contains the Primary SCH (Primary sequence) and n Secondary SCHs (Secondary sequences). The result is communicated back to the RNC..

For the procedure to be executed successfully the following is needed:

- Node B equipment has previously been defined and configured to support the cell on the Implementation Specific O&M interface.
- A Node B control port is available for communication between the RNC and the Node B, for the procedure to be executed successfully.
- The Node B has informed the CRNC of the existence of the local cell id and the resource capabilities of

the cell via the Node B Resource Notification procedure.



a) Successful case a) Unsuccessful case

Cell Setup Procedures

The CELL SETUP REQUEST message contains the following administrative information:

- Local Cell ~~Id~~ID (a pre-configured cell identity local to Node B, known by both RNC and Node B)
- UC-~~Id~~ID (The UC-~~Id~~ID to be used in all other NBAP messages, unique in UTRAN)
- Transaction ~~Id~~ID (to identify this invocation of the procedure)
- Configuration Generation ID (FFS)

Information for Cell Configuration includes:

- Primary SCH power (FDD only)
- Secondary SCH power (FDD only)
- PSCH (TDD only) (relation of TX power between Primary and Secondary is fixed)
- PSCH & PCCPCH Allocation Information (TDD only)
- Common Pilot power (FDD only)
- T Cell (FDD only)
- UL Frequency number (FDD only)
- DL Frequency number (FDD only)
- Frequency Number (TDD only)
- Max transmission Power
- DL Scrambling Code (FDD only)
- Scrambling Code and Basic Midamble (TDD only)
- Time Slot Configuration information (TDD only)
- Cell Parameters (TDD only)
- PSCH Power (TDD only)

The CELL SETUP RESPONSE message contains the following information:

- Transaction ~~Id~~ID (same ~~Id~~ID as in the corresponding CELL SETUP REQUEST message)

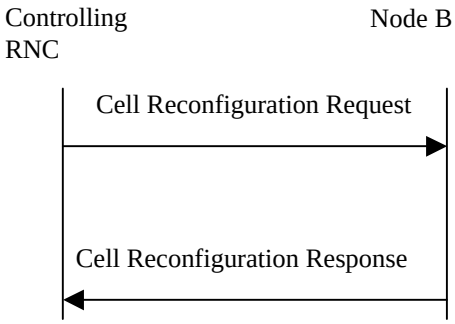
The CELL SETUP FAILURE message contains the following information:

- Transaction ~~Id~~ID (same ~~Id~~ID as in the corresponding CELL SETUP REQUEST message)
- Cause for each failure reason~~Reason~~

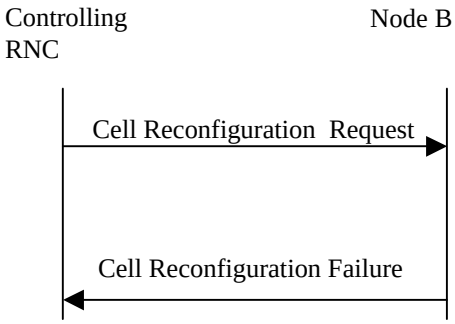
8.1.5.2 Cell Reconfiguration

This NBAP common procedure is used by the Controlling RNC, to request Node B to change its configuration for a cell. This procedure is initiated by CRNC. Node B tries to reconfigure the cell. If the reconfiguration is

successful, Node B returns the message Cell Reconfigure Response. If any of the changes cannot be done, Node B keeps the old configuration and returns the message Cell Reconfiguration Failure, indication what was unsuccessful.



a) Successful case



b) Unsuccessful case

The CELL RECONFIGURATION REQUEST message contains the following information:

- UC-ID
- Primary SCH Power (FDD only)
- Secondary SCH Power (FDD only)
- CPICH Power (FDD only)
- PSCH Power (TDD only)
- Maximum Transmission Power

The CELL RECONFIGURATION FAILURE message contains the following mandatory information:

- Cause for each failure reason

~~8.1.5.2~~8.1.5.3 Cell Deletione

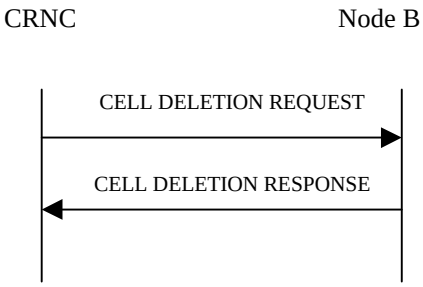
This NBAP common procedure is used to remove one cell in a Node B. This procedure is initiated by the Controlling RNC.

The RNC initiates deletion of a cell in Node B, which deletes the cell context. The result is communicated back to the RNC.

For the procedure to be executed successfully the following is needed:

- The cell in question must be configured in Node B.

- A Node B control port is available for communication between the RNC and the Node B.



Cell Deletione Procedure

The CELL DELETION REQUEST message contains the following information:

- UC-~~Id~~ID
- Transaction ~~Id~~ID (to identify this invocation of the procedure)

The CELL DELETION RESPONSE message contains the following information:

- Transaction ~~Id~~ID (same ~~Id~~ID as in the corresponding CELL DELETION REQUEST message)

8.1.6 Resource Event Management

When the resources of node B which are available to the RNC change (e.g. due to failures within Node B or due to interactions with management system), this procedure provides the means to inform the RNC of this change.

Where events at Node B occur on implementation specific entities within it, but the result is an impact on the logical resources of Node B, the Resource Event Management procedure shall be used to indicate this impact to the RNC. Any such impact on logical resources should include both total loss and performance degradation (for example fault such as receiver sensitivity reduction). Scenarios anticipated to trigger such a situation include:

- Timing and synchronisation errors in Node B
- Radio Resource events (see section 8.1.2)
- Node B equipment failure
- Interaction with the management plane
- Node B/ RNC synchronisation (FFS)

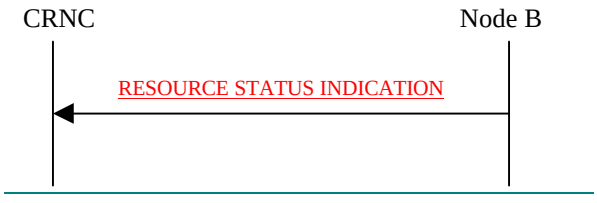
The Procedures for Resource event management:

- NodeB Failure
- NodeB Resource Notification

8.1.6.1 Resource Status Indication

With the Resource Status Indication message the Node B informs the RNC about changed capabilities of a logical resource.

The Node B shall use the following procedure to advise the CRNC of changed capabilities within a Node B:



The RESOURCE STATUS INDICATION message may include the following parameters:

- Local Cell ID

- Logical resource identity for the affected resource (i.e. UC-ID or the control transport channel ID)
- Indication type FFS
- Resource information (e.g. cell capacity, logical resources configured, communications control port ID)
- Availability Status
- Resource Operational State

For the procedure to be executed successfully, the following is needed:

- A Node B control port is available for communication between the RNC and the Node B.

~~8.1.6.1Resource Status Indication~~

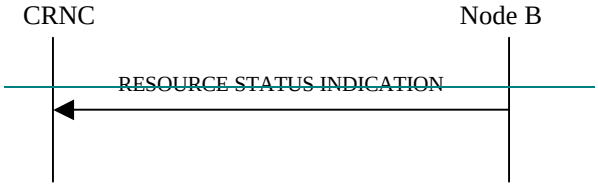
~~With the Resource Status Indication message the Node B informs the RNC about the abnormal condition of a logical resource that is the result of a temporary or permanent HW failure.~~

~~The following reasons to start this procedure are foreseen (list is not exhaustive):~~
~~The Node B starts this procedure when a faulty equipment is taken out of service in Node B, and the logical resource that it serves is taken out of service or its service is degraded. The loss of equipment could result in the loss of a cell, carrier, number of codes supported or power availability.~~

~~The Node B starts this procedure when it has detected that HW resources allocated for the cell control are no longer available and HW resources must be reallocated for that purpose. Node B sends the common NBAP message „Resource Status Indication“ to the RNC to indicate that cell parameters have been cleared and common transport channels of the cell have been locally released. The RNC may also initiate other procedures to clear resources affected by the failure. It is up to the RNC to e.g. retransmit the configuration data and reallocate the common transport channels. In this case the message contains at least the Local Cell Identifier.~~

~~The Node B starts this procedure when it has detected that HW resources allocated for the traffic termination point are no longer available and HW resources must be reallocated for that purpose. Node B sends the common NBAP message „Node B Failure“ to the RNC to indicate that all radio links and Node B communication contexts of the traffic termination point have been locally released. In this case the message contains at least the communication control port identifier, which uniquely also identifies the traffic termination point. At reception of the Traffic Termination Point Failure message the C-RNC is expected to locally release all the radio links and the C-RNC communication contexts of the identified traffic termination point.~~

~~The Node B shall use the following procedure to advise the CRNC of a failure at Node B:~~



~~The RESOURCE STATUS INDICATION message may include the following parameters:~~
~~- Failure type (e.g. service degradation, cell control or traffic termination point restart)~~

~~- Local Cell Id~~

~~- UC-Id~~

~~- Resource information (e.g. cell capacity, logical resources configured, communications control port identifier)~~

~~- Service Impact Level (indicates the grade of the service degradation i.e. total loss or degradation, also may indicate whether the fault is permanent or temporary (FFS))~~

~~For the procedure to be executed successfully, the following is needed:~~

- ~~A configured cell exists in Node B. Downlink and uplink common channel(s) may or may not have been defined in the cell.~~
- ~~A Node B control port is available for communication between the RNC and the Node B.~~

~~8.1.6.2Node B Resource Notification~~

~~The Node B resource notification procedure provides the means for Node B to advise the RNC of it's high level resource capabilities. The ability for Node B to provide this information to the RNC is important particularly at initial cell configuration, where the status of the Node B following both Implementation Specific configuration and cell configuration should be provided to the RNC.~~

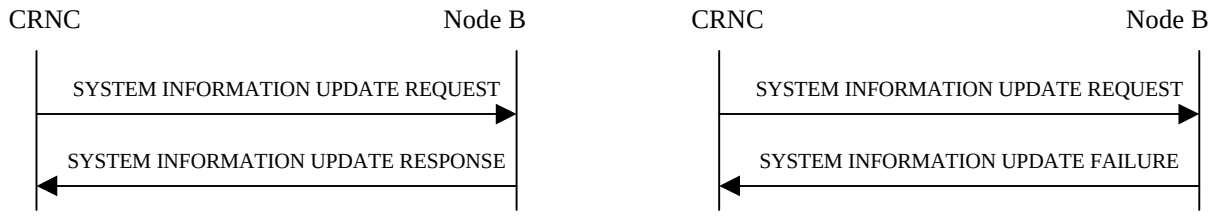
~~The Node B shall use the following procedure to provide resource notification to the RNC:~~

~~The RESOURCE NOTIFICATION INDICATION message contains the following information:~~

- ~~Local Cell Id (a pre-configured cell identity local to Node B, known by both RNC and Node B)~~
- ~~Resources Supported (e.g. cell capacity, logical resources configured)~~
- ~~Transaction Id (identifies the procedure)~~
- ~~Add/Delete Indicator (advises Node B if the resource identified is to be added or deleted from the current resource record)~~

8.1.7 System Information Update Procedure

This NBAP common procedure is used by the CRNC to send system information to its Node B, which broadcasts them on the logical channel BCCH. The procedure is triggered when CRNC sets the system information at start/restart and when the system information needs to be modified.



System~~Sysyem~~ Information Update Procedure

The SYSTEM INFORMATION UPDATE REQUEST message contains Master Information Block (MIB)- and/or System Information Block (SIB) segments which have to be broadcasted on the primary-CCPCH, together with scheduling information for each segment. The Node B is responsible for transmitting the received segments according the scheduling parameters provided by the CRNC. Based on the received segment position (SG_POS) and segment repetition (SG_REP), the Node B shall transmit the corresponding segment in frames with :

SFN mod SG_REP = SG_POS

If the SYSTEM INFORMATION UPDATE REQUEST message contains MIB segments in addition to SIB segments, the MIB segments shall be updated last in the BCH scheduling cycle.

~~new information to be broadcast on the BCCH.~~

The Node B shall either reply with a SYSTEM INFORMATION UPDATE RESPONSE message, or a SYSTEM INFORMATION UPDATE FAILURE message.

The SYSTEM INFORMATION UPDATE RESPONSE message indicates successful completion of the update procedure meaning that all the new segments are inserted in BCH scheduling cycle.

(Editor's Note: This does not necessarily mean that the information is already broadcasted on the Uu.)

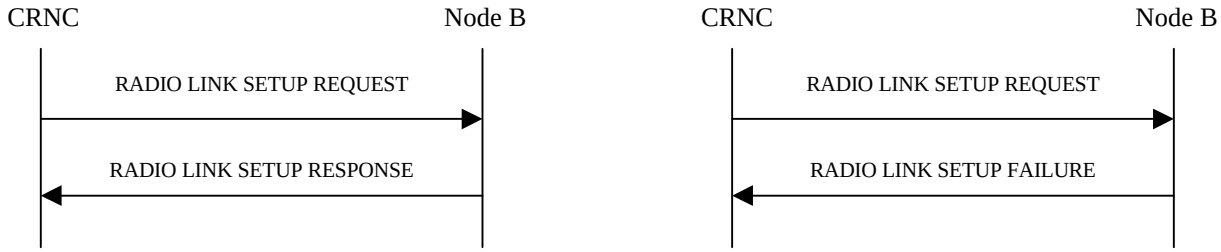
The~~while~~ SYSTEM INFORMATION UPDATE FAILURE message indicates unsuccessful completion of the BCH update. In this case the complete update has failed; no new segment will have been inserted in the BCH scheduling cycle.~~. When the SYSTEM INFORMATION UPDATE RESPONSE message indicates successful procedure completion, the information broadcast on the BCCH is updated successfully with the newly received information.~~

(Editor's note: the assumption that no SIB is originating from the Node B still needs to be confirmed by WG2)

(Editor's note: The need for Node B to insert information, and if needed, the exact solution for this is FFS)

8.1.8 Radio Link Setup

This NBAP common procedure is used when there is no Radio Link for this UE in the Node B.



a) Successful case **b) Unsuccessful case**

Radio Link Setup Procedure

The RADIO LINK SETUP REQUEST message contains the following information:

- UL Radio Resource (UL Scrambling Code [FDD], Time Slot – Midamble ~~Type &~~ Shift [TDD only], UL Channelisation Code)
- DL Radio Resource (DL Channelisation Codes, DL Scrambling Code per Radio Link [FDD only], Time Slot – Midamble ~~Type &~~ Shift [TDD only])
- DCH Information (DCH ~~Identifier~~ID~~, DCH Allocation/Retention Priority~~, DCH Frame handling Priority, Transmission Rate, Transport Format Set) (for each DCH in the UE)
- DSCH Information (DSCH ~~Identifier~~ID, RL ~~Identifier~~ID, Transport Format Set)
- Transport Format Combination Set
- Power control information (Editor's note: Absolute power will be provided as Initial Tx power)
- ~~Frequency~~
- RL ~~identifier~~ID #1
- Target UC-~~Id~~ID

- RL ~~identifier~~ID #2[FDD only]
- Target UC-~~Id~~ID [FDD only]
- Soft combining indication [FDD only] (may, must, or must not be combined with already existing radio links)

…

- RL ~~identifier~~ID #n [FDD only]
- Target UC-~~Id~~ID [FDD only]
- Soft combining indication [FDD only] (may, must, or must not be combined with already existing radio links)

When setting up coordinated DCH's, if the receiver is not able to setup one of the DCH's, the setup of the other DCH's requested with the same DCH Combination Indicator value shall be rejected.

The RADIO LINK SETUP RESPONSE message contains

- Transport layer addressing information (Transport layer address, Binding ID) per RL

The RADIO LINK SETUP FAILURE message contains

- (Editor's note: Contents shall be added)

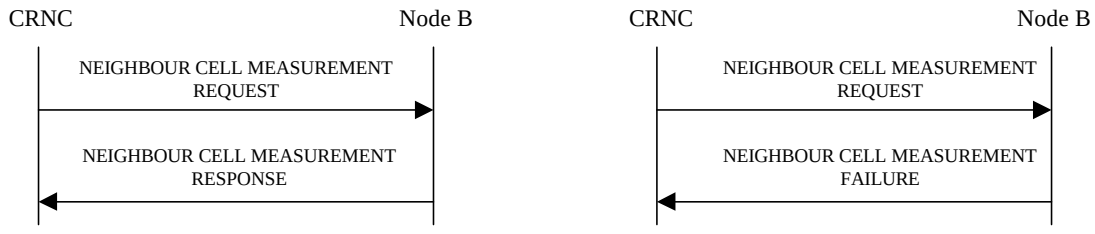
8.1.9 Neighbour Cell Measurement (for TDD)

(Editor's Note: this section is valid only if TDD sync. measure is found feasible by both R1 and R4)

The purpose of Neighbour Cell Synchronisation is to have the selected cell (Measuring Cell) read the synchronisation channel of another cell (Measured Cell) allowing the timing alignment necessary for TDD.

The Neighbour Cell Measurement Procedure requires three message types, a Neighbour Cell Measurement Request, a Neighbour Cell Measurement Response in the successful case when a neighbour cell is received and a chip offset is determined, and a Neighbour Cell Measurement Failure in the unsuccessful case. The CRNC initiates this based on its knowledge of the cell configuration and the cells necessary to align timing. The request contains the Measuring UC-~~Id~~ID that is making the request along with the pertinent neighbour Measured Cell information to allow it to read the synchronisation channel. The Node B responses back with the offset from its internal timing and the timing read from the neighbour's synch channel.

In case the Measured Cell IE is missing, the NodeB measures its relative frame timing in respect to the best cell it can detect (the ID of the detected cell is given in the Cell Measurement Response)



a) Successful case **b) Unsuccessful case**

NEIGHBOUR CELL MEASUREMENT REQUEST message contains:

- Transaction ID
- Measuring UC-~~Id~~ID
- Neighbour Measured Cell information

NEIGHBOUR CELL MEASUREMENT RESPONSE message contains:

- Transaction ID
- Measured UC-~~Id~~ID
- Measured Chip Offset

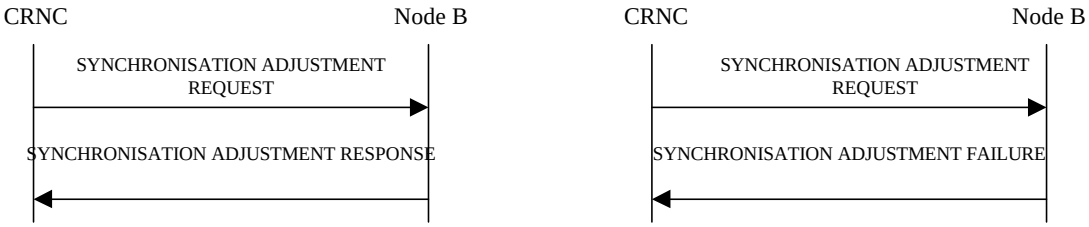
NEIGHBOUR CELL MEASUREMENT FAILURE message contains:

- Transaction ID
- Measured UC-~~Id~~ID
- Failure reason

8.1.10 Synchronisation Adjustment (for TDD)

(Editor's Note: this section is valid only if TDD sync. measure is found feasible by both R1 and R4)

The purpose of Synchronisation Adjustment is to allow the CRNC to adjust the timing of a Slave NodeB for time alignment in TDD. The Synchronisation Adjustment Procedure requires three message types, a Synchronisation Adjustment Request, a Synchronisation Adjustment Response in the successful case, and a Synchronisation Adjustment Failure in the unsuccessful case. The CRNC initiates this based on its knowledge of the cell configuration and the cells necessary to align timing. The request contains the UC-~~Id~~ID that is being aligned along with the pertinent Chip Offset Adjustment and the Master UC-~~Id~~ID, i.e. the ID of the cell that the NodeB continue to monitor (when this IE is not present, then the NodeB does not continue to monitor its master Cell). The NodeB responses back with a response in the successful case or a failure in the unsuccessful case.



a) Successful case **b) Unsuccessful case**

SYNCHRONISATION ADJUSTMENT REQUEST message contains:

- Transaction ID
- Master UC-~~Id~~ID
- Chip Offset Adjustment

SYNCHRONISATION ADJUSTMENT RESPONSE message contains:

- Transaction ID
- UC-~~Id~~ID

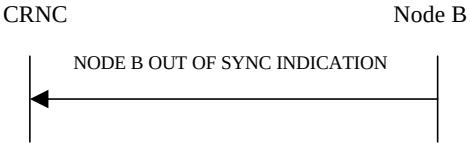
SYNCHRONISATION ADJUSTMENT FAILURE message contains:

- Transaction ID
- UC-~~Id~~ID
- Cause

8.1.11 Synchronisation Recovery (for TDD)

(Editor's Note: this section is valid only if TDD sync. measure is found feasible by both R1 and R4)

This recovery procedure is used in case the locked slave NodeB looses its Master Cell or the Master Cell becomes unreliable. When the CRNC is notified that the synchronisation of the NodeB to the Master Cell has been lost, it can decide whether to stop the NodeB transmission (in this case the SYNCHRONISATION RESTART is issued) or to proceed with different recovery actions.



NODE B OUT OF SYNC INDICATION message contains:

- Transaction ID

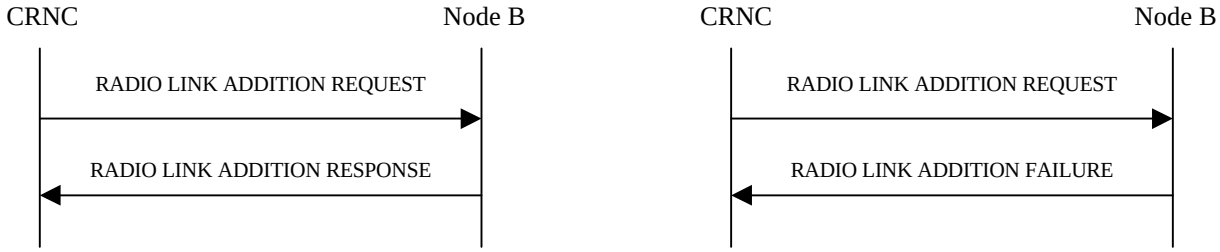
SYNCHRONISATION RESTART REQUEST message contains:

- Transaction ID

8.2 NBAP Dedicated Procedures

8.2.1 Radio Link Addition

This procedure is used when there is already one or more existing Radio Link(s) for this UE in the Node B.



a) Successful case **b) Unsuccessful case**

Radio Link Addition Procedure

The RADIO LINK ADDITION REQUEST message contains the following information :

- NodeB Communication Context ID
- ~~DL~~ Radio Resource (e.g. (DL Channelisation codes) per RL)
- Power control information (Editor's note: Absolute power will be provided as Initial Tx power)
- the parameter "FRAME OFFSET" (frame offset information) ~~[FDD only]~~

~~Frequency~~

- RL ~~identifier~~ID #n+1
- Target UC-~~Id~~ID
- Soft combining indication [FDD only] (may, must, or must not be combined with already existing radio links)
- RL ~~identifier~~ID #n+2 [FDD only]
- Target UC-~~Id~~ID [FDD only]
- Soft combining indication [FDD only] (may, must, or must not be combined with already existing radio links)

….

Other parameters are already known in the Node B, therefore there is no need to send them.

The RADIO LINK ADDITION RESPONSE message contains

- CRNC Communication Context ID
- Transport layer addressing information (AAL2 address, AAL2 binding ID) per RL (FDD only)

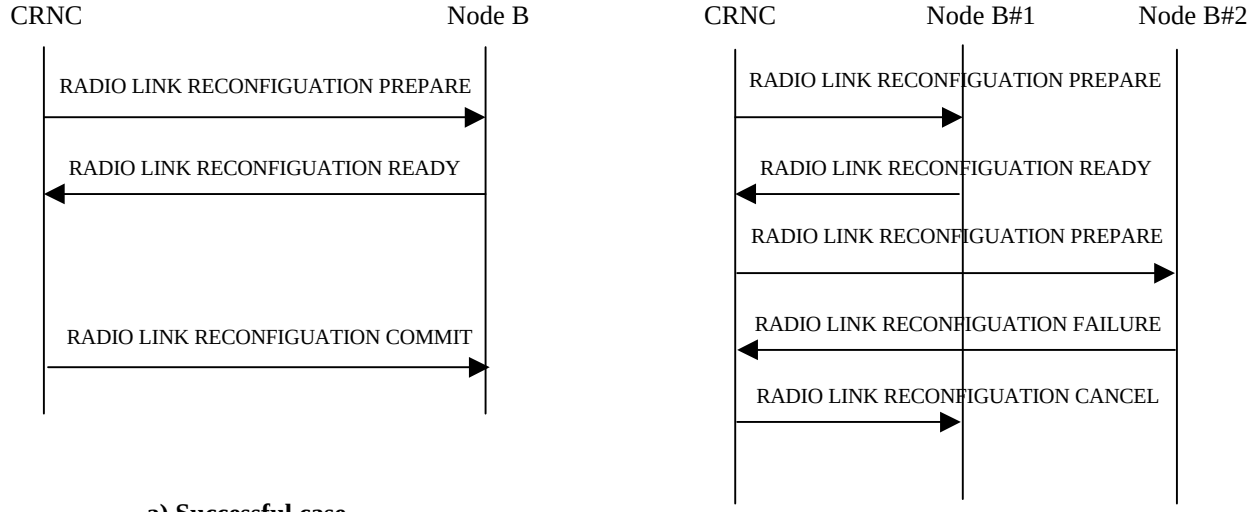
If the transport layer addressing information is not needed in case Node B decides to use an existing AAL2 connection, then the AAL2 address is not needed and the AAL2 binding ID of the already existing AAL2 connection is sent. If the Controlling RNC receives the AAL2 binding ID of an already existing AAL2 connection, the Controlling
RNC does not execute the setting of the AAL2 connection.

8.2.2 Radio Link Reconfiguration (Synchronized)

The Radio Link Reconfiguration (Synchronized) procedure is used to reconfigure radio links related to one UE-UTRAN connection within Node B. The procedure can be used to add, delete or reconfigure a DCH. It can also be used to put, remove a UE on a DSCH (in case of FDD) and modify the usage the UE is making of the DSCH (in case of FDD) .

The Radio Link Reconfiguration procedure is initiated by the Controlling RNC by sending the message RADIO LINK RECONFIGURATION PREPARE to the Node B. The message is sent using the relevant signalling connection. It includes the desired radio link parameters for the radio links to be used continuously after completion of this procedure (no change in active set). If the proposed modifications are approved by the Node B resource management algorithms, and when the Node B has successfully reserved the required resources, it responds to the Controlling RNC with the RADIO LINK RECONFIGURATION READY message. In the unsuccessful case a NBAP message RADIO LINK RECONFIGURATION FAILURE is returned, indicating among other things the reason for failure. The Controlling RNC informs the UE about the changes in the RL with the relevant RRC message(s) after sending the RADIO LINK RECONFIGURATION COMMIT message to the Node Bs. If necessary (for example when the new L1/L2 configuration cannot coexist with the old one), the SRNC selects the most suitable CFN for the switching between the old and new configuration and includes it in the RRC message and in the RADIO LINK RECONFIGURATION COMMIT message. The Controlling RNC is responsible for releasing unnecessary Iub transport bearers (in case of DCH deletion).

This procedure is not used for adding or deleting radio links.



a) Successful case **b) Unsuccessful case**

Radio Link Reconfiguration (Synchronized) Procedure

The RADIO LINK RECONFIGURATION PREPARE message contains:

- UL Radio Resources (UL Channelisation code type)
- DL Radio Resources (DL Channelisation code per RL) (if changed)
- Transport Format Combination Set

In case of DCH addition, this message also contains

- DCH Information (new DCH ID to add, Transmission Rate, Transport Format Set)
- DCH Frame Handling Priority

  When setting up co-ordinated DCH's, if the receiver is not able to setup one of the DCH's, the setup of the other DCH's requested with the same DCH Combination Indicator value shall be rejected.

In case of DCH reconfiguration, this message also contains

- DCH Information (existing DCH ID to modify, Transmission Rate, Transport Format Set)
- DCH Frame Handling Priority

In case of DCH deletion, this message also contains

- DCH Information (DCH ID to delete)
  In case of deleting one or more co-ordinated DCH's, the deletion of all DCH's established together with the same value for the DCH Combination Ind, shall be requested with one message. If deletion of only a subset of the co-ordinated DCH's is requested, the complete deletion shall be rejected.

In case of DSCH addition, [FDD] this message also contains
- DSCH Information (DSCH ~~Identifier~~ID to add, RL ~~identifier~~ID, Transport Format Set)

In case of DSCH modification, [FDD] this message also contains
- DSCH Information (DSCH ~~Identifier~~ID to modify, Transport Format Set)

In case of DSCH deletion [FDD], this message also contains
- DSCH Information (DSCH ~~Identifier~~ID to delete)

The RADIO LINK RECONFIGURATION PREPARE message may consist of a combination of DCH addition, deletion, and reconfiguration.

The RADIO LINK RECONFIGURATION READY message contains:
- FFS

In case of DCH addition, this message also contains
- Transport layer addressing information (Transport layer address, binding ID) for added DCH

In case of DCH reconfiguration, this message also contains
- Transport layer addressing information (Transport layer address, binding ID) for modified DCH (if needed)

In case of DSCH addition [FDD], this message also contains
- Transport layer addressing information (Transport layer address, binding ID) for added DSCH

In case of DSCH reconfiguration[FDD], this message also contains
- Transport layer addressing information (Transport layer address, binding ID) for modified DSCH

The RADIO LINK RECONFIGURATION FAILURE message contains
- CAUSE

The RADIO LINK RECONFIGURATION COMMIT message contains
- Timing information (e.g. CFN) to change old resource to new resource

The RADIO LINK RECONFIGURATION CANCEL message contains
- Cancel information to reconfigure resources

~~*Note: A mechanism for synchronising the switching from the old to the new configuration in the UE and in the Controlling RNC is needed and FFS.*~~

8.2.3 Radio Link Reconfiguration (Unsynchronised)

The Radio Link Reconfiguration (Unsynchronised) procedure is used to reconfigure radio links related to one UE-UTRAN connection within Node B. The procedure can be used to add, delete or reconfigure a DCH. It can also be used to put, remove a UE on a DSCH (in case of FDD) and modify the usage the UE is making of the DSCH(in case of FDD).

The Unsynchronised RL Reconfiguration is used when there is no need to synchronise the time of the switching from the old to the new configuration in the node-Bs used by the UE-UTRAN connection. This is the case when new TFCs are added or old TFCs are deleted without changing the TFCI values of the TFCs that are maintained

during the reconfiguration.

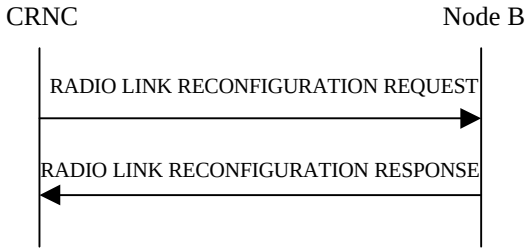
The Radio Link Reconfiguration procedure is initiated by the Controlling RNC by sending the message RADIO LINK RECONFIGURATION REQUEST to the Node B. The message is sent using the relevant signalling connection. It includes the desired radio link parameters for the radio links to be used continuously after completion of this procedure (no change in active set).

If the proposed modifications are approved by the Node B resource management algorithms, and when the Node B has successfully reserved the required resources, it responds to the Controlling RNC with the RADIO LINK RECONFIGURATION RESPONSE message.

In the unsuccessful case, a NBAP message RADIO LINK RECONFIGURATION FAILURE is returned, indicating among other things the reason for failure.

The Controlling RNC is responsible for releasing unnecessary Iub transport bearers (in case of DCH deletion).

This procedure is not used for adding or deleting radio links.



Radio Link Reconfiguration (Unsynchronised) Procedure

The RADIO LINK RECONFIGURATION REQUEST message contains:

- Transport Format Combination Set

In case of DCH addition, this message also contains

- DCH Information (new DCH ID to add, Transmission Rate, Transport Format Set)
-
- DCH Frame Handling Priority

When setting up co-ordinated DCH's, if the receiver is not able to setup one of the DCH's, the setup of the other DCH's requested with the same DCH Combination Indicator value shall be rejected.

In case of DCH reconfiguration, this message also contains

- DCH Information (existing DCH ID to modify, Transmission Rate, Transport Format Set)
- DCH Frame Handling Priority

In case of DCH deletion, this message also contains

- DCH Information (DCH ID to delete)

In case of deleting one or more coordinated DCH's, the deletion of all DCH's established together with the same value for the DCH Combination Ind, shall be requested with one message. If deletion of only a subset of the coordinated DCH's is requested, the complete deletion shall be rejected.

In case of DSCH addition [FDD], this message also contains

- DSCH Information (DSCH ~~Identifier~~ID to add, RL ~~identifier~~ID, Transport Format Set)

In case of DSCH modification [FDD], this message also contains

- DSCH Information (DSCH ~~Identifier~~ID to modify, Transport Format Set)

In case of DSCH deletion, this message also contains
- DSCH Information (DSCH ~~Identifier~~ID to delete)

The RADIO LINK RECONFIGURATION REQUEST message may consist of a combination of DCH addition, deletion, and reconfiguration.

The RADIO LINK RECONFIGURATION RESPONSE message contains:
- FFS

In case of DCH addition, this message also contains
- Transport layer addressing information (Transport layer address, binding ID) for added DCH

In case of DCH reconfiguration, this message also contains
- Transport layer addressing information (Transport layer address, binding ID) for modified DCH (if needed)

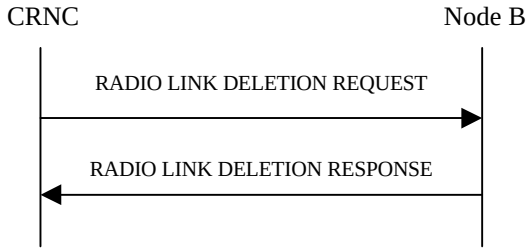
In case of DSCH addition [FDD], this message also contains
- Transport layer addressing information (Transport layer address, binding ID) for added DSCH

In case of DSCH reconfiguration [FDD], this message also contains
- Transport layer addressing information (Transport layer address, binding ID) for modified DSCH

The RADIO LINK RECONFIGURATION FAILURE message contains
- CAUSE

8.2.4 Radio Link Deletion

When the Controlling RNC is asked to delete a cell from the active set of a specific RRC connection, the message RADIO LINK DELETION REQUEST is sent to the corresponding Node B. The message contains essentially the Radio Link ~~identifier~~ID of the Radio Link to be deleted. Upon reception of the message, Node B should delete immediately the radio link and all related allocations within the Node B and acknowledge the deletion to the Controlling RNC with the message RADIO LINK DELETION RESPONSE.
The Controlling RNC is responsible to release the corresponding Iub transport bearers if they are not used by other radio links.



Radio Link Deletion Procedure

The RADIO LINK DELETION REQUEST message contains:
- Radio Link ~~Identifiers~~ID (of cells to be deleted)

The RADIO LINK DELETION RESPONSE message contains:
- FFS

8.2.5 DL Power Control (for FDD only)

The purpose of this procedure is to balance the DL transmission powers of Radio Links used for the related RRC connection within the NodeB. DL POWER CONTROL procedure is initiated by the Controlling RNC by sending a *DL POWER CONTROL REQUEST* NBAP message, which contains the desired power reference for the Radio

Links within the node B.
CRNC may contain either *DL Reference Power* or *DL Reference Power Information*. If no RL id is provided in the message, the DL Reference Power value applies to all radio links.

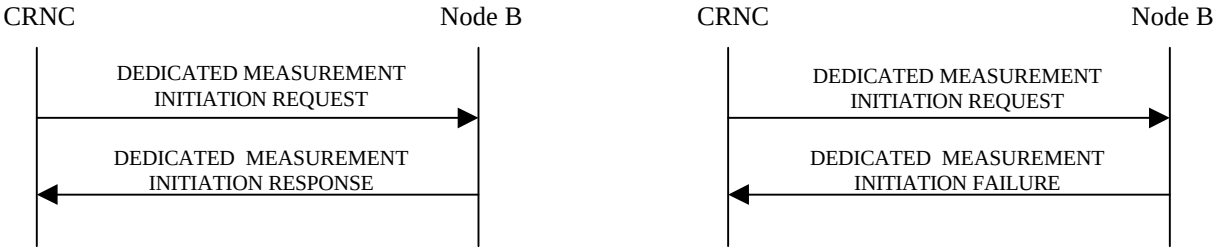
The DL POWER CONTROL procedure can be initiated by the CRNC at any time when the NodeB communication context exists, irrespective of other ongoing CRNC initiated dedicated NBAP procedures towards this NodeB communication context. The only exception occurs when the CRNC has requested the deletion of the last RL via this NodeB, in which case the DL POWER CONTROL procedure shall no longer be initiated.

DL Power Control Procedure

8.2.6 Radio Network Performance Measurement

8.2.6.1 Dedicated Measurement Initiation Request

For requesting measurements, the RNC use the following procedure:



a) Successful case **b) Unsuccessful case**

Measurement Request Procedure

The DEDICATED MEASUREMENT INITIATION REQUEST message includes the following information:

Measurement ~~Id~~ID: This is a RNC defined identifier that uniquely identifies the measurement.

Measurement Object: This defines on which resource the measurement should be performed. For example might this identifier point out a radio link. *Other measurement objects are FFS.*

Measurement Type: This defines what measurement that should be performed. This could for example be ~~"used power on the downlink". *Other measurement types are FFS.*~~

SIR: See [4],[5]

Transmitted Code Power: See [4], [5]

SIR error: The difference between the SIR-target (used by the UL inner loop power control) and the received SIR as defined in [4], [5].

Measurement Characteristics: This defines how the measurements should be performed. Possible measurement characteristics are: ~~For example measurement frequency, timing information, and filtering information. *The exact structure and contents of this parameter is dependent on the Measurement Type and is FFS.*~~

- **Measurement Frequency**
- **Averaging Duration**

Report Characteristics: The reporting could be any of the following classes:

~~**Periodic:** Reports should be delivered in a periodic matter with some frequency. In this case the update frequency have to be specified.~~

~~**Event Triggered:** Reports should be delivered upon a specific event in Node B. In this case the event have to be specified.~~

- ~~**Immediate Reporting:** A report should be delivered immediately. Only one measurement report should be sent and after that the measurement is automatically cancelled~~

On-Demand

Name	On-Demand
Definition	Node B shall as soon as possible respond with a measurement report containing the requested measurement. The response time should mainly depend on the time it takes to measure the entity.
Additional Parameters	None

Periodic

Name	Periodic
Definition	Node B shall schedule and measure the entity so that a measurement report is delivered periodically.
Additional Parameters	Reporting Frequency

A periodic report shall be sent until CRNC issues a DEDICATED MEASUREMENT TERMINATION REQUEST or until the NodeB issues a DEDICATED MEASUREMENT FAILURE INDICATION

Event-Triggered

Name	Event-Driven Type A
Definition	Node B shall report when the measured entity rises above an absolute threshold and stays there for the hysteresis time.
Additional Parameters	Absolute Threshold (Mandatory) Hysteresis Time (Optional)

Name	Event-Driven Type B
Definition	Node B shall report when the measured entity falls below an absolute threshold and stays there for the hysteresis time.
Additional Parameters	Absolute Threshold (Mandatory) Hysteresis Time (Optional)

Name	Event-Driven Type C
Definition	Node B shall report when the measured entity increases more than the threshold within the rising time.
Additional Parameters	Relative Threshold (Mandatory) Rising Time (Mandatory)

Name	Event-Driven Type D
Definition	Node B shall report when the measured entity decreases more than the threshold within the fall time.
Additional Parameters	Relative Threshold (Mandatory) Fall Time (Mandatory)

Name	Event-Driven Type E
Definition	Node B shall report when the measured entity rises above absolute threshold 1 and stays there for the hysteresis time (Event 1). In addition, after event 1, Node B shall report when the measured entity falls below the absolute threshold 2 and stays there for the hysteresis time (event 2). If absolute threshold 2 has not been specified, absolute threshold 1 is used for event 2 as well. If a reporting frequency has been specified, the Node B shall send periodic reports between the events 1 and 2. Periodic reports shall be sent until event 2 occurs or the measurement is terminated. If no periodicity is specified, only two measurement reports will result. Note: If at start of the measurement, the measured entity is already above absolute threshold 1 and stays there for the hysteresis time, an immediate report of event 1 shall be sent.
Additional Parameters	Absolute Threshold 1 (Mandatory)

	Absolute Threshold 2 (Optional) Hysteresis Time (Optional) Reporting Frequency (Optional)

Name	Event-Driven Type F
Definition	Node B shall report when the measured entity falls below absolute threshold 1 and stays there for the hysteresis time (Event 1). In addition, after event 1, Node B shall report when the measured entity rises above the absolute threshold 2 and stays there for the hysteresis time (event 2). If absolute threshold 2 has not been specified, absolute threshold 1 is used for event 2 as well. If a reporting frequency has been specified, the Node B shall send periodic reports between the events 1 and 2. Periodic reports shall be sent until event 2 occurs or the measurement is terminated. If no periodicity is specified, only two measurement reports will result. Note: If at start of the measurement, the measured entity is already below absolute threshold 1 and stays there for the hysteresis time, an immediate report of event 1 shall be sent.
Additional Parameters	Absolute Threshold 1 (Mandatory) Absolute Threshold 2 (Optional) Hysteresis Time (Optional) Reporting Frequency (Optional)

The possibility to request several measurements for the same event is FFS

The DEDICATED MEASUREMENT INITIATION RESPONSE message is used to accept a requested measurement and it includes the following information:

Measurement ~~Id~~ID: This is the same ~~Id~~ID as that was used in the request.

The DEDICATED MEASUREMENT INITIATION FAILURE MESSAGE is used to reject a requested measurement and it includes the following information:

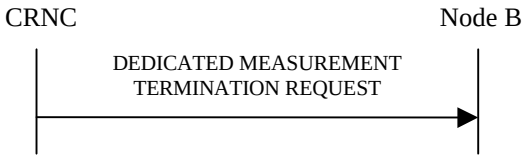
Measurement ~~Id~~ID: This is the same ~~Id~~ID as that was used in the request.

Cause: This states the cause for the reject. ~~*The exact content of this parameter is FFS.*~~

Processor overload
Hardware failure
Measurement not supported
Unspecified failure

8.2.6.2 Dedicated Measurement Termination initiated by CRNC

For termination of previously requested measurements, the CRNC use the following procedure:



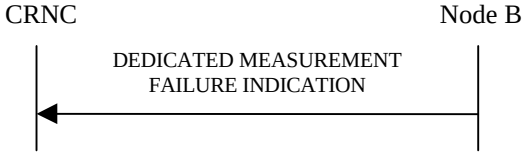
Dedicated Measurement Termination Procedure

The DEDICATED MEASUREMENT TERMINATION REQUEST message includes the following information:

Measurement ~~Id~~ID: This is the same ~~Id~~ID that was used in the request.

8.2.6.3 Dedicated Measurement Termination initiated by Node B

For termination of previously requested measurements, the Node B use the following procedure:



Dedicated Measurement Failure Indication Procedure

The DEDICATED MEASUREMENT FAILURE INDICATION message includes the following information:

Measurement ~~Id~~ID: This is the same ~~Id~~ID as that was used in the request.

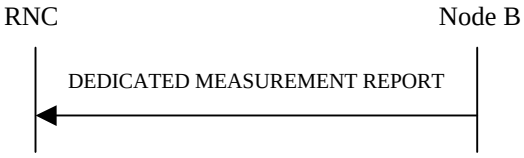
- **Cause:** This states the reason for the termination. ~~*The exact content of this parameter is F.F.S.*~~*Following reasons are possible:*
  - Processor overload
  - Hardware failure
  - O&M intervention
  - Unspecified break off

8.2.6.4 Dedicated Measurement Reporting Procedure

This procedure is used by the NodeB to report its measurements to the RNC.

When the measurement reporting criteria are met, the NodeB sends the DEDICATED MEASUREMENT REPORT message to the RNC. Message includes the required measurement.

The NodeB is allowed to initiate the MEASUREMENT REPORTING message at any time after having sent the RADIO LINK SETUP RESPONSE message, as long as the NodeB communication context exists.



Measurement Reporting Procedure

The MEASUREMENT REPORT message includes the following information:

Measurement ~~Id~~ID: This is the same id as that was used in the request.

Time Reference: This is a time reference showing the time of the measurement. *The accuracy of this is FFS.*

Value

The possibilities for including several values and/or several measurements in the same report are FFS.

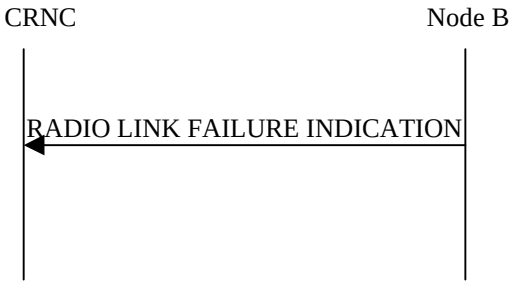
8.2.7 Radio Link Failure

The Node B starts this procedure when a radio link is no longer available. For example, ~~T~~the reason for this is a NodeB internal failure~~ or lost radio interface synchronisation due to bad radio conditions~~. The Radio Link Failure procedure is also used to notify the non achievement or loss of UL synchronisation: the message is sent when the UL synchronisation of the radio link is not achieved at the RL setup, RL Addition or RL reconfiguration, or it is lost during the active connection. Other reasons are FFS.

Consequently, the NodeB sends the NBAP message, RADIO LINK FAILURE INDICATION to the CRNC.

The message specifies at least:

- RL ID(s): This may address some or all of the radio links of the Node B.
- A reason code for the release (ex: RF failure, hardware failures, overload condition)



Radio Link Failure procedure

Whether this procedure can also be used to notify dropping of DCH(s) is FFS.

8.2.8 Radio Link Restore

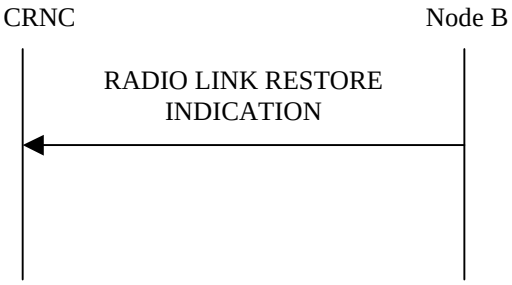
This procedure is used to notify the re-achievement of the UL synchronisation after that the RL Failure procedure has been used to notify the loss of the synchronisation

When over the UL synchronisation is re-established, the Node B sends the RL RESTORE message to the CRNC. The message is sent only if the RL Failure procedure has been previously used to notify the loss of UL synchronisation, and it is not sent if a NBAP procedures to modify or remove the RL have been activated in the NodeB after the RL failure has been sent..

For example, the RL Restore message is not sent to notify the successful achievement of the UL synchronisation at the RL Setup, Addition, and Reconfiguration.

The message contains the following information:

- RL ID(s)



Radio Link Restore procedure

9 Elements for NBAP communication

9.1 Message functional definition and content

9.1.1 Message Contents

An information element can be of the following *types*:

M	The information element is mandatory, i.e. always present in the message
O	The information element is optional, i.e. may or may not be present in the message independently on the presence or value of other information elements in the same message
C	The presence of the information element is conditional to the presence or to the value of another information element, as reported in the correspondent footnote

In case of an information element group, the group is preceded by a name for the info group (in bold). It is also indicated whether the group is mandatory, optional or conditional. Each group may be also repeated within one message. The presence field of the information elements inside one group defines if the information element is mandatory, optional or conditional if the group is present.

~~9.1.32~~9.1.2 COMMON TRANSPORT CHANNEL SETUP REQUEST

This message is sent from the RNC to the Node B to request the setup and configuration of a common transport channel as well as the associated physical channel in the Node B. One common transport channel at a time can be setup using this procedure. The channel is available for use after the successful completion of this procedure.

~~9.1.32.1~~9.1.2.1 FDD Message

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
UC-~~Id~~ID		M
DL scrambling code ID		M
Common transport channel ID		M
Common transport channel type		M
Configuration Generation ID (FFS)		M
Transmit Offset		M
FACH parameters		**O**
DL Channelisation code number		M
DL Channelisation code spreading factor		M
DL Transport Format Set		M
DL Transport Format Combination Set		M
ToAWS		M
ToAWE		M
FACH Power		M
BCH parameters		**O**
BCH power		M
FACH/PCH parameters		**O**
DL Channelisation code number		M
DL Channelisation code spreading factor		M
DL Transport Format Set		M
DL Transport Format Combination Set		M
ToAWS		M
ToAWE		M
FACH/PCH power		M
PICH parameters		**FFS**
DL Channelisation code		M
PICH power		M
RACH parameters		**O**
Preamble Spreading Code		M
UL scrambling code		M
Allowed Preamble Signatures		M
Allowed Spreading Factor for the message part		M

Allowed Access Slot		M
Preamble to Preamble timing		M
AICH parameters		**FFS**
DL Channelisation Code		M
AICH Power		M

~~9.1.32.2~~9.1.2.2 TDD Message

Note that it's assumed that in TDD the FACH and PCH are mapped on the Secondary CCPCH (this assumption should be confirmed by WG1), while the BCH is mapped on the Primary CCPCH.

Information Element	**Reference**	**Type**
Message Discriminator		M
Message Type		M
Transaction ID		M
UC-ID		M
~~Cell carrier ID~~		~~M~~
Common transport channel ID		M
Common transport channel type		M
Configuration Generation ID (FFS)		M
Transmit Offset		M
FACH parameters		**O**
Channelisation Code Number		M
Time Slot		M
Midamble Shift		M
Superframe Offset		O
Repetition Period		M
Repetition Length		O
FACH Power		M
Primary CCPCH parameters		**O**
Channelisation Code Number		M
Time Slot		M
Midamble Code		M
Midamble shift		M
Superframe Offset		O
Repetition Period		M
Repetition Length		O
Primary CCPCH power		M
Secondary CCPCH parameters		**O**

Channelisation Code Number		M
Time Slot		M
Midamble Shift		M
Superframe Offset		O
Repetition Period		M
Repetition Length		O
Secondary CCPCH power		M
PRACH parameters		**M**
Allowed spreading factors for the message part		M
Timeslots		M
Channelisation Codes Number		M
Midamble Code		M
PDSCH parameters		**M**
PDSCH ID		O
Channelisation Code Number		M
Time Slot		M
Midamble Shift		M
Superframe Offset		O
Repetition Period		M
Repetition Length		O
TFCI Presence		O
PUSCH parameters		**M**
PUSCH ID		O
Channelisation Code Number		M
Time Slot		M
Midamble Shift		M
Superframe Offset		O
Repetition Period		M
Repetition Length		O
TFCI Presence		O

~~(Editor's note: contributions are invited)~~

~~9.1.33~~9.1.3 COMMON TRANSPORT CHANNEL SETUP RESPONSE

This message is sent to inform the RNC about the common transport channel that Node B has been able to define, and return any transport layer information required. Information on one physical channel at a time is given using this response.

Information Element	Reference	Type

Message Discriminator		M
Message Type		M
Transaction ID		M
FACH/PCH/RACH/DSCH[TDD]/USCH[TDD] parameters		**O**
Transport layer Information		**M**
Transport layer address		M
Binding ID for FACH / PCH / RACH / DSCH [TDD] / USCH[TDD]		M
~~Binding ID for FACH~~		~~O~~
~~Binding ID for PCH~~		~~O~~
~~Binding ID for RACH~~		~~O~~

~~9.1.34~~9.1.4 COMMON TRANSPORT CHANNEL SETUP FAILURE

This message is sent to inform the RNC that the attempt to configure a downlink common transport channel has failed.

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Failure cause		M

9.1.5 COMMON TRANSPORT CHANNEL RECONFIGURATION REQUEST

This message is sent from the RNC to the Node B to request the reconfiguration of a common transport channel in the Node B. One common transport channel at a time can be reconfigured using this procedure.

~~9.1.35.1~~9.1.5.1 FDD Message

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
UC-~~Id~~ID		M
Configuration Generation ID (FFS)		M
FACH Parameters		**O**
FACH Power		C
BCH Parameters		**O**
BCH Power		C
FACH / PCH Parameters		**O**
FACH / PCH Power		C
PICH Parameters		**FFS**
PICH Power		C
AICH Parameters		**FFS**

AICH power		C

(Editor's Note: Other parameters may be introduced)

~~9.1.35.2~~9.1.5.2 TDD Message

~~(Editor's note: contributions are invited)~~

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
UC-ID		M
Configuration Generation ID (FFS)		M
FACH Parameters		**O**
FACH Power		C
BCH Parameters		**O**
BCH Power		C
PCH Parameters		**O**
PCH Power		C
DSCH Parameters		**O**
DSCH Power		C
~~**USCH Parameters**~~		~~**O**~~
~~USCH Power~~		~~C~~

~~9.1.36~~9.1.6 COMMON TRANSPORT CHANNEL RECONFIGURATION RESPONSE

This message is sent from the Node B to the RNC to indicate the common transport channel that the Node B has been able to reconfigure.

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M

~~9.1.37~~9.1.7 COMMON TRANSPORT CHANNEL RECONFIGURATION FAILURE

This message is sent from the Node B to the RNC to inform the RNC that the attempt to reconfigure a common transport channel has failed.

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Common Transport Channel Failure Cause		M

~~9.1.38~~9.1.8 COMMON TRANSPORT CHANNEL DELETION REQUEST

This message is sent to inform the Node B about what common transport that the RNC no longer wants to be supported by Node B.

Information Element	Reference	Type
Message Discriminator		M

Message Type		M
Transaction ID		M
common transport channel ID		M
Configuration Generation ID (FFS)		M

~~9.1.39~~9.1.9 COMMON TRANSPORT CHANNEL DELETION RESPONSE

This message is sent to inform the RNC about what common transport channels that Node B no longer shall support.

Information Element	**Reference**	**Type**
Message Discriminator		M
Message Type		M
Transaction ID		M

9.1.10 BLOCK RESOURCE REQUEST

This message is sent from Node B to CRNC to request the blocking of a resource supported in Node B at the RNC.

Information Element	**Reference**	**Type**
Message Discriminator		M
Message Type		M
Transaction ID		M
~~Communication Control Port ID~~		~~O~~
UC-ID		C[1]
Priority Indicator		M
Shutdown Timer		C[2]

C1: The information element is present when Node B supports multiple cell ID's.
C2: The information element is present when the priority indicator requests a class 2 or class 3 shutdown.

9.1.11 BLOCK RESOURCE RESPONSE

This message is sent from CRNC to Node B in response to a Block Resource Request to indicate a successful/pending attempt to block a resource.

Information Element	**Reference**	**Type**
Message Discriminator		M
Message Type		M
Transaction ID		M

9.1.12 BLOCK RESOURCE FAILURE

This message is sent from CRNC to Node B in response to a Block Resource Request to indicate a failed attempt to block a resource.

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Cause		M

9.1.13 NODE B RESTART INDICATION

(Editor's note: contributions are invited)

9.1.14 AUDIT REQUIRED 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
Local Cell ID parameters		M
Local Cell ID		M

9.1.15 RNC RESTART INDICATION

(Editor's note: contributions are invited)

9.1.16 RNC RESTART COMPLETION INDICATION

(Editor's note: contributions are invited)

9.1.17 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
Transaction ID		M
UC-ID parameters		O
UC-ID		M
Configuration Generation ID		M

(Editor's note: details of Configuration Generation ID are FFS)

9.1.18 AUDIT RESPONSE

This message is sent to the RNC indicating which UC-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
UC-ID parameters		O
UC-ID		M

~~9.1.16~~9.1.19 COMMON MEASUREMENT INITIATION REQUEST

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Measurement ID		M
Measurement Object		M
Measurement Type		M
Measurement Characteristic		M
Report Characteristics[1]		M
On-Demand		**C1**
Periodic		**C1**
Reporting Frequency		M
Event-Triggered		**C1**
Event-Triggered Type A		**C2**
Absolute Threshold		M
Hysteresis Time		O
Event-Triggered Type B		**C2**
Absolute Threshold		M
Hysteresis Time		O
Event-Triggered Type C		**C2**
Relative Threshold		M
Rising Time		M
Event-Triggered Type D		**C2**
Relative Threshold		M

[1] Can be periodic, event triggered or immediate.

Fall Time		M
Event-Triggered Type E		**C2**
Absolute Threshold 1		M
Absolute Threshold 2		O
Hysteresis Time		O
Reporting Frequency		O
Event-Triggered Type F		**C2**
Absolute Threshold 1		M
Absolute Threshold 2		O
Hysteresis Time		O
Reporting Frequency		O

C1: One and only one of On-Demand, Periodic or Event-Triggered can be present at the same time.
C2: One and only one of Event A to Event F can be present at the same time.

~~9.1.17~~9.1.20 COMMON MEASUREMENT INITIATION RESPONSE

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Measurement ID[2]		M

~~9.1.18~~9.1.21 COMMON MEASUREMENT INITIATION FAILURE

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Measurement ID[3]		M
Cause		O

~~9.1.19~~9.1.22 COMMON MEASUREMENT TERMINATION REQUEST

Information Element	Reference	Type
Message Discriminator		M

[2] This is the same measurement ID as that sent in Request message.
[3] This is the same measurement ID as that sent in Request message.

Message Type		M
Transaction ID		M
Measurement ID[4]		M

~~9.1.20~~9.1.23 COMMON MEASUREMENT FAILURE INDICATION

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Measurement ID[5]		M
Cause		M

~~9.1.21~~9.1.24 COMMON MEASUREMENT REPORT

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Measurement ID[6]		M
Time Reference		O
Value		M

~~9.1.24~~9.1.25 CELL SETUP REQUEST

This message is sent from CRNC to inform the Node B in order to configure a cell context and to create the associated SCHes.

Several carriers per cell is FFS. *(Editor's note: it is assumed that a cell will only manage one carrier)*

~~9.1.24.1~~9.1.25.1 FDD Message

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Local Cell ID		M
UC-ID~~d~~		M
Configuration Generation ID (FFS)		M

[4] This is the same measurement ID as that sent in Request message.

[5] This is the same measurement ID as that sent in Request message.

[6] This is the same measurement ID as that sent in Request message

Primary SCH power		M
Secondary SCH power		M
Common Pilot CH power		M
T Cell		M
UL Frequency number		M
DL Frequency number		M
Max transmission power		M
Primary DL scrambling code		M

~~9.1.24.2~~9.1.25.2 TDD Message

~~(Editor's note: contributions are invited)~~

Information Element	**Reference**	**Type**
Message Discriminator		M
Message Type		M
Transaction ID		M
Local UC-ID		M
UC-ID		M
Configuration Generation ID (FFS)		M
~~UARFCN~~		~~M~~
Cell Parameter		M
PSCH & PCCPCH Allocation		M
PSCH & PCCPCH Time Slot Pointer (k)		M
PCCPCH Time Slot Pointer (i)		C1
PSCH Power		M
Max transmission power		M
Time Slot Configuration		M
Time Slot		M
Time Slot Status		M
Time Slot Direction		M

C1: this IE is present only if *PSCH & PCCPCH Allocation=Case 3*

~~9.1.25~~9.1.26 CELL SETUP RESPONSE

This message is sent to inform the CRNC that the cell and SCH configuration was successful in Node B.

Information Element	**Reference**	**Type**
Message Discriminator		M
Message Type		M
Transaction ID		M

~~9.1.26~~9.1.27 CELL SETUP FAILURE

This message is sent to inform the CRNC that the attempt to configure a cell and the SCHes has

failed.

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Cause		M

9.1.28 CELL RECONFIGURATION REQUEST

This message is sent to inform the Node B about what cell configuration, that the RNC want Node B to change.

9.1.28.1 FDD Message

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
UC-ID		M
Configuration Generation ID (FFS)		M
Primary SCH Power		O
Secondary SCH Power		O
CPICH Power		O
Max Transmission Power		O

9.1.28.2 TDD Message

(Editor's note: contributions are invited)

9.1.29 CELL RECONFIGURATION RESPONSE

This message is sent to inform the RNC about a successful reconfiguration in Node B.

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M

9.1.30 CELL RECONFIGURATION FAILURE

This message is sent to inform the RNC that the attempt to reconfigure the cell has failed.

Information Element	Reference	Type
Message Discriminator		M

Message Type		M
Transaction ID		M
Cause		M

~~9.1.27~~9.1.31 CELL DELETION~~E~~ REQUEST

This message is sent from CRNC to order the Node B to delete the cell context and the corresponding SCHes.

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
UC-~~Id~~ID		M

~~9.1.28~~9.1.32 CELL DELETION~~E~~ RESPONSE

This message is sent to inform the CRNC that the cell and SCHes are deleted in Node B.

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M

~~9.1.30~~9.1.33 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 (FFS)		M
Resource Impact		**C**[7]
Local Cell ID		**O**
~~Resource Operational State~~		~~M~~
~~Service Impact Level~~		~~M~~
~~Availability Status~~		~~O~~
~~Add/Delete Indicator~~		~~M~~
Number Channel Elements		O

[7] The information element is present when the Indication Type reflects ~~service impact~~Availability Status..

Maximum DL Power Capability		O
UC-~~Id~~ID		**O**
Maximum DL Power Capability		FFS
New Minimum Spreading Factor		FFS
Resource Operational State		~~M~~O
~~Service Impact Level~~		~~M~~
Availability Status		O
Communication Control Port ID		**O**
Resource Operational State		M
~~Service Impact Level~~		~~M~~
Availability Status		O
BCH ID		**O**
Resource Operational State		M
~~Service Impact Level~~		~~M~~
Availability Status		O
PCH ID		**O**
Resource Operational State		M
~~Service Impact Level~~		~~M~~
Availability Status		O
PICH ID		**O (FFS)**
Resource Operational State		M
Availability Status		O
FACH ID		**O**
Resource Operational State		M
~~Service Impact Level~~		~~M~~
Availability Status		O
RACH ID		**O**
Resource Operational State		M
~~Service Impact Level~~		~~M~~
Availability Status		O
AICH ID		**O (FFS)**
Resource Operational State		M
Availability Status		O
DSCH ID		**O**
Resource Operational State		M
~~Service Impact Level~~		~~M~~
Availability Status		O

USCH ID		**O**
Resource Operational State		M
~~Service Impact Level~~		~~M~~
Availability Status		O
Cause		O

NOTE: The resource objects defined above is an initial list only. The addition or removal of further objects is ffs.

9.1.34 SYSTEM INFORMATION UPDATE REQUEST

Information Element	**Reference**	**Type**
Message Discriminator		M
Message Type		M
Transaction ID		M
MIB Segment Information		C1
MIB SG REP		M
MIB SG POS		M
MIB SG		M
SIB Segment Information		C1
SIB SG REP		M
SIB SG POS		M
SIB SG		M

C1: At least one of the information element groups shall be present.

9.1.35 SYSTEM INFORMATION UPDATE RESPONSE

Information Element	**Reference**	**Type**
Message Discriminator		M
Message Type		M
Transaction ID		M

9.1.36 SYSTEM INFORMATION UPDATE FAILURE

Information Element	**Reference**	**Type**
Message Discriminator		M
Message Type		M
Transaction ID		M

~~9.1.34~~9.1.37 RADIO LINK SETUP REQUEST

This message is sent from CRNC to Node B in order to start radio link setup for the UE in the Node B.

~~9.1.34.1~~9.1.37.1 FDD message

~~This message is sent from CRNC to Node B in order to start radio link setup for the UE in the Node B.~~

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
CRNC Communication Context ID		M
Transaction ID		M
UL Scrambling Code		M
UL Channelisation Code		**M**
Length of UL Channelisation Code		M
DCH Information		**M**
DCH ID		M
DCH Combination Ind		O
UL FP mode		M
Payload CRC Presence Indicator		M
DCH Frame Handling Priority		O
UL Transport Format Set		M
DL Transport Format Set		M
ToAWS		M
ToAWE		M
UL Transport Format Combination Set		M
UL TFCI used flag		*(FFS)*
DL Transport Format Combination Set		M
DL TFCI used Flag		*(FFS)*
RL Information		**M**
RL ID		M
UC-~~Id~~ID		M
Frame Offset		M
Chip Offset		M
Propagation Delay		O
Diversity Control Field		C[8]
DL Scrambling Code		M

[8] This Information Element is present for all the radio links except the first radio link in the Node B.

DL Channelisation Code		**M**
DL Channelisation Code Number		M
~~(~~iInitial~~)~~ DL transmission power		M
Maximum DL power		M
Minimum DL power		M
UL Eb/No Target		M
~~DL Reference Power~~		~~M~~

~~9.1.34.2~~9.1.37.2 TDD message

~~(Editor's note: contributions are invited)~~

Information Element	**Reference**	**Type**
Message Discriminator		M
Message Type		M
CRNC Communication Context ID		M
Transaction ID		M
RL ID		M
UC-ID		M
Frame Offset		M
UL CCTrCH Information		**M**
CCTrCH ID		M
CCTrCH Activation CFN		O
CCTrCH Duration		O
Transport Format Combination Set		M
UL DPCH Information		**M**
DPCH ID		M
Channelisation Code Number		M
Midamble Shift		M
Time Slot		M
Superframe Offset		O
Repetition Period		M
Repetition Length		O
TFCI Presence		O
DL CCTrCH Information		**M**
CCTrCH ID		M
CCTrCH Activation CFN		O
CCTrCH Duration		O
Transport Format Combination Set		M

DL DPCH information		**M**
DPCH ID		M
Channelisation Code Number		M
Midamble Shift		M
Time Slot		M
Superframe Offset		O
Repetition Period		M
Repetition Length		O
TFCI Presence		O
DCH Information		**M**
DCH ID		M
UL FP mode		M
Payload CRC Presence Indicator		M
Supporting CCTrCH ID		M
DCH Combination Ind		O
DCH Frame Handling Priority		O
UL Transport Format Set		M
DL Transport Format Set		M
ToAWS		M
ToAWE		M
Initial DL transmission power		M
Maximum DL power		M
Minimum DL power		M

~~9.1.35~~9.1.38 RADIO LINK SETUP RESPONSE

This message is sent from Node B to CRNC as response to the Radio Link Setup message when all RLs have been successfully setup.

~~9.1.35.1~~9.1.38.1 FDD message

~~This message is sent from Node B to CRNC as response to the Radio Link Setup message when all RLs have been successfully setup.~~

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
CRNC Communication Context ID		M
Node B Communication Context ID		M
Communication Control Port ID		M
Transaction ID		M
RL Information Response		**M**

RL ID		M
UL interference level		M
Diversity Indication		C[9]
Reference RL ID		C[10]
DCH Information Response		**C**[11]
DCH ID		M
Binding ID		M
Transport Layer Address		FFS

~~9.1.35.2~~9.1.38.2 TDD Message

~~(Editor's note: contributions are invited)~~

Information Element	**Reference**	**Type**
Message Discriminator		M
Message Type		M
CRNC Communication Context ID		M
Node B Communication Context ID		M
Communication Control Port ID		M
Transaction ID		M
RL ID		M
UL interference level		M
DCH Information Response		M
DCH ID		M
Binding ID		M
Transport Layer Address		FFS

~~9.1.36~~9.1.39 RADIO LINK SETUP FAILURE

This message is sent from Node B to CRNC as response to the Radio Link Setup REQUEST message when at least one RL has not been successfully setup.

~~9.1.36.1~~9.1.39.1 FDD Message

~~This message is sent from Node B to CRNC as response to the Radio Link Setup REQUEST message when at least one RL has not been successfully setup.~~

Information Element	**Reference**	**Type**
Message Discriminator		M
Message Type		M
CRNC Communication Context ID		M

[9] This Information Element is present for all the radio links except the first radio link in the Node B.

[10] This Information Element is present when the Diversity Indication Information Element indicates combining.

[11] This Information Element is present when the Diversity Indication Information Element indicates non-combining.

Node B Communication Context ID		M
Communication Control Port ID		O
Transaction ID		M
Successful RL Information Response		**O**
RL ID		M
UL interference level		M
Diversity Indication		C[12]
Reference RL ID		C[13]
DCH Information Response		**C**[14]
DCH ID		M
Binding ID		M
Transport Layer Address		FFS
Unsuccessful RL Information Response		**M**
RL ID		M
RL Failure Cause		M

~~9.1.36.2~~9.1.39.2 TDD Message

~~(Editor's note: contributions are invited)~~

Information Element	**Reference**	**Type**
Message Discriminator		M
Message Type		M
CRNC Communication Context ID		M
Transaction ID		M
RL ID		M
RL Failure Cause		M

9.1.40 NEIGHBOUR CELL MEASUREMENT REQUEST (TDD only)

This message is sent from CRNC to Node B in order to check the synchronisation of neighbour cells in TDD.

Information Element	**Reference**	**Type**
Message Discriminator		M
Message Type		M
Transaction ID		M

12 This Information Element is present for all the radio links except the first radio link in the Node B.

13 This Information Element is present when the Diversity Indication Information Element indicates combining.

14 This Information Element is present when the Diversity Indication Information Element indicates non-combining.

Measuring UC-~~Id~~ID		M
Measured Cell information		**O**
Measured UC-~~Id~~ID		O
~~DL~~ Scrambling Code		O
Toffset		M
Sync Midamble		O
PSCH & PCCPCH Time Slot (k)~~PSCH TS id - K~~		O

9.1.41 NEIGHBOUR CELL MEASUREMENT RESPONSE (TDD only)

This message is sent from Measuring Node B to CRNC as response to the Neighbour Cell Measurement Request message and returns the chip offset of the neighbours synchronisation channel.

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Measured UC-~~Id~~ID		O
Measured Chip Offset		M

9.1.42 NEIGHBOUR CELL MEASUREMENT FAILURE (TDD only)

This message is sent from Measuring Node B to CRNC as response to the Neighbour Cell Synchronisation Request message when the Neighbour cell could not be read.

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Measured UC-~~Id~~ID		O
Failure Cause		M

9.1.43 SYNCHRONISATION ADJUSTMENT REQUEST (TDD only)

This message is sent from CRNC to Slave Node B in order to set the clocking of a cell in TDD.

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Synchronisation Method		M

Master UC-~~Id~~ID		C1~~O~~
Chip Offset Adjustment		C1~~M~~

C1: conditional to the value of Synchronisation Method

9.1.44 SYNCHRONISATION ADJUSTMENT RESPONSE (TDD only)

This message is sent from Slave Node B to CRNC as response to the Cell Synchronisation Adjustment Request message and returns the chip offset of the neighbours synchronisation channel.

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
UC-~~Id~~ID		M

9.1.45 SYNCHRONISATION ADJUSTMENT FAILURE (TDD only)

This message is sent from Slave Node B to CRNC as response to the Synchronisation Adjustment Request message when the Slave NodeB could not be adjusted.

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
UC-~~Id~~ID		M
Failure Cause		M

9.1.46 NODE B OUT OF SYNC INDICATION (TDD only)

This message is sent from Slave Node B to CRNC when the Master Cell is lost or becomes un reliable

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Cause		M

9.1.47 SYNCHRONISATION RESTART REQUEST (TDD only)

This message is sent by the CRNC to the slave Node B in case the CRNC decides to stop NodeB transmission and to restart the search for a Master Cell

Information Element	Reference	Type
Message Discriminator		M

Message Type		M
Transaction ID		M

~~9.1.45~~9.1.48 RADIO LINK ADDITION REQUEST

This message is sent from CRNC to Node B in order to add radio link(s) for the UE in the Node B.

~~9.1.45.1~~9.1.48.1 FDD Message

~~This message is sent from CRNC to Node B in order to add radio link(s) for the UE in the Node B.~~

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Node B Communication Context ID		M
Transaction ID		M
RL Information		**M**
RL ID		M
UC-~~Id~~ID		M
Frame Offset		M
Chip Offset		M
Diversity Control Field		M
DL Scrambling Code		M
DL Channelisation Code		M
DL Channelisation Code Number		M
~~(I~~initial~~)~~ DL transmission power		O
Maximum DL power		O
Minimum DL power		O
~~DL Reference Power~~		~~M~~

~~9.1.45.2~~9.1.48.2 TDD Message

~~(Editor's note: contributions are invited)~~

Information Element	**Reference**	**Type**
Message discriminator		M
Message type		M
Node B communication context ID		M
Transaction ID		M
RL-ID		M
UC-ID		M
Frame Offset		M
UL DPCH Information		**M**
DPCH ID		M

Channelisation Code Number		M
Midamble Shift		M
Time Slot		M
Superframe Offset		O
Repetition Period		M
Repetition Length		O
TFCI Presence		O
DL DPCH Information		**M**
DPCH ID		M
Channelisation Code Number		M
Midamble Shift		M
Time Slot		M
Superframe Offset		O
Repetition Period		M
Repetition Length		O
TFCI Presence		O
Maximum Downlink power		O
Minimum Downlink power		O

~~9.1.46~~9.1.49 RADIO LINK ADDITION RESPONSE

This message is sent from Node B to CRNC as response to the Radio Link Addition message when all RLs have been successfully added.

~~9.1.46.1~~9.1.49.1 FDD message

~~This message is sent from Node B to CRNC as response to the Radio Link Addition message when all RLs have been successfully added.~~

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
CRNC Communication Context ID		M
Transaction ID		M
RL Information Response		**M**
RL ID		M
UL interference level		M
Diversity Indication		M
Reference RL ID		C[15]
DCH Information Response		**C**[16]

[15] This Information Element is present when the Diversity Indication Information Element indicates combining.

[16] This Information Element is present when the Diversity Indication Information Element indicates non-combining.

DCH ID		M
Binding ID		M
Transport Layer Address		FFS

~~9.1.46.2~~9.1.49.2 TDD Message

~~(Editor's note: contributions are invited)~~

Information Element	**Reference**	**Type**
Message discriminator		M
Message type		M
CRNC Communication Context ID		M
Transaction ID		M
UL interference level		M

~~9.1.47~~9.1.50 RADIO LINK ADDITION FAILURE

This message is sent from Node B to CRNC as response to the Radio Link Addition REQUEST message when at least one RL has not been successfully added.

~~9.1.47.1~~9.1.50.1 FDD Message

~~This message is sent from Node B to CRNC as response to the Radio Link Addition REQUEST message when at least one RL has not been successfully added.~~

Information Element	**Reference**	**Type**
Message Discriminator		M
Message Type		M
CRNC Communication Context ID		M
Transaction ID		M
Successful RL Information Response		**O**
RL ID		M
UL interference		M
Diversity Indication		M
Reference RL ID		C[17]
DCH Information Response		**C**[18]
DCH ID		M
Binding ID		M
Transport Layer Address		FFS
Unsuccessful RL Information Response		**M**
RL ID		M
RL Failure Cause		M

[17] This Information Element is present when the Diversity Indication Information Element indicates combining.

[18] This Information Element is present when the Diversity Indication Information Element indicates non-combining.

~~9.1.47.2~~9.1.50.2 TDD Message

~~(Editor's note: contributions are invited)~~

Information Element	Reference	Type
Message discriminator		M
Message type		M
CRNC Communication Context ID		M
Transaction ID		M
RL Failure Cause		M

~~9.1.48~~9.1.51 RADIO LINK RECONFIGURATION PREPARE

~~9.1.48.1~~9.1.51.1 FDD Message

Information element	Reference	Type
Message Discriminator		M
Message type		M
Node B Communication Context ID		M
Transaction ID		M
DCHs to modify		**O**
DCH ID		M
~~DCH Allocation/Retention Priority~~		~~O~~
UL FP mode		O
DCH Frame Handling Priority		O
Transport format set (DL)		O
Transport format set (UL)		O
ToAWS		M
ToAWE		M
DCHs to add		**O**
DCH ID		M
DCH Combination Ind		O
UL FP mode		M
Payload CRC Presence Indicator		M
DCH Frame Handling Priority		O
Transport format set (DL)		M
Transport format set (UL)		M
ToAWS		M
ToAWE		M
DCHs to delete		**O**
DCH ID		M
TFCS (DL)		M
TFCS (UL)		M
Uplink Scrambling code		O
UL Channelisation Codes		**O**
Channelisation code (UL)		M
RL Information		**O**
RL ID		M

Information element	Reference	Type
Message Discriminator		M
DL Scrambling Code		M
DL Channelisation Code		**M**
Channelisation code Number (DL)		M
Max DL power		O
Min DL power		O
~~DL reference power~~		~~FFS~~

~~9.1.48.2~~9.1.51.2 TDD Message

~~(Editor's note: contributions are invited)~~

Information element	**Reference**	**Type**
Message Discriminator		M
Message type		M
Node B Communication Context ID		M
Transaction ID		M
RL ID		M
Maximum Downlink power		O
Minimum Downlink power		O
UL CCTrCH Information		**O**
CCTrCH ID		M
CCTrCH Duration		O
Transport Format Combination Set		M
UL DPCH Information		**O**
DPCH ID		M
Channelisation Code Number		O
Midamble Shift		O
Time Slot		O
Superframe Offset		O
Repetition Period		O
Repetition Length		O
TFCI Presence		O
DL CCTrCH Information		**O**
CCTrCH ID		M
CCTrCH Duration		O
Transport Format Combination Set		M
DL DPCH Information		**M**
DPCH ID		M
Channelisation Code Number		O
Midamble Shift		O
Time Slot		O

Superframe Offset		O
Repetition Period		O
Repetition Length		O
TFCI Presence		O
DCHs to modify		**O**
DCH ID		M
Supporting CCTrCH ID		O
UL FP mode		O
DCH Frame Handling Priority		O
Transport format set (DL)		O
Transport format set (UL)		O
ToAWS		M
ToAWE		M
DCHs to add		**O**
DCH ID		M
Supporting CCTrCH ID		O
UL FP mode		M
Payload CRC Presence Indicator		M
Supporting CCTrCH ID		M
DCH Combination Ind		O
DCH Frame Handling Priority		O
Transport format set (DL)		M
Transport format set (UL)		M
ToAWS		M
ToAWE		M
DCHs to delete		**O**
DCH ID		M

~~9.1.49~~9.1.52 RADIO LINK RECONFIGURATION READY

Information element	**Reference**	**Type**
Message Discriminator		M
Message type		M
CRNC Communication Context ID		M
Transaction ID		M
RLs to be reconfigured (synch)		**O**
RL ID		M
DCH to be setup		**O**
DCH ID		M
Binding ID		M
Transport Layer Address		FFS
DCH to be modified		**O**
DCH ID		M
Binding ID		M
Transport Layer Address		FFS

~~9.1.50~~9.1.53 RADIO LINK RECONFIGURATION COMMIT

9.1.53.1 FDD Message

Information element	Reference	Type
Message Discriminator		M
Message type		M
Node B Communication Context ID		M
Transaction ID		M
CFN		M

9.1.53.2 TDD Message

Information element	**Reference**	**Type**
Message Discriminator		M
Message type		M
Node B Communication Context ID		M
Transaction ID		M
UL CCTrCH Information		**M**
CCTrCH ID		**M**
CCTrCH Activation CFN		M
DL CCTrCH Information		**M**
CCTrCH ID		**M**
CCTrCH Activation CFN		M

~~9.1.51~~9.1.54 RADIO LINK RECONFIGURATION FAILURE

Information element	Reference	Type
Message Discriminator		M
Message type		M
CRNC Communication Context ID		M
Transaction ID		M
Cause1		M
RLs causing reconfiguration failure		**O**
RL ID		M
Cause2		M

~~9.1.52~~9.1.55 RADIO LINK RECONFIGURATION CANCEL

Information element	Reference	Type
Message Discriminator		M
Message type		M

Node B Communication Context ID		M
Transaction ID		M

~~9.1.53~~9.1.56 RADIO LINK RECONFIGURATION REQUEST

~~9.1.53.1~~9.1.56.1 FDD Message

Information element	Reference	Type
Message Discriminator		M
Message type		M
Node B Communication Context ID		M
Transaction ID		M
DCHs to modify		O
DCH ID		M
UL FP mode		M
DCH Frame Handling Priority		O
Transport format set (DL)		O
Transport format set (UL)		O
ToAWS		M
ToAWE		M
DCHs to add		O
DCH ID		M
DCH Combination Ind		O
UL FP mode		M
Payload CRC Presence Indicator		M
~~DCH Allocation/Retention Priority~~		~~O~~
DCH Frame Handling Priority		O
Transport format set (DL)		M
Transport format set (UL)		M
ToAWS		M
ToAWE		M
DCHs to delete		O
DCH ID		M
TFCS (DL)		O
TFCS (UL)		O
Radio Link Information		O
RL ID		M
Max DL Power		O
Min DL Power		O
~~DL reference power~~		~~FFS~~

~~9.1.53.2~~9.1.56.2 TDD Message

Information element	Reference	Type
Message Discriminator		M
Message type		M
Node B Communication Context ID		M
Transaction ID		M

RL ID		M
Maximum Downlink power		O
Minimum Downlink power		O
UL CCTrCH Information		**O**
CCTrCH ID		M
TFCS		M
DL CCTrCH Information		**O**
CCTrCH ID		M
TFCS		M
DCHs to modify		**O**
DCH ID		M
Supporting CCTrCH ID		O
DCH Frame Handling Priority		O
Transport format set (DL)		O
Transport format set (UL)		O
DCHs to add		**O**
DCH ID		M
UL FP mdoe		M
Supproting CCTrCH		M
Payload CRC Presence Indicator		M
Supporting CCTrCH ID		M
DCH Combination Ind		O
DCH Frame Handling Priority		O
Transport format set (DL)		M
Transport format set (UL)		M
DCHs to delete		**O**
DCH ID		M

~~(Editor's note: contributions are invited)~~

~~9.1.54~~9.1.57 RADIO LINK RECONFIGURATION RESPONSE

Information element	**Reference**	**Type**
Message Discriminator		M
Message type		M
CRNC Communication Context ID		M
Transaction ID		M
RLs to be reconfigured (unsync.)		**O**
RL ID		M
DCHs requiring a new transport bearer to be setup		**O**
DCH ID		M
Binding ID		M
Transport Layer Address		FFS

~~9.1.55~~9.1.58 RADIO LINK DELETION REQUEST

This message is sent from CRNC to Node B in order to delete radio link(s) for the UE in the Node B.

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Node B Communication Context ID		M
Transaction ID		M
RL Information		**M**
RL ID		M

~~9.1.56~~9.1.59 RADIO LINK DELETION RESPONSE

This message is sent from Node B to CRNC as response to the Radio Link Deletion REQUEST message.

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
CRNC Communication Context ID		M
Transaction ID		M

~~9.1.57~~9.1.60 DL POWER CONTROL REQUEST (FDD only)

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
NodeB Communication Context ID		M
Transaction ID		M
DL Reference Power		C1~~M~~
DL Reference Power Information		C2
RL ID		M
DL Reference power		M

Note: Either C1 or C2 can be present in the same message.

9.1.61 DEDICATED MEASUREMENT INITIATION REQUEST

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Measurement ID		M
Measurement Object		M
Measurement Type		M

Measurement Characteristic		M
Report Characterisitics[19]		**M**
On-Demand		**C1**
Periodic		**C1**
Report Frequency		M
Event-Triggered		**C1**
Event-Triggered Type A		**C2**
Absolute Threshold		M
Hysteresis Time		O
Event-Triggered Type B		**C2**
Absolute Threshold		M
Hysteresis Time		O
Event-Triggered Type C		**C2**
Relative Threshold		M
Rising Time		M
Event-Triggered Type D		**C2**
Relative Threshold		M
Fall Time		M
Event-Triggered Type E		**C2**
Absolute Threshold 1		M
Absolute Threshold 2		O
Hysteresis Time		O
Reporting Frequency		O
Event-Triggered Type F		**C2**
Absolute Threshold 1		M
Absolute Threshold 2		O
Hysteresis Time		O
Reporting Frequency		O

C1 : One and only one of On-Demand, Periodic or Event-Triggered can be present at the same time.
C2: One and only one of Event A to Event F can be present at the same time.

9.1.62 DEDICATED MEASUREMENT INITIATION RESPONSE

Information Element	**Reference**	**Type**
Message Discriminator		M
Message Type		M

19 Can be On-Demand, Periodic or Event-Triggered

Transaction ID		M
Measurement ID[20]		M

9.1.63 DEDICATED MEASUREMENT INITIATION FAILURE

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Measurement ID[21]		M
Cause		O

9.1.64 DEDICATED MEASUREMENT TERMINATION REQUEST

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Measurement ID[22]		M

9.1.65 DEDICATED MEASUREMENT FAILURE INDICATION

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Measurement ID[23]		M
Cause		M

9.1.66 DEDICATED MEASUREMENT REPORT

Information Element	Reference	Type
Message Discriminator		M
Message Type		M

[20] This is the same measurement ID as that sent in Request message.
[21] This is the same measurement ID as that sent in Request message.
[22] This is the same measurement ID as that sent in Request message.
[23] This is the same measurement ID as that sent in Request message.

Transaction ID		M
Measurement ID[24]		M
Time Reference		O
Value		M

~~9.1.29~~9.1.67 RADIO LINK FAILURE INDICATION

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
CRNC Communication Context ID		M
RL ID		M
Radio Link Failure Cause		M

9.1.68 RADIO LINK RESTORE INDICATION

Information Element	**Reference**	**Type**
Message Discriminator		M
Message Type		M
Transaction ID		M
CRNC Communication Context ID		M
RL ID		M

~~9.1.31NODE B RESOURCE NOTIFICATION~~

~~This message is sent from Node B to CRNC to notify the CRNC of the high level resource capabilities supported by Node B.~~

~~**Information Element**~~	~~**Reference**~~	~~**Type**~~
~~Message Discriminator~~		~~M~~
~~Message Type~~		~~M~~
~~**Local Cell ID**~~		~~**M**~~
~~Add/Delete Indicator~~		~~O~~
~~Resource Operational State~~		~~M~~
~~Number Channel Elements FFS~~		~~M~~
~~Maximum DL power capability~~		~~M~~
~~Transaction ID~~		~~M~~

24 This is the same measurement ID as that sent in Request message

~~9.1.48~~9.1.69 RESET (FFS)

~~9.1.49~~9.1.70 RESET ACKNOWLEDGE (FFS)

~~9.1.50~~9.1.71 CONFUSION (FFS)

9.2 Information Element Functional Definition and Contents

Editor's Note: Ies have been divided in to 3 subsections: "FDD/TDD commonly used","FDD only", and "TDD only". Categorisation is provisional and shall be refined.

9.2.1 FDD/TDD commonly used parameters

9.2.1.1 Absolute Threshold

The threshold for which the Node B shall trigger a measurement report.

~~9.2.1.1~~9.2.1.2 Add/Delete Indicator

The add/delete indicator shall notify the RNC whether the associated resource has been added to or removed from the Node B. This IE is optional and shall not be included if the message is sent to indicate an operational state change in the resources only.

9.2.1.3 ~~Service Impact Level~~Availability Status

~~The service impact level shall indicate the level of impact on the related logical resource of a Node B failure. The following service impact levels shall be defined:~~
~~1.Resource disabled permanent – Total loss of resource due to a permanent fault.~~
~~2.Resource disabled temporary – Total loss of resource due to a temporary fault.~~
~~3.Service degraded permanent – Resource performance degraded due to a permanent fault.~~
~~4.Service degraded temporary - Resource performance degraded due to a temporary fault.~~
~~5.Capacity reduced permanent – The capacity of the resource is reduced due to a permanent fault.~~
~~6.Capacity reduced temporary - The capacity of the resource is reduced due to a temporary fault.~~
~~The definition of other service impact levels is ffs.~~

The availability status is used to indicate more detailed information of the availability of the resource. In accordance with [6], following values are defined: 'in test', 'failed', 'power off', 'off line', 'off duty', 'dependency', 'degraded', 'not installed', 'log full'. If the value of this attribute is an empty set, this implies that none of the status conditions described in [6] are present. The empty set attribute is used e.g. the resource is enabled again and fully service is provided again.

~~9.2.1.2~~9.2.1.4 Binding ID

The Binding ID is the identifier of a~~n~~ user data stream. It is allocated at Node B and it is unique for each active transport bearer to/from the Node B. The length of this parameter is variable.

~~9.2.1.3~~9.2.1.5 Communication Control Port ID

A Communication Control Port corresponds to one signalling bearer between the RNC and Node B for the control of Node B Communication Contexts. Node B may have multiple Communication Control Ports (one per Traffic Termination Point). The Communication Control Port is selected at creation of the Node B Communication Context. The Communication Control Port ID is the identifier of the Communication Control Port.

9.2.1.6 Configuration Generation ID

The Configuration Generation ID describes the generation of the configuration of logical resources in a cell.
(Editor's note: details are FFS)

~~9.2.1.5~~9.2.1.7 CRNC Communication Context ID

The CRNC Communication Context ID is the identifier of the Communication Context in the CRNC.

~~9.2.1.6~~9.2.1.8 DCH Combination Indicator

The DCH Combination Indicator is used to indicate the multiplexing of more than one DCH on ~~on~~ transport bearer. The value should be unique for each group of coordinated DCH's per request message.

~~9.2.1.7~~9.2.1.9 DCH Frame Handling Priority

This parameter indicates the priority level to be used during the lifetime of the DCH for temporary restriction of the allocated resources due overload reason

~~9.2.1.8~~9.2.1.10 DCH ID

The DCH ID is the identifier of an active dedicated transport channel. It is unique for each active DCH among the active DCHs simultaneously allocated for the same UE.

~~9.2.1.9~~9.2.1.11 DL Transport Format Combination Set

The Transport Format Combination Set is defined as a set of Transport Format Combinations on a Coded Composite Transport Channel. It is the allowed Transport Format Combinations of the corresponding Transport Channels. The DL Transport Format Combination Set is applicable for DL Transport Channels.

~~9.2.1.10~~9.2.1.12 DL Transport Format Set

The Transport Format Set is defined as the set of Transport Formats associated to a Transport Channel, e.g. DCH. The DL Transport Format Set is applicable for DL.

9.2.1.13 Fall Time

The time the measurement entity shall fall, in order to trigger a measurement report.

9.2.1.14 Frame Offset

Frame Offset is the required offset between the dedicated channel downlink transmission frames (CFN, Connection Frame Number) and the broadcast channel frame offset (Cell Frame Number). The Frame Offset parameter has a resolution of 1 frame and a range of 0 to 255 (<=2,55 seconds). The Frame_offset is used in the translation between Connection Frame Number (CFN) on Iub/Iur and least significant 8 bits of SFN (System Frame Number) on Uu. The Frame Offset is UE and cell specific.

9.2.1.15 Frequency Number

Designate the central frequency of the carrier.

9.2.1.16 Hysteresis Time

The time for which the measurement entity has to be above/beneath the absolute threshold when a measurement report should be sent.

~~9.2.1.11~~9.2.1.17 Indication Type (FFS)

The indication type shall indicate the category of a failure with respect to its impact on the logical resources supported at Node B. The following categories shall be defined:

1. ~~Service Impacting~~Availability Status – The failure has impacted on the logical resources supported at Node B.
2. Cell Control – The failure has impacted on the ability for the cell parameters to be administered or O&M functions performed.

The definition of other failure types is ffs.

~~9.2.1.12~~9.2.1.18 Local Cell ID

The local cell ID represents resources in Node B that can be used for the configuration of a cell.

9.2.1.19 Maximum DL Power

(Editor's note: contents missing)

9.2.1.20 Maximum DL Power Capability

This parameter indicates the maximum DL power capability for a local cell within Node B.

~~9.2.1.13~~9.2.1.21 Measurement Characteristic

Defines how the measurements should be performed, e.g. measurement frequency, timing information, filtering information.

~~9.2.1.14~~9.2.1.22 Measurement ID

RNC defined identifier that uniquely identifies the measurement.

~~9.2.1.15~~9.2.1.23 Measurement Object

Defines on which resource the measurement should be performed, e.g. cell. If more detailed information is necessary the measurement shall be performed as e.g. the timeslot indication in case of TDD, this information belongs to the Measurement Object and is included within this information element.

~~9.2.1.16~~9.2.1.24 Measurement Type

Defines what measurements should be performed, e.g. the interference on UL.

~~9.2.1.17~~9.2.1.25 Message discriminator

This field is used to discriminate between Dedicated NBAP and Common NBAP messages.

~~9.2.1.18~~9.2.1.26 Message Type

The Message Type uniquely identifies the message being sent.

~~9.2.1.19Maximum DL Power Capability~~

~~This parameter indicates the maximum DL power capability for a local cell within Node B.~~

9.2.1.27 MIB_SG

Segment which is part of the Master Information Block.

9.2.1.28 MIB_SG_POS

First position of the Master Information Block segment in the SFN cycle (MIB_SG_POS < MIB_SG_REP)

9.2.1.29 MIB_SG_REP

Repetition distance for a Master Information Block segment. The segment shall be transmitted when SFN mod MIB_SG_REP = MIB_SG_POS.

9.2.1.30 Minimum DL Power

(Editor's: contents missing)

~~9.2.1.23~~9.2.1.31 Node B Communication Context ID

The Node B Communication Context ID is the identifier of the Communication Context in the Node B, it corresponds to all the dedicated resources which are necessary for an UE using one or more dedicated channels in a given Node B.

~~9.2.1.24~~9.2.1.32 Number Channel Elements

The number of channel elements is used to indicate to the RNC the maximum number of simultaneous user channels supported by a carrier. The exact definition of a channel element is FFS.

9.2.1.33 Payload CRC presence

(Editor's note: contents missing)

9.2.1.34 Priority Indicator

The priority indicator is used to identify the immediacy with which the associated function shall be performed. It is used to enable graceful shutdown of resources where operations impact on these resources.

The following priority classes shall be supported in the priority indicator.

- Class 1~~2~~ – High: High priority shutdown required (terminate resource immediately)
- Class 2~~3~~ – Normal: Standard priority shutdown required (attempt graceful resource termination)
- Class 3 – Low: Low priority shutdown required (terminate resource when idle)

9.2.1.35 Relative Threshold

The distance that the measurement entity shall rise/fall, in order to trigger a measurement report.

~~9.2.1.25~~9.2.1.36 Report Characteristics

Reporting can be any of the following:

Periodic: Reports shall be delivered with a periodicity which shall be defined.
Event: Reports shall be delivered upon a specified event in the node B.
Immediate: Reports shall be delivered immediately. Once the report is sent the measurement is cancelled.

~~9.2.1.26~~9.2.1.37 Resource Operational State

The resource operational state is used to indicate the current operational state of the associated

resource following a Node B failure. In accordance with [1], the resource operational state can have the following values:

1. Enabled
2. Disabled

NOTE: Where a resource is marked as disabled, then its child resources are implicitly disabled.

9.2.1.38 Reporting Frequency

The frequency with which the Node B shall send measurement reports.

9.2.1.39 Rising Time

The time the measurement entity shall rise on, in order to trigger a measurement report.

~~9.2.1.27~~9.2.1.40 RL Failure Cause

The RL Failure Cause indicates the reason of unsuccessful radio link setup.

~~9.2.1.28~~9.2.1.41 RL ID

The RL ID is the unique identifier for one RL associated with a UE

9.2.1.42 Shutdown Timer

Where a class 2~~3 or class 4~~ shutdown has been requested, the shutdown timer shall indicate the length of time available to the RNC to perform the shutdown of the resource. The range of the shutdown timer is ffs.

9.2.1.43 SIB_SG

Segment which is part of a System Information Block.

9.2.1.44 SIB_SG_POS

First position of the System Information Block segment in the SFN cycle (SIB_SG_POS < SIB_SG_REP).

9.2.1.45 SIB_SG_REP

Repetition distance for a System Information Block segment. The segment shall be transmitted when SFN mod SIB_SG_REP = SIB_SG_POS.

~~9.2.1.33TFCI used flag~~

~~Indicates whether TFCI shall be included in the DPCCH.~~

~~9.2.1.34~~9.2.1.46 Time Reference

Time Reference ~~S~~shows the time of the measurement (timestamp).

9.2.1.47 ToAWE

TOAWE is the window endpoint. DL data frames are expected to be received before this window endpoint. TOAWE is defined with a positive value relative Latest Time of Arrival (LTOA). A data frame arriving after TOAWS gives a Timing Adjustment Control frame response.
The TOAWE is a CFN length parameter.
The resolution is 1 ms, the range is: {0 .. CFN length –1 ms}

9.2.1.48 ToAWS

TOAWS is the window startpoint. DL data frames are expected to be received after this window startpoint. TOAWS is defined with a positive value relative Time of Arrival Window Endpoint

(TOAWE). A data frame arriving before TOAWS gives a Timing Adjustment Control frame response. The TOAWS is a CFN length parameter.
The resolution is 1 ms, the range is: {0 .. CFN length/2 –1 ms}

~~9.2.1.35~~9.2.1.49 Transaction ID

The Transaction ID is used to associate all the messages belonging to the same pending procedure of the same NBAP procedure type (e.g. Radio Link Addition), i.e. the Request-, Response-, Confirm-type of messages have the same Transaction ID. The messages belonging to different pending procedures have different Transaction ~~Id~~IDs.

9.2.1.50 Transmit Offset

(Editor's note: contents missing)

~~9.2.1.36~~9.2.1.51 Transport Layer Address

Transport Layer Address defines the transport address of the NodeB. For details on the Transport Address used see [2]. The addressing in UTRAN is FFS.
~~The Transport Layer Address indicates the Node B transport address. The format of the Transport Layer Address is FFS.~~

~~9.2.1.37~~9.2.1.52 UC-I~~d~~D

The UC-ID~~d~~ is the identifier of a cell.

~~9.2.1.38UL Scrambling Code~~

~~The UL Scrambling Code is the scrambling code used by UE. Every UE has its specific UL Scrambling Code.*(Editor's note: this parameter may be only applicable to FDD)*~~

9.2.1.53 UL FP mode

(Editor's note: contents missing)

9.2.1.54 UL interference level

The UL interference level indicates the UL interference at a certain cell under DRNC. This parameter is transferred from DRNC to SRNC. This value will then be sent to UE by RRC so that the UE can calculate Initial UL power for itself.

~~9.2.1.39~~9.2.1.55 UL Transport Format Combination Set

The Transport Format Combination Set is defined as a set of Transport Format Combinations on a Coded Composite Transport Channel. It is the allowed Transport Format Combinations of the corresponding Transport Channels. The UL Transport Format Combination Set is applicable for UL Transport Channels.

~~9.2.1.40~~9.2.1.56 UL Transport Format Set

The Transport Format Set is defined as the set of Transport Formats associated to a Transport Channel, e.g. DCH. The UL Transport Format Set is applicable for UL

~~9.2.1.41~~9.2.1.57 Value

"Value" ~~I~~includes the reported data.

9.2.2 FDD specific parameters

9.2.2.1 Chip Offset

The Chip Offset is defined as the radio timing offset inside a radio frame. The Chip Offset

parameter has a resolution of 1 chip and a range of 0 to 38399 (< 10ms). The Chip_offset is used as offset for the DL DPCH relative to the PCCPCH timing.

9.2.2.2 CPICH Power

CPICH power is the power that should be used for transmitting the CPICH in a cell.

9.2.2.3 Diversity Control Field

The Diversity Control Field indicates if the current RL may, must or must not be combined with the already existing RLs.

9.2.2.4 Diversity Indication

The Diversity Indication indicates if the RL has been (ON) or has not been (OFF) combined with another RL.

9.2.2.5 DL Channelisation Code Number ~~for FDD use~~

The DL Channelisation Code is used to preserve the orthogonality between a cell's different DL physical channels, e.g. DPCH/CCPCH. The DL Channelisation Code Number indicates the DL Channelisation Code number for a specific DL physical channel a cell has.

9.2.2.6 DL Reference Power

Reference transmission power which is the CRNC requested downlink power to be used by the downlink inner loop power control to eliminate the power drifting problem The usage is FFS.

9.2.2.7 DL Scrambling Code

DL scrambling code to be used by the RL. One cell may have multiple DL scrambling codes available.

~~The DL Scrambling Code is the scrambling code used for each cell/RL. It is the same for all physical channels in one cell, but different for different cells. One cell may have several DL Scrambling Codes available.~~

~~9.2.2.8Frame Offset~~

~~Frame Offset is the required offset between the dedicated channel downlink transmission frames (CFN, Connection Frame Number) and the broadcast channel frame offset (Cell Frame Number). The Frame Offset parameter has a resolution of 1 frame and a range of 0 to 255 (<=2,55 seconds). The Frame_offset is used in the translation between Connection Frame Number (CFN) on Iub/Iur and least significant 8 bits of SFN (System Frame Number) on Uu. The Frame Offset is UE and cell specific.~~

~~9.2.2.9~~9.2.2.8 Length of DL Channelisation Code ~~for FDD use~~

The Length of UL Channelisation Code defines the level of the Channelisation code in the code tree. It is equivalent to the Spreading Factor.

~~9.2.2.10~~9.2.2.9 Length of UL Channelisation Code ~~for FDD use~~

The Length of UL Channelisation Code defines the level of the Channelisation code in the code tree. It is equivalent to the Spreading Factor.

9.2.2.10 Max Transmission Power

Max Transmission Power is maximum power for all downlink channels added together, that is allowed to be used simultaneously in a cell.

9.2.2.11 Primary SCH Power

Primary SCH power is the power that should be used for transmitting the primary SCH in a cell.

~~9.2.2.13~~9.2.2.12 Propagation Delay

Propagation delay ~~***(PD):*** It~~ is the ~~round trip~~one-way propagation delay of the radio signal from the BS to the MS and back to the BS in one chip resolution.

~~9.2.2.14~~9.2.2.13 Reference RL ID

The Reference RL ID is the identifier of the radio link that the indicated radio link has been combined with.

9.2.2.14 Secondary SCH Power

Secondary SCH power is the power that should be used for transmitting the secondary SCH in a cell.

9.2.2.15 TFCI used flag

TFCI used flag indicates whether TFCI shall be included in the DPCCH.

9.2.2.16 UL Eb/No Target

The UL Eb/No Target indicates the UL Eb/No target to be used by the UL inner loop power control.

~~9.2.2.17UL interference level~~

~~The UL interference level indicates the UL interference at a certain cell under DRNC. This parameter is transferred from DRNC to SRNC. This value will then be sent to UE by RRC so that the UE can calculate Initial UL power for itself.~~

~~9.2.2.18~~9.2.2.17 UL Scrambling Code

The UL Scrambling Code is the scrambling code used by UE. Every UE has its specific UL Scrambling Code.

9.2.3 TDD specific Parameters

~~**(Editor's note: contributions are expected)**~~

9.2.3.1 CCTrCH Activation CFN

The CFN of the frame in which the physical layer starts transmitting a CCTrCH

9.2.3.2 CCTrCH Duration

The CCTrCH Duration represents the number of frames for which the CCTrCH is activated.

Note: in case the Superframe Offset is not specified but only the CCTrCH Activation CFN, all DPCHs belonging to the same CCTrCH will start at the same time (i.e. at the CCTrCH Activation CFN). In case neither the Superframe Offset nor the CCTrCH Activation CFN are specified, the Superframe Offset for all DPCHs belonging to the same CCTrCH is assumed to be 0.

9.2.3.3 ~~C~~CCTrCH ID

The CCTrCH ID identifies unambiguously a CCTrCH inside a Radio Link.

9.2.3.4 Cell Parameter

The Cell Parameter identifies unambiguously the Code Groups, Scrambling Codes, Midambles and Toffset (see table 9 of TS25.223)
The range of this parameter is 0..127.

9.2.3.5 Channelisation Code ~~code NUMBER~~Number

The Channelisation Code Number indicates which Channelisation Code is used for a given Physical Channel. In TDD the Channelisation Code is an Orthogonal Variable Spreading Factor code, that can have a spreading factor of 1, 2, 4, 8 or 16.
The range of this parameter is *0* .. *30*.

~~9.2.3.16~~9.2.3.6 Chip Offset Adjustment

The Chip Offset Adjustment represent the timing adjustment to be applied to achieve frame synchronisation.

~~9.2.3.10~~9.2.3.7 DPCH ID

The DPCH ID identifies unambiguously a DPCH inside a Radio Link.

~~9.2.3.14~~9.2.3.8 Measured Chip Offset

The Measured Chip Offset represents the relative frame timing difference respect to the cell taken as reference (identified by the Measured ~~Cell Id~~UC-ID)

9.2.3.9 Measured UC-ID

The Measured UC-ID identifies the cell taken as reference to measure the relative frame timing difference

~~9.2.3.15~~9.2.3.10 Measuring UC~~Cell~~ ~~I~~D~~d~~

The Measuring ~~Cell Id~~UC-ID identifies the cell that performs the measurement of the relative frame timing difference respect to the cell taken as reference (identified by the Measured ~~Cell Id~~UC-ID).

9.2.3.11 Midamble shift

In TDD, different bursts transmitted simultaneously, using the same midamble code shall use different Midamble Shifts.
The 256 chip midamble supports 3 different time shifts, the 512 chips midamble may support 8 or even 16 time shifts.
The range of this parameter is *0* .. *15* for long midamble and *0* .. *2* for short midamble.

~~9.2.3.12Midamble TYPE~~

~~In TDD the midamble part of the burst can contain two different midamble types: a short one of length 256 chips, or a long one of 512 chips. The data rate of the physical channel is depending on the used midamble length.~~
~~The values of this parameter are *short* and *long*.~~

9.2.3.12 PCCPCH Time Slot (i)

This IE is present only if PSCH & PCCPCH Allocation = Case 3.
In that case this parameter assumes the value k=0…14.

9.2.3.13 PSCH and PCCPCH Allocation

In TDD the PSCH and PCCPCH are mapped on one or two downlink slots per frame. There are three cases of PSCH and PCCPCH allocation as follows:
Case 1) PSCH and PCCPCH allocated in a single TS#k
Case 2) PSCH in two TS and PCCPCH in the same two TS: TS#k and TS#k+8
Case 3) PSCH in two TS, TS#k and TS#k+8, and the PCCPCH in TS#i, pointed by PSCH.
The range of this parameter is therefore 1..3.

9.2.3.14 PSCH and PCCPCH Time Slot (k)

When the value of PSCH and PCCPCH Allocation is:
Case 1, then this parameters assume the value k=0….14
Case 2 and Case 3, then this parameter assumes the value k=0…6

~~9.2.3.19PSCH TS id K~~

~~The timeslot in TDD that contains the Synchronisation channel.~~

9.2.3.15 PSCH Power

PSCH power is the power that should be used for transmitting the Physical Synch Channel in a cell. Primary sequence (Primary SCH) and secondary sequences (Secondary SCH) are superimposed for transmission.
Relation of TX power between Primary and Secondary is fixed, thus only one value is to be configured.

~~9.2.3.17~~9.2.3.16 Repetition Length

In TDD the Repetition Length represents the number of consecutive Radio Frames inside a Repetition Period in which the same Time Slot is assigned to the same Physical Channel.
The values of this parameter are *1, 2, 4 and 8*.

~~9.2.3.18~~9.2.3.17 Repetition Period

In TDD, the Repetition Period represents the number of consecutive Radio Frames after which the same assignment scheme of Time Slots to a Physical Channel is repeated. This means that if the Time Slot *K* is assigned to a physical channel in the Radio Frame *J*, it is assigned to the same physical channel also in all the Radio Frames *J+n*Repetition Period* (where *n* is an integer).
The Repetition Period is a submultiple of the Superframe length (72), i.e. 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36 or 72.

~~9.2.3.11~~9.2.3.18 ~~DL~~ Scrambling Code ~~for TDD use~~

The ~~DL~~ Scrambling Code is the scrambling code used ~~for each~~in a cell~~/RL.~~. It is the same for all physical channels in one cell, but different for different cells.

~~9.2.3.20~~9.2.3.19 Superframe Offset

In TDD, the Superframe Offset represents the number of the first Radio Frame inside a Superframe that is assigned to a Physical Channel.
The range of this parameter is *0 .. Repetition Period – 1*.

9.2.3.20 Supporting CCTrCH ID

The Supporting CCTrCH ID indicates on which CCTrCH is mapped a DCH.

~~9.2.3.18~~9.2.3.21 Sync Midamble

Midamble used for the ~~of the TDD~~ synchronisation channel ~~for a neighbouring cell~~

~~9.2.3.23~~9.2.3.22 TFCI Presence

The TFCI PRESENCE parameter indicates whether the TFCI shall be included. This is important for CCTrCH, which have capacity on more than one physical channel.
The values of this parameter are *present* and *not present*.

~~9.2.3.24~~9.2.3.23 Time Slot

In TDD, the Time Slot represents the minimum time interval inside a Radio Frame that can be assigned to a Physical Channel.
The range of this parameter is *0 .. 14*.

9.2.3.24 Time Slot Direction

This parameter indicates whether the TS in the cell is used in Uplink or Downlink direction.
The values of this parameter are UL and *DL*.

9.2.3.25 Time Slot Status

This parameter indicates whether the TS in the cell is active or not.
The values of this parameter are Active and *Not Active*

~~9.2.3.12UL Scrambling Code for TDD use~~

~~The DL Scrambling Code is the scrambling code used for each cell/RL. It is the same for all physical channels in one cell, but different for different cells.~~

~~9.2.3.13Measured Cell Id~~

~~The Measured Cell Id identifies the cell taken as reference to measure the relative frame timing difference.~~

~~9.2.3.17~~9.2.3.26 Toffset

The offset of the primary synchronisation code ~~for a neighbouring cell~~

9.3 Message and Information element abstract syntax (with ASN.1)

[Editor's Note: ASN.1 shall be applied to describe the contents of each NBAP message. The applied version of ASN.1 is FFS]

9.3.1 PDU Description for NBAP

```
****************************************************************
--
PDU descriptions for NBAP.
--
****************************************************************

NBAP-PDU-descriptions { object identifier to be allocated }
DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

****************************************************************
--
PDU content types from the PDU module.
--
****************************************************************
```

```
IMPORTS
Imports PDU content types from NBAP PDU contents module
*** TO BE DEFINED ***
    ExampleMessageContents1,
    ExampleMessageContents2-v1,
    ExampleMessageContents2-v2,
    ExampleMessageContents3
FROM NBAP-PDU-contents;

**************************************************************
--
Table column structure.
--
NBAP-PDU-DESCR associates a NBAP PDU structure with a PDU
identifier.
--
**************************************************************

NBAP-PDU-DESCR ::= CLASS {
    &PDUType,
    &versionID              VersionID  UNIQUE,
    &LogicalProcedure       LogicalProcedure
}
WITH SYNTAX {
    PDU TYPE                &PDUType
    VERSION NUMBER AND ID       &versionID
    LOGICAL PROCEDURE           &LogicalProcedure
}

*** TO BE DEFINED ***
VersionID ::= SEQUENCE {
    pduID               INTEGER (0..63),
    versionNumber           VersionNumber
}

*** TO BE DEFINED ***
VersionNumber               ::= INTEGER (1 .. 255)

*** TO BE DEFINED ***
LogicalProcedure ::= ENUMERATED {
    global,
    dedicated
}

**************************************************************
--
Table row definitions.
--
NBAP PDU descriptions.
--
**************************************************************

NBAP-PDUs NBAP-PDU-DESCR ::= {
    *** TO BE DEFINED ***
    exampleMessage1 |
    exampleMessage2-v1  |
    exampleMessage2-v2  |
    exampleMessage3 |

    Additional PDU descriptions can be added in future
    ...
}
```

```
*** TO BE DEFINED ***
exampleMessage1 NBAP-PDU-DESCR ::= {
    PDU TYPE                ExampleMessageContents1
    VERSION NUMBER AND ID       { pduID 1, versionNumber 1 }
    LOGICAL PROCEDURE       { global }
}

exampleMessage2-v1 NBAP-PDU-DESCR ::= {
    PDU TYPE                ExampleMessageContents2-v1
    VERSION NUMBER AND ID       { pduID 2, versionNumber 1 }
    LOGICAL PROCEDURE       { dedicated }
}

exampleMessage2-v2 NBAP-PDU-DESCR ::= {
    PDU TYPE                ExampleMessageContents2-v2
    VERSION NUMBER AND ID       { pduID 2, versionNumber 2 }
    LOGICAL PROCEDURE       { dedicated }
}

exampleMessage3 NBAP-PDU-DESCR ::= {
    PDU TYPE                ExampleMessageContents3
    VERSION NUMBER AND ID       { pduID 3, versionNumber 1 }
    LOGICAL PROCEDURE       { global | dedicated }
}

**************************************************************
--
Generic PDU structure. The NBAP-PDUs table above describes
valid contents for the vid, indication and value fields.
--
**************************************************************

NBAP-PDU ::= SEQUENCE {
    vid     NBAP-PDU-DESCR.&versionID     ({NBAP-PDUs}),
    value   NBAP-PDU-DESCR.&PDUType       ({NBAP-PDUs}{@vid})
}

END
```

9.3.2 NBAP PDU Content Definitions

```
**************************************************************
--
NBAP PDU content definitions
--
**************************************************************

NBAP-PDU-contents DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

*** TO BE DEFINED ***
FROM NBAP-Ies

*** TO BE DEFINED ***
FROM NBAP-Constants;

Definitions of NBAP PDU content types one by one
*** TO BE DEFINED ***

ExampleMessageContents1 ::= SEQUENCE {
```

```
    *** Ies to be defined ***
    ...
}

ExampleMessageContents2-v1 ::= SEQUENCE {
    *** Ies to be defined ***
    ...
}

ExampleMessageContents2-v2 ::= SEQUENCE {
    *** Ies to be defined ***
    ...
}

ExampleMessageContents3 ::= SEQUENCE {
    *** Ies to be defined ***
    ...
}

END
```

9.3.3 NBAP Information Elements

```
**************************************************************
--
NBAP Information Elements
--
**************************************************************

NBAP-Ies DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

*** TO BE DEFINED ***
FROM NBAP-Constants;

Definitions of NBAP Ies one by one
*** TO BE DEFINED ***

END
```

```
**************************************************************
--
Constant definitions for NBAP
--
**************************************************************

NBAP-Constants DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

Definitions of NBAP constants one by one
*** TO BE DEFINED ***

END
```

9.4 Message transfer syntax

[Editor's Note: The transfer syntax to be used is FFS]

~~This paragraph contains the CODING of the signaling elements used.~~
~~The following convention are assumed for the sequence of transmission of bits and bytes:~~
~~— Each bit position is marked as 1 to 8. Bit 1 is the least significant bit and is transmitted first.~~
~~— In an element octets are identified by number, octet 1 is transmitted first, then octet 2 etc.~~

~~Length Indicator~~

~~It is desirable to have Length for messages and parameters because future version of protocol may have extension to the present message or parameter, and also variable size can be present in some parameters as well.~~

~~— In case of message size exceeding 256 byte it is better to have 2 bytes for message LENGTH.~~
~~— However it is enough to have 1 byte for parameter LENGTH.~~

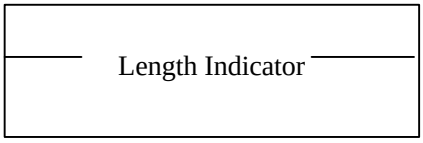


Fig. 9.2.4.1-1 Length Indicator for Message

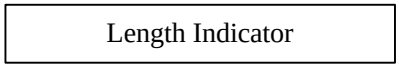


Fig. 9.2.4.1-2 Length Indicator for Parameter

~~Compatibility Information~~

~~Compatibility Information is used in the situation of unrecognized messages or parameter. This parameter should be placed at a certain place then it is easy to pick up this parameter in any circumstances.~~

~~Consequently, the format can be as follow:~~
~~- Message Identifier / Length / Compatibility Info / parameters~~
~~- Parameter Identifier / Length / Compatibility Info / Fields~~
~~Figure 3 shows the coding format of message and Figure 4 shows the coding format of parameter.~~

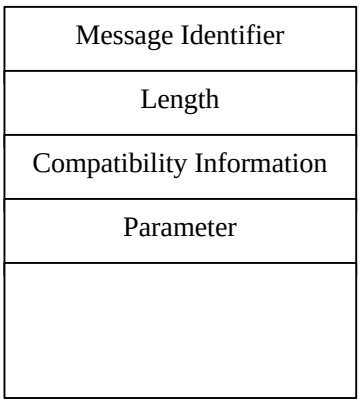


Fig. 9.2.4.1-3 Message Coding Format

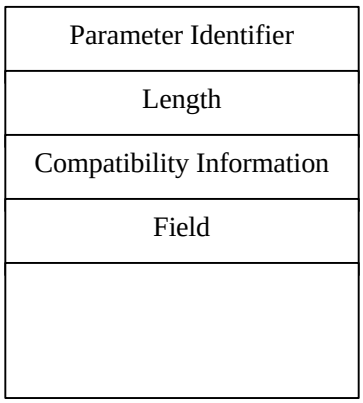


Fig. 9.2.4.1-4 Parameter Coding Format

~~Fixed size data and Variable size data in Field~~

~~It may have two types of filed i.e. with variable size or fixed size in data of field. It has no any problem to specify the fixed size field. Figure5 shows an example of fixed size data in field.~~

Fig. 9.2.4.1-5 Format for fixed size field

~~Regarding the variable size of data~~

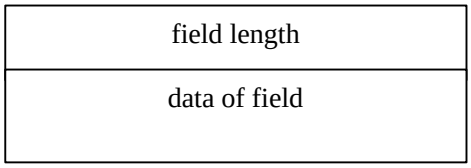


Fig. 9.2.4.1-6 Length method

~~The elements used and their CODING are:~~

~~Element Identifier Coding~~	~~Element name~~	~~Reference~~
	~~ATM Binding ID~~	
	~~ATM Address~~	
	~~No of DCHs~~	
	~~DCH ID~~	
	~~TFS(for DCH)~~	
	~~TFCS(for DCHs)~~	
	~~Radio Frequency~~	
	~~UL scrambling code~~	
	~~UL channelization code type~~	
	~~No. of UL channelization code~~	
	~~UL channelization code ID~~	
	~~UL Interference Level~~	
	~~DL channelization code type~~	
	~~No. of DL channelization code~~	
	~~DL channelization code id~~	
	~~Cell ID~~	
	~~Neighbour Cell Information~~	
	~~Soft Combination Indication~~	
	~~Phase Difference~~	
	~~Radio Link ID~~	
	~~No. of Radio Links~~	
	~~Execution Time~~	
	~~Slot offset~~	
	~~Frame offset~~	
	~~Initial DL Power~~	
	~~DL Power Range~~	
	~~Target UL Eb/Io~~	
	~~DCH QoS~~	
	~~LAI~~	
	~~Group number of incoming call~~	
	~~Cause~~	

9.4.1Message Identifier

Message Identifier uniquely identifies the message being sent. It is a single octet element, mandatory in all messages.

8765 4321	
	RADIO LINK SETUP RADIO LINK SETUP RESPONSE RADIO LINK SETUP FAILURE
	RADIO LINK ADDITION RADIO LINK ADDITION RESPONSE RADIO LINK ADDITION FAILURE
	RADIO LINK DELETION RADIO LINK DELETION RESPONSE
	RADIO LINK RECONFIGURATION PREPARE RADIO LINK RECONFIGURATION READY RADIO LINK RECONFIGURATION COMMIT RADIO LINK RECONFIGURATION FAILURE RADIO LINK RECONFIGURATION CANCEL
	POWER CONTROL
	OUTER LOOP POWER CONTROL
	PAGING
	RESET (FFS)
	RESET ACKNOWLEDGE (FFS)
	RESET (FFS)

Message Compatibility Information

Message Compatibility Information is used in the situation of unrecognized messages.

8	7	6	5	4	3	2	1	
Message Compatibility Information								1(oct)

Figure: Message Compatibility Information

Table: Message Compatibility Information octet

Bit	
8	Reserved
÷	
4	Pass On not possible
3	Discard Message
2	Send Notify (1)
1	Release Indicator

1.It should be used in CONFUSION message

9.4.2Parameter Compatibility Information

Parameter Compatibility Information is used in the situation of unrecognized messages.

8	7	6	5	4	3	2	1	
Parameter Compatibility Information								1(oct)

Figure: Parameter Compatibility Information

Table: Parameter Compatibility Information octet (The detail is FFS.)

Bit	
8	Reserved
÷	

4	Pass On not possible
3	Discard Message
2	Send Notify (1)
1	Release Indicator

1.It should be used in CONFUSION message

9.4.3ATM Address

This element is included ATM address.

[Note: The following should be described the cording format. (The detail is FFS.)]

9.4.4ATM Binding ID

This element is included ATM Binding ID.

[Note: The following should be described the cording format. (The detail is FFS.)]

9.4.5Cell ID

This element uniquely identifies cell which a RNC and is of variable length containing.

8	7	6	5	4	3	2	1	
Parameter Identifier								1 (oct)
Length								2
Compatibility Information								3
Spare								4
Cell identification discriminator								
Cell Identification								

Figure: format of Cell Identifier

9.4.6Neighbour Cell information

9.4.7No of DCHs

9.4.8DCH ID

9.4.9TFS(for DCH)

9.4.10TFCS(for DCHs)

9.4.11Soft Combination Indication

9.4.12Phase Difference

9.4.13Radio Frequency

~~9.4.14UL Interference level~~

~~9.4.15UL scrambling code~~

~~9.4.16UL channelization code type~~

~~9.4.17No. of UL channelization codes~~

~~9.4.18UL channelization code ID~~

~~9.4.19DL channelization code type~~

~~9.4.20No. of Radio Links~~

~~9.4.21Radio Link ID~~

~~9.4.22No. of DL channelization codes~~

~~9.4.23DL channelization code ID~~

~~9.4.24Execution Timer~~

~~9.4.25Initial DL Power~~

~~9.4.26DL Power Range~~

~~This Information element defines the DL transmission power range to be used for the radio links used for the related RRC connection in the node-B.~~

~~9.4.27Target UL Eb/Io~~

~~9.4.28Slot Offset~~

~~9.4.29Frame Offset~~

~~9.4.30DCH QoS~~

~~9.4.31LAI~~

~~9.4.32Group number of incoming call~~

~~9.4.33Cause~~

~~This element is used to indicate the reason for a particular event to have occurred and is coded as shown below.~~

The cause value is a single octet element if the extension bit (bit 8) is set to 0. If it is set to 1 then the cause value is a 2octet field.

8	7	6	5	4	3	2	1	
Parameter Identifier								1 (oct)
Length								2
Compatibility Information								3
D.C	Cause Value							5

Figure: format of Cause

Cause Value:

Class: Normal event

Class: Normal event
Class: Resource unavailable
Class: Service or option not available
Class: Service or option not implemented
Class: invalid message (e.g. parameter out of range)
Class: protocol error
Class: interworking

The following table shows example of cause value.

Table: cause value

Cause Value		
Class	value	
765	4321	
		Normal termination Mobile illegal (ex. Authentication NG) O & M intervention Equipment failure Protocol error Message type non-existent or not implemented Information element/parameter non-existent or not implemented Radio link failure BS approach link failure Timer expired Ciphering algorithm not supported Resource unavailable Other values are reserved

9.5 Timers

10 Handling of unknown, unforeseen and erroneous protocol data

10.1 Error reporting procedure

Editor's note: this section is included as a working assumption in R3
Editor's note: it is FFS in which error cases the error report procedures are applied. The definition of procedural error and syntactic error are also FFS

This procedure is used by both NodeB and its CRNC to report detected errors or any other problems in one incoming message if they cannot be reported by any other procedure.

When NodeB or CRNC detect an erroneous message (or a message, which for some other reasons cannot be processed), it sends an ERROR REPORT message with the most appropriate cause value.

The message contains as a transparent L3 information the erroneous message (coded), CRNC communication context ID (in UL), and NodeB communication context ID (in DL), if the NodeB is able to deduce it from the erroneous message.

Possible error cause can be:

- Unknown message ID: the message contains a message ID that is not known to the receiver
- Unknown Information element: the message contains an information element that is not known or cannot be interpreted by the receiver
- Procedural errors: the message is not compatible with the status of the receiver.
- Unknown failure reason: requested procedure failed to process by unknown reason

The message is sent using the Dedicated NBAP signalling connection of the incoming message, or using the Common NBAP if the incoming message was sent via Common NBAP.

10.2 Error reporting message

10.2.1 ERROR REPORTING

Information Element	Reference	Type
Message Type		M
Message Discriminator		M
CRNC communication context id		O
Cause		M
L3 transparent information		M

10.3 L3 information parameter

L3 Information: This parameter contains the complete L3 information of one NBAP message.

11 Annex A (normative):

12 Annex B (informative):

Document Stability Assessment Table

Section	Content missing	Incomplete	Restructuring needed	Checking needed	Editorial work required	Finalisation needed	Almost stable	Stable
1								√
2					√			
3				√				
4		√						
5				√				
6	√							
7				√				
8.1				√				
8.2				√				
9.1		√						
9.2		√						
9.3	√							
9.4	√							
9.5	√							
10	√							

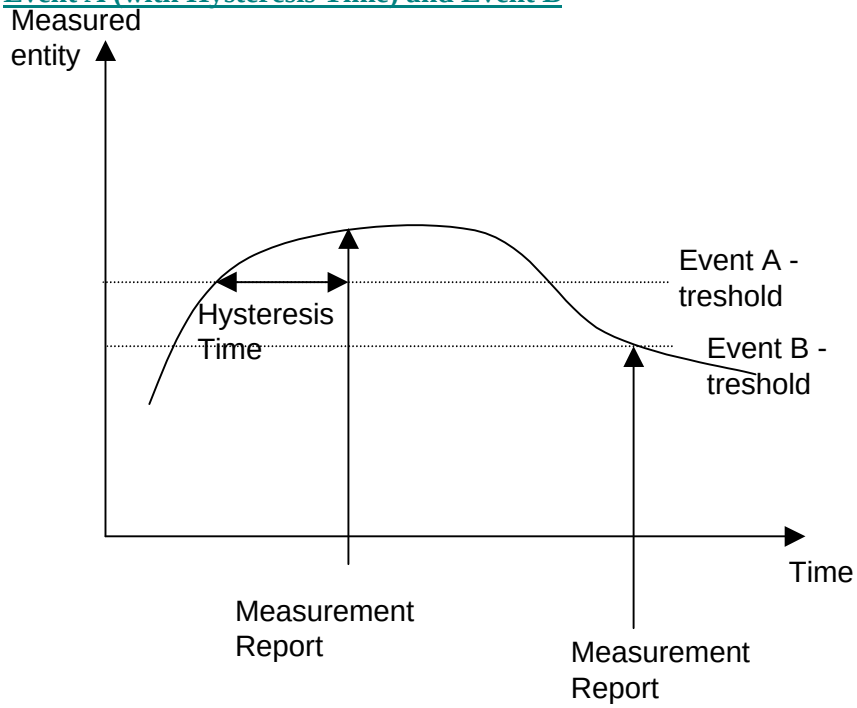
13 Annex C (informative): List of Outstanding Issues

This list of outstanding issues was *initially* derived from the planning meeting held between the chairman and the editors within the RAN WG3 Iur/Iub SWG at the RAN WG3 meeting #6 in Sophia Antipolis.
The following Issues are remaining in the present specification (not in order of importance):

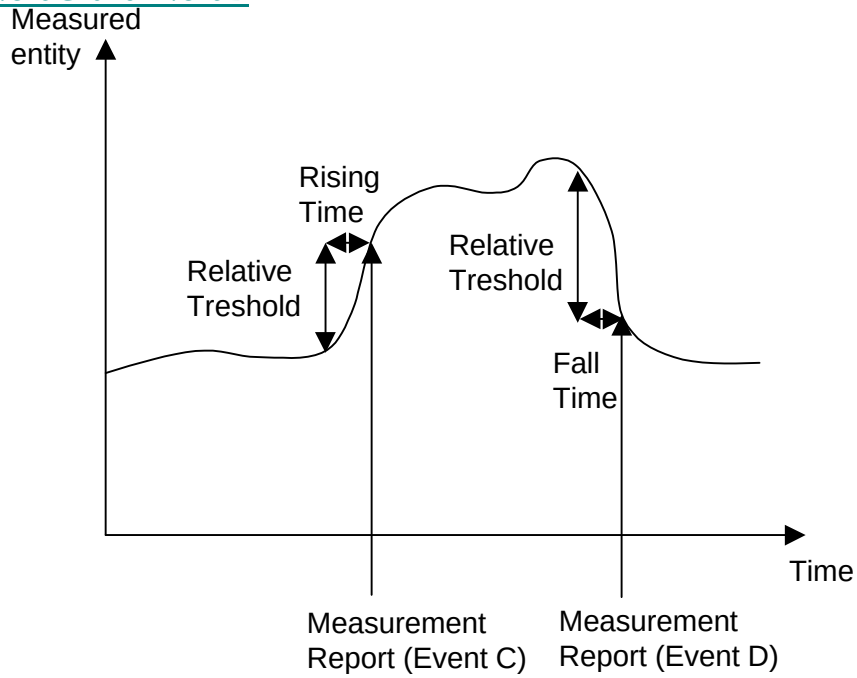
- Compressed Mode
- Positioning
- TDD: Some issues remains to be sorted out, e.g. parameters, differences between FDD and TDD, etc.
- DL Power Control: The handling of the DL power control is an additional open issue. (For instance, how shall the DL reference Power be used?)
- Error Cases/Error Handling
- Timers
- Compatibility and Version handling
- Specification text: This specification needs to be improved to be more of a specification rather than the present descriptive text.
- Common procedures for resource handling (“Logical O&M”) is unstable
- Services from Signalling Transport (Chapter 6)
- ~~Parameters for DSCH~~
- Parameters for CPCH
- Parameter definitions and ranges
- ~~Out-of-sync detection procedure (Radio Link Failure Indication? In-band signalling?)~~
- Details for “RESET”, “RESET ACKNOWLEDGE”, and “CONFUSION” messages
- Cause parameters for most of response messages
- System Information Update message parameters
- SSDT
- ASN.1 description and coding

14 Annex D (Informative)

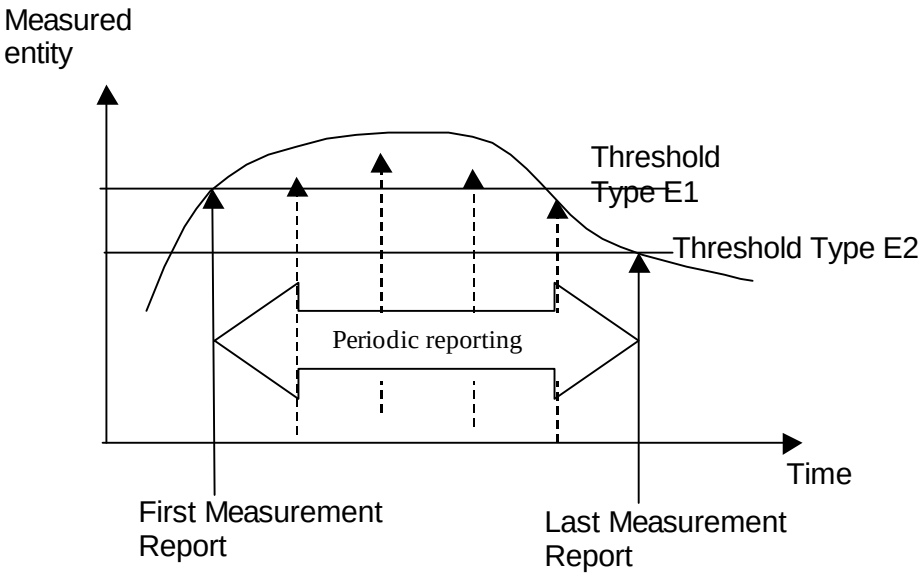
Event A (with Hysteresis Time) and Event B



Event C and Event D



Event E


Measured entity
Threshold Type E1
Threshold Type E2
Periodic reporting
Time
First Measurement Report
Last Measurement Report

~~14~~15 History

Document history		
V0.0.1	March 1999	First Draft
V0.0.2	March 1999	Introduction of content from the Merged Description of I_{ub} Interface, V0.0.2 1999-03
V0.0.3	April 1999	New sections "8.1.4. Measurement Request", "8.1.5. Measurement Termination requested by RNC" , "8.1.6. Measurement Termination requested by NodeB" and "8.1.7. Measurement Report" have been introduced. Contents in Tdoc R3-99191 have been reflected. Contents for "Measurement Termination requested by NodeB" will be contributed. New section "8.1.9. System Information Update Procedure" has been introduced. Contents in Tdoc R99-192 have been reflected Several corrections and modifications have been made to "4 General", "8.1.11 Paging", "8.2.2 Radio Link Reconfiguration (Synchronized)", and "8.2.4 Radio Link Deletion" reflecting the proposals in Tdoc R3-99193 Editor's notes were added to "8.2.6 Outer Loop Power Control". The notes describe the raised discussion items to be solved from Tdoc R3-99176. "8.2.7 Down Link Code Reconfiguration Trigger" has been deleted according to the result of study item "ARC/2: DL Channelisation codes are managed and allocated by CRNC to NodeB". "9.1.16 DL CODE RECONFIGURATION "Spreading Code" were renamed to "Channelisation Code" Editor's notes were added onto the top of 8.1.1 stating that Logical O&M procedures would be included in NBAP Common Procedures
V0.0.4	April 1999	New section "8.1.6 Measurement Termination initiated by NodeB" has been added according to the result from TSG-RAN WG3 meeting #2. In accordance, the title of section 8.1.5 has been changed to "8.1.5 Measurement
V0.1.0	April 1999	V0.0.4 has been updated to V0.1.0 after the approval by TSG-RAN WG3
V1.0.0	April 1999	V0.1.0 has been updated to V1.0.0 after the approval by TSG-RAN WG3

V1.0.1	May 1999	Chapter 3 has been detailed (definition and abbreviation were added) Chapter 7 has been detailed (List of messages were added) Section 8.1.2 has been deleted due to the change of paging termination point DL Power Control will be done in outband signalling (8.2.5) Outerloop Power Control will be done in inband signalling (8.2.6) Chapter 9 has been updated Section 9.2 has been divided into two sections, Section 9.2 and Section 9.4; Section 9.2 is for "Information Element Functional Definition and Contents. Section 9.4 is for "Message Transfer Syntax" New Section 9.3 will be prepared for "Message and Information element Chapter 12 (Annex B) has been deleted
V1.0.2	June 1999	Several Logical O&M procedures have been introduced and added. Chapter 7 and 8 have been updated according the agreement Small editorial modification/correction have been made to Chapter 2 and 3 A new section in Chapter 5 has been added. This section described the current policy how to handle "Parallel Transactions" The names of the procedures have been placed under the figures
V1.1.0	July 1999	Several editorial modifications (e.g. remove FFS that are already solved) have been made FDD/TDD columns have been removed in order to be aligned with the layout in 25.423 RNSAP specification Modifications related to outer-loop power control have been made Several new parameter tables for e.g. Measurement Procedures, DL power control have been added in chapter 9.1 RL setup procedure and RL reconfiguration procedure(sync/unsync) have been updated according to the decisions on DSCH. Logical O&M procedures and parameters have been detailed. Transaction ID has been added to all parameters
V1.1.1	July 1999	ASN.1 description has been updated
V1.1.2	August 1999	Several dedicated measurement procedures have been detailed (as proposed in R3-99736)

V1.2.0	August 1999	Capability exchange procedure has been removed Section 9.2 “Information Element Functional Definition and Contents” has been divided into 3 sub-sections, “Commonly used parameters for FDD/TDD”, “FDD specific parameters”, and “TDD specific parameters” The figure in 8.1.2.1 Block Resource has been modified by changing the direction of the arrows Power-control-related parameters has been detailed according to the conclusion of R3-99924 discussion ”DL Power Control” has been renamed to “DL Power Control Request” (R3-99A29) “Cell configuration procedure” has been detailed according to the conclusion of R3-99862, R3-99926, and R3-99928 “NodeB failure procedure” has been renamed to “Resource status procedure” and detailed. The message name has also changed accordingly. (R3-99994) “NodeB Resource procedure” has been detailed according to the conclusion of R3-99995 TDD procedures and parameters related to TDD synchronization have been detailed according to the conclusion of R3-99905 and R3-99882 UL interference parameter has been added (R3-99976) Propagation delay parameter has been introduced (R3-99A05) DCH priority issues solved and reflected (R3-99A07) Common Transport Channel Management procedures for DL and UL have been merged (R3-99867) Annex C “List of Outstanding Issues” has been added
V1.2.1	September	Editorial modifications Allocation /Retention priority has been deleted; this parameter is only applicable to RNSAP The definition of Frame Offset and Chip Offset have been detailed (as in R3-99A44) New reference TS25.426 has been added “Cell ID” except “local Cell ID” is renamed to “UC-ID” Cell Setup procedure has been slightly updated by adding some parameter

V1.3.0	September	Approved by RAN WG3 with the following editorial modifications: • 9.2.3.11 and 9.2.3.12 are merged • Contents of Chapter 9.4 have been removed • ToAWS and ToAWE added to RL SETUP REQUEST, RL RECONFIGURATION PREPARE, and RL RECONFIGURATION SETUP • Transport layer address and Binding ID are paired as "Transport layer information"
V1.3.1	October	Approved by TSG-RAN
V1.3.2	October	Conclusions of R3 #7 discussions are included: • The message contents subsections in section 9.1 have been rearranged in order of appearance in Chapter 8. • The IE functional definitions subsections in section 9.2 have been rearranged in alphabetical order. • The contents of "9.4 Message Transfer Syntax" have been removed since the contents provide little information for 3GPP specification at this moment. • 8.1.2.1 Block Resource Procedure has been detailed • 8.1.2.2.2 and 8.1.2.3.2 Audit Procedure has been added • Both Common and Dedicated Measurement Procedures have been detailed. (8.1.4 and 8.2.6) • 8.1.5.1 Cell Setup Procedure has been updated • 8.1.5.2 Cell Reconfiguration Procedure has been newly added • 8.1.6.1 Resource Status Indication Procedure has merged NodeB Resource Notification Procedure • 8.1.7 System Information Update Procedure has been detailed • 8.2.5 DL Power Control Procedure has been detailed • 8.2.7 Radio Link Failure Indication Procedure and 8.2.8 Radio Link Restore Indication Procedure are used when NodeB detects out-of-sync / recovery from out of-sync. • When a new DCH is established in RLs, each DCH may choose either normal mode or silent mode in UL direction • Payload CRC Presence Indicator has been added • Message contents have been updated according to the conclusions • Parameter definitions have been updated according to the conclusions • 10. Error handling Procedure has been added • Other editorial modifications have been made
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