TSG-RAN Meeting #7 *RP-000008*
Madrid, Spain, 13 - 15 March 2000

(R3-000399, to TSG-RAN) Response to LS (S5-99205) and LS (S5-000046) on RAN-WG3 Document I3.05

To: TSG-SA WG5 and TSG-RAN

From: TSG-RAN WG3

Title: Reply to Liaison Statement on RAN-WG3 Document I3.05 (Node B O&M Functional Description)

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R3 thank S5 for their liaisons S5-99205 and S5-000046 regarding making I3.05 an official 3GPP report.
R3 apologise for not answering the first LS, as it was believed that S5 wanted an updated and approved document. Due to a high work load, R3 have not been able to consider the I3.05 document or any related contributions since R3#5 (5^{th} – 9^{th} of July 1999).

R3 would like to inform S5 that the last approved version of I3.05 (v0.2.0) is not aligned with the latest versions of the R3 specifications. We would also like to highlight that even subsequent contributions toward I3.05 (e.g. the editors proposal - I3.05 v0.2.2) are not aligned with the latest versions of the R3 specifications.

R3 would also like to point out that the consistency between S5 and R3 should be against the R3 technical specifications, i.e. TS 25.401, TS 25.430, TS 25.433 and TS 25.442, rather than a technical report such as I3.05., This gives only examples of how the interaction between the management system and inter-node signalling may be done.

To date, I3.05 has been assigned a lower priority than the completion of the R3 specifications for release 99 (which are to be finalised at TSG RAN#7, 13^{th} – 15^{th} of March). In R3, we now consider I3.05 to have served its intended purpose, therefore it has been decided during R3#10 that R3 will no longer maintain I3.05.

For the above reasons, R3 would refer S5 to the latest versions of TS 25.401 (v3.1.0), TS 25.430 (v3.0.0), TS 25.433 (v3.0.0) and TS.442 (v3.0.0).
The last agreed version of I3.05 is also attached (v0.2.0), however the above comments (regarding the alignment of this document with the current R3 specifications) must be taken into account when reviewing this.

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Contents

Intellectual Property Rights

Foreword

This Technical Report has been produced by the 3rd Generation Partnership Project, Technical Specification Group RAN.

The contents of this TR may be subject to continuing work within the 3GPP and may change following formal TSG approval. Should the TSG modify the contents of this TR, 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.

Introduction

This technical report defines an O&M functional model for the Node B Radio Site. The purpose of this functional model is to ensure that the scope of O&M functions supported over the Iub interface is sufficient to allow a multi-vendor environment to be realised. To define this scope a proper understanding of the O&M functions performed at Node B is required. This will ensure that, in order to minimise the impact of O&M operations at Node B on the quality of service available, all O&M functions requiring functional interaction with the RNC are identified and the Iub interface specified accordingly.

1 Scope

The principle objective of the document is to provide supporting information for the Iub O&M work item. The actual specification work relating to the Iub interface O&M can be found in [1]. For this reason the document may contain information or working assumptions which are not a direct part of the aforementioned work item, but are essential to the progress and informed decision making. Where information or working assumptions are outside the scope of TSG-RAN-WG3, this shall be indicated.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] 25.433, NBAP Specification
[2] 25.401, UTRAN Overall Description
[3] 25.442, UTRAN Implementation Specific O&M Transport
[4] 25.432, UTRAN Iub interface signaling transport
[5] 25.426, UTRAN Iur and Iub interface data transport and transport signaling for DCH data streams
[6] 25.434, UTRAN Iub interface data transport and transport signaling for CCH data streams

3 Definitions, symbols and abbreviations

3.1 Definitions

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

Logical O&M shall be as defined in section 10.1.2 of [2]

3.2 Symbols

For the purposes of the present document, the following symbols apply:

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

4 UTRAN O&M

4.1 UTRAN O&M Procedures

This following list of UTRAN procedures should be used to derive requirements for the O&M functions of UTRAN elements, and to identify all information that has to be exchanged via Iub (i.e. NBAP messages) to provide the required functionality.

4.1.1 Network Expansion Procedure

Network Expansion in general includes expansion of existing elements and integration of new elements. The most frequent expansion processes are:

NodeB Expansion The NodeB Expansion means a modification of several NodeB parameters that are possibly provided by a previous planning process.

NodeB Installation Installation of a new NodeB including setting of all required parameters. Additionally the NodeB is attached to the appropriate RNC and all links are dimensioned accordingly. Possibly causes Expansion/Modification of adjacent NodeBs. An automatic configuration with the download of all required, not vendor specific data can reduce the required effort significantly. One possible example of such a configuration process is as follows:

- After the physical installation of NodeB including all wired and wireless connections to RNC and/or Management System the signalling bearers for NBAP according to [4] and ALCAP according to [5] and [6] have to be established.

  [Note: It is ffs whether the signalling bearers have to be established manually or whether an automatic establishment is possible.]

- Following to the successful establishment of the NBAP signalling bearer the NodeB initiates it's configuration by sending a configuration request to the RNC.

- Since the RNC knows the address of the new NodeB, the RNC establishes the signalling bearer intended for implementation specific O&M link from Node B to it’s Management System (only in case of routing the implementation specific O&M signalling via the RNC).

- The successful establishment of the implementation specific O&M signalling bearer is communicated to the new NodeB including all required addresses and interface descriptions.

- The NodeB requests it's implementation specific and therefore manufacturer dependent initialisation from the Management System.

  [Note: It is ffs. Whether the RNC can trigger the NodeB initialisation.]

- After receiving the configuration request from the NodeB the vendor specific part of the Management System sends all required initialisation parameters to the NodeB.

- The NodeB performs a self-test after the implementation specific configuration and sends a result report to the Management System and a Node B Healthy notification to the RNC indicating that the NodeB is ready to operate.

- After receiving the Node B Healthy notification (following to the initial configuration request) the RNC send all required radio and cell parameters to the NodeB (including common channel setup data). These parameters must have been previously provided to the RNC from the management system.

- The NodeB performs a self-test after the radio/cell configuration and sends a final result report to the Management System and a resource notification to the RNC indicating the successful radio/cell configuration.

- When the RNC receives the notification that the NodeB is configured accordingly the RNC issues a BCH transmission begin notification.

NodeB Swap In case of integration of a new RNC one or more NodeBs are detached from neighbouring RNCs and attached to the new RNC. After configuration of the NodeB and the new RNC and all according links the NodeB is detached from the old RNC and operates connected to the new RNC. Possibly NodeB expansion procedures are triggered in all affected NodeBs (in the neighbouring cells).

4.1.2 Cellular Network Configuration Procedure

Cellular network configuration processes deal with all modifications to network elements that have impact on the radio access network. For example parameters required for power management or synchronisation may be modified. A notification message to the according element indicating the planned configuration changes will be sent. However, both discreet message and file transfer methods should be supported for cellular network configuration, enabling the selected mechanism to be chosen dependent on the number of parameters to be configured. *(Editors note: The concept of configuration using file transfer is proposed for Implementation Specific O&M configuration only, the concept of file transfer for Logical O&M configuration is for further study).* If the modification requires a larger amount of data to be transferred than the notification message may contain only name and location of a required data file to be downloaded. Afterwards the affected network element(s) can integrate the supplied modifications and report the results of the performed parameter update. The element itself can choose the best time (in case of NodeB in co-operation with the RNC) for the update according to it's current load, etc.

4.1.3 Remote Update Procedure

Remote Update Procedure includes the remote software update of all network elements. Within this update process also self-checks and consistency checks are included. A status request message asking for a response from the affected network elements with the current release number can avoid release conflicts during the update procedure. The update procedure itself can be implemented with pull or with push technologies. A notification message to elements indicating a new software release and the location of the required file could be used the trigger an automatic download of the new release (pull technology). Or, the responses of the status request messages can be used to compose a multicast message carrying the new software release to all affected elements (push technology).

4.1.4 Network Optimisation Procedure

In order to identify possible modifications that allow an improvement of the overall network performance this process type consists of the collection of measurement data and of the decision process to trigger network expansion and/or configuration procedures to optimise the network. Since expansion and configuration processes are handled separately the network optimisation process deals in this context only with the collection of measurement data.

4.1.5 Network Monitoring and Fault Management Procedures

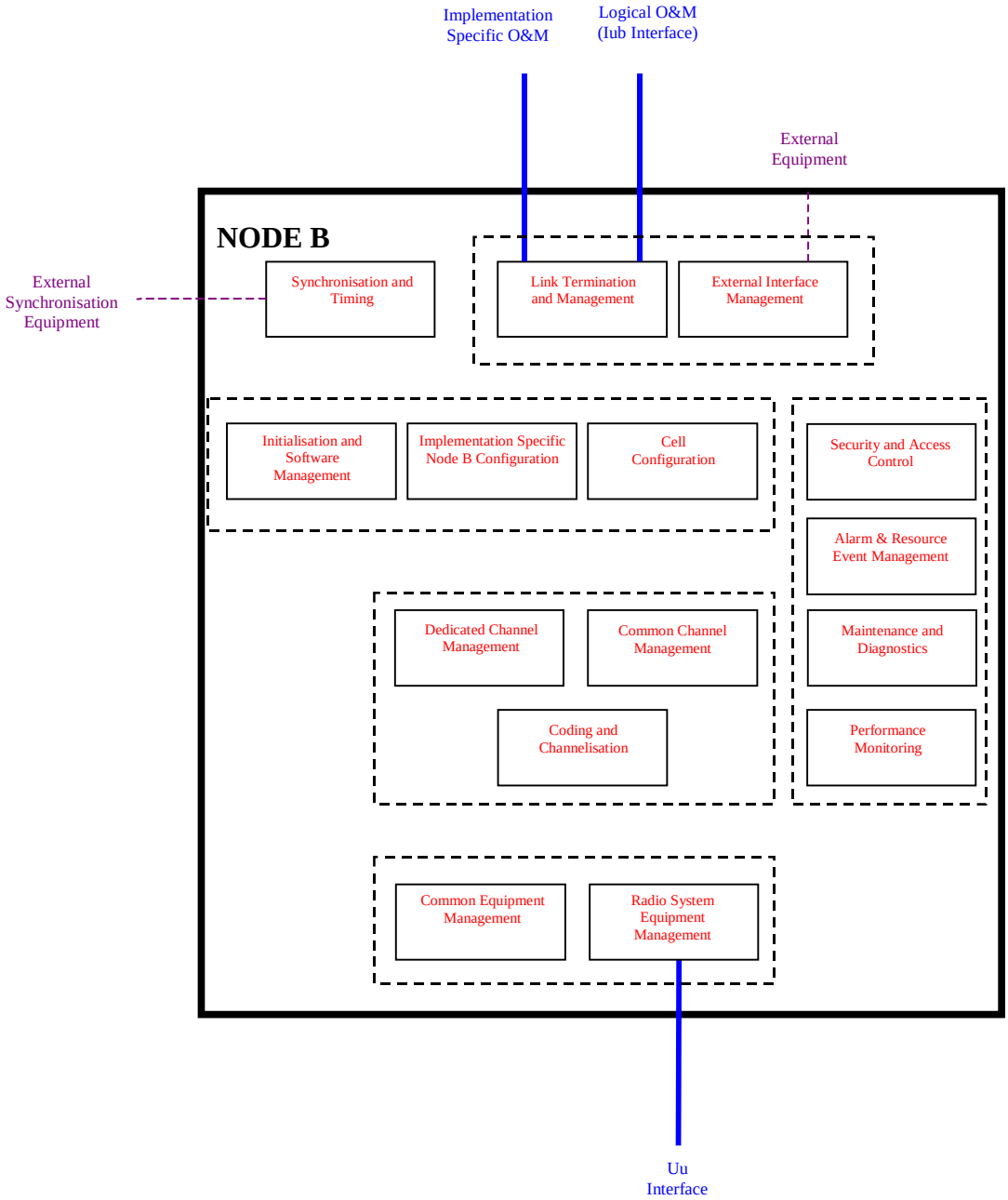
In addition to performance measurements collected in the network optimisation procedure this process observes the status of network elements and handles alarm and event notifications. Additionally customer complaints are considered.

4.2 Node B O&M Management Architecture

The working assumption for the Node B O&M management architecture is described in section 10.1 of [2]. This architecture defines two categories of O&M functions at Node B – Logical O&M and Implementation Specific O&M. Logical O&M functions are supported over the Iub interface – see section 10.1.2 of [2]. It should be possible to route the Implementation Specific O&M via the same physical bearer as the Iub interface – see section 10.1.1 of [2], where the transport layer for this scenario is specified in [3].0

5 O&M Functional Overview

The diagram below presents a high level functional model of the O&M operations for the Node B radio site. This model should be viewed as logical in nature, it attempts only to identify those categories of functions essential to the operation and maintenance of a generic Node B. The diagram below should not be interpreted as a physical implementation or an exhaustive functional list.



[Note] The Logical O&M (Iub interface) and Implementation Specific O&M interface are represented above as logically independent interfaces. It should be possible to route both the Iub interface and Implementation Specific O&M interface either independently or via the same physical bearer.

6 Functional Descriptions

This chapter presents the functional descriptions for the elements of Node B O&M proposed in section 5 above. The descriptions below shall be interpreted as informative only, their purpose being to assist in a proper understanding of each function. The functional descriptions presented should not be considered exhaustive.

6.1 Initialisation and Software Management

This function will initiate and control all aspects of software management for the Radio site, from initial downloading to intra node software distribution. The function shall support a range of defined processes, from site initialisation and new software loading to software distribution and correction management/fault isolation. The process of software downloading can either be performed in a non-service affecting way (background operation), or it may require the Node B to release some or all of it's traffic. For the latter case, any interruption to traffic must be performed in a controlled fashion,.

Also the actual process of initialising new software (following the download) is very likely to cause an interruption to traffic, and this must also be performed in a controlled fashion. The process of functional interaction of initialisation and software management is termed 'Software Initialisation'. The process of initiating and performing software management activities is termed 'Software Management'.

6.2 Link Termination and Management

NOTE: Inclusion of the following text is dependent on the RAN-WG3 decision relating to the suitability of IMA to perform this function.

This function shall deal with the management of the Iub interface and Implementation Specific O&M interface. This will address not only initial link establishment, but also the ongoing monitoring of link health, link recovery following a fault, and load sharing and distribution. The function shall also monitor layer 1/2/3 link performance and status, these being reported back to the RNC/management system as necessary via the appropriate interface, possibly first being processed by the performance monitoring function (see section 6.5).

The link termination and management function should control any ATM switching (i.e. to cascaded equipment), and packetisation/de-packetisation of the incoming data from the Iub or Implementation Specific O&M logical interfaces. It should further manage the distribution of data internal to the Node B. This should also cover the communications from the external interface management function (section 6.15), to report on the status of any external link management equipment that may be used.

It is important for the termination and management of the Iub to be supported in such a way as to allow the traffic handling to be optimised according to the link performance.

6.3 Implementation Specific Node B Configuration

Whilst this function is passive with regard to service provision it is important from an operational perspective to have an accurate record of the physical configuration of the Node B radio site, combined with the ability to easily configure new hardware. This function should perform the detection and configuration (which should be automatic), of the Node B hardware. The function should further manage a database capable of storing the software and hardware configuration information to serial number/version resolution (i.e. replaceable unit level). It should be possible to interrogate this from the management system.

6.4 Cell Configuration

This function should manage all the relevant (logical) cell configuration information and act as a co-ordinating function for the other controlling blocks, which will implement these parameters physically. All the associated RF parameters, system information parameters, and channel configuration data shall be held and distributed by the cell configuration function. In addition, this function should interface with the Implementation Specific Node B Configuration function

(section 6.3) in order to ensure high level Node B capabilities (such as basic duplexing and antenna configuration information) are available to the management system. It is envisaged that a number of Implementation Specific cell configuration parameters may exist in addition to those defined within the generic cell model.

6.5 Performance Monitoring

This function shall be responsible for all performance related data collection and processing. All relevant aspects of the radio sites performance, which are not reported back to the RNC implicitly during normal traffic handling, should be incorporated here. It is envisaged that features such as interference measurements, local site events and periodic physical channel test results should be managed here. This function should also interface with other functions within the radio site to collate performance-related data (for example statistics relating to Iub link quality from the link termination and management function - section 6.2). Once processed, the resulting reports should be transmitted back to the RNC/management system as applicable via the appropriate logical interface. The impact of performance statistics can be divided into two categories.

Firstly there are a number of performance statistics/measurements that can enable real time optimisation of the traffic environment; these are termed ‘real time’ (e.g. Node B DL transmission power, uplink interference). In addition there are a number of performance statistics which are not immediately required for traffic optimisation, for instance those requiring pre-processing or trend analysis to be useful. These are termed ‘non-real time’. The configuration of the real time and non real time performance measurements and statistics may be different.

6.6 Alarm & Resource Event Management

Each of the individual functions shall be responsible for the generation of alarms and event notifications associated with its specific functional area. A centralised function should then be responsible for the collation and processing of these alarms and events, and their issue to the RNC/management system as applicable via the appropriate logical interface. It should also be possible for the Node B radio site to perform correlation and filtering, and the alarm and resource event management function would be responsible for these processes. All alarms and events raised against logical resource capabilities are termed ‘Resource Events’. When alarms or events relate to implementation specific aspects of the Node B they shall be termed ‘Fault Management Alarms’. In the case where a fault management alarm also impacts on the logical resources, Node B should be capable of assessing this impact and ensuring the appropriate resource event is also issued to the RNC/management system.

6.7 Maintenance and Diagnostics

This function will supervise and repair faults in the Node B hardware. As such it will manage the execution of diagnostics on the Node B hardware, interacting with the Implementation Specific Node B Configuration function (section 6.3) as necessary. The maintenance and diagnostics function will also be responsible for the ongoing health monitoring of the Node B (and via the external interface management function its ancillary devices - section 6.15) by means such as periodic polling, diagnostics, and automatic calibration of radio hardware. It is envisaged the results of such diagnostics will not normally need to be reported back to RNC/management system, unless problems are discovered which result in resource events or fault management alarms being generated. Any form of remote test equipment installed in the node B site shall be controlled by this function.

Where problems are identified by the maintenance and diagnostics functions it should co-ordinate with the Alarm and Resource Management function (section 6.6) to ensure the appropriate logical resource impact is notified accordingly. This should also include the circumstances where service capability is not totally lost but suffers reduced performance.

6.8 Radio System Equipment Management

This function shall control the physical radio system hardware, performing operations such as transmitter tuning and power ramping. The cell configuration function (section 6.4) shall perform the mapping of the physical channel information from the logical channels. Other radio related operations should also be performed by the radio system equipment management function. It will be the responsibility of this function to monitor the radio related performance aspects of the hardware, and report the results to the performance monitoring function (section 6.5). Additionally, it is envisaged this function will be responsible for the redundancy of radio equipment - providing automatic reconfiguration as required.

The management of the radio system equipment will be dependent on the particular hardware implementation contained in a Node B. However the performance of the radio system is critical to traffic handling. The Radio System Equipment management function should therefore be capable of co-ordinating with the Alarm and Resource Management and Performance Management functions (sections 6.6 and 6.5 respectively) to ensure the conditions where logical resources may be impacted are notified accordingly.

6.9 Common Equipment Management

The Common Equipment Management function shall control the management of the non-radio hardware within the Node B. This shall include equipment such as power supply units and O&M/support modules. The Node B should be capable of assessing the impact on the logical resources of the loss/degradation of any such common equipment, and generating indication of such loss as necessary.

6.10 Dedicated Channel Management

This function shall perform the activation and management of dedicated channel resources - including both dedicated traffic and control channels. It will also be responsible for other related functionality such as the monitoring of channel performance and generation of resource events and fault management alarms as necessary. Dedicated channel management is an integral part of the core traffic handling function.

6.11 Common Channel Management

This function shall perform the activation and management of common channel resources such as broadcast and paging channels. It will also be responsible for other related functionality such as re-paging, (though this may be transparent to the RNC/management system), as well as the monitoring of channel performance and generation of resource events and fault management alarms as necessary. Common channel management is an integral part of the core traffic handling function.

6.12 Synchronisation and Timing

The Node B controller must be able to obtain accurate timing and synchronisation information for use within the radio site and over the Uu interface. The synchronisation and timing function should manage the extraction of timing information from any desired source (i.e. including external timing equipment). Recovery of timing and temporary generation of clock information must all be supported upon failure (and subsequent re-establishment) of the synchronisation source. This function should also manage the generation of timing related resource events/fault management alarms and performance parameters for communication back to the RNC/management platform as applicable. The synchronisation of the Node B site is critical to the successful handling of traffic, and it is therefore important that the synchronisation and timing function interacts with the Alarm and Resource Event Management function (section 6.6) to indicate any impact on the logical resources.

6.13 Coding and Channelisation

The coding and channelisation function shall be responsible for the physical coding and channelisation of the Uu interface. This function shall receive all the appropriate logical data from the dedicated channel and common channel management functions and manage all the required encoding and packaging for transmission by the radio hardware. The coding and channelisation function should contain sufficient intelligence to enable identification of any conflicts between the realisable physical channels and logical channel data. Any errors detected should be reported back to the RNC/management system as applicable via the appropriate interface. Coding and channelisation is an integral part of the core traffic handling function.

6.14 Security and Access Control

The Node B Radio site must be capable of controlling local access both physically (i.e. tamper alarms) and through communication interfaces. Password protection and security levels should be implemented for local interfaces. It should further be possible to report the status of these operations back to the management system - possibly as fault

management alarms. These shall provide indication of sessions established, door alarms triggered, operations performed locally, etc.

6.15 External Interface Management

The Node B site should be provided with the ability to interface with external ancillary devices such as standalone power systems, repeaters, link equipment and adaptive antenna's. Whilst it is not within the remit of this document to attempt to define these local interfaces, it should be recognised that support of such ancillary devices may impact on either the Iub or Implementation Specific O&M logical interfaces, or both. Notably, where such equipment is critical to the provision or quality of service, any logical impact where a loss or degradation in the equipment is experienced should be indicated as necessary.

7 Logical O&M Functions

[Note: The following list of functions must be aligned with those agreed in 25.433 (NBAP Specification) at WG3#4 in Warwick]

The following functions have been identified which consist of elements that can be classified as Logical O&M. The logical O&M elements of these functions should be supported on the Iub interface, as an integral part of the NBAP specification (see reference [1]). The scope of messages required for each function is FFS – some of the functions listed below may consist of both Logical O&M and Implementation Specific O&M elements.

1. Cell Configuration

Since a cell is a logical traffic handling entity, the parameters determining its configuration must all be defined by the RNC. In addition, ongoing changes to the cell configuration must be co-ordinated with the traffic handling entity(s). For this reason cell configuration should be considered as an integral part of the core traffic handling function. The parameters associated with a cell must therefore be derived from the RNC, and the function of Cell Configuration must consequently be supported over the Iub interface. This should included the ability to update or change cell parameters on a real time basis in response to the traffic conditions.

2. Common Channel Management

The management of common channels should be considered an integral part of the traffic handling procedure, and it should therefore be supported over the Iub interface.

3. Dedicated Channel Management

The management of dedicated channels should be considered an integral part of the traffic handling procedure, and it should therefore be supported over the Iub interface.

4. Coding and Channelisation

Coding and channelisation should be considered an integral part of the traffic handling procedure, and it should therefore be supported over the Iub interface.

5. Resource Events

For all resource faults and conditions, Node B must be capable of generating resource event notifications indicating the impact on the logical resources. These resource events must be available to the RNC and must therefore be supported over the Iub interface. This will enable the RNC to compensate for such faults in its core traffic handling procedures, thus maximising the available quality of service.

6. Software Initialisation

Where the process of downloading software (and its initialisation) impact on the traffic carrying abilities of Node B, it is essential that the RNC is informed of such initialisation and can respond to the Node B indicating that a restart is

allowed. This will ensure that the traffic can be controlled according to the abilities of Node B**,** thus maximising the available quality of service. In addition, to optimise the Software download process the RNC may be used as a code repository, however download initiation and control should lie with the management system. This may reduce the number of simultaneous downloads that the management system must support, by using the RNC as a distribution function. As such the process of software downloading shall be transparent to the RNC at application level and should not be supported over the Iub. However, the associated process interaction should be supported over the Iub to ensure the impact on traffic can be carefully managed.

7. Link Termination and Management

NOTE: Inclusion of the following text is dependent on the RAN-WG3 decision relating to the suitability of IMA to perform this function.

Knowledge of the status and performance of the Iub interface at the RNC is essential to the optimisation of the service environment. The Iub interface should therefore support the management of the link condition and performance.

8. Performance Monitoring – Real Time

These key statistics should enable the RNC to make traffic handling decisions which best suit the system conditions at that time, and these statistics should therefore be common to all Node B's and available to the RNC on a real time basis. These key measurements are FFS, but the Iub interface should be capable of supporting their transfer to allow the quality of service to be maximised.

8 Implementation Specific O&M Functions

The following functions should be supported by the Implementation Specific O&M interface. Standardisation of the Implementation Specific O&M shall be limited to the physical transport bearer (reference [3]) – further standardisation is out of scope for RAN-WG3.

1. Radio System Equipment Management

The management of the radio system equipment will be dependent on the implementation of the Node B in question. It should therefore be supported via the Implementation Specific O&M. The performance of the radio system, and any impact of failures on the logical resources of Node B (including performance degradation), should be reported to the RNC via the Resource event alarm management in the logical O&M.

2. Common Equipment Management

The common equipment within a Node B will be dependent on the implementation of the Node B in question. Common Equipment Management should therefore be supported via Implementation Specific O&M. However, where failures impact on the logical resources of Node B this should be reported to the RNC via the Resource event alarm management in the logical O&M.

3. Maintenance and Diagnostics

The maintenance and diagnostic procedures carried out at the Node B radio site will be dependent on the particular implementation. Therefore these functions should be supported via the Implementation Specific O&M. Where the results of such operations impact on the logical resources in Node B, this should be reported to the RNC via the Resource event alarm management in the logical O&M.

4. Security and Access Control

The security and access control functions performed at Node B will be dependent on the implementation in question. Security and Access control should therefore be supported via the Implementation Specific O&M.

5. Implementation Specific Node B Configuration

It is important from a system management perspective to have an accurate record of the hardware and software configuration of the Node B radio site. This should be remotely available, and will be dependent on the implementation

of the Node B in question. Implementation Specific Node B Configuration should therefore be supported via the Implementation Specific O&M.

6. Fault Management Alarms

For accurate remote fault diagnosis, all Node B alarms should be available to the management system. All alarms should therefore be supported via the Implementation Specific O&M. However Node B should be capable of assessing the impact of certain faults on the logical resources, and reporting this to the RNC via the Resource event alarm management in the logical O&M.

7. Performance Monitoring - Non Real Time

Measurements or performance statistics should be available from Node B, to assist in the optimisation of the UTRAN. These should therefore be supported via the Implementation Specific O&M.

8. External Interface Management

A number of ancillary devices may be connected to a Node B, and the status of these devices should be accessible to the overall network management system. The Implementation Specific O&M should therefore support the ability to interface between these ancillary devices and the management system.

9. Synchronisation and Timing

The configuration of the synchronisation and timing function of the Node B will be dependent on the implementation of Node B. As such, this function should be supported over the Implementation Specific O&M. Where the timing and synchronisation status of the Node B radio site impacts on the logical resources, this impact should be indicated to the RNC via the Resource event alarm management in the logical O&M.

10. Software Management

Control of Software Download and initialisation should rest with the management system, and is therefore implemented via the Implementation Specific O&M Interface, The RNC should be informed and allowed to ok any Node B initialisation or restart (see section 7 above) via the logical resource management interface.

11. Implementation Specific Cell Configuration

To allow for vendor differentiation of cell functionality, it is envisaged a number of cell related parameters may exist in addition to those defined as part of the generic cell model. The configuration of these parameters shall be supported via the Implementation Specific O&M.

9 Signalling Procedures

9.1 Signalling Procedures

[Editor's note: This section should define (where possible) the signalling procedures for the functions identified in section 5. It is not envisaged it will be possible to define signalling procedures for all Node B O&M functions, since some will be implementation specific. These procedures may be required for certain functions to assist in the categorisation as either Logical O&M or Implementation Specific O&M.]

History

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