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Commissioning the WCDMA upgrade of UltraSite EDGE BTS

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Contents

1 Statutory Information

1.1 CE Marking

Standard	Description
CE 0168 !	Hereby, Nokia Corporation, declares that this Nokia UltraSite EDGE Base Station is in compliance with the essential requirements and other relevant provisions of Directive: 1999/5/EC.

1.2 FCC Statement

Standard	Description
FCC Statement	Hereby, Nokia Corporation declares that this Nokia UltraSite EDGE Base Station is in compliance with the essential requirements and other relevant provisions of Directive: 1999/5/EC. The product is marked with the CE marking and Notified Body number according to the Directive 1999/5/EC. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. The term "IC:" before the radio certification number only signifies that Industry Canada technical specifications were met.

2 Overview of commissioning UltraSite EDGE BTS with WCDMA upgrade

2.1 Overview of commissioning UltraSite EDGE BTS with WCDMA Upgrade

Before you start

Before commissioning, the physical installation of the BTS (units, cabling, antennas and radios) must be complete.

Summary

Caution

Nokia recommends that only properly trained and authorised personnel perform commissioning operations on any Nokia BTS.

Steps

1. **Connect the LMP cable.**
2. **Power on the UltraSite EDGE BTS.**
3. **Install WCDMA BTS Manager.**
4. **Install AXC from NOLS.**
5. **Install AXC software, if required.**
6. **Commission UltraSite EDGE BTS with WCDMA upgrade.**
7. **Commission AXC of UltraSite EDGE BTS with WCDMA upgrade.**

2.2 Preparing to commission UltraSite EDGE BTS with WCDMA upgrade

2.2.1 Connecting LMP cable for commissioning UltraSite EDGE BTS

Before you start

Review the *Overview of commissioning UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

The LMP cable connects the PC running BTS Manager SW to the BOI unit in the BTS.

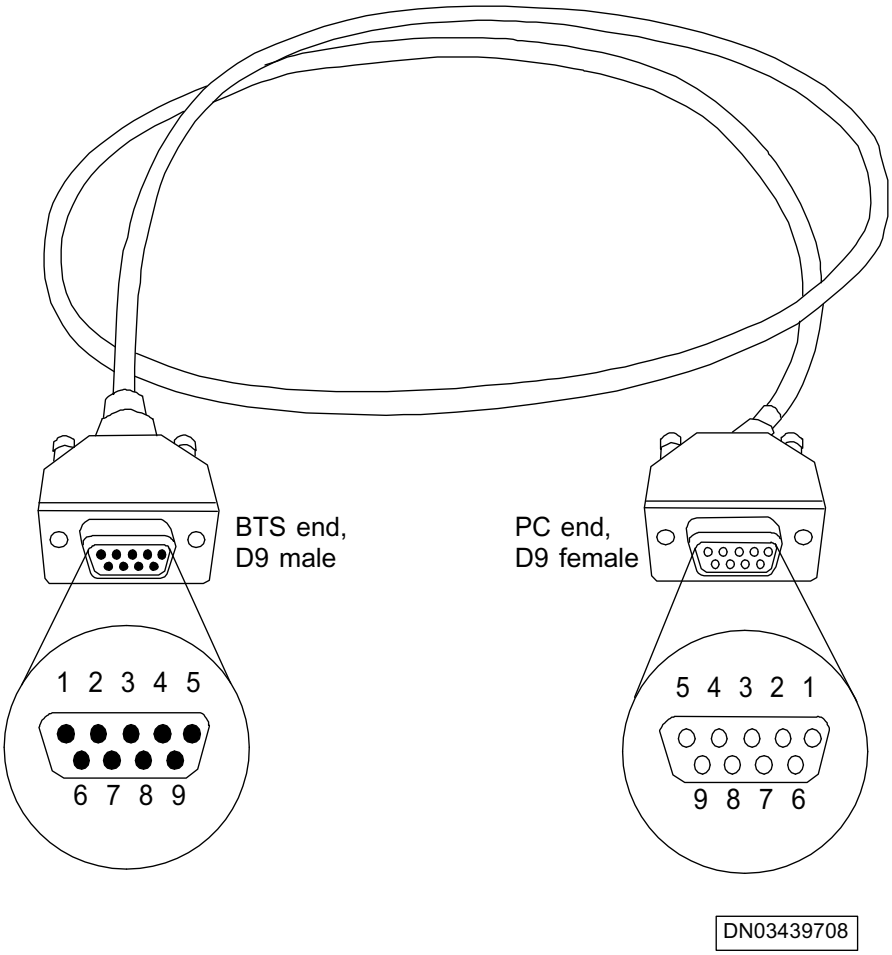


Figure 1. LMP cable

Table 1. LMP cable connector pin order

BTS end, D9 male, pin number	PC end, D9 female, pin number	PC end, D25 female, pin number
2, LMP in	3, transmitted data	2, transmitted data
3, LMP out	2, received data	3, received data
5, ground	5, ground	7, ground

Steps

1. **Remove the protective cover from the LMP port on the BOIx for GSM/EDGE connection.**

   Alternatively, remove the protective cover from the BTS master WAM unit for WCDMA connection.

2. **Connect the D9 female connector to the PC.**

3. **Connect the D9 male connector to the LMP port on the BOIx for GSM/EDGE connection.**

   Alternatively, connect the D25 female connector to the BTS master WAM unit for WCDMA connection.

2.2.2 Powering ON UltraSite EDGE BTS

Before you start

Review the *Overview of commissioning UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Ensure all internal BTS components are properly installed.

Summary

Warning

Be aware of the risk of lethal voltages and electric shock.

Steps

1. *If* Mains power has been switched OFF,

   Then

   Check the ADUx circuit breakers.

   Verify all ADUx unit circuit breakers are switched OFF.

2. *If* BTS power supplies are switched ON,

   Then

Switch the power supplies OFF.

3. **Switch Mains breaker ON.**

4. **Switch ADUx unit breakers ON.**

5. **Switch BTS Power supplies ON.**

6. **Check BTS units for power.**

   Observe the LED lights of the units in the BTS and ensure power is supplied. If LED lights are not illuminated, troubleshoot the affected units as directed in *Overview of checking UltraSite EDGE BTS GSM/EDGE LEDs* or *Overview of checking UltraSite EDGE BTS WCDMA LEDs*.

2.2.3 Installing WCDMA BTS Manager

Before you start

Review the *Overview of commissioning UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Before installing BTS Manager, ensure that system requirements are met.

Table 2. System requirements for WCDMA BTS Manager

System component	Requirement
Processor	Intel® Pentium® II 166 MHz or higher
Operating system	Microsoft® Windows™ NT4.0 or 95/98/2000
RAM	Minimum 64 MB
Hard disk space	2 MB for BTS Manager, plus space for JRE
LAN connection	100 Mbit/s Ethernet card for BTS Manager <-> WAM interface
Display	Minimum 1024x768, 16 colours
Accessories	CD-ROM or DVD drive (optional) Windows-compatible mouse or pointing device with required software Windows-compatible printer

Table 2. System requirements for WCDMA BTS Manager (cont.)

System component	Requirement
Interface ports	Serial port or parallel port for printer Mouse port (in case mouse is used as the pointing device)
WWW browser	Microsoft Internet Explorer 4.01 (revision 4.72.* or newer)
Java 2 Runtime Environment (JRE)	JRE 1.3.1 or later version, to be downloaded from the Sun website: http://java.sun.com/j2se/1.3/download.html/ **Note** System Requirements for Java 2 Runtime Environment can be found from the Internet web address: • http://java.sun.com/j2se/1.3/jre/install-windows.html • http://java.sun.com/j2se/1.3/jre/install-linux.html • http://java.sun.com/j2se/1.3/jre/install-solaris-re.html

The following conditions must be met:

- The PC is connected to the BTS's master WAM unit, the WAM2 in the BTS, with a communication cable (10baseT Ethernet cable with RJ-45 connector).
- The WAM's private IP address must be defined in the BTS Manager's `run.bat` file as described in the `readme.txt` file.
- Specify your computer's network settings to match the following settings:
  - IP address: 192.168.255.111
  - Subnet mask: 255.255.255.0

In order to set up and install WCDMA BTS Manager, an Internet connection must be available to download the WCDMA BTS software zip (`BTSManager.zip`) file from Nokia Online Services (NOLS).

Before beginning installation tasks, download the `BTSManager.zip` file from NOLS to the PC.

Steps

1. **Establish an Internet connection and navigate to the NOLS website.**

   Use an ordinary web browser.

2. **Select the BTS software installation package file and download it to your PC.**

3. **Create directory for extracting BTS Manager files.**

   Create a temporary directory and extract all files from the `BTSManager.zip` file to the temporary directory.

4. **Create directory for extracting WCDMA BTS Manager files.**

   In the temporary directory, create another directory for the WCDMA BTS Manager and extract the files from the `BTSManager.zip` file to that directory.

5. **Unzip the file.**

   The `BTSManager.zip` file includes the following:

   - BTS Manager. properties (properties file for BTS Manager software)
   - run.bat (MS-DOS Batch File)
   - run.sh (Bourne shell script text file)
   - README.txt (this file)
   - services.config (configuration file for BTS Manager services)
   - lib/applibs.jar (Platypus jar file)
   - lib/applservices.jar (Application Launcher jar file)
   - lib/btsguica.jar (Core asset jar file)
   - lib/BTSManager.jar (BTS Manager jar file)
   - lib/jaxp.jar (XML Parser jar file)
   - lib/jh.jar (JavaHelp jar file)
   - lib/parser.jar (XML Parser jar file)
   - lib/servicesif.jar (Platypus jar file)
   - lib/servicesimp.jar (Platypus jar file)

6. **Configure IP address of the WAM.**

   Depending on your system, edit the `run.bat` or `run.sh` file by changing the latest value (%1) to the IP address of the WAM.

7. **Launch Nokia WCDMA BTS Manager.**

a. Execute the `run.bat` or `run.sh` file to launch Nokia WCDMA BTS Manager.
b. Give the IP address of the BTS as a parameter to the command prompt, as in the following example:
`/home/johndoe/Btsmanager$ ./run.sh 127.0.0.1`

8. *If* you wish to install Nokia WCDMA BTS Manager locally,

Then

You must first download the BTS Manager files to your PC.

a. Connect the PC to the BTS master WAM unit in the BTS.
b. Navigate with your web browser to the IP address of the master WAM unit.
c. Locate and download the `BTSManager.zip` file to your PC.
d. Create a temporary directory and extract all files from the `BTSManager.zip` file to this directory.
e. In the temporary directory, open `readme.txt` file with any text editor. The file has instructions for installing the Nokia WCDMA BTS Manager.
f. After following the instructions in the `readme.txt` file, execute the `run.bat` file to launch the Nokia WCDMA BTS Manager.

2.2.4 Installing Nokia AXC Manager from NOLS

Before you start

Review the *Overview of commissioning UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Check that:

- You have access to NOLS
- The LMT meets the system requirements given in *AXC Manager and AXC-FB Hopper Manager system requirements*
- You have administrator rights on the LMT

Note

Read the `readme.txt` file because it contains the latest information on changes in the application.

Note

Make backups of all important files on the LMT, including the Nokia AXC Manager data files. Recent backups are the best security.

Summary

You can install the Nokia AXC Manager from Nokia Online Services (NOLS). The setup program creates all the necessary directories. It also installs all the program and data files on the Local Management Tool (LMT).

Steps

1. **Start Windows.**

   It is recommended that you close all other applications before starting the installation.

2. **Go to Nokia Online Services (NOLS) web page.**

3. **Create a temporary directory (`temp-directory`) on the LMT.**

4. **Extract all Nokia AXC Manager files into this directory.**

5. **Follow instructions in index file for installing Nokia AXC Manager.**

   a. In `temp-directory`, open `index.html` file with your web browser.

   b. Follow instructions in `index.html` for installing the Nokia AXC Manager.

Note

If you do not have administrative rights on the LMT, an error message will be generated. From the error dialogue you can select a directory where you have *write* access and store the Nokia AXC Manager in this directory.

6. **Restart the LMT, if necessary.**

Depending on the configuration, you may have to restart the LMT before running the Nokia AXC Manager for the first time.

2.2.5 Uninstalling Nokia AXC Manager

Before you start

Review the *Overview of commissioning UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

Uninstalling Nokia AXC Manager removes only the software, but does not remove any data files you have created. The Nokia AXC Manager directory structure may not be automatically removed.

Steps

1. **Start the Nokia AXC Manager C2.0 Uninstall program.**

   Start the program from the Start menu (**Start → Programs → Nokia AXC Manager C2.0 → Nokia AXC Manager C2.0 Uninstall**).

2. **Uninstall the Nokia AXC Manager.**

   Click *Uninstall*, and wait until the uninstall process is complete. You can cancel the uninstall process by clicking *Cancel.*

Further information

Alternatively, you can use *Add/Remove Programs* in the Windows Control Panel to uninstall the AXC Manager. For more information, see Windows Help or Windows manuals.

2.2.6 Changing AXC software

Before you start

Review the *Overview of commissioning UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Note

When upgrading the AXC from C1.7 to C2.0, the C2.0 AXC Manager is connected to the C1.7 node. Only limited configuration features will be available, the most important one being the software upgrade. Note that the hardware image of the AXC Manager and the *Inactive SW Version* field of the *Node Software* window will be empty.

Note

This procedure does not cover updating the software of the Flexbus part of the IFUE. For more information, see *Maintenance* in the *Nokia FlexiHopper and MetroHopper with IFUE User Manual*.

Note

The use of the Transactor tool is necessary only if an AXC C1.7 is upgraded to C2.0 and the upgraded node has been commissioned before. In case of an upgrade from a C2.0 release to another C2.0 release the configuration of the AXC will be restored.

Check that:

- you have access to an external FTP server if you are downloading the new software from a remote PC

Note

The AXC Manager integrated FTP server is recommended for remote and local software download if the new software configuration files are located on the PC on which the AXC Manager is installed.

Summary

The software of the AXC can be updated from one release to the next. The configuration of the AXC can be restored using the Transactor tool.

The AXC Manager contains a File Transfer Protocol (FTP) server. This AXC internal FTP server does not need to be configured, and it is activated automatically when necessary. If you download the AML configuration files or software packages to the AXC locally from the LMT, you will not need to configure an external FTP server.

The AXC download package is a compressed (tar) package that consists of individual images for the existing units and the Target Build Descriptor file.

To update the Nokia AXC from C1.7 to C2.0:

1. Download the new software to the AXC.
2. Generate an AML file using the Transactor tool.
3. Activate the new software.

Steps

1. Download and extract the download package.

Download and extract the download package using an appropriate tool, for example WinZip®.

Note

You should not decompress the individual unit software packages (for example, `AXU_main.tar`).

Make sure that the Target Build Descriptor (TBD) is on the same level in the directory structure with the `SPM` directory that accommodates all unit software packages, and that the `TBD` and `SPM` directory structures are consistent. If the `SPM` directory does not exist, you must create it. Maintain the following directory structure in order not to change anything in the TBD:

- Directory X

- TBD

- SPM

  - AXU_main.tar
  - IFU8P1_main.tar
  - IFU3S_main.tar
  - ...

2. Start the download of the new software.

a. Select **Node → Software...**.

The *Node Software* window opens. In this window you can view all active and inactive software versions that are currently available in the AXC.

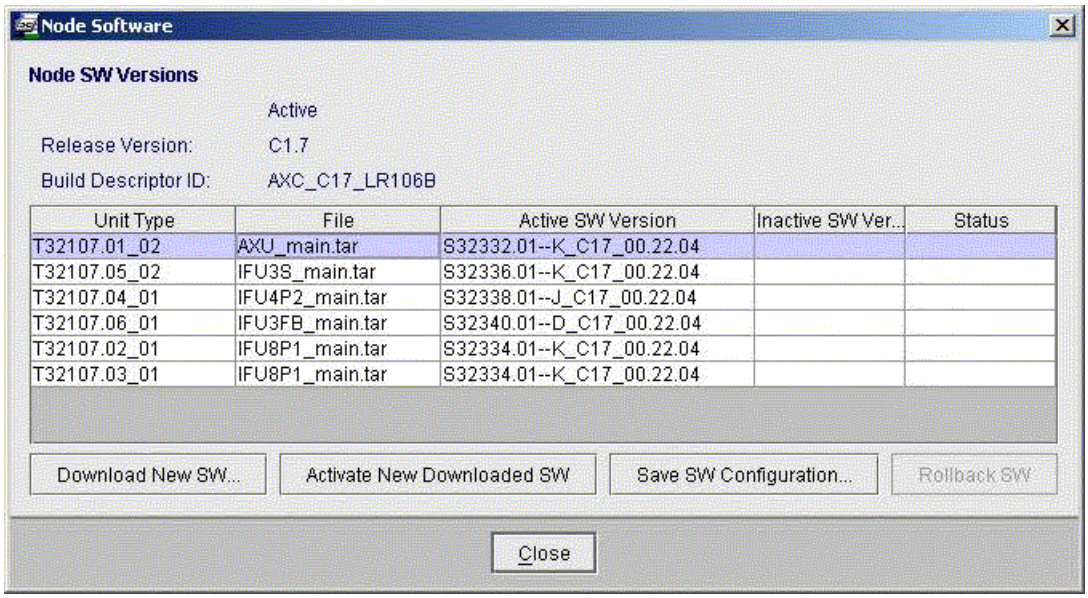


Figure 2. Node Software window before software upgrade

b. Click *Download New SW...* button. The *Download New SW* window opens.

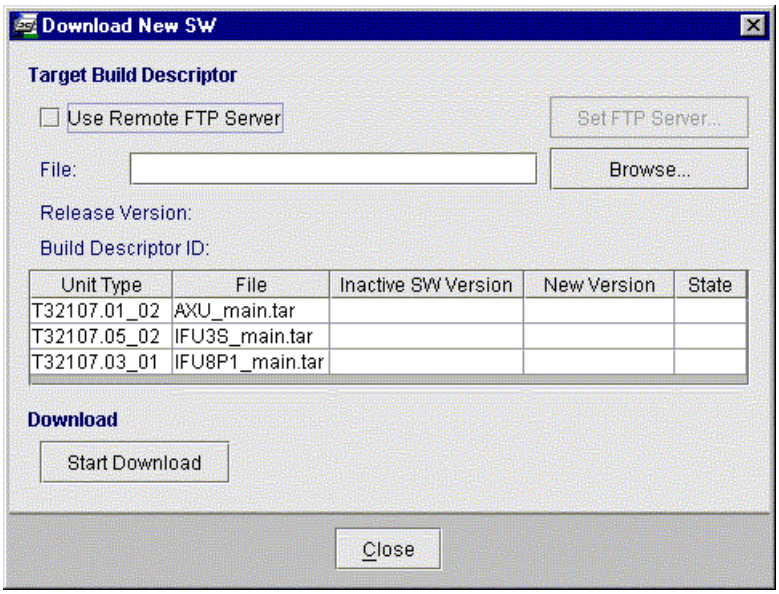


Figure 3. Download New SW window

3. *If* you want to download the new software from a remote system (PC),

   Then

   Configure the remote FTP server.

   a. Select *Use Remote FTP server* box. If the box is not selected, the FTP server integrated to the AXC Manager is used.
   b. Click *Set FTP server...* button.
   c. Define the following information for the FTP session in the *Set FTP Server* window:

      - username: the relevant username of the remote FTP server
      - password: password configured for the user
      - host: IP address of the FTP server or host name if Domain Name Server (DNS) is available

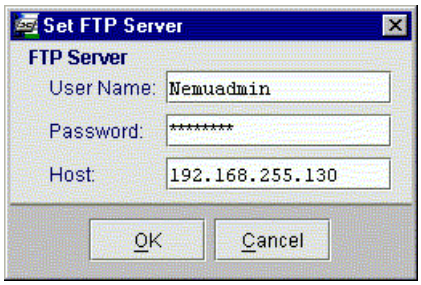


Figure 4. Set FTP server

d. Click **OK**.

4. *If* the new node software files are located on the same PC as the AXC Manager,

   Then

   Set up for local software download.

   a. Click **Browse** in the *Download New SW* window.
   b. Select the Target Build Descriptor containing the new software configuration in the *Select Node SW for download* window.

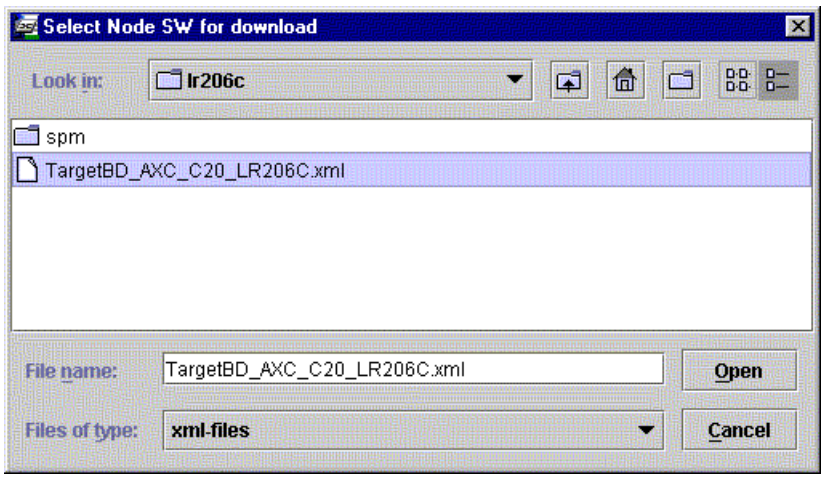


Figure 5. Select Node SW for download

c. Click *Open* button to start the download.

Note

The download time for local software download is approximately 4 minutes per unit, or 24 minutes for a fully equipped 6-slot system.

5. *If* the new node software files are located on a remote system (PC),

   Then

   Start downloading from the remote location.

   a. Enter the path of the new software in the *Download New SW* window.
   b. Click *Start Download* button to start the download of the new software.
   c. After the download is complete, a message is displayed.

Note

The download time for a remote download is dependent on the bandwidth and setup of the DCN.

6. Return to the *Node Software* window.

Click **Close** in the *Download New SW* window to return to the *Node Software* window.

7. *If* the software is updated from C1.7 to C2.0,

   Then

   Translate the configuration of the AXC.

   a. Select **Node → Transactor**.
   b. Click *Yes* to confirm the action.
   c. The Transactor tool will translate the configuration of the Nokia AXC from C1.7 to C2.0. The result is a C2.0 AML file that represents the configuration of the AXC and is stored in the AXC file system.

8. Activate the new software.

Click *Activate Inactive SW...*. Confirm the activation of the new software by clicking *Activate*.

Note

Activating the new node software will result in a loss of connection to the Nokia AXC. The Nokia AXC will restart automatically with the previous configuration and the connection to the AXC can be restored.

Expected outcome

The C2.0 software will be shown in the *Active SW Version* field of the *Node Software* window.

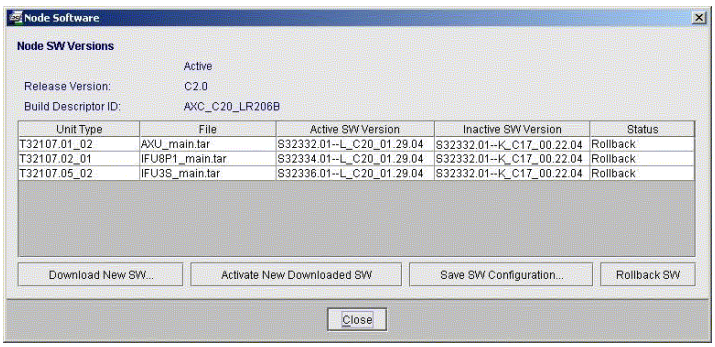


Figure 6. Node Software window after software upgrade

The Nokia AXC Manager allows you to initiate a rollback of the software upgrade. This means that the node will be rolled back to the previous software build without downloading the old software to the node again. Nokia does not recommend performing a rollback if new units have already been installed to the AXC. To initiate a rollback, click *Rollback SW* button in the *Node Software* window.

Unexpected outcome

If the AXU does not start up successfully after the software upgrade, the complete node software will automatically fall back to the previous software build.

Verification

Once the software download and activation is completed, the results can be checked with the AXC Manager. For more information, see *Commissioning the AXC with XML configuration file*.

2.3 Commissioning WCDMA UltraSite EDGE BTS

2.3.1 Starting manual commissioning

Purpose

If there is no site configuration file available, Nokia WCDMA BTS has to be commissioned manually. The following section provides detailed information on how to commission the BTS manually.

The BTS commissioning is done with the Commissioning Wizard in the BTS Manager. The Wizard features Back, Next, Cancel and Help buttons for navigating. The Next button confirms the entered parameters and brings up the following page in each commissioning line. The Back button reverses to the previous page in the Wizard. The Cancel button cancels all the entered parameters and ends the Wizard. The Help button brings up a context sensitive help topic for each Wizard page.

Note

All parameters that are entered in the Commissioning Wizard dialog boxes are to be defined prior to commencing the tasks.

Note

At the moment the Commissioning Wizard supports English alphabet only. Please remember this when typing text in the parameter boxes. The supported character number limit is 64.

Before you start

If you have not started Nokia WCDMA BTS Manager yet, launch it as described in *Installing WCDMA BTS Manager*.

Steps

1. Choose Wizard... on the Commissioning menu

The Commissioning Wizard Introduction page comes up.

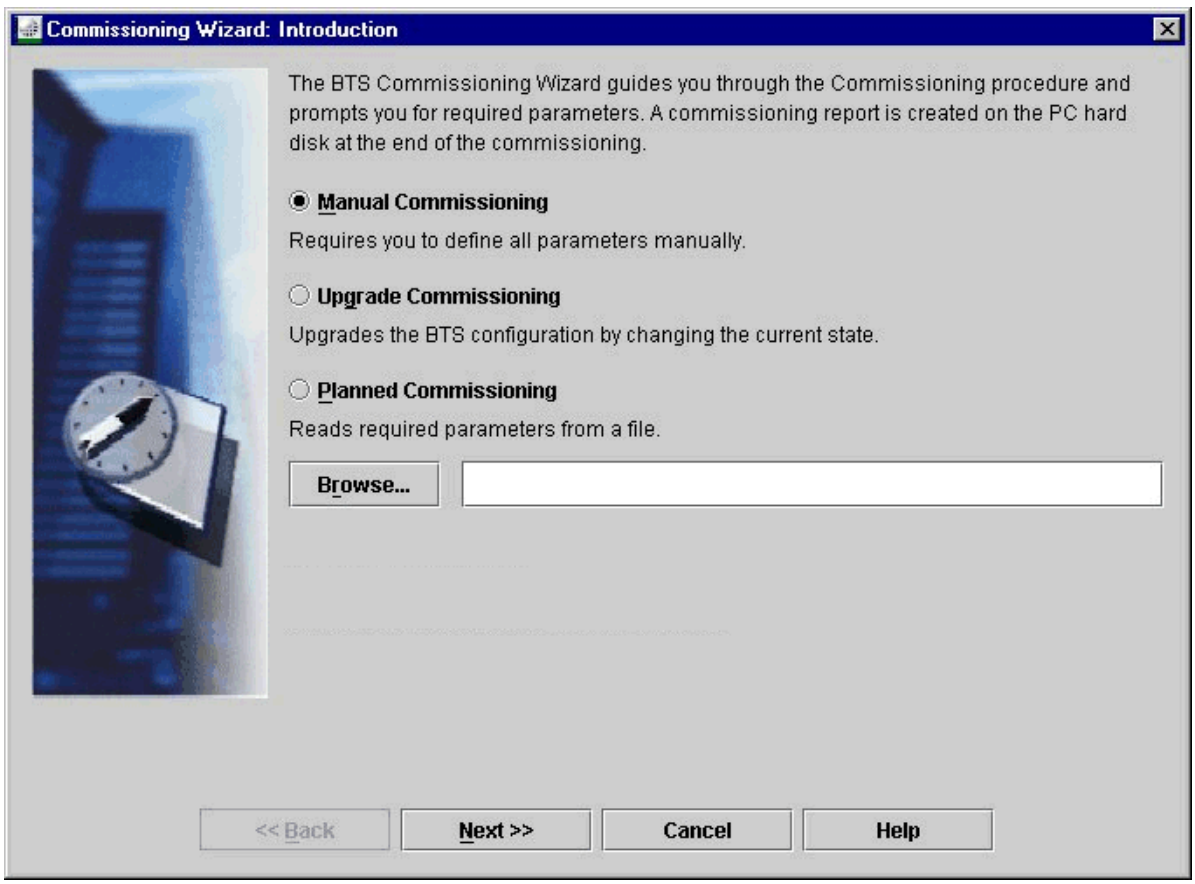


Figure 7. Commissioning wizard introduction page (manual)

2. Select the Manual Commissioning option.

3. Click Next.

2.3.2 Defining general settings

Purpose

This Wizard page is for setting up the general settings: the current author name and the Network Time Protocol (NTP) Internet Protocol (IP) address. The NTP IP address is used for retrieving the correct date and time for the current BTS. The information given here will be stored in the commissioning report.

Steps

1. **Type your name in the Author box.**

2. **Type the Network Time Protocol IP address in the NTP IP Address boxes.**

   This is an operator-specific information and should be provided by the operator.

3. **Select the local time zone from the list.**

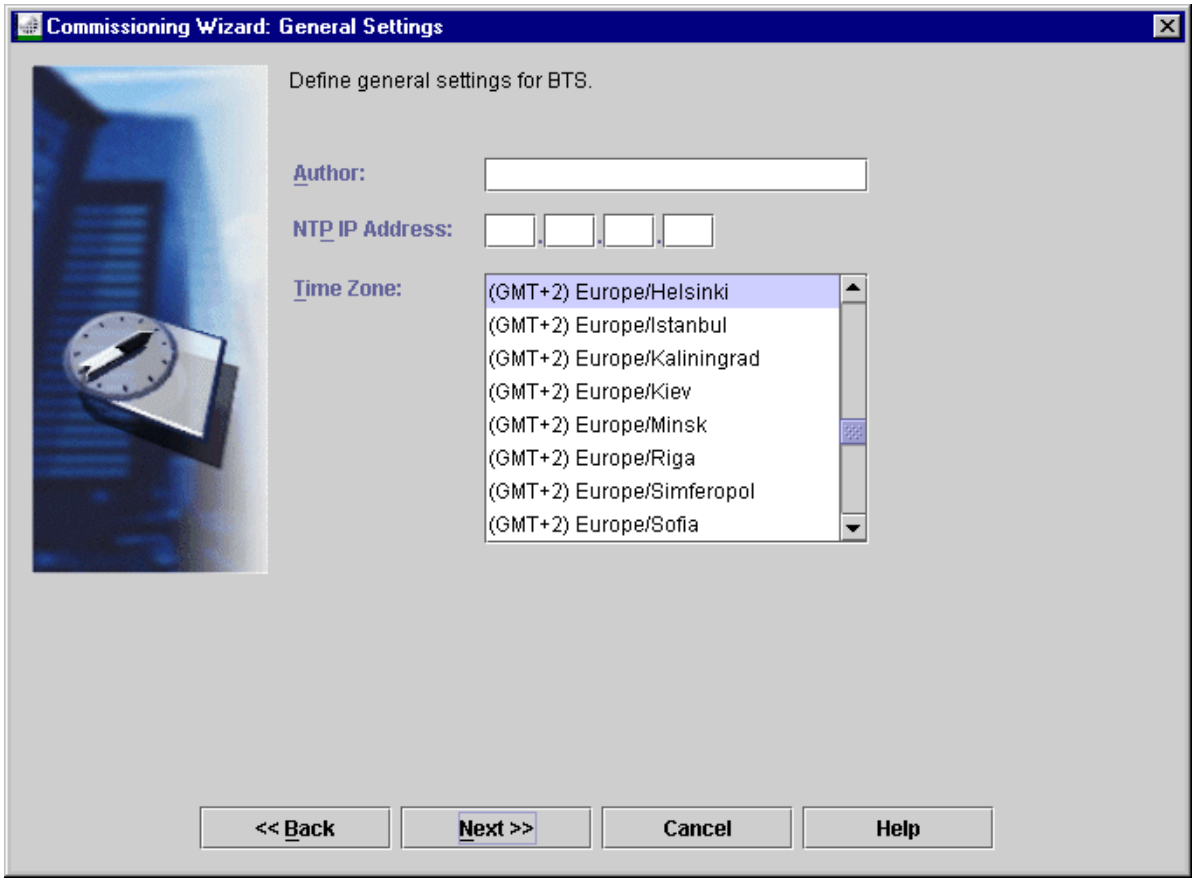


Figure 8. General settings

4. **Click Next.**

2.3.3 Defining site settings

Before you start

Note

IDs have to be defined according to agreed values, which are usually determined by the network planning exercise. You should not assign arbitrary values for these parameters.

Steps

1. **Enter the following site settings for both the BTS and RNC:**

   See the *Site settings* diagram below.

   - name
   - ID
   - IP address

2. **You can select Door Switch In Use and/or Intelligent Shutdown Enabled options by checking the corresponding check boxes**

   Door switch in use option is shown only when commissioning Nokia Supreme configurations.

   Selecting the intelligent shutdown option here brings a BBU type selection on external alarms settings page. Refer to *Defining external alarm settings*.

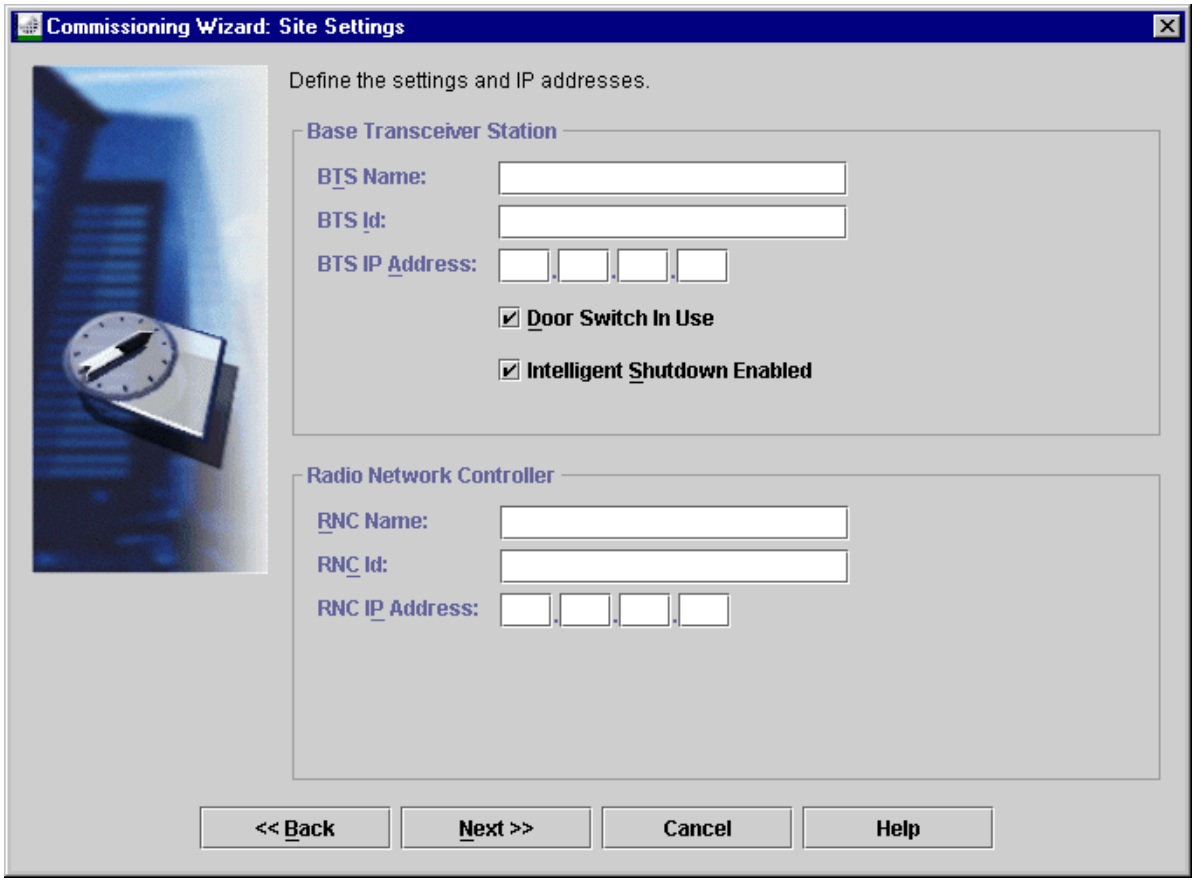


Figure 9. Site settings

3. **Click Next**

2.3.4 Defining BTS configuration

Steps

1. **Select the appropriate commissioning configuration from the dialog's list.**

   The list displays the probable configurations from detecting the hardware. Refer to the BTS configuration selection (example) diagram.

However, if the desired configuration is not in the list, select the Show All Possible Configurations checkbox below the list and then make your selection.

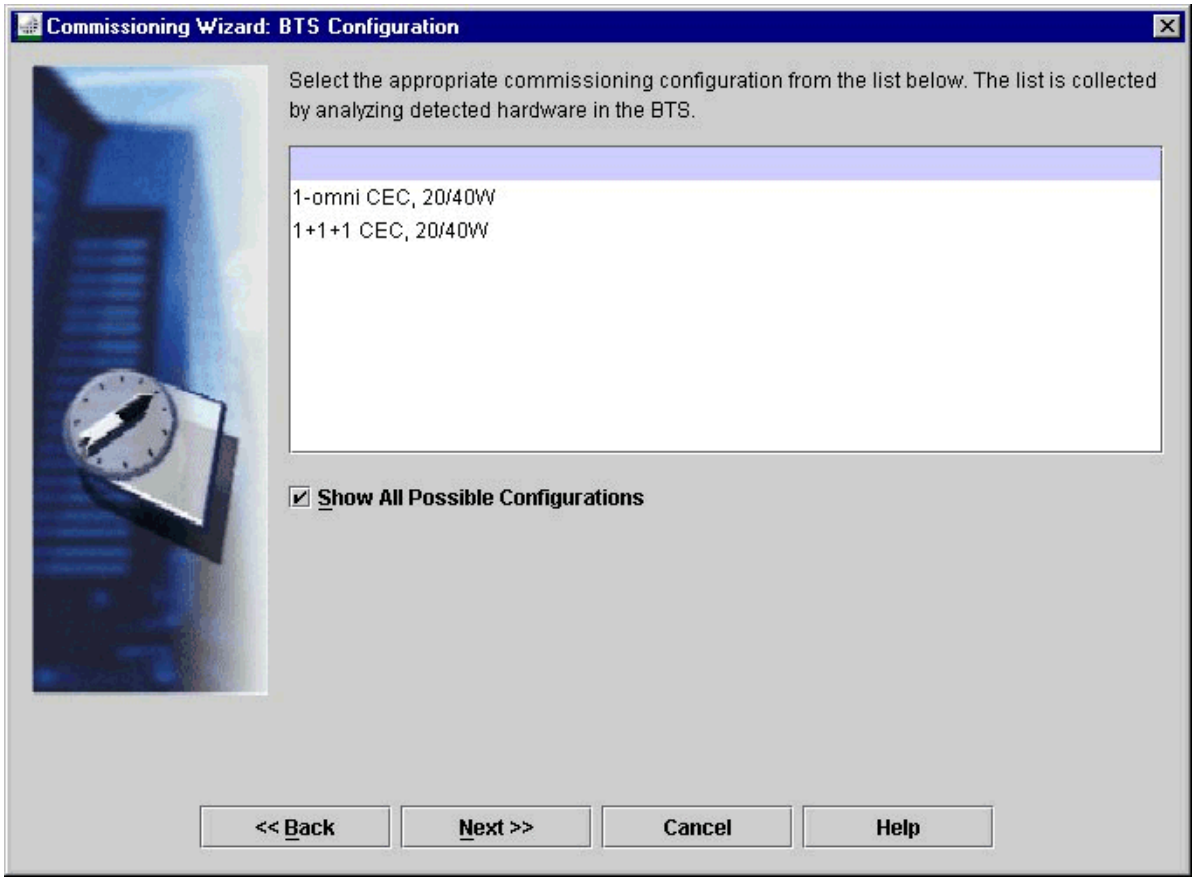


Figure 10. BTS configuration selection (example)

2. Click Next.

2.3.5 Defining local cell resources

Purpose

Local Cell Resource is a concept for defining all hardware which a logical wideband cell (WCEL) requires in the base station.

Before you start

Note

The LCR Id is determined at network planning stage. It is essential that the value input matches the expected value in the radio network plan. You should not select the value arbitrarily.

Steps

1. **Select the cell to be defined from the LCR Id list on the left.**

   Refer to the Local cell resources diagram.

2. **Define the cell ID by clicking Change LCR Id... button or by using the keyboard combination Alt + C.**

3. **Select appropriate units by clicking the corresponding check boxes.**

   Selecting a unit defines it to the cell defined in the first step.

Note

If a WOC unit is used, click the WOC In Use check box.

Note

WMC is Nokia MetroSite specific unit. WMP is only in MetroSite and triple-mode configurations.

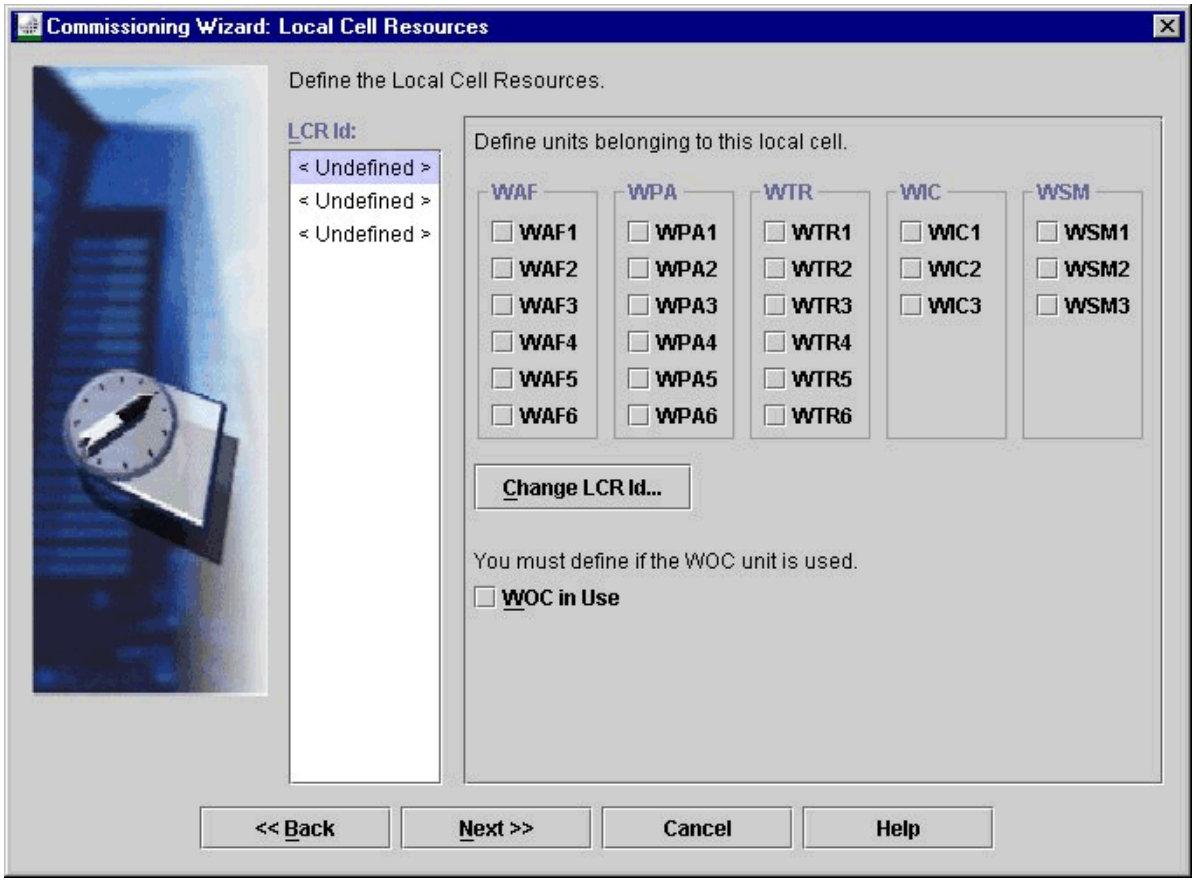


Figure 11. Local cell resources

4. When you are done, click Next.

2.3.6 Defining WTR information

Before you start

Each WTR must be specified in the following way:

Steps

1. Select the WTR from the list on the left side of the page.

2. **Select the TX/RX usage from the drop down menu by clicking the corresponding arrow.**

3. **Click the corresponding check box if the internal TX summing is used.**

   Repeat until all WTRs have been specified.

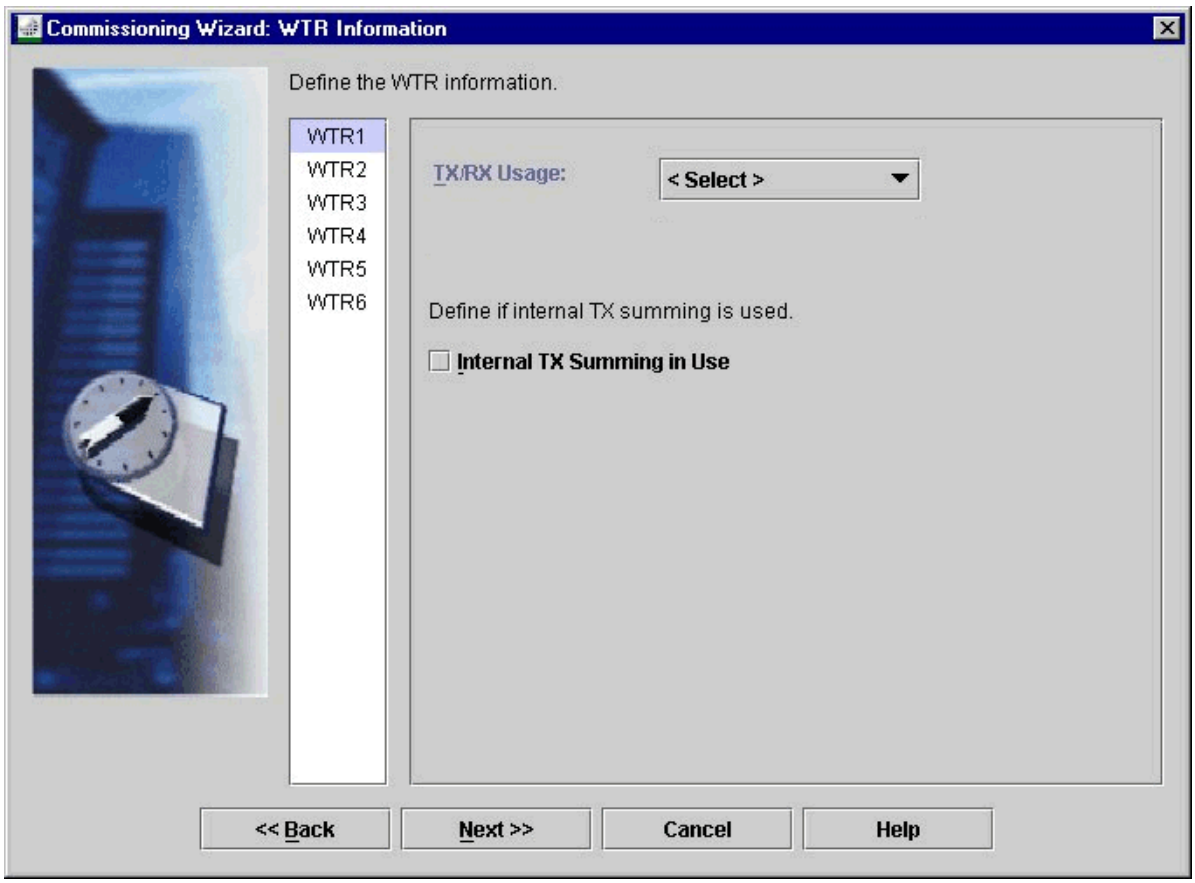


Figure 12. WTR information

4. **Click Next.**

2.3.7 Defining WCDMA carrier information

Steps

1. **Enter the UARFCN for the WCDMA carriers in respective boxes.**

Refer to the figure below.

The value range is from 10563 - 10837 (0 = 0.0 Hz, 16383 = 3276.6 MHz, each step of 1 = 0.2 MHz). Example values: 10563, 10588, 10613 and 10638. The frequency is the centre frequency of the downlink.

At least one carrier must be defined.

Figure 13. WCDMA carrier information

Note

Up to four WCDMA carrier frequencies can be allocated for an operator. These are a known group of carriers within the base station and are used to linearise all

WPA units at start-up for each of the four specified carriers. This facilitates faster possibility to utilise any of the carrier candidates, should the need arise. The parameter uses the so-called UARFCN convention defined in the I_{UB} specification. The parameter specifies the downlink frequency.

---

2. Click Next.

2.3.8 Defining ATM settings

Purpose

ATM settings are defined to configure the termination of the ATM and AAL layers for the I_{UB}.

In ATM Settings views you have to define values for the WAM (Wideband Application Manager) units, individually.

To view the default settings of any screen, click the Non-Editable ATM Parameters button. .

Steps

1. Click the relevant unit in the leftmost view.

2. Specify the following information:

See the WAM1 ATM settings diagram below.

- egress PCR for D-NBAP VCC
- egress PCR for AAL2SIG VCC
- egress PCR for AAL2UP (TP1 - TP3, as required by network planning)
- Select WAM In Use for each defined WAM

The value range for each field in cells per second is 0...350 000.

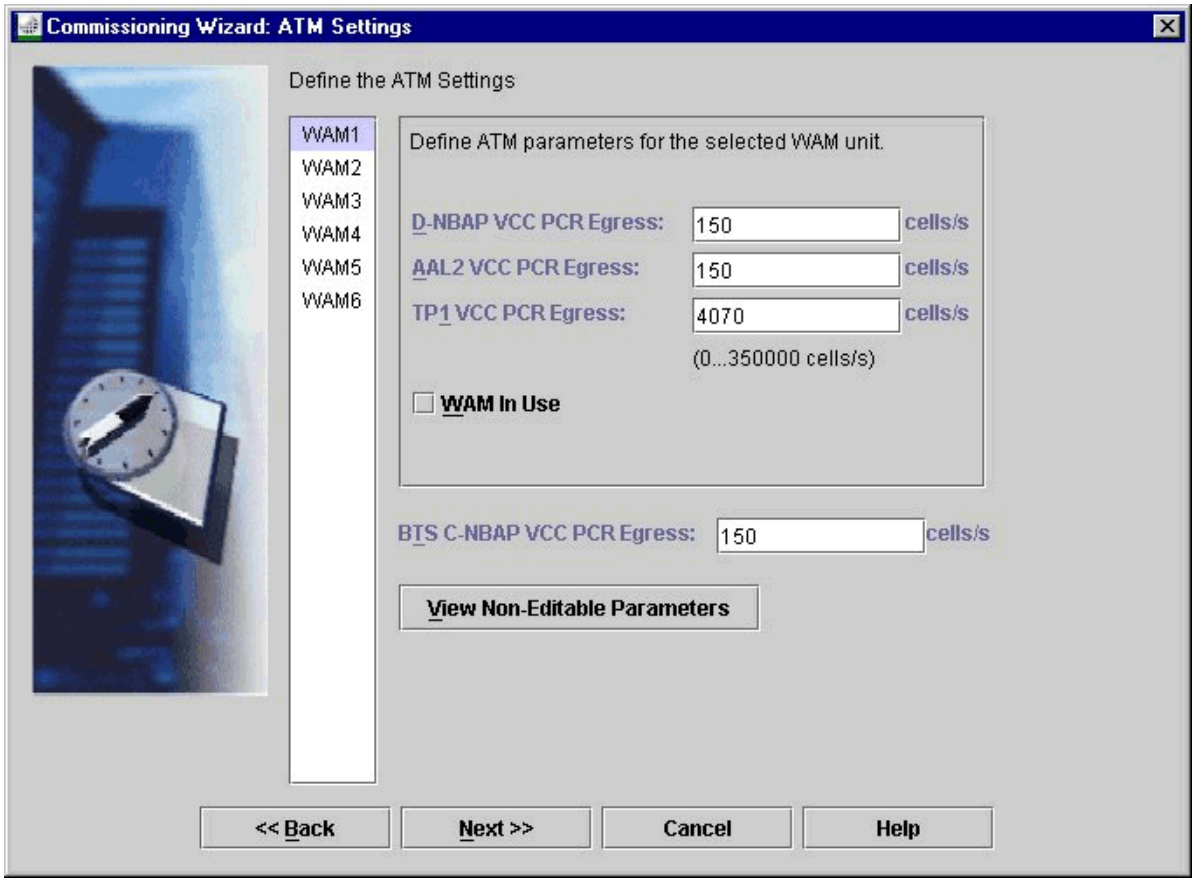


Figure 14. WAM1 ATM settings

3. Specify the egress PCR for BTS C-NBAP VCC.

4. You can check out ATM default values for each selected WAM unit by clicking the View Non-Editable Parameters button.

The Non-editable ATM parameters window opens up, see diagram:

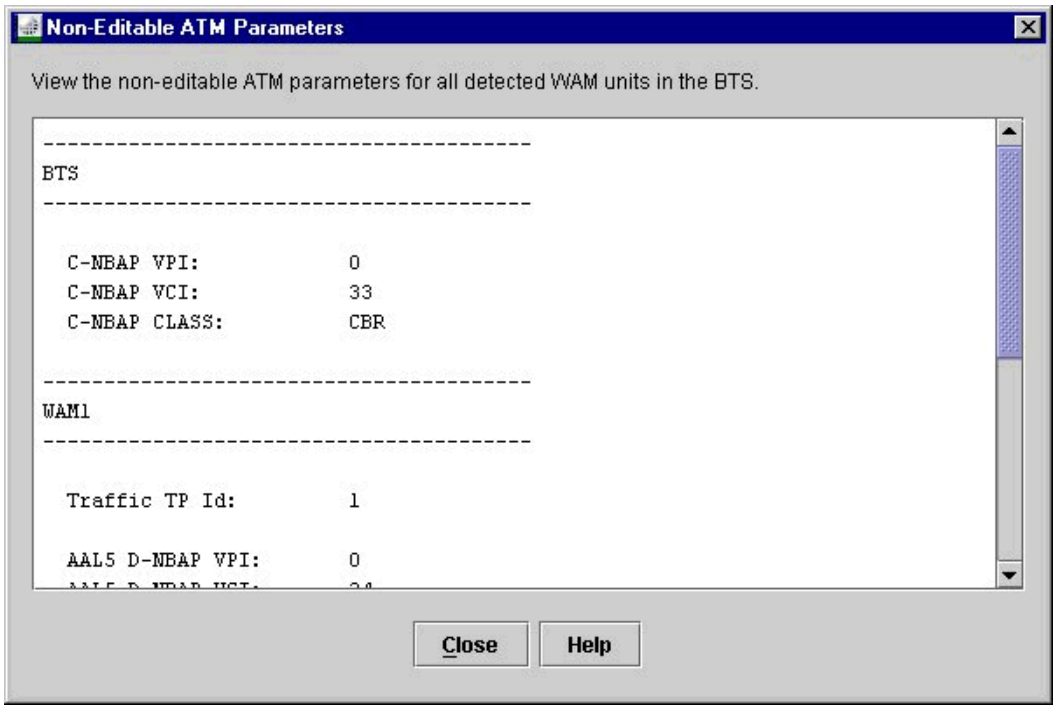


Figure 15. WAM1 default values

This panel is for information purposes only. You cannot change any values in this view. Click the Close button to return to the previous dialog box.

5. Click Next.

2.3.9 Defining external alarm settings

Purpose

At this point of the commissioning procedure you need to configure external alarm settings. There are 24 external alarm settings: the settings are divided into two sets of 12 alarm inputs.

Before you start

Note

If you are commissioning a triple-mode BTS, jump to Defining MHA settings, since no EACs are defined in the WCDMA section of the triple-mode BTS.

Steps

1. **Check the In Use check box if the input device is in use.**

2. **Type the name of each input device in the Name box.**

3. **Define the device polarity from the corresponding column by clicking on the column box and selecting High or Low from the drop-down list.**

   High setting equals “Normally open” setting in the BTS parameters file and Low setting equals “Normally closed” setting respectively.

4. **Define the input device severity from the corresponding column.**

   Click each input device box to bring out a drop-down list and select the severity value: Critical, Major, Minor or Warning.

   If Intelligent Shutdown was selected on Site Settings page, you will have the Mains alarm indication box with BBU unit selection included on this page. If BBU unit type is Nokia, three mains alarm lines are reserved on the External Alarms (13-24) page, refer to Figure 15. If you have other type of BBU, only one line can be defined from Mains Alarm column.

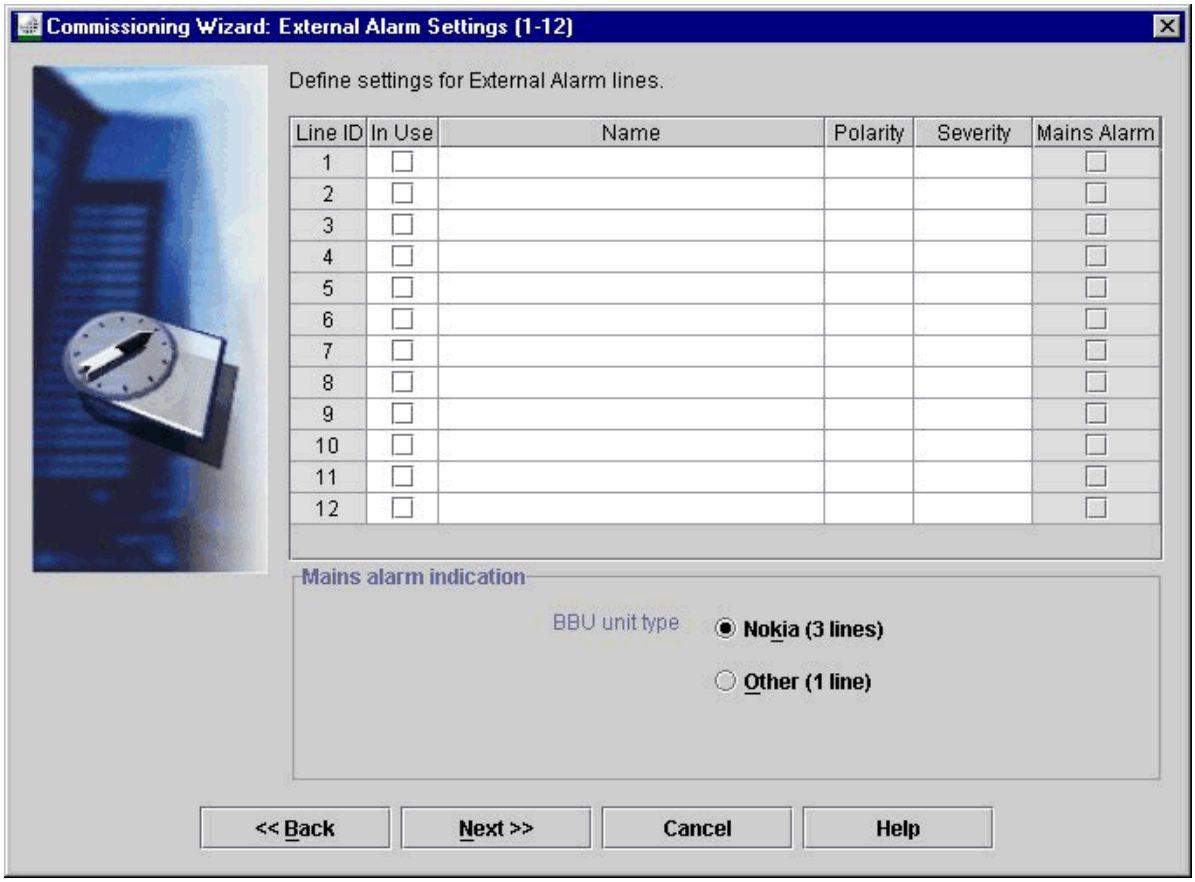


Figure 16. External alarm settings (1-12) with Nokia BBU unit type selection

5. After you have typed the alarm information for the first twelve alarm inputs, click Next to open the 13-24 set of alarm inputs. Repeat the procedure.

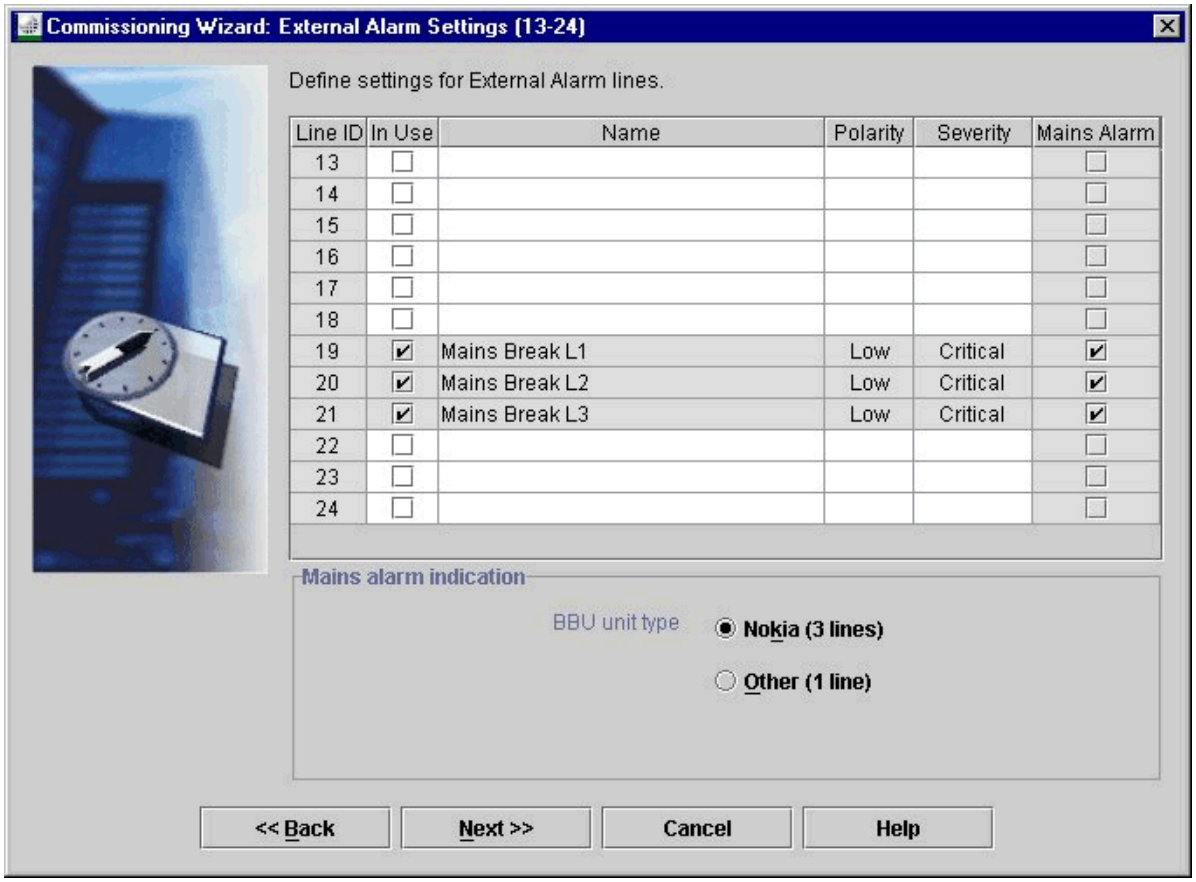


Figure 17. External alarm settings (13-24) with reserved alarm lines

2.3.10 Defining external control settings

Purpose

This step in the commissioning wizard is the specifying of the six possible external control settings. Refer to the External control settings diagram.

Steps

1. **Select the appropriate In Use check boxes for each control.**
2. **Type the control names in the Name boxes.**

3. **Click the Initial State box for each control.**

   Select the correct value: On or Off.

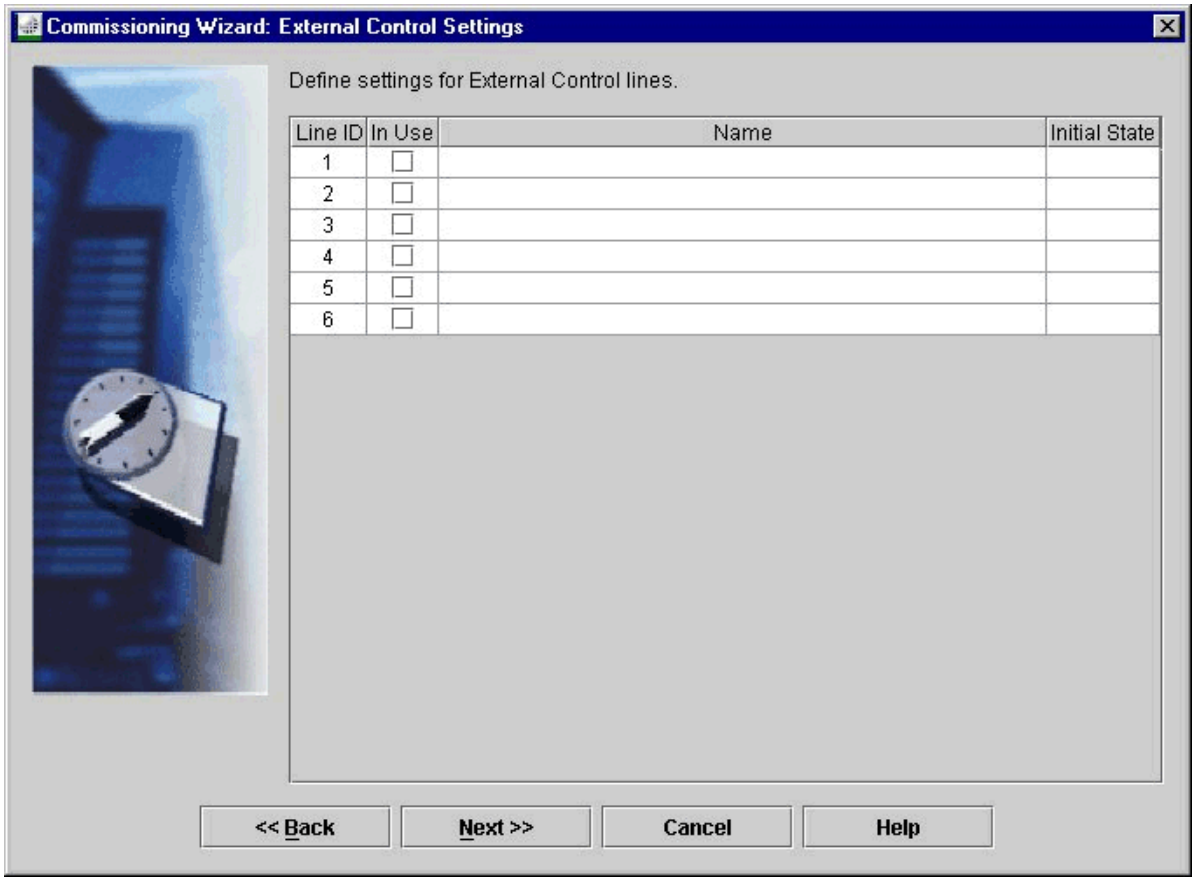


Figure 18. External control settings

4. **Click Next.**

2.3.11 Defining MHA settings

Purpose

In the MHA settings dialog box, select installed MastHead Amplifier connections for each installed WAF unit. You also need to select appropriate parameters for the MastHead Amplifiers.

Enter information for each WAF unit. Refer to the MHA settings diagram.

Steps

1. **Select the WAF to be defined from the left side of the dialog box.**
2. **In the tabbed page on the right side of the dialog box:**

   select Main or Diversity, depending on whether the MHA serves the main antenna or diversity antenna, for the selected WAF.
3. **Click the MHAIn Use check box for the corresponding WAF if necessary.**
4. **Type the MHA gain value in the corresponding box. The value range is from 0.0 to 99.0 dB.**

Note

It is not necessary to specify the MHA gain value and the feeder loss value in decimal values. Approximate values will suffice.

---

5. **Type the feeder loss value in the corresponding box.**

   The value range is from -99.0 to 0.0 dB.

   The feeder loss parameter is composed of the attenuation value between the cabinet roof and antenna or MHA.

Note

It is mandatory to enter a feeder loss value even though no MHA was in use.

---

6. **Type the serial number in the corresponding box.**
7. **Type the product code in the corresponding box.**
8. **Repeat the procedure for each WAF in the site.**

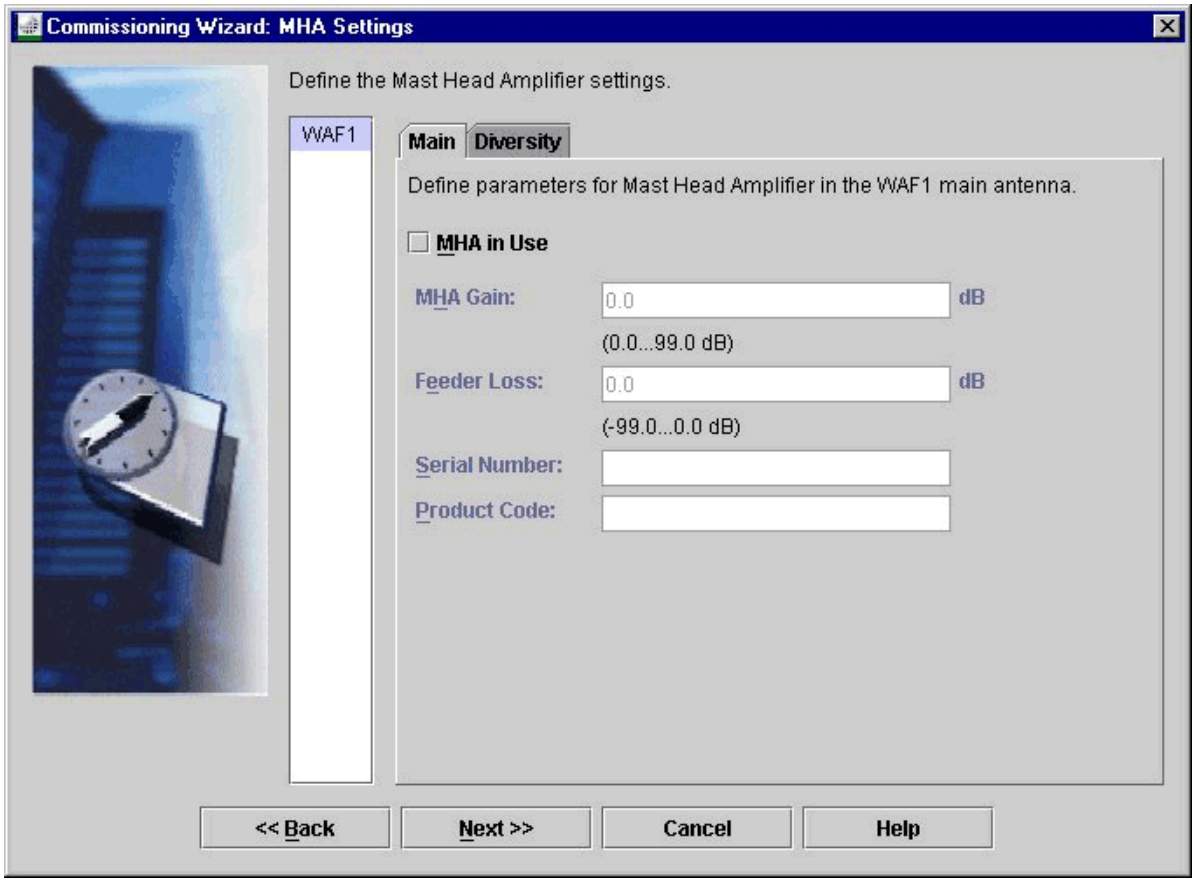


Figure 19. MHA settings

9. Click Next to proceed.

2.3.12 Defining BTU settings

Purpose

Define parameters for Bias Tee unit.

Steps

1. Select the WAF antenna from the list on left side of the dialog box.

2. Click Main or Diversity tab on the right side of the page.

3. **Select the BTU In Use check box, if necessary.**

4. **Select the VSWR Alarm Detection check box, if necessary.**

Note

If VSWR Alarm Detection is required, the VSWR Alarm Detection checkbox shall be checked. If it is not checked, no VSWR Alarms shall be detected or reported for that Bias Tee unit.

---

5. **Type the serial number in the corresponding box.**

6. **Type the product code in the corresponding box.**

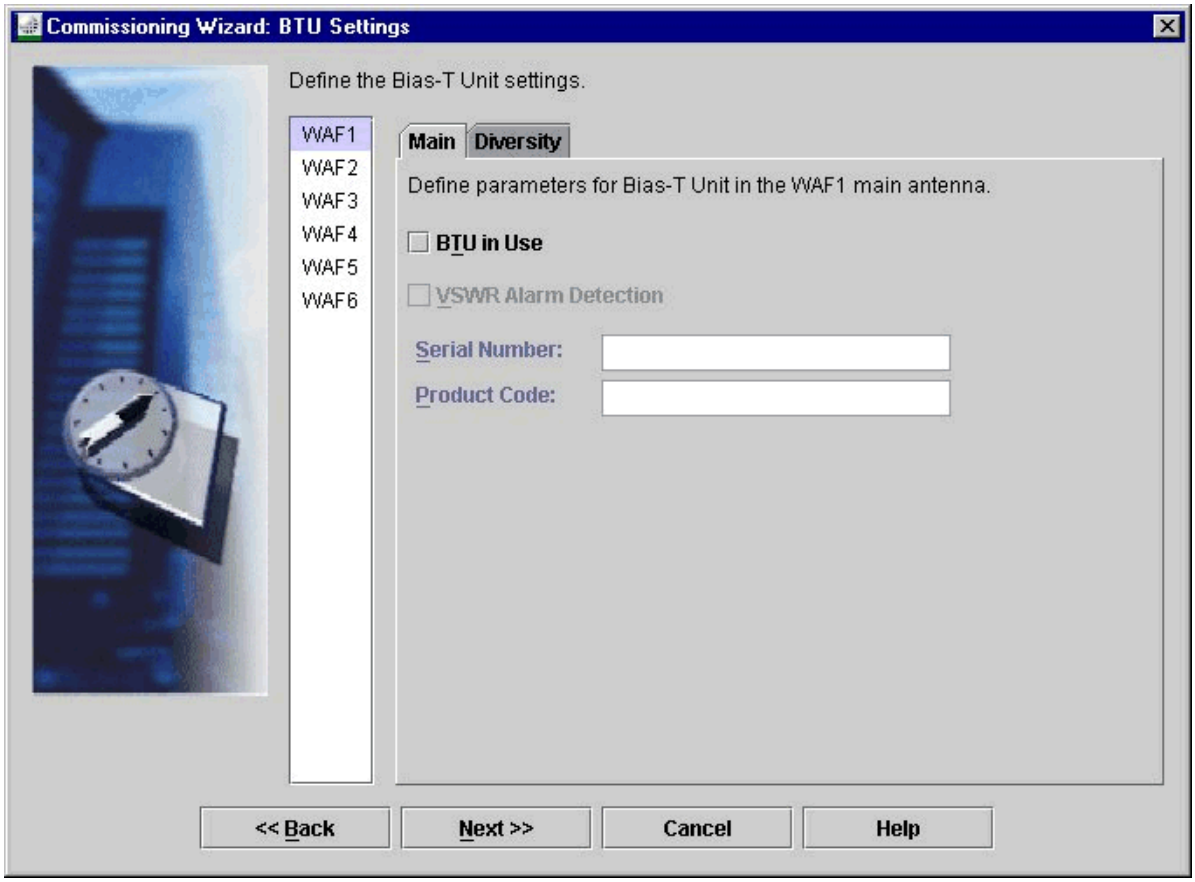


Figure 20. BTU settings

7. **Click Next**

2.3.13 Defining RX cabling

Steps

1. **Select a WAF unit from the list on the left side of the page.**
2. **Select RX connectors (RX1 to RX4 or RX DIV1 to RX DIV4) by clicking the boxes in the From WAF Port column.**
3. **Select the destination WTRs by clicking the boxes in the To WTR column.**

4. **Select the WTR port (RX1 or RX2) from To WTR Port column.**

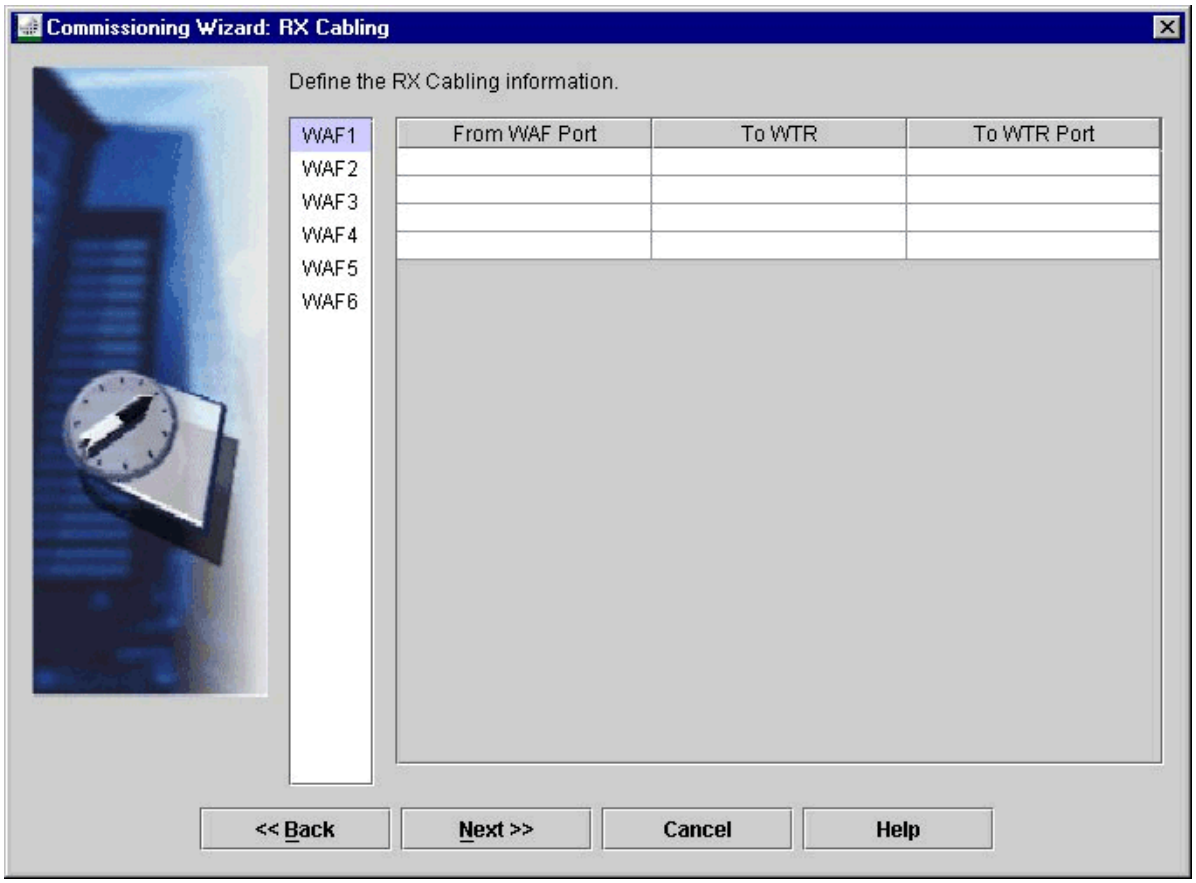


Figure 21. RX cabling

Remember to enter the connection information for each WAF unit.

5. **Click Next.**

2.3.14 Defining TX cabling

Purpose

To select the TX cabling routing. TX cabling dialog box shows all WTR units which are installed in the current cabinet.

Steps

1. **Select the originating WTR from the From WTR column.**

2. **Select the TX cabling route through corresponding WIC port.**

   Click the corresponding WIC column and select the correct WIC from the drop-down list.

Note

No WIC unit is selected here with triple-mode and MetroSite BTSs.

---

3. **Define the WIC port by clicking the corresponding column and select the correct port from the drop-down list.**

4. **Define the correct WPA unit by clicking the WPA column and selecting the unit from the drop-down list.**

5. **Define the connection destination WAF unit by clicking the To WAF column and selecting the corresponding unit from the drop-down list.**

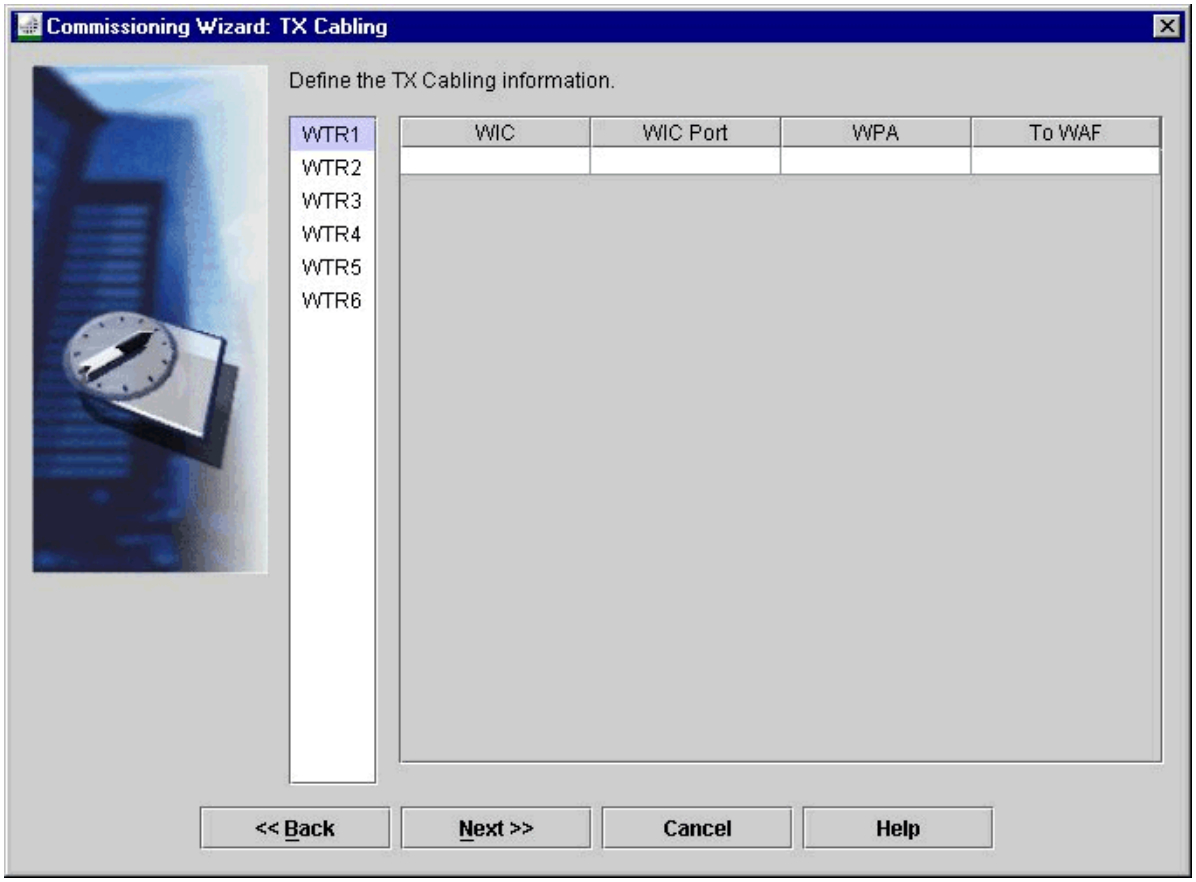


Figure 22. TX cabling

6. Click Next.

2.3.15 Saving BTS parameters

Purpose

In the BTS Parameters dialog box you can save all previously entered commissioning parameters in an XML file and select the location for it; be it on your PC hard disk or elsewhere.

Steps

1. Click Save Parameters... button.

2. **Type a file name with a desired file location path.**

   You can scroll down the BTS parameters list to check that the commission parameters match the work order.

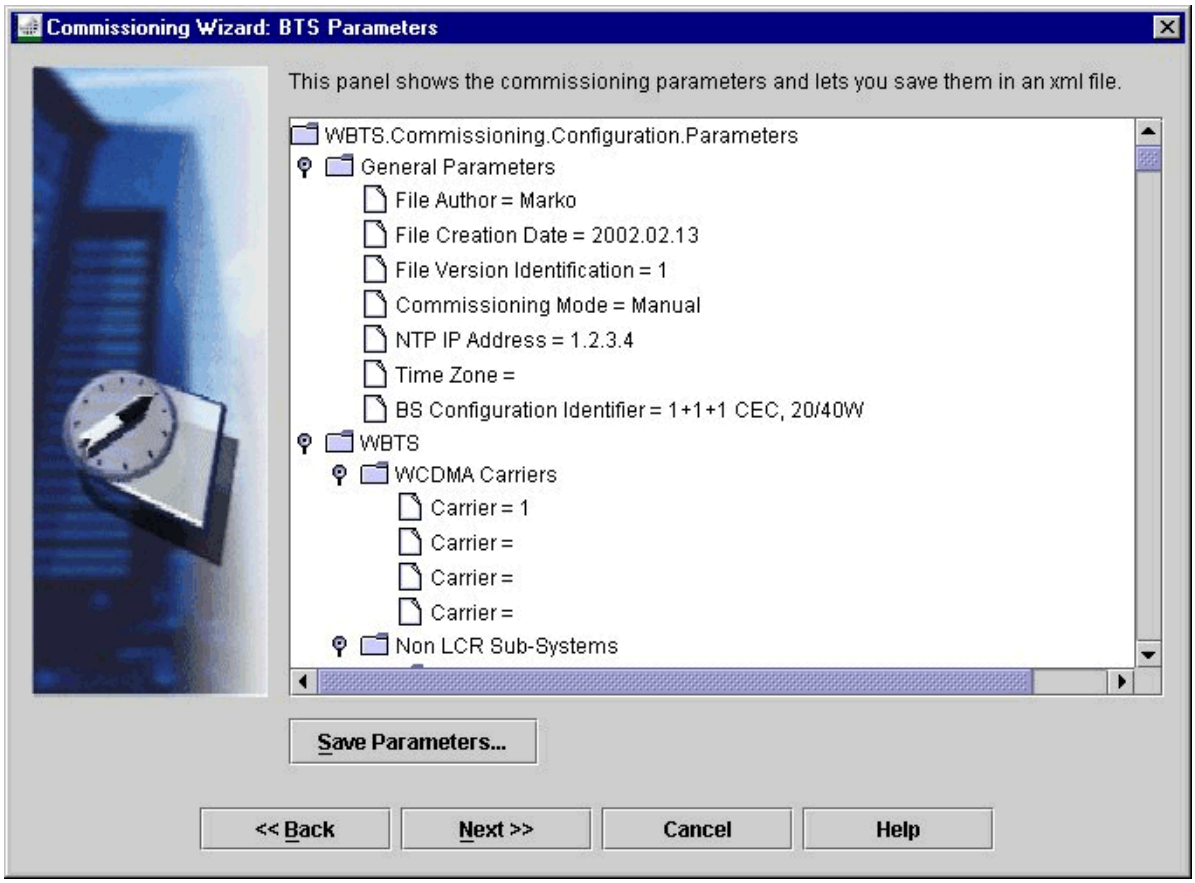


Figure 23. BTS parameters

3. **Click Next.**

2.3.16 Sending parameters to BTS

Purpose

This is where you send the previously entered commissioning parameters to the BTS and reset the BTS.

Steps

1. **Click the Send Parameters button.**

   You can follow the parameter transfer status in lower part of this window.

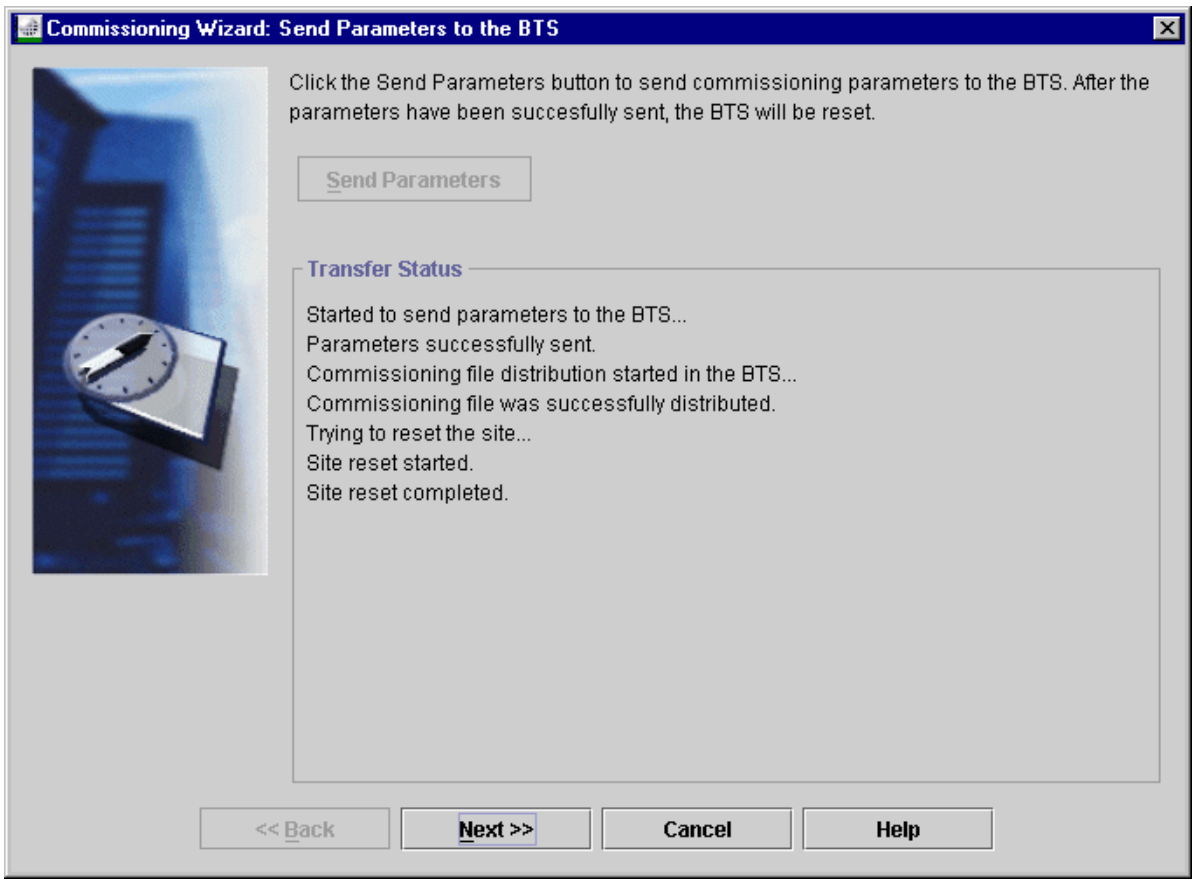


Figure 24. Send parameters to the BTS

After the transfer is complete, a site reset will follow and the Next button will become enabled.

2. **Click Next.**

2.3.17 Saving BTS commissioning report

Purpose

At the end of the BTS commissioning, the commissioning report is saved in a file on the laptop PC hard disk. See BTS commissioning report diagram. The report contains the parameters supplied in the Commissioning Wizard.

The report is an ASCII text file that you can open and check with any word processor.

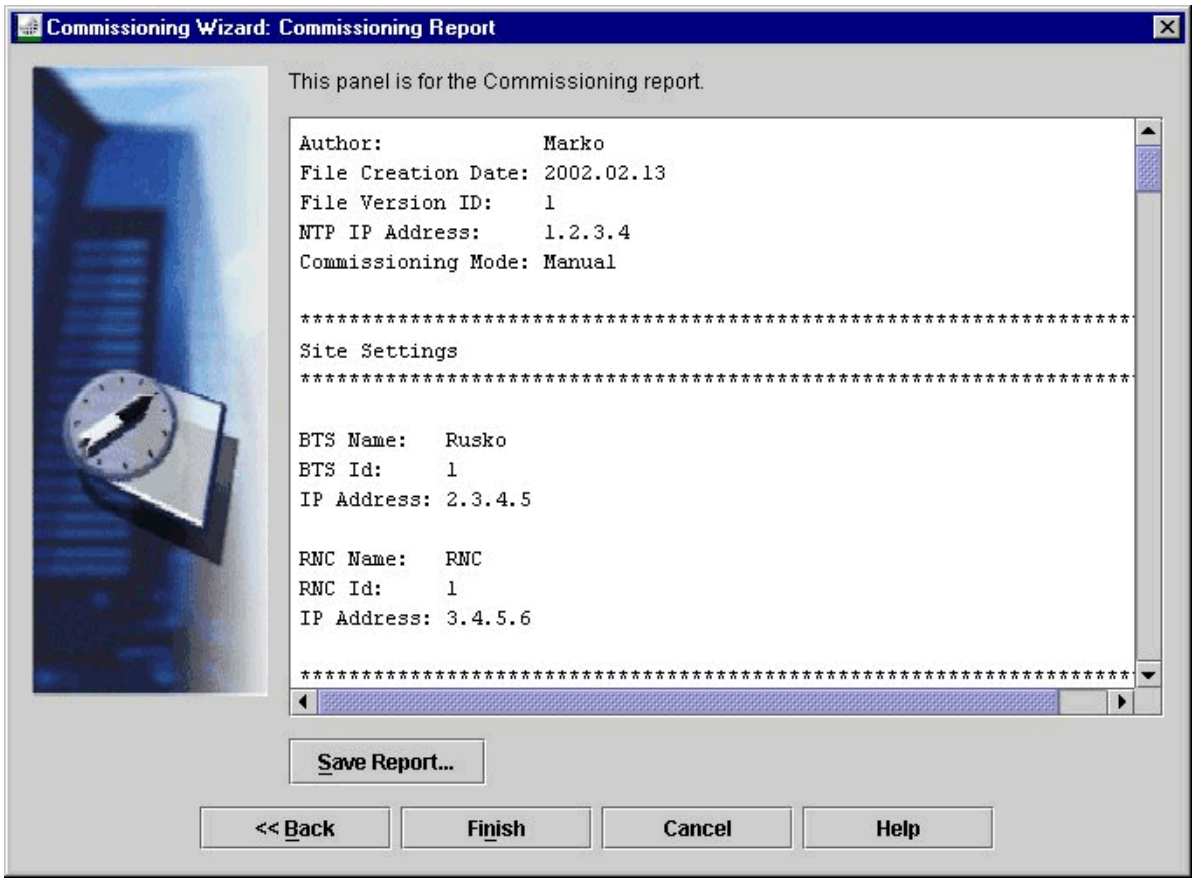


Figure 25. BTS commissioning report

Steps

1. **Click Save Report... to browse for the location for the commissioning report to save it to a file**

2. **Click Finish to finish the commissioning and exit the Commissioning Wizard**

Expected outcome

After saving the commissioning report and exiting the commissioning wizard, you can check the BTS status from the WCDMA BTS Manager main window's status bar.

If the commissioning was successful, it should read "Commissioned". See WCDMA BTS Manager status bar after commissioning.

Figure 26. WCDMA BTS Manager status bar after commissioning

Further information

Typically the network configuration is stored on individual unit serial number level to enable fast and efficient search in the network, in case such information is needed. One of the entry points for this data is after commissioning.

Depending on the requirements of the IM system where this information is stored, there might be several options to collect the data. The most typical is to scan the units with a bar code reader. Nokia recommends a certain bar code reader HW and SW to enable more automated transfer of data to Nokia NetAct™. More information is available in Nokia NetAct Asset Manager documentation "Using Asset Manager Scanner, dn0147312x2x0xen".

2.3.18 Starting upgrade commissioning

Purpose

Upgrade commissioning provides an option to commission an already commissioned BTS. Upgrade commissioning includes the following options:

- Add/Remove units
- Change Configuration
- Custom Upgrade

During upgrade commissioning, the BTS remains operational, but the site requires a reset in order to be upgraded.

Steps

1. **Start Nokia WCDMA BTS Manager.**
2. **Choose Wizard... on the Commissioning menu.**
3. **Select Upgrade commissioning option.**

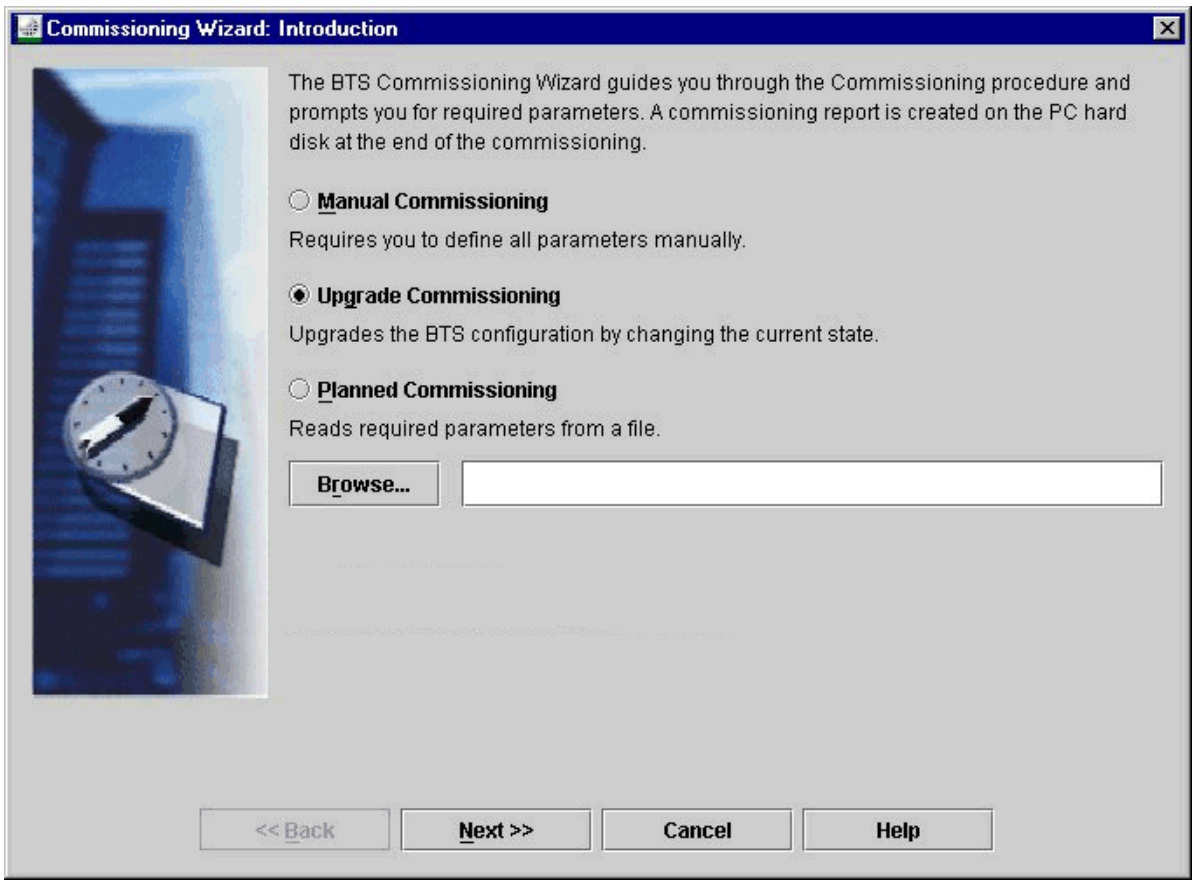


Figure 27. Commissioning wizard introduction page (upgrade)

The Upgrade page opens up displaying three options for upgrade commissioning.

4. **Check the Add or remove units in the Upgrade page.**

This option enables commissioning the BTS by adding or removing units.

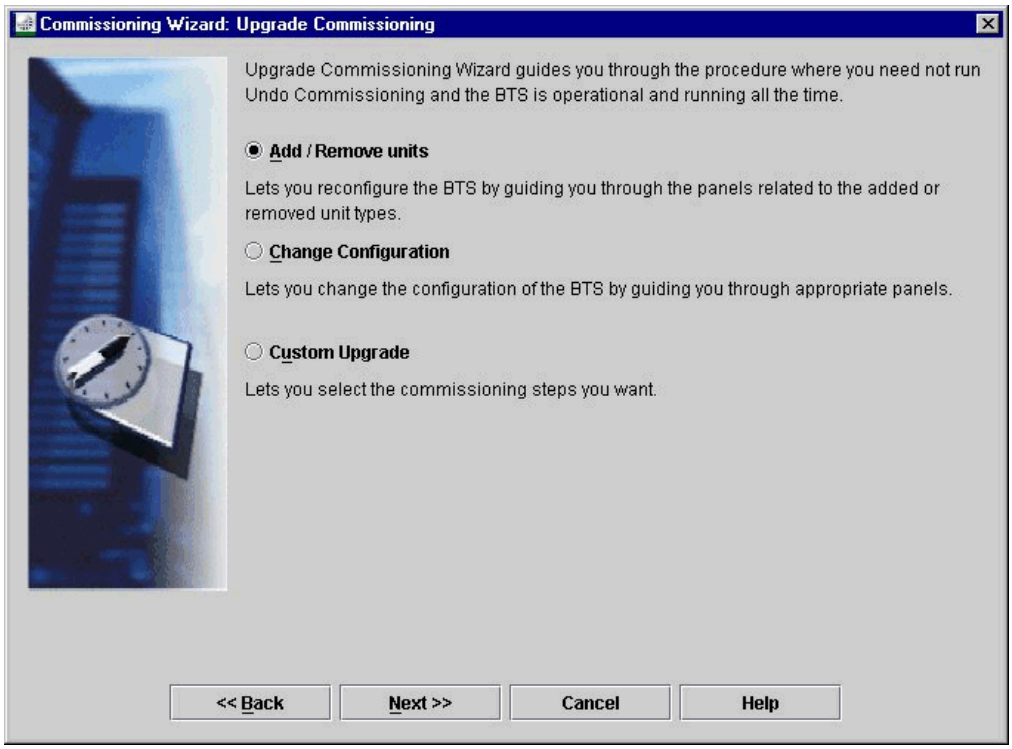


Figure 28. Add/Remove units option in upgrade commissioning

If you choose this option, you will have to go through only the selected unit-specific Wizard pages (see diagram below).

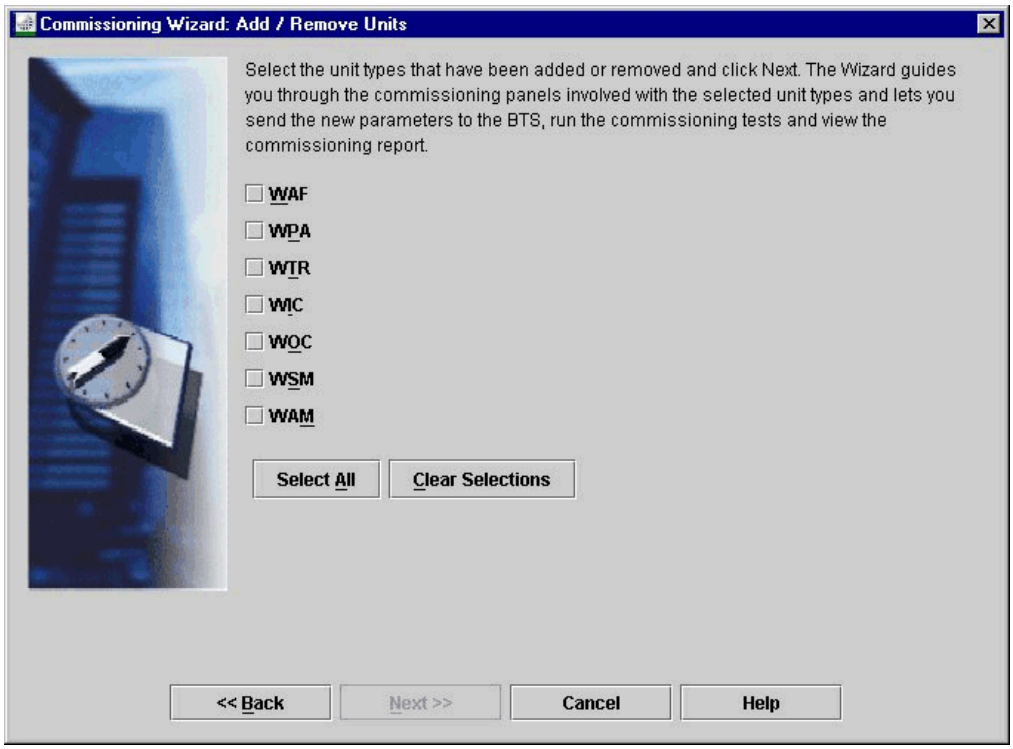


Figure 29. Add or remove units - unit type selection (example)

5. Save parameters to a file.

After going through the selected Wizard pages, continue the commissioning process by saving the parameters to a file, as described in *Saving BTS parameters*

6. The Change configuration option in upgrade commissioning requires the following Wizard pages to be configured:

- General settings (see *Defining general settings*)
- BTS configuration (see *Defining BTS configuration*)
- Local cell resources (see *Defining local cell resources*)
- MHA settings (see *Defining MHA settings*)
- BTU settings (see *Defining BTU settings*)
- RX cabling (see *Defining RX cabling*)
- TX cabling (see *Defining TX cabling*)
- BTS parameters (see *Saving BTS parameters*)

- Send parameters (see *Sending parameters to BTS*)
- Commissioning report (see *Saving commissioning report*)

7. Select the Custom upgrade commissioning option to choose the commissioning wizard pages you want to change.

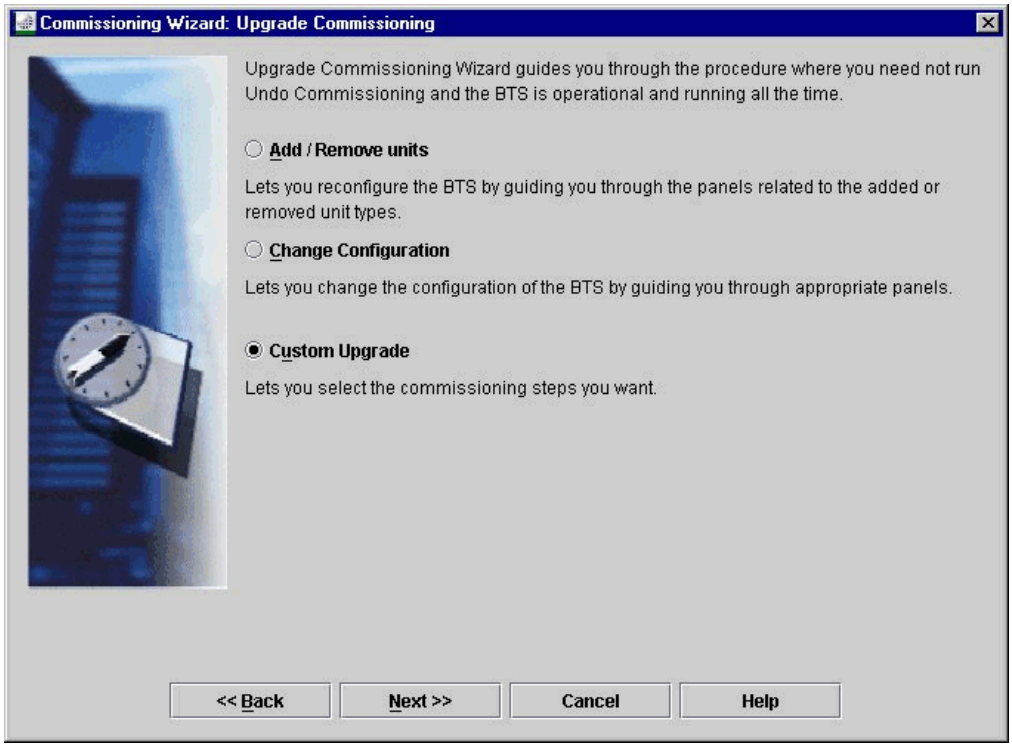


Figure 30. Custom upgrade

8. Click Next.

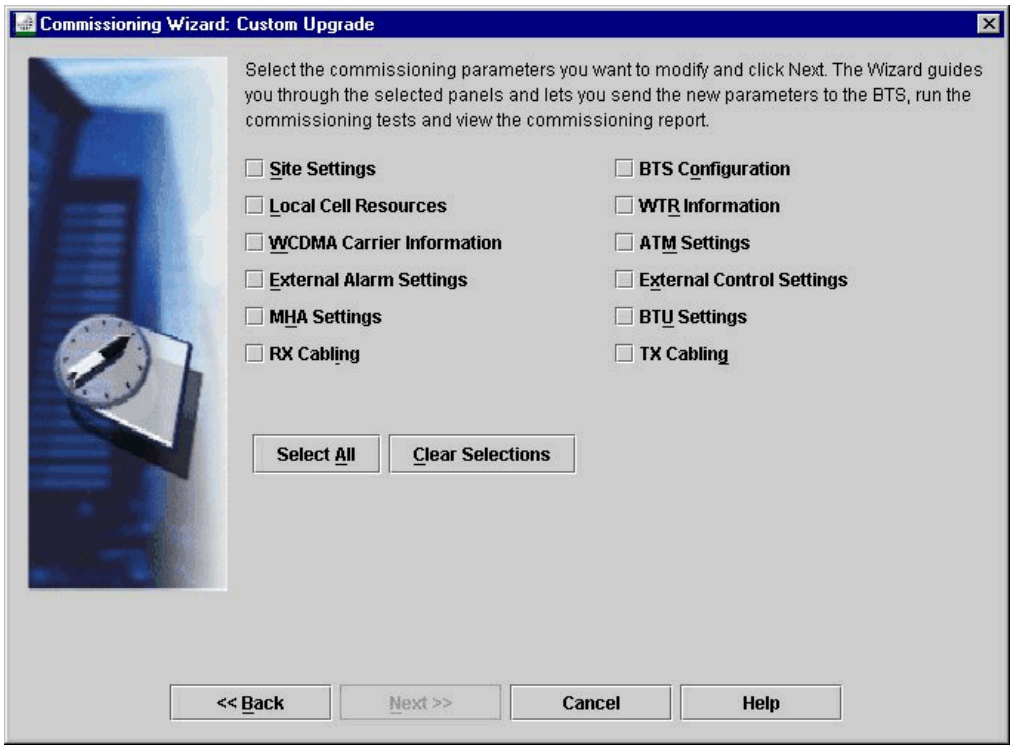


Figure 31. Custom upgrade options

9. Click the options you want and then click Next.

After you click Next, the chosen pages will appear in the wizard.

Further information

At the end of Custom upgrade commissioning, continue sending the parameters to the BTS, as described in *Sending parameters to BTS*

2.3.19 Starting planned commissioning

Purpose

There is the opportunity to commission Nokia WCDMABase Stations by loading a Site Configuration File to the BTS. XMLformat Site Configuration File is made from the NetAct Planner and NetAct Radio Access Configuration - PlanEditor tools. The XML format Site Configuration File is downloaded to the local management terminal by means of the NetAct Radio Access Configurator - Site Configuration Tool.

Steps

1. Launch Nokia WCDMA BTS Manager and select Wizard on the Commissioning menu

The introduction page opens up. See diagram below.

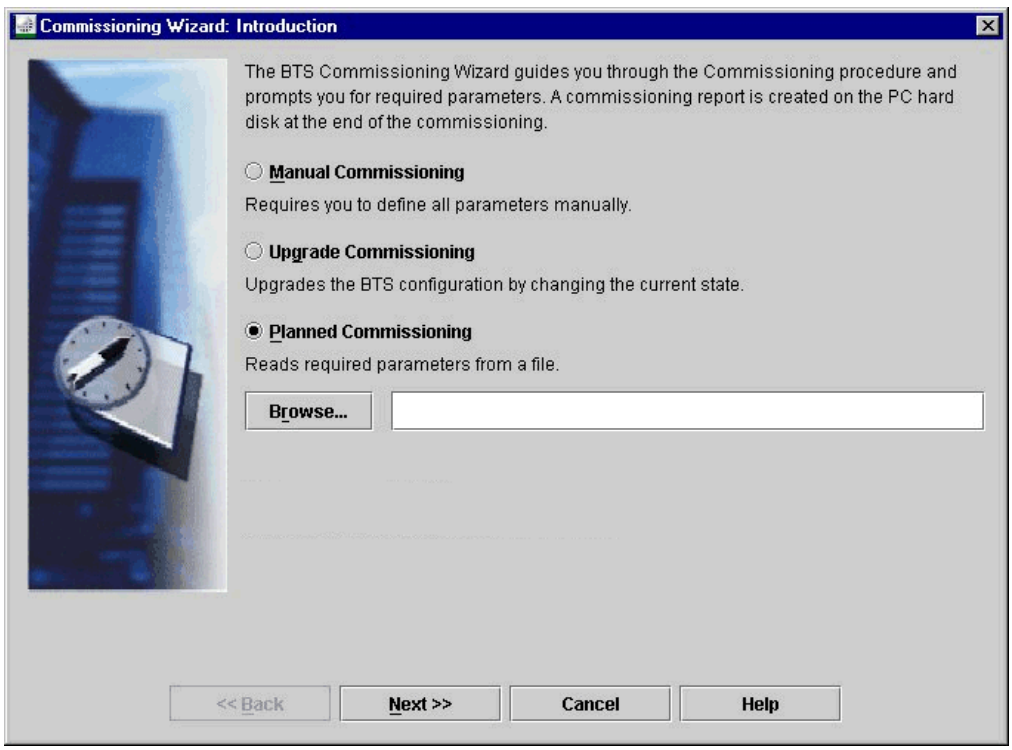


Figure 32. Planned commissioning

2. Select Planned Commissioning

3. Click Browse button to browse for the site configuration file

The only supported file format is XML. When the file is opened, all the fields in Commissioning Wizard will be filled automatically according to the parameters in the file.

Caution

Changing the parameters may cause the site not to work according to the network plan.

You will have the opportunity to change those parameters in the Commissioning Wizard, after you have loaded the selected site configuration file to the Wizard.

You must go through every page in the Wizard in order to successfully complete the commissioning.

4. Click Next

See *Defining general settings* for details on how to continue the commissioning, all the way up to creating a commissioning report.

2.3.20 Defining WCDMA loop test

Purpose

The first test option in the WCDMA BTS Manager's Tests menu is WCDMA Loop Test. The purpose of the test is to verify the working condition of the installed and commissioned units in the BTS.

Regarding the BTS commissioning it is recommended to run the WCDMA loop test.

Before you start

Before running any tests the BTS should be commissioned and transmitter testing equipment should be connected to the BTS antenna connector.

Steps

1. Select the WCDMA Loop Test command from the Tests menu.

See Tests menu diagram.

Figure 33. Tests menu

The WCDMA Loop Test dialog box opens on the screen. See WCDMA loop test diagram.

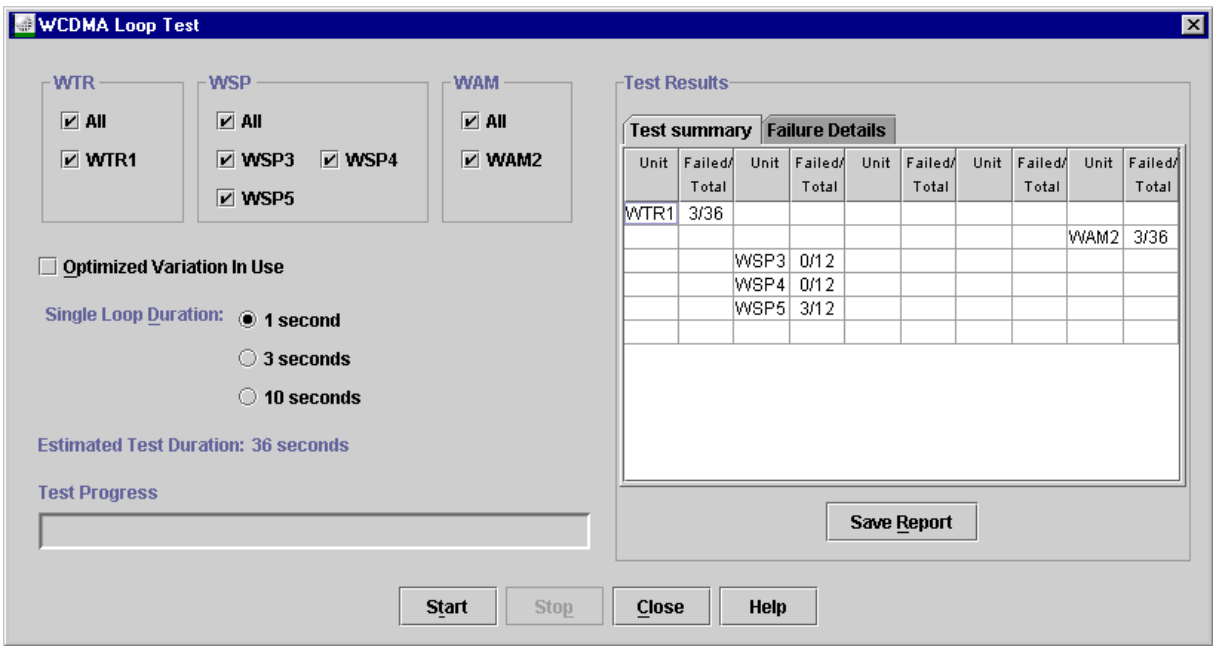


Figure 34. WCDMA loop test

2. **Select the units to be tested from the unit-specific group boxes, individually, or by selecting All option from each group box.**

3. **Select Optimized Variation In Use if necessary.**

4. **Select Single Loop Duration:**

   - 1 second
   - 3 seconds
   - 10 seconds

5. **Click Start to execute the testing for the selected units.**

   The estimated test duration is shown based on the single loop duration and the number of units choices. The test progress bar shows the actual test progress.

   If for some reason you want to stop the test before it is finished, utilise the Stop button.

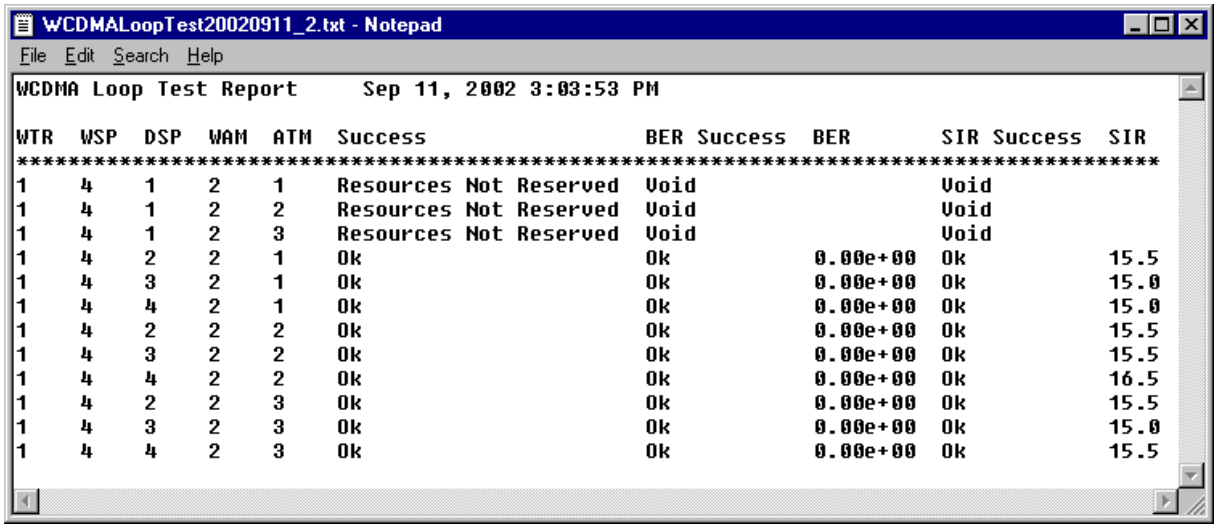
   The test results are shown in two tabbed pages on the right side of the dialog box: test summary and failure details.

6. **After the test is over, you must save the test report by clicking Save Report button.**

   If the WCDMA BTS Manager finds a commissioning report of the same date, it will automatically add the test results into that commissioning report. If there is no commissioning report for that particular day to be found, you can save the test results as a text file. The suggested file name is “WCDMALoopTest<date>.txt

Expected outcome

Here is an example of an WCDMA loop test report:



WCDMALoopTest20020911_2.txt - Notepad

File Edit Search Help

WCDMA Loop Test Report Sep 11, 2002 3:03:53 PM

WTR	WSP	DSP	WAM	ATM	Success	BER Success	BER	SIR Success	SIR
1	4	1	2	1	Resources Not Reserved	Void		Void	
1	4	1	2	2	Resources Not Reserved	Void		Void	
1	4	1	2	3	Resources Not Reserved	Void		Void	
1	4	2	2	1	Ok	Ok	0.00e+00	Ok	15.5
1	4	3	2	1	Ok	Ok	0.00e+00	Ok	15.0
1	4	4	2	1	Ok	Ok	0.00e+00	Ok	15.0
1	4	2	2	2	Ok	Ok	0.00e+00	Ok	15.5
1	4	3	2	2	Ok	Ok	0.00e+00	Ok	15.5
1	4	4	2	2	Ok	Ok	0.00e+00	Ok	16.5
1	4	2	2	3	Ok	Ok	0.00e+00	Ok	15.5
1	4	3	2	3	Ok	Ok	0.00e+00	Ok	15.0
1	4	4	2	3	Ok	Ok	0.00e+00	Ok	15.5

Figure 35. WCDMA loop test report

The results in the report are comprised in a way that the fully successful loops are at the bottom of the page and the loops that are not, are on the top of the page. However, “Resources Not Reserved” does not indicate a failed result, rather that they are reserved in other use than this test.

Unexpected outcome

If parts of the test are not ok, it is recommended to run the test again with the failed units. In case the results do not change, the units in question should be replaced:

- if the test fails through one WTR, but not through other WTRs, replace the WTR
- if the test fails though one WSP, but not through other WSPs, replace the WSP
- if the test fails through one WAM subrack, but not through other WAM subracks, replace the WAM

If replacing the units does not rectify the situation, the fault is then with cabling or the cabinet.

2.3.21 Defining BTS output power test

Purpose

Running the BTS output power test after commissioning is optional.

Before you start

Before running any tests the BTS should be commissioned and transmitter testing equipment should be connected to the BTS antenna connector.

The BTS should be reset to test state before running the BTS output power test.

1. Select Reset to test state command from the Tests menu.

Figure 36. Tests menu

You can follow the BTS reset status in the Reset to Test State dialog box.

Note

For integrated BTSs (I_{UB} connected) the resets takes about 5 minutes. For stand-alone BTSs the reset is faster.

---

2. Wait for the notification “The site is now ready for testing” and then click Close.

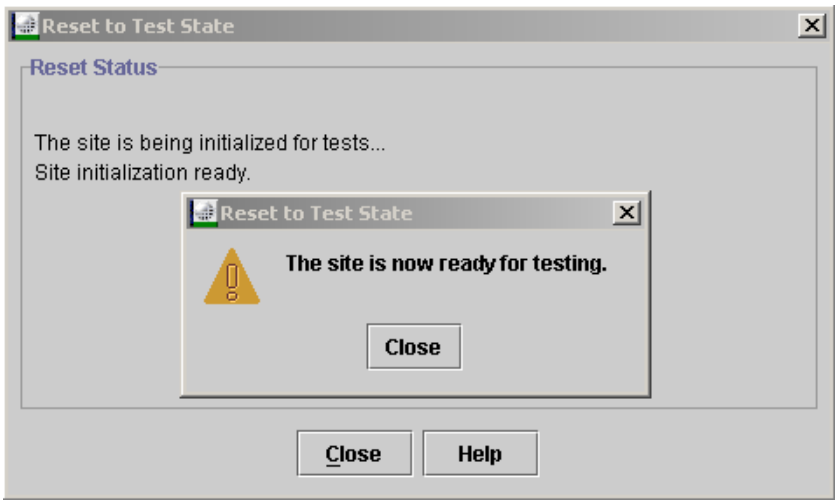


Figure 37. Ready for testing notification

The site is now reset and ready for testing.

Steps

1. **Select the Test Models command from the Tests menu to bring up the test models page.**

Figure 38. Tes model command in Tests menu

The test models page is for testing the BTS cells with up to four test models. Test Model 1 is for testing the BTS output power test.

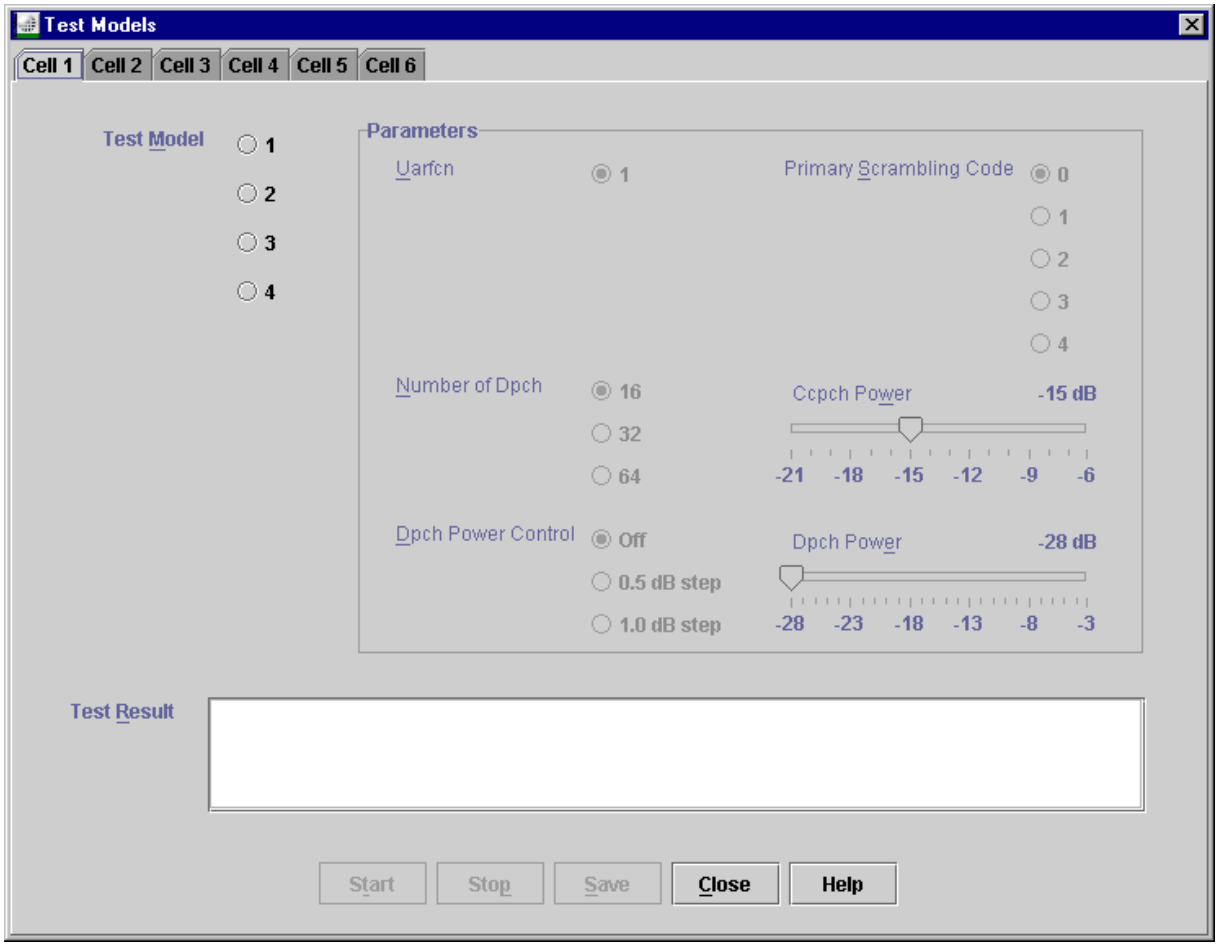


Figure 39. Test models dialog box

2. Connect your external power meter to the antenna port of the BTS cell to be tested.

3. Select the cell from the tabbed cell pages.

4. Select the Test Model 1 to be run.

Note

Run the Test Model 1 for only one cell at a time.

Parameters area on the right side of the dialog box describes the test model parameters in detail. The BTS output power test utilises only the Number of Dpch and Primary Scrambling Code parameters.

Note

For Number of Dpch only 16 channels are recommended.

---

5. **Click Start to run the test model one.**

6. **Type the reading from your external power meter to the Test Result box at the bottom of the dialog box.**

7. **Click Save after you have run the desired tests to save the results.**

   If the WCDMA BTS Manager finds a commissioning report of the same date, it will automatically add the test results into that commissioning report. If there is no commissioning report for that particular day to be found, you can save the test results as a text file.

8. **After you have run the desired tests, click Close to end the testing.**

9. **Reset the BTS to leave the test state.**

   You can utilise the reseting feature of the Object Control dialog box from the Object menu.

2.4 Commissioning AXC of UltraSite EDGE BTS with WCDMA Upgrade

2.4.1 Checklist for starting to commission AXC

Before starting to commission the Nokia AXC check that:

- the equipment has been installed in accordance to instructions
- the Local Management Tool (LMT) is compliant with the hardware and software requirements specified in *AXC Manager and AXC-FB Hopper Manager system requirements*

- the network properties of the LMT have been set as described in *Configuring network properties of the LMT*
- the Nokia AXC Manager has been installed on the LMT as described in *Installing Nokia AXC Manager from NOLS*
- the AXC-FB Hopper Manager and the GCS R4.2 have been installed on the LMT as described in the *FlexiHopper and MetroHopper with IFUE User Manual* (only if IFUE is installed)
- you have access rights to the managed Nokia AXC
- you have all the necessary commissioning information available

The instructions are based on the assumption that the user knows how to use basic computer software. At least the following actions are needed: installing SW, uninstalling SW and changing the IP address in the PC.

2.4.2 Configuring network properties of LMT

Purpose

The network properties of the Local Management Tool (LMT) have to be set up correctly.

Before you start

Note

IP addresses 192.168.254.xxx and 192.168.255.xxx should not be configured. These subnets are reserved for inter-unit communication protocol of BTS internal components.

Steps

1. **Set the IP address to 192.168.255.130**
2. **Set the Subnet to 255.255.255.0**
3. **Set the Default gateway to 192.168.255.129**

2.4.3 Connecting to AXC

Purpose

You can connect to the AXC either locally or remotely. Through the Local Management Port (LMP) of the AXU you can access the AXC you are physically connected to. Once the Data Communications Network (DCN) has been configured, it is possible also to access any AXC node within the same network.

Before you start

Check that:

- You have a crossed Ethernet cable with RJ-45 connector available
- You know the IP address of the AXC to be managed (remote connection)

Steps

1. **Connect the Local Management tool (LMT) to the LMP with the communication cable**

2. **Start the Nokia AXC Manager**

   Start your computer and Microsoft Windows. Start the Nokia AXC Manager from the Start menu (**Start → Programs → Nokia AXC Manager C2.0 → Nokia AXC Manager C2.0**).

3. **Login to the AXC**

   Click **File → Connect...**.

   The Network Element Login window opens.

   Check the **Connect To Remote Host** box if you want to establish a remote connection.

   To log in the Nokia AXC enter:

   - host name if Domain Name Server (DNS) is available or IP address (default gateway address specified in *Configuring network properties of the LMT*)
   - default name: Nemuadmin
   - default password: nemuuser

Note

Name and password are case sensitive. It is recommended to change the default password. For more information see *Changing AXC account.*

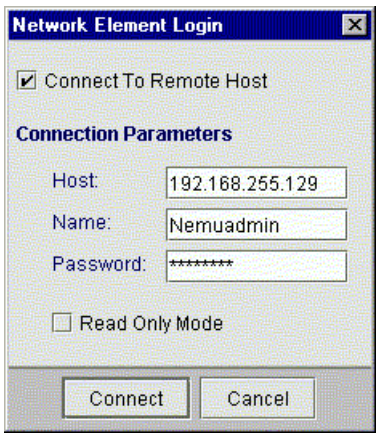


Figure 40. Network Element Login window>

4. Click Connect and wait for the connection to be established

2.4.4 Commissioning AXC with XML configuration file

Purpose

All parameters needed to configure the Nokia AXC are defined in the planning phase.

For automated commissioning an XML file containing the necessary parameters is created. This XML file can be created for example with NetAct Transmission Planner, which is also the recommended tool for doing I_{ub} dimensioning for the AXC. The result of this phase is a network element independent XML file.

The XML file is then imported to NetAct Plan Editor that is used to convert the XML file to a Nokia AXC specific XML configuration file called an AML file. With Plan Editor it is also possible to include additional parameters to the XML file. After this the AML file can be exported to the AXC for automated commissioning.

The XML configuration file is transferred from PlanEditor to Nokia AXC either locally or remotely. In local XML file transfer the XML configuration file is transferred directly from PlanEditor to the Local Management Tool (LMT). The file is downloaded to the Nokia AXC when the AXC Manager that is installed to the LMT is connected directly to the Nokia AXC. In remote XML file transfer the XML configuration file is transferred to NetAct Radio Access Configurator where the Site Configuration Tool (SCT) organises the files to the particular sites. The Nokia AXC Manager running in the NetAct Radio Access Configurator transfers the configuration file.

The Nokia AXC also supports partial AML configuration. The AML file can be parsed and activated immediately without resetting the AXC. This means that the configuration in the AML file will be taken into use on top of the current AXC configuration.

Before you start

Note

The maximum supported sum of VPI/VCI bits is 13 on up to 14 physical/logical interfaces. VPI cannot exceed 8 bits. The default range per interface is 4 bits for VPI and 7 bits for VCI. Up to 32 interfaces can be configured to a VPI/VCI bit range of 12 bits.

Note

Virtual Channel values lower than 32 are configurable but they should not be used. These values are reserved by standardisation bodies for other purposes.

Note

VC 21 in Virtual Path 0 is configurable but should not be used. It is reserved for support of ATM end-to-end management option (Neighbour Node Discovery (NND) feature in AXC).

Note

You can restore the AXC Manager to factory default settings by downloading a special XML configuration file (AXC_C2.0final_Factory_Defaults.xml) This file is delivered as part of the Nokia AXC Manager and can be found in the AXC Manager data files (for example Program files\Nokia AXC Manager C2.0\File Storage). All configurations of the AXC will be deleted when this file is activated. Therefore, the Data Communication Network (DCN) connection will be lost if the activation is done remotely.

Check that:

- the AML configuration file has been prepared and is available
- the Nokia AXC has access to the location of the AML configuration file, for example Local Management Tool (LMT) or a database in NetAct
- the prerequisites listed in *Checklist for starting to commission the AXC* are fulfilled

The AXC Manager contains a File Transfer Protocol (FTP) server. This AXC integrated FTP server does not need to be configured, and it is activated automatically when necessary. If the AML configuration files or software packages are located on the same PC as the AXC Manager, no external FTP server needs to be configured. For remote file transfer an external FTP server has to used.

Note

If the AXC Manager integrated FTP server is used, all other FTP servers running on the same PC must be closed to avoid port conflicts.

Note

If a remote FTP server is used, make sure that the AML configuration file is accessible to the AXC and that the FTP server is running and it is online. For more information, see relevant documentation.

Steps

1. Downloading the AML configuration file locally

Purpose

In local AML configuration download the AML configuration file is located on the same PC as the AXC Manager.

Steps

a. Start the AML configuration file download

Click **Node → Import configuration...** in the Nokia AXC Manager. The Import Configuration window opens.

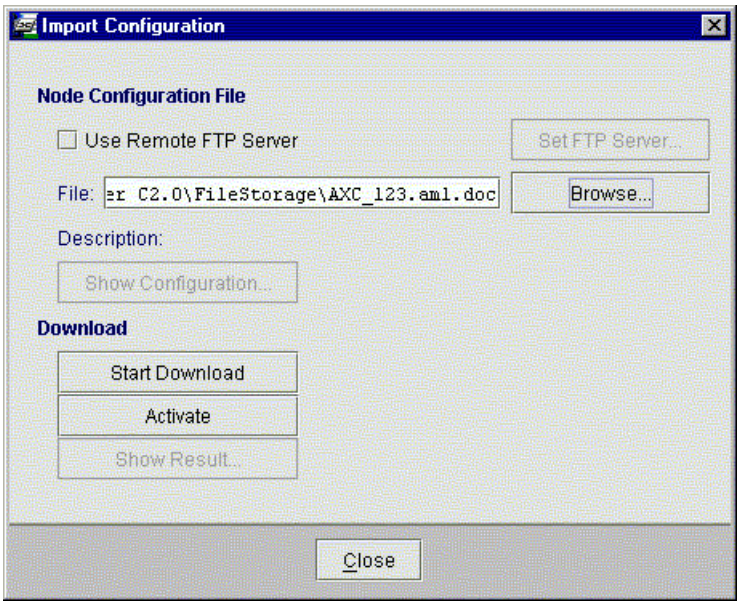


Figure 41. Import configuration

b. Download the AML file

Click **Browse** and select the AML file in the Select Node Configuration for Import window. Click **Open**.

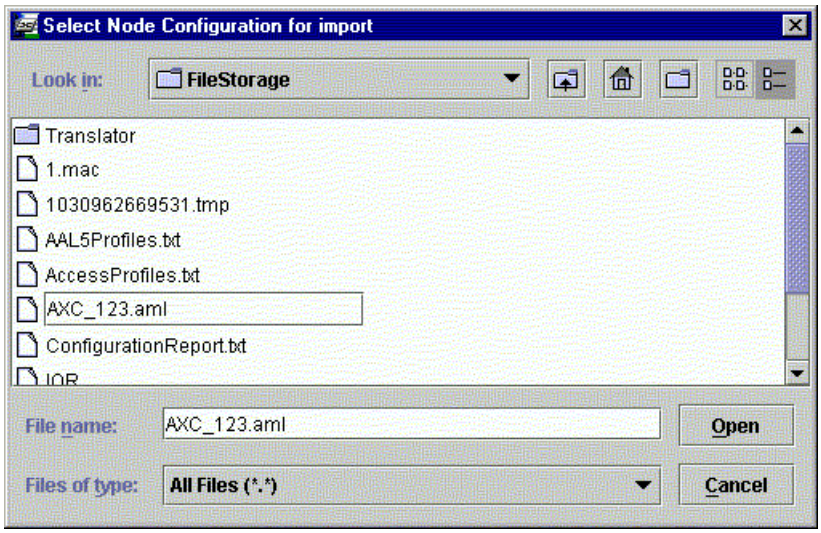


Figure 42. Select node configuration for import

Click **Start Download** in the Import Configuration window to start the download of the AML file.

After the AML configuration download is complete a message is displayed.

c. Activate the configuration

Activate the AML configuration by clicking **Activate**. Verify the activation in the Activate Restored Node Configuration window.

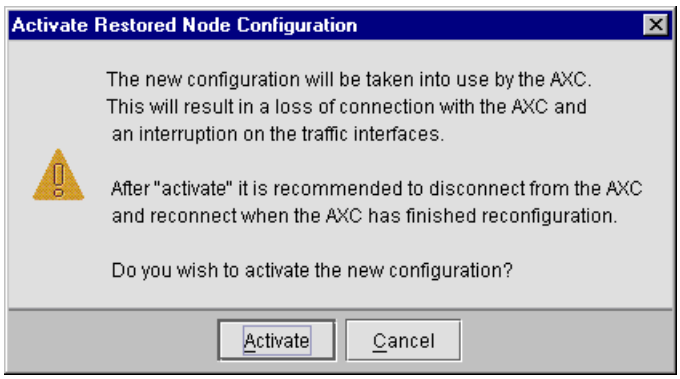


Figure 43. Activate restored node configuration

2. Downloading the AML configuration file remotely

Purpose

In remote AML configuration download the AML configuration file is located on a remote system (PC).

Steps

a. Start the AML configuration file download

Click **Node → Import configuration...** in the Nokia AXC Manager. The Import Configuration window opens.

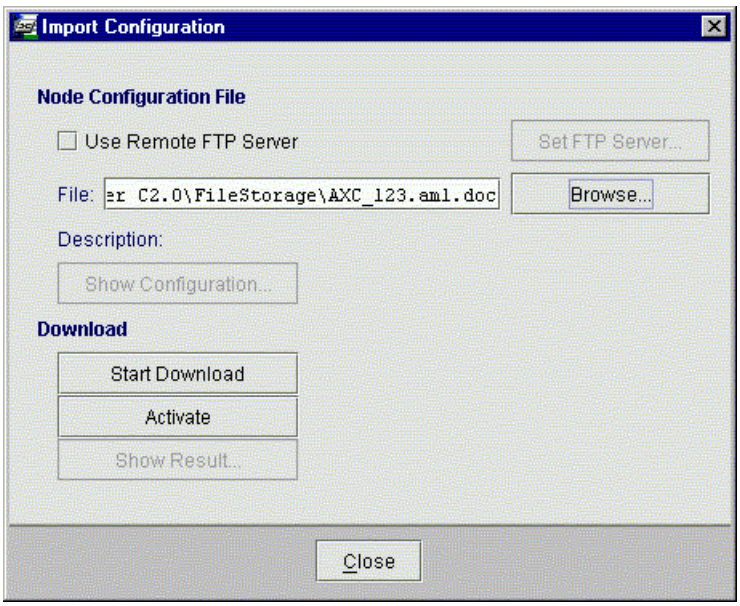


Figure 44. Import configuration

b. Set the FTP server

Select **Use Remote FTP server** and click **Set FTP server**. If the box is not selected the FTP server integrated in the AXC Manager will be used.

Define the following information for the FTP session:

- username: the relevant username of the remote FTP server
- password: password configured for the user
- host: IP address of the FTP server or host name if Domain Name Server (DNS) is available

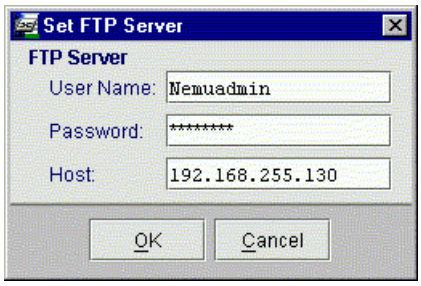


Figure 45. Set FTP server

c. Download the AML file

Enter the path and name of the AML configuration file (relative to the root directory of the FTP server).

d. Activate the configuration

Activate the AML configuration by clicking **Activate**. Verify the activation in the Activate Restored Node Configuration window.

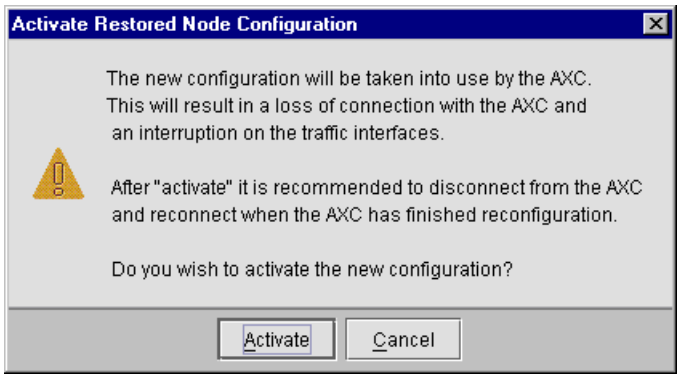


Figure 46. Activate restored node configuration

Expected outcome

In case of complete AML configuration the Nokia AXC will reset after activation, and the new configuration will delete all other configurations.

In case of partial AML file download the AXC does not reset, and the configuration in the AML file will only add to the existing configuration and not delete it.

Note

If the complete AML configuration file is remotely applied, the Nokia AXC will lose the DCN connection after the AML file activation. The Nokia AXC will use the new DCN connection and register to Nokia NetAct after the configuration is completed.

Verification

Once the automated commissioning is completed the results can be checked with the AXC Manager.

Click **Show results** in the Import Configuration window.

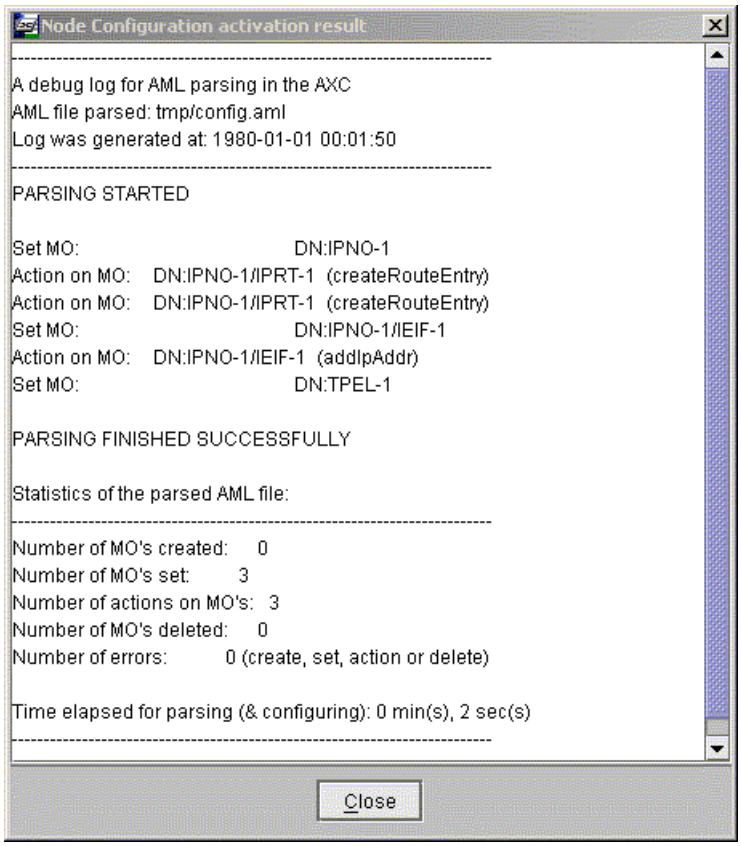


Figure 47. Node configuration activation result

In the Node Configuration activation result window you can view the results of the AML download. All objects that have been deleted and created are shown, as well as all errors that occurred during parsing. If an error occurs in any line of the AML configuration file, the results show where it occurred.

2.5 WCDMA Manual commissioning of UltraSite EDGE BTS with WCDMA Upgrade

2.5.1 Overview of commissioning AXC manually

Purpose

The AXC can be commissioned either manually or automatically by *downloading an AML configuration file to the AXC*. In manual commission all necessary parameters are configured manually.

Before you start

Check that:

- the prerequisites listed in *Checklist for starting to commission the AXC* are fulfilled

---

Note

The general constraints to be taken into account when commissioning the AXC are listed in *Interface configuration constraints*.

Note

The AXC Manager automatically detects and configures the installed units. The installed hardware units can also be configured manually.

Steps

1. **Login to the AXC with the Nokia AXC Manager**
2. **Check the software version of the AXC and *change the software version* if necessary**

   You can check the software version in the AXC Manager hardware view by selecting the AXC pane.
3. **Configure the *PDH interface settings* and *SDH interface settings***

4. ***Configure the synchronisation settings***

5. ***Create Traffic Descriptors* and *modify Access Profiles* if necessary**

6. ***Configure ATM interfaces***

7. ***Configure the BTS AAL2 Multiplexing settings***

8. **Create *Virtual Path* and *Virtual Channel* connections on the ATM interfaces**

9. ***Configure the public IP address***

10. ***Configure the Data Communications Network (DCN) settings***

11. ***Configure the IP management settings***

12. ***Configure NTP servers***

13. ***Configure the management protocol settings***

14. ***Configure the AXC Q1 Support Function* if necessary**

15. **Inspect the settings**

    Inspect the settings you have made, and if the operation of the AXC is in order, proceed with the steps below.

16. **Save AML file**

    Generate an AML file containing the configuration (**Node → Export configuration...**) and store it in a safe place for later use (configuration backup).

17. ***Close the connection to the AXC***

18. **Verify the configuration**

19. **Store the item code and serial number report**

    It is recommended to store the network configuration on individual unit serial number level to enable fast and efficient search in the network, in case such information is needed. For more information see *Storing item code and serial number for traceability purposes.*

2.6 Configuring transmission interfaces of UltraSite EDGE BTS with WCDMA Upgrade

2.6.1 Configuring PDH interfaces

Purpose

The PDH interfaces (E1/JT1/T1) can be deployed as:

- Standard links
- Circuit Emulation Service (CES) links
- Inverse Multiplexing for ATM links (IMA links)
- ATM over fractional interfaces

In addition, Q1 Embedded Operation Channels (EOC) can be configured on the E1 and E1 within Flexbus interfaces.

Before you start

In the AXC Manager the IFUE is displayed as an IFU with 16 E1 interfaces and 3 Flexbus interfaces (greyed out). The ATM part of the IFUE is treated as any other IFU and can therefore be configured with the AXC Manager. Flexbus-related configurations are done with the Nokia AXC-FB Hopper Manager.

Steps

1. Select the interface in the Hardware view.

Select the appropriate interface in the Interface pane of the Hardware view. Click **Modify**. The Modify Interface window opens.

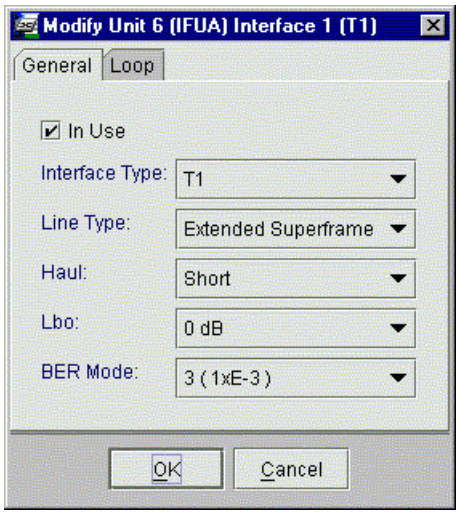


Figure 48. Modify PDH interface

2. Take the interface into use.

Check the **In use** box.

3. Check the transmission standard (PDH interface type) and line type.

If necessary, select another standard from the list (selectable only for IFUA).

The available standards for the PDH interface units are:

- IFUA: E1, JT1, T1
- IFUB: JT2
- IFUD: E1
- IFUE: E1

Note

If you change the PDH interface type between E1/JT1/T1 the change will be applied to all interfaces of the unit. You are informed that in this case all traffic will be cut off.

Note

No mixed configurations of E1/JT1/T1 are allowed on the same IFU.

The available line types are the following:

- E1: MultiFrame G704 (default, CRC on), DoubleFrame G704 (CRC off)
- T1: Extended SuperFrame (default, CRC on), SuperFrame (CRC off)
- JT1: Extended MultiFrame
- JT2: 4 Frame MultiFrame

4. Modify the Haul, Lbo and BER settings.

Modify the settings:

- Haul (Short/Long) for JT2 interfaces. For E1/JT1/T1 the haul type is configured automatically according to the received signal level.
- Line Build Out (Lbo): 0dB (default), 7.5dB, 15dB. 0dB is the highest Tx power output for the line interface, and can be attenuated in steps of 7.5 and 15 dB in order to avoid overloading the interface. Lbo has to be defined for JT1 and T1 interfaces.
- Bit error rate (BER). The possible values are 10^{-3} (default), 10^{-6}. BER has to be defined for E1/JT1/T1 interfaces.

5. Send the changes to the node.

Click **OK** to send the changes to the node and close the Modify Unit window.

2.6.2 Configuring CES Interworking function

Purpose

Circuit Emulation Service (CES) for structured or unstructured E1/JT1/T1 allows to map TDM traffic into ATM cells. CES is supported on IFUA, IFUD and IFUE (unstructured).

Before you start

Note

A mixed configuration of structured/unstructured CES is allowed on the same IFUA/D.

Note

Up to 32 CES connections can be supported by the Nokia AXC. Each CES connection is equivalent to one logical ATM interface.

Note

Up to 8 x structured/unstructured CES are supported on IFUA/D and up to 16 x unstructured CES on IFUE.

Steps

1. Click Configuration → CES...

The Circuit Emulation Service (CES) window opens.

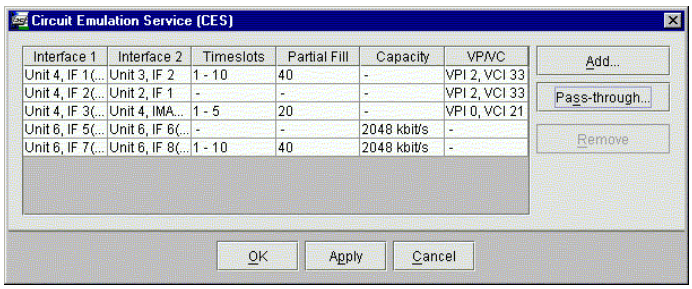


Figure 49. Circuit Emulation Service (CES) window

2. Click Add... to add a new CES Interworking Function.

The Add CES Interworking Function window opens.

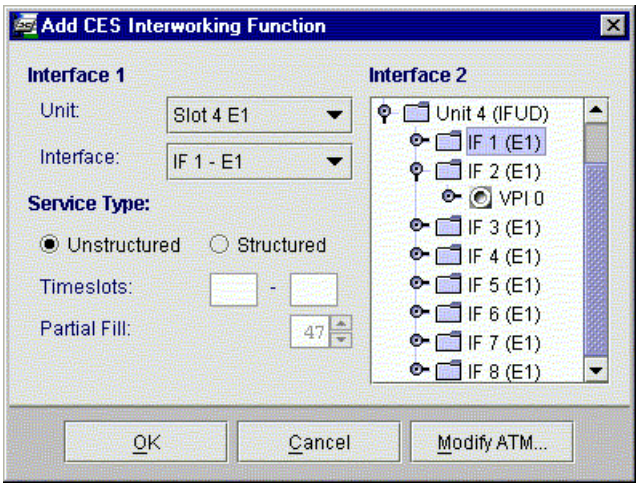


Figure 50. Add CES Interworking Function - unstructured

3. Select Interface 1.

Interface 1 is the interface carrying TDM traffic.

Select the Unit and Interface from the drop down lists on the left side of the window.

4. Select Interface 2.

Interface 2 is the interface carrying ATM traffic.

Select the Virtual Channel from the tree view on the right side of the window.

If you want to create a new Virtual Channel click **Modify ATM**. For more information see *Configuring ATM interface*.

The Peak Cell Rate (PCR) of the Virtual Channel used for CES must be adequate. The minimum PCR for structured CES with partial fill can be counted with the following formula:

8000 x number of timeslots/partial fill x 1/0.95. This allows for a 95 per cent load of the Virtual Channel.

The following are examples of Peak Cell Rates needed for VCs carrying CES links:

- E1 unstructured (32 timeslots) 5733 cells/s
- E1 structured (31 timeslots) 5554 cells/s
- JT1/T1 unstructured and structured 4300 cells/s

5. Select the Service Type.

Select the Service Type: Structured or Unstructured.

For Structured CES define also the following settings:

- Timeslots used for transporting TDM signals. The available timeslot range for E1 is 1 - 31 and for JT1 and T1 1 - 24. The timeslot range must be continuous.
- Partial Fill 4 - 47. Partial Fill Value is required to limit the delay that is introduced to fill the 47 bytes AAL1 payload by the segmentation and reassembly function. Partial fill represents the number of bytes that carry payload (filling bytes). The smaller this value is, the more dummy bytes need to be inserted.

Note

Partial Fill must be equal to or higher than 4 x number of timeslots selected for structured CES. From 12 timeslots upwards Partial Fill 47 must always be selected. The structured service supports one contiguous group of timeslots.

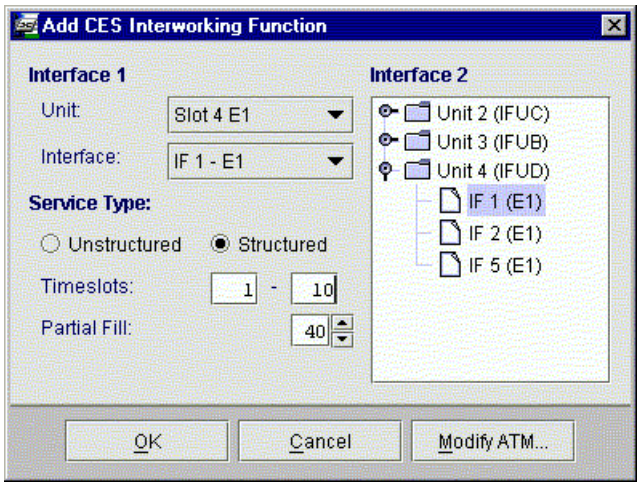


Figure 51. Add CES Interworking Function - structured

6. Send the changes to the node.

Click **OK** in the Add CES Interworking Function window.

Click **OK** in the Circuit Emulation Service (CES) window to send the changes to the node and close the window, or **Apply** to send the changes and keep the window open.

2.6.3 Configuring CES pass-through

Purpose

The Circuit Emulation Service (CES) pass-through function of the Nokia AXC is an internal CES function that allows to perform a TDM cross-connection by setting up a circuit emulation service simultaneously on two AXC interfaces with an associated ATM connection. Pass-through is available for the IFUA, IFUD and IFUE (unstructured) interface units.

Before you start

Note

A mixed configuration of structured/unstructured CES is allowed on the same IFUA/D.

Note

Up to 32 CES connections can be supported by the Nokia AXC. Each CES connection is equivalent to one logical ATM interface.

Note

Up to 8 x structured/unstructured CES supported on IFUA/D and up to 16 x unstructured CES on IFUE.

Steps

1. Click Configuration → CES...

The Circuit Emulation Service (CES) window opens.

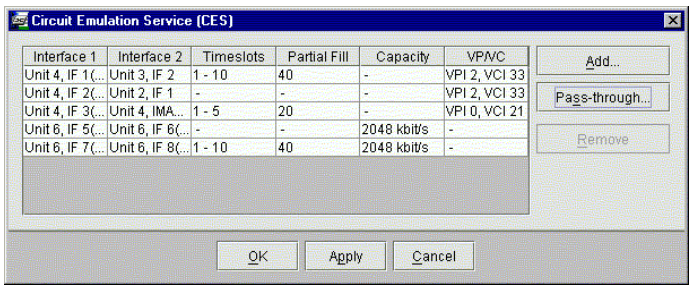


Figure 52. Circuit Emulation Service (CES) window

2. Click Pass-through... to add a new pass-through connection.

The Add Pass-through window opens.

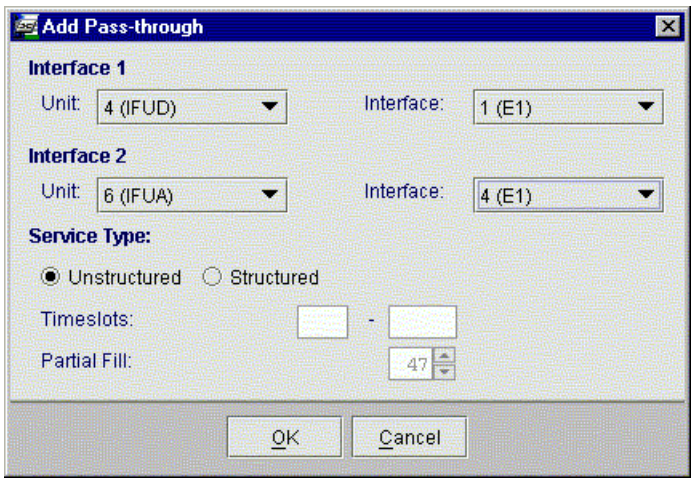


Figure 53. Add pass-through - unstructured

3. Select Interface 1 and Interface 2.

Select the Unit and Interface from the list for Interfaces 1 and 2.

4. Select the Service Type.

- Timeslot used for transporting TDM signals. The available timeslot range for E1 is 1 - 31 and for JT1 and T1 1 - 24.
- Partial Fill 4 - 47. Partial Fill Value is required to limit the delay that is introduced to fill the 47 bytes AAL1 payload by the segmentation and reassembly function. Partial fill represents the number of bytes that carry payload (filling bytes). The smaller this value is, the more dummy bytes need to be inserted.

Note

Partial Fill must be equal to or higher than 4 x number of timeslots selected for structured CES. From 12 timeslots upwards Partial Fill 47 must always be selected. The structured service supports one contiguous group of timeslots.

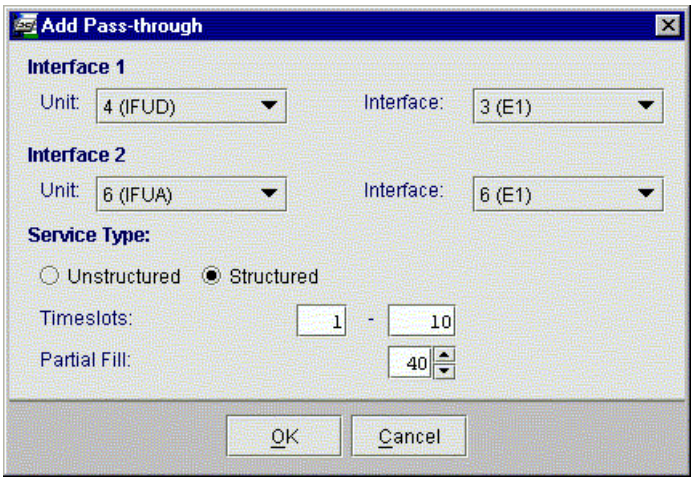


Figure 54. Add pass-through - structured

5. Send the changes to the node.

Click **OK** in the Add Pass-through window.

Click **OK** in the Circuit Emulation Service (CES) window to send the changes to the node and close the window, or **Apply** to send the changes and keep the window open.

2.6.4 Configuring fractional interfaces

Purpose

PDH interfaces can be configured as fractional interfaces. ATM over fractional E1/JT1/T1 enables the use of partial E1/JT1/T1 links for the transport of ATM traffic. With the help of an external PDH 64k multiplexer it is possible to combine 3G traffic over the fractional interfaces with existing 2G traffic without disturbance.

Steps

1. Click Configuration → Fractional interfaces...

The Fractional Interfaces window opens.

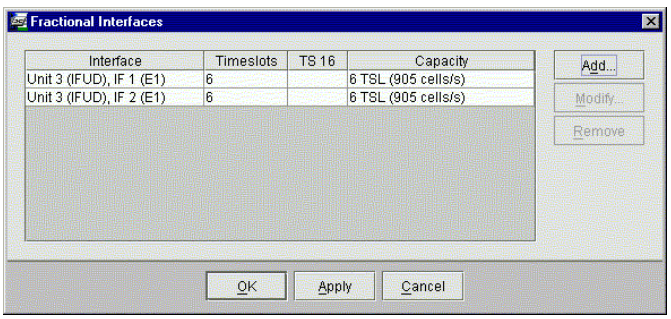


Figure 55. Fractional Interfaces window

2. Click Add... in the Fractional Interfaces window.

3. Select the unit and interface on which you want to create a fractional interface.

Only interfaces that are not already configured as fractional are shown in the list.

4. Define the Timeslots for ATM traffic.

The timeslots available for E1 are 1-31, for JT1 1-24 and for T1 1-24, the fragment always starts from timeslot 1 and is continuous. For E1 interfaces Use Timeslot 16 can be selected if the selected end timeslot is over 15. The use of timeslot 16 is optional to optimise bandwidth utilisation.

Note

Timeslot 16 can be used for Channel Associated Signalling (CAS) in Time-division Multiplexing (TDM) networks. In Nokia 3G RAN networks, TS 16 can carry Q1 Embedded Operation Channels (EOC).

The window displays the capacity of the ATM fragment.

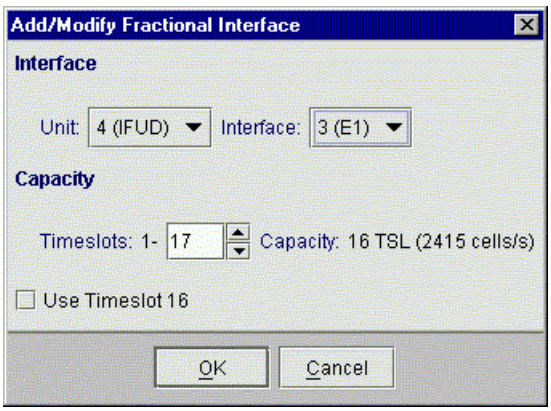


Figure 56. Create fractional interface

5. Send the changes to the node.

Click **OK** to close the Add/Modify fractional interface window. Click **Add...** if you want to create another fractional interface.

Click **OK** to send the changes to the node and close the Fractional interfaces window, or **Apply** to send the changes and keep the window open.

2.6.5 Configuring IMA settings

Purpose

PDH interfaces can be configured as Inverse Multiplexing for ATM (IMA) links. Inverse multiplexing for ATM (IMA) is a technique by which ATM traffic can be distributed between several lower bandwidth PDH links, and then recombined again at the far end.

Before you start

Note

The IMA group has to be created at both ends of the physical link.

Note

Fractional interfaces cannot be used for IMA.

Note

Do not take the PDH interfaces into use before configuring the IMA group. The PDH interfaces will be automatically taken into use after the IMA group has been created.

Steps

1. **Click Configuration → IMA...**

   The Inverse Multiplexing for ATM (IMA) window opens.

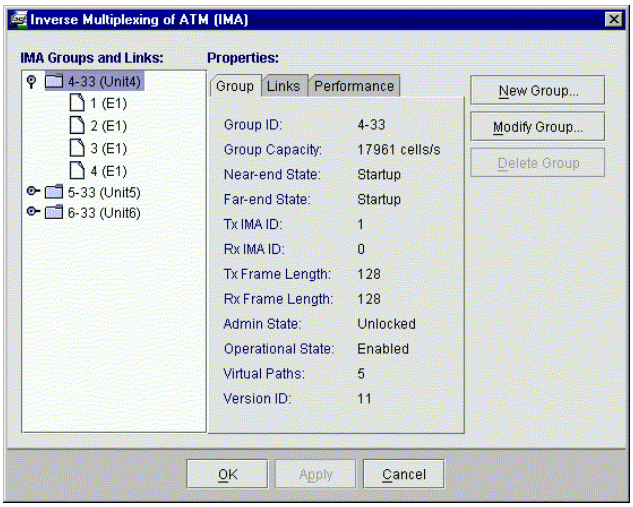


Figure 57. Inverse Multiplexing for ATM (IMA) window

2. Click New Group... in the Inverse Multiplexing for ATM (IMA) window

The New IMA Group window opens.

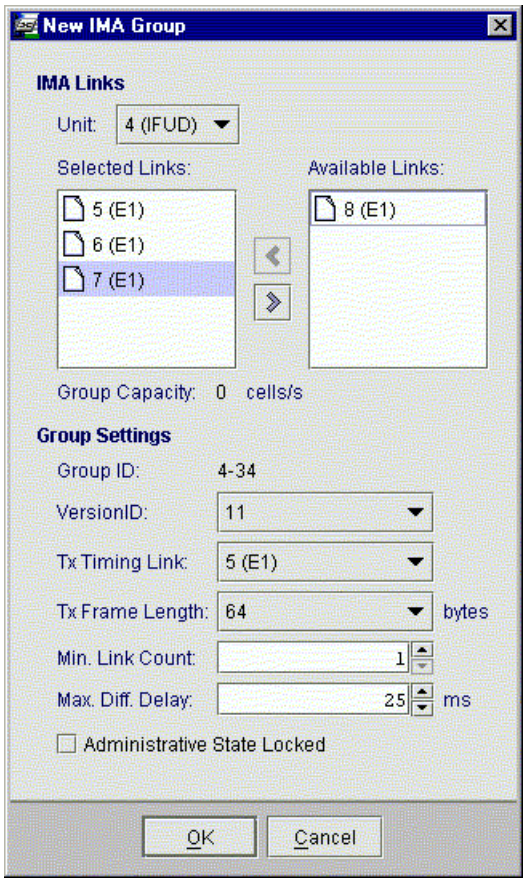


Figure 58. Create new IMA group

3. Select the interface unit on which you want to create the IMA group

4. Select the links to be included in the IMA group

Select the IMA links to be included in the IMA group from the list of available links using the arrow buttons. The links will be added to the list of Selected Links. The Group Capacity is displayed. The links have to be located on the same IFU.

Note

The maximum number of IMA groups and links is the following:

- IFUA: 1 to 4 IMA groups, with 1 to 8 E1/JT1/T1 links per IMA group
- IFUD: 1 to 4 IMA groups, with 1 to 8 E1 links per IMA group
- IFUE: 1 to 8 IMA groups, with 1 to 8 E1 links per IMA group

---

5. Define settings for the IMA group

Define the following settings for the IMA group:

- Version ID: Version of the IMA standard to be applied: 10 (af-phy-0086.000) or 11 (af-phy-0086.001)
- desired Tx Timing Link. The received timing information of this IMA link is used as reference for all IMA links of this IMA group in TX direction (Common Transmit Clock Mode (CTC)).
- desired Tx Frame Length of the IMA group in the transport direction. The possible values are 32, 64, 128 (default) and 256. For example 128 means that 1 cell is used for IMA messages and 127 cells for ATM payload. The Tx Frame length must be equal on local and remote sites.
- Min. Link Count: the minimum number of IMA links required to keep the IMA group active. The possible values are 1 to number of configured IMA links. The default value is 1.
- Max. Diff. Delay: the maximum allowed differential delay in the physical link. The possible values are 0 to 25 ms. The default value is 25 ms.
- Administrative State Locked. Administrative State means permission to use (Unlocked), or prohibition against using the resource (Locked), imposed through management services.

The AXC Manager creates the Group ID automatically after checking the already assigned IDs in the slot. The range of IDs is from 33 to 99 per slot, so that 33 is assigned to the first group and incremented by 1 for the next group.

6. Send the changes to the node

Click **OK** to close the New IMA Group window. Click **New Group...** if you want to create another IMA group.

Click **OK** to send the changes to the node and close the Inverse Multiplexing for ATM window, or **Apply** to send the changes and keep the window open.

2.6.6 Configuring IMA settings

Purpose

PDH interfaces can be configured as Inverse Multiplexing for ATM (IMA) links. Inverse multiplexing for ATM (IMA) is a technique by which ATM traffic can be distributed between several lower bandwidth PDH links, and then recombined again at the far end.

Before you start

Note

The IMA group has to be created at both ends of the physical link.

Note

Fractional interfaces cannot be used for IMA.

Note

Do not take the PDH interfaces into use before configuring the IMA group. The PDH interfaces will be automatically taken into use after the IMA group has been created.

Steps

1. **Click Configuration → IMA...**

   The Inverse Multiplexing for ATM (IMA) window opens.

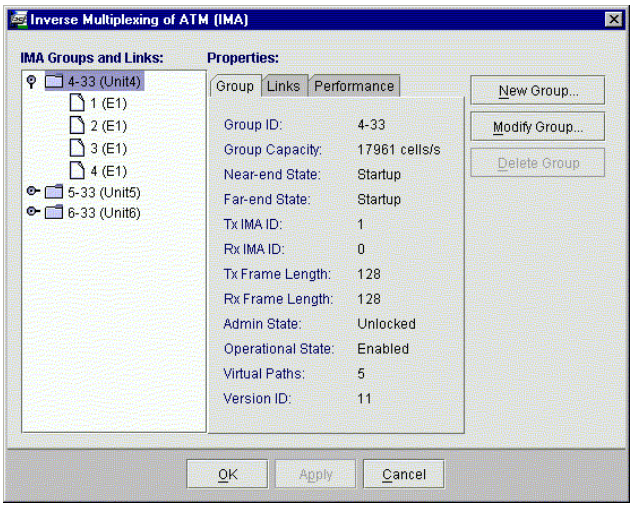


Figure 59. Inverse Multiplexing for ATM (IMA) window

2. Click New Group... in the Inverse Multiplexing for ATM (IMA) window

The New IMA Group window opens.

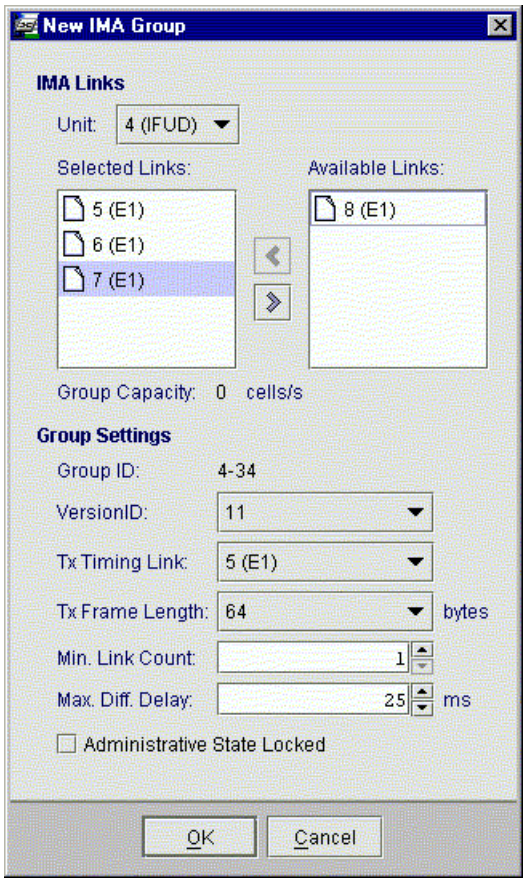


Figure 60. Create new IMA group

3. Select the interface unit on which you want to create the IMA group

4. Select the links to be included in the IMA group

Select the IMA links to be included in the IMA group from the list of available links using the arrow buttons. The links will be added to the list of Selected Links. The Group Capacity is displayed. The links have to be located on the same IFU.

Note

The maximum number of IMA groups and links is the following:

- IFUA: 1 to 4 IMA groups, with 1 to 8 E1/JT1/T1 links per IMA group
- IFUD: 1 to 4 IMA groups, with 1 to 8 E1 links per IMA group
- IFUE: 1 to 8 IMA groups, with 1 to 8 E1 links per IMA group

---

5. Define settings for the IMA group

Define the following settings for the IMA group:

- Version ID: Version of the IMA standard to be applied: 10 (af-phy-0086.000) or 11 (af-phy-0086.001)
- desired Tx Timing Link. The received timing information of this IMA link is used as reference for all IMA links of this IMA group in TX direction (Common Transmit Clock Mode (CTC)).
- desired Tx Frame Length of the IMA group in the transport direction. The possible values are 32, 64, 128 (default) and 256. For example 128 means that 1 cell is used for IMA messages and 127 cells for ATM payload. The Tx Frame length must be equal on local and remote sites.
- Min. Link Count: the minimum number of IMA links required to keep the IMA group active. The possible values are 1 to number of configured IMA links. The default value is 1.
- Max. Diff. Delay: the maximum allowed differential delay in the physical link. The possible values are 0 to 25 ms. The default value is 25 ms.
- Administrative State Locked. Administrative State means permission to use (Unlocked), or prohibition against using the resource (Locked), imposed through management services.

The AXC Manager creates the Group ID automatically after checking the already assigned IDs in the slot. The range of IDs is from 33 to 99 per slot, so that 33 is assigned to the first group and incremented by 1 for the next group.

6. Send the changes to the node

Click **OK** to close the New IMA Group window. Click **New Group...** if you want to create another IMA group.

Click **OK** to send the changes to the node and close the Inverse Multiplexing for ATM window, or **Apply** to send the changes and keep the window open.

2.6.7 Configuring Q1 EOCs

Purpose

Q1 Embedded Operation Channels (EOC) can be configured on the E1 and E1 within Flexbus interfaces. Via the Q1 Embedded Operation Channels within E1 frames the AXC Q1 Support Function can poll far-end Q1 network elements. Nokia AXC provides support for Q1 managed network elements connected to it. Nokia AXC contains a Q1 Support Function that acts as a master poller for Nokia Q1 managed equipment.

Before you start

Note

Q1 EOCs in E1 frames are configured with the Nokia AXC Manager and supported on IFUA, IFUD and IFUE. The EOCs are created on timeslot 0 or 16, and the location of the EOCs is common for all interfaces of a unit.

Note

Q1 information can also be mapped to the Flexbus overhead. This can be configured with the AXC-FB Hopper Manager. For more information see the *FlexiHopper and MetroHopper with IFUE User Manual.*

Steps

1. **Click Configuration → Q1 EOCs...**

   The Q1 EOCs window opens.

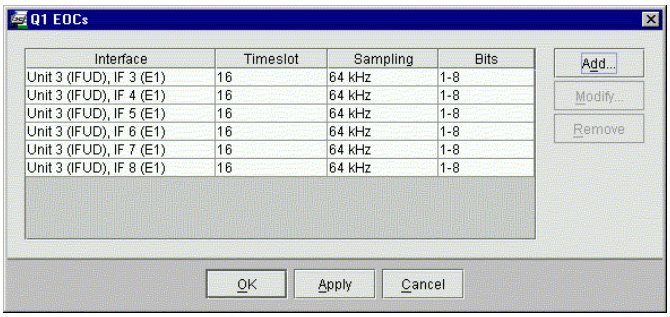


Figure 61. Q1 EOCs window

2. Click Add... in the Q1 EOCs window

The **Add...** button is enabled if there are E1 or Flexbus interfaces available that do not already have configured Q1 EOCs or are not configured as fractional interfaces.

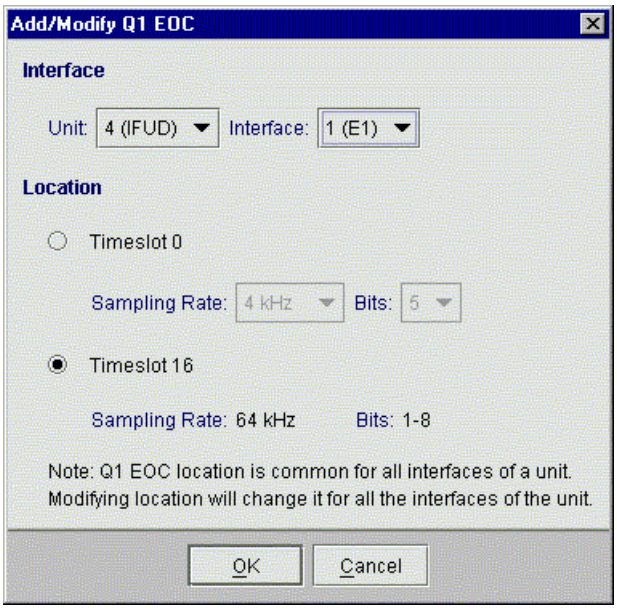


Figure 62. Add Q1 EOC

3. Define the unit, interface and location of the Q1 EOC

Define the Unit, Interface and Location (Timeslot 0 or Timeslot 16) of the Q1 EOC. For timeslot 0 you can modify the Sampling Rate and Bits.

Note

Never activate Q1 EOCs between two AXCs as this can cause Q1 bus conflicts.

The available sampling rates and bit positions are:

Table 3. Sampling rates and bit positions for timeslot 0 and timeslot 16

TS	Sampling rate	Bit position	Baud rate for Nokia equipment
0	4 kHz	5,6,7,8	600
0	8 kHz	5–6, 7–8	1200
0	16 kHz	5–8	2400
16	64 kHz	1 - 8	9600

4. Send the changes to the node

Click **OK** to close the Add/Modify Q1 EOC window. Click **Add...** if you want to configure another Q1 EOC.

Click **OK** to send the changes to the node and close the Q1 EOCs window, or **Apply** to send the changes and keep the window open.

2.6.8 Configuring SDH/Sonet interfaces

Purpose

SDH/Sonet interfaces can be configured as either STM-0 mapping VC-3, STM-1 mapping VC-4, OC-3 mapping STS-1 or OC-1 mapping STS-3c. Redundant SDH/Sonet links can also be established to protect operational links in case of a failure. For more information see *Interface Protection options.*

Steps

1. Select the interface in the Hardware view

Select the appropriate interface in the Interface pane of the Hardware view. Click **Modify**. The Modify Interface window opens.

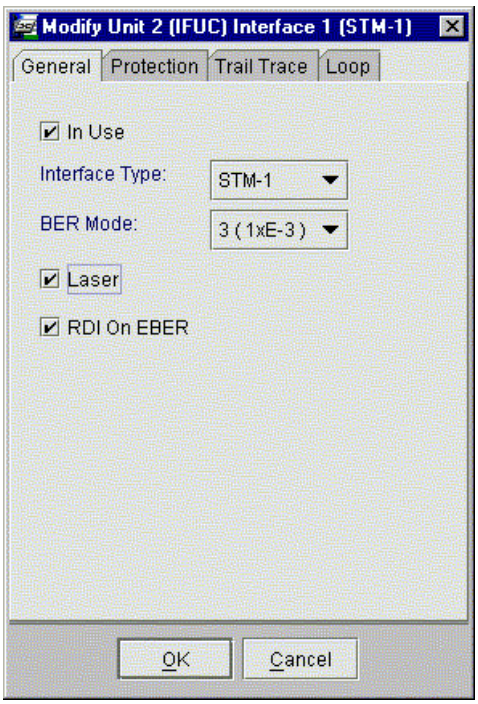


Figure 63. Modify SDH/Sonet interface, general settings

2. Check the Interface Type (STM-0/STM-1/STS-1/STS-3c)

If necessary, select another Interface Type from the list.

Note

If you change the SDH/Sonet interface type between STM-1/STM-0/STS-1/STS-3c all traffic on that interface will be cut off and all configurations will be lost. A mixture of these SDH/Sonet interface types is allowed on an IFUC.

---

3. Set the BER (Excessive Bit Error Rate) Mode

The possible values for BER Mode are 10^{-3} (default), 10^{-6}. The BER Mode indicates the threshold for raising an EBER alarm.

4. Select the following if necessary: Laser and RDI on EBER

Selecting Laser will switch on the laser on the interface. By default Laser is not selected.

Remote Defect Indication (RDI) On EBER means that the appearance of an EBER alarm will trigger the sending of the Remote Defect Indication signal. The default value is enabled.

5. Take the interface into use

Check the **In use** box.

6. Define the J0 identifier and J1 identifier settings

Select the Trail Trace pane.

Enter the values for Send ID and Expected ID. The send ID in the local node and the Expected ID in the remote node have to be equal. If the IDs do not match an alarm will be raised. The default value is NULL, which indicates that the ID will not be checked. You can enter a value with maximum 15 characters.

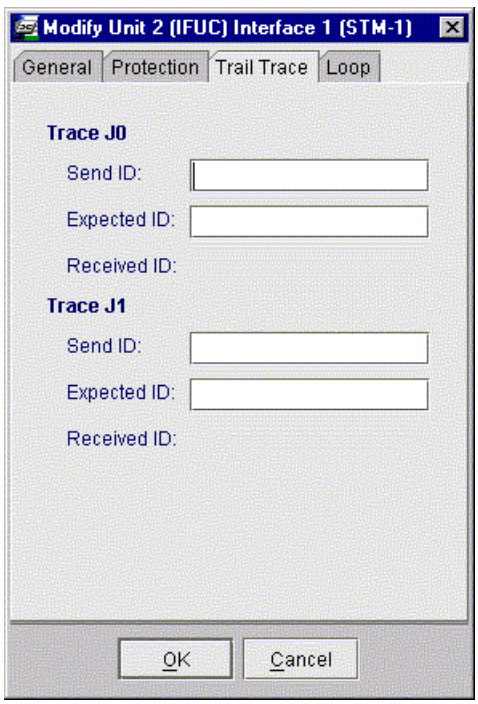


Figure 64. Modify SDH/Sonet interface, Trail Trace settings

7. Configure interface protection

Select the Protection tabbed pane.

Select the Protecting Unit and Protecting Interface from the list. The Protecting Interface can be either on the same or different unit as the protected interface.

Note

The AXC supports MSP1:1. MSP1:1 is interoperable with MSP1+1 (compatible with MSP1:n) implemented in Nokia RNC and third party equipment provided that the third party equipment supports MSP1:1 or MSP1+1 compatible with MSP1:n as described in G.783, Annex A.

The following rules apply to the Protecting Unit and Interface:

- interface 1 can be protected by interface 1 of any other IFU or any interface 3
- interface 2 can be protected by interface 2 of another IFU or any interface 3
- interface 3 can be protected by interface 3 of another IFU

It is recommended to reserve interface 3 as the Protecting Interface. Unit protection can be implemented easily by using an appropriate configuration, that is:

- interface 1 of the working unit is protected by interface 1 of a protecting unit
- interface 2 of the working unit is protected by interface 2 of a protecting unit
- interface 3 of the working unit is protected by interface 3 of the protecting unit

---

Note

Although a maximum of 8 SDH/Sonet interfaces is supported per AXC, there can be up to 7 additional SDH/Sonet interfaces for interface protection (MSP1:1).

Select the following if necessary:

- Revertive Operation. If Revertive Operation is selected the protection switches back to the working interface when the working interface is repaired after a failure. In non-revertive mode traffic will keep running on the protecting line even after the working line has been repaired. Non-revertive operation is the default option.
- Lock Group. If selected interface protection is disabled.
- Multiplex Section Protection (MSP) Protocol On. If deselected only local triggers will cause a switch to the protecting interface.

Note

MSP Protocol has to be switched on if the far end node provides MSP1:1 or MSP 1+1 (compatible with MSP1:n). If the far end node supports MSP1+1 (optimised), the MSP Protocol should be switched off.

- Mask Signal Degrade Trigger. If selected an EBER alarm will not cause a switch to the protecting interface.

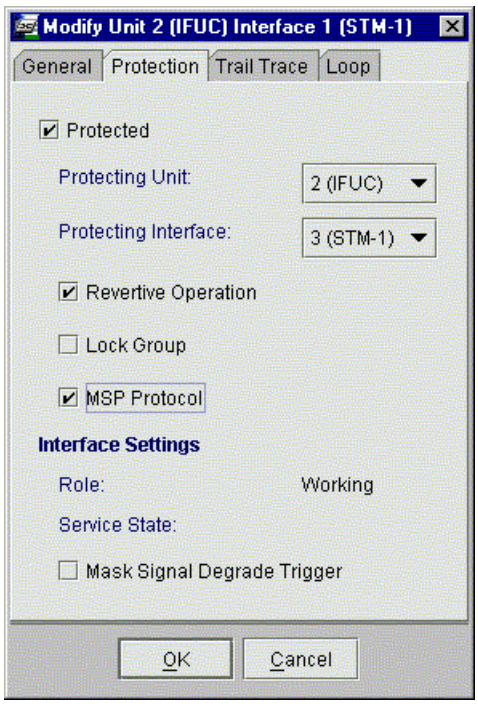


Figure 65. Modify SDH/Sonet interface, Protection settings

8. Send the changes to the node

Click **OK** to send the changes to the node and close the Modify Interface window.

2.6.9 Enabling and disabling NND

Purpose

Neighbour Node Discovery (NND) provides ATM level topology information to the NetAct ATM Manager for building an ATM network view. NND can send information packets through each AXC interface. By default NND is enabled.

Steps

1. Click Configuration → NND...

The Neighbour Node Discovery window opens.

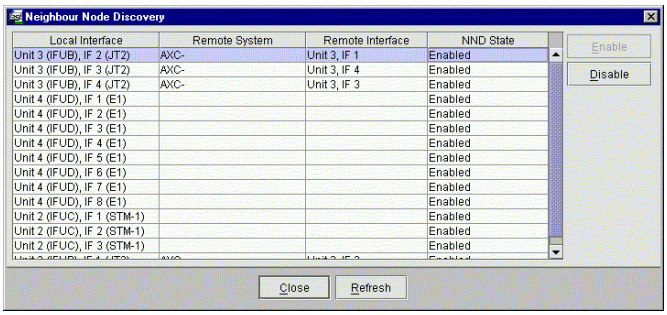


Figure 66. Neighbour Node Discovery window

The current NND settings can be inspected in this window.

2. Enable/Disable NND

Select the interface for which you want to modify the NND settings and click Enable/Disable.

3. Refresh the settings

Click **Refresh** to refresh the NND settings in the AXC Manager.

2.6.10 Configuring synchronisation of UltraSite EDGE BTS with WCDMA Upgrade

Purpose

To ensure the synchronisation of the Nokia AXC, the recovered timing source and the timing protection source have to be configured.

The Radio Network Controller (RNC) provides the primary reference clock source for all other RAN network elements and as the Nokia AXC connects the BTS to RNC it also acts as a synchronisation interface between the two elements. This is the preferred option for synchronisation.

You can define a primary synchronisation (active) timing source and one secondary (stand-by) timing source. If the primary timing source fails, the AXC will automatically switch to the secondary source and an alarm will be raised, and when the primary source becomes available again, the AXC switches back to it. If these synchronisation sources both should fail, the Nokia AXC will switch to hold over mode for up to 24 hours, and after 24 hours to the internal clock (free run mode). The hold over mode is not displayed in the AXC Manager. A maximum of 3 timing sources are possible, the third always being the internal clock.

Before you start

Note

If IFUE is configured as a synchronisation source, it has to be taken into use correctly also with the AXC-FB Hopper Manager. For more information see the *Nokia FlexiHopper and MetroHopper with IFUE User Manual.*

Steps

1. **Click Configuration → Synchronisation...**

   The Synchronisation window opens.

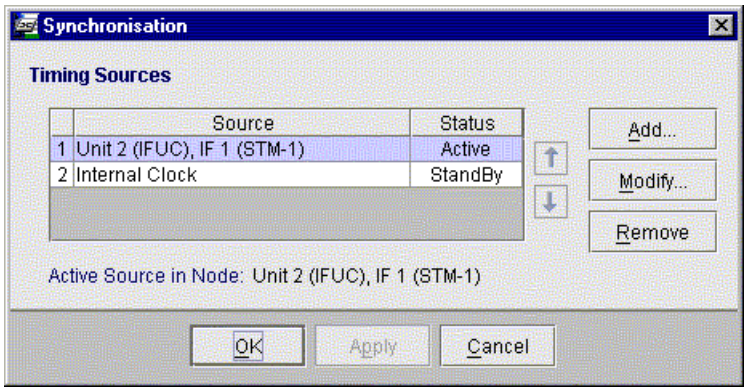


Figure 67. Synchronisation window

2. Click Add... in the Synchronisation window

The Add Synchronisation Timing Source window opens.

3. Define the new synchronisation timing source

You can select either Transmission Interface or AXU Synchronisation Input as the timing source type. The priority of the new synchronisation timing source is always active.

For the Transmission Interface, or recovered clock source, select the Unit and Interface you want to use as recovered source.

Note

Also an IMA link belonging to an IMA group can be selected as a synchronisation timing source. This link does not have to be the same as the TX timing link that is used for the IMA group timing in Tx direction.

Note

After new interfaces are taken into use, the AXC Manager has to be refreshed (**View → Refresh → All**) before the interfaces are displayed in the Add Synchronisation Timing Source window.

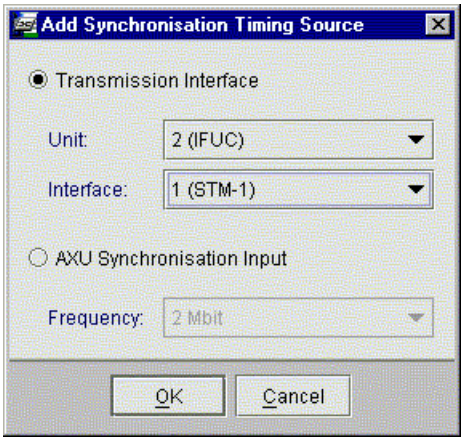


Figure 68. Add synchronisation timing source: transmission interface

For the AXU Synchronisation Input, or external timing source, define the Frequency of the external source clock.

Table 4. Frequency of the external source clock

External reference clock interface 1 (ERC 1)	64 kHz + 8 kHz (AMI with 8 kHz bipolar violation)
External reference clock interface 2 (ERC 2)	1.544 MHz 2.084 to 2.048 MHz 2 Mbit/s

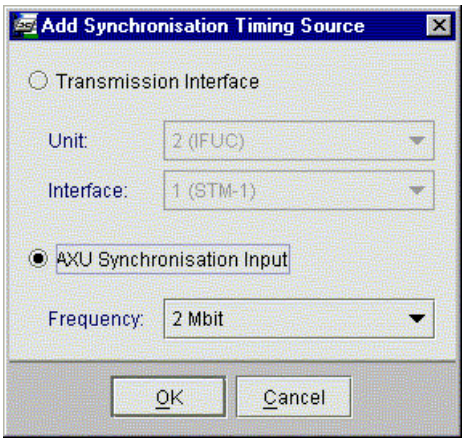


Figure 69. Add synchronisation timing source: AXU synchronisation input

Click **OK** to close the Add synchronisation timing source window. Click **Add...** if you want to configure another synchronisation source.

4. Change the priority of synchronisation timing sources if necessary

Use the arrow buttons in the Synchronisation window to change the priority of the Sources. Select the Source whose priority you want to modify and use the arrow buttons to change the Status. The Up button is activated when the chosen source is in Stand-by mode and the Down button is activated when the chosen source is Active.

5. Send the changes to the node

Click **OK** to send the changes to the node and close the Synchronisation window, or **Apply** to send the changes and keep the window open.

2.7 Creating ATM settings of UltraSite EDGE BTS with WCDMA Upgrade

2.7.1 Creating Traffic Descriptor

Purpose

The Traffic Descriptor defines the traffic and Quality of Service (QoS) parameters for one or more Virtual Path and Virtual Channel connections. A Traffic Descriptor can be created either to the network element or to an application file.

Steps

1. **Click Configuration → ATM Settings....**

   Select the Traffic Descriptor pane in the ATM Settings window.

2. **Click New....**

   The Create new Traffic Descriptor window opens. [Insert graphic dn03294863 and caption "Create new traffic descriptor"

3. **Define the necessary settings for the Traffic Descriptor.**

   Define the following settings:

   - Name (max. 20 characters)
   - Use Settings From (you can choose to use settings from an existing Traffic Descriptor)
   - created to Equipment or to a File as a predefined template
   - Service Category (CBR/UBR)
   - Conformance Definition (available values for CBR: CBR.1 and UBR: UBR.1 or UBR.2. UBR.1 discards packets that do not conform to the traffic contract and UBR.2 uses policing to tag non-compliant cells. The default values are CBR.1 and UBR.1)
   - Peak Cell Rate (cells/s)

Note

Up to 32 different Traffic Descriptors are supported per AXC.

- Cell Delay Variation Tolerance (CDVT) defines the acceptable variation of ingress traffic over the PCR.

Note

The default value for CBR is 5000 µs and for UBR is 20 000 µs.

4. Send the changes to the node.

In the ATM Settings window, click **OK** to send the changes to the node and close the window, or click **Apply** to send the changes and keep the window open.

Note

Click **OK** to close the New Traffic Descriptor window. Click **New...** if you want to create another Traffic Descriptor.

2.7.2 Modifying Access Profile

Purpose

The Access Profile defines the maximum bandwidth, and the Virtual Path Identifier (VPI) and Virtual Channel Identifier (VCI) length for an ATM interface. The Access Profiles that are modified in the New File Access Profile window are stored in an application file, and can be associated to an ATM interface in the Modify ATM Interface window.

Before you start

Caution

The maximum supported sum of VPI/VCI bits is 13 on up to 14 physical/logical interfaces. VPI cannot exceed 8 bits. The default range per interface is 4 bits for VPI and 7 bits for VCI. Up to 32 interfaces can be configured to a VPI/VCI bit range of 12 bits.

Note

Unlock at least one physical/logical interface to make Access Profiles visible in the AXC Manager.

Steps

1. **Click Configuration → ATM Settings...**

   Select the Access Profile pane in the ATM Settings window.

2. **Select the desired interface and click Modify...**

   The bandwidth of an Access Profile may be modified as long as the new bandwidth is sufficient to meet all existing traffic contracts. The VPI/VCI value ranges may be modified as long as the new values do not conflict with those defined for existing VP/VCs on the TCTT.

Note

Access Profiles should be modified only if it is absolutely necessary. Otherwise the AXC default Access Profiles should be used.

Note

Changes to the Access profile may cause a short traffic break.

The Modify Access Profile window opens.

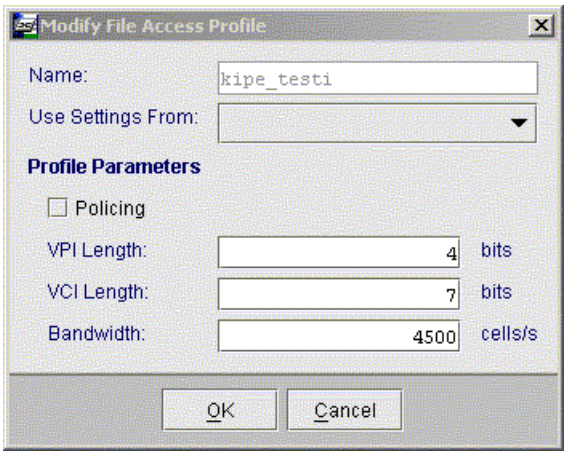


Figure 70. Modify Access Profile

3. Modify the settings of the Access Profile if necessary

Modify the following settings:

- Name (max. 10 characters)
- Use Settings From: You can select settings from an existing Access Profile.
- VPI Length: Possible values are 1 - 8; the default value is 4.
- VCI Length: Possible values are 1 - 12; the default value is 7.
- Bandwidth

Note

The Nokia AXC Manager sets this value automatically, depending on the interface type. Alternatively, you can decrease the bandwidth to provide aggregate shaping.

---

4. Send the changes to node

Click **OK** to close the Modify Access Profile window. Click **Modify...** if you want to modify another Access Profile.

In the ATM Settings window click **OK** to send the changes to the node and close the window, or **Apply** to send the changes and keep the window open.

2.7.3 Configuring ATM interface

Purpose

The Virtual Channel (VC) has to be configured before ATM Adaptation Layer 2 (AAL2) connections and Data Communications Network (DCN) connections can be created.

Steps

1. Create new VP on an ATM interface.

Click **New VP...** in the ATM view to create a new VP on the interface.

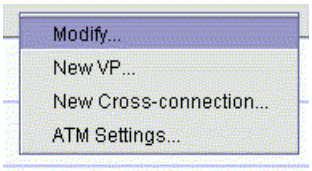


Figure 71. New VP

The AXC Manager creates a new VP on the ATM interface. The first free VPI is used by default, but it can be changed by the user.

Define the following settings for the VP:

- Traffic Descriptor
- Supported Service Categories (enabled if there is one or more VCs created on the VP and the selected traffic descriptor is CBR)
- Performance Monitoring

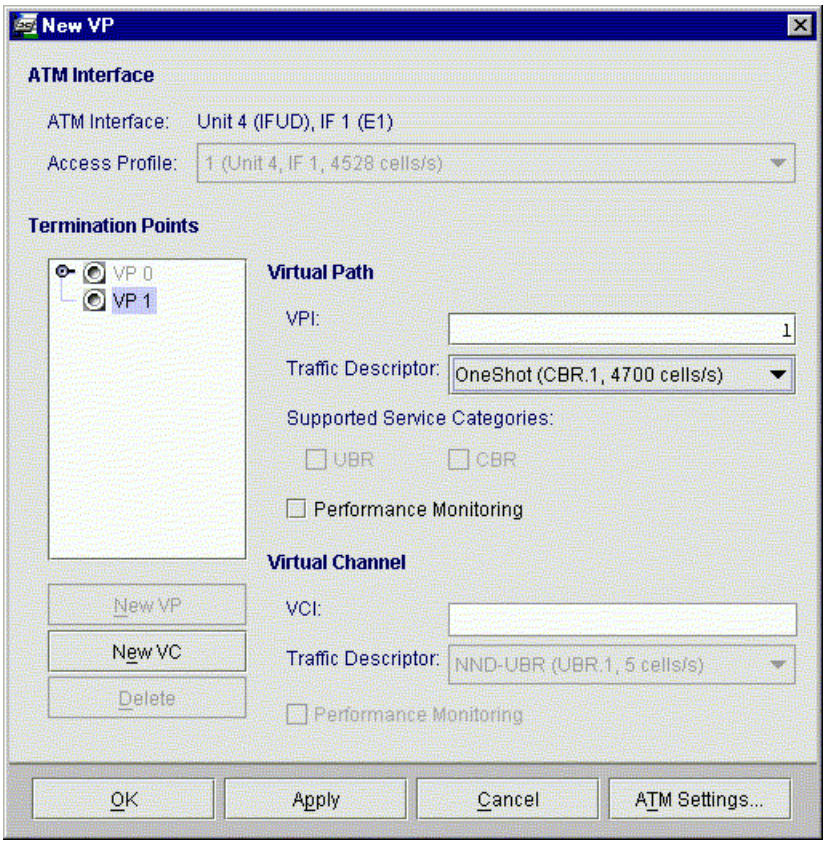


Figure 72. Create New VP

2. Create new VCs on a VP.

Click **New VC** to create a new VC on a VP. The first free VCI is used by default, but it can be changed by the user.

Define the following settings for the VC:

- Traffic Descriptor
- Performance Monitoring

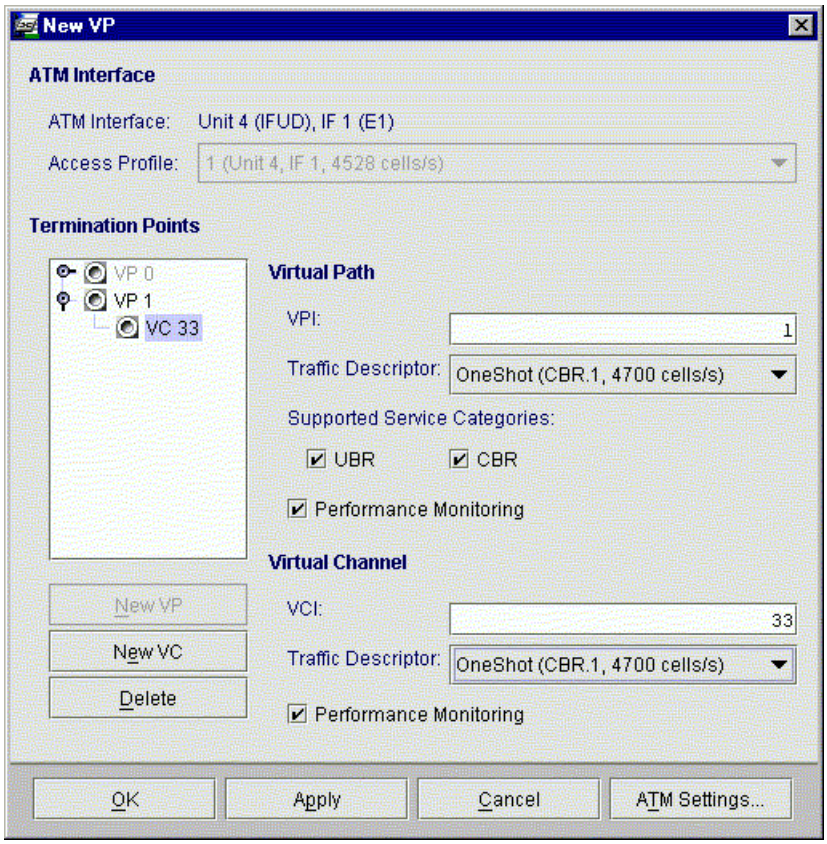


Figure 73. Create new VC

3. Send the changes to node

Click **OK** to send the changes to the node and close the New VP window, or click**Apply** to send the changes and keep the window open.

2.7.4 Configuring BTS AAL2 Multiplexing settings

Purpose

BTS ATM Adaptation Layer 2 AAL2 Multiplexing concentrates AAL2 user plane traffic and AAL2 signalling links in AXC and hence reduces the number of VCCs for each base station towards the Radio Network Controller (RNC).

Before you start

The ATM interface used for BTS AAL2 Multiplexing has to be created before configuring AAL2 settings. The following VCs are used for AAL2:

- VCI = 35 for signalling links, CBR traffic
- VCI = 36 - 38 for user paths, CBR traffic

Steps

1. Click Configuration → AAL2 Multiplexing....

The ATM Adaptation Layer 2 Multiplexing (AAL2) window opens.

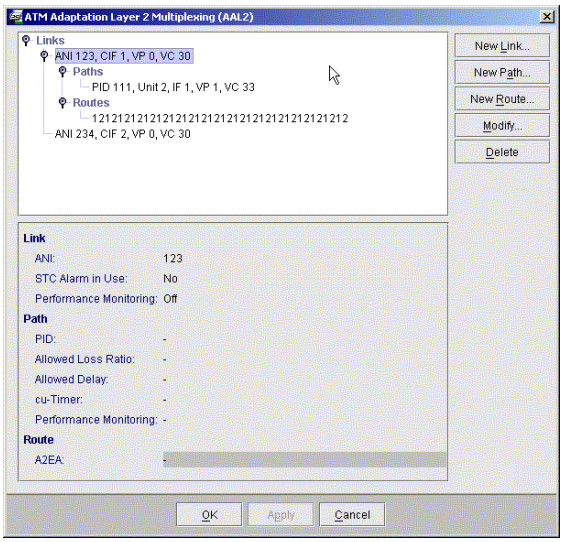


Figure 74. ATM Adaptation Layer 2 Multiplexing (AAL2) window

2. Create Signalling Links.

Click the **New link...** button.

Define the Adjacent Node Identifier (ANI). Use a value between 0 to 255. The ANI has to be unique for the AXC.

Select the ATM Virtual Channel designated to carry AAL type 2 signalling traffic from the list.

Set the STC Alarm in Use and Performance Monitoring to enabled if necessary. If the STC Alarm in Use is selected the generation of a *61260/ STC connection to signalling peer not established*, the alarm is triggered.

Click **OK**.

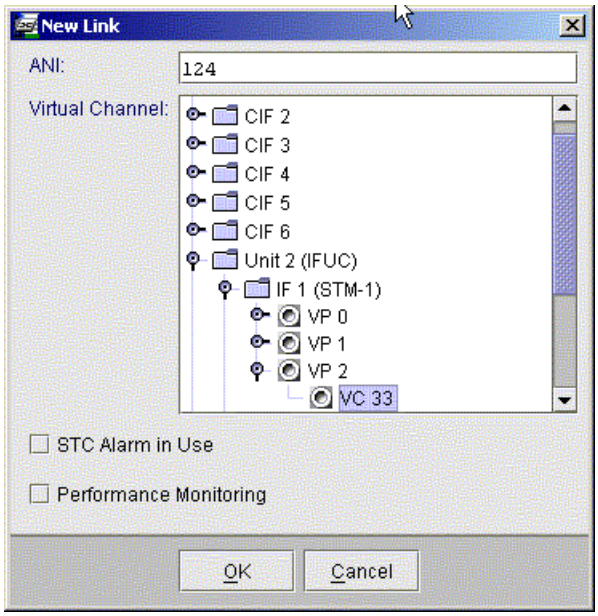


Figure 75. Create new signalling links

3. Create User Paths

Mark the AAL2 Signalling Link to which the User Path belongs (created in Step 2).

Click the **New Path...** button.

Define the Path Identifier (PID).

Note

The PID has to be unique for each Signalling Link. The same PID can be used for User Paths of different Signalling links.

Select the ATM Virtual Channel (VC) designated to carry AAL2 type user traffic from the list.

Define the cu-Timer (Composite Unit timer). After expiry of this timer (default 2ms, granularity 1ms) even a partially filled ATM cell will be transmitted.

Enable Performance Monitoring if necessary.

Click **OK**.

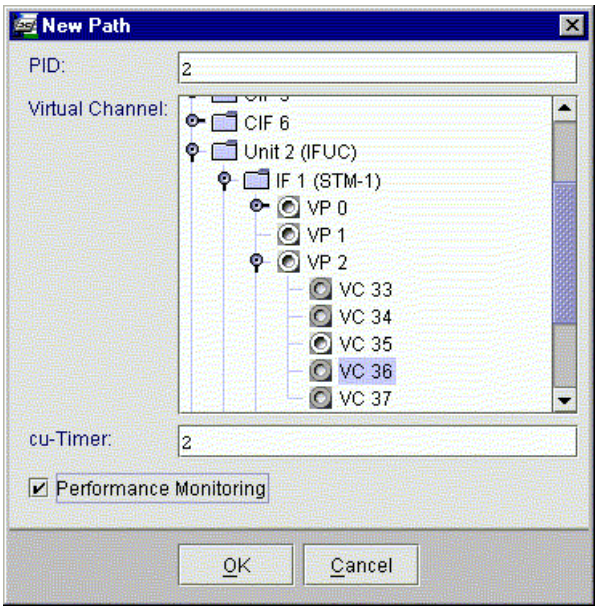


Figure 76. Create new user path

4. Configure Signalling Routes.

Mark the AAL2 Signalling Link to which the Signalling Route belongs (created in step 2).

Click the **New** button next to the list of Signalling Routes.

Define the AAL2 service endpoint address (A2EA). The format of the A2EA is 0 to F in hexadecimal. The length of the A2EA is automatically restricted to 40 digits.

Click **OK**.

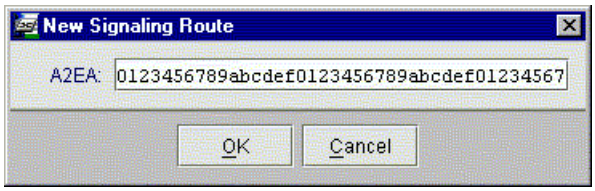


Figure 77. Configure new signalling route

5. Send the changes to the node.

Click **OK** to send the changes to the node and close the AAL Adaptation Layer 2 Multiplexing (AAL2) window, or **Apply** to send the changes and keep the window open.

Expected outcome

The settings are visible in the ATM view of the AXC Manager. The AAL2 Signalling Links (based on AAL5) are shown as AAL5 termination points and the AAL2 User Paths as AAL2 termination points.

2.8 Creating ATM cross-connections

2.8.1 Creating Virtual Path cross-connections

Purpose

The Nokia AXC supports semi-permanent Virtual Path cross-connections.

Before you start

Note

Virtual Channel (VC) values lower than 32 are configurable but they should not be used. These values are reserved by standardisation bodies for other purposes.

Note

VC 21 in Virtual Path (VP) 0 is configurable but should not be used. It is reserved for support of ATM end-to-end management option (Neighbour Node Discovery (NND) feature in AXC).

Steps

1. **Select the ATM view by clicking View → ATM View.**

   If the bottom view is not visible, click **View → Bottom View**.

2. **Click New in the bottom view**

   The New Cross-connection window opens.

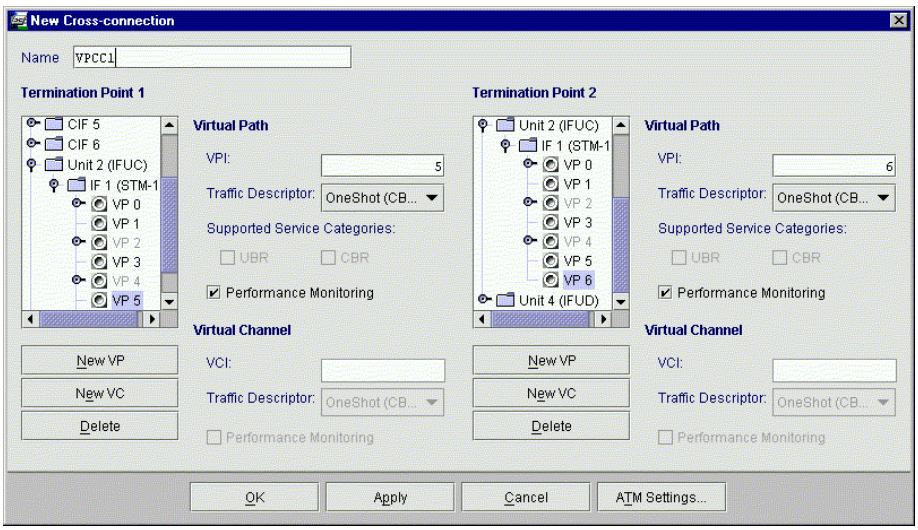


Figure 78. Create new VP cross-connection

3. **Define the termination points**

   Perform the following tasks on both interfaces you want to cross-connect.

   Select the Unit and Interface (IF) on which you want to create a cross-connection from the list. Click **New VP**. A new Virtual Path is created on the interface.

4. **Select a Traffic Descriptor and Supported Service Categories for the VP.**

   Select a Traffic Descriptor from the list of predefined Traffic Descriptors or click **ATM Settings** to create a new Traffic Descriptor. For more information see *Creating Traffic Descriptor.*

   Select the Supported Service Categories. The check boxes are enabled if the selected VP has at least one VC and the selected Traffic Descriptor is CBR.

5. **Enable performance monitoring if necessary.**

   Enable performance monitoring by selecting the Performance Monitoring box.

6. **Define a Name for the cross-connection (optional).**

   The Name can have maximum 20 characters.

7. **Send the changes to the node.**

   Click **OK** to send the changes to the node and close the New Cross-connection window, or **Apply** to send the changes and keep the window open.

2.8.2 Checking cross-connections

Steps

1. **Select the ATM view by clicking View → ATM View**

   If the bottom view is not visible click **View → Bottom View** to see the list of cross-connections.

2. **Sort the cross-connections by clicking the column headers**

   You can sort the cross-connections by:

   - Name
   - Type
   - Termination points
   - VPI and VCI
   - Category

You can also check the cross-connections on each interface by clicking the desired interface in the hardware image. The cross-connections are displayed on the right side of the ATM view.

2.8.3 Setting public IP address

Purpose

Before doing any IP level configurations, the public IP address of the AXC has to be configured. The public IP address can be any valid IP address that is not in the subnets 192.168.254.xxx and 192.168.255.xxx. These subnets are reserved for inter-unit communication protocol of BTS internal components.

Steps

1. **Click IP → DCN....**

   The DCN window opens.

   [Add graphic dn03295017 and caption "DCN window"]

2. **Click Set... at the top of the window.**

   The Set AXC Public IP Address window opens. [Add graphic dn3295029 and caption "Set AXC Public IP address"]

3. **Define the public IP address.**

   Enter the public IP address for the AXC.

4. **Send the changes to the node.**

   Click **OK**. The AXC Manager configures the public IP address.

   Click **Close** to close the DCN window.

2.8.4 Creating DCN connection for ATM interface

Purpose

The Data Communications Network (DCN) connections are IP over ATM connections that are terminated in the IP routing instance of the Nokia AXC. IP packets are transported via ATM/AAL5.

Before you start

A Virtual Channel (VC) is used as an ATM interface for the DCN connection. The VC has to be created before configuring DCN settings.

Before configuring DCN settings, the public IP address of the AXC has to be established. .

Steps

1. Click IP → DCN....

The DCN window opens.

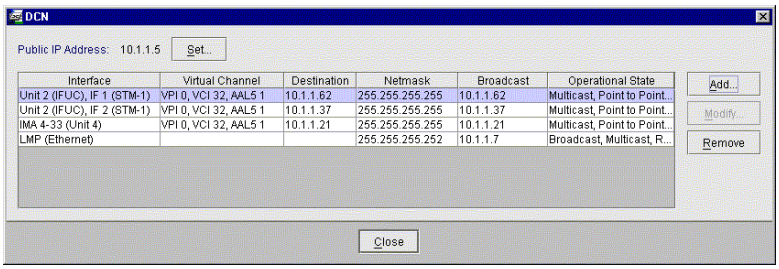


Figure 79. DCN Window

2. Click Add....

The Add DCN for ATM Interface window opens.

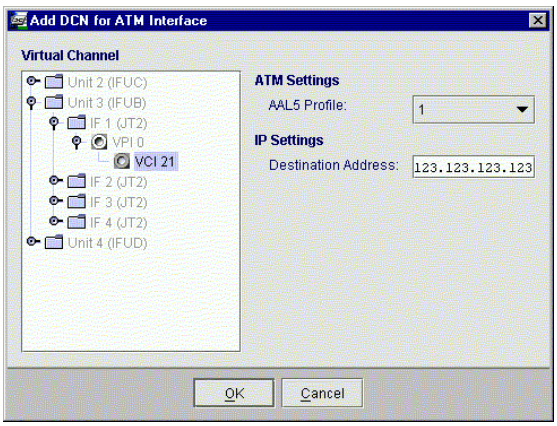


Figure 80. Add DCN for ATM interface

3. **Select the VC.**

   Select the Virtual Channel (VC) on which you want to create the DCN connection from the treeview on the left side of the window.

4. **Define the Destination Address.**

   Define the Destination Address where the DCN interface is connected to.

5. **Click OK.**

6. **Configure all necessary DCN connections by repeating steps 2 to 5.**

7. **Send the changes to the node.**

   Click **OK**. The AXC Manager creates the cross-connection from the VC to the internal IP routing device automatically.

   Click **Close** to close the DCN window, or **Add** to create another DCN connection.

2.8.5 Defining IP configuration

Purpose

The Nokia AXC has an integrated IP router which has to be configured. In order for the Data Communications Network (DCN) to work, the routing table should be configured so that there is a route to each possible destination address specified.

Before you start

Note

IP addresses 192.168.254.xxx and 192.168.255.xxx should not be configured. These subnets are reserved for inter-unit communication protocol of BTS internal components.

Steps

1. **Click IP → Routing Table....**

The IP Routing window opens.

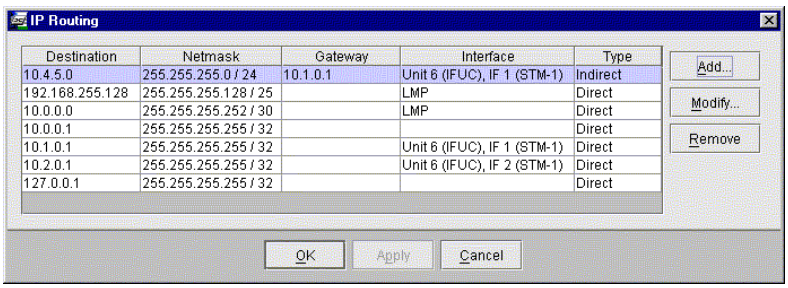


Figure 81. IP routing window

Direct routes have been automatically created by the AXC. Indirect routes can be configured by the user.

2. Click Add... in the IP Routing window.

The Add IP Route window opens.

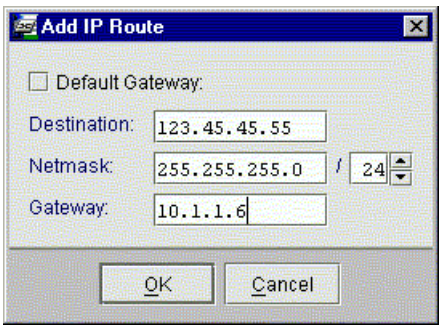


Figure 82. Add IP Route

3. Define settings for the route.

Define the following settings:

- Destination (IP address for indirectly connected IP nodes)
- Netmask (netmask of the destination address)
- Gateway (gateway IP address of the destination)

For a complete entry, all of the values have to be filled.

Enabling Default Gateway will set Destination and Netmask to 0.0.0.0. This will simplify the configuration of a default route as you only need to configure the Gateway. Only one default gateway can be created. Once the default gateway has been created it can be modified and deleted.

4. **Click OK.**

5. **Add all required routing information by repeating steps 2 to 4**

6. **Send the changes to the node.**

   Click **OK** to send the changes to the node and close the IP Routing window, or **Apply** to send the changes and keep the window open.

2.8.6 Creating NTP server

Before you start

Time setting in the AXC can be handled via Network Time Protocol (NTP) by connecting to an NTP server.

Note

If no NTP server is available the system time can be configured also manually. In this case the time settings are lost after a restart of the AXC. Therefore it is recommended to handle time via NTP servers.

Steps

1. **Click IP → System time....**

   The System Time window opens.

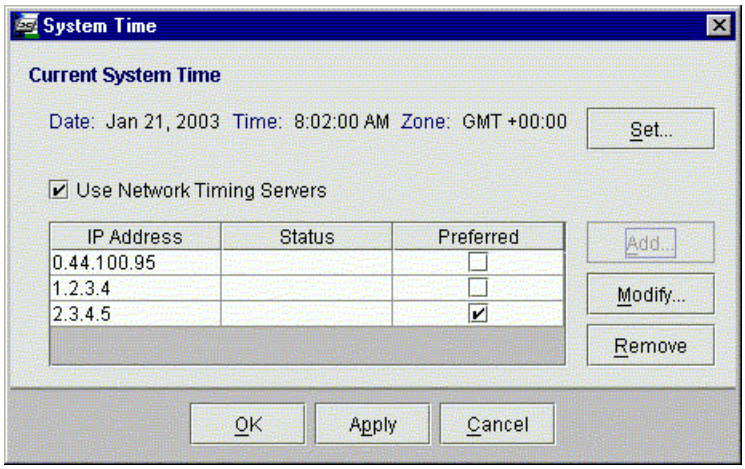


Figure 83. System Time window

2. Define the IP address for the NTP server.

Set NTP to enabled by checking the Use Network Timing Servers box. By default NTP is disabled.

Click **Add...** to add a Network Time Protocol server. Enter the IP Address of the NTP server. If you want this server to be the preferred server, check the Preferred box. Click **OK**.

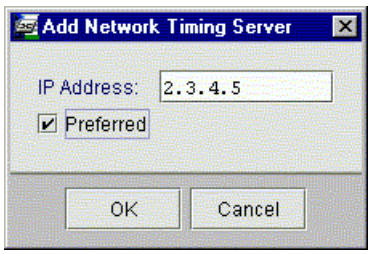


Figure 84. Add NTP server

Note

It is possible to configure several NTP servers. The AXC chooses the best server, taking into account several factors like stratum or round trip delays. If these criteria are the same for two or more servers, the preferred server is used.

3. *If* you want to configure the system time manually

   Then

   Click Set... to open the Set System Time window.

   Set the desired system time by selecting the Time, Day, Month and Year.

   Click **OK**.

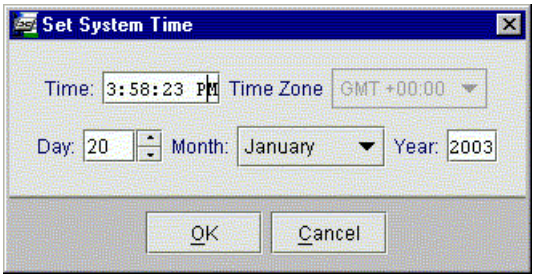


Figure 85. Set system time manually

4. **Send the changes to node.**

   Click **OK** to send the changes to the node and close the System time window, or **Apply** to send the changes and keep the window open.

2.8.7 Configuring Management Protocol

Purpose

The following Management Protocol settings are mandatory if the AXC shall be registered to and identified by Nokia's Network Management System NetAct.

Steps

1. **Click Configuration → Management Protocol....**

   The Management Protocol window opens.

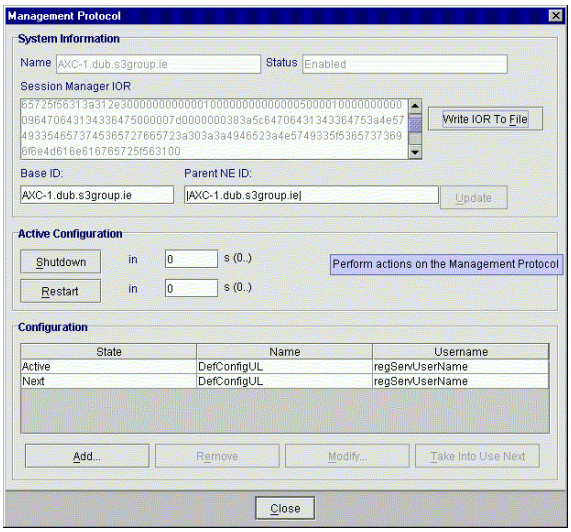


Figure 86. Management Protocol window

2. Modify the Base ID and Parent NE ID.

Modify the settings if necessary. The Base ID is the unique identifier for the AXC in the network, and the Parent NE ID is the NWI3 identifier of the BTS the AXC is located in (for S-AXC no Parent ID is defined).

The Base ID and the Parent NE ID are formed according to the following scheme:

Table 5. Base ID and Parent NE ID naming scheme

Base ID	NE-AXC-<id> For example: NE-AXC-17 The value for the <id> is planned in advance and it must be unique among the AXCs in the RAN

Table 5. Base ID and Parent NE ID naming scheme (cont.)

Parent NE ID	The value is entered in format: `<Manager object Specifier> | <BaseId> | <LocalMOID>` • `<Managed Object Specifier>` = NE • `<BaseId>` = BaseId of the RNC controlling the BTS in which the AXC is located • `<LocalMOID>` = DN:NE-WBTS-Id For example NE | NE-RNC-5 | DN:NE-WBTS-12 The Parent NE ID value for a stand-alone AXC is `NULL | NULL-0 | DN:NULL-0`

Click **Update**.

3. Set NetAct's Interoperable Object Reference (IOR) string in the AXC.

Click **Add...** in the Management Protocol window. The Add Configuration window opens.

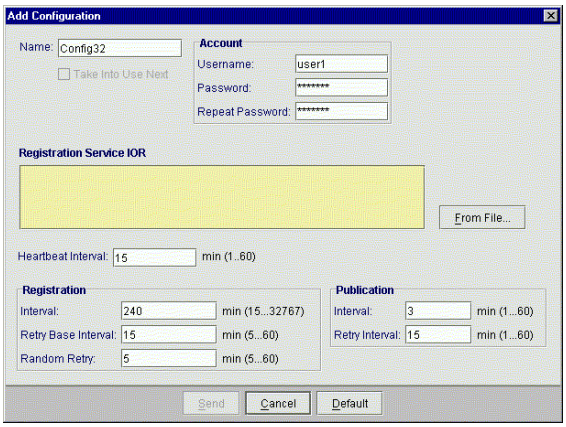


Figure 87. Add configuration

Define the following settings:

- Name of configuration
- NWI3 Registration Service account parameters, Username and Password
- select the file that contains the NWI3 Registration Service IOR by clicking **From File...**

Click **Send**.

4. **Activate the new configuration**

   Select the new configuration object from the list and click **Take Into Use Next**.

   Click **Restart** to start the AXC's registration process towards NetAct.

   Close the window by clicking **Close**.

Verification

Click **View → Refresh → Refresh All**. Open the Management Protocol window again and ensure that the state of the new configuration is changed to Active.

2.8.8 Configuring AXC Q1 Support Function

Purpose

The Nokia AXC contains a Q1 Support Function that acts as a master poller for Nokia Q1 managed network elements. Via Q1 Embedded Operation Channels (EOC) the AXC Q1 Support Function can poll far-end Q1 network elements. Additionally the AXC Q1 Support Function can poll Q1 network elements connected to the AXC's V.11 Q1 interface, and it can poll the Flexbus part of IFUE.

Please refer to *Commissioning* in the *Nokia FlexiHopper and MetroHopper with IFUE User Manual* for more information on configuring the Q1 management connection over the Q1SF and the connection type for the Flexbus part of the IFUE.

Before you start

Note

If the AXC Q1 Support Function is connected via Data Communications Network (DCN) to the Nokia Q1 Agent Mediation device, the configuration of Q1 Support Function may differ. Please refer to *Nokia Q1 Agent documentation* for more information.

Note

The Q1 Support Function settings are not persistent. If no Q1 Agent connection is available, Q1 Support Function has to be reconfigured if AXC is rebooted or power lost.

Check that:

- the General Communications Service GCS R4.2 (or later) tool is installed on the LMT.

Steps

1. Select the baud rate.

Click **Node → Q1 Support Function → Set Channel to → [desired baud rate]**. The available baud rates are 300, 600, 1200, 2400, 4800, 9600 and 19200.

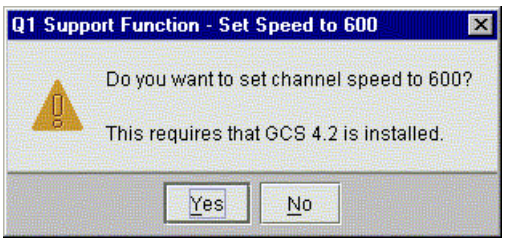


Figure 88. Set Q1 Support Function channel

2. Confirm channel speed.

Click **Yes** to confirm the channel speed. Nokia AXC will set the channel speed to the desired baud rate.

Expected outcome

The GCS Command Line Tool starts automatically and configures all necessary settings.

Check that the last line of the output reads # clean run, no errors occurred.

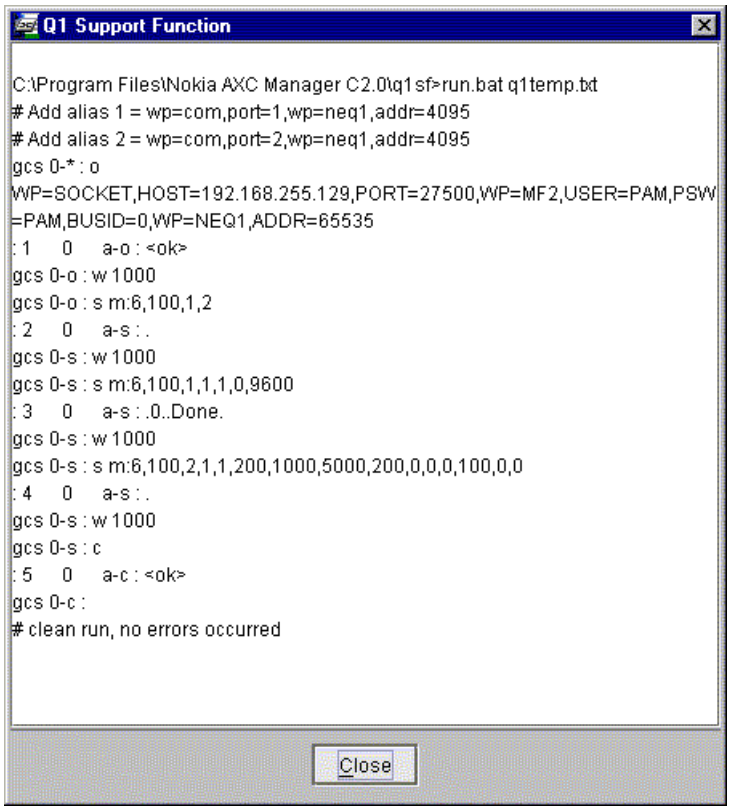


Figure 89. Q1 Support Function output

2.8.9 Configuring loopbacks

Purpose

Loopbacks can be configured on PDH and SDH/Sonet interfaces. The following loopback can be inserted:

- short loop to interface (incoming signal looped back to output directly after the interface)
- long loop to equipment (outgoing signal looped back to input directly before the interface)

Steps

1. Select the interface on which you want to create a loopback.

Select the interface on which you want to create a loopback in the Hardware view and click **Modify**. The Modify Interface window opens. Select the Loop pane.

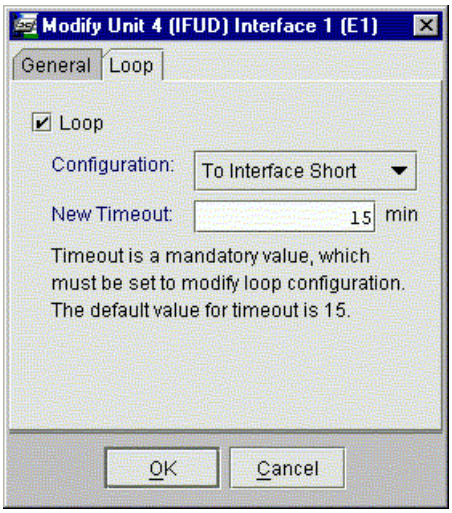


Figure 90. Modify Loop Settings

2. Check the Loop box.

3. Select the loopback configuration.

The loopback configuration can be either To Interface Short (default) or To Equipment Long.

4. Define the loop timeout.

Define the New Timeout, that is the time period after which the loopback stops automatically. The default value is 15 minutes and the maximum value 1440 minutes (1 day).

5. Send the changes to the node by clicking OK.

2.9 ATM settings

2.9.1 Inspecting and modifying BTS AAL2 Multiplexing settings

Purpose

BTS ATM Adaptation Layer 2 AAL2 Multiplexing concentrates AAL2 user plane traffic and AAL2 signalling links in AXC and hence reduces the number of VCCs for each base station towards the Radio Network Controller (RNC).

You can inspect the AAL2 settings in the ATM view of the AXC Manager. The AAL2 Signalling Links (based on AAL5) are shown as AAL5 termination points and the AAL2 User Paths as AAL2 termination points.

Steps

1. Click Configuration → AAL2 Multiplexing...

The ATM Adaptation Layer 2 Multiplexing (ATM) window opens.

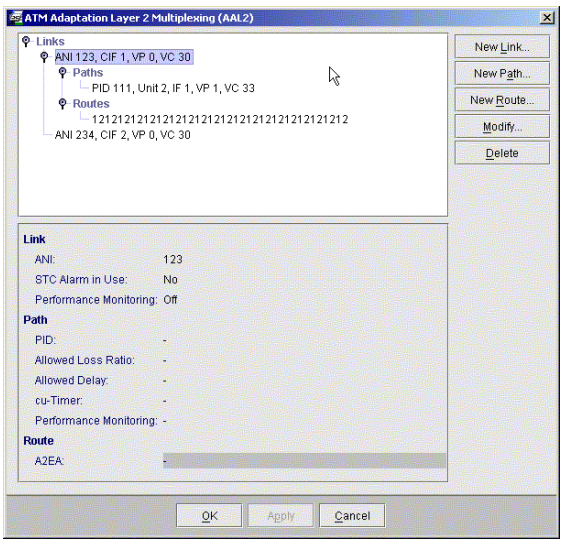


Figure 91. ATM Adaptation Layer 2 Multiplexing (AAL2) window

2. Inspect the AAL2 settings

Mark the Signalling link and either the User Path or Signalling route that you want to inspect.

The following information is displayed for Signalling Links:

- In the top part of the window you can see the Virtual Channel that carries AAL2 signalling traffic
- Adjacent Node Identifier (ANI)
- STC Alarm in Use (enabled/disabled)
- Performance Monitoring (enabled/disabled)

The following information is displayed for User Paths:

- in the top part of the window you can see the Virtual Channel that carries AAL2 user traffic
- Path Identifier (PID)
- Allowed Loss Ratio that is taken into account by Connection Admission Control (CAC)
- Allowed Delay that is taken into account by CAC
- cu-Timer (ms)
- Performance Monitoring (enabled/disabled)

For the Signalling Routes the AAL2 service endpoint address (A2EA) is displayed.

3. Delete settings

If you want to delete Signalling Links, User Paths or Signalling Routes, select the object you want to remove and click **Delete**.

Note

When you delete Signalling Links and User Paths the termination points visible in the ATM view of the AXC Manager are not deleted.

---

4. Modify Signalling Links

Modify a Signalling Link by selecting the link and clicking **Modify...**.

Make the necessary modification to:

- STC Alarm in Use. If enabled the generation of a *61260/STC connection to signalling peer not established* alarm is triggered.
- Performance Monitoring

If you want to modify the other settings you have to create a new Signalling Link.

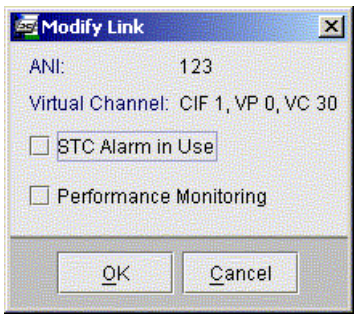


Figure 92. Modify Signalling link

5. Modify User Paths

Modify a User Path by selecting the path and clicking **Modify...**.

Make the necessary modifications to:

- cu-Timer (Composite Unit timer). After expiry of this timer (default 2ms, granularity 1ms) even a partially filled ATM cell will be transmitted.
- Performance Monitoring

If you want to modify the other settings you have to create a new User Path.

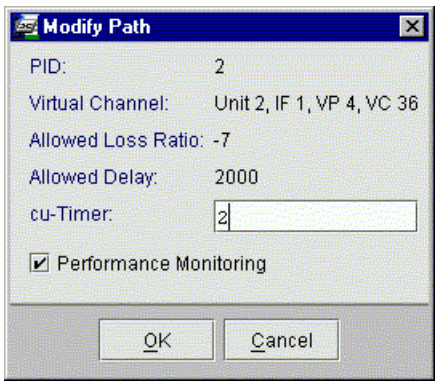


Figure 93. Modify User Path

6. Create new Signalling Links, User Paths and Signalling Routes

For more information please see *Configuring BTS AAL2 Multiplexing settings.*

7. Send the changes to the node

Click **OK** to send the changes to the node and close the AAL Adaptation Layer 2 Multiplexing (AAL2) window, or **Apply** to send the changes to the node and keep the window open.

2.9.2 Inspecting and modifying Access Profile

Purpose

The Access Profile defines the maximum bandwidth, and the Virtual Path Identifier (VPI) and Virtual Channel Identifier (VCI) length for an ATM interface.

Before you start

Caution

The maximum supported sum of VPI/VCI bits is 13 on up to 14 physical/logical interfaces. VPI cannot exceed 8 bits. The default range per interface is 4 bits for VPI and 7 bits for VCI. Up to 32 interfaces can be configured to a VPI/VCI bit range of 12 bits.

Steps

1. Click Configuration → ATM Settings...

Select the Access Profile pane in the ATM Settings window.

2. Inspect Access Profile settings

You can inspect the Access Profile settings in the Access Profile pane of the ATM Settings window.

The following information is displayed:

- Name
- VPI Length (Current)

- VCI Length (Current)
- Bandwidth

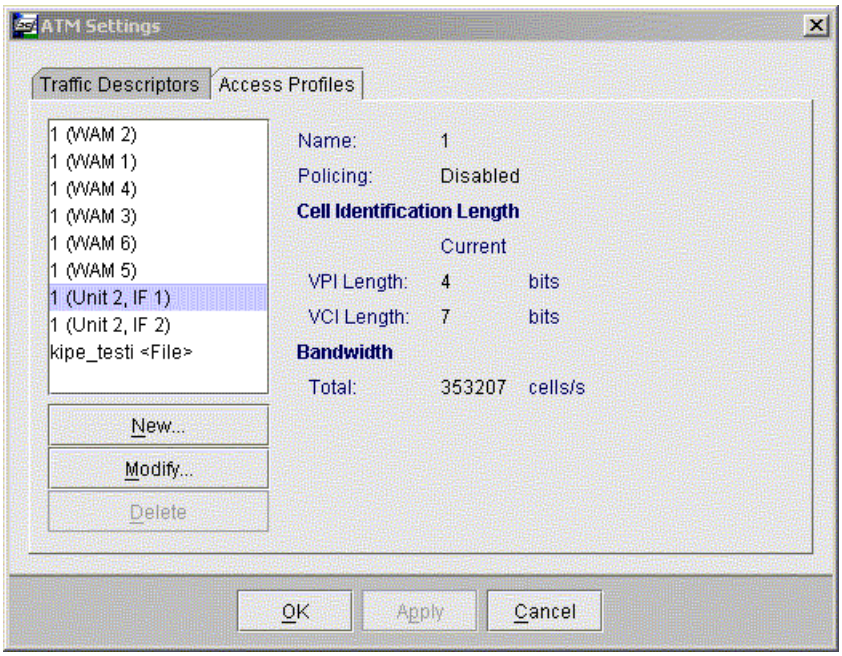


Figure 94. ATM settings window, Access Profile pane

3. Modify an Access Profile

The bandwidth of an Access Profile may be modified as long as the new bandwidth is sufficient to meet all existing traffic contracts. The VPI/VCI value ranges may be modified as long as the new values do not conflict with those defined for existing VP/VCs on the TCTT.

Note

Access Profiles should be modified only if it is absolutely necessary. Otherwise the AXC default Access Profiles should be used.

Note

Changes to the Access profile may cause a short traffic break.

Select the Access Profile you want to modify and click **Modify...**. Make the necessary modifications. You can modify:

- Name (max. 10 characters)
- Use Settings From (you can choose to use settings from an existing Access Profile)
- VPI Length (possible values are 1 - 8, the default value is 4)
- VCI Length (possible values are 1 - 12, default value is 7)
- Bandwidth (Set automatically by the Nokia AXC Manager depending on the interface type. Alternatively the Bandwidth can be decreased to provide aggregate shaping.)

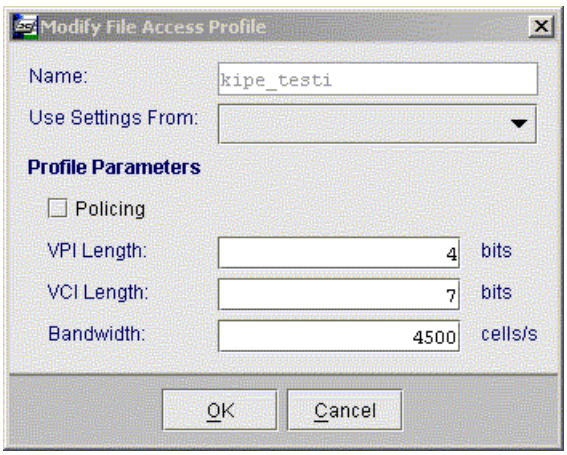


Figure 95. Modify Access Profile

4. Send the changes to the node

Click **OK** to close the Modify Access Profile window.

Click **OK** to send the changes to the node and close the ATM Settings window, or **Apply** to send the changes and keep the window open.

2.9.3 Inspecting and modifying Traffic Descriptor

Purpose

The Traffic Descriptor defines the traffic and Quality of Service (QoS) parameters for one or more Virtual Path (VP) or Virtual Channel (VC) connections.

Before you start

Note

Only Traffic Descriptors that are not in use can be modified or deleted.

Steps

1. **Click Configuration → ATM Settings...**

   Select the Traffic Descriptor pane in the ATM Settings window.

2. **Inspect Traffic Descriptor settings**

   You can inspect the Traffic Descriptor settings in the Traffic Descriptor pane of the ATM Settings window.

   The following information is displayed:

   - Name
   - Service Category (CBR, UBR)
   - Conformance Definition (CBR: CBR.1 and UBR: UBR.1 or UBR.2)
   - Peak Cell Rate (cells/s)
   - Cell Delay Variation Tolerance (µs)
   - Cell Loss Ratio (cells/s)
   - In Use (number of VPs and VCs associated to the Traffic Descriptor)

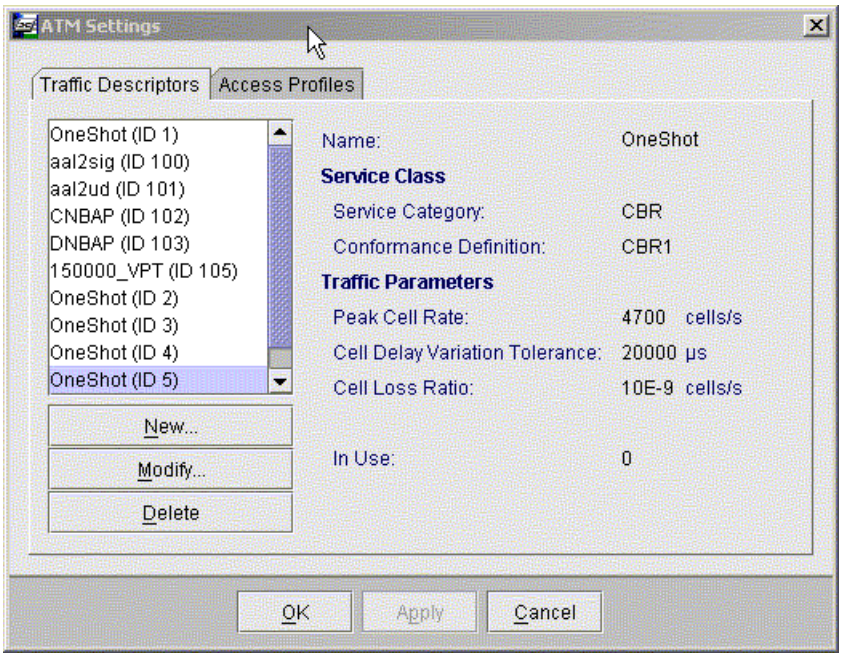


Figure 96. ATM settings window, Traffic Descriptor pane

3. Delete Traffic Descriptor

Delete a Traffic Descriptor by selecting the Traffic Descriptor from the list and clicking **Delete**.

4. Modify a Traffic Descriptor

Modify a Traffic Descriptor by selecting the Traffic Descriptor you want to modify and clicking **Modify...**. Make the necessary modifications to the settings:

- Name (max. 20 characters)
- Use Settings From (you can choose to use settings from an existing Traffic Descriptor)
- created to Equipment or to a File as a predefined template
- Service Category (CBR/UBR)
- Conformance Definition (available values for CBR: CBR.1 and UBR: UBR.1 or UBR.2. UBR.1 discards packets that do not conform to the traffic contract and UBR.2 uses policing to tag non-compliant cells. The default values are CBR.1 and UBR.1)

- Peak Cell Rate (cells/s)

Note

Up to 32 different Traffic Descriptors are supported per AXC.

- Cell Delay Variation Tolerance (CDVT) defines the acceptable variation of ingress traffic over the PCR (default value for CBR 5000 µs and for UBR 20 000 µs)

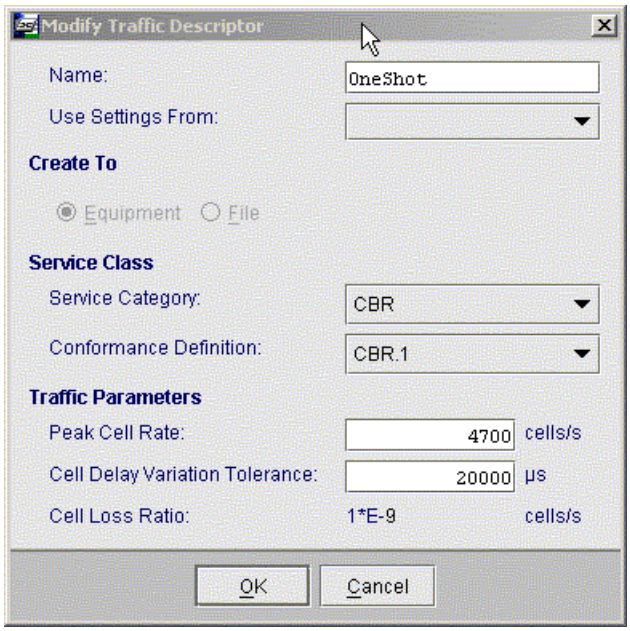


Figure 97. Modify Traffic Descriptor

5. Send the changes to the node

Click **OK** to close the Modify Traffic Descriptor window.

Click **OK** to send the changes to the node and close the ATM Settings window, or **Apply** to send the changes and keep the window open.

2.9.4 Modifying ATM cross-connection

Before you start

Note

AAL1, AAL2 and AAL5 connections cannot be modified on ATM level.

Steps

1. Select the ATM view by clicking View → ATM View

If the bottom view is not visible click **View → Bottom View**.

2. Select the cross-connection you want to modify

In the bottom view, select the cross-connection that you want to modify and click **Modify**. The Modify Cross-connection window opens.

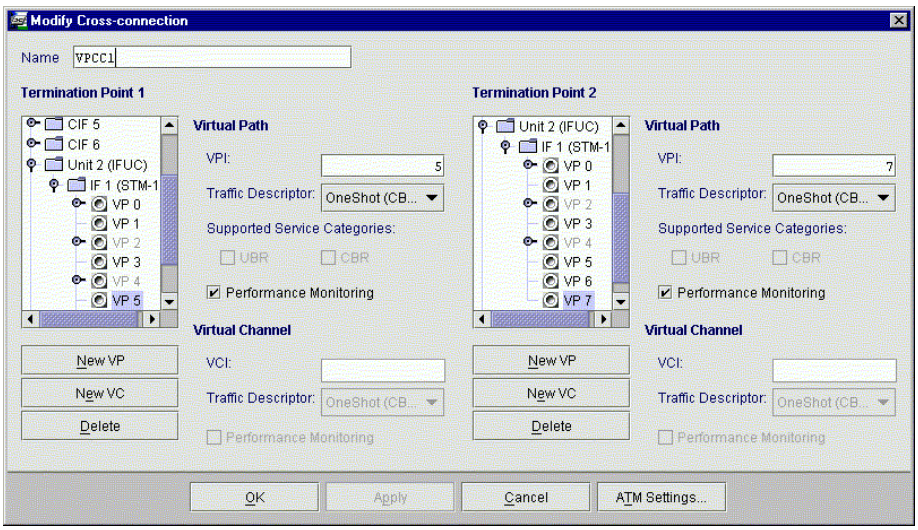


Figure 98. Modify cross-connection

3. Modify the cross-connection

Make the necessary modifications. The following settings can be modified:

- Name (max. 20 characters, optional)
- Traffic Descriptor
- Supported Service Categories. The check boxes are enabled if the selected Virtual Path (VP) has at least one Virtual Channel (VC) and the selected Traffic Descriptor is CBR.
- Performance Monitoring

4. Send the changes to the node

Click **OK** to send the changes to the node and close the Modify Cross-connection window, or **Apply** to send the changes to the node and keep the window open.

2.9.5 Modifying Virtual Channel

Before you start

Note

Only Virtual Channels (VC) that are not cross-connected can be modified.

Steps

1. Select the ATM view by clicking View → ATM View

2. Select the VC that you want modify

Click the right mouse button on the VC that you want to modify in the treeview of termination points, and select **Modify VC...**. The Modify VC window opens.

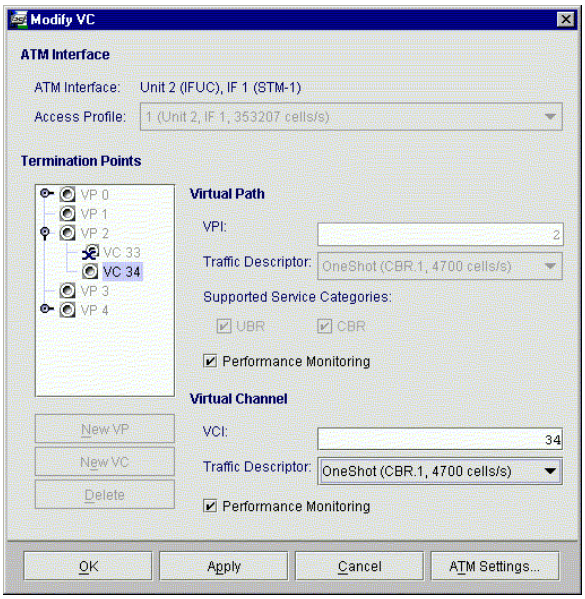


Figure 99. Modify VC

3. Modify VC

Make the necessary modifications to:

- VCI
- Traffic Descriptor
- Performance Monitoring

4. Send the changes to the node

Click **OK** to send the changes to the node and close the Modify VC window, or **Apply** to send the changes to the node and keep the window open.

5. Delete VC

You can delete a VC by clicking the right mouse button on the VC that you want to delete and selecting **Delete VC**.

2.9.6 Modifying Virtual Path

Before you start

Note

Only the following Virtual Paths (VP) can be modified:

- those that are not cross-connected
- those that do not contain VCCs
- those that are not terminated

Steps

1. **Select the ATM view by clicking View → ATM View**
2. **Select the VP you want to modify**

   Click the right mouse button on the VP that you want to modify in the treeview of termination points, and select **Modify VP...**. The Modify VP window opens.

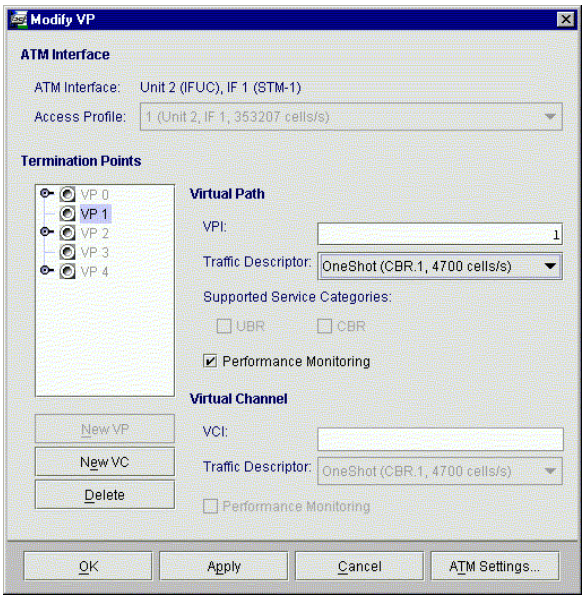


Figure 100. Modify VP

3. Modify VP

Make the necessary modifications to:

- VPI
- Traffic Descriptor
- Performance Monitoring

4. Delete VP

You can delete a VP by clicking **Delete**.

5. Create new VCs to the VP

You can create new Virtual Channels (VC) to the VP by clicking **New VC**. The first free VCI is used by default, but it can be changed by the user. Define the following settings for the VCs:

- Traffic Descriptor
- Supported Service Categories (enabled if there is one or more VCs created on the VP and the selected traffic descriptor is CBR)
- enable Performance Monitoring if necessary

6. Send the changes to the node

Click **OK** to send the changes to the node and close the Modify VP window, or **Apply** to send the changes to the node and keep the window open.

2.10 Interface settings

2.10.1 Inspecting and modifying CES settings

Purpose

Circuit Emulation Service (CES) for structured or unstructured E1/JT1/T1 allows mapping TDM traffic into ATM cells. CES is supported on IFUA, IFUD and IFUE (only unstructured).

The CES pass-through function of the Nokia AXC is an internal CES function that allows to perform a TDM cross-connection by setting up a circuit emulation service simultaneously on two AXC interfaces with an associated ATM connection. Pass-through is available for the IFUA, IFUD and IFUE (unstructured) interface units.

Steps

1. Click Configuration → CES...

The Circuit Emulation Service (CES) window opens.

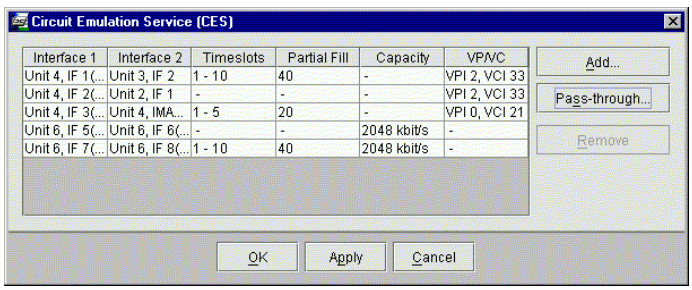


Figure 101. Circuit Emulation Service (CES) window

2. Inspect the CES settings

In the Circuit Emulation Service (CES) window you can inspect all CES Interworking Function and CES pass-through connections created on the AXC.

The following information is displayed:

- Interface 1 (carrying TDM traffic)
- Interface 2 (in case of Interworking Function carrying ATM traffic and in case of pass-through carrying TDM traffic)
- Timeslots used for CES for structured connections (available timeslot range for E1 1 - 31 and for JT1 and T1 1 - 24)
- Partial Fill for structured CES
- Capacity for pass-through
- VP/VC of the ATM interface used for Interworking function

3. Delete CES connections

Remove a CES connection by selecting the connection from the list and clicking **Remove**.

4. Add new CES connections

For more information see *Configuring CES interworking function* and *Configuring CES pass-through*.

5. Send the changes to the node

Click **OK** in the Circuit Emulation Service (CES) window to send the changes to the node and close the window, or **Apply** to send the changes and keep the window open.

2.10.2 Inspecting and modifying fractional interfaces

Purpose

PDH interfaces can be configured as fractional interfaces. ATM over fractional E1/JT1/T1 enables the use of partial E1/JT1/T1 links for the transport of ATM traffic. With the help of an external PDH 64k multiplexer it is possible to combine 3G traffic over the fractional interfaces with existing 2G traffic without disturbance.

Steps

1. Open the fractional interfaces window by clicking Configuration → Fractional Interfaces...

The Fractional Interfaces window opens.

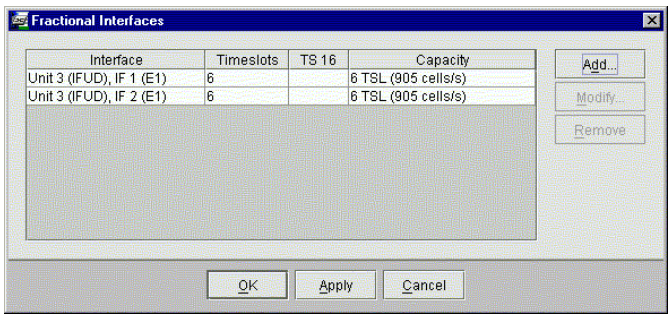


Figure 102. Fractional Interfaces window

2. Inspect fractional interfaces

You can view the properties of the fractional interfaces in the Fractional Interfaces window.

The following information is displayed:

- Interface
- Timeslots reserved for the ATM fragment
- TS 16 (shows whether timeslot 16 is used)
- Capacity of the ATM fragment

3. Delete fractional interfaces

Remove a fractional interface by selecting the interface from the list and clicking **Remove**.

4. Modify a fractional interface

Modify a fractional interface by selecting the interface you want to modify and clicking **Modify...**. Make the necessary modifications to the Timeslots.

The timeslots available for E1 are 1-31, for JT1 1-24 and for T1 1-24, the fragment starts always from timeslot 1. For E1 interfaces Use Timeslot 16 can be selected if the selected end timeslot is over 15. The use of timeslot 16 is optional to optimise bandwidth utilisation.

Note

Timeslot 16 can be used for Channel Associated Signalling (CAS) in Time-division Multiplexing (TDM) networks. In Nokia 3G RAN networks, TS 16 can carry Q1 Embedded Operation Channels (EOC).

The window displays the capacity of the ATM fragment.

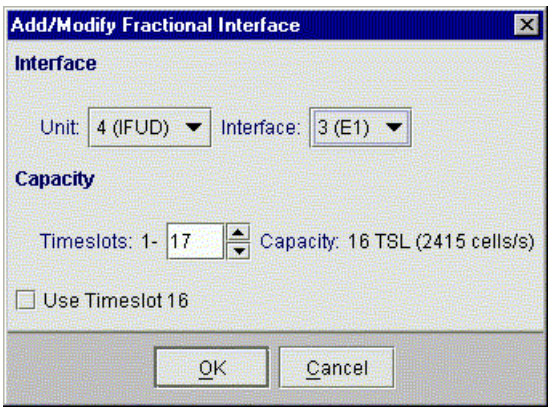


Figure 103. Modify fractional interface

5. Send the changes to the node

Click **OK** to close the Add/Modify fractional interface window.

Click **OK** to send the changes to the node and close the Fractional interfaces window, or **Apply** to send the changes and keep the window open.

2.10.3 Inspecting and modifying IMA settings

Purpose

PDH interfaces can be configured as Inverse Multiplexing for ATM (IMA) links. Inverse Multiplexing for ATM is a technique by which ATM traffic can be distributed between several lower bandwidth PDH links and then recombined again at the far end.

Note

Fractional interfaces cannot be used for IMA.

Steps

1. Refresh the settings

Click **View → Refresh → All**.

2. Open the Inverse Multiplexing for ATM window by clicking Configuration → IMA...

The Inverse Multiplexing for ATM (IMA) window opens.

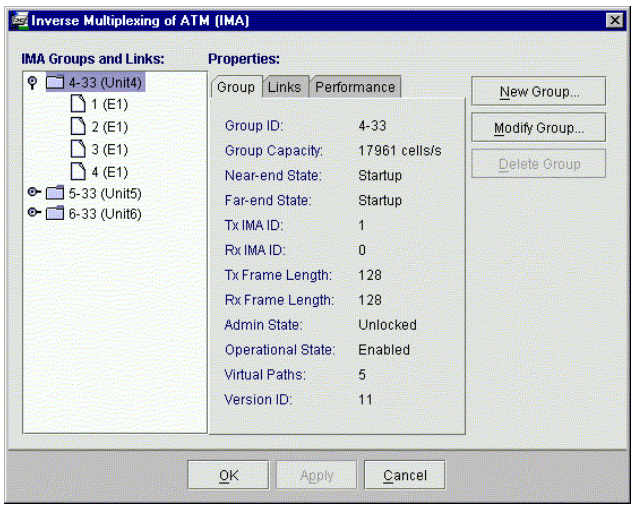


Figure 104. Inverse multiplexing for ATM (IMA) window

3. Inspect the IMA group settings

Select the IMA group you want to inspect. You can view the properties of IMA groups and IMA links in the Inverse Multiplexing for ATM (IMA) window. Select the Group, Links and Performance panes as necessary.

The following IMA group properties are displayed:

- Group
  - Group ID: Version of the IMA standard to be applied: 10 (af-phy-0086.000) or 11 (af-phy-0086.001)
  - Group Capacity
  - Near-end and Far-end State
  - Tx and Rx IMA ID
  - Tx and Rx Frame Length
  - Admin. State (Locked/Unlocked).
  - Operational State (Disabled/Enabled)
  - the number of Virtual Paths
  - Version ID (Version of the IMA standard to be applied: 10 (af-phy-0086.000) or 11 (af-phy-0086.001))
- Links
  - Link
    - Interface
    - Group ID
    - Tx and Rx Link ID
    - Relative Delay
  - State
    - Operational State (Enabled/Disabled)
    - Near-end Tx and Rx State
    - Far-end Tx and Rx State
- Performance
  - Observed Differential Delay
  - Tolerated Differential Delay
  - Available Tx and Rx Cell Rate
  - Least Delay Link

Note

The Tx Timing Link displayed is the one actually used and not necessarily equal to the desired Tx Timing Link defined when creating the group. This situation occurs e.g. when the desired Tx Timing Link is not usable.

---

4. Delete IMA groups

Remove an IMA group by selecting the group from the list and clicking **Delete Group**.

Note

Before deleting an IMA group delete all cross-connections and termination points.

5. Modify IMA groups

Modify an IMA group by selecting the group and clicking **Modify Group...**.

Note

The maximum number of IMA groups and links is the following:

- IFUA: 1 to 4 IMA groups, with 1 to 8 E1/JT1/T1 links per IMA group
- IFUD: 1 to 4 IMA groups, with 1 to 8 E1 links per IMA group
- IFUE: 1 to 8 IMA groups, with 1 to 8 E1 links per IMA group

Make the necessary modifications to:

- Selected Links

Note

Do not remove the IMA link defined as the desired Tx Timing Link.

- Version ID: Version of the IMA standard to be applied: 10 (af-phy-0086.000) or 11 (af-phy-0086.001)
- Min. Link Count: the minimum number of IMA links required to keep the IMA group active. The possible values are 1 to number of configured IMA links. The default value is 1.

- Max. Diff. Delay: the maximum allowed differential delay in the physical link. The possible values are 0 to 25 ms. The default value is 25 ms.
- Administrative State Locked. Administrative State means permission to use (Unlocked), or prohibition against using the resource (Locked), imposed through management services.

The Tx Timing Link and the Tx Frame Length cannot be modified for an existing IMA group. If you want to modify these you have to create a new IMA group. Delete the old group before creating a new IMA group.

The AXC Manager creates the Group ID automatically after checking the already assigned IDs in the slot. The range of IDs is from 33 to 99 per slot, so that 33 is assigned to the first group and incremented by 1 for the next group.

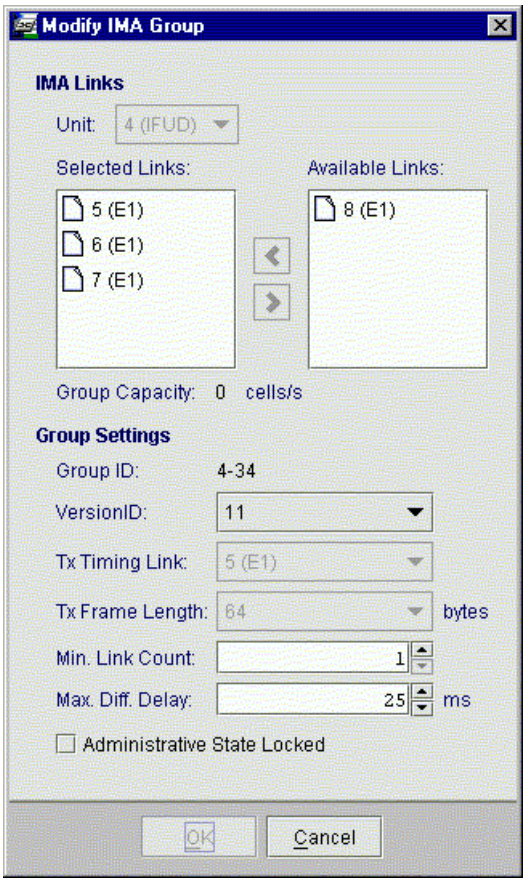


Figure 105. Modify IMA group

6. Send the changes to the node

Click **OK** to close the Modify IMA Group window.

Click **OK** to send the changes to the node and close the Inverse Multiplexing for ATM window, or **Apply** to send the changes and keep the window open.

2.10.4 Inspecting and modifying PDH settings

Before you start

Note

In the AXC Manager the IFUE is displayed as an IFU with 16 E1 interfaces and 3 Flexbus interfaces (greyed out). The ATM part of the IFUE is treated as any other IFU and can therefore be configured with the AXC Manager. Flexbus related configurations are done with the Nokia AXC-FB Hopper Manager.

Steps

1. Select the Hardware view of the AXC Manager by clicking View → Hardware view

Select the hardware view and either click on the interface on the left side of the window or select the interface pane on the right side of the window.

2. Inspect the PDH settings

The following information is displayed:

- Loop Configuration (None/To Interface Short/To Equipment Long)
- Line Type
- Line Coding
- CRC Usage (On/Off)
- In Use (Yes/No)
- Operational State (Disabled/Enabled)

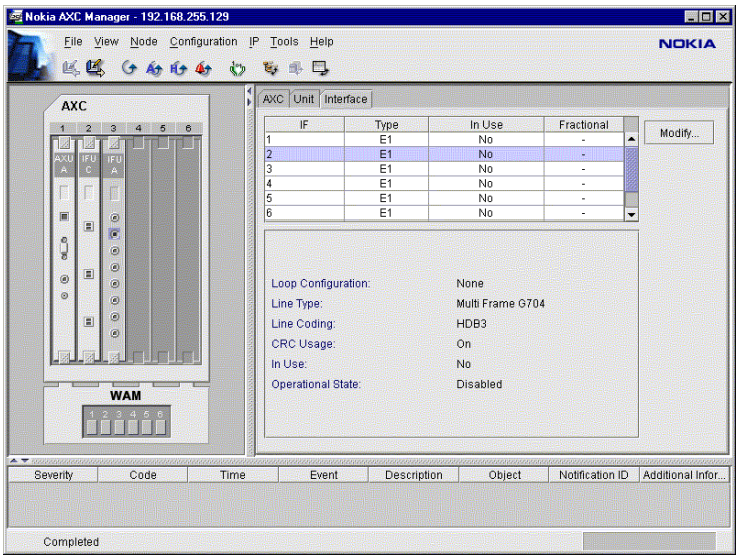


Figure 106. Inspect PDH settings

3. Check the transmission standard

Select the appropriate interface from the list and click **Modify...**. The Modify Interface window opens.

Check the transmission standard (PDH interface type) and line type. If necessary, select another standard from the list (selectable only for IFUA).

The available standards for the PDH interface units are:

- IFUA: E1, JT1, T1
- IFUB: JT2
- IFUD: E1
- IFUE: E1

Note

If you change the PDH line type between E1/JT1/T1 the change will be applied to all interfaces of the unit. You are informed that in this case all traffic will be cut off.

Note

No mixed configurations of E1/JT1/T1 are allowed on the same IFU.

The available line types are the following:

- E1: MultiFrame G704 (default, CRC on), DoubleFrame G704 (CRC off)
- T1: Extended SuperFrame (default, CRC on), SuperFrame (CRC off)
- JT1: Extended MultiFrame
- JT2: 4 Frame MultiFrame

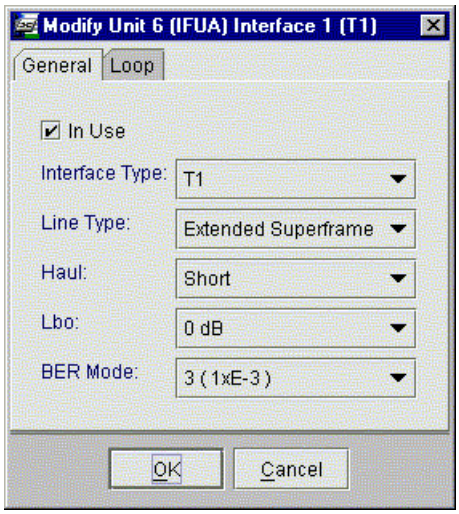


Figure 107. Modify PDH interface

4. Modify the Haul, Lbo and BER settings

You can modify:

- Haul (Short/Long) for JT2 interfaces. For E1/JT1/T1 the haul type is configured automatically according to the received signal level.
- Line Build Out (Lbo): 0dB (default), 7.5dB, 15dB. 0dB is the highest Tx power output for the line interface, and can be attenuated in steps of 7.5 and 15 dB in order to avoid overloading the interface. Lbo has to be defined for JT1 and T1 interfaces.
- Bit Error Rate (BER). The possible values are 10^{-3} (default), 10^{-6}. BER has to be defined for E1/JT1/T1 interfaces.

5. Send the changes to the node

Click **OK** to send the changes to the node and close the Modify Unit window.

2.10.5 Inspecting and modifying Q1 EOCs

Purpose

Q1 Embedded Operation Channels (EOC) can be configured on the E1 and E1 within Flexbus interfaces. Via the Q1 Embedded Operation Channels within E1 frames the AXC Q1 Support Function can poll far-end Q1 network elements. Nokia AXC provides support for Q1 managed network elements connected to it. Nokia AXC contains a Q1 Support Function that acts as a master poller for Nokia Q1 managed equipment.

Before you start

Note

Q1 EOCs in E1 frames are configured with the Nokia AXC Manager and supported on IFUA, IFUD and IFUE. The EOCs are created on timeslot 0 or 16, and the location of the EOCs is common for all interfaces of a unit.

Note

Q1 information can also be mapped to the Flexbus overhead. This can be configured with the AXC-FB Hopper Manager. For more information see the *FlexiHopper and MetroHopper with IFUE User Manual*.

Steps

1. **Open the Q1 Embedded Operation Channels window by clicking Configuration → Q1 EOCs...**

2. **Inspect Q1 EOCs**

   You can view the properties of the Q1 Embedded Operation Channels in the Q1 EOCs window.

   The following information is displayed:

   - Interface
   - Timeslot (TS 0 or TS 16)
   - Sampling (sampling rate of the Q1 EOC)
   - Bits (bits used for Q1 EOC in the timeslot)

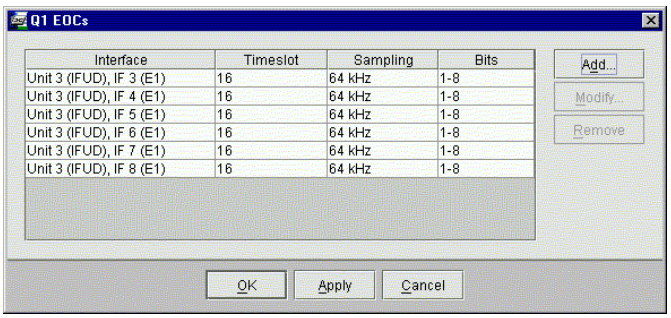


Figure 108. Q1 EOCs window

3. **Delete Q1 EOCs**

   Remove a Q1 EOC by selecting the EOC from the list and clicking **Remove**.

4. **Modify a Q1 EOC**

   Modify a Q1 EOC by selecting the EOC you want to modify and clicking **Modify...**. Make the necessary modifications to Location (Timeslot 0 or Timeslot 16).

Note

Never activate Q1 EOCs between two AXCs as this can cause Q1 bus conflicts.

For timeslot 0 you can modify the sampling rate and bit position.

The available sampling rates and bit positions are:

Table 6. Sampling rates and bit positions for timeslot 0 and timeslot 16

TS	Sampling rate	Bit position	Baud rate for Nokia equipment
0	4 kHz	5,6,7,8	600
0	8 kHz	5–6, 7–8	1200
0	16 kHz	5–8	2400
16	64 kHz	1 - 8	9600

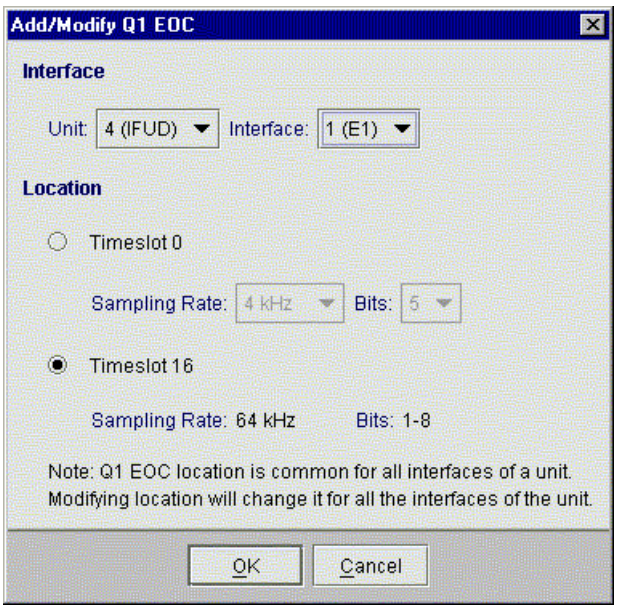


Figure 109. Modify Q1 EOC

5. Send the changes to the node

Click **OK** to close the Add/Modify Q1 EOC window.

Click **OK** to send the changes to the node and close the Q1 EOCs window, or **Apply** to send the changes and keep the window open.

2.10.6 Inspecting and modifying SDH/Sonet settings

Steps

1. **Select the Hardware view of the AXC Manager by clicking View → Hardware view**

   Select the hardware view and either click on the interface on the left side of the window or select the interface pane on the right side of the window.

2. **Inspect the SDH/Sonet settings**

   The following information is displayed:

   - Operational State (Disabled/Enabled)
   - BER (Bit Error Rate) Mode
   - Laser Mode (On/Off)
   - In Use (Yes/No)
   - Remote Defect Indicator (RDI) on EBER
   - Loop Configuration (None/To Interface Short/To Equipment Long)

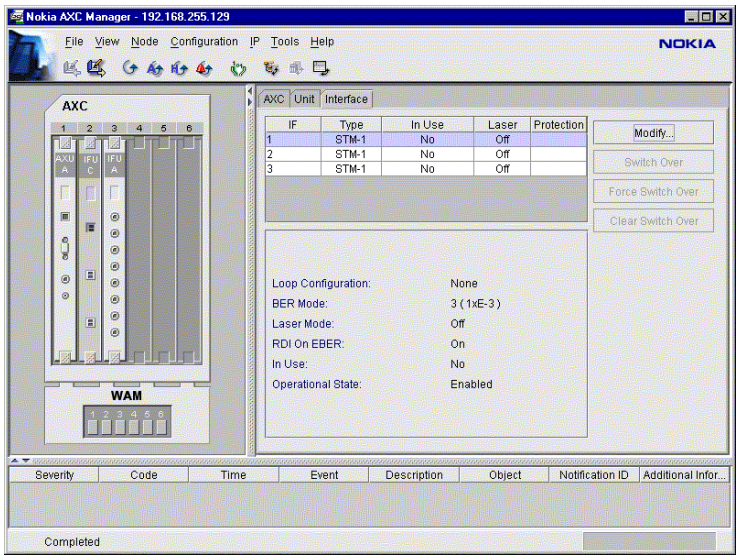


Figure 110. Inspect SDH/Sonet settings

3. Modify the interface settings

Select the appropriate interface from the list and click **Modify...**.

The Modify Interface window opens.

Make the necessary modifications.

In the General pane you can modify the SDH/Sonet Interface Type and BER Mode, Laser settings and RDI On EBER. You can also select/deselect In Use.

Note

If you change the SDH/Sonet interface type between STM-1/STM-0/STS-1/STS-3c all traffic on that interface will be cut off and all configurations will be lost. A mixture of these SDH/Sonet line types is allowed on an IFUC.

The possible values for BER Mode are 10^{-3} (default), 10^{-6}. The BER Mode indicates the threshold for raising an EBER alarm.

Selecting Laser will switch on the laser on the interface. By default Laser is not selected.

Note

If work on the fibre is carried out the laser must be switched off.

Remote Defect Indication (RDI) on EBER means that the appearance of an EBER alarm will trigger the sending of the Remote Defect Indication signal. The default value is enabled.

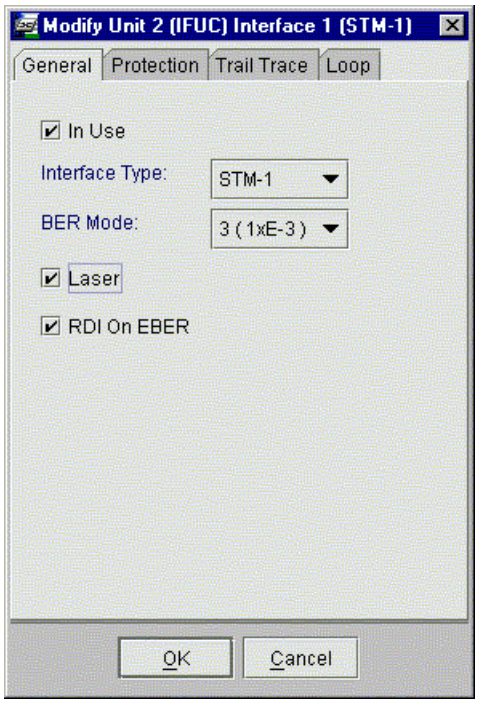


Figure 111. Modify SDH/Sonet interface, general settings

In the Trail Trace pane you can modify J0 identifier and J1 identifier settings.

For J0 identifier and J1 identifier, the send ID in the local node and the Expected ID in the remote node have to be equal. If the IDs do not match an alarm will be raised. The default value is NULL, which indicates that the ID will not be checked. You can enter a value with maximum 15 characters.

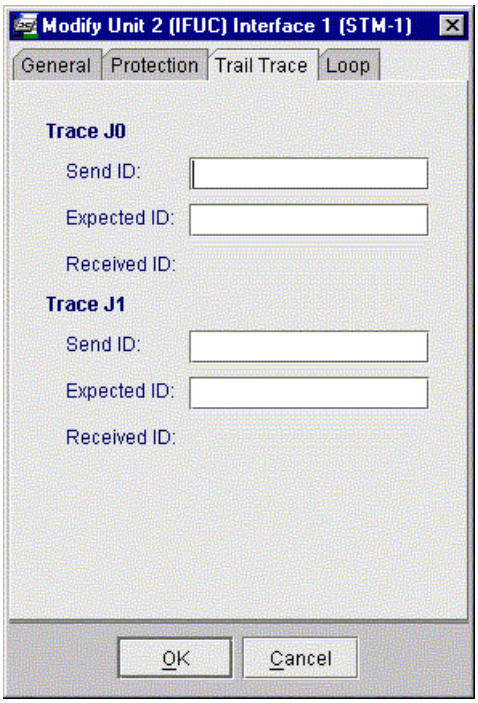


Figure 112. Modify SDH/Sonet interface, Trail Trace settings

4. Modify interface protection

Select the Protection tabbed pane.

Modify the Protecting Unit and Protecting Interface if necessary. The Protecting Interface can be either on the same or different unit as the protected unit.

Note

The AXC supports MSP1:1. MSP1:1 is interoperable with MSP1+1 (compatible with MSP1:n) implemented in Nokia RNC and third party equipment provided that the third party equipment supports MSP1:1 or MSP1+1 compatible with MSP1:n as described in G.783, Annex A.

The following rules apply to the Protecting Unit and Interface:

- interface 1 can be protected by interface 1 of any other IFU or any interface 3
- interface 2 can be protected by interface 2 of another IFU or any interface 3
- interface 3 can be protected by interface 3 of another IFU

It is recommended to reserve interface 3 as the Protecting Interface. Unit protection can be implemented easily by using an appropriate configuration, that is:

- interface 1 of the working unit is protected by interface 1 of a protecting unit
- interface 2 of the working unit is protected by interface 2 of a protecting unit
- interface 3 of the working unit is protected by interface 3 of the protecting unit

---

Note

Although a maximum of 8 SDH/Sonet interfaces is supported per AXC, there can be up to 7 additional SDH/Sonet interfaces for interface protection (MSP1:1).

Modify the following if necessary:

- Revertive Operation. If Revertive Operation is selected the protection switches back to the working interface when the working interface is repaired after a failure. In non-revertive mode traffic will keep running on the protecting line even after the working line has been repaired. Non-revertive operation is the default option.
- Lock Group. If selected interface protection is disabled.
- Multiplex Section Protection (MSP) Protocol On. If selected only local triggers will cause a switch to the protecting interface.

Note

MSP Protocol has to be switched on if the far end node provides MSP1:1 or MSP 1+1 (compatible with MSP1:n). If the far end node supports MSP1+1 (optimised), the MSP Protocol should be switched off.

- Mask Signal Degrade Trigger. If selected an EBER alarm will not cause a switch to the protecting interface.

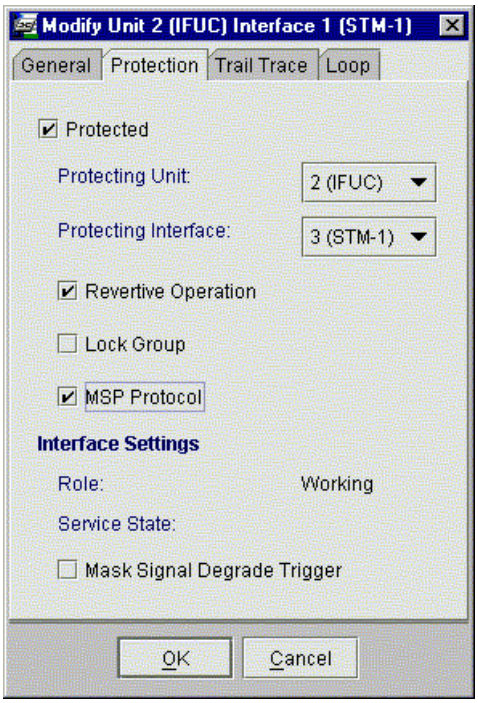


Figure 113. Modify SDH/Sonet interface, Protection settings

5. Send the changes to the node

Click **OK** to send the changes to the node and close the Modify Interface window.

2.11 IP settings

2.11.1 Modifying DCN settings

Purpose

The Data Communications Network (DCN) connections are IP over ATM connections that are terminated in the IP routing instance of the Nokia AXC. IP packets are transported via ATM/AAL5.

Before you start

Note

Connection to the AXC can be lost if the Data Communications Network settings are modified.

Steps

1. Click IP → DCN...

The DCN window opens.

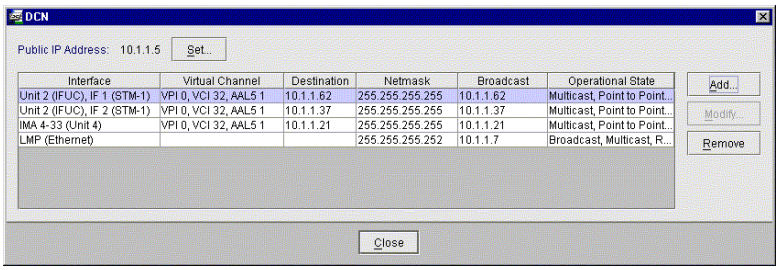


Figure 114. DCN window

2. Delete a DCN connection

If you want to delete a DCN connection select the connection from the list and click **Remove**. Delete also routing table entries if necessary, for more information see *Modifying IP routing table.*

Click **Close** to close the DCN window.

3. Modify LMP interface settings

Select the Local Management Port (LMP) interface from the list and click **Modify...**.

Make the necessary modifications to the LMP interface settings.

Netmask defines the maximum amount of hosts on the LMP. Broadcast is the last address in the chosen subnet and is used to send information to all hosts in one subnet.

Note

The 192.168.254.xxx addresses are used AXC internally and the 192.168.255.xxx addresses BTS internally. All other IP addresses are referred to as public IP addresses. In the so-called restricted mode of the LMP, it is possible to access only the local Nokia AXC and BTS. In unrestricted mode other network elements within the same network can also be accessed.

Restricted Mode has to be deactivated when the DCN and the RAN need to be connected via the LMP. In all other cases Restricted Mode should be activated for security reasons. By default, the LMP is in restricted mode.

Note

Restricted Mode can only be deactivated over a remote DCN connection. In local management this cannot be done.

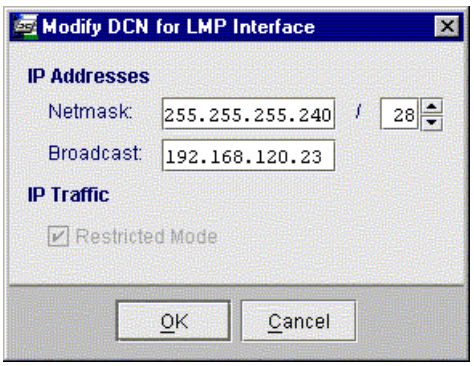


Figure 115. Modify DCN for LMP Interface

Click **OK** to send the changes to the node and close the Modify DCN for LMP Interface window, or **Apply** to send the changes to the node and keep the window open.

2.11.2 Modifying IP routing table

Purpose

The Nokia AXC has an integrated IP router which has to be configured. In order for the Data Communications Network (DCN) to work, the routing table should be configured so that there is a route to each possible destination address specified.

Before you start

Note

Only routes that are of type indirect can be modified or deleted. Direct routes are automatically created by the AXC and cannot be modified by the user.

Note

IP addresses 192.168.254.xxx and 192.168.255.xxx should not be configured. These subnets are reserved for inter-unit communication protocol of BTS internal components.

Steps

1. Click IP → Routing Table...

The IP Routing window opens.

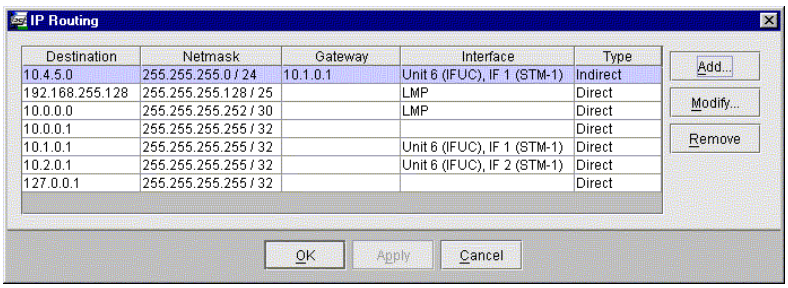


Figure 116. Inspect IP routing

2. Delete a route

If you want to remove a route, select the route from the list and click **Remove**.

3. Add a route

If you want to add a route, click **Add...** and specify the Destination address, Netmask and Gateway. For more information see *Defining IP configuration*.

Click **OK** to close the Add IP Route window.

4. Modify a route

If you want to modify a route, select the route and click **Modify...**. Make the necessary modifications.

The following settings can be modified:

- Destination (IP address for indirectly connected IP nodes)
- Netmask (netmask of the destination address)
- Gateway (gateway IP address of the destination)

For a complete entry all of the values have to be filled.

Enabling Default Gateway will set Destination and Netmask to 0.0.0.0. This will simplify the configuration of a default route as you only need to configure the Gateway. The Default Gateway check box is selected if the default gateway has not been defined or if the default route is being modified.

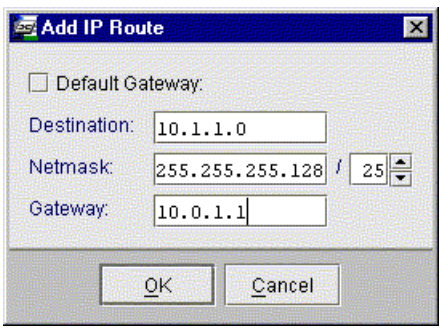


Figure 117. Modify IP route

Click **OK** to close the Modify IP Route window.

5. Send the changes to the node

Click **OK** to send the changes to the node and close the Modify IP Route window, or **Apply** to send the changes and keep the window open.

2.11.3 Modifying NTP settings

Purpose

Time setting in the AXC can be handled via Network Time Protocol (NTP) by connecting to an NTP server. System time can also be configured manually.

Note

If no NTP server is available the system time can be configured also manually. In this case the time settings are lost after a restart of the AXC. Therefore it is recommended to handle time via NTP servers.

Steps

1. Click IP → System time...

The System Time window opens.

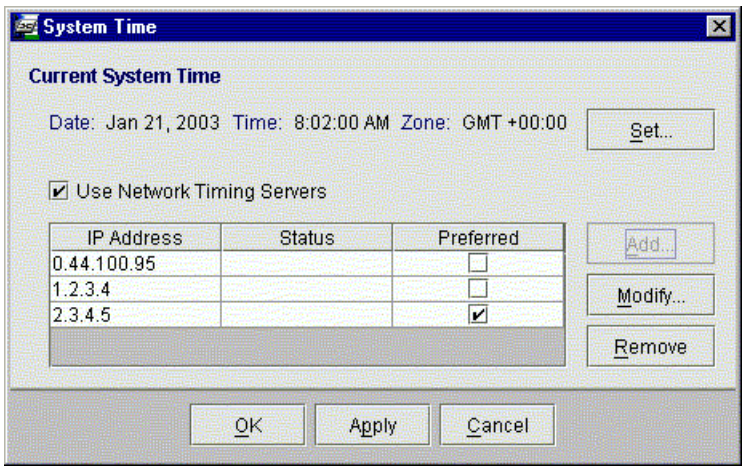


Figure 118. System Time window

2. Modify NTP settings

Select the NTP server that you want to modify from the list and click **Modify...**. You can modify the IP Address and select/deselect the Preferred box. Click **OK**.

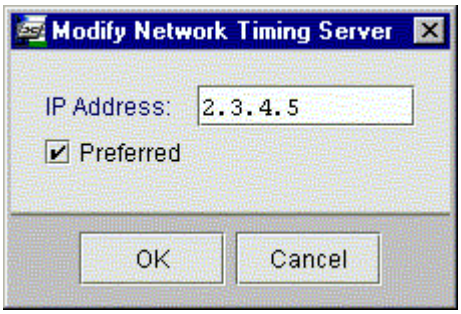


Figure 119. Modify NTP

3. Add an NTP server

If you want to add an NTP server click **Add...** and enter the IP address of the new NTP server. If you want this server to be the preferred server, check the Preferred box. Click **OK**.

Note

It is possible to configure several NTP servers. The AXC chooses the best server, taking into account several factors like stratum or round trip delays. If these criteria are the same for two or more servers, the preferred server is used.

---

4. Remove an NTP server

Select the NTP server you want to remove and click **Remove**.

5. Modify date and time settings manually

You can modify the date and time settings manually by clicking **Set...** and selecting Time, Day, Month and Year.

Note

This is not recommended if NTP has been set to enabled as in this case the NTP synchronisation is disturbed.

6. Send the changes to the node

Click **OK** to send the changes to the node and close the System time window, or **Apply** to send the changes to the node and keep the window open.

2.11.4 Modifying public IP address

Purpose

The public IP address of an AXC can be reconfigured with the Nokia AXC Manager. The public IP address can be any valid IP address that is not in the subnets 192.168.254.xxx and 192.168.255.xxx. These subnets are reserved for inter-unit communication protocol of BTS internal components.

Steps

1. Click IP → DCN...

The DCN window opens.

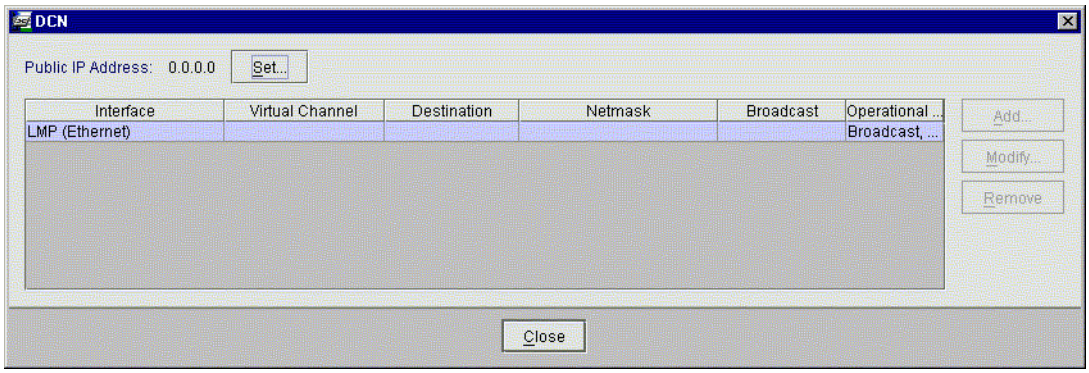


Figure 120. DCN window

2. Click Set... at the top of the window

The Set AXC Public IP Address window opens.

Figure 121. Set AXC Public IP Address

3. Define the public IP address

Enter the public IP address for the AXC.

4. Send the changes to the node

Click **OK**. The AXC Manager configures the public IP address.

Click **Close** to close the DCN window.

2.11.5 Inspecting and modifying Management Protocol settings

Purpose

The Management Protocol settings are mandatory if the AXC shall be registered to and identified by Nokia's Network Management System NetAct.

Steps

1. Click Configuration → Management Protocol...

The Management Protocol window opens.

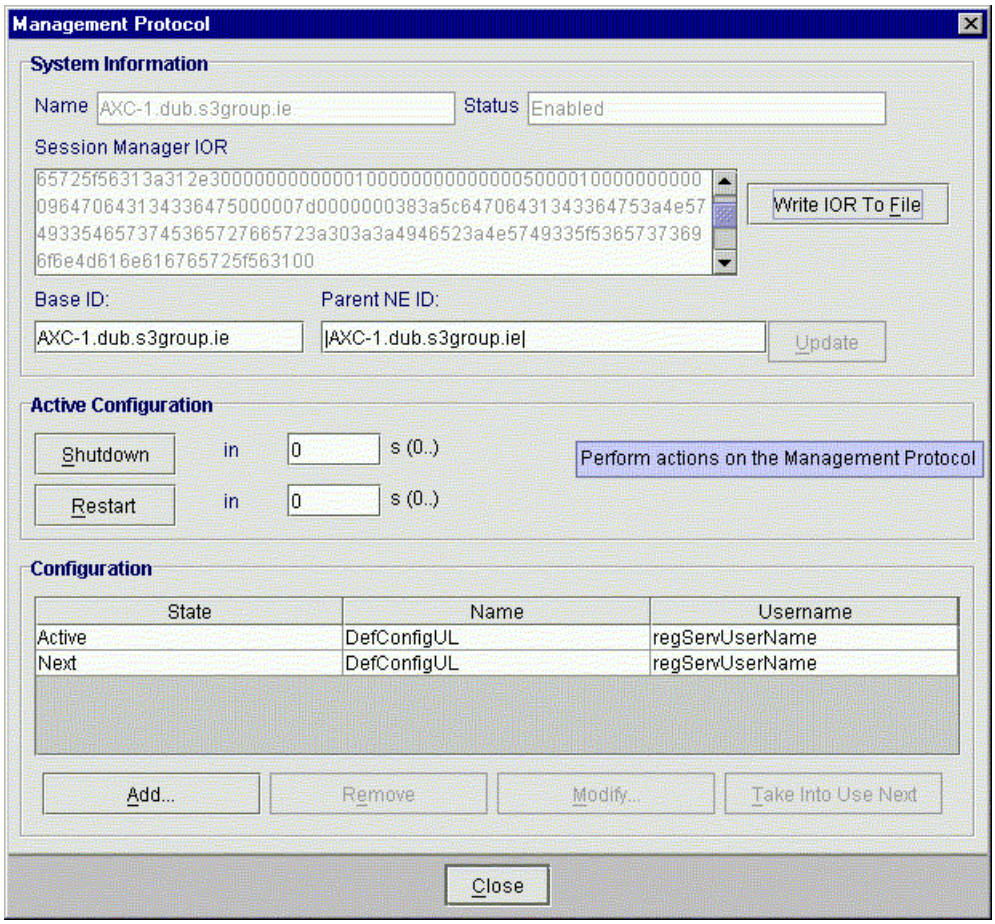


Figure 122. Management Protocol window

2. Inspect the Management Protocol settings

The following information is displayed:

- System information shows information about the AXC the AXC Manager is connected to:
  - Name
  - Status
  - Session Manager IOR
  - Base ID (the unique identifier for the AXC in the network)
  - Parent NE ID (the NWI3 identifier of the BTS the AXC is located in (for S-AXC no Parent NE ID is defined))

- Configuration shows all available configurations. The following information is displayed for the configurations:
  - State (Active/Next/None)
  - Name
  - Username

3. Modify the Base ID and Parent ID

Modify the settings if necessary. The Base ID is the unique identifier for the AXC in the network, and the Parent NE ID is the NWI3 identifier of the BTS the AXC is located in (for S-AXC no Parent NE ID is defined).

The Base ID and the Parent NE ID are formed according to the following scheme:

Table 7. Base ID and Parent NE ID naming scheme

Base ID	NE-AXC-<id> For example: NE-AXC-17 The value for the <id> is planned in advance and it must be unique among the AXCs in the RAN
Parent NE ID	The value is entered in format: <Manager object Specifier> | <BaseId> | <LocalMOID> • <Managed Object Specifier> = NE • <BaseId> = BaseId of the RNC controlling the BTS in which the AXC is located • <LocalMOID> = DN:NE-WBTS-Id For example NE | NE-RNC-5 | DN:NE-WBTS-12 The Parent NE ID value for a stand-alone AXC is NULL | NULL-0 | DN:NULL-0

Click **Update**.

4. Remove NetAct's Interoperable Object Reference (IOR) string in the AXC

Remove a configuration by selecting the configuration and clicking **Remove**. The AXC Manager asks for confirmation.

5. Modify IOR string in AXC

Select the configuration that you want to modify and click **Modify...**.

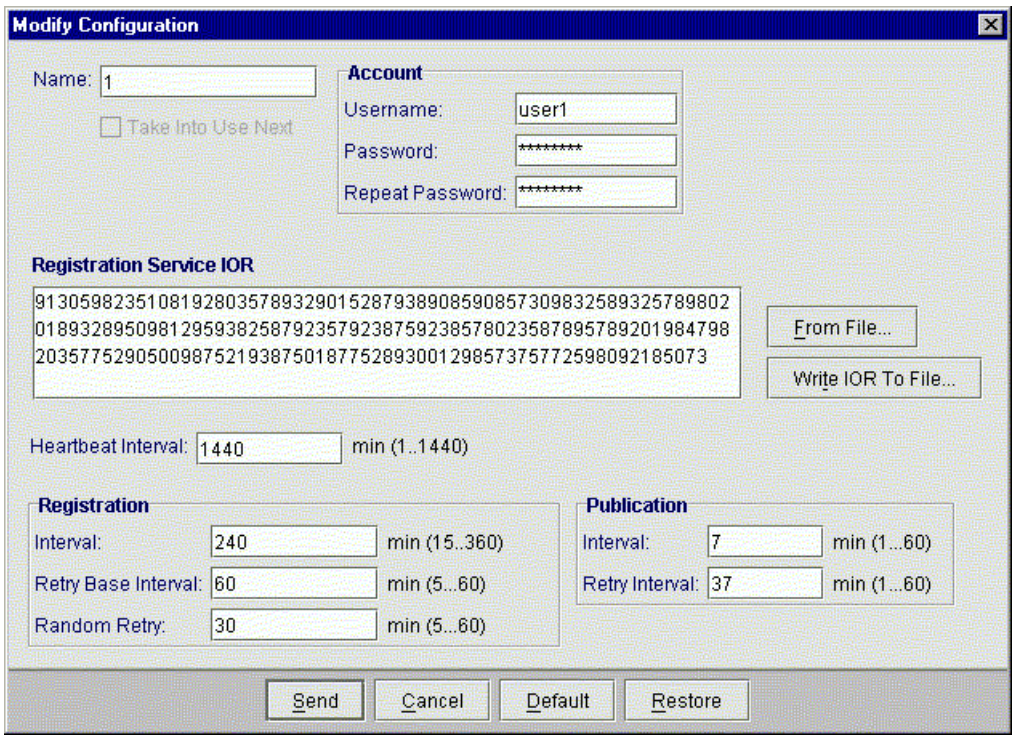


Figure 123. Modify configuration

Modify the following if necessary:

- Name of configuration
- NWI3 Registration Service account parameters, Username and Password
- NWI3 Registration Service IOR by clicking **From File...** and selecting the file

Click **Send**.

6. Set new IOR string in AXC

Click **Add...** in the Management Protocol window. The Add Configuration window opens.

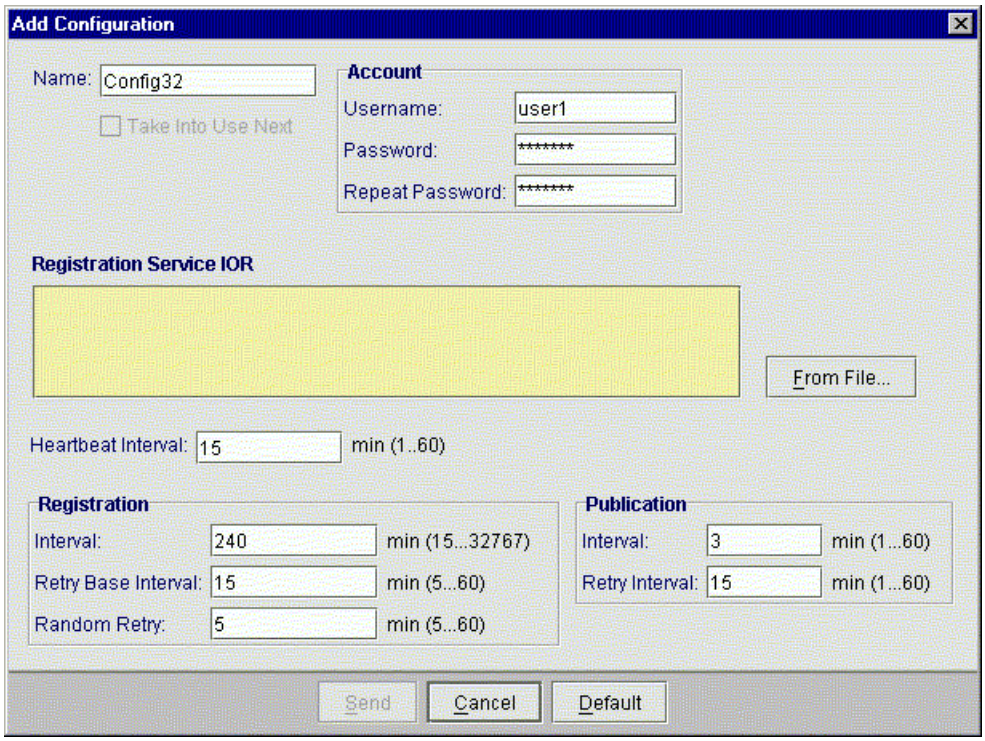


Figure 124. Add configuration

Define the following settings:

- Name of configuration
- NWI3 Registration Service account parameters, Username and Password
- select the file that contains the NWI3 Registration Service IOR by clicking **From File...**

Click **Send**.

7. Activate a configuration

Select the configuration object from the list and click **Take Into Use Next**.

Click **Restart** to start the AXC's registration process towards NetAct.

Close the window by clicking **Close**.

2.11.6 Modifying AXC configuration with XML configuration file

Purpose

The configuration of the AXC can be modified by downloading an AML configuration file containing the changed configuration.

Before you start

Check that:

- the AML configuration file has been prepared and is available
- the Nokia AXC has access to the location of the AML configuration file for example Local Management Tool (LMT) or a database in NetAct

The AXC Manager contains a File Transfer Protocol (FTP) server. This AXC internal FTP server does not need to be configured, and it is activated automatically when necessary. If the AML configuration files or software packages are downloaded to the AXC locally from the LMT, no external FTP server needs to be configured.

Note

If the AXC Manager integrated FTP server is used, all other FTP servers running on the same PC must be closed to avoid port conflicts.

Note

If a remote FTP server is used, make sure that the AML configuration file is accessible to the AXC and that the FTP server is running and it is online. For more information see relevant documentation.

Summary

You can modify the AXC configuration with an AML file by:

- downloading a partial AML file configuration file to the AXC
- uploading the configuration of the AXC, modifying it with Nokia NetAct Plan Editor and downloading the new AML file to the AXC
- resetting the AXC to factory settings with an AML file

Steps

1. Download a partial AML file configuration file to the AXC

In partial AML file configuration the AML file can be parsed and activated immediately without resetting the AXC. The configuration will be taken into use on top of the current AXC configuration. For more information, see *Commissioning the AXC with XML configuration file*.

2. Upload the AXC configuration to Plan Editor

The Nokia AXC has a configuration upload capability. The Nokia AXC Manager triggers the generation of an AML file containing the full configuration of the AXC node. The current AXC configuration is then uploaded to Nokia NetAct Plan Editor where settings can be changed or added. Finally, a new AML file is created and downloaded to the AXC.

3. Resetting the AXC to factory settings

Purpose

The AXC can be reset to factory settings by downloading an AML file (AXC_C20final_Factory_Defaults.xml) that is delivered with the AXC Manager. The file can be found in the FileStorage folder of the AXC Manager.

Steps

a. Click Node → Import configuration...

The Import Configuration window opens.

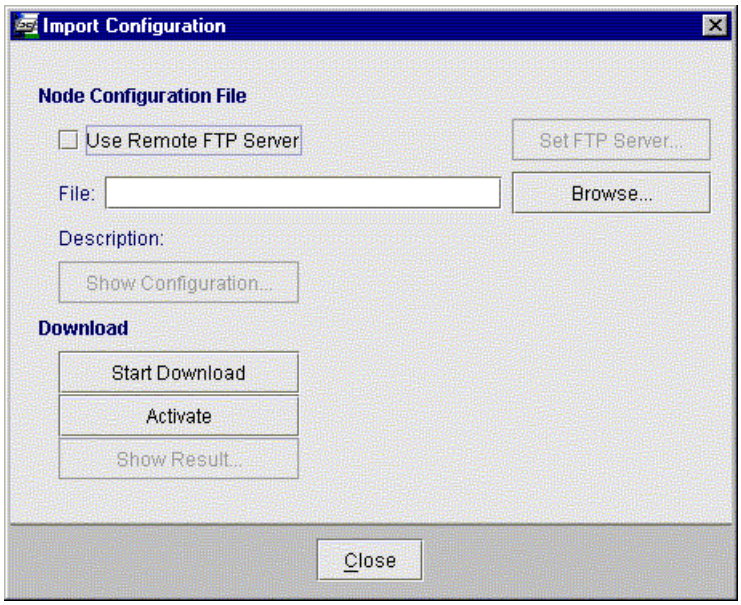


Figure 125. Import configuration

b. Download the AML file

Click **Browse** and select the AML file in the Select Node Configuration for Import window. Click **Open**.

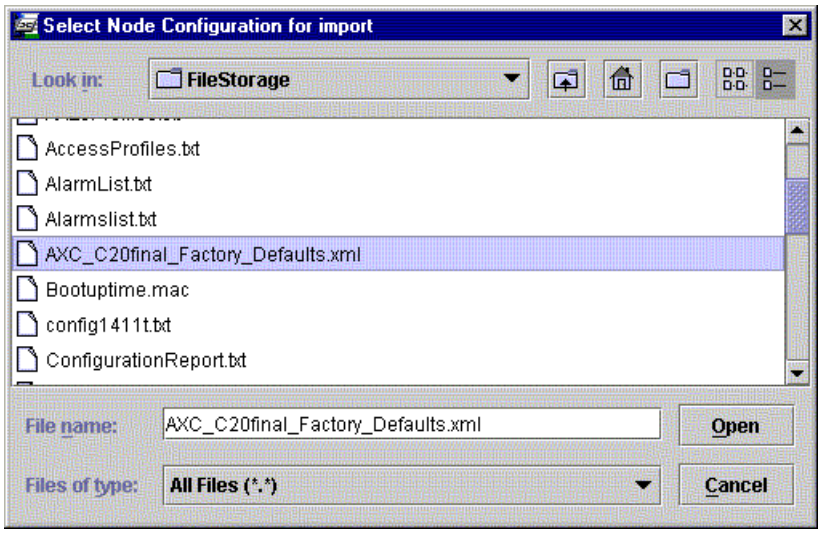


Figure 126. Select Node Configuration for Import

Click **Start Download** in the Node Configuration window to start the download of the AML file.

After the AML configuration download is complete a message is displayed.

c. Activate the configuration

Activate the AML configuration by clicking **Activate**. Confirm the activation by clicking **Activate**.

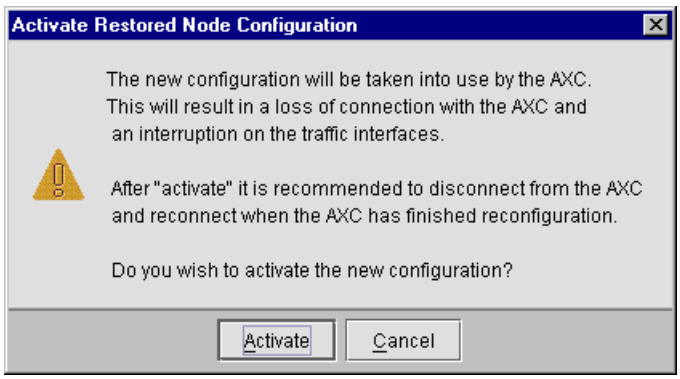


Figure 127. Activate restored node configuration

Verification

You can check the results of the AML download with the Nokia AXC Manager. For more information, see *Commissioning the AXC with XML configuration file*.

2.11.7 Modifying synchronisation settings

Purpose

To ensure the synchronisation of the Nokia AXC, the recovered timing source and the timing protection source have to be configured. A maximum of 3 timing sources are possible, the third always being the internal clock.

Steps

1. **Click Configuration → Synchronisation...**

   The Synchronisation window opens.

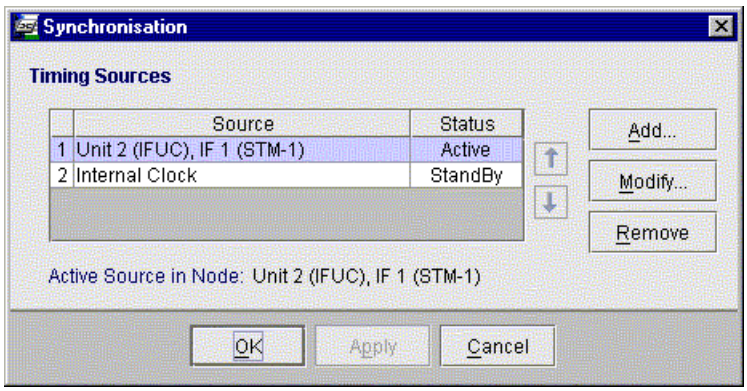


Figure 128. Synchronisation window

2. **Delete a timing source**

   If you want to remove a Source, select the timing source from the list and click **Remove**.

3. **Modify a timing source**

If you want to modify a timing source, select the Source and click **Modify...**. You can change the timing source type between Transmission Interface and AXU Synchronisation Input.

For the Transmission Interface or recovered timing source you can modify the Unit and Interface you want to use as recovered clock source.

Note

Also an IMA link belonging to an IMA group can be selected as a synchronisation timing source. This link does not have to be the same as the TX timing link that is used for the IMA group timing in Tx direction.

For the AXU Synchronisation Input or external timing source you can modify the Frequency of the external source clock.

Table 8. Frequency of the external source clock

External reference clock interface 1 (ERC 1)	64 kHz + 8 kHz (AMI with 8 kHz bipolar violation)
External reference clock interface 2 (ERC 2)	1.544 MHz 2.084 to 2.048 MHz 2 Mbit/s

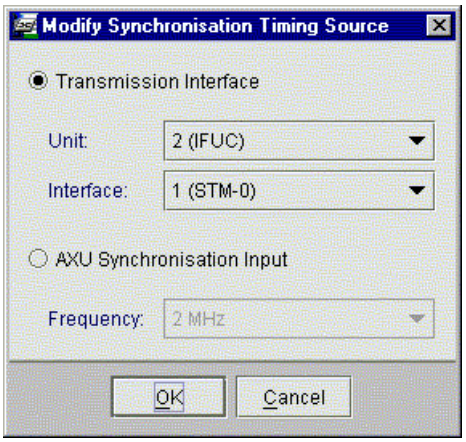


Figure 129. Modify synchronisation timing source

Click **OK** to close the Modify synchronisation timing source window.

4. Modify the priority of timing sources

To modify the priority of the synchronisation timing sources use the arrow buttons in the Synchronisation window. Select the source whose priority you want to modify and use the arrow buttons to change the Status. The Up button is activated when the chosen source is in Stand-by mode and the Down button is activated when the chosen source is Active.

5. Send the changes to the node

Click **OK** to send the changes to the node and close the Synchronisation window, or **Apply** to send the changes and keep the window open.

2.11.8 Modifying AXC Q1 Support Function

Purpose

The Nokia AXC contains a Q1 Support Function that acts as a master poller for Nokia Q1 managed network elements. Via Q1 Embedded Operation Channels (EOC) the AXC Q1 Support Function can poll far-end Q1 network elements. Additionally the AXC Q1 Support Function can poll Q1 network elements connected to the AXC's V.11 Q1 interface, and it can poll the Flexbus part of IFUE.

Please refer to *Commissioning* in the *Nokia FlexiHopper and MetroHopper with IFUE User Manual* for more information on configuring the Q1 management connection over the Q1SF and the connection type for the Flexbus part of the IFUE.

Before you start

Note

If the AXC Q1 Support Function is connected via Data Communications Network (DCN) to the Nokia Q1 Agent Mediation device, the configuration of Q1 Support Function may differ. Please refer to *Nokia Q1 Agent documentation* for more information.

Note

The Q1 Support Function settings are not persistent. If no Q1 Agent connection is available, Q1 Support Function has to be reconfigured if AXC is rebooted or power lost.

Check that:

- the General Communications Service GCS R4.2 (or later) tool is installed on the LMT

Steps

1. Select the new baud rate

Click **Node → Q1 Support Function → Set Channel to → [desired baud rate]**. The available baud rates are 300, 600, 1200, 2400, 4800, 9600 and 19200.

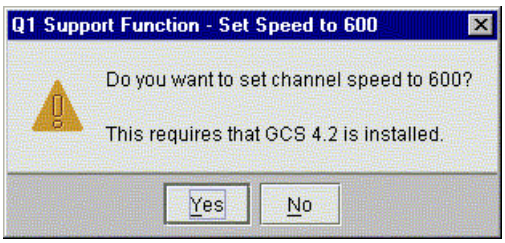


Figure 130. Set Q1 Support Function channel

2. Confirm channel speed

Click **Yes** to confirm the channel speed. Nokia AXC will set the channel speed to the desired baud rate.

Expected outcome

The GCS Command Line Tool starts automatically and configures all necessary settings.

Check that the last line of the output reads # clean run, no errors occurred.

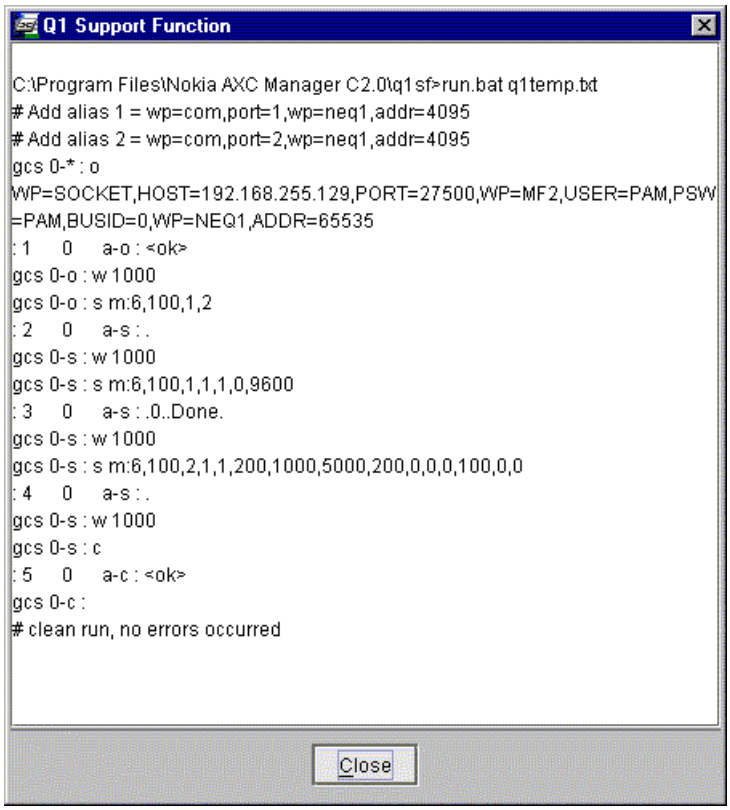


Figure 131. Q1 Support Function output

2.11.9 Inspecting and modifying Management Protocol settings

Purpose

The Management Protocol settings are mandatory if the AXC shall be registered to and identified by Nokia's Network Management System NetAct.

Steps

1. Click Configuration → Management Protocol...

The Management Protocol window opens.

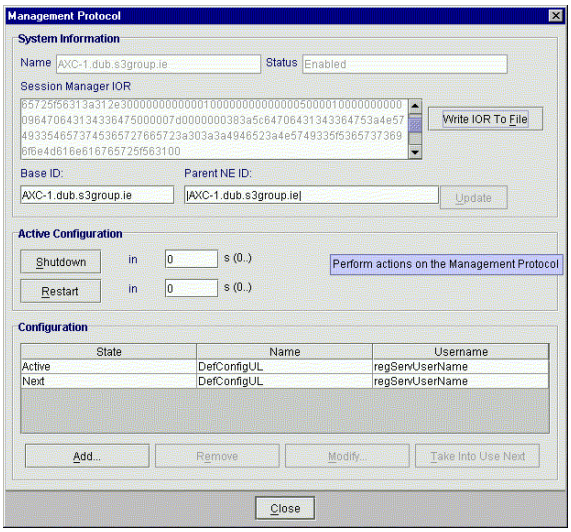


Figure 132. Management Protocol window

2. Inspect the Management Protocol settings

The following information is displayed:

- System information shows information about the AXC the AXC Manager is connected to:
  - Name
  - Status
  - Session Manager IOR
  - Base ID (the unique identifier for the AXC in the network)
  - Parent NE ID (the NWI3 identifier of the BTS the AXC is located in (for S-AXC no Parent NE ID is defined))
- Configuration shows all available configurations. The following information is displayed for the configurations:
  - State (Active/Next/None)
  - Name
  - Username

3. Modify the Base ID and Parent ID

Modify the settings if necessary. The Base ID is the unique identifier for the AXC in the network, and the Parent NE ID is the NWI3 identifier of the BTS the AXC is located in (for S-AXC no Parent NE ID is defined).

The Base ID and the Parent NE ID are formed according to the following scheme:

Table 9. Base ID and Parent NE ID naming scheme

Base ID	NE-AXC-<id> For example: NE-AXC-17 The value for the <id> is planned in advance and it must be unique among the AXCs in the RAN
Parent NE ID	The value is entered in format: <Manager object Specifier> | <BaseId> | <LocalMOID> • <Managed Object Specifier> = NE • <BaseId> = BaseId of the RNC controlling the BTS in which the AXC is located • <LocalMOID> = DN:NE-WBTS-Id For example NE | NE-RNC-5 | DN:NE-WBTS-12 The Parent NE ID value for a stand-alone AXC is NULL | NULL-0 | DN:NULL-0

Click **Update**.

4. Remove NetAct's Interoperable Object Reference (IOR) string in the AXC

Remove a configuration by selecting the configuration and clicking **Remove**. The AXC Manager asks for confirmation.

5. Modify IOR string in AXC

Select the configuration that you want to modify and click **Modify...**.

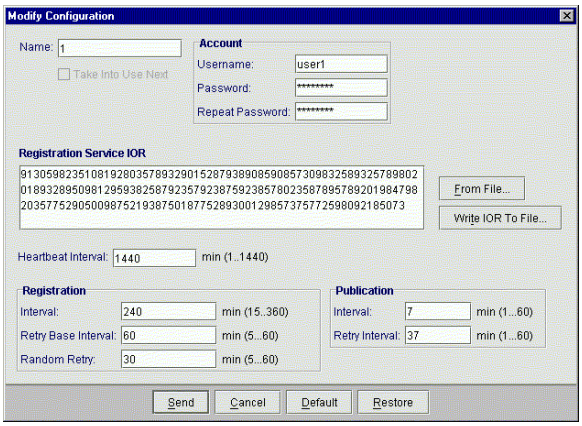


Figure 133. Modify configuration

Modify the following if necessary:

- Name of configuration
- NWI3 Registration Service account parameters, Username and Password
- NWI3 Registration Service IOR by clicking **From File...** and selecting the file

Click **Send**.

6. Set new IOR string in AXC

Click **Add...** in the Management Protocol window. The Add Configuration window opens.

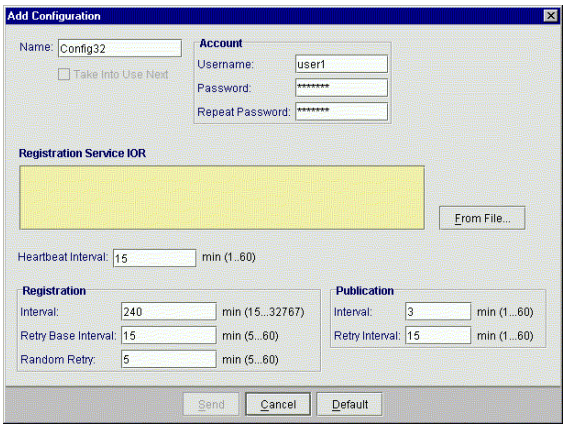


Figure 134. Add configuration

Define the following settings:

- Name of configuration
- NWI3 Registration Service account parameters, Username and Password
- select the file that contains the NWI3 Registration Service IOR by clicking **From File...**

Click **Send**.

7. Activate a configuration

Select the configuration object from the list and click **Take Into Use Next**.

Click **Restart** to start the AXC's registration process towards NetAct.

Close the window by clicking **Close**.

2.11.10 Modifying AXC configuration with XML configuration file

Purpose

The configuration of the AXC can be modified by downloading an AML configuration file containing the changed configuration.

Before you start

Check that:

- the AML configuration file has been prepared and is available
- the Nokia AXC has access to the location of the AML configuration file for example Local Management Tool (LMT) or a database in NetAct

The AXC Manager contains a File Transfer Protocol (FTP) server. This AXC internal FTP server does not need to be configured, and it is activated automatically when necessary. If the AML configuration files or software packages are downloaded to the AXC locally from the LMT, no external FTP server needs to be configured.

Note

If the AXC Manager integrated FTP server is used, all other FTP servers running on the same PC must be closed to avoid port conflicts.

Note

If a remote FTP server is used, make sure that the AML configuration file is accessible to the AXC and that the FTP server is running and it is online. For more information see relevant documentation.

Summary

You can modify the AXC configuration with an AML file by:

- downloading a partial AML file configuration file to the AXC
- uploading the configuration of the AXC, modifying it with Nokia NetAct Plan Editor and downloading the new AML file to the AXC
- resetting the AXC to factory settings with an AML file

Steps

1. Download a partial AML file configuration file to the AXC

In partial AML file configuration the AML file can be parsed and activated immediately without resetting the AXC. The configuration will be taken into use on top of the current AXC configuration. For more information, see *Commissioning the AXC with XML configuration file*.

2. Upload the AXC configuration to Plan Editor

The Nokia AXC has a configuration upload capability. The Nokia AXC Manager triggers the generation of an AML file containing the full configuration of the AXC node. The current AXC configuration is then uploaded to Nokia NetAct Plan Editor where settings can be changed or added. Finally, a new AML file is created and downloaded to the AXC.

3. Resetting the AXC to factory settings

Purpose

The AXC can be reset to factory settings by downloading an AML file (AXC_C20final_Factory_Defaults.xml) that is delivered with the AXC Manager. The file can be found in the FileStorage folder of the AXC Manager.

Steps

a. Click Node → Import configuration...

The Import Configuration window opens.

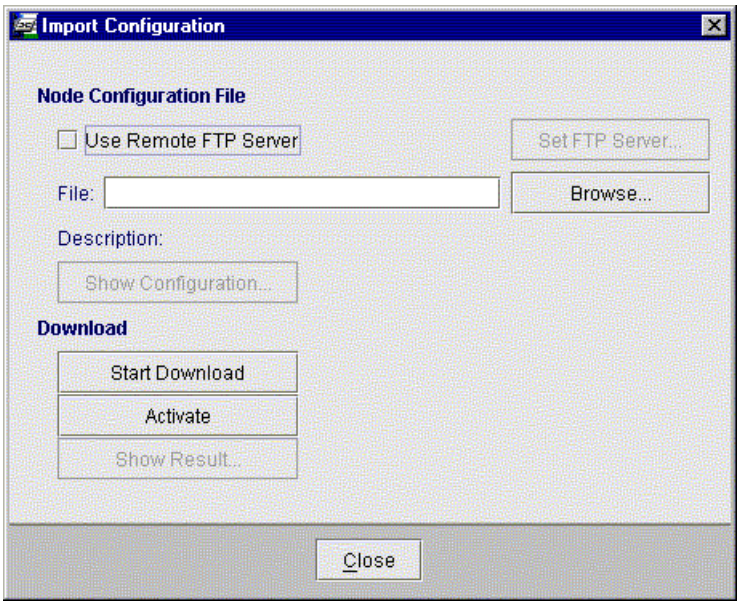


Figure 135. Import configuration

b. Download the AML file

Click **Browse** and select the AML file in the Select Node Configuration for Import window. Click **Open**.

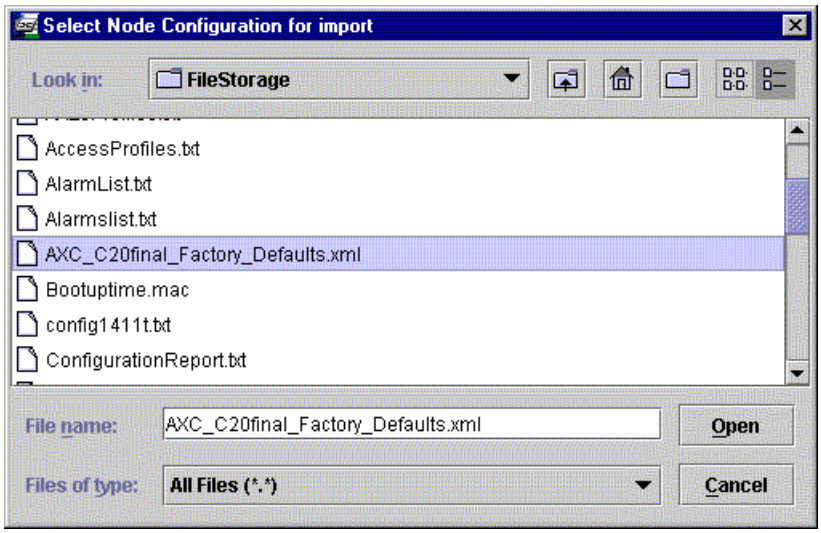


Figure 136. Select Node Configuration for Import

Click **Start Download** in the Node Configuration window to start the download of the AML file.

After the AML configuration download is complete a message is displayed.

c. Activate the configuration

Activate the AML configuration by clicking **Activate**. Confirm the activation by clicking **Activate**.

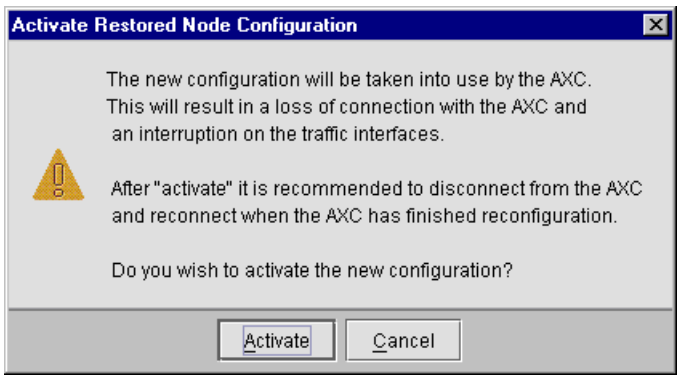


Figure 137. Activate restored node configuration

Verification

You can check the results of the AML download with the Nokia AXC Manager. For more information, see *Commissioning the AXC with XML configuration file.*

2.11.11 Modifying synchronisation settings

Purpose

To ensure the synchronisation of the Nokia AXC, the recovered timing source and the timing protection source have to be configured. A maximum of 3 timing sources are possible, the third always being the internal clock.

Steps

1. Click Configuration → Synchronisation...

The Synchronisation window opens.

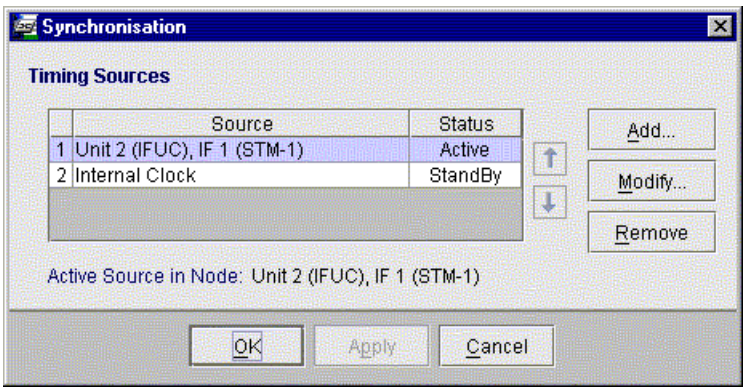


Figure 138. Synchronisation window

2. Delete a timing source

If you want to remove a Source, select the timing source from the list and click **Remove**.

3. Modify a timing source

If you want to modify a timing source, select the Source and click **Modify...**. You can change the timing source type between Transmission Interface and AXU Synchronisation Input.

For the Transmission Interface or recovered timing source you can modify the Unit and Interface you want to use as recovered clock source.

Note

Also an IMA link belonging to an IMA group can be selected as a synchronisation timing source. This link does not have to be the same as the TX timing link that is used for the IMA group timing in Tx direction.

For the AXU Synchronisation Input or external timing source you can modify the Frequency of the external source clock.

Table 10. Frequency of the external source clock

External reference clock interface 1 (ERC 1)	64 kHz + 8 kHz (AMI with 8 kHz bipolar violation)
External reference clock interface 2 (ERC 2)	1.544 MHz 2.084 to 2.048 MHz 2 Mbit/s

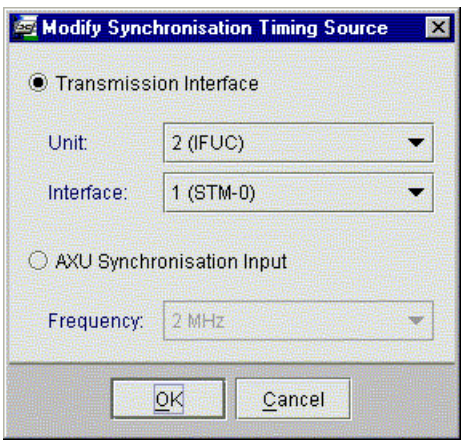


Figure 139. Modify synchronisation timing source

Click **OK** to close the Modify synchronisation timing source window.

4. Modify the priority of timing sources

To modify the priority of the synchronisation timing sources use the arrow buttons in the Synchronisation window. Select the source whose priority you want to modify and use the arrow buttons to change the Status. The Up button is activated when the chosen source is in Stand-by mode and the Down button is activated when the chosen source is Active.

5. Send the changes to the node

Click **OK** to send the changes to the node and close the Synchronisation window, or **Apply** to send the changes and keep the window open.

2.11.12 Modifying AXC Q1 Support Function

Purpose

The Nokia AXC contains a Q1 Support Function that acts as a master poller for Nokia Q1 managed network elements. Via Q1 Embedded Operation Channels (EOC) the AXC Q1 Support Function can poll far-end Q1 network elements. Additionally the AXC Q1 Support Function can poll Q1 network elements connected to the AXC's V.11 Q1 interface, and it can poll the Flexbus part of IFUE.

Please refer to *Commissioning* in the *Nokia FlexiHopper and MetroHopper with IFUE User Manual* for more information on configuring the Q1 management connection over the Q1SF and the connection type for the Flexbus part of the IFUE.

Before you start

Note

If the AXC Q1 Support Function is connected via Data Communications Network (DCN) to the Nokia Q1 Agent Mediation device, the configuration of Q1 Support Function may differ. Please refer to *Nokia Q1 Agent documentation* for more information.

Note

The Q1 Support Function settings are not persistent. If no Q1 Agent connection is available, Q1 Support Function has to be reconfigured if AXC is rebooted or power lost.

Check that:

- the General Communications Service GCS R4.2 (or later) tool is installed on the LMT

Steps

1. Select the new baud rate

Click **Node → Q1 Support Function → Set Channel to → [desired baud rate]**. The available baud rates are 300, 600, 1200, 2400, 4800, 9600 and 19200.

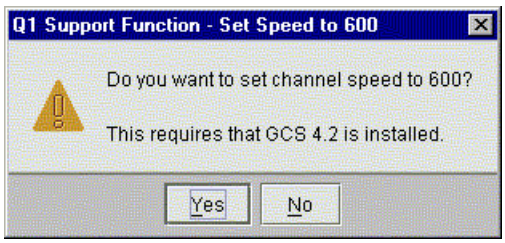


Figure 140. Set Q1 Support Function channel

2. Confirm channel speed

Click **Yes** to confirm the channel speed. Nokia AXC will set the channel speed to the desired baud rate.

Expected outcome

The GCS Command Line Tool starts automatically and configures all necessary settings.

Check that the last line of the output reads # clean run, no errors occurred.

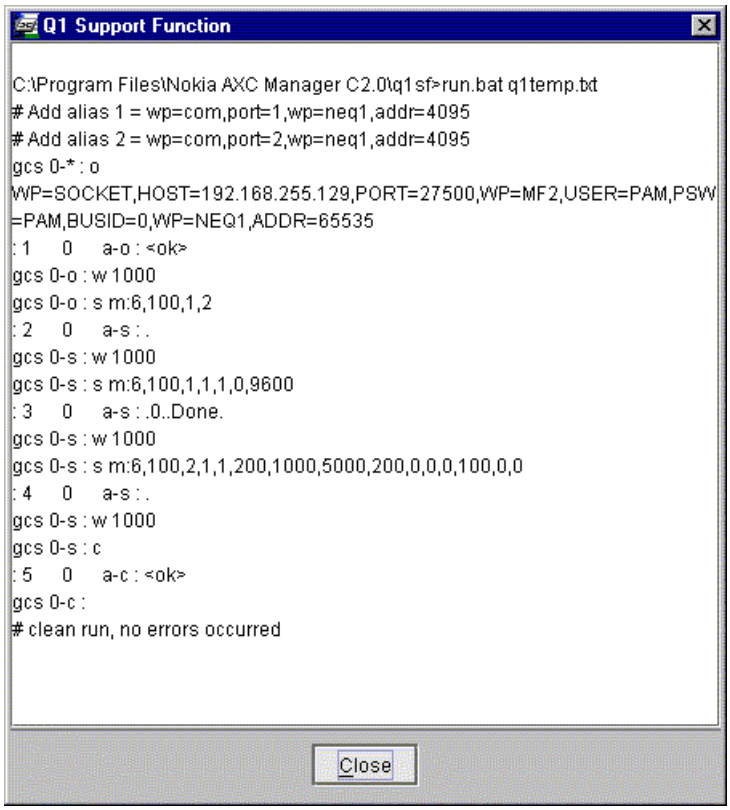


Figure 141. Q1 Support Function output

3 Integrating WCDMA of UltraSite EDGE BTS

3.1 Integrating WCDMA to NetAct

Summary

For information regarding Integrating WCDMA to NetAct, use *Nokia Online Services (NOLS).*

Steps

1. **Starting at the *NOLS Main Page* window, click on the following submenus:**

   a. Maintenance
   b. Documentation Center
   c. Product Information
   d. Network and Service Management
   e. Network Management
   f. Nokia NetAct
   g. Integrate
   h. Integrating 3G BTS to NetAct

2. **Locate NetAct documentation.**

   On the *Nokia NetAct* window of NOLS, locate *Nokia NetAct Framework, Rel. OSS3.1, ED2, Product Documentation.*

3. **Open or download NetAct documents.**

   Click on *Browse* or *Download.*

Further information

If you have any questions or troubles using Nokia Online Services please contact us. We appreciate your improvement proposals and comments. Your feedback is valuable as we try to make Nokia Online Services better fulfill your needs!

Please contact:

- NOLS Webmaster (mail to:webmaster.nols@nokia.com) for feedback or questions about Nokia Online Services.
- NOLS Administrator (mailto:administrator.nols@nokia.com) if you forget your password or experience access problems to Nokia Online Services.
- Your Nokia Care Manager for assistance in the use and practicalities of Nokia Online Services.
- Your local Nokia Help Desk, which is your primary support for technical problems.
- You are also welcome to give your feedback using the Feedback feature. All feedback given using this feature is accessible to all fellow workers in your company. We do not forward your feedback to any 3rd parties.

3.2 Integrating AXC of UltraSite EDGE BTS with WCDMA upgrade

3.2.1 Integrating AXC to Iub

Purpose

Once the Nokia AXC has been installed and commissioned it has to be integrated to the I_{ub} to ensure all necessary connections between the BTS and the Radio Network Controller (RNC).

Before you start

Check that:

- the AXC has been commissioned
- no changes have occurred to the hardware configuration since the AXC was commissioned: check that all installed plug-in units are visible in the hardware view and the unit types are correct for each slot
- you have the necessary integration information available

Check the software version running in the AXC by clicking **Node → Software**. You can inspect the active and inactive software versions in the Node Software window.

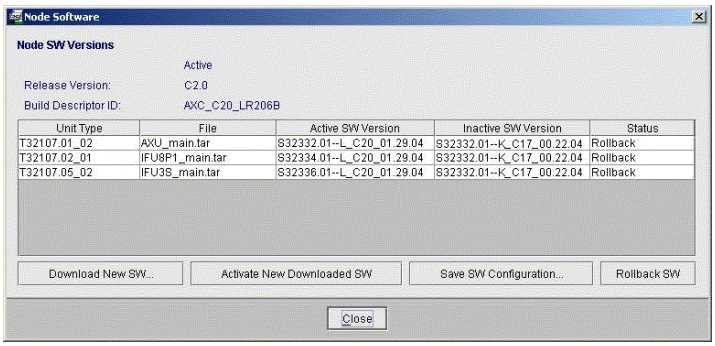


Figure 142. Node Software window

Steps

1. Check the physical lines connections

In the Hardware view click **View → Refresh → Refresh alarms**. If any physical layer alarms are displayed, check the transmission lines towards the neighbouring nodes. Connect the transmission cables. If there is a proper signal on the line, the alarms will disappear.

If the AXC is integrated into a WCDMA BTS the WSCA status LED should turn green. If the LED does not turn green check that synchronisation is set up correctly (the tested interface should be the active synchronisation source) and that the interface is set to unlocked and enabled in the RNC. If this does not help, and the LED stays red and the LOS alarms are not cancelled, check that the TX/RX cables on the IFU are connected correctly.

2. Check the external interface settings

Check the interface settings in the Hardware view by selecting each interface in turn and clicking **Modify...**.

For SDH/Sonet interfaces check that the interfaces have been taken into use and that the Laser box is ticked.

For PDH interfaces check that the interfaces have been taken into use.

Click **View → Refresh → Refresh Alarms** and check that no alarms appear for the connected interfaces.

3. Check the internal interface settings

Check the connections to each WAM unit using private ping. Run a DOS Prompt on the LMT and ping each WAM in turn and wait for the response.

Check the connections to the master WAM unit using public ping. Ping the master WAM using the public IP address.

Note

This is possible only if the BTS has been commissioned.

---

4. Check IMA settings

Check the Inverse Multiplexing for ATM (IMA) settings by clicking **Configuration → IMA...**.

Check that all IMA groups that were configured during commissioning are present and the administrative state of each group is set to unlocked and the IMA groups are operational.

Select the Link pane and check that the IMA links are associated with the correct interfaces according to the commissioning information.

Select the Performance pane and check that the maximum differential delay is set to 25 ms (default value).

5. Configure the necessary ATM cross-connections

Configure the following ATM cross-connections between each WCDMA BTS and RNC.

a. minimum required connections for AXUA (5 ATM connections):

- ATM connections per BTS cabinet:
  - 1 VCC for Operation and Maintenance (UBR, AAL5)
  - 1 VCC for NBAP-C (CBR, AAL5, terminated in Master WAM)
- ATM connections per BTS sector (CBR):

- 1 VCC for AAL2 user traffic
- 1 VCC for AAL2 signalling (AAL5)
- 1 VCC for NBAP-D

Note

When the feature BTS AAL2 Multiplexing is not used (AXUA) the number of AAL2 user traffic VCCs may be increased according to BTS configurations (more sectors) and to traffic load calculations. NBAP-D and AAL2 signalling VCCs need to be added for BTSs with more than one sector.

b. minimum required connections for AXUB (5 connections):

- ATM connections per BTS cabinet:
  - 1 VCC for Operation and Maintenance (UBR, AAL5)
  - 1 VCC for NBAP-C (CBR, AAL5, terminated in Master WAM)
  - 1 VCC for AAL2 user traffic (CBR, second VCC required if first is fully loaded)
  - 1 VCC for AAL2 signalling (CBR, AAL5)
- ATM connections per BTS sector:
  - 1 VCC for NBAP-D (CBR)

Note

When the feature BTS AAL2 Multiplexing is used (AXUB) the number of AAL2 user traffic VCCs may be increased according to traffic load calculations. NBAP-D VCCs need to be added for BTSs with more than one sector.

6. Check the Network Time Protocol (NTP) server

Click **IP → System time...** and check that all configured NTP servers, the server port and its IP addresses are visible in the list. For more information, see *Creating NTP server.*

7. Check the IP Routing table

Click **IP → Routing table...** and check the routing table information is according to the commissioning information.

8. Check the synchronisation source

Click **Configuration → Synchronisation...** and check that all the configured Recovered Clock Sources are visible in the list. Check that the incoming interface is at priority level 1, and if not, modify the priority settings.

Expected outcome

Connections between the network elements in the I_{ub} interface are operational.

3.2.2 Integrating AXC to NetAct

Purpose

The Nokia AXC can be remotely managed from NetAct after it has been integrated to the NetAct Operations and Maintenance (O&M) connection. Only the configurations that need to be established for the Nokia AXC are explained in detail here. Please refer to the *Integrating 3G BTS to NetAct* document delivered with NetAct documentation for more information on how to integrate Nokia AXC network elements to the Nokia NetAct.

Before you start

Check that:

- the AXC has been commissioned
- all necessary parameters are available

Steps

1. Configure the Management Protocol settings with the Nokia AXC Manager

The Management Protocol settings of the AXC have to be configured. For more information see *Configuring Management Protocol*. If the Nokia AXC is commissioned automatically by downloading an XML file no additional settings have to be configured as these parameters are included in the XML configuration file.

2. Define the IP configuration

Ensure there is a route from the AXC to the NetAct server. For more information see *Defining IP Configuration*.

3. **Transfer the commissioning settings to NetAct's Site Configuration Tool (SCT)**

   For more information see *Integrating 3G BTS to NetAct* in NetAct documentation.

4. **Configure Domain Name Service (DNS) and network views in NetAct**

   For more information see *Integrating 3G BTS to NetAct* in NetAct documentation.

4 Glossary

4.1 Glossary for UltraSite EDGE BTS

4.1.1 Abbreviations and acronyms

This section lists abbreviations and acronyms used throughout Nokia UltraSite EDGE Solution documentation.

AC	Alternating Current
ACFU	AC Filter Unit
A/D	Analog/Digital
ADC	Analog to Digital Converter
ADUA	AC/DC control and distribution unit for Integrated Battery Backup (IBBU)
AGC	Automatic Gain Control
ALS	Automatic Laser Shutdown
AMR	Adaptive Multi-Rate coding
ANSI	American National Standards Institute
ANT	Antenna connector
ARFN	Absolute Radio Frequency Channel Number
ASIC	Application Specific Integrated Circuit
ATM	Asynchronous Transfer Mode

AWG	American Wire Gauge
AXC	ATM cross-connect
AXU	ATM cross-connect unit
BAPT	Bundesamt für Post und Telekommunikation Telecommunications advisory agency of Federal Republic of Germany
BATx	Rectifier for battery backup
BBAG	12 V battery for Integrated Battery Backup (IBBU)
BB2x	Transceiver Baseband unit • BB2A for GSM • BB2E for GSM/EDGE
BCCH	Broadcast Control Channel
BCF	Base Control Function
BER	Bit Error Ratio The ratio of the number of bit errors to the total number of bits transmitted in a given time interval.
BIST	Built-In Self Test A technique that provides a circuit the capability to carry out an implicit test of itself.
BOIx	Base Operations and Interfaces unit
BPxN	Bias Tee without VSWR monitoring • BPDN for GSM 900/1800/1900 • BPxV Bias Tee with VSWR monitoring • BPGV for GSM 900 • BPDV for GSM 1800/1900
BS	British Standards
BSC	Base Station Controller

BSS	Base Station Subsystem
BTS	Base Transceiver Station (Base Station)
CC	Cross-Connection
CCCH	Common Control Channel
CCITT	Comité Consultatif International Télégraphique et Téléphonique International Telegraph and Telephone Consultative Committee (Telecommunications advisory agency of France)
CCUA	Cabinet Control Unit
CDMA	Code Division Multiple Access A technique in which the radio transmissions using the same frequency band are coded in a way that a signal from a certain transmitter can be received only by certain receivers
CE	Cable Entry; Consumer Electronics; Conformit Européen (European Conformity) CH Channel
CHDSP	Channel Digital Signal Processor
CN	Change Note A short trouble management document in a specified form sent to a customer about a modification in a product
CRC	Cyclic Redundancy Check A method for detecting errors in data transmission.
CRMx	Core Mechanics for Nokia UltraSite EDGE Base Station Indoor and Outdoor cabinet • CRMA for Indoor and Outdoor cabinets • CRMB for Site Support cabinets • CRMC for Midi Indoor and Outdoor cabinets
CSC	Customer Services Centre
D/A	Digital/Analog

DC	Direct Current
DCS	Digital Cellular System
DDS	Direct Digital Synthesis The frequency synthesis in which logic and memory are used to digitally construct the desired output signal, and a digital-to-analogue converter is used.
DL	(Downlink) The direction of transmission in which the BTS is the transmitting facility and the mobile station is the receiving facility.
DIP	Dual In-line Package
DRAM	Dynamic Random Access Memory
DRX	Discontinuous Reception
DSP	Digital Signal Processor
DTX	Discontinuous Transmission
DU2A	Dual Band Diplex Filter unit for GSM 900/1800
DVxx	Dual Variable Gain Duplex Filter unit • DVTB for GSM/EDGE 800 • DVTC for GSM/EDGE 800 co-siting • DVGA for GSM/EDGE 900 • DVHA for GSM/EDGE 900 customer-specific H band • DVJA for GSM/EDGE 900 customer-specific J band • DVDC for GSM/EDGE 1800 • DVDA for GSM/EDGE 1800 A band • DVDB for GSM/EDGE 1800 B band • DVPA for GSM/EDGE 1900
E1	European Digital Transmission Format Standard (2.048 Mbit/s)
EAC	External Alarms and Controsl

EC	European Community
EDGE	Enhanced Data rates for Global Evolution
EEC	European Economic Community
EEPROM	Electronically Erasable Programmable Read Only Memory
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
EMP	Electromagnetic Pulse
EN	European Norm
EQDSP	Equaliser Digital Signal Processor
ESD	Electrostatic Discharge
ET	Exchange Terminal
ETSI	European Telecommunications Standards Institute
Ext.	External
FACCH	Fast Associated Control Channel
FACH	Forward Access Channel
FCC	Federal Communications Commission The United States federal agency responsible for the regulation of interstate and international communications by radio, television, wire, satellite, and cable.
FC E1/T1	Wireline transmission unit (75 [ohm] E1, 120 [ohm] E1, or 100 [ohm] T1) of Nokia UltraSite EDGE Base Station without cross-connection capability.
FCLK	Frame Clock
FET	Field Effect Transistor
FHS	Frequency Hopping Synthesiser

FIFP	Forwarded Intermediate Frequency Power
FIKA	+24 VDC Installation Kit
FPGA	Field Programmable Gate Array
FXC E1	Wireline transmission unit (75 [ohm] E1) with four line interfaces to the 2 Mbit/s (E1) transmission line; cross-connection capability at 8 kbit/s level.
FXC E1/T1	Wireline transmission unit (120 [ohm] E1 or 100 [ohm] T1) with four line interfaces to the 2 Mbit/s (E1) or 1.5 Mbit/s (T1) transmission line; cross-connection capability at 8 kbit/s level.
FXC RRI	Radio link transmission unit (radio indoor unit) with cross-connection capability at 8 kbit/s level. Used with MetroHopper Radio and FlexiHopper Microwave Radio.
Gb	Interface between RNC and SGSN
GMSK	Gaussian Minimum Shift Keying
GND	Ground; Grounding (protective earthing). See Grounding and PE.
GPRS	General Packet Radio Service
GSM	Global System for Mobile communications • GSM 800 GSM 800 MHz frequency band • GSM 900 GSM 900 MHz frequency band • GSM 1800 GSM 1800 MHz frequency band • GSM 1900 GSM 1900 MHz frequency band
GUI	Graphical User Interface
HDLC	High-level Data Link Control
HETA	Base station cabinet heater
HO	Handover

	The action of switching a call in progress from one radio channel to another, to secure the continuity of the established call
HSCSD	High-Speed Circuit Switched Data
HV	High Voltage
HW	Hardware Specfically, electronic equipment supporting data transmission and processing tasks, and the electrical and mechanical devices related to their operation
IAKx	Indoor Application Kit for Nokia UltraSite EDGE Base Station • IAKA for UltraSite Indoor cabinet • IAKC for UltraSite Midi Indoor cabinet
IBBU	Integrated Battery Backup
IC	Integrated Cell
ICE	Intelligent Coverage Enhancement
ID	Identification; Identifier IE Information Element The basic unit of a transaction capabilities application part (TCAP) message.
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IF	Intermediate Frequency
IFM	Interface Module
IFU	Interface unit
ILKA	Indoor Lock Kit
ILMT	Integrated Local Management Tool

IMA	Inverse Multiplexed ATM
IP	Ingress Protection
IRPA	International Radiation Protection Association
ISDN	Integrated Services Digital Network
ISHO	Inter-system handover The handover from one system to another.
ISO	International Organization for Standardization
ITU	International Telecommunication Union
L2	AC Phase 2
L3	AC Phase 3
Iu	The interconnection point between the RNC and the Core Network
Iub	Interface between the RNC and node B
Iubis	Interface between the RNC and the BTS
Iur	The logical interface for the interconnection of two radio network controller (RNC) components of the UMTS terrestrial radio access network (UTRAN) system
JIS	Japanese Industrial Standard
LAN	Local Area Network A data transmission network covering a small area.
LAPD	Link Access Protocol on D-channel between the BSC and BTS
LED	Light Emitting Diode
LMB	Local Management Bus
LMP	Local Management Port

LNA	Low-Noise Amplifier
LO	Local Oscillator
LTE	Line Terminal Equipment
LV	Low Voltage
LVD	Low Voltage Disconnect
LVDS	Low Voltage Differential Signalling
LVTTL	Low Voltage Transistor Transistor Logic
M2xA	2-way Receiver Multicoupler unit • M2LA for GSM/EDGE 800/900 • M2HA for GSM/EDGE 1800/1900 • M6xA 6-way Receiver Multicoupler unit • M6LA for GSM/EDGE 800/900 • M6HA for GSM/EDGE 1800/1900
MAC	Medium Access Control function, handles the channel allocation and multiplexing, that is, the use of physical layer functions.
MCLG	Master Clock Generator
MDF	Main Distribution Frame
MHA	Masthead Amplifier
MMI	Man-Machine Interface
MML	Man-Machine Language A text-based command language with a standardised structure, designed to facilitate direct user control of a system.
MNxx	Masthead Amplifier specific to Nokia UltraSite EDGE Base Station • MNGA for GSM/EDGE 800/900 • MNDA for GSM/EDGE 1800 A band • MNDB for GSM/EDGE 1800 B band

- MNPA for GSM/EDGE 1900 A band
- MNPB for GSM/EDGE 1900 B band
- MNPC for GSM/EDGE 1900 C band

MPT — Ministry of Posts and Telecommunications

Telecommunications regulatory agency of Great Britain.

MS — Mobile Station

User equipment which uses a radio connection, and which can be used in motion or at unspecified points. This is usually a mobile phone.

MSC — Mobile Switching Centre

The mobile network element which performs the switching functions in its area of operation, and controls cooperation with other networks.

MTBF — Mean Time Between Failure

NCRP — National Council on Radiation Protection and Measurements

NCU — Node Control Unit

NEBS — Network Equipment Building Systems

NED — Nokia Electronic Documentation

NMS — Network Management System

O&M — Operation and Maintenance

OAKB — Cable entry kit for BTS co-siting

OAKx — Outdoor Application Kit for Nokia UltraSite EDGE Base Station

- OAKA for UltraSite Outdoor cabinet
- OAKC for UltraSite Midi Outdoor cabinet
- OAKD for UltraSite Midi Outdoor to Talk-family Co-siting

OBKA — Outdoor Bridge Kit

OCXO	Oven Controlled Crystal Oscillator An oscillator in which the crystal and critical circuits are temperature-controlled by an oven.
OEKA	Outdoor (cable) Entry Kit
OFKA	Outdoor Air Filter Kit
OFKC	MIDI Outdoor Air Filter Kit
OMU	Operation and Maintenance Unit
OMUSIG	OMU Signalling
OVP	Over-Voltage Protection
PC	Personal Computer
PCB	Printed Circuit Board
PCM	Pulse Code Modulation
PE	Protective earthing (grounding) See GND and Grounding.
PFC	Power Factor Correction
PLL	Phase-Locked Loop
Point-to-point	Transmission between two fixed points
PSM	Power System Management
PWM	Pulse Width Modulation
PWSx	AC/DC Power Supply unit • PWSA for 230 VAC input • PWSB for -48 VDC input • PWSC for +24 VDC input
Q1	Nokia proprietary transmission management protocol

RACH	Random Access Channel
RAKE	A receiver capable of receiving and combining multipath signals
RAM	Random Access Memory
RAN	Radio Access Network A third generation network that provides mobile access to a number of core networks of both mobile and fixed origin.
RCD	Residual Current Device
RF	Radio Frequency
RFF	Radio Frequency Fingerprinting
RIFP	Reflected Intermediate Frequency Power
RLE	Radio Link Equipment
RNC	Radio Network Controller The network element in a radio access network which is in charge of the use and the integrity of radio resources.
ROM	Read Only Memory
RRI	Radio Relay Interface
RSSI	Received Signal Strength Indicator
RTC	Remote Tune Combining
RTxx	Remote Tune Combiner • RTGA for GSM/EDGE 900 • RTHA for GSM/EDGE 900 H band • RTJA for GSM/EDGE 900 J band • RTDC for GSM/EDGE 1800 • RTDA for GSM/EDGE 1800 A band • RTDB for GSM/EDGE 1800 B band • RTPA for GSM/EDGE 1900

RTN	Return
RX	Receiver; Receive
SCF	Site Configuration File
SCT	Site Configuration Tool
SDCCH	Stand-alone Dedicated Control Channel
SDH	Synchronous Digital Hierarchy
SMB	Sub-Miniature B Connector
SMS	Short Message Service
SSS	Site Support System
STM	Synchronous Transport Module
STM-1	Synchronous Transport Module (155 Mbit/s)
SW	Software
Sync	Synchronization The process of adjusting corresponding significant instances of signals, in order to obtain the desired phase relationship between these instances.
T1	North American Digital Transmission Format Standard (1.544 Mbit/s)
TC	Transcoder
TCH	Traffic Channel The logical radio channel that is assigned to a base transceiver station and is primarily intended for conversation.
TCP/IP	Transport Control Protocol/Internet Protocol
TCS	Temperature Control System
TDMA	Time Division Multiple Access

TE	Terminal Equipment Equipment that provides the functions necessary for user operation of the access protocols.
TMS	Transmission Management System The network system for managing equipment settings, and for centralised retrieval of statistics and alarm information from transmission equipment connected to the system.
TS	Time Slot A cyclic time interval that can be recognised and given a unique definition.
TRE	Transmission Equipment
TRX	Transceiver
TRXSIG	TRX Signalling
TS	Time Slot
TSxx	Transceiver (RF unit), specific to Nokia UltraSite EDGE Base Station • TSTB for GSM/EDGE 800 • TSGA for GSM 900 • TSGB for GSM/EDGE 900 • TSDA for GSM 1800 • TSDB for GSM/EDGE 1800 • TSPA for GSM 1900 • TSPB for GSM/EDGE 1900
TTL	Transistor Transistor Logic
TX	Transmitter; Transmit
UC	Unit Controller
UI	User Interface
UL	Underwriters Laboratories

UL (Uplink) The direction of transmission in which the mobile station is the transmitting facility and the BTS is the receiving facility.

- 2-way uplink diversity - The function by which a BTS uses two antennas and two receivers simultaneously on a single channel to obtain improved overall BTS receiver sensitivity in an environment that is subject to random multipath fading.
- 4-way uplink diversity - The function by which a BTS uses four antennas and four receivers simultaneously on a single channel to obtain improved overall BTS receiver sensitivity in an environment that is subject to random multipath fading.

UMTS Universal Mobile Telecommunications System

UTRAN / UMTS
Terrestrial Radio Access Network

A radio access network (RAN) consisting of radio network controllers (RNCs) and base transceiver stations (BTSs). It is located between the Iu interface and the wideband code division multiple access (WCDMA) radio interface.

UPS Uninterruptible Power Supply

VC Virtual Channel

VCO Voltage Controlled Oscillator

An oscillator for which a change in tuning voltage results in a predetermined change in output frequency.

VLL Line-to-Line Voltage

VP Virtual Path

The unidirectional transport of ATM cells belonging to virtual channels that are associated by a common identifier value.

VPCI Virtual Path Connection Identifier

An identifier which identifies the virtual path connection between two B-ISDN ATM exchanges, or between a B-ISDN ATM exchange and a B-ISDN user.

VPI — Virtual Path Identifier

An identifier which identifies a group of virtual channel links at a given reference point that share the same virtual path connection.

VSWR — Voltage Standing Wave Ratio

The ratio of maximum to minimum voltage in the standing wave pattern that appears along a transmission line. It is used as a measure of impedance mismatch between the transmission line and its load.

VXxx — Transmission unit, specific to Nokia UltraSite EDGE Base Station

- VXEA for FC E1/T1
- VXRA for FC RRI
- VXRB for FXC RRI
- VXTA for FXC E1
- VXTB for FXC E1/T1

WAF — Wideband Antenna Filter unit

WAM

Wideband Application Manager unit

WBC — Wideband Combining unit

WCC — Wideband Cabinet Core

WCDMA — Wide band Code Division Multiple Access

A spread spectrum CDMA technique used to increase the capacity and coverage of wireless communication networks.

WCH — Wideband Cabinet Heater

WCxA — Wideband Combiner, specific to Nokia UltraSite EDGE Base Station

- WCGA for GSM/EDGE 800/900
- WCDA for GSM/EDGE 1800
- WCPA for GSM/EDGE 1900

WEK	Wideband Extension Kit
WFA	Wideband Fan
WHX	Wideband Heat Exchanger
WIC	Wideband Input Combiner
WIK	Wideband Indoor Kit
WOC	Wideband Output Combiner
WOK	Wideband Outdoor Kit
WPA	Wideband Power Amplifier unit
WPS	Wideband Power Supply unit
WSC	Wideband System Clock
WSM	Wideband Summing and Multiplexing unit
WSP	Wideband Signal Processor unit
WTR	Wideband Transmitter and Receiver

4.1.2 Terms

This section provides definitions for terms used throughout Nokia UltraSite Solution documentation.

Abis Interface
: Interface between a Base Transceiver Station (BTS) and the Base Station Controller (BSC) and between two BTSs.

Absolute radio frequency channel number
: See absolute radio frequency number.

Absolute radio frequency number; absolute radio frequency channel number; ARFN; ARFCN
: Radio frequency used in connection with, for example, mobile originating and terminating test calls.

Adaptive multi-rate speech codec; AMR speech codec; AMR codec; AMR
: Speech codec which adapts its operation optimally according to the prevailing channel conditions.

Air Interface — Interface between MS and BTS.

Alarm — Announcement given to the operating personnel about abnormal functioning of the system or about a failure, or an indication of the degradation of the service level or reliability.

Alarm Status — Classification of the severity of an alarm, such as Critical, Major, Minor, and Information.

Alternating current; AC
A periodic current having a mean value zero.

Analogue-to-digital converter; Analog-to-digital converter /US/; A/D converter; ADC
A device which converts an analogue input signal to a digital output signal carrying equivalent information.

Application-specific integrated circuit; custom circuit; custom IC; ASIC
Integrated circuit which is designed for a specific application and a specific customer and which is not available to other customers.

ATM connection control; connection control; CC
Function that keeps track of connection resources and based on those handles the operations related to different kind of cross-connections.

ATM inverse multiplexing
See inverse multiplexing for ATM.

Backplane — Connector board at the back of Nokia UltraSite cabinets to which plug-in units are directly connected. See also BATA backplane and RFU backplane.

Base station — See base transceiver station.

Base station controller; BSC
Network element in the public land mobile network (PLMN) for controlling one or more base transceiver stations (BTS) in the call set-up functions, in signalling, in the use of radio channels and in various maintenance tasks.

Base station system; BSS
System of base stations (BSs) and base station controllers which is viewed by the mobile services switching centre (MSC) through a single interface.

Base transceiver station; base station; BTS; BS
: Network element in a mobile network responsible for radio transmission and reception to or from the mobile station.

BATA backplane
: Additional backplane required in a Site Support cabinet when using 12 rectifiers.

Bias Tee
: Unit that provides DC power for an associated MHA unit.

Cabinet Control Unit
: Module of the ADUA or ADUB that manages battery control, climatic control, alarm reporting, and serial and version number reporting for the IBBU or Nokia UltraSite Support cabinet. The CCU connects to the BOIx with Q1-bus.

Cell
: Coverage area of a given BTS where transmission is acceptably received.

Cell breathing
: Variation of the cell coverage area; depends on the interference and power requirements.

Cellular Network
: Two or more base stations connected together to provide an area of coverage for Mobile Stations (MS).

CENELEC
: Comité European de Normalisation ELECtrotechnique. European Committee for Electrotechnical Standardization.

Chain Connection
: Transmission solution in which the BTSs are interconnected through a chain, and the first BTS in the chain is connected to the BSC. See Loop Connection, Multidrop Connection, and Star Connection.

Chip
: Signal element.

Chip rate
: Number of chips transmitted in one second.

Commissioning
: Tasks performed to enable the BTS to be connected to the network. Includes operational tests and configuring of the transmission equipment.

Coverage Area
: See Cell.

Cross-connection
: Connection between input and output ports of a network element.

Cross-connection bank
: Information base that defines the cross-connections of a network element. The network element contains two or more banks, one of which is always active.

Custom circuit
: See application-specific integrated circuit.

Custom IC
: See application-specific integrated circuit.

D-bus
: Bus used for traffic communication between the transmission units and BB2x units (D1-bus) and for internal O&M communication with the BOIx, BB2x, and RTxx units (D2-bus).

Despreading
: The received wideband signal is modulated with the spreading code to get a narrowband signal after the multipath propagation in spread spectrum systems.

Digital signal processor; DSP
: A processor designed for signal handling, resembling an ordinary microprocessor.

Discontinuous reception; DRX
: Means of saving battery power (for example in hand-portable units) by periodically and automatically switching the mobile station receiver on and off.

Discontinuous transmission; DTX
: Feature which enables saving battery power (for example in hand-portable units) and reducing interference by automatically switching the transmitter off when no speech or data are to be sent.

Downlink Diversity
: See Frequency Hopping.

Earthing
: See Grounding.

F-bus
: Frequency Hopping bus. See Frequency Hopping.

Finger; rake finger; RAKE finger
: Receiver unit that despreads one multipath signal.

Four-way uplink diversity; 4-way uplink diversity
: Function by which a base transceiver station (BTS) uses four antennas and four receivers simultaneously on a single channel to obtain improved overall BTS receiver sensitivity in an environment that is subject to random multipath fading.

Forward link
: See downlink.

Flash memory
: Nonvolatile, electronically writable memory, similar to EEPROM in function, but which must be erased in blocks.

Flexbus
: Bidirectional coaxial cable that carries up to 16 x 2 Mbit/s signals and power between transmission equipment, such as a radio outdoor and indoor unit.

Frequency-change oscillator
: See local oscillator.

Frequency Hopping
: Function in which a BTS swaps two transmitters on a single channel to obtain improved overall MS receiver sensitivity in a system that is subject to random fading.

Gain
: Signal amplification, expressed in dBi—decibels over a theoretic, isotropic, and uniformly radiating antenna.

Grounding
: Protecting the equipment and the users against lightning and surges through the external connections.

I^2C-bus
: Integrated Inter Cell communication bus used for polling, autodetection, version and serial number management, temperature polling, and alarm collection in units without a microprocessor.

Handover
: The handover occurs between two cells; the signal goes through one base station or base station sector at a time.

Human-machine interface; man-machine interface; HMI; MMI
: A subsystem or function which provides user interface functions in a man-machine language.

Installation
: Tasks performed to enable the BTS to be mounted at the site.

Integration
: Tasks performed to make the BTS functional in the cellular network. Includes making test calls.

Inter-frequency handover
: Handover where the new carrier frequency is different from the current one.

Inter-system handover
: Handover from one system to another, e.g. between a 3rd generation system and GSM.

Inverse multiplexing for ATM; ATM inverse multiplexing; inverse multiplexing; IMA
: The transmission method in which ATM cells in a cell stream are divided across several physical E1 links on a cell-by-cell basis, and then reassembled at the receiving end without affecting the original cell order.

Loop connection
: Transmission solution in which BTSs are interconnected in a loop. For example, the first and last BTSs are connected to the BSC. See Chain Connection, Multidrop Connection, and Star Connection.

Macrocellular
: Application that covers large areas with a cell radius of 1 to 10 km (0.6 to 6 miles). The coverage area is achieved when the antenna is installed high and off the ground.

Maximum ratio combining
: A signal combining technique in which each signal is multiplied by a weight factor that is proportional to the signal amplitude: the strong signals are further amplified, while the weak signals are attenuated.

Microcellular
: Application that typically covers areas with a cell radius of 100 m to 1 km (327 feet to 0.6 miles). The antennas are installed below rooftop level.

Microwave radio
: Radio equipment for establishing an aligned and fixed radio connection between two points.

Midi
: Indoor or Outdoor cabinet with up to six TRXs.

Multidrop Connection
: Transmission solution in which one or more BTS chains are connected to one BTS that is connected to the BSC. See Chain Connection, Loop Connection, and Star Connection.

Network Element

Any equipment that can be managed, monitored, or controlled in a telecommunications network.

Network Topology

Method of transmission between the cells of a network. Examples of transmission solutions are chain, loop, multidrop, and star connections.

Node Manager

A feature of Power System Management (PSM), the Node Manager software called PSMMan is used to control network elements, or nodes, of the Site Support System.

Nokia FlexiHopper

Nokia family of Flexbus-compatible microwave radios for the 13, 15, 18, 23, 26, and 38 GHz frequency bands, in which the radio transmission capacity can be selected using software. The radio transmission capacity of Nokia FlexiHopper can be 2 x 2, 4 x 2, 8 x 2, or 16 x 2 Mbit/s.

Nokia FlexiHopper outdoor unit can be used with different indoor units: FIU 19, RRIC, FC RRI, and FXC RRI.

Nokia Hopper Manager

PC software application used for controlling and monitoring Nokia FlexiHopper and Nokia MetroHopper radios connected to FIU19 or RRIC indoor units.

Nokia MetroHopper

Nokia Flexbus-compatible radio for the 58 GHz frequency band that does not require coordinated frequency planning. The main use of Nokia MetroHopper is to provide 4 x 2 Mbit/s, point-to-point wireless access for Nokia MetroSite BTS and Nokia MetroHub.

Nokia MetroHopper outdoor unit can be used with different indoor units: FIU 19, RRIC, FC RRI, and FXC RRI.

Nokia MetroHub

Nokia’s compact transmission node with cross-connection and grooming functions, such as FXC RRI. Nokia MetroHub contains up to five transmission units.

Nokia MetroSite GSM BTS

Nokia’s compact four-TRX GSM base station for Nokia MetroSite capacity solution. Nokia MetroSite GSM BTS can contain one transmission unit.

Nokia Q1 Connection Tool
: Program that makes connection and node definitions for identifying objects on a Nokia Q1 managed network. See Q1.

Nokia UltraSite
: Multimedia coverage and capacity macrocellular base station.

Omnidirectional Cell
: Cell with a 360× sector; also known as standard cell.

Operator
: Telecommunications company running telecommunications services in a specific geographical area.

PCM time slot
: 1.5 Mbit/s PCM circuit is divided into twenty-four 64 kbit/s time slots.

  2 Mbit/s PCM circuit is divided into thirty-two 64 kbit/s time slots.

Peltier elements
: Elements that absorb or emit heat when an electric current passes across a junction between two materials. Used for heating and cooling IP20 protection class equipment.

Point-to-point
: Transmission between two fixed points.

Q1-bus
: Bus in Nokia UltraSite EDGE BTS, used for local transmission management (Q1int) and for extending the management to external equipment.

Radio interface; air interface; AI
: The interface between the mobile station (MS) and the radio equipment in the network. This is defined by functional characteristics, common radio (physical) interconnection characteristics, and other characteristics as appropriate.

Radio Relay
: Microwave radio unit that replaces a fixed cable with a microwave radio link in the Abis Interface.

Rectifier
: Device for converting alternating current to direct current. See BATx.

RFU backplane
: Backplane in Nokia UltraSite EDGE BTS cabinet to which RF units are attached.

Sectored BTS Site
: A site with multiple cells positioned to supply the desired radiation.

Sectored Cell — A cell with a conical coverage area achieved by means of a directional aerial.

Single Sector — A part of the BTS's physical equipment that serves a single cell in the network radio topology.

Site — Location where telecommunication equipment has been installed. For example, a site can contain a base station and transmission equipment with an equipment shelter and antenna tower.

Several network elements can be located at a site.

Soft handover — Handover where the signal goes through two base stations or base station sectors at a time.

Softer handover — Handover where the signal goes through two sectors in one base station area at a time.

Software Package — Software collection consisting of the components of the BTS operating system.

Spreading — A process in which the signal is modulated with the pseudo noise code to get a wideband signal for multipath propagation in spread spectrum systems.

Spreading code — A code that is used to despread a signal in spread spectrum communications.

Star Connection — Transmission solution in which three branches with one BTS in each are connected to a common node. See Chain Connection, Loop Connection, and Multidrop Connection.

Synchronisation (Sync) — Process of adjusting the corresponding significant instances of signals (between adjacent and serving cells) to obtain the desired phase relationship between these instances.

Uplink — Direction of transmission in which the mobile station is the transmitting facility and the BTS is the receiving facility.

Uplink Diversity

2-way uplink diversity – Function in which a BTS uses two antennas and two receivers simultaneously on a single channel to obtain improved overall BTS receiver sensitivity in an environment that is subject to random multipath fading.

4-way uplink diversity – Function in which a BTS uses four antennas and four receivers simultaneously on a single channel to obtain improved overall BTS receiver sensitivity in an environment that is subject to random multipath fading.

See Frequency Hopping.

Related Topics

Overview of commissioning UltraSite EDGE BTS with WCDMA Upgrade

Instructions

Uninstalling AXC Manager

Descriptions

Nokia SiteWizard