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Technical Specification

**3rd Generation Partnership Project (3GPP);
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NBAP Specification**

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Contents

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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]   [1]   25.401, UTRAN Overall Description

[2]   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]

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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
OFF	Frame Offset
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.]
[Editor's note: This chapter is almost stable]

Node B Application Part, NBAP, includes common procedures and dedicatedprocedures. 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

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

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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 Downlink Common Transport Channel Configuration Procedures

The Procedures for Downlink Common Transport Channel Configuration:

- Downlink Common Transport Channel Setup (e.g. FACH, PCCH, BCCH, and DSCHand RACH)
- Downlink Common Transport Channel Reconfigure
- Downlink Common Transport Channel Delete

8.1.1.1.1   Downlink Common Transport Channel Setup

 The RNC initiates a definition of downlink common transport channels in a cell within Node B, which defines the ordered channels and takes them into service. 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, and BCH, and RACH. This procedure is initiated by CRNC.
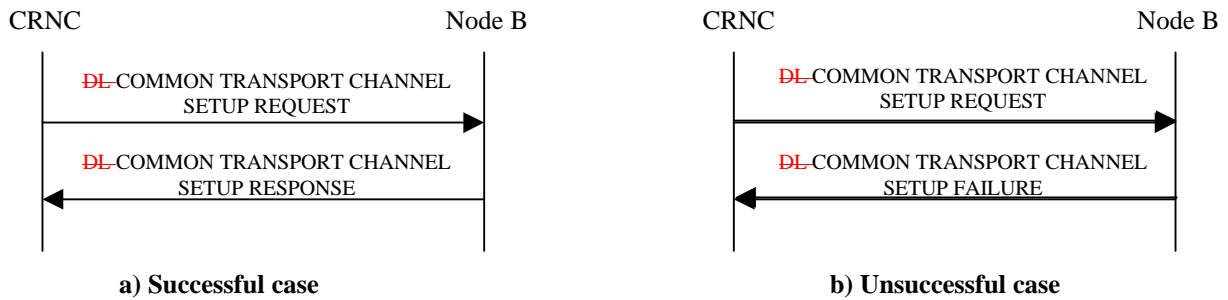
The DOWNLINK COMMON TRANSPORT CHANNEL SETUP REQUEST message contains the following mandatory information:

- Transaction ID (assumed unique in the RNC)

- Cell Identity

- Cell Carrier Id

- Downlink Scrambling Code Id - FFS

- Downlink Common Transport Control Channel Id

- Downlink Common Transport Control Channel type

- Downlink Common Transport Control Channel data

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

- Transaction ID

- Downlink Common Transport Control Channel data

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

- Transaction ID

- Failure Cause

8.1.1.1.2   Downlink Common Transport Channel Reconfigure

The RNC initiates a change of the configuration of downlink common transport channels in Node B, which reconfigures the channels. The result is communicated back to the RNC.

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

- The downlink 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

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- 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 ~~downlink~~ common transport channel
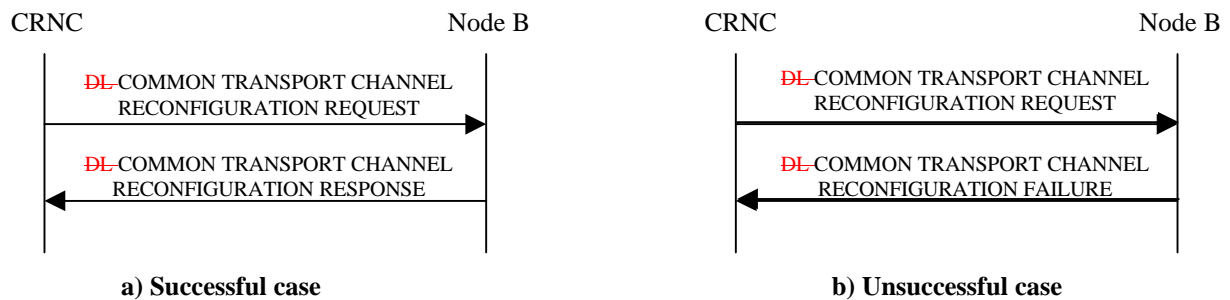
CRNC — ~~DL~~ COMMON TRANSPORT CHANNEL RECONFIGURATION REQUEST → Node B; CRNC ← ~~DL~~ COMMON TRANSPORT CHANNEL RECONFIGURATION RESPONSE — Node B	CRNC — ~~DL~~ COMMON TRANSPORT CHANNEL RECONFIGURATION REQUEST → Node B; CRNC ← ~~DL~~ COMMON TRANSPORT CHANNEL RECONFIGURATION FAILURE — Node B
a) Successful case	**b) Unsuccessful case**

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

- Cell Id (allows the Node B to reference the channel against the correct cell where a Node B supports multiple cells)

- Common channel type (e.g. FACH, BCCH, PCCH) and identifier ~~(for the case where more than one common transport channel of the same type exists in a cell)~~

- New DL radio resource (DL ~~channelisation~~Channelisation code, frequency)

- Transaction Id (identifies the procedure)

The ~~DL~~ COMMON TRANSPORT CHANNEL RECONFIGURATION RESPONSE contains the following information:

- Transaction Id (identifies the procedure)

The ~~DL~~ COMMON TRANSPORT CHANNEL RECONFIGURATION FAILURE contains the following information:

- Transaction Id (identifies the procedure)

- Cause (cause value for the failure)

8.1.1.1.3   ~~Downlink~~ Common Transport Channel Delete

The RNC initiates the deletion of ~~downlink~~ 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 ~~downlink~~ 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 ~~Downlink~~ Common Transport Channels. This procedure is initiated by CRNC.

CRNC   Node B

~~DL~~ COMMON TRANSPORT CHANNEL
DELETION REQUEST

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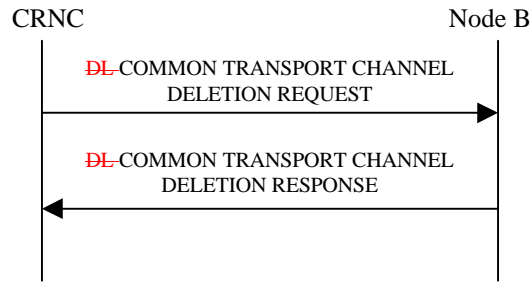
The ~~DOWNLINK~~ COMMON TRANSPORT CHANNEL DELETION message contains the following mandatory information:

- Transaction ID

- ~~Downlink~~ Common Transport Control Channel Id

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

- Transaction ID

8.1.1.2 Uplink Common Transport Channel Configuration Procedures

The Procedures for Uplink Common Transport Channel Configuration:

- Uplink Common Transport Channel Setup (e.g. RACH)

- Uplink Common Transport Channel Reconfigure

- Uplink Common Transport Channel Delete

8.1.1.2.1 Uplink Common Transport Channel Setup

The RNC initiates a definition of uplink common transport channels in a cell within Node B, which defines the ordered channels and takes them into service. The result is communicated back to the RNC.

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

- The cell to which the common transport channels are to be defined in has been defined within Node B.

- 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

This NBAP common procedure is used by the Controlling RNC to request Node B to support the logical resources RACH. This procedure is initiated by CRNC.
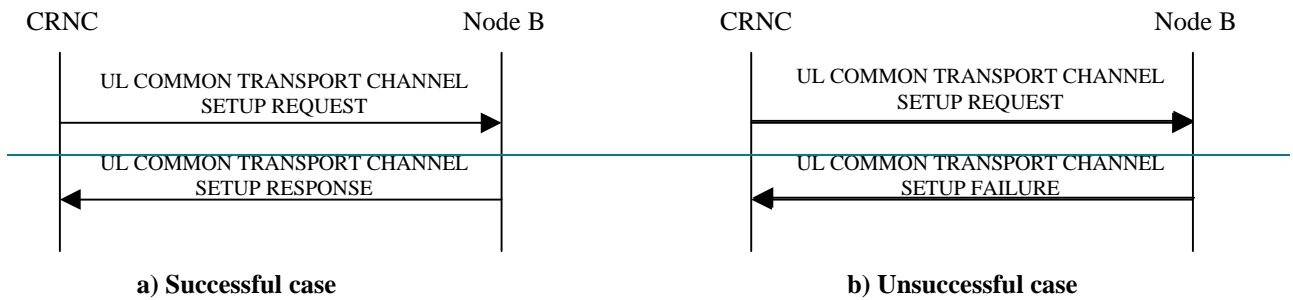
CRNC   Node B   CRNC   Node B

UL COMMON TRANSPORT CHANNEL		UL COMMON TRANSPORT CHANNEL
SETUP REQUEST ──────▶	SETUP REQUEST ──────▶
UL COMMON TRANSPORT CHANNEL		UL COMMON TRANSPORT CHANNEL
◀────── SETUP RESPONSE		◀────── SETUP FAILURE

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

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

- Transaction ID

- Cell Identity

- Cell Carrier Id

- Uplink Common Transport Control Channel Id

- Uplink Common Transport Control Channel type

- Uplink Common Transport Control Channel data

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

- Transaction ID

- Uplink Common Transport Control Channel data

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

- Transaction ID

- Failure Cause

8.1.1.2.2 Uplink Common Transport Channel Reconfigure

The RNC initiates a change of the configuration of uplink common transport channels in Node B, which reconfigures the channels. The result is communicated back to the RNC.

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

- The uplink common transport 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

The RNC shall use the following procedure to re-configure an uplink common transport channel:
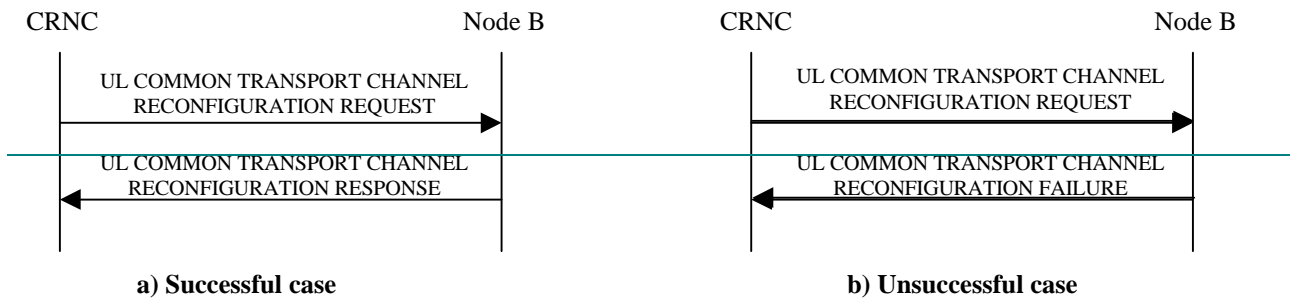
CRNC   Node B   CRNC   Node B

```
         UL COMMON TRANSPORT CHANNEL              UL COMMON TRANSPORT CHANNEL
           RECONFIGURATION REQUEST                 RECONFIGURATION REQUEST
        ──────────────────────────────▶        ──────────────────────────────▶

         UL COMMON TRANSPORT CHANNEL              UL COMMON TRANSPORT CHANNEL
          RECONFIGURATION RESPONSE                 RECONFIGURATION FAILURE
        ◀──────────────────────────────        ◀──────────────────────────────
```

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

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

- Cell Id (allows the Node B to reference the channel against the correct cell where a Node B supports multiple cells)

- Common channel type (e.g. FACH,) and identifier (for the case where more than one common transport channel of the same type exists in a cell)

- New UL radio resource (UL channelisation code, frequency)

- Transaction Id (identifies the procedure)

The UL COMMON TRANSPORT CHANNEL RECONFIGUREATION RESPONSE contains the following information:

- Transaction Id (identifies the procedure)

The UL COMMON TRANSPORT CHANNEL RECONFIGURATION FAILURE contains the following information:

- Transaction Id (identifies the procedure)

- Cause (cause value for the failure)

8.1.1.2.3 Uplink Common Transport Channel Delete

The RNC initiates the deletion of uplink 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 uplink 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 the logical resource RACH. This procedure is initiated by CRNC.
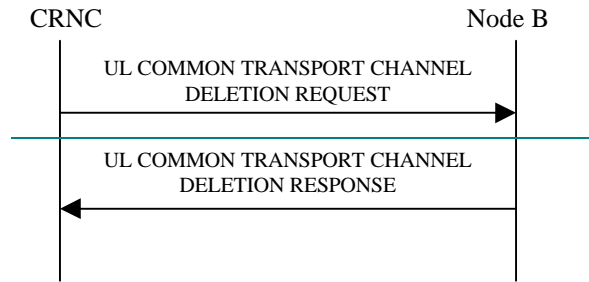
```
        CRNC                                    Node B

                  UL COMMON TRANSPORT CHANNEL
                       DELETION REQUEST

                  UL COMMON TRANSPORT CHANNEL
                       DELETION RESPONSE
```

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

— Transaction ID

— Uplink Common Transport Control Channel Id

The UPLINK 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:

```
  CRNC                    Node B          CRNC                    Node B

      BLOCK RESOURCE REQUEST                  BLOCK RESOURCE REQUEST
  ───────────────────────────►            ───────────────────────────►

      BLOCK RESOURCE RESPONSE                  BLOCK RESOURCE FAILURE
  ◄───────────────────────────            ◄───────────────────────────

        a) Successful case                      b) Unsuccessful case
```

```
  CRNC                    Node B          CRNC                    Node B

      BLOCK RESOURCE REQUEST                  BLOCK RESOURCE REQUEST
  ◄───────────────────────────            ◄───────────────────────────

      BLOCK RESOURCE RESPONSE                  BLOCK RESOURCE FAILURE
  ───────────────────────────►            ───────────────────────────►

        a) Successful case                      b) Unsuccessful case
```
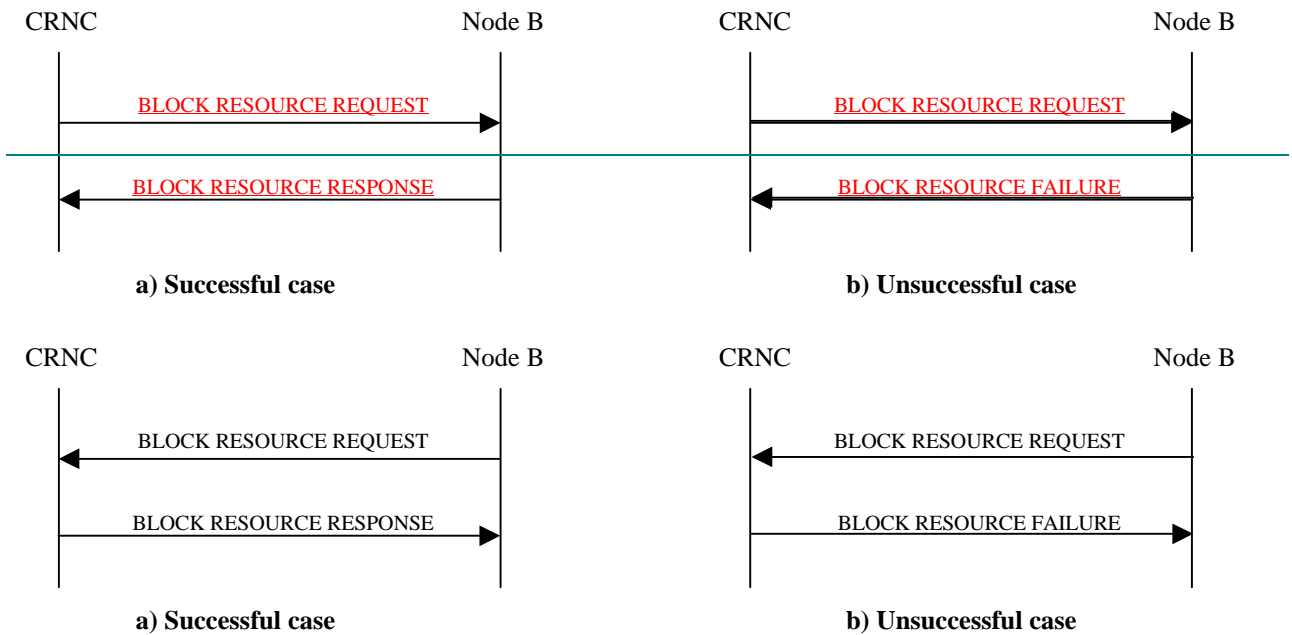
The BLOCK RESOURCE REQUEST message contains the following information:

- Cell 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

- Transaction Id (identifies the procedure)

The BLOCK RESOURCE RESPONSE message contains the following information:

- Transaction Id (identifies the procedure)

The BLOCK RESOURCE FAILURE message contains the following information:

- Transaction Id (identifies the procedure)

8.1.2.2 Node B Restarted

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:

```
       CRNC                              Node B
        |                                  |
        |   <───  NODE B RESTART INDICATION |
        |                                  |
```

The NODE B RESTART INDICATION message contains the following information:

- Node B Id (an 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

8.1.2.3 RNC Restarted

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:

```
       CRNC                              Node B
        |                                  |
        |   RNC RESTART INDICATION  ──────>|
        |                                  |
        |   RNC RESTART COMPLETION         |
        |   INDICATION             ──────> |
        |                                  |
```
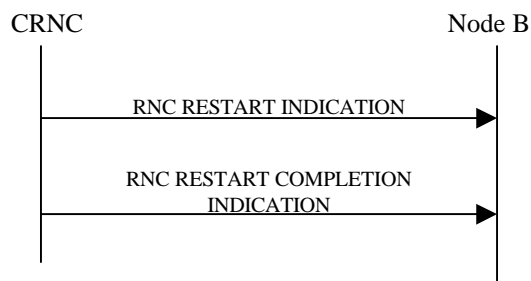
The RNC RESTART INDICATION message contains the following information:

- 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))

- Transaction Id (identifies the procedure)

The RNC RESTART COMPLETION INDICATION message contains the following information:

- Transaction Id (identifies the procedure)

NOTE: The use of this procedure for partial restarts is ffs.

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 Measurement Request

For requesting measurements, the RNC use the following procedure:
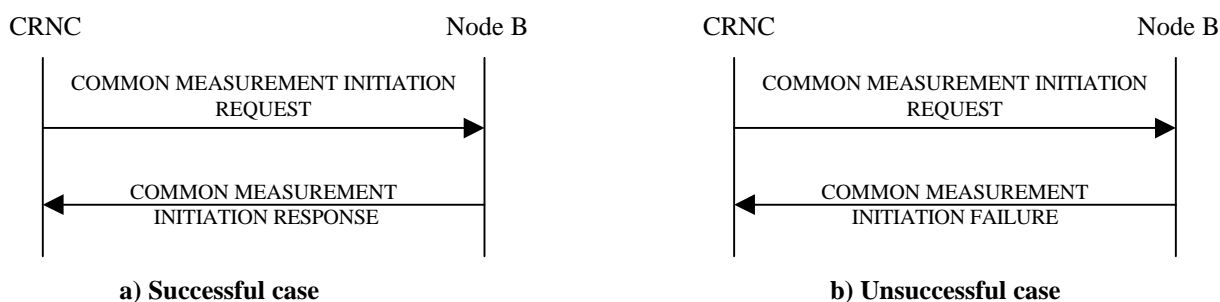
Measurement Request Procedure

The COMMON MEASUREMENT INITIATION REQUEST message includes the following information:

- **Measurement 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".

- **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.*

- **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.

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

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

- **Measurement Id:** This is the same 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:** This is the same Id that was used in the request.
- **Cause:** This states the cause for the reject. *The exact content of this parameter is FFS.*

8.1.4.2 Measurement Termination initiated by RNC

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

CRNC   Node B

COMMON MEASUREMENT
TERMINATION REQUEST
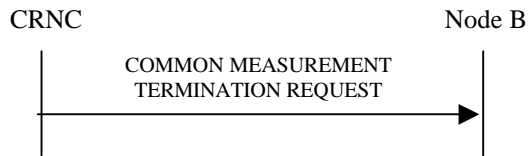
Measurement Termination Procedure

The COMMON MEASUREMENT TERMINATION REQUEST message includes the following information:

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

8.1.4.3 Measurement Termination initiated by NodeB

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

CRNC   Node B

COMMON MEASUREMENT FAILURE
INDICATION

Measurement Failure Indication Procedure

The COMMON MEASUREMENT FAILURE INDICATION message includes the following information:

- **Measurement Id:** This is the same Id that was used in the request.
- **Cause:** This states the reason for the termination. *The exact content of this parameter is F.F.S.*

8.1.4.4 Measurement Report

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

CRNC   Node B

COMMON MEASUREMENT REPORT

Measurement Report Procedure

The COMMON MEASUREMENT REPORT message includes the following information:

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

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- **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:

- Cell Setup

- 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 RNC initiates a definition of a cell in Node B, which creates and configures a cell context is in Node B. The result is communicated back to the RNC.

The CRNC initiates cell configuration, by sending the message CELL SETUP REQUEST to Node B. Node B creates and configures a cell context, creates and configures two synchronisation channels (Primary SCH and Secondary SCH). 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.

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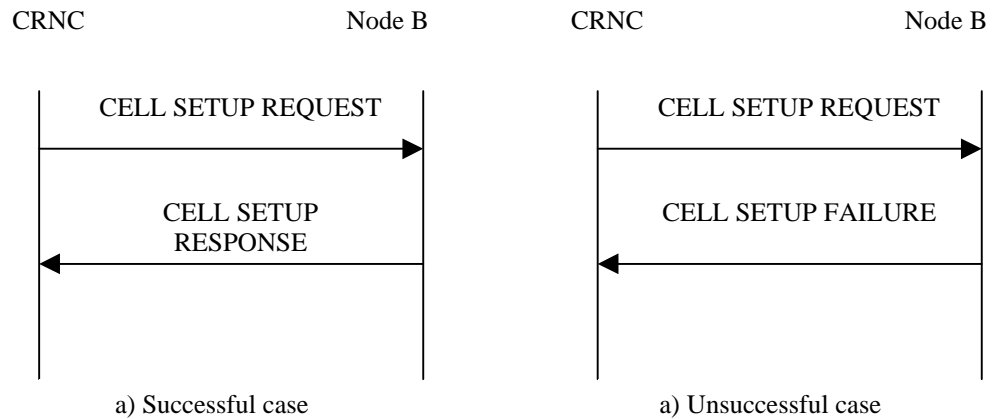
Cell Setup Procedures

The CELL SETUP REQUEST message contains the following administrative information:

- Local Cell Id (a pre-configured cell identity local to Node B, known by both RNC and Node B)

- Cell Id (The Cell Id to be used in all other NBAP messages, unique in UTRAN)

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

Information for Cell Configuration includes:

- Primary SCH power

- Secondary SCH power

- Common Pilot power

- Max transmission Power

- Frequency

- DL Scrambling Code

The CELL SETUP RESPONSE message contains the following information:

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

The CELL SETUP FAILURE message contains the following information:

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

- Reason

8.1.5.2 Cell Delete

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.

CRNC   Node B

CELL DELETION REQUEST

CELL DELETION RESPONSE
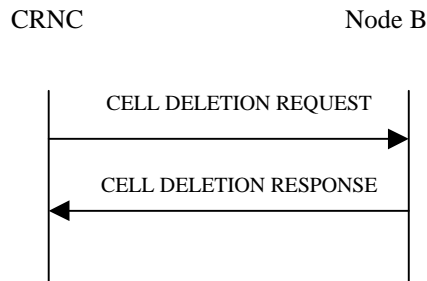
Cell Delete Procedure

The CELL DELETION REQUESTmessage contains the following information:

- Cell Id

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

The CELL DELETION RESPONSE message contains the following information:

- Transaction Id (same 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 (eg 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 IndicationNode B Failure

*

With the Node B failureResourec 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 „Node B FalureResource 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:

CRNC   Node B

|<──── NODE B FAILURERESOURCE STATUS INDICATION ────

The NODE B FAILURERESOURCE STATUS INDICATION message may include the following parameters:

* Failure type (e.g. service degradation, cell control or traffic termination point restart)

* Local Cell Id

* Cell Id (if configured)   FFS

* 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.

8.1.6.2 Node 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:

```
        CRNC                                    Node B
          |                                        |
          |    RESOURCE NOTIFICATION INDICATION     |
          |<───────────────────────────────────────|
          |                                        |
```

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)

- ~~Actual Cell Id (if configured)~~

- 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.

```
    CRNC                     Node B        CRNC                     Node B
     |                         |            |                         |
     | SYSTEM INFORMATION      |            | SYSTEM INFORMATION      |
     | UPDATE REQUEST          |            | UPDATE REQUEST          |
     |────────────────────────>|            |────────────────────────>|
     | SYSTEM INFORMATION      |            | SYSTEM INFORMATION      |
     | UPDATE RESPONSE         |            | UPDATE FAILURE          |
     |<────────────────────────|            |<────────────────────────|
```

Sysyem Information Update Procedure
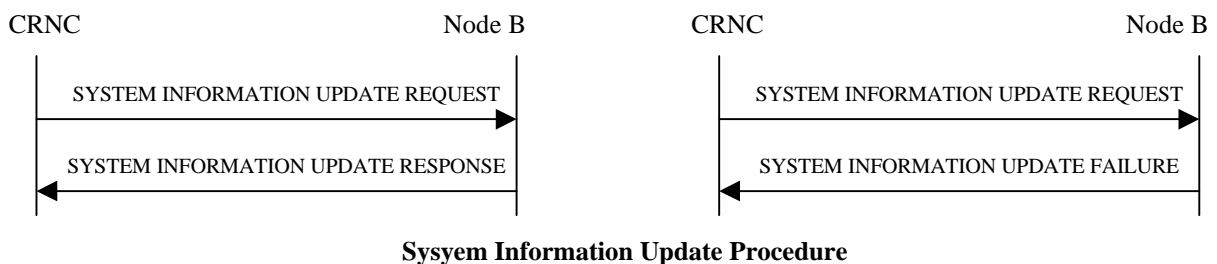
The SYSTEM INFORMATION UPDATE REQUEST message contains new information to be broadcast on the BCCH.

The SYSTEM INFORMATION UPDATE RESPONSE message indicates successful completion of the update procedure while SYSTEM INFORMATION UPDATE FAILURE message indicates unsuccessful completion. 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.

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**
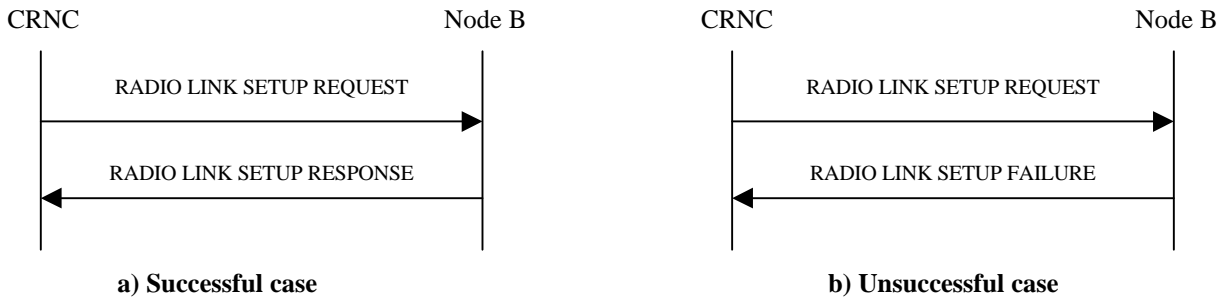
Radio Link Setup Procedure

The RADIO LINK SETUP REQUEST message contains the following information :

- UL Radio Resource (UL Scrambling Code, UL Channelisation Code)

- DL Radio Resource (DL Channelisation Codes and DL Scrambling Code per Radio Link)

- DCH Information (DCH Identifier, DCH Allocation/Retention Priority, DCH Frame handling Priority, Transmission Rate, Transport Format Set) (for each DCH in the UE)

- DSCH Information (DSCH Identifier, RL Identifier, Transport Format Set)

- Transport Format Combination Set

- Power control information

- Frequency

- RL identifier #1

- Target cell identifier #

- RL identifier #2

- Target cell identifier #

- Soft combining indication (may, must, or must not be combined with already existing radio links)

    …

- RL identifier #n

- Target cell identifier #

- Soft combining indication (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

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8.1.9Capability Exchange Procedure

The purpose of a capability exchange is to allow Network Elements (CRNC and Node B) to run unaligned versions of software. Customer rollout and upgrade strategies and differing Network Element (NE) software product release schedules may result in software releases with different functional content and capabilities within the same UTRAN.

A capability exchange is necessary in order to negotiate the software capabilities to be used between NEs. If a feature/functionality affects the interface between NEs, it is included in a capability exchange. If a feature/functionality is isolated to a particular NE, it is not controlled by a capability exchange.

Cross-NE functionality is only available when it is supported by NEs on both ends of an interface. Thus, only the greatest common capabilities between NEs are supported.

The Capability Exchange Procedure requires two message types, a Capability Indication and a Capability Indication Ack. The Node B may initiate the Capability Indication. CRNC initiated case may be needed (FFS).
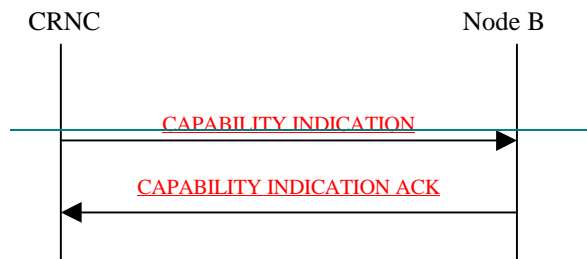
CAPABILITY INDICATION message contains:

- Transaction ID

- Feature set - NE feature set (FFS)

CAPABILITY INDICATION ACK message contains:

- Transaction ID

- Feature set - greatest common feature set (FFS)

A Capability Indication message contains a transaction id and the feature set (FFS) and protocol versions of the Network Element initiating the exchange. When a NE receives a Capability Indication, it responds with a Capability Indication Ack containing the transaction id from the received Capability Indication and the greatest common capabilities of itself and the originating NE. A NE uses the transaction id to distinguish between capability exchanges with different NEs or with a single NE.

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 Cell 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 missung, 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 |
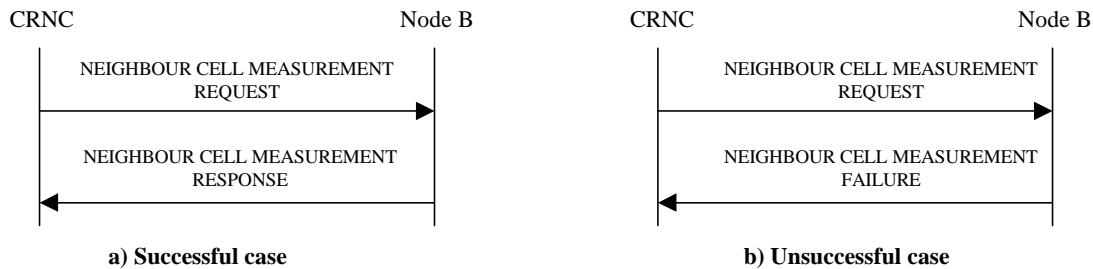
NEIGHBOUR CELL MEASUREMENT REQUEST message contains:

- Transaction ID

- Measuring Cell Id

- Neighbour Measured Cell information

NEIGHBOUR CELL MEASUREMENT RESPONSE message contains:

- Transaction ID
- Measured Cell Id

- Measured Chip Offset

NEIGHBOUR CELL MEASUREMENT FAILURE message contains:

- Transaction ID
- Measured Cell 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 cell id that is being aligned along with the pertinent Chip Offset Adjustment and the Master Cell 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.

CRNC   Node B   CRNC   Node B

SYNCHRONISATION ADJUSTMENT
REQUEST

SYNCHRONISATION ADJUSTMENT
REQUEST

SYNCHRONISATION ADJUSTMENT RESPONSE

SYNCHRONISATION ADJUSTMENT FAILURE

a) Successful case   **b) Unsuccessful case**
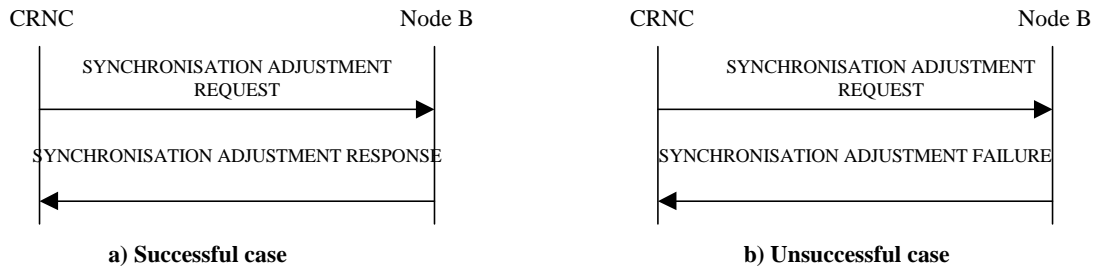
SYNCHRONISATION ADJUSTMENT REQUEST message contains:

- Transaction ID

- Master Cell Id

- Chip Offset Adjustment

SYNCHRONISATION ADJUSTMENT RESPONSE message contains:

- Transaction ID
- Cell Id

SYNCHRONISATION ADJUSTMENT FAILURE message contains:

- Transaction ID
- Cell 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.

CRNC   Node B

NODE B OUT OF SYNC INDICATION

CRNC   Node B

SYNCHRONISATION RESTART REQUEST
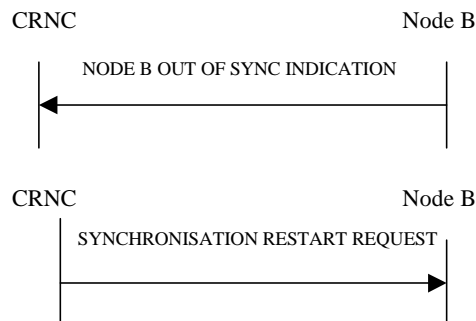
NODE B OUT OF SYNC INDICATION message contains:

     Transaction ID

SYNCHRONISATION RESTART REQUEST message contains:

     Transcation ID

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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
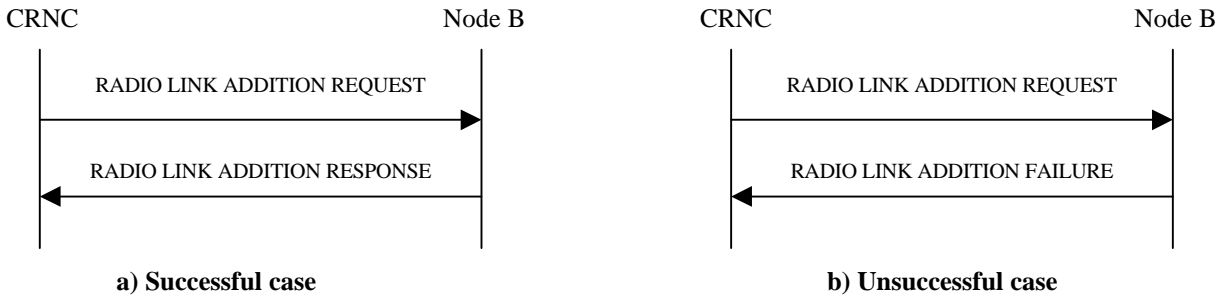
Radio Link Addition Procedure

The RADIO LINK ADDITION REQUEST message contains the following information :

- DL Radio Resource (DL channelisation codes) per RL

- Power control information

- the parameter "OFF" (frame offset information)

- Frequency

- RL identifier #n+1

- Target cell identifier #

- Soft combining indication (may, must, or must not be combined with already existing radio links)

- RL identifier #n+2

- Target cell identifier #

- Soft combining indication (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

- Transport layer addressing information (AAL2 address, AAL2 binding ID) per RL

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 and modify the usage the UE is making of the DSCH.

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
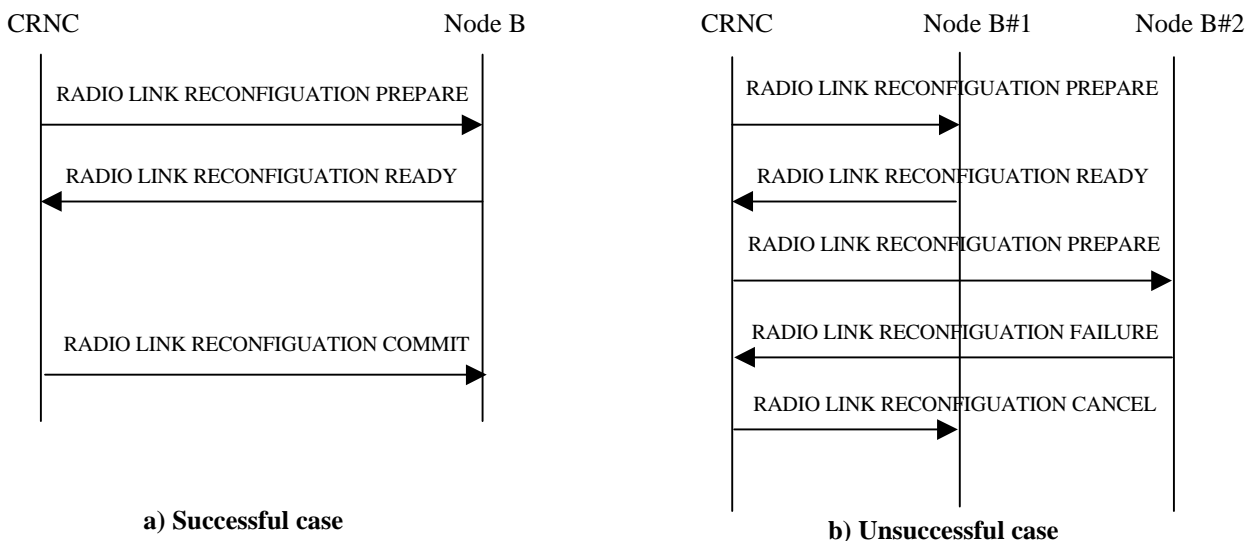
Radio Link Reconfiguration (Synchronized) Procedure

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 Allocation/Retention PriorityPriority of DCH (How is it used?)

- 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 Allocation/Retention Priority

- DCH Frame Handling Priority ~~Priority of modified DCH (How is it used?)~~

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, this message also contains

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

In case of DSCH modification, this message also contains

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

In case of DSCH deletion, this message also contains

- DSCH Information (DSCH Identifier 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)

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In case of DSCH addition, this message also contains

- Transport layer addressing information (Transport layer address, binding ID) for added DSCH

In case of DSCH reconfiguration, 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 and modify the usage the UE is making of the DSCH.

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.

CRNC   Node B

RADIO LINK RECONFIGURATION REQUEST
→

RADIO LINK RECONFIGURATION RESPONSE
←
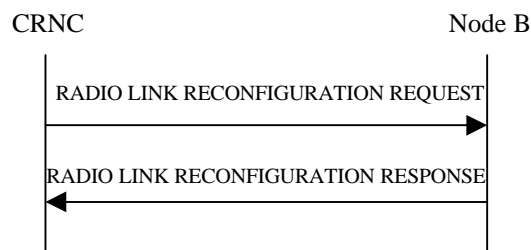
Radio Link Reconfiguration (Unsynchronized) Procedure

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 Allocation/Retention Priority
- DCH Frame Handling PriorityPriority of DCH (How is it used?)

  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 Allocation/Retention Priority
- DCH Frame Handling PriorityPriority of modified DCH (How is it used?)

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.

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In case of DSCH addition, this message also contains

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

In case of DSCH modification, this message also contains

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

In case of DSCH deletion, this message also contains

- DSCH Information (DSCH Identifier 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, this message also contains

- Transport layer addressing information (Transport layer address, binding ID) for added DSCH

In case of DSCH reconfiguration, 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 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.

```
CRNC                                        Node B
  |                                           |
  |        RADIO LINK DELETION REQUEST        |
  |------------------------------------------>|
  |                                           |
  |        RADIO LINK DELETION RESPONSE       |
  |<------------------------------------------|
  |                                           |
```
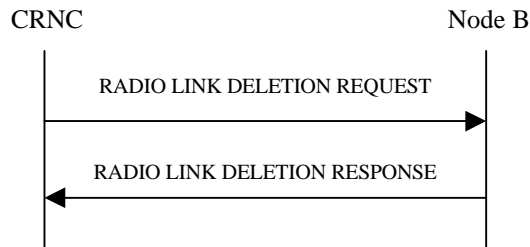
Radio Link Deletion Procedure

The RADIO LINK DELETION REQUEST message contains :

- Radio Link Identifiers (of cells to be deleted)

The RADIO LINK DELETION RESPONSE message contains:

- FFS

8.2.5   DL Power Control

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.

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.

```
CRNC                                        Node B
  |                                           |
  |        DL POWER CONTROL REQUEST           |
  |------------------------------------------>|
  |                                           |
```

DL Power Control Procedure

8.2.6 Radio Network Performance Measurement

8.2.6.1 Measurement Request
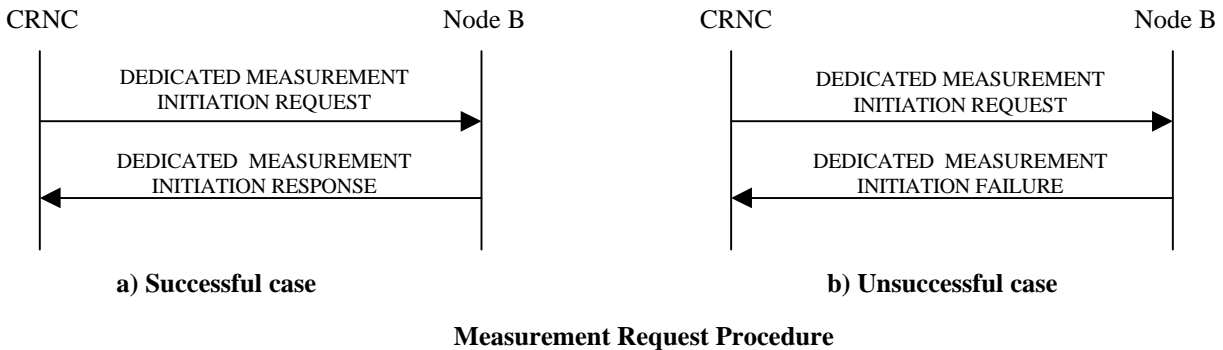
For requesting measurements, the RNC use the following procedure:

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

Measurement Request Procedure

The DEDICATED MEASUREMENT INITIATION REQUEST message includes the following information:

Measurement Id: 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.*

Measurement Characteristics: This defines how the measurements should be performed. 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.*

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.

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

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

8.2.6.2 Measurement Termination initiated by CRNC

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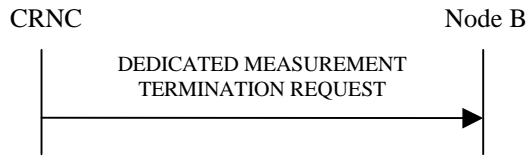
CRNC   Node B

DEDICATED MEASUREMENT
TERMINATION REQUEST

Dedicated Measurement Termination Procedure

The DEDICATED MEASUREMENT TERMINATION REQUEST message includes the following information:

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

8.2.6.3 Measurement Termination initiated by Node B

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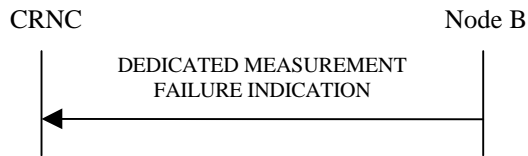
CRNC   Node B

DEDICATED MEASUREMENT
FAILURE INDICATION

Dedicated Measurement Failure Indication Procedure

The DEDICATED MEASUREMENT FAILURE INDICATION message includes the following information:

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

Cause: This states the reason for the termination. *The exact content of this parameter is F.F.S.*

8.2.6.4 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.

RNC   Node B

DEDICATED MEASUREMENT REPORT

Measurement Reporting Procedure

The MEASUREMENT REPORT message includes the following information:

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Measurement 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.

8.2.7   Radio Link Failure

The Node B starts this procedure when a radio link is no longer available. The reason for this is a NodeB internal failure or lost radio interface ~~synchronization~~synchronisation due to bad radio conditions. Other reasons are FFS.

As a consequence 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)

CRNC   Node B

RADIO LINK FAILURE INDICATION
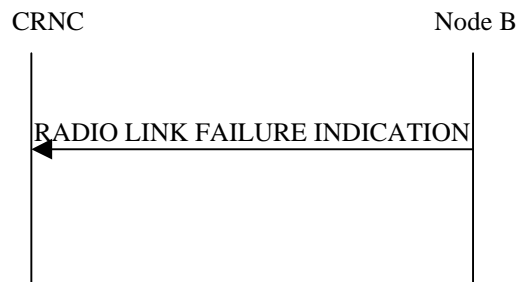
Radio Link Failure procedure

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

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.

9.1.2   RADIO LINK SETUP REQUEST

9.1.2.1 RADIO LINK SETUP REQUEST for FDD

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 Channelization Code		**M**
Length of UL Channelization Code		M
DCH Information		**M**
DCH ID		M
DCH Combination Ind		O
DCH Allocation/Retention priority		O
DCH Frame Handling Priority		O
DCH Priority		FFS
UL Transport Format Set		M
DL Transport Format Set		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
Cell ID		M
Frame OffsetOFF		M
Chip Offset		M
Propagation Delay		O
Diversity Control Field		C[1]

---

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

DL Scrambling Code		M
DL Channelization Code		**M**
DL Channelization Code Number		M
(initial) DL transmission power		M
Maximum DL power		M
Minimum DL power		M
UL Eb/No Target		M
DL Reference Power		M

9.1.2.2 RADIO LINK SETUP REQUEST for TDD

(Editor's note: contributions are invited)

9.1.3   RADIO LINK SETUP RESPONSE

9.1.3.1   RADIO LINK SETUP RESPONSE for FDD

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		C²
Reference RL ID		C³
DCH Information Response		**C⁴**
DCH ID		M
Binding ID		M
Transport Layer Address		FFS

---

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

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

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

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9.1.3.2 RADIO LINK SETUP RESPONSE for TDD

(Editor's note: contributions are invited)

9.1.4   RADIO LINK SETUP FAILURE

9.1.4.1   RADIO LINK SETUP FAILURE for FDD

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
Node B Communication Context ID		M
Communication Control Port ID		O
Tranaction ID		M
Successful RL Information Response		**O**
RL ID		M
UL interference level		M
Diversity Indication		C[5]
Reference RL ID		C[6]
DCH Information Response		**C[7]**
DCH ID		M
Binding ID		M
Transport Layer Address		FFS
Unsuccessful RL Information Response		**M**
RL ID		M
RL Failure Cause		M

9.1.4.2 RADIO LINK SETUP FAILURE for TDD

(Editor's note: contributions are invited)

9.1.5   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.

---

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

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

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

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
Cell ID		M
Frame OffsetOFF		M
Chip Offset		M
Diversity Control Field		M
DL Scrambling Code		M
DL Channelization Code		M
DL Channelization Code Number		M
(initial) DL transmission power		MO
Maximum DL power		MO
Minimum DL power		MO
DL Reference Power		M

9.1.6   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.

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[8]
DCH Information Response		C[9]
DCH ID		M

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

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

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Binding ID		M
Transport Layer Address		FFS

9.1.7   RADIO LINK ADDITION FAILURE

This message is sent from Node B to CRNC as response to the Radio Link Addition REQUESTmessage 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[10]
DCH Information Response		**C[11]**
DCH ID		M
Binding ID		M
Transport Layer Address		FFS
Unsuccessful RL Information Response		**M**
RL ID		M
RL Failure Cause		M

9.1.7.19.1.8   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

---

[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.

9.1.7.29.1.9   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

9.1.10   RADIO LINK RECONFIGURATION PREPARE

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
DCH Frame Handling Priority		O
DCH Priority		FFS
Transport format set (DL)		O
Transport format set (UL)		O
DCHs to add		**O**
DCH ID		M
DCH Combination Ind		O
DCH Allocation/Retention Priority		O
DCH Frame Handling Priority		O
DCH Priority		FFS
Transport format set (DL)		M
Transport format set (UL)		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

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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

9.1.11   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

9.1.12   RADIO LINK RECONFIGURATION COMMIT

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

9.1.13   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

9.1.14 RADIO LINK RECONFIGURATION CANCEL

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

9.1.15 RADIO LINK RECONFIGURATION REQUEST

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
DCH Frame Handling Priority		O
DCH Priority		FFS
Transport format set (DL)		O
Transport format set (UL)		O
DCHs to add		O
DCH ID		M
DCH Combination Ind		O
DCH Allocation/Retention Priority		O
DCH Frame Handling Priority		O
DCH Priority		FFS
Transport format set (DL)		M
Transport format set (UL)		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

9.1.16 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

9.1.17 DL POWER CONTROL REQUEST

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
NodeB Communication Context ID		M
Transaction ID		M
DL Reference Power		M

9.1.18 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

		M
Report Characterisitics[12]		M

9.1.19 COMMON MEASUREMENT INITIATION RESPONSE

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Measurement ID[13]		M

9.1.20 COMMON MEASUREMENT INITIATION FAILURE

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Measurement ID[14]		M
Cause		O

9.1.21 COMMON MEASUREMENT TERMINATION REQUEST

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Measurement ID[15]		M

9.1.22 COMMON MEASUREMENT FAILURE INDICATION

Information Element	Reference	Type
Message Discriminator		M

---

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

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

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

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

Message Type		M
Transaction ID		
Measurement ID[16]		M

9.1.23   COMMON MEASUREMENT REPORT

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		
Measurement ID[17]		M
Time Reference		O
Value		M

9.1.24   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)*

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Local Cell ID		M
Cell ID		M
Primary SCH power		M
Secondary SCH power		M
Common Pilot CH power		M
Max transmission power		M
DL scrambling code		M

---

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

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

9.1.25   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   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

9.1.27   CELL DELETE 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
Cell ID		M

9.1.28   CELL DELETE 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

9.1.249.1.29   RADIO LINK FAILURE INDICATION

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

9.1.30   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
Indication Type (FFS)		O
Resource Impact		C[18]
Local Cell ID		O
Resource Operational State		M
Service Impact Level		M
Cell ID		O
Resource Operational State		M
Service Impact Level		M
Communication Control Port ID		O
Resource Operational State		M
Service Impact Level		M
BCH ID		O
Resource Operational State		M
Service Impact Level		M
PCH ID		O
Resource Operational State		M
Service Impact Level		M
FACH ID		O
Resource Operational State		M

---

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

Service Impact Level		M
RACH ID		**O**
Resource Operational State		M
Service Impact Level		M
DSCH ID		**O**
Resource Operational State		M
Service Impact Level		M
USCH ID		**O**
Resource Operational State		M
Service Impact Level		M
Cause		O
Transaction ID		M

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

9.1.31   Node 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

9.1.259.1.32   ~~DL~~ 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 in the Node B. One ~~downlink~~ 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.

Information Element	**Reference**	**Type**

Message Discriminator		M
Message Type		M
Transaction ID		M
Cell ID		M
Cell carrier ID		M
DL scrambling code ID –FFS		M
~~DL c~~Common transport channel ID		M
~~DL c~~Common transport channel type		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**
~~DL channelisation code number~~		~~M~~
~~DL channelisation code spreading factor~~		~~M~~
BCH power		M
FACH/PCH parameters		~~FFS~~O
DL ~~channelisation~~Channelisation code number		M
DL ~~channelisation~~Channelisation code spreading factor		M
DL Transport Format Set		M
DL Transport Format Set		M
ToAWS		M
ToAWE		M
~~FACH/~~PCH power		~~FFS~~M
PICH parameters		**FFS**
DL ~~channelisation~~Channelisation code		M
PICH power		M
RACH parameters		**O**
Preamble Spreading 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

9.1.269.1.33   ~~DL~~ COMMON TRANSPORT CHANNEL SETUP RESPONSE

This message is sent to inform the RNC about the ~~downlink~~ common transport channel that Node B has been able to define, and return any transport layer information required. Information on one 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 parameters		**O**
Transport layer address		M
Binding ID		M

9.1.279.1.34   ~~DL~~ 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

9.1.35   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.

Information Element	Reference	Type
Message Discriminator		M
Message Type		M

Transaction ID		M
Cell_ID		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)

9.1.36   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   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

9.1.289.1.38   DL COMMON TRANSPORT CHANNEL DELETION REQUEST

This message is sent to inform the Node B about what downlink 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
DL common transport channel ID		M

9.1.299.1.39   DL COMMON TRANSPORT CHANNEL DELETION RESPONSE

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

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

9.1.30 UL 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 in the Node B. One uplink 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.

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
Cell ID		M
Cell carrier ID		M
UL common transport channel ID		M
UL common transport channel type		M
RACH parameters		M
Preamble spreading code		M
Allowed preamble signatures		M
Allowed spreading factors for the message part		M

Allowed access slots		M
Preamble to preamble timing		M
AICH parameters		FFS
DL channelisation code		M
AICH power		M

9.1.31 UL COMMON TRANSPORT CHANNEL SETUP RESPONSE

This message is sent to inform the RNC about the uplink common transport channel that Node B has defined, and return any transport layer information required.

Information Element	Reference	Type
Message Discriminator		M
Message Type		M
Transaction ID		M
RACH parameters		O
Transport layer address		M
Binding ID		M

9.1.32 UL COMMON TRANSPORT CHANNEL SETUP FAILURE

This message is sent to inform the RNC that the attempt to configure uplink common transport channels has failed.

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

9.1.33 UL COMMON TRANSPORT CHANNEL DELETION REQUEST

This message is sent to inform the Node B about what uplink 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
UL common transport channel ID		M

9.1.34UL COMMON TRANSPORT CHANNEL DELETION RESPONSE

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

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

9.1.40 NEIGHBOUR CELL MEASUREMENT REQUEST

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
Measuring Cell ID		M
Measured Cell information		**O**
Measured Cell ID		O
DL Scrambling Code		O
Toffset		M
Sync Midamble		O
PSCH TS id - K		O

9.1.41 NEIGHBOUR CELL MEASUREMENT RESPONSE

This message is sent from Measureing 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 Cell Id		O
Measured Chip Offset		M

9.1.42   NEIGHBOUR CELL MEASUREMENT FAILURE

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 Cell Id		O
Failure Cause		M

9.1.43   SYNCHRONISATION ADJUSTMENT REQUEST

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
Master Cell ID		O
Chip Offset Adjustment		M

9.1.44   SYNCHRONISATION ADJUSTMENT RESPONSE

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
Cell Id		M

9.1.45   SYNCHRONISATION ADJUSTMENT FAILURE

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
Cell Id		M

Failure Cause		M

9.1.46 NODE B OUT OF SYNC INDICATION

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

9.1.47 SYNCHRONISATION RESTART REQUEST

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

9.1.359.1.48   RESET (FFS)

9.1.369.1.49   RESET ACKNOWLEDGE (FFS)

9.1.379.1.50   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

9.2.19.2.1.1 Message discriminator

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

9.2.29.2.1.2 Message Type

The Message Type uniquely identifies the message being sent.

9.2.39.2.1.3 CRNC Communication Context ID

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

9.2.1.4 UL 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)

9.2.1.5 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.

9.2.1.6DCH Priority

The DCH Priority is used to indicate the DCH priority level.

9.2.1.6 DCH Allocation/Retention Priority

This parameter indicates the priority level in the allocation and retention of DCH resources in DRNS.

9.2.1.7 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

9.2.1.79.2.1.8 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.

9.2.1.89.2.1.9 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.

9.2.1.99.2.1.10 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.

9.2.1.109.2.1.11 TFCI used flag

Indicates whether TFCI shall be included in the DPCCH.

9.2.1.119.2.1.12 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.

9.2.1.129.2.1.13 RL ID

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

9.2.1.139.2.1.14 Cell ID

The Cell ID is the identifier of a cell.

9.2.1.149.2.1.15 DL Scrambling Code

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.
(Editor's note: this parameter may be only applicable to FDD)

9.2.1.159.2.1.16 DL Channelisation Code Number

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.
(Editor's note: this parameter may be only applicable to FDD)

9.2.1.169.2.1.17 Length of DL Channelisation Code

The Length of UL Channelisation Code defines the level of the Channelisation code in the code tree. It is equivalent to the Spreading Factor.
(Editor's note: this parameter may be only applicable to FDD)

9.2.1.179.2.1.18 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.

9.2.1.189.2.1.19 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.

9.2.1.199.2.1.20 Binding ID

The Binding ID is the identifier of an 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.

9.2.1.209.2.1.21 Transport Layer Address

The Transport Layer Address indicates the Node B transport address. The format of the Transport Layer Address is FFS.

9.2.1.219.2.1.22 RL Failure Cause

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

9.2.1.229.2.1.23 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 Ids.

9.2.1.239.2.1.24 Measurement ID

RNC defined identifier that uniquely identifies the measurement.

9.2.1.249.2.1.25 Measurement Object

Defines on which resource the measurement should be performed, e.g. cell.

9.2.1.259.2.1.26 Measurement Type

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

9.2.1.269.2.1.27 Measurement Characteristic

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

9.2.1.279.2.1.28 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.

9.2.1.289.2.1.29 Time Reference

Shows the time of the measurement (timestamp).

9.2.1.299.2.1.30 Value

Includes the reported data.

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9.2.1.309.2.1.31 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.

9.2.1.32 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 – 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.

9.2.1.33 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.

9.2.1.34 Service Impact Level

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.

9.2.1.35 Local Cell ID

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

9.2.1.36 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.

9.2.1.37 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.

9.2.1.38 Maximum DL Power Capability

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

9.2.2   FDD specific parameters

9.2.2.1 Length of UL Channelisation Code

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

9.2.2.2 OFF

The OFF (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 OFF Frame Offset is UE and cell specific.

9.2.2.3 Chip Offset

The Chip Offset is defined as the radio timing offset inside a radio frame. The precision is on chip level.

9.2.2.4 Diversity Control Field

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

9.2.2.5 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.

9.2.2.6 DL Reference Power

The DL Reference Power indicates the reference transmission power used by the fast UL inner loop power control to eliminate the power drifting problem. This is FFS and depends on the outcome of Study Item Iur/1: Signalling for UL Outer Loop Power Control and DL Power Balancing.

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 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.

9.2.2.79.2.2.8 Diversity Indication

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

9.2.2.89.2.2.9 Reference RL ID

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

9.2.2.10 Propagation Delay

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

9.2.3　TDD specific Parameters

(Editor's note: contributions are expected)

9.2.3.1 Toffset

The offset of the primary synchronisation code for a neighbouring cell

9.2.3.2 Sync Midamble

Midamble used of the TDD synchronisation channel for a neighbouring cell

9.2.3.3 PSCH TS id K

The timeslot in TDD that contains the Synchronisation channel.

9.2.3.4 Measured Chip Offset

Value of the measured offset of neighbour cell during synchronisation process.

9.2.3.5 Chip Offset adjustment

The chip adjustment to be made in a cell to facilitate cell synchronisation

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
```

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```
&≋☺□◆ℳ□   ☐▤  *** TO BE DEFINED ***
    ExampleMessageContents1,
    ExampleMessageContents2-v1,
    ExampleMessageContents2-v2,
    ExampleMessageContents3
FROM NBAP-PDU-contents;

&≋☺□◆ℳ□   ☐▤  ************************************************************
--
&≋☺□◆ℳ□   ☐▤  Table column structure.
--
&≋☺□◆ℳ□   ☐▤  NBAP-PDU-DESCR associates a NBAP PDU structure with a PDU
&≋☺□◆ℳ□   ☐▤  identifier.
--
&≋☺□◆ℳ□   ☐▤  ************************************************************

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

&≋☺□◆ℳ□   ☐▤  *** TO BE DEFINED ***
VersionID ::= SEQUENCE {
    pduID          INTEGER (0..63),
    versionNumber          VersionNumber
}

&≋☺□◆ℳ□   ☐▤  *** TO BE DEFINED ***
VersionNumber              ::= INTEGER (1 .. 255)

&≋☺□◆ℳ□   ☐▤  *** TO BE DEFINED ***
LogicalProcedure ::= ENUMERATED {
    global,
    dedicated
}

&≋☺□◆ℳ□   ☐▤  ************************************************************
--
&≋☺□◆ℳ□   ☐▤  Table row definitions.
--
&≋☺□◆ℳ□   ☐▤  NBAP PDU descriptions.
--
&≋☺□◆ℳ□   ☐▤  ************************************************************

NBAP-PDUs NBAP-PDU-DESCR ::= {
    &≋☺□◆ℳ□   ☐▤  *** TO BE DEFINED ***

    exampleMessage1 |
    exampleMessage2-v1  |
    exampleMessage2-v2  |
    exampleMessage3 |

    &≋☺□◆ℳ□   ☐▤  Additional PDU descriptions can be added in future

    ...
}

&≋☺□◆ℳ□   ☐▤  *** TO BE DEFINED ***
exampleMessage1 NBAP-PDU-DESCR ::= {
```

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```
        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
```

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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.
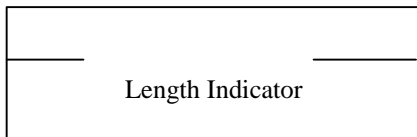
Length Indicator

Fig. 9.2.4.1-1 Length Indicator for Message

Length Indicator

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.

Message Identifier
Length
Compatibility Information

Parameter Identifier
Length
Compatibility Information

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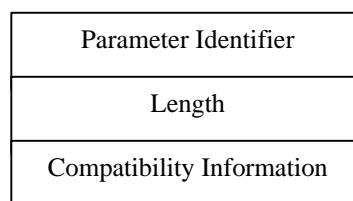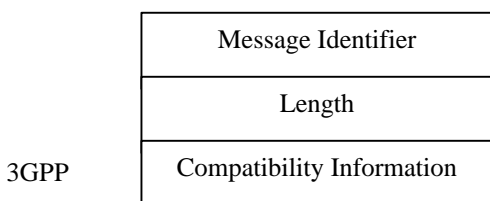
Fixed size data and Variable size data in Field

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.

```
┌─────────────────────────────────────┐
│                                      │
│               Field                  │
│                                      │
└─────────────────────────────────────┘
```
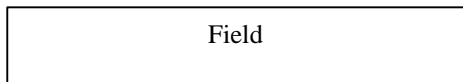
Fig. 9.2.4.1-5 Format for fixed size field

Regarding the variable size of data

```
┌─────────────────────────────────────┐
│                                      │
│             field length             │
│                                      │
├─────────────────────────────────────┤
│             data of field            │
│                                      │
│                                      │
└─────────────────────────────────────┘
```
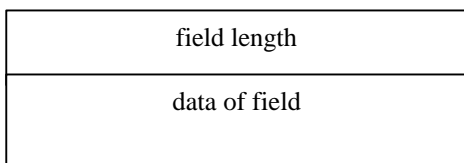
Fig. 9.2.4.1-6   Length method

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	
	Neighborbour 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	

9.4.1   Message 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)
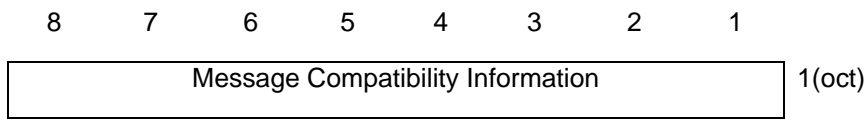
Figure: Message Compatibility Information

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

9.4.2   Parameter 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)
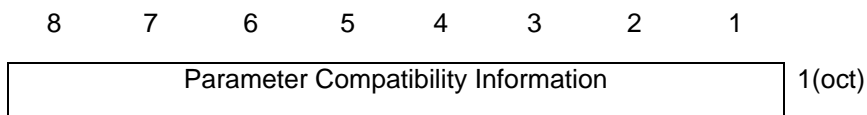
Figure: Parameter Compatibility Information

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

9.4.3   ATM Address

This element is included ATM address.

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

9.4.4   ATM Binding ID

This element is included ATM Binding ID.

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

9.4.5   Cell 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				Cell identification discriminator				4
Cell Identification								
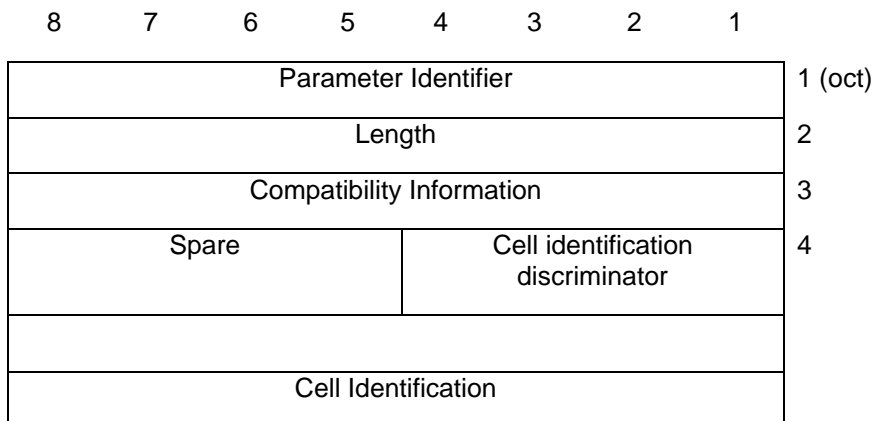
Figure: format of Cell Identifier

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9.4.6   Neighbour Cell information

9.4.7   No of DCHs

9.4.8   DCH ID

9.4.9   TFS(for DCH)

9.4.10   TFCS(for DCHs)

9.4.11   Soft Combination Indication

9.4.12   Phase Difference

9.4.13   Radio Frequency

9.4.14   UL Interference level

9.4.15   UL scrambling code

9.4.16   UL channelization code type

9.4.17   No. of UL channelization codes

9.4.18   UL channelization code ID

9.4.19   DL channelization code type

9.4.20   No. of Radio Links

9.4.21   Radio Link ID

9.4.22   No. of DL channelization codes

9.4.23   DL channelization code ID

9.4.24   Execution Timer

9.4.25   Initial DL Power

9.4.26   DL 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.

9.4.27   Target UL Eb/Io

9.4.28   Slot Offset

9.4.29 Frame Offset

9.4.30 DCH QoS

9.4.31 LAI

9.4.32 Group number of incoming call

9.4.33 Cause

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

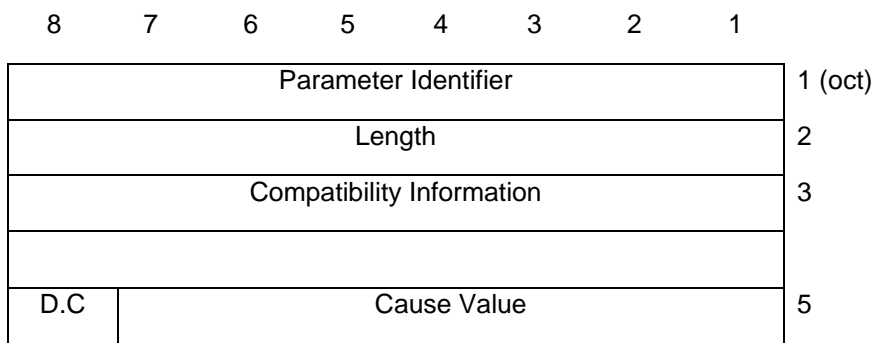Figure: format of Cause

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

11 Annex A (normative):

12 Annex B (informative):

Document Stability Assessment Table

[UMTS <spec>] V1.2.01.1.2 (1999-0908)TS RAN 25.433 V4.2.01.1.2 (1999-0908)TS RAN 25.433 V1.1.21.0.2 (1999-068)

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:A lot of 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.

- 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

- Out-of-sync detection procedure (Radio Link Failure Indication? In-band signalling?)

- Details for "RESET", "RESET ACKNOWLEDGE", and "CONFUSION" messages

1314 History

<table>
<tr><td colspan="3">Document history</td></tr>
<tr><td>V0.0.1</td><td>March 1999</td><td>First Draft</td></tr>
<tr><td>V0.0.2</td><td>March 1999</td><td>Introduction of content from the Merged Description of I$_{ub}$ Interface, V0.0.2 1999-03</td></tr>
<tr><td>V0.0.3</td><td>April 1999</td><td>New sections "8.1.4. Measurement Request", "8.1.5. Measurment Termination requested by RNC" , "8.1.6. Measurement Termination requested by NodeB" and "8.1.7. Measurment Report" have been introduced. Contents in Tdoc R3-99191 have been reflected. Contents for "Measurement Termination requested by NodeB" will be contrtibuted.

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 Channelization codes are maneged and allocated by CRNC to NodeB". "9.1.16 DL CODE RECONFIGURATION REQUEST" has also been deleted.

"Spreading Code" were renamed to "Channelization 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</td></tr>
<tr><td>V0.0.4</td><td>April 1999</td><td>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 chqanged to "8.1.5 Measuremnet Termination initiated by RNC"</td></tr>
<tr><td>V0.1.0</td><td>April 1999</td><td>V0.0.4 has been updated to V0.1.0 after the approval by TSG-RAN WG3</td></tr>
<tr><td>V1.0.0</td><td>April 1999</td><td>V0.1.0 has been updated to V1.0.0 after the approval by TSG-RAN WG3</td></tr>
</table>

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 singaling (8.2.5)
		Outerloop Power Control will be done in inband signaling (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 abstract syntax with ASN.1"
		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 synchronisation 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

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