NOKIA

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Nokia UltraSite EDGE BTS, Rel. CX5, Product Documentation, v.1

Commissioning UltraSite EDGE BTS

Contents

1 Summary of changes in Commissioning UltraSite EDGE BTS

The following changes have taken place in the *Commissioning UltraSite EDGE BTS* document.

- Mini Outdoor information added in Section *Connecting LMP cable for commissioning*
- Section *Using Site Wizard in Mini Outdoor commissioning* added to the document
- Section *List of instructions for BTS configuration using MMI software* added to the document

2 Overview of commissioning the BTS

Before you start

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

Steps

1. **Connect the LMP cable.**
2. **Power on the BTS.**
3. **Set the BOIx unit 13 MHz clock.**
4. **Install the BTS Manager.**
5. **Install the UltraSite BTS Hub Manager.**
6. **Install other Transmission Manager as required.**
7. **Commission the BTS.**

3 Preparing to commission

3.1 Connecting LMP cable for commissioning

Before you start

There are two options for connecting to the LMP port within the Mini outdoor BTS:

1. Connecting directly to the BOIx unit LMP connection, or
2. Connecting to the BTS external interface point.

Summary

The LMP cable connects the PC running the BTS Manager software to the BOIx unit in the BTS.

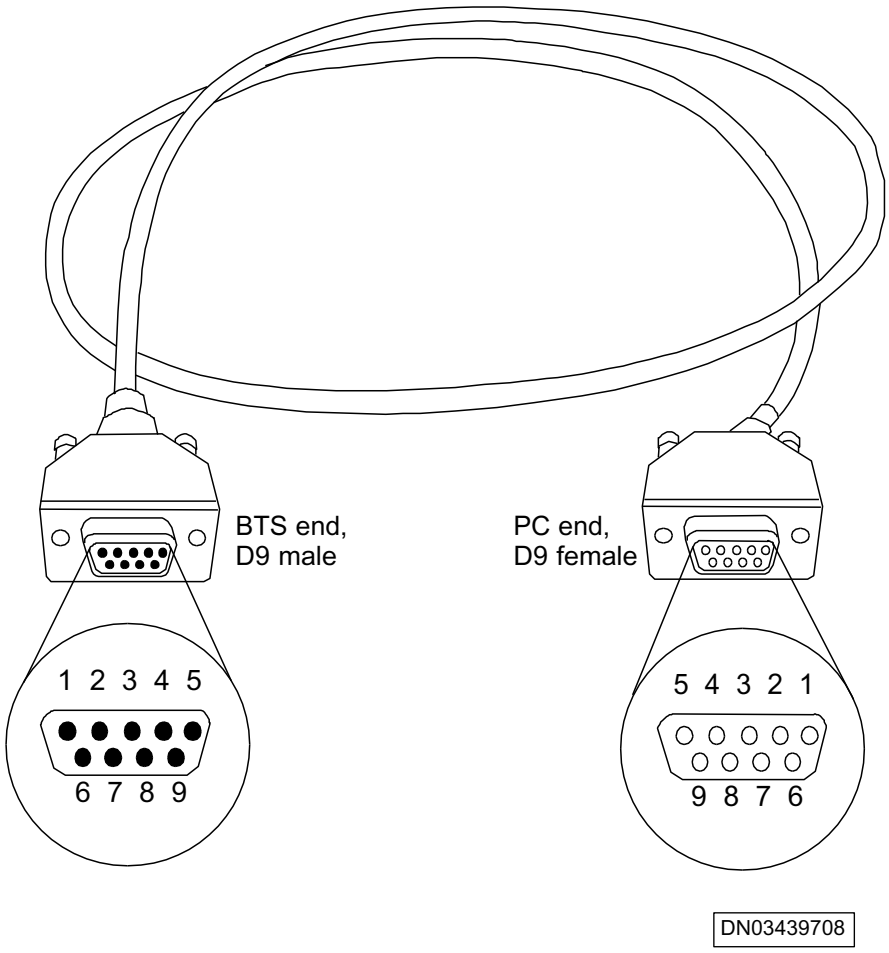

Figure 1. LMP cable

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 unit for GSM/EDGE connection.**

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

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

   Or

   If you are commissioning Mini outdoor cabinet, you can also:

4. **Connect the D9 connector to the BTS external interface point.**

3.2 Technical data for the LMP cable

The LMP cable provides a connection between the laptop computer and the LMP port on the CCUA.

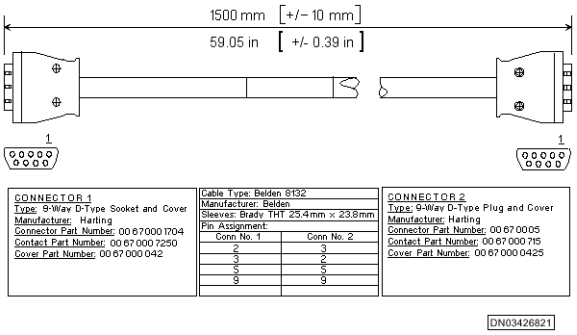

Figure 2. LMP cable specification

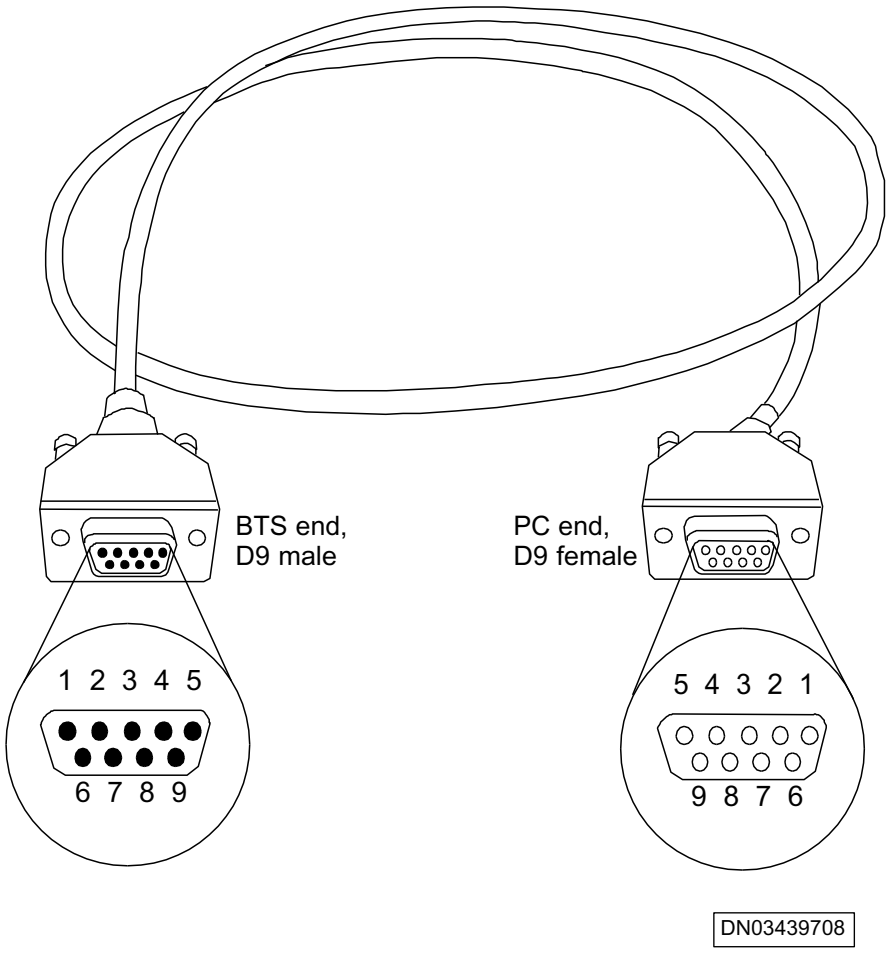

Figure 3. LMP cable

Table 2. 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

3.3 Powering on the BTS

Before you start

Ensure that all internal BTS components are properly installed.

Summary

Steps

1. *If* the Mains power has been switched off,

   Then

   Check the ADUx circuit breakers.

   Verify that all the ADUx unit circuit breakers are switched off.

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

   Then

   switch the power supplies off.

3. **Switch the Mains breaker on.**

4. **Switch the ADUx unit breakers on.**

5. **Switch the BTS Power supplies on.**

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

   Observe the LED lights of the BTS units and ensure that power is supplied. If the LED lights are not illuminated, troubleshoot the affected units.

4 Remote BTS Manager Setup

4.1 Remote BTS Manager setup

Before you start

This document explains how to configure and use the Remote BTS Manager feature. It provides a high-level view of the Remote BTS Manager connection. It also explains how to configure the NMS/OSS, BSC, and BTS, which are required for a connection to a remote BTS.

The operations available in Remote usage of BTS Manager depend on whether the user is set up with full priviledges or not. This depends on the Windows user group to which the user belongs.

If the user has full privileges, then Remote BTS manager will not allow:

- Disable Abis
- Commissioning
- SW Download
- BCF block/unblock
- Sector block/unblock
- TRX block/unblock

If the user has 'Read Only' privileges, then Remote BTS manager will not allow:

- Commissioning
- Software Update/Replace/Use Current
- Object Reset/Block/Unblock
- Enable/Disable Abis

- RTC Configure
- Clock Control
- Setting of IDD information
- Running tests such as TRX test and Loop Tests
- Writing to Site Specific Notepad
- Sending of BCCH Carrier
- Updating Abis Allocation
- Setting BTS password

The following diagram provides a high-level view of how the BTS Manager connects to a remote BTS. It also shows Local Connection mode.

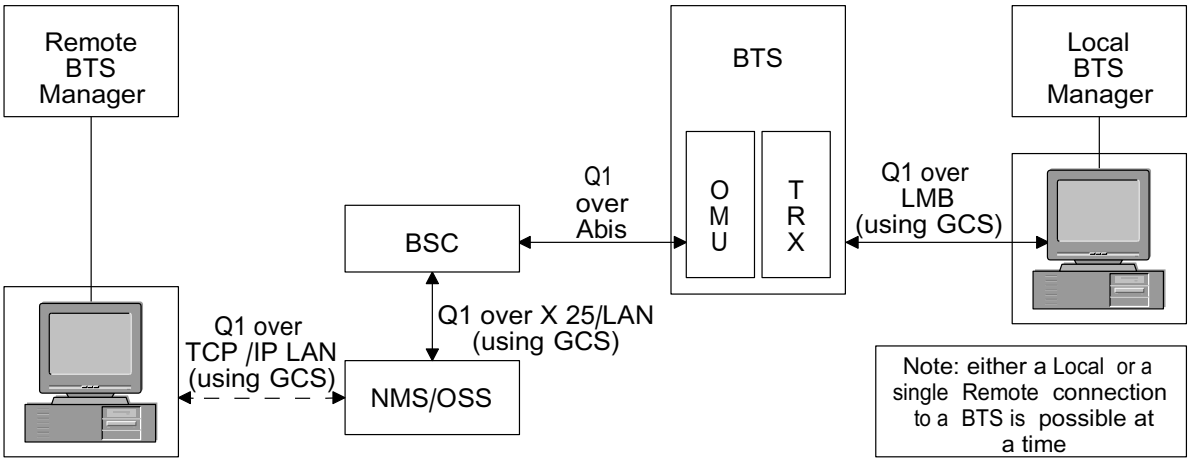

Figure 4. BTS Manager - Local and remote access

Steps

1. Set up the NMS/OSS.

Use NMS2000 software version T12 or later or NetAct 3.1 or later.

a. Log on to NMS/OSS.

b. Verify that the configuration file *$OMCPOLICE/osi/ouorapmx.cf* describes the NOD and RET applications.

Note

To locate these two files, check the Remote BTS Manager and Node sections of the BSC with which you are working.

c. Verify that NMS/OSS has *ornuser* set up in the user profiles:

From the Top Level User Interface (TLUI) menu, select *Utils*, *System mgmt*, *User profiles*, and *Users*.

Note

If the user profile does not exist, you must create it according to NMS/OSS instructions.

2. Set up the BSC.

Use the BSC with software version S10.5/S10.5 ED or later.

a. Log on to the BSC.

b. Verify that the BSC with which you are working has the NOD and RET applications. These applications must be in UNL-ENA state.

Note

These applications must be in UNL state to log on to remote access.

At the prompt, enter the MML command *ZQDI*. See also the following example.

```
DX 200  BSC5                2002                    - 11 - 26  15:08:26

LOCAL OSI APPLICATION DATA

AE- NAME        APPL   NET ADDR  STATE   UNIT      FAM ID PROC ID
_________       ____   _____     ____    ______    ____   ____
BSC055423A      CMISE        LOCNMS  LOC  - ENA  OMU       021FH  0000H
BSC055423F      VFS    LOCNMS  UNL       - ENA  OMU
BSC055423VT     VTP    LOCNMS  UNL       - ENA  OMU
BSC055423EHA    CMISE  LOCNMS  LOC       - ENA  OMU       02B1H  0000H
BSC055423NOD    TPU    LOCNMS       UNL  - ENA  OMU       02AFH  0000H
BSC055423RET    TPU    LOCNMS  UNL       - ENA  OMU       0229H  0000H
```

Figure 5. Example

In this example, a BSC with C-Number 55423 is used. Notice the highlighted RET and NOD applications.

3. Set up the BTS

The BTS must be running software version CX3.3 or later. No specific setup for the BTS is required. The BTS, which is identified by its BCF ID, must be switched on and commissioned (Abis O&M Link up and running).

To connect remotely to the BTS Manager, the BTS Manager must not be connected locally to the same BTS.

4. Set up the BTS Manager.

Use the BTS Manager with SiteWizard 5 for the remote connection.

a. Verify that the GCS Installation Release 5 software is properly installed on the computer.

The GCS software is used to establish the BTS Manager connection to a BTS, both local and remote.

Note

If the GCS software is not installed, you can install it during SiteWizard 5 installation.

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b. From the Connection menu, select *Connection - Connect* to launch the Nokia GCS Connection Tool.

For more information, see the *Nokia GCS Connection Tool* online help.

Note

You can also set up a connection separately using CLI with sobriquet.

Once established, the details are recorded in the GCS database and ready for use at a later date.

c. Set up the BTS connection.

i. Make sure you have the Database Property sheet open.

ii. Click *Connections*, and then select *Add ....*

iii. Enter a name for the connection.

iv. Select *BTS Connection* as the type of connection. The following connection definitions appear:

- Network parameters
- BSC parameters
- BTS parameters
- Optional parameters

v. Select *Network Parameters*. Click *Properties*, add the following parameters, and click *OK*:

Parameter	Enter ...
HOST NAME	Host IP address
PORT	7878

vi. Select *BSC Parameters* in the Connection Definition area. Click *Properties*, add the following parameters, and click *OK*:

Parameter	Enter ...
USER NAME	ornuser
PASSWORD	Password for the ornuser user profile in the NMS/OSS
PROTOCOL	1
BSC ID	C-Number of the BSC
BUS NUMBER	0

vii. Select *BTS Parameters* in the Connection Definition area. Click *Properties*, add the following parameters, and click *OK*:

Parameter	Enter ...
BCF ID	BCF ID of the BTS
PORT	1

Note

It is not necessary to modify the *Optional Parameters*.

viii. From the Database Property tab, click *Save*.

d. Create a node using the Nokia Connection Tool.

i. Select *Nodes* on the Database Property Sheet; then click *Add*.

ii. Enter the following information:

Parameter	Enter ...
CONNECTION NAME	Name given to the connection
NODE NAME	Name of the node
NODE CLASS	Q1 Node
NODE DEFINITION	Q1 Node
Q1 ADDRESS	4001

Note

All other parameters are *optional*.

e. Enter the following sobriquet command line argument to launch the BTS Manager using CLI:

BTSManager -sobriquet "aNodeNameYouHaveDefinedInNokiaConnectionTool"

Note

This command attempts remote connection straightaway.

f. Or, initiate the BTS Manager Remote Connection without the command line argument.

i. From the Connection menu, select *Disconnect*.

ii. Select *Connect* to open the Nokia GCS Connection Tool.

Note

The Direct property page must be open with existing connections displayed.

iii. Select the connection you want to use, enter the Q1 address, and click *Connect*.

Note

It is also possible to define new connections and nodes using the Database property sheet.

Tip

Check the following if the Remote Connection fails:

- Is the LAN running?
- Is the GCS Installation OK?
- Are the NMS/OSS and BSC up and running? Have they been set up properly?
- Have the connection and node in GCS Connection Tool been properly configured (in accordance with the System setup)?
- Is the BTS connected to the BSC?
- Is the Abis link up and running (is the BTS switched on)?

- Does the targeted BTS have the O&M software that supports Remote BTS Manager?
- Is there already a Local or Remote connection to the targeted BTS (in which case, the BTS Manager displays a message box indicating that the BTS already has an active BTS connection)?

4.2 Rules for EDAP transmission connections

Summary

It is recommended that the same timeslot allocation be used for the BSC and BTS. If required, the first EDAP timeslot at the BSC can be different than the first EDAP timeslot at the BTS. Cross connections are allowed, but it is recommended that the whole PCM frame or the n*64 cross connection complies with the ITU-T G.796 (Characteristics of a 64 kbit/s Cross-Connect Equipment with 2048 kbit/s Access Ports, Chapter 2.1) standard in respect to maintaining octet sequence integrity of signals being cross connected. The following precautions help to maximise performance:

- EDAP and the TRXs that are tied to the EDAP (including traffic/master and signaling channels) must share the same physical Abis connection route. It is also recommended that PCM frames have octet sequence integrity, which can be achieved using one of the following methods:
  - Using 1-3 PCM lines that perform according to G.796. If BTS capacity requires several PCM lines, a normal network delay variance between the PCM lines does not impact performance. EDAP pool and the TRXs tied to it have to locate on a single PCM. Example 4+4+4 configuration: TRX 1-4 and their EDAP(s) on PCM1, TRX 5-8 and their EDAP(s) on PCM2, and TRX 9-12 and their EDAP(s) on PCM3.
  - Using fractional E1, n*64k connection that complies with G.796.
- The EDAP pool and TRXs tied to it must have a connection made within a single PCM or a single or multiple n*64k connection inside one PCM that comply with the G.796 in the respect of octet sequence integrity. This structure must be maintained throughout the network.
- If the PCM line does not fulfill the octet sequence integrity requirement as specified in ITU-T G.796, a maximum of +/- three PCM frame delay between timeslots is tolerated when BSC software S10.5 ED CD1.2 or newer is used.

Steps

1. **Use a telecom analyzer, such as Agilent E7580A or HP 37722A, at the BSC end.**
2. **Measure from the line that comes to the E/T interface.**
3. **Define all time slots that are connected through the network to the BTS as transmit time slots in the Measurement Equipment view.**

Note

This also applies to fractional time slot blocks as well.

4. **Verify that the Measurement view does not contain/use any time slots used for any other BTS (or other purpose).**
5. **Loop the signal back with the FXC unit at the BTS using the Loop-to-Interface command.**
6. **Define the same time slots as receiving time slots in the Measurement Equipment view.**
7. **Start the pseudorandom (PRBS) test pattern.**

   If the measurement result for the 2Mbit/s line proves that the line is clean of errors during the short measurement cycle (for example, 15 minutes), the line must be free of time slot phase shifts, and the G.796 is fulfilled.

4.3 Installing BTS Manager

Before you start

Before installing BTS Manager, check the following system requirements.

Table 3. System requirements for BTS Manager

System component	Requirement
Computer	Intel® Pentium®-compatible PC

Table 3. System requirements for BTS Manager (cont.)

System component	Requirement
Operating system	Microsoft® Windows™ 2000 (Service Pack 3) Microsoft® Windows™ 2000 Server Microsoft® Windows™ XP Microsoft® Windows™ 2003 Server
Processor	minimum 300 MHz (recommended 500 MHz or more)
System memory	128 MB recommended or according to installed operating system
Monitor	minimum SVGA with 800 x 600 resolution (recommended 1024 x 768 resolution)
Hard disk	10 MB free space exclusively for each Node Manager installation (recommended hard disk space 200 MB)
Local connection	9-pin serial port in the PC and LMP cable
Remote connection	Network adapter with connection to DCN
Accessories	CD-ROM drive Pointing device: mouse, trackball, touch pad or equivalent Windows-compatible printer (optional)

Summary

BTS Manager and the other related management applications are delivered on the SiteWizard CD.

Software updates are delivered via Nokia Online Services (NOLS).

Steps

1. Start Windows.

2. Insert the installation CD-ROM into the CD-ROM drive.

3. Wait a few seconds.

If the Setup program is not launched automatically, double-click the CD-ROM drive icon in the *My Computer* window to open the CD-ROM disk. Double-click the *Nokia SiteWizard5.msi* program icon in the window.

4. Follow the instructions displayed in the Setup program.

The Setup program copies the BTS Manager files. At the end of the procedure, it notifies you that the setup is complete.

4.4 Installing UltraSite BTS Hub Manager

Before you start

Before installing UltraSite BTS Hub Manager, check the following system requirements.

Table 4. System requirements for UltraSite BTS Hub Manager

System component	Requirement
Computer	Intel® Pentium®-compatible PC
Operating system	Microsoft® Windows™ 2000 (Service Pack 3) Microsoft® Windows™ 2000 Server Microsoft® Windows™ XP Microsoft® Windows™ 2003 Server
Processor	minimum 300 MHz (recommended 500 MHz or more)
System memory	128 MB recommended or according to installed operating system
Monitor	minimum SVGA with 800 x 600 resolution (recommended 1024 x 768 resolution)
Hard disk	10 MB free space exclusively for each Node Manager installation (recommended hard disk space 200 MB)
Local connection	9-pin serial port in the PC and LMP cable
Remote connection	Network adapter with connection to DCN
Accessories	CD-ROM drive Pointing device: mouse, trackball, touch pad or equivalent Windows-compatible printer (optional)

Summary

UltraSite BTS Hub Manager and the other related management applications are delivered on the SiteWizard CD.

Software updates are delivered via Nokia Online Services (NOLS).

Steps

1. Install General Communication Service (GCS).

SiteWizard automatically checks for the presence of GCS. If it is not found on the system, SiteWizard installs it if selected from the Program Selection window:

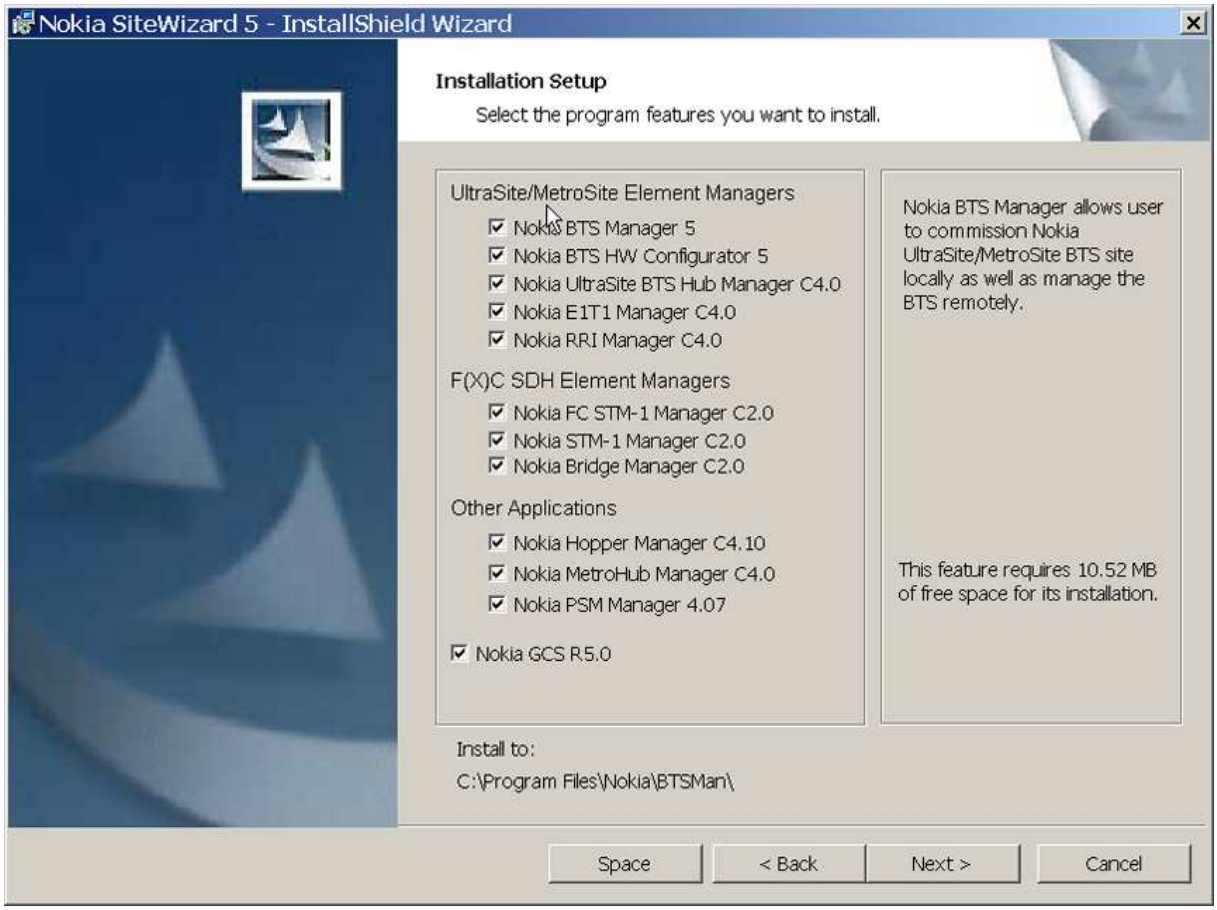

Figure 6. Program Selection window

Note

To upgrade GCS from a previous version, see the SiteWizard `Readme.txt` file or the GCS `Readme.txt` file for detailed instructions.

2. **Start Setup by running setup.exe from your CD-ROM drive.**

   If AutoRun is set in your Operating System, **setup.exe** starts once the SiteWizard CD is inserted into the CD-ROM drive.

3. **Follow the instructions in the installation program.**

Note

The XML parser is automatically set by the Operating System. If you experience any problem while saving XML files from the Hub Manager, manually install the XML parser from the accessories folder on the SiteWizard installation CD. The XML parser is included on the SiteWizard installation CD at **\Accessories\XML\InstallXML Win2000.exe**.

5 Using SiteWizard commissioning software

5.1 Overview of using Hub Manager of Site Wizard

Summary

Use UltraSite BTS Hub Manager to configure and test the transmission units of the BTS and its hub node during commissioning. You can commission the FXC transmission units manually or based on a node file. When commissioning the BTS or its hub node based on a node file, the UltraSite BTS Hub Commissioning Wizard sends the node file to the node during commissioning. Commissioning based on a node file allows some network setup tasks to be completed offsite.

Note

If the BTS configuration includes an FC E1/T1 transmission unit, that unit is configured with the Commissioning Wizard in BTS Manager.

Steps

1. *If* manually commissioning the FXC transmission units with UltraSite BTS Hub Manager,

   Then

   See *Manual Hub configuration.*

2. *If* commissioning FXC transmission units with UltraSite BTS Hub Manager based on a node file,

   Then

   See *Commissioning based on an off-line node file.*

5.2 Overview of using BTS Manager of Site Wizard

Summary

The BTS Manager is a tool for configuring, commissioning, and managing the BTS and related transmission equipment.

After the BTS is installed and commissioned, the BTS Manager allows you to monitor and control the BTS operation, either locally at the site or remotely from the Network Management System (NMS/2000) or NetAct. BTS Manager lets you perform the following BTS management tasks:

- View and manage the BTS configuration in graphical format or as logical objects.
- Monitor real-time status and alarm information with continuous and automatic updates during the BTS Manager session.
- Check, load, or activate the BTS software locally.
- Reset, block, or unblock BTS units to replace them for local tests.
- Read new TRX Abis allocations and send them to the BTS when adding TRXs or altering Abis settings for existing TRXs.

The BTS Commissioning Wizard within the BTS Manager guides you through the commissioning tasks. Commissioning Wizard includes an·*Undo Commissioning* option that sets the BTS to non-commissioned mode. This is necessary if the BTS must be re-commissioned (for example, when it has been commissioned with incorrect parameters). Running the Commissioning Wizard is the third step in the overall commissioning sequence.

Steps

1. **Define the BTS configuration with the Nokia BTS HW Configurator.**

   Nokia BTS HW Configurator allows you to use an existing configuration or to create a new configuration, if there is not a pre-defined hardware configuration file available for the BTS. A BTS HW configuration file with basic BTS configurations is delivered with the Nokia BTS HW Configurator. Use the default parameters or modify them as necessary.

2. **Commission the FXC transmission units with the Nokia UltraSite BTS Hub Manager.**

Use the Nokia UltraSite BTS Hub Manager to configure and test the transmission of the BTS and its Hub node during commissioning. You can commission FXC transmission units manually or based on a node file. When commissioning based on a node file, send the node file to the node during the commissioning procedure with the BTS Hub Commissioning Wizard. This action allows more network setup to be performed offsite.

Note

If the BTS configuration includes an FC E1/T1 transmission unit, that unit is configured with the Commissioning Wizard in the BTS Manager.

3. **Commission the BTS with the BTS Commissioning Wizard (includes FC transmission unit configuration).**

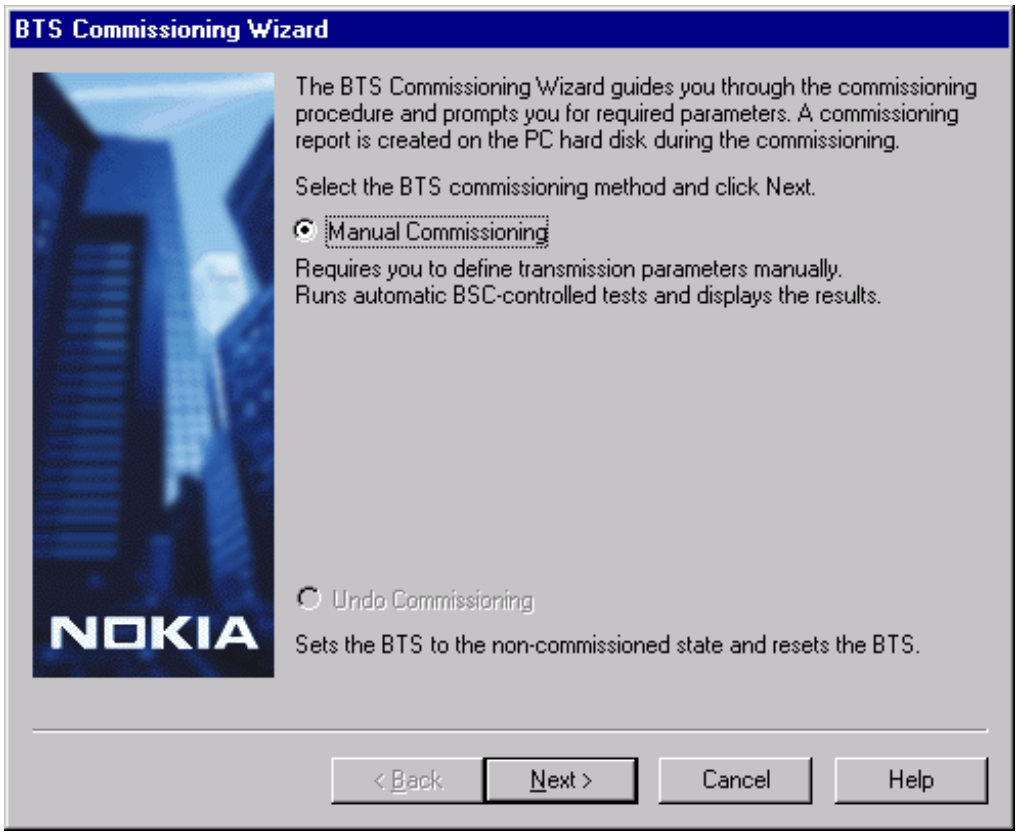

Figure 7. Manual Commissioning option

5.3 Using Site Wizard in Mini Outdoor commissioning

Before you start

BTS Manager and Hardware Configurator 4.1 CD2.2 are required for commissioning and maintaining the UltraSite EDGE BTS Mini Outdoor.

Note

Administrator privileges are required to perform these actions.

Install BTS Manager, Hardware Configurator and General Communication Services as instructed in Site Wizard installation instructions. To install BTS Manager 4.1 CD2.2 for Mini Outdoor, follow the steps below.

Steps

1. **Download BTS Manager and Hardware Configurator 4.1 CD2.2 from www.online.nokia.com and save these files to a temporary directory on the PC.**
2. **Create a directory called C:\Program files\Nokia\Mini UltraSite**
3. **Change the data under NOKIAMGR registry value to the target path: C:\Program Files\Nokia\Mini UltraSite.**
4. **From the Windows Start menu select *Run* and enter *regedit* followed by OK.**
5. **Browse to: HKEY_LOCAL_MACHINE\SOFTWARE\Nokia\GCS Communication Service**
6. **Change the value of the data field to C:\Program Files\Nokia\Mini UltraSite e.g. Registry key: HKEY_LOCAL_MACHINE \SOFTWARE\Nokia\GCS Communication Service Registry Value: NOKIAMGR Data: C:\Program Files\Nokia\Mini UltraSite.**
7. **Edit the Environment Variable for NOKIAMGR.**

Tip

Right Click on the “My Computer” icon on the desktop. Select the “Properties” tab and “Advanced” tab followed by “Environment Variables”. Select NOKIAMGR from the System Variables and edit this to read “C:\Program Files\Nokia\Mini UltraSite”.

8. **Install the Mini UltraSite BTS Manager 4.1 CD2.2 software to C:\Program Files\Nokia\Mini UltraSite\BTSMan by running the setup.exe program within the temporary directory created earlier.**

9. **Install the Mini UltraSite BTS Hardware Configurator 4.1 CD2.2 software to C:\Program Files\Nokia\Mini UltraSite\HWConfig by running the setup.exe program within the temporary directory created earlier.**

10. **Desktop shortcut icons can be added as required for the above applications.**

Further information

Restrictions of use:

- Only Microsoft Windows 2000 Professional and Microsoft Windows XP Professional editions are supported.
- Simultaneous use of both of the BTS Manager / Hardware Configurator versions is not supported.
- Launching of Transmission Element Managers from within BTS manager is not supported. Element managers should be launched using the appropriate shortcut or start menu item.
- Different versions of BTS Manager and Hardware Configurator cannot be used remotely when installed on the same NetAct Node Manager Server Platform. Due to this duplicate NetAct Node Manager Servers are required for Mini UltraSite if remote management is required.

Different versions of BTS Manager and Hardware Configurator cannot be used remotely when installed on the same NetAct Node Manager Server Platform. For this reason, duplicate NetAct Node Manager Servers are required for Mini UltraSite if remote management is required. See NetAct documentation for installation and administration of the NetAct Node Manager Server.

6 Overview of commissioning GSM/EDGE UltraSite EDGE BTS

Before you start

Note

It is necessary to connect a frequency counter to the BOIx unit's 13 MHz test port and power on the frequency counter before beginning the commissioning procedure. This action enables the counter timer to warm up and provide accurate measurements.

Summary

The BTS is manually commissioned using these Nokia software applications:

- BTS HW Configurator - a tool for creating, checking, and updating the configuration of a BTS cabinet.
- BTS Hub Manager - a tool for configuring and testing the transmission of the BTS and its Hub node (if there are FXC units in the configuration).
- BTS Manager - a tool for configuring, commissioning, and managing the BTS and related transmission equipment. The BTS Commissioning Wizard is included in the BTS Manager (includes FC E1/T1 transmission unit configuration).

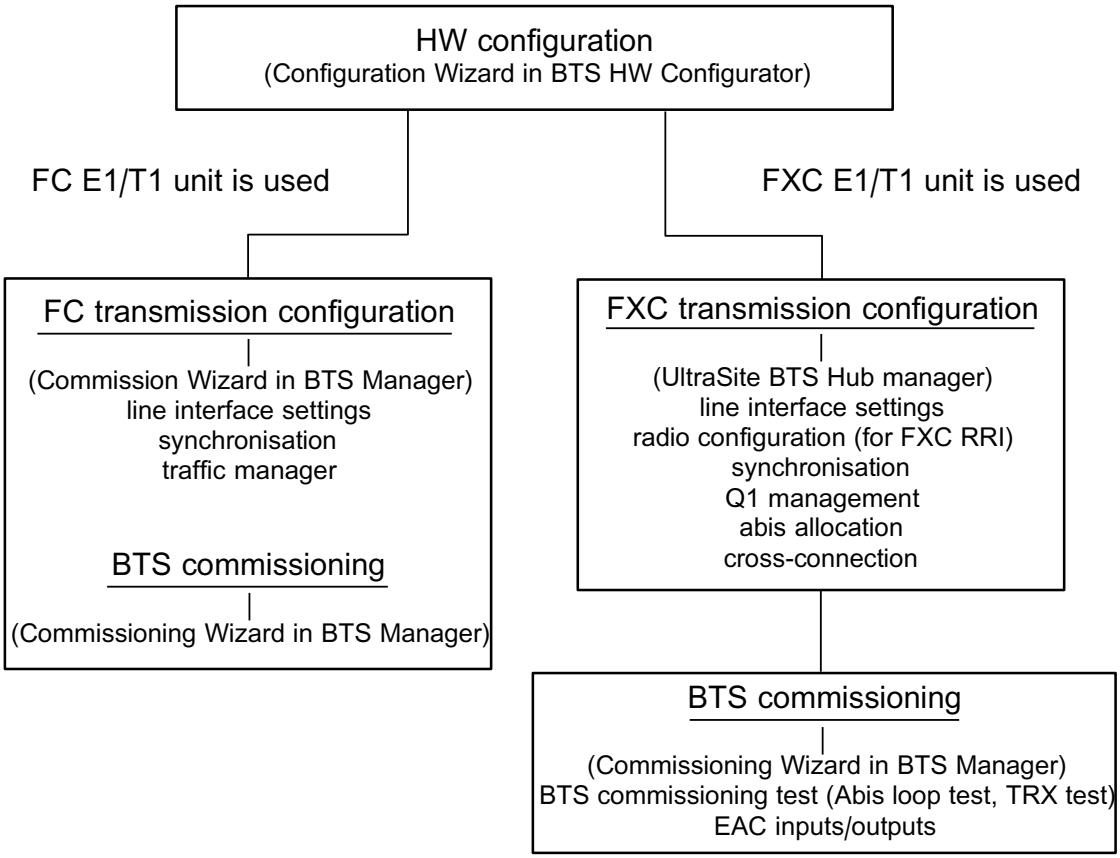

Figure 8. Commissioning procedure overview

Note

Only one application can communicate with the BTS at a time. Close the BTS HW Configurator before starting UltraSite BTS Hub Manager, and close Hub Manager before starting BTS Manager.

Nokia BTS Manager and related UltraSite BTS Hub Manager software have a convenient, context-sensitive online Help facility.

To get help, perform one of the following actions:

- Press F1
- Click the Help button on the toolbar
- Choose one of the Help menu commands
- Click the Help button in any dialog box

To exit Help, press ESC or ALT+F4.

The Help Topics window displays a set of tabbed pages:

- Contents - displays a list of topics organized in books by category.
- Index - lists keywords in alphabetical order through which different topics can be reached.
- Find - provides a full-text search functionality that allows you to search for any word or phrase in the Help file.

Note

All images in this document are typical in nature and are for general reference only. For hardware, the versions depicted may differ from the latest version of equipment. For software, any version numbers shown in any of the windows/ screens/dialog boxes may not be the same as the actual software that is to be installed. It is important to remember that the procedure must be followed, as these provide advice on the correct software to be installed and the correct text to be displayed in each window/screen/dialog box.

Steps

1. **Define the BTS configuration with Nokia BTS HW Configurator.**

   The Nokia BTS HW Configurator allows you to use an existing configuration or to create a new configuration, if there is not a pre-defined hardware configuration file available for the BTS. A BTS HW configuration file with basic BTS configurations is delivered with the Nokia BTS HW Configurator. Use the default parameters or modify them as necessary.

2. **Commission the FXC transmission units with Nokia UltraSite BTS Hub Manager.**

Use the Nokia UltraSite BTS Hub Manager to configure and test the transmission of the BTS and its Hub node during commissioning. You can commission FXC transmission units manually or based on a node file. When commissioning based on a node file, send the node file to the node during the commissioning procedure with the BTS Hub Commissioning Wizard. This action allows more network setup to be performed offsite.

Note

If the BTS configuration includes an FC E1/T1 transmission unit, that unit is configured with the Commissioning Wizard in the BTS Manager.

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3. Commission the BTS with the BTS Commissioning Wizard.

The BTS Commissioning Wizard guides you through the commissioning tasks, including manual entry of the commissioning parameters. Commissioning Wizard runs automatic BSC-controlled tests and generates the BTS Commissioning Report, which contains information collected during the commissioning procedure. FC E1/T1 transmission units are configured during this step.

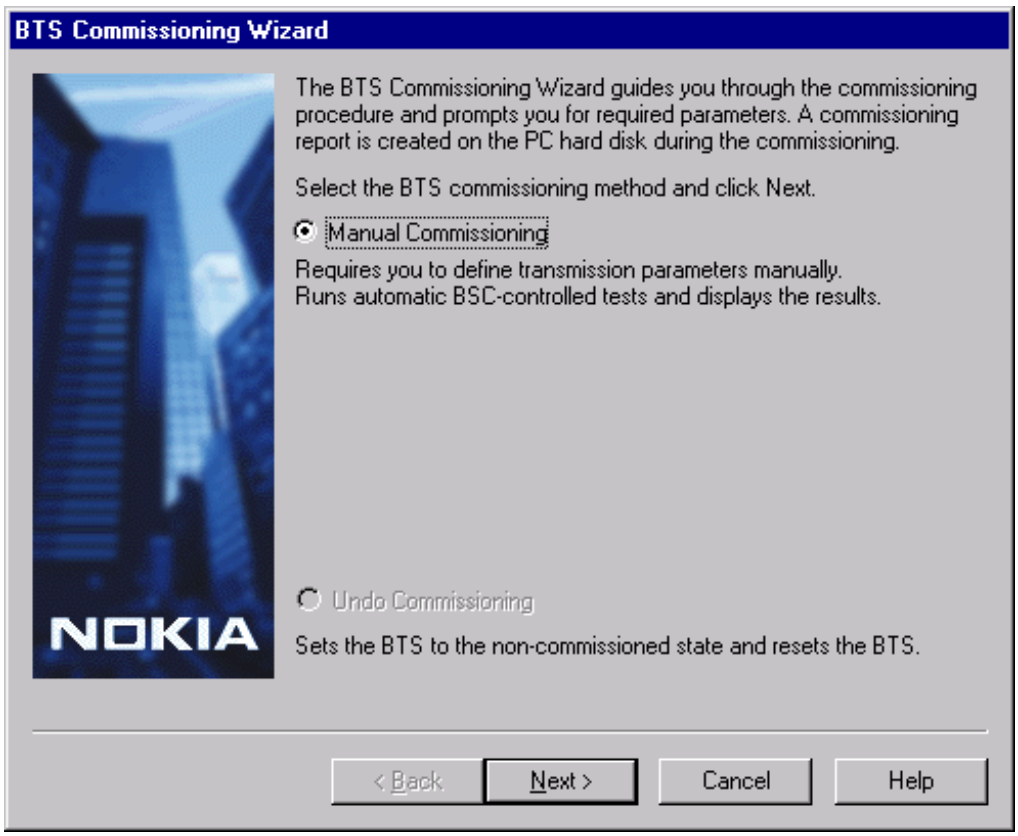


Figure 9. Manual Commissioning option

Note

If the BTS is already commissioned, **Undo Commissioning** is the only option available in the BTS Commissioning Wizard. Because the BTS can only be commissioned in its non-commissioned state, this procedure is typically necessary when the BTS must be re-commissioned (for example, when it has been commissioned with incorrect parameters). The **Undo Commissioning** procedure clears previous commissioning data from the BTS.

7 List of instructions for BTS configuration using MMI software

This section lists the instructions for configuring UltraSite and MetroSite Base Transceiver Stations (BTS) with Nokia BTS Manager and Nokia BTS HW Configurator software.

The instructions are available in the Online Helps of the applications. The Help files can be accessed by clicking the application's **Help** menu.

Nokia BTS Manager Online Help (for UltraSite BTS and MetroSite BTS)

The following instructions provide help on the commissioning procedure and the use of BTS Commissioning Wizard:

- *Commissioning BTS*
- *Manual commissioning* (for UltraSite and MetroSite respectively)
- *Undo commissioning*

The following instructions provide help on BTS object control:

- *Changing TRX and BCF States*
- *Enabling/Disabling Abis*
- *Setting and Viewing EAC States* (for UltraSite and MetroSite respectively)
- *Setting and Viewing IDD Information*
- *Updating Abis allocations*
- *Viewing BTS Object Information*
- *Viewing the Site Configuration* (for UltraSite and MetroSite respectively)

The following instructions can be used for testing the BTS after commissioning:

- *Testing the BTS*
- *Sending BCCH carrier*
- *Testing TRXs*
- *Testing TRX Loops*
- *Tracing TRX Traffic*

For more information, see the appropriate BTS Product Documentation Set.

Nokia BTS HW Configurator Online Help (for UltraSite BTS only)

The following instructions provide help for managing configurations:

- *Opening a configuration*
- *Creating and changing a configuration*
- *Saving a configuration to a file*
- *Printing configuration information*
- *Fetching/sending a configuration*
- *Fetching/sending configuration for upgrade units*

8 Using Commissioning Wizard to commission the transmission node

8.1 Commissioning the transmission node with the Commissioning Wizard

Before you start

To be able to commission the node with the Commissioning Wizard, both the hardware and *software* must be installed and the node powered up.

Summary

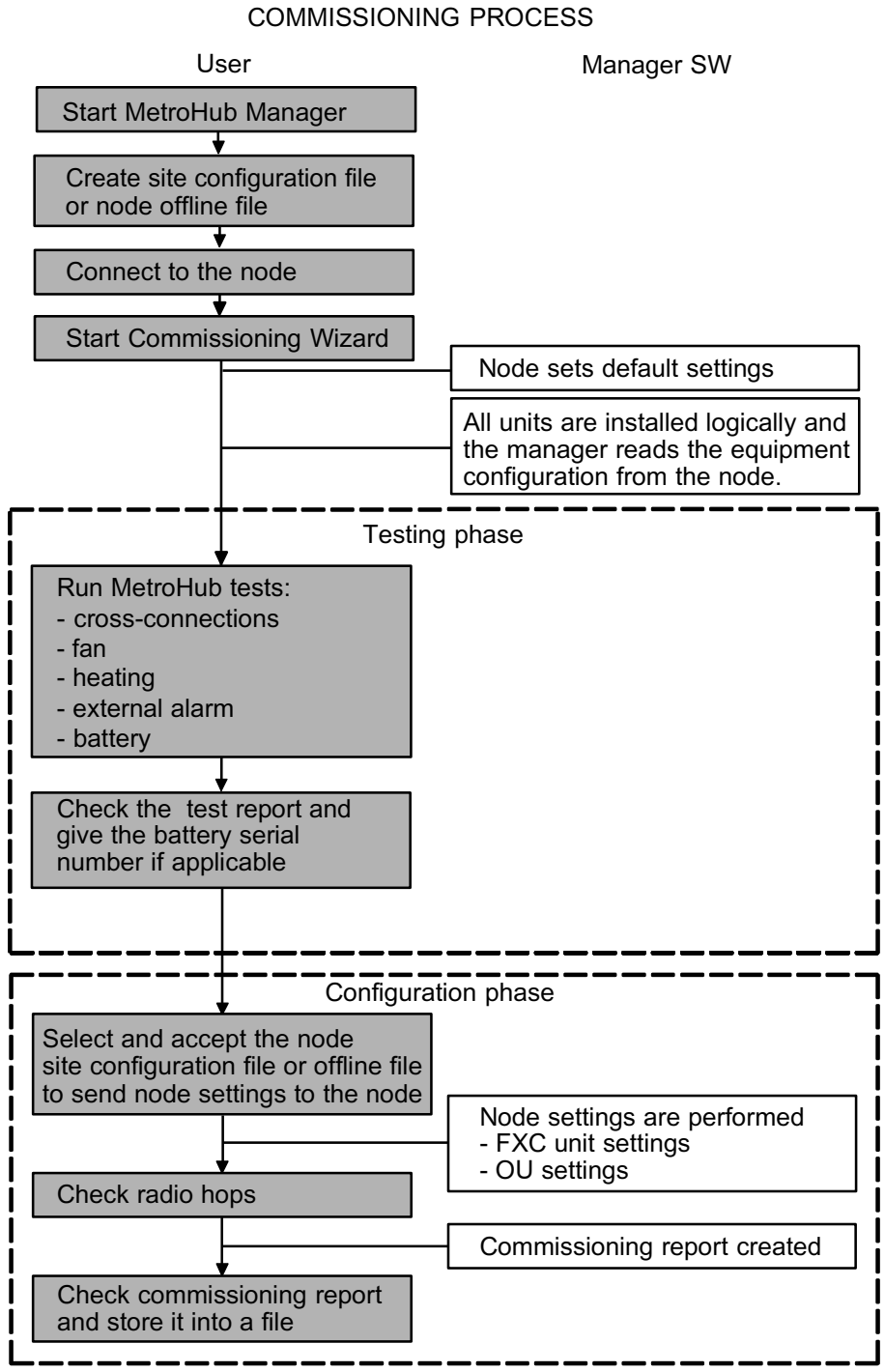


Figure 10. Commissioning process

Steps

1. **Start the node manager.**
2. **Establish a connection to the node.**
3. **Select Configuration → Commissioning Wizard from the menu bar.**

Note

Nokia delivers all units with factory settings. The node must not contain any prior settings (such as cross-connections) when the manager is running the Commissioning Wizard.

If the node manager detects modified settings, for example cross-connections, the manager shows a note informing that it resets the factory defaults before starting the Commissioning Wizard.

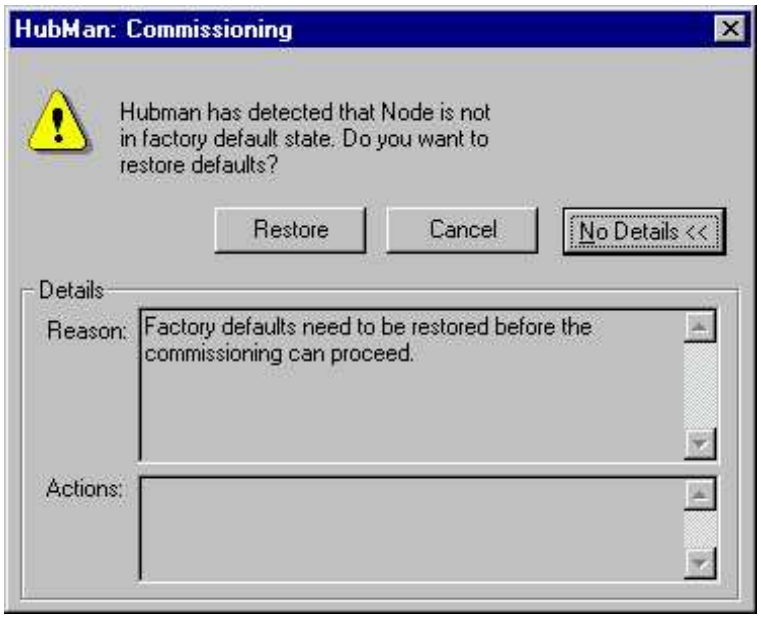


Figure 11. Commissioning note

The user can exit the Commissioning Wizard by clicking **Cancel** or continue with the testing process by clicking **Restore**.

If there are no prior settings or after the node has restored the factory defaults, the manager installs all units logically and reads the equipment configuration from the node while displaying a progress dialogue box. After that, the **Welcome** dialogue box appears showing the tests that can be run.

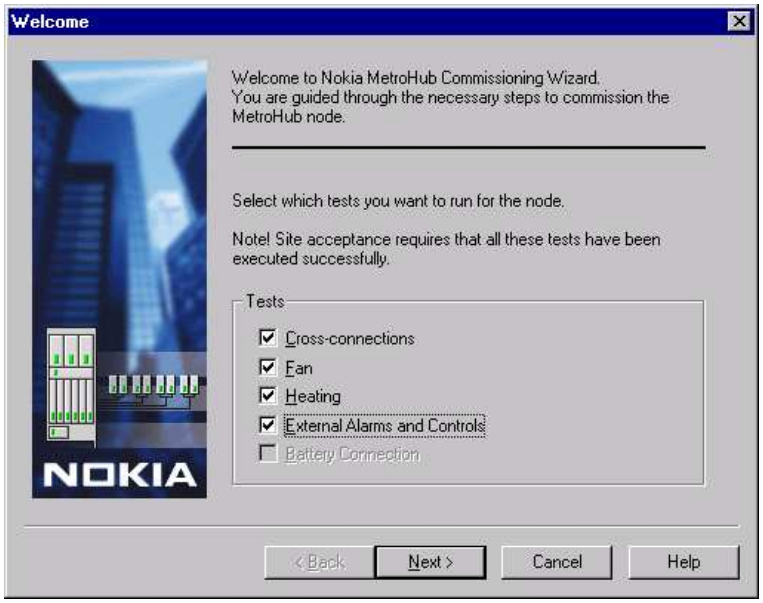


Figure 12. Welcome dialogue box

4. Test the node.

5. Configure the node.

6. Check the commissioning report.

Further information

The commissioning report is displayed in the End dialogue box. A commissioning report contains the test results and information about how the node is configured (node settings, the settings of each unit, cross-connections).

7. *If* you want to give the file a name and a place on the disk to store the file to

   Then

   Click To file...

Give the file a name and browse to a suitable place on the disk and accept it.

8. Click Finish to end the commissioning process.

The node manager refreshes the information.

Expected outcome

The commissioning report is protected and stored in a file. This file can be used, for example, for site acceptance. Note that the file is a text file with the extension .cmr and has to be opened with a text editor.

8.2 Testing with the Commissioning Wizard

Purpose

The testing phase contains activities which ensure that the hardware is functioning properly. In this phase all feasible tests are run in the transmission node and also in the transmission units found in the node.

The tests run at this phase are cross-connections test, fan test, heating test, battery test, and EAC interface tests.

Note

USBTS Hub Manager allows only cross-connection tests.

Before you start

You have opened the Commissioning Wizard as described in *Commissioning the transmission node with the Commissioning Wizard*.

Steps

1. Select the tests to be run.

All tests are run as default. Although you can select which tests to run, site acceptance requires that all tests are completed successfully.

2. Start the testing process by clicking Next.

The manager program executes the selected tests, and the results are shown in the **Testing** dialogue box.

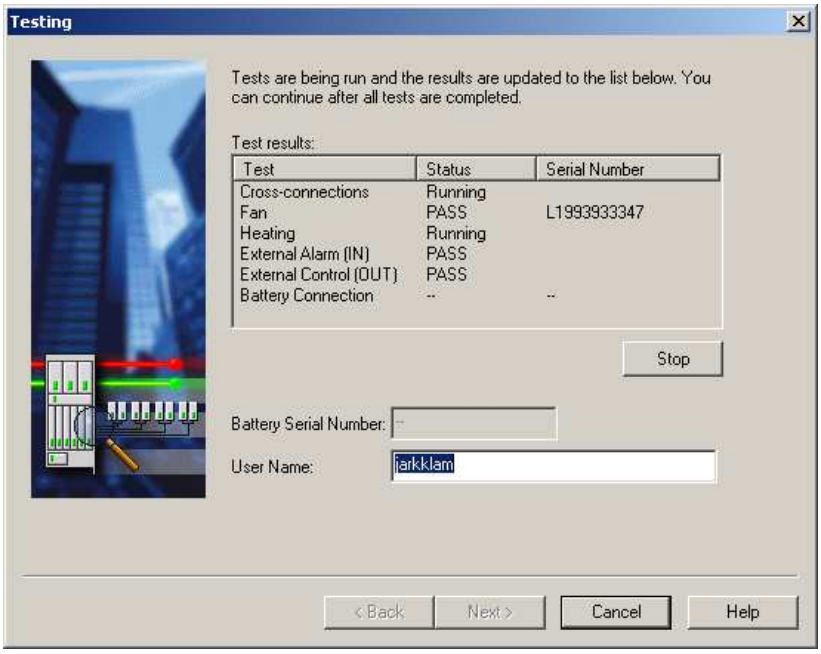


Figure 13. Testing dialogue box

Note

Running the tests takes about four minutes.

3. **Check the results of the tests from the Testing dialogue box and fill in the required fields.**

4. **Click Next.**

   The *Site Selection* dialogue box opens.

5. **Continue the commissioning process as described in Configuring with the Commissioning Wizard.**

8.3 Configuring with the Commissioning Wizard

Purpose

The configuration phase contains activities needed to make the node function in the network. These activities include setting the node ID, Q1 and synchronisation settings for the node, unit-specific settings for the transmission units, radio parameters and cross-connections.

Before you start

After the testing phase, the Commissioning Wizard continues with the site configuration.

The **Site Selection** dialogue box is open.

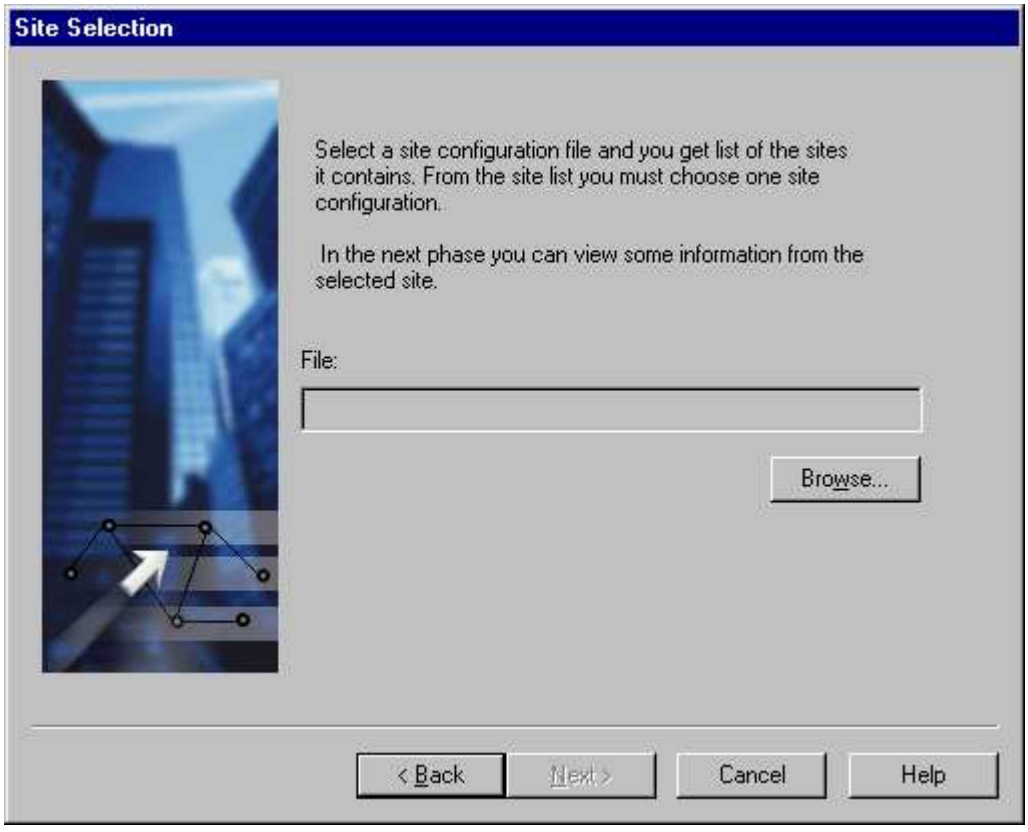


Figure 14. Site Selection dialogue box

Steps

1. **Click Browse.**

   The Commissioning Wizard opens a standard Windows dialogue box where you can look for the corresponding file. The default search criteria is .xml.

2. **Browse to file that corresponds to the configuration and select it.**

   Only if you selected a valid XML file, a dialogue box opens where you can select the correct site.

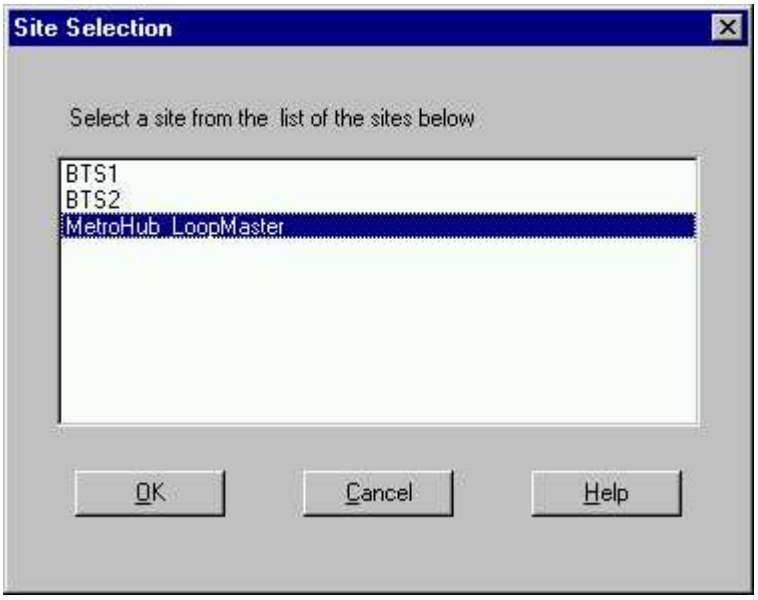


Figure 15. Site selection list dialogue box

If you selected a file other than XML, the manager returns to the **Site Selection** dialogue box where the selected file is displayed.

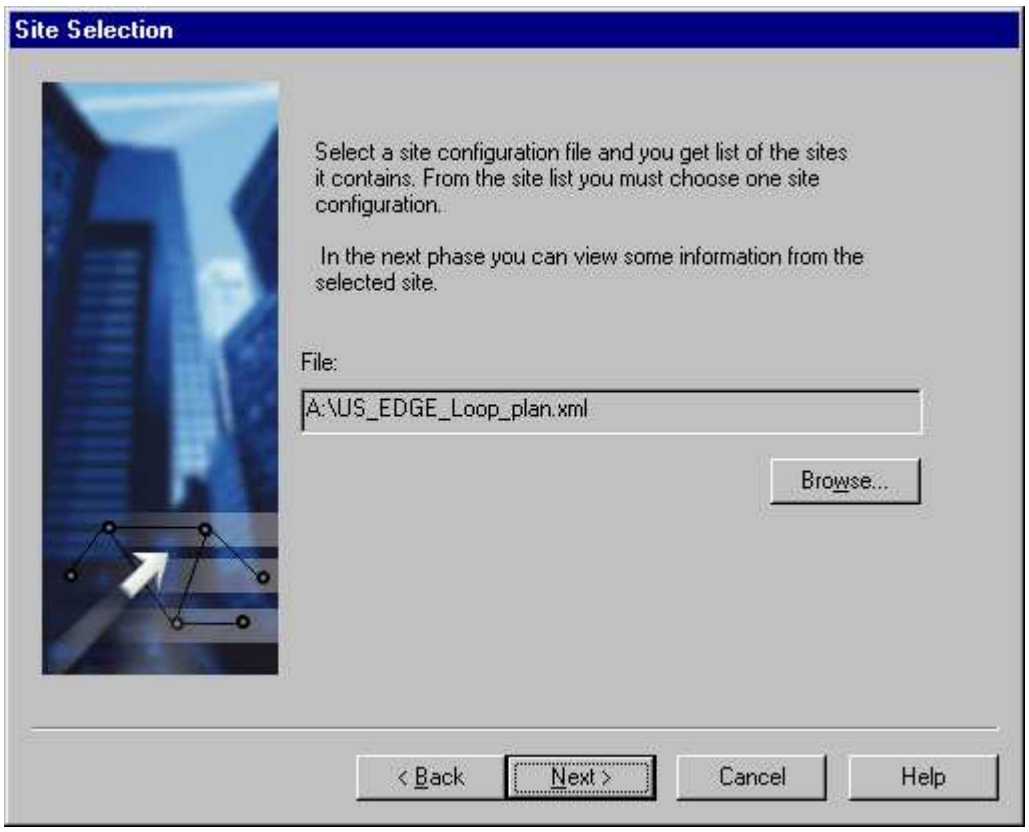


Figure 16. Site Selection dialogue box

3. *If* you selected an XML file

   Then

   Select the site and click OK.

   The manager returns to the **Site Selection** dialogue box where the selected file is displayed.

4. Click Next.

   Click **Next**.

   Some of the selected file data is shown to the user in the **Accept Site Selection** dialogue box.

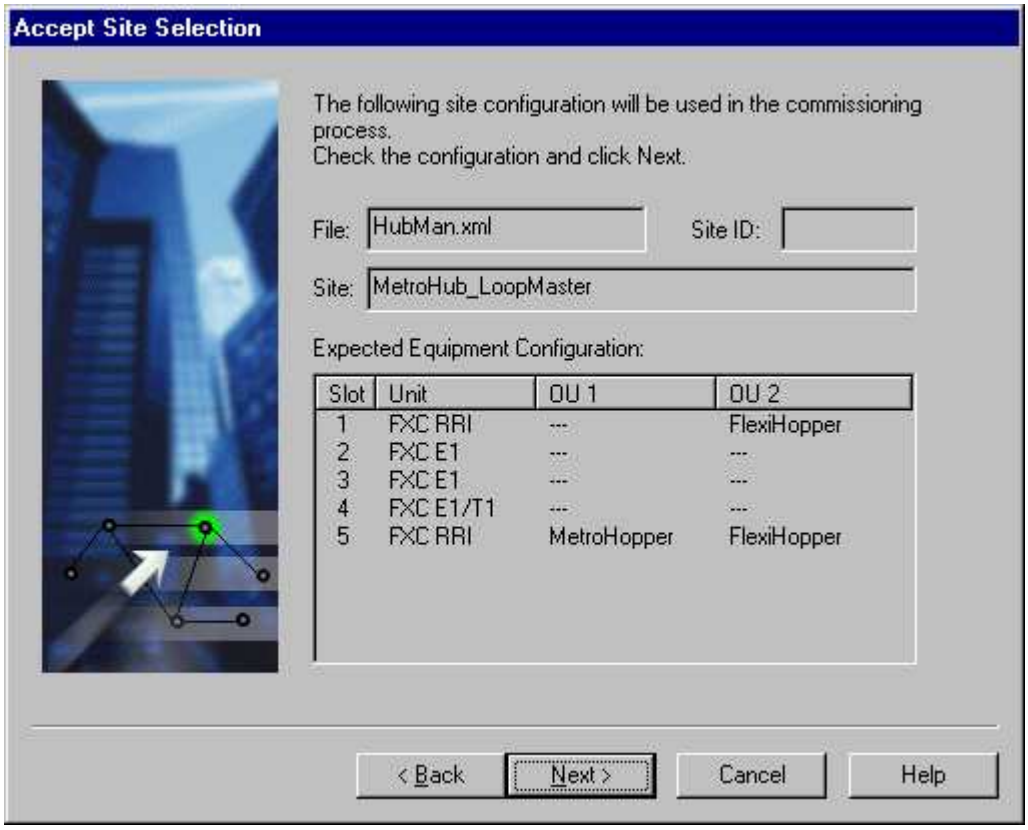


Figure 17. Accept Site Selection dialogue box

5. Click Next to accept the selected node offline file and the site, and to send node settings to the node.

The manager performs the node configuration check, that is, compares the file equipment configuration against the node configuration. If there are differences, the manager notifies about them with the note: *Fix the configuration and restart the commissioning process.*

After the configuration is correct, all the settings are sent to the node and units. The manager takes care of the node level settings and the integrated FXC unit managers take care of the FXC unit related settings and possible OU settings.

- If no radio units are used, the **End** dialogue box opens.

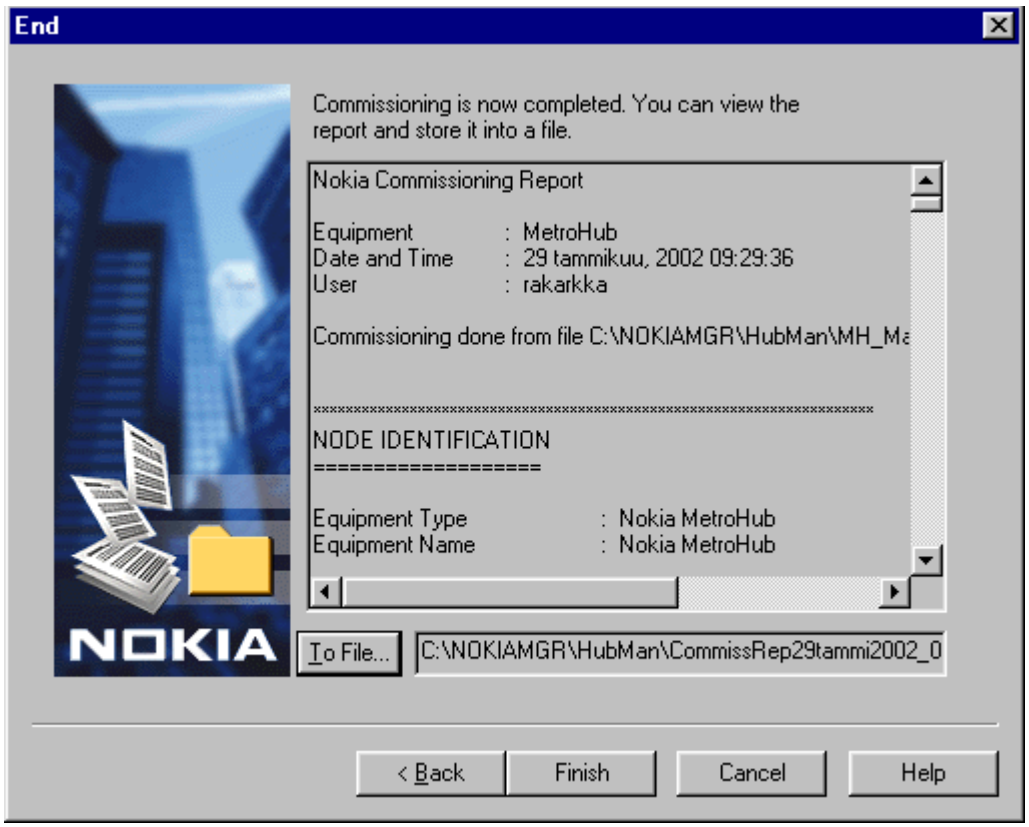


Figure 18. End dialogue box

6. *If* FlexiHopper Plus radios are present

   Then

   In the Licence Manager page that is displayed, select the folder from which the licence is installed to the FlexiHopperPlus supporting E-licensing and click Next.

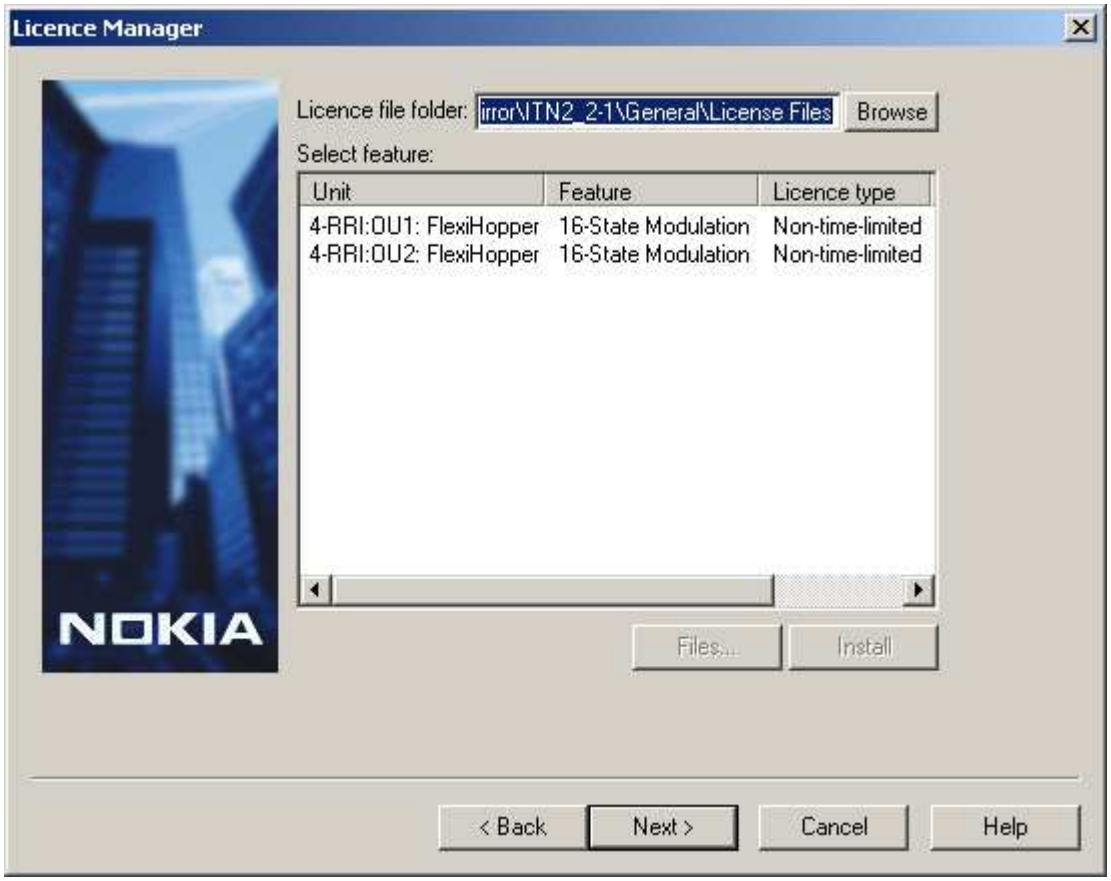


Figure 19. Licence Manager in Commissioning Wizard

- If there are radios included in the configuration, the **Check Hops** dialogue box opens.

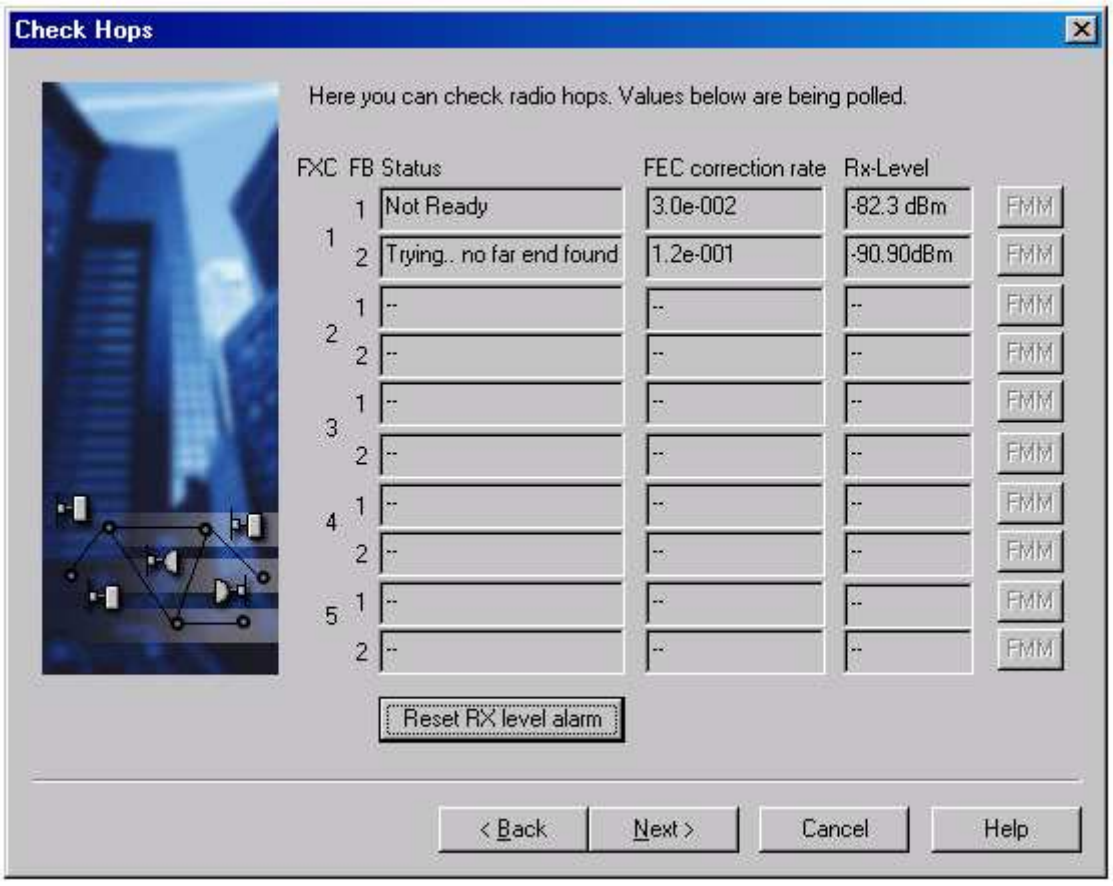


Figure 20. Check Hops dialogue box

You can monitor possible radio hops and fine-tune them. The manager polls and updates the status of the radio outdoor units to the dialogue box. For more detailed instructions, see the relevant radio documentation.

If the configuration includes Nokia FlexiHopper radios, also *fading margin measurement* is enabled.

Note

After the first end of the hop is commissioned, the hop status is shown as *Not ready* or *Trying, no far-end found* in the **Check Hops** dialogue box and in the commissioning report.

A complete commissioning report, which contains the correct status of the hop, can be obtained after the far-end of the hop has been commissioned.

After commissioning a new site or doing maintenance work at a site, quite often an *incoming signal level incorrect* alarm (caused by the outdoor units) is active until the result of the next 15 minute RX level minimum measurement is above the configurable threshold. Depending on the time point when the 15-minute measurement interval starts, this could take between 15 and 30 minutes. To avoid waiting and, thus, reduce operator OPEX costs, you can reset the alarm by clicking the **Reset RX level alarm** button. The alarm will only disappear if the incoming signal level is above the configured minimum threshold (this is checked by the outdoor unit).

Click **Next** when the required hop statuses are acceptable to end the polling.

Expected outcome

The **End** dialogue box opens and you can continue the commissioning process as described in *Commissioning the transmission node with the Commissioning Wizard*.

Further information

Note

Nokia recommend the use of *.nod files for commissioning.

9 Hub configuration

9.1 Manual Hub configuration

Summary

Steps

1. Open the Nokia UltraSite BTS Manager.

From the *Nokia Applications* submenu in the **Start | Programs** menu in Windows, select *Nokia UltraSite BTS Manager*.

Wait until the BTS Manager has properly started before moving to the next step.

2. Start the Nokia UltraSite BTS Hub Manager.

Start Nokia UltraSite BTS Hub Manager from the BTS Manager's *Tools* menu.

When the connection has been established, the *Equipment* view window opens automatically.

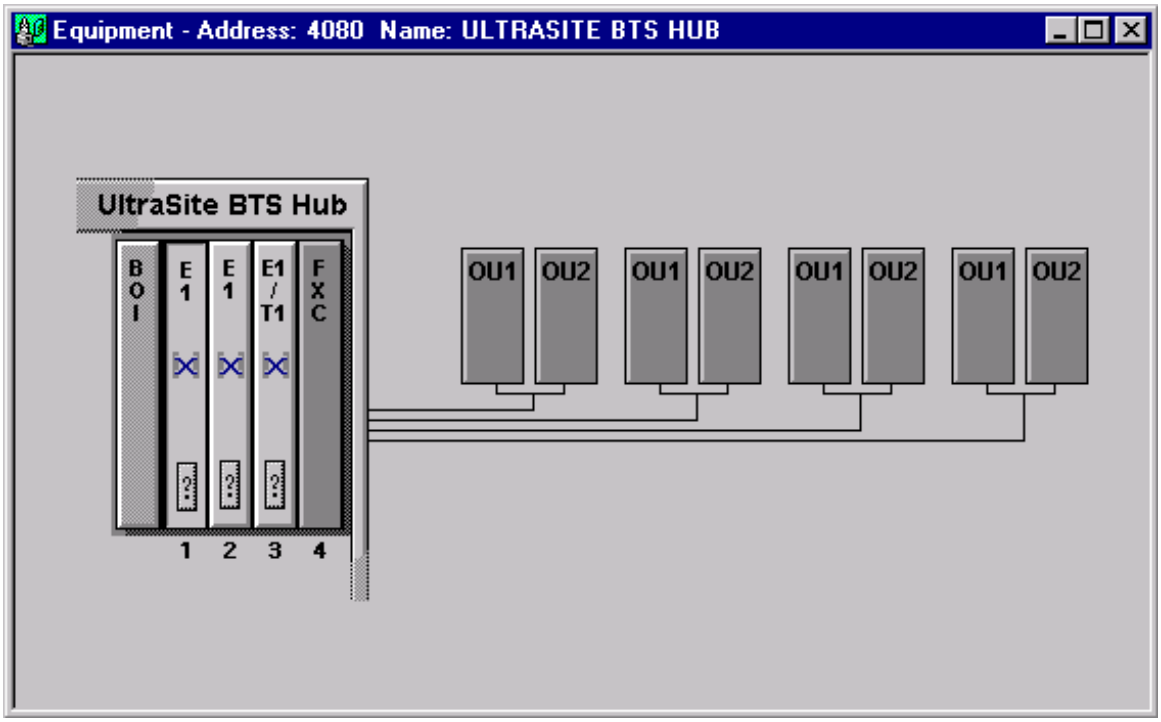


Figure 21. Equipment view in Nokia UltraSite BTS Hub Manager

3. *If* the connection fails,

   Then

   Troubleshoot the connection.

   Verify the connection speed and LMP cable connection from the **Tools | Options | Manager** options. You can also try the **Connection | Connect...** command and enter the connection parameters in the *Connect to Node* window. Using the Nokia Connection Tool, refer to the application's online Help.

4. **Define the LIF settings.**
   a. Define the FXC E1/T1 LIF settings.
   b. Define the FXC RR1 LIF settings.

5. **Adjust the identification settings.**

6. **Adjust the service interface settings.**

7. **Configure the radio units for FXC RRI units.**

8. **Adjust the synchronisation settings.**

9. **Adjust the synchronisation loop bit settings.**

10. **Adjust the Q1 management settings.**

11. **Adjust the alarm property settings.**

12. **Allocate the transmission capacity.**

13. **Create the bi-directional cross-connections.**

14. **Exit UltraSite BTS Hub Manager.**

    BTS Manager opens automatically if you started the UltraSite BTS Hub Manager from the BTS Manager.

9.2 Overview of upgrading the transmission node manager and transmission unit software

Before you start

ITN releases from C2.0 support remote software download.

Note

Upgrade from C1.2 on site via the LMP connection.

Do any necessary hardware or BTS upgrades before the software upgrade.

Note

Remote user access level can be restricted. If user access levels are enabled, only those remote users who have administrator rights gain full read/write access to element manager.

Steps

1. **Upgrade the node manager from Nokia SiteWizard to your PC or laptop as described in Installing transmission node software from Nokia SiteWizard.**

2. **Upload the node settings for a back-up.**

3. *If* upgrading new transmission unit software in MetroSite BTS

   Then

   Open the transmission unit manager.

4. **Download the FXC transmission unit software.**

   If there are several FXC units using the same kind of software package in the same cabinet, download the FXC unit software to the first unit (see *Downloading FXC transmission unit software* for instructions). Then copy the software from the first unit to the other(s), as described in *Copying transmission unit software between transmission units*.

Note

When upgrading, activate the downloaded SW on the master FXC unit (the unit in slot 1) before copying and activating the new SW on the other FXC units.

5. **Upgrade the radio outdoor unit software last, if it is required.**

9.3 Installing transmission node manager software from Nokia SiteWizard

Purpose

Use Nokia SiteWizard to install Nokia node managers, communication components, and tools required to manage related Nokia equipment. Each SiteWizard CD-ROM contains a compatible set of managers.

Before you start

To avoid compatibility problems, note the following:

- Check the compatible versions of managers.
- If your PC already contains previous node manager installations, it is recommended that you uninstall them before installing the new versions from the SiteWizard CD-ROM.
- The user ID used in the installation process must have local administrator rights when the software is being installed.

Note

Remote user access level can be restricted. If user access levels are enabled, only those remote users who have administrator rights gain full read/write access to element manager. For instructions, see *Enabling user access level control.*

Steps

1. **Start Windows.**
2. **Insert the Nokia SiteWizard installation CD-ROM into the CD-ROM drive.**

   Insert the Nokia SiteWizard installation CD-ROM into your PC's CD-ROM drive. The setup program should start automatically within a few seconds.

3. *If* the setup program does not start automatically

   Then

   Double-click the CD-ROM drive icon in the My Computer window to open the CD-ROM disk and then double-click the setup.exe program icon in the window.

4. **Follow the instructions displayed in the setup program.**

Note

GCS should be chosen for installation along with the Node Managers.

Expected outcome

The setup program copies the selected files. The user is notified when the installation is complete.

9.4 Checking the transmission unit product codes and versions with the manager

Purpose

The FXC unit product code and version number is printed on the label on top of the unit. This label identifies the hardware and the software version of the unit at the time of shipping from Nokia.

The FXC unit product code and the separate product code for software can be checked locally or by the Network Management System (NMS) or NetAct.

Before you start

Note

For ITN C1.2 hardware, the boot code, boot code version, and hardware version are not displayed.

Note

In the event of a software update to FXC E1, FXC E1/T1, FXC RRI, or FXC Bridge, the **Product Version** and **Product Version for HW** will be set to N/A.

Steps

1. **Open the FXC unit's manager by clicking the unit.**
2. *If* the unit is an FXC E1 unit

   Then

   Read the identifications in the E1 Manager under FXC E1/T1 → Identifications.
3. *If* the unit is an FXC RRI unit

Then

Read the identifications in the RRI Manager under FXC RRI → Identifications → Unit/Outdoor Unit.

4. *If* the unit is an FXC STM-1 unit

   Then

   Read the identifications in the STM-1 Manager underFXC STM-1 → Identifications.

5. *If* the unit is an FXC Bridge unit

   Then

   Read the identifications in the Bridge Manager underFXC Bridge → Identifications.

Expected outcome

The manager displays the **Identifications** dialogue box.

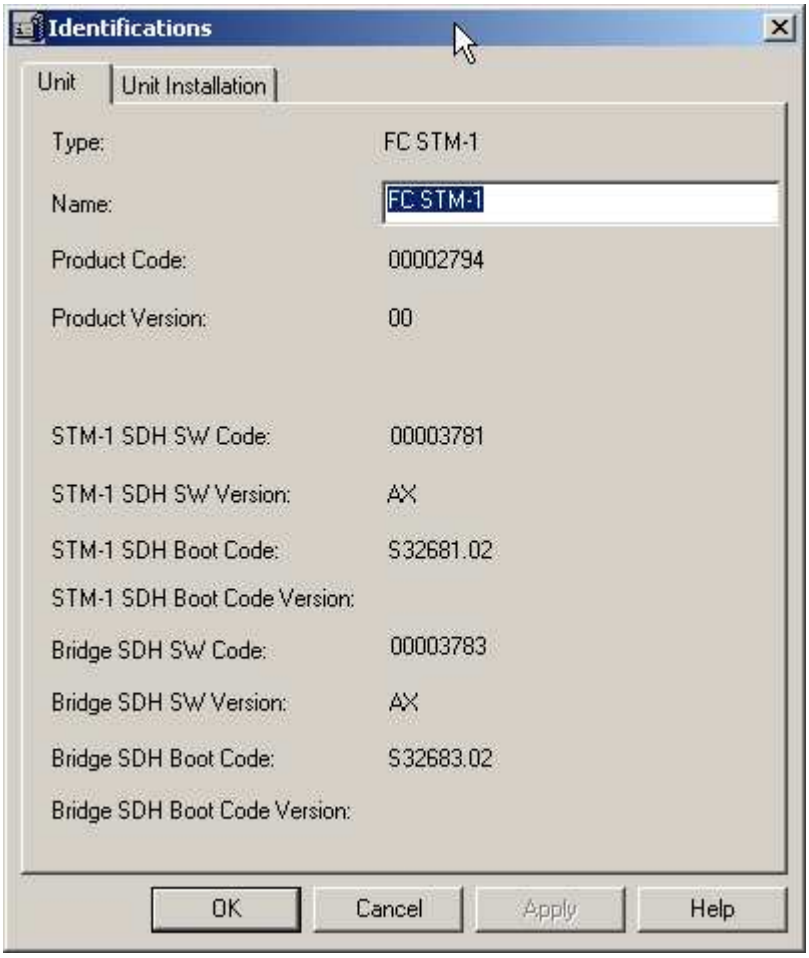


Figure 22. Identifications dialogue box

9.5 Downloading FXC transmission unit software

Purpose

You can download unit software into an FXC unit with the node manager both locally and remotely. Remote download is supported in ITN C2.0 and later releases.

Transmission Loader, introduced in ITN C2.1, is an application for remote software download. It enables automatic remote software upgrade to network elements, using existing Q1 management channels. For more information, refer to the Transmission Loader documentation available in NOLS under Maintenance.

Note

Readers should note that all images in this document are typical in nature and are for general reference only. For hardware, the versions depicted may differ from the latest version of equipment. For software, any version numbers shown in any of the windows/screens/dialogue boxes may not be the same as the actual software that is to be installed. It is important to remember that the procedure steps must be followed, as these will give advice on the correct software to be installed and the correct text that will be displayed in each window/screen/dialogue box.

Before you start

Software can be downloaded to one unit at a time. If you have more units of the same type in the cabinet, download software into one unit first and then use *software copy* to update the rest of the units. Software copy is supported in ITN C2.0 and later releases.

Note

When upgrading to ITN C2.2 release, the downloaded SW on the master FXC unit has to be activated before the SW on other FXC units.

Summary

The FXC units have two software banks, and the active software bank always contains the running software. Downloaded software is always stored into the inactive software bank.

Downloading does not disturb the traffic in the transmission unit. However, after the download is completed, you need to activate the software with the manager. To activate the software, the unit executes a restart, which disturbs traffic in the transmission network. In MetroSite EDGE BTS and UltraSite EDGE BTS, all active calls may be cut.

Note

Remote software download through the Q1 management channel may decrease the performance of remote alarm and performance monitoring via NetAct during software download.

The FXC application file extension is .pkt or .pkz (e.g. S36122D0.pkz). The file name includes the software code of the application. The extension .pkt is used for an uncompressed file and .pkz for compressed file. Therefore the .pkz file size is smaller and download is faster with it. Compressed file is uncompressed in the unit before stored into the flash. File compression is supported by ITN C2.0 and later releases. Release SDH C1.0 does not support file compression (FXC Bridge and FXC STM-1).

Software/hardware compatibility

The application file compatibility (SW/HW) is checked at the beginning of the download by the unit software. If the file to be downloaded is not compatible, the download is not executed further. In that case the manager displays an error dialogue box when the download starts.

Figure 23. Download error message when SW/HW compatibility check fails

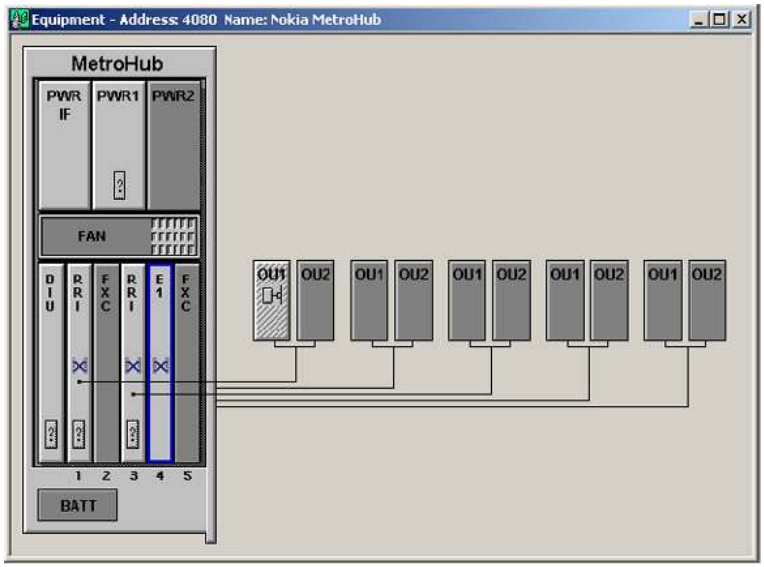
The inactive software bank is always cleared after a failed SW download.

Software/software compatibility

All the FXC unit software in a cabinet must be from the same release, for example ITN C2.1. The node master unit checks the release compatibility, and all the slave units must have the same release software. If a units has active software from a different release, the node gives the *221 Version mismatch* alarm and incompatible units are shown in the equipment view with a blue border. For removing the blue border and cancelling the alarm, see *221 Version mismatch*.

Note

The 221 Version mismatch alarm has to be cancelled in order to manage the node successfully.



Note

The equipment view looks slightly different for UltraSite.

Figure 24. Version mismatch in the equipment view

Steps

1. **Start the node manager.**
2. **Establish a connection to the node.**

3. **In the Equipment view, click the FXC unit to be upgraded.**

   The FXC menu appears in the menu bar (on the left side of the Tools menu).

4. *If* the FXC unit to be upgraded is an FXC RRI

   Then

   Select FXC RRI → Unit software → Unit.

   The **Unit Software Management** dialogue box opens.

5. *If* the FXC unit to be upgraded is an FXC E1/T1

   Then

   Select FXC E1 → Unit software.

   The **Unit Software Management** dialogue box opens.

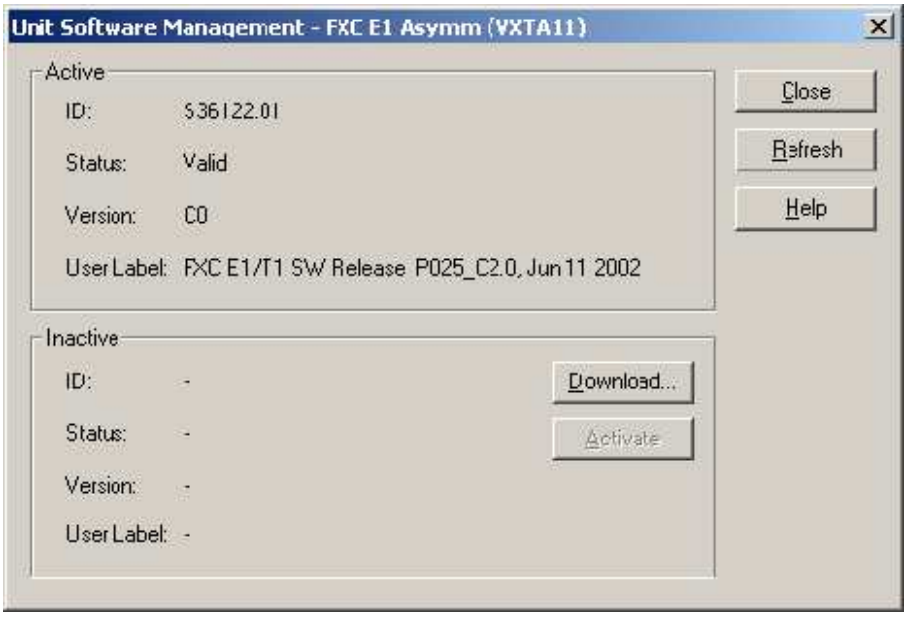


Figure 25. Unit Software Management dialogue box

6. *If* the FXC unit to be upgraded is an FXC STM-1 unit

   Then

   Select FXC STM-1 → Unit software.

The **Unit Software Management** dialogue box opens, and the FXC STM-1(SDH) page is displayed.

7. *If* the FXC unit to be upgraded is an FXC Bridge unit

   Then

   Download both the SDH software component and PDH software component for the FXC Bridge unit.

   Download both the SDH and PDH software components for the FXC Bridge unit as follows:

   a. Select **FXC STM-1 → Unit software**.
   b. Select the **FXC Bridge (SDH)** tab.
   c. Follow steps 8 to 11 of this procedure, and step 13.
   d. Select **FXC Bridge → Unit software**.
   e. Follow steps 8 to 11 of this procedure, and step 13.

8. Click Download.

A standard Windows file selection dialogue box opens.

9. Select the file to be downloaded and click Open.

The download starts, and the **Downloading Data** dialogue box is displayed.

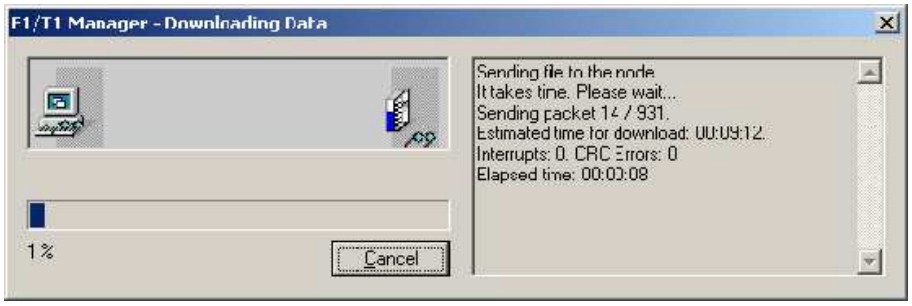


Figure 26. Downloading Data dialogue box

The dialogue box displays information about the reliability of the management channel used. The following counters are available:

- Packet counter (which shows how many packets have been downloaded)
- SWDL interrupt counter
- CRC error counter

The estimated duration, and the actual elapsed time, are displayed.

The discontinuation of the download can be easily seen when the packet counter stops. If, for example, the connection is lost, the SWDL interrupt counter is increased by one. The CRC error counter displays the number of erroneous packets.The values indicate the performance of the DCN channel.

The *Downloading Data* dialogue box is displayed during the whole downloading process. It is closed after the download has been completed and the *Unit Software Management* dialogue box is activated.

Note

To cancel the download, click **Cancel**. Note that the dialogue box may take between 75 to 110 seconds to respond.

---

10. In case the transmission unit is operating in a Nokia BTS, block the BCF with Nokia BTS Manager or request BCF lock from the BSC.

11. Activate the downloaded software by clicking Activate.

The manager starts the software activation, and the unit executes a restart.

Note

When upgrading to the ITN C2.2 release, activate the downloaded SW on the master FXC unit before the other FXC units.

Activating new software disturbs traffic in the transmission network. In MetroSite EDGE BTS and UltraSite EDGE BTS, all active calls may be cut.

When the activation is complete, the manager displays the downloaded software in the active bank. The previously active software is now inactive.

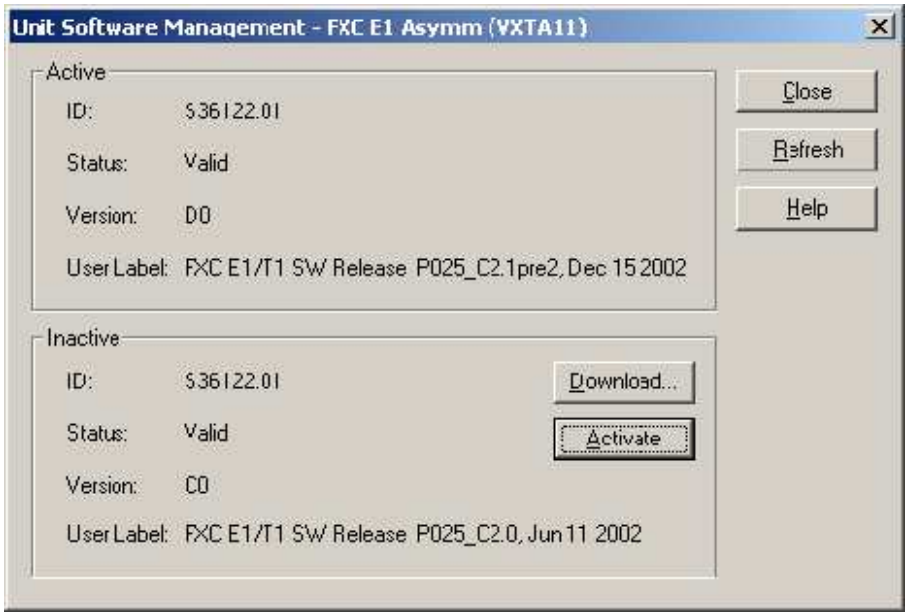


Figure 27. Unit Software Management dialogue box after software download

12. **In case the transmission unit is operating in a Nokia BTS, unblock the BCF with Nokia BTS Manager or request BCF unlock from the BSC.**

13. **Click Close.**

9.6 Copying transmission unit software between transmission units

Summary

Inside a node, software can be copied between similar types of FXC units:

- from any bank of an FXC E1(/T1) to the inactive bank of an FXC E1(/T1)
- from any bank of an FXC RRI to the inactive bank of an FXC RRI

The compatibility of the software is checked before it is downloaded (or copied). The file to be copied is compared to the one in the target. Only software with the same software code are allowed to replace each other.

Note

Different hardware versions may in some cases require different software. Refer to the *Nokia ITN Integrated Transmission Node Release C3, Compatibility* document, which is available in NOLS.

The master unit of the node has a copy queue where the copy commands are situated. The master unit executes the commands in the background one by one. The copy queue has a maximum of four copy commands. If the queue is full, the queue must be cleared before any new commands can be accepted. A copy command can also include a software activation command, if the target is not the master unit.

Steps

1. **Start the node manager.**
2. **Establish a connection to the node.**
3. **Select Maintenance → Software Copy...**

   The **Software Copy** dialogue box opens.

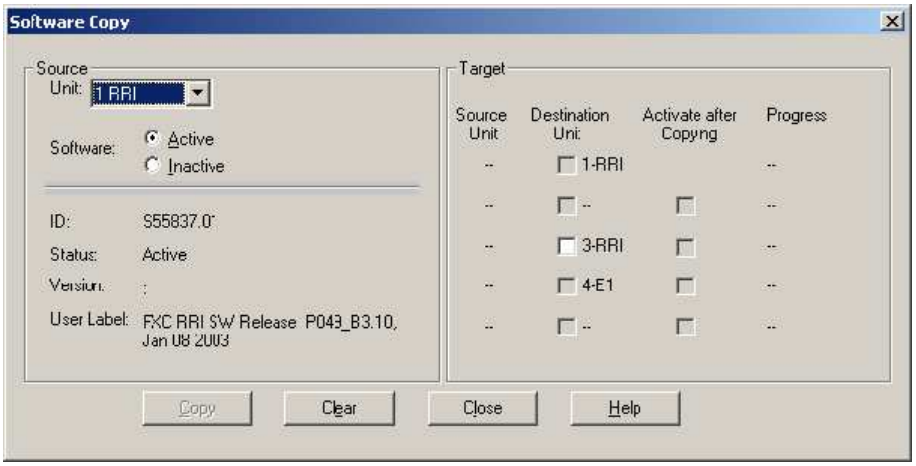


Figure 28. Software Copy dialogue box

The *Software Copy* dialogue box includes an individual software activation check box for each target FXC unit, which allows software activation after copying on only the selected units, instead of all units. The source and progress indication are also displayed for each target FXC unit.

The right-most column in the *Software Copy* dialogue box shows the progress, in percent, when copying is ongoing.

4. Select the source unit and the bank.

5. Select the target unit from the target group by clicking the checkbox.

6. *If* you want the manager to activate the software after copying

   Then

   Check the Activate after copying check box.

   When upgrading to ITN C2.2 release, activate the downloaded SW on the master FXC unit before copying and activating the new SW on the other FXC units.

7. *If* you want to copy software from another source unit into another target unit

   Then

   Repeat the steps above as many times as needed.

8. Click the Copy button.

Expected outcome

Software copying starts, and the progress is displayed in the **Software Copy** dialogue box.

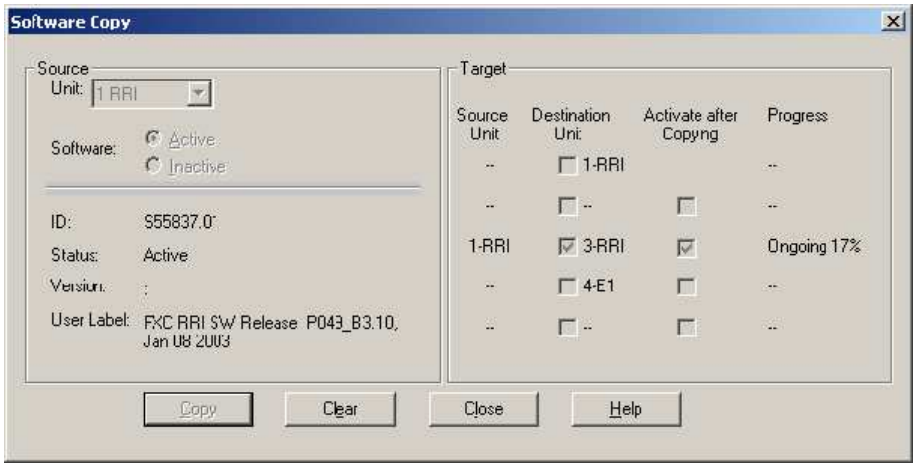


Figure 29. Software Copy dialogue box when copying ongoing

After all the copy commands are executed and the **Progress** is set to **Done**.

Unexpected outcome

If there are mistakes in the copy definitions, click **Clear**. Note that this clears all the selections you have made.

9. **Click Close to close the dialogue box.**

   When the dialogue box is reopened, the copy progress is updated.

9.7 Downloading transmission unit software to outdoor units

Purpose

New software can be downloaded to outdoor units from Nokia UltraSite EDGE BTS, Nokia MetroSite EDGE BTS or Nokia MetroHub via an FXC RRI unit.

Before you start

Note

Activating the new software disturbs the traffic in the transmission network. In Nokia MetroSite EDGE BTS and Nokia UltraSite EDGE BTS, all active calls may be cut.

Before downloading, ensure that you have the correct file for each radio type available.

Steps

1. To upgrade new outdoor unit software in Nokia UltraSite EDGE BTS or Nokia MetroHub

   ### Steps

   a. **Click either the outdoor unit or the corresponding FXC RRI unit.**

      The FXC RRI menu opens in the menu bar.

b. Select FXC RRI → Unit Software → Outdoor Unit for the radio you need to upgrade.

The **Software Management** dialogue box opens for the radio you need to upgrade.

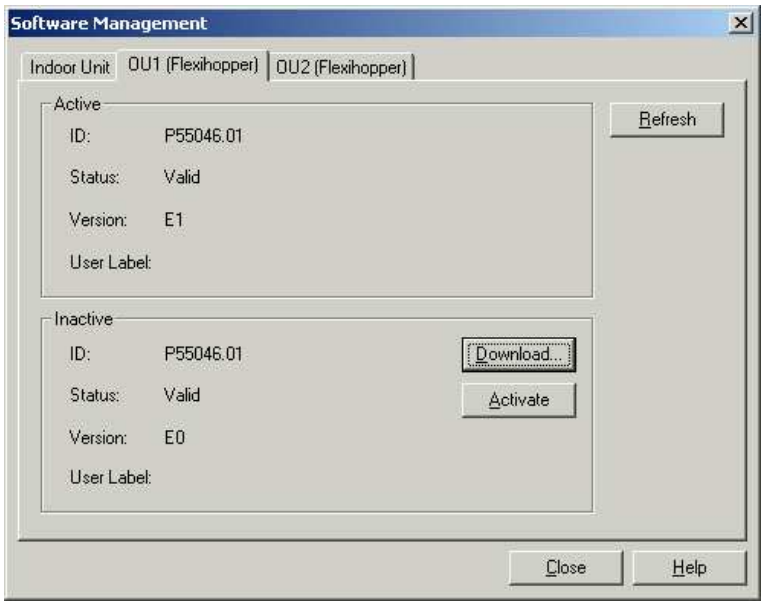


Figure 30. Software Management dialogue box

2. To upgrade new outdoor unit software in Nokia MetroSite

Steps

a. Select Transmission → Open.

Nokia RRI Manager opens.

b. Select Maintenance → Unit Software → Outdoor Unit for the radio you need to upgrade.

The **Software Management** dialogue box opens for the radio you need to upgrade.

3. Click Download to browse for a file.

4. Click Open to start the download.

The RRI Manager checks that SW code of the downloaded SW is the same as the running SW in the outdoor unit.

If the code is not the same, an error dialogue box is displayed, which informs you that the selected binary is not compatible with the OU.

5. **Click Activate to activate the new software in each of the radio units.**

Note

Activating the new software will cause an outdoor unit reset and thus interrupting running traffic through that outdoor unit. Management communication to the outdoor unit and traffic will be interrupted until the outdoor unit has been started up again Start-up of the outdoor unit may take 30 seconds to 1 minute. The actual start-up time after a reset depends on the outdoor unit type.

6. **Repeat the procedure for the other outdoor units.**

9.8 Installing and uninstalling transmission units logically with the manager

Purpose

A MetroHub or BTS is only aware of a certain transmission unit if this unit has been installed beforehand with the manager.

Note

The manager indicates a SW mismatch in a unit in an unnistalled state by a blue border and a hash fill for that unit.

Steps

1. To install a unit logically in the offline mode:

Steps

a. **Open a node file (.dat or .nod) or an SCF file (.xml).**

b. Right-click an empty slot to access the pop-up menu in the Equipment window.

c. Select Unit →Install FXC (RRI, E1, E1/T1, Bridge, or STM-1) from the pop-up menu.

Expected outcome

The installed unit can now be used.

2. To install a unit logically in the connected mode:

Before you start

You can only install a unit that is physically present in the connected mode.

Steps

a. Insert a new unit into UltraSite EDGE BTS or MetroHub Manager.

b. Connect to a node.

c. Right-click the desired unit (the unit is displayed with diagonal stripes) to access the pop-up menu in the Equipment window.

d. Select Install Unit from the pop-up menu.

Or

Select **Install All** from the pop-up menu if you want to install all units at the same time.

3. To uninstall a unit logically with the manager

Purpose

You can logically uninstall one or more selected transmission units.

Note

Some unit-related node settings (for example: EOC, synchronisation, cross-connections) are erased when a unit is uninstalled.

Steps

a. **Connect to a node or open a node file.**

b. **Point to the unit(s) to be uninstalled and click the right mouse button to access the Equipment window pop-up menu.**

c. **Select the Uninstall Unit pop-up menu command.**

Expected outcome

The uninstalled unit(s) can no longer be used, and you can physically remove the unit(s).

Further information

You can also insert a new unit when you have already established a connection to the node. In that case, to make the unit appear in the **Equipment** window, you need to select **Refresh All** from the **Equipment** window pop-up menu.

9.9 Adjusting FXC E1/T1 and FXC E1 interface settings

Summary

Configuring the Line Interface (LIF) settings for a FXC E1/T1 or FXC E1 unit is, with one exception, common and as result this section describes the possible settings and options for both unit types.

Steps

1. **To open the LIF settings dialogue box, select FXC E1/T1 → LIF Settings, or FXC E1 → LIF Settings.**

   The LIF settings dialogue box opens.

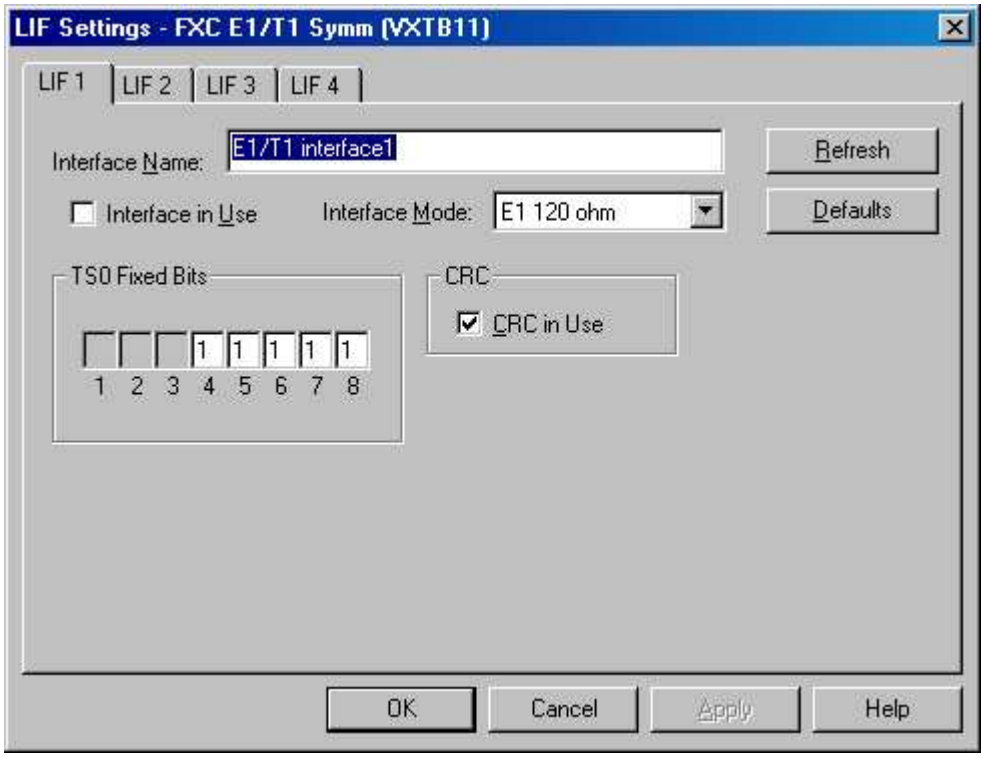


Figure 31. The LIF settings dialogue box

2. Select the LIF1, LIF2, LIF3, or LIF4 tab.

3. Add a specific name for the LIF in the 'Interface Name' field.

4. Click the Interface In Use check box to mark the LIF for activation.

Check the 'Interface in Use' check box to mark the LIF for activation. If this check box is not checked, the interface will be not operational; it will supply an AIS signal, and all interface-related alarms will be suppressed.

5. *If* you are adjusting FXC E1/T1 interface settings

Then

Select the Interface Mode in the drop-down menu.

Select the **Interface Mode** in the drop-down menu. The alternatives are E1 120 Ohm and T1 100 Ohm.

Note

An interface configured to the E1 mode operates as an ITU G.703/ITU G.704 Interface with 2048Kbit/s. An interface configured to the T1 mode operates as an ANSI T1.102/ANSI T1.403 Interface with 1544Kbit/s.

Note

For the FXC E1 unit, E1 75 Ohm is displayed. This value is fixed and cannot be changed.

6. *If* the interface mode is T1 100 Ohm

   Then

   Adjust the settings for Framing Format, Line Code, and T1 Interface Type.

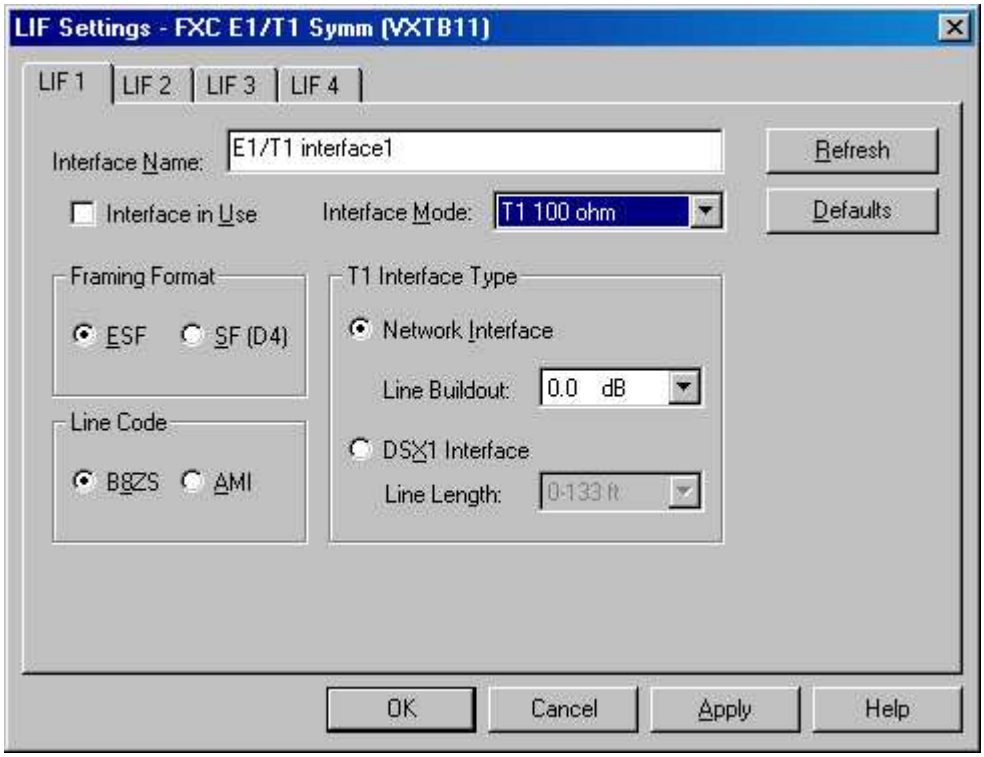


Figure 32. The LIF settings dialogue box, T1 Interface Mode

Adjust the settings for **Framing Format**, **Line Code**, and **T1 Interface Type**:

- Under **Framing Format**, select either **Extended Super Frame (ESF)** or **Super Frame (SF)**.
- Under **Line Code**, select **B8ZS** or **AMI**.
- Under **T1 Interface Type**, select and configure either **Network Interface** or **DX1 Interface**:
  - Select **Network Interface** to insert additional attenuation into the transmitter of the line interface, for standard T1 interface operation. Configure the line build (7.5, 15, 22.5,or 0.0 B).
  - Select **DX1 Interface** if the T1 line interface of the FXC E1/T1 unit is connected to a device whose interfaces operate as DSX1 interfaces. Configure the line length up to that device.

7. *If* the interface mode is E1 120 Ohm or E1 75 Ohm

   Then

   Adjust the settings for TSO Fixed Bits and CRC.

   Adjust the settings for TSO Fixed Bits and CRC:

   - By checking the CRC in use check box, the transmitted and expected E1 frame is configured to be of CRC-4 multi-frame structure. If the check box is not checked, a E1 basic frame structure will be send and expected to be received.
   - With the TS0 fixed bit settings it is possible to set the TS0 Sa bits either to one or zero or T (transparent), dependent on the policy or need within the network. If it is set to T then it represents the status of the loops set by the software (M: Master control bit, L: Loop control bit, E: EOC).

8. **Click OK or Apply to activate the interface settings.**

9.10 Adjusting FXC RRI interface settings

Purpose

The flexbus signal of the FXC RRI unit can multiplex up to 16 E1 signals. Each of these 16 E1 signals can be made operational, and the frame format can be selected (just as for the E1 line interface settings of a FXC E1/T1 or FXC E1 unit).

Steps

1. **Select FXC RRI → Settings → Unit.**

2. **Select the Flexbus 1 Interface tab or the Flexbus 2 Interface tab (depending on the interface to be configured).**

   The Flexbus (1/2) Interface tab is displayed.

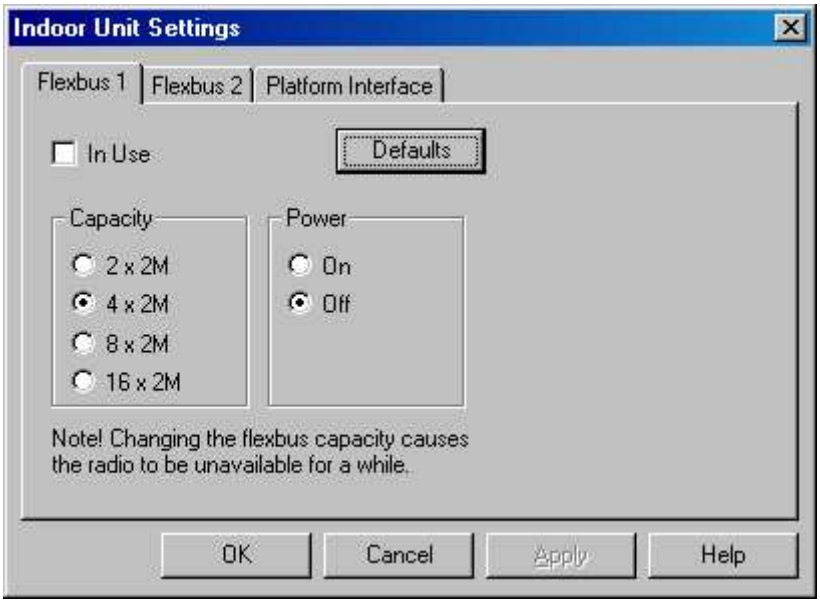


Figure 33. The Flexbus (1/2) interface tab

3. **Click the In Use check box to mark the interface for activation.**

   If this check box is not marked, the interface will be not operational; it will supply an AIS signal, and all interface-related alarms will be suppressed.

4. **Select the interface capacity (2 - 16 x 2M).**

   Select the interface capacity according to the capacity of the microwave radio link to be connected to it.

5. *If* the FXC RRI unit is directly connected to an outdoor unit (radio)

   Then

   select the Power On option.

Select the **Power On** option to switch on the power for the outdoor unit.

Note

Do not use the Power On setting when two FXC RRI units are connected with a flexbus cable, or when an FXC RRI and FIU 19(E) are connected with a flexbus cable. This could damage the units.

6. **Click OK or Apply to activate the Flexbus interface settings.**

7. **Select the Platform Interface tab.**

   The Platform Interface tab is displayed.

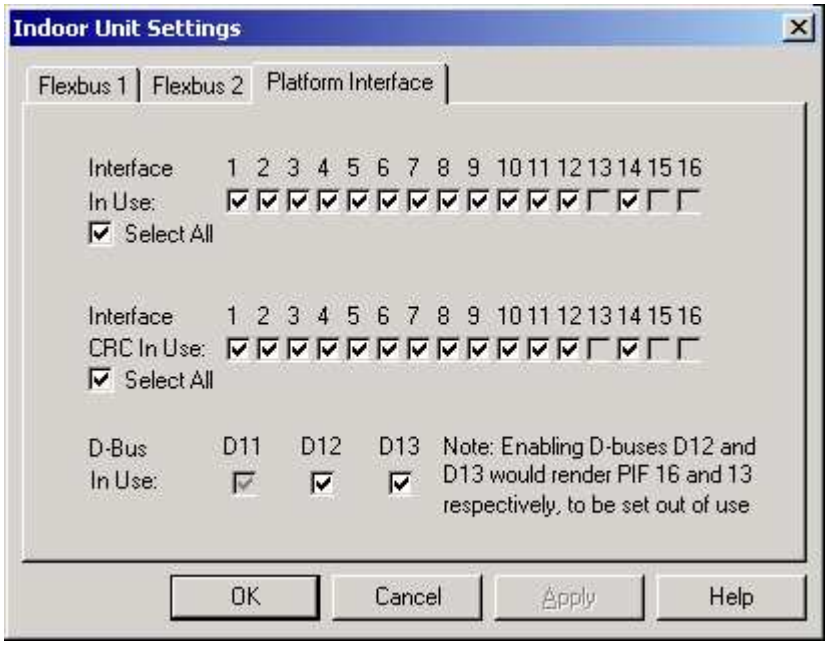


Figure 34. The Platform Interface tab

8. **Click theInterface In Use check box for each interface to be activated.**

   If its check box is not marked, an interface will not be operational once the settings are activated. The interface will send AIS signals, and all interface-related alarms will be suppressed.

Note

Platform interfaces 13, 14, and 16 are disabled if D-bus D12 or D13 is enabled.

If a Nokia MetroHub is chained to a Nokia BTS, the platform interface 15 is always allocated to relay capacity to the BTS internal D-bus. The interface cannot be enabled.

9. **Alternatively, click the Select All check box so that all the interfaces are activated.**

10. **Click the CRC In Use check box for each interface to use a CRC-4 multi-frame structure.**

    If its**CRC in use** check box is not marked, an interface will use E1 basic frame structure.

11. **Alternatively, click the Select All check box so that CRC In Use is activated for all the interfaces.**

12. **Click the D-Bus In Use check box for each D-bus to be activated.**

13. **Click OK or Apply to activate the platform interface settings.**

9.11 Allocating F(X)C transmission capacity

Summary

You must now allocate BTS transmission capacity on the D-bus. Use the Traffic Manager, which is a graphical tool that allows you to allocate BTS transmission capacity, regardless of which Nokia transmission unit is used. You must define the unit (for example, 1 E1/T1), the interface (with FXC units), and the incoming timeslot allocation on the Abis according to the transmission plan.

The D-bus allocation menu also allows for manual optimisation of cross-connections along a D-bus. This is a manual process of allocation, whereas the Traffic Manager performs this operation automatically.

By performing manual D-bus allocations, information for all traffic signals inside the D-bus (EDAP, OMUSIG, TCH, TRXSIG) can be received by the BTS.

If you use the D-bus allocations alone, you must create the cross-connections individually with the Cross-connection Wizard. This method of allocation is used to optimise the traffic in the D-bus.

Define the capacity to be used by selecting its signal type (EDAP, TCHs, TRXSIG, OMUSIG, or TRXSIG on TCHs) and by reserving required time slots and bits.

Note

In the case of 1.5 MB links (T1), the Traffic Manager automatically reduces the number of time slot rows in the table to 24.

Steps

1. Open Traffic Manager.

Select the *Traffic Manager* command on the *Configuration* menu in Nokia UltraSite BTS Hub Manager. The Traffic Manager window displays.

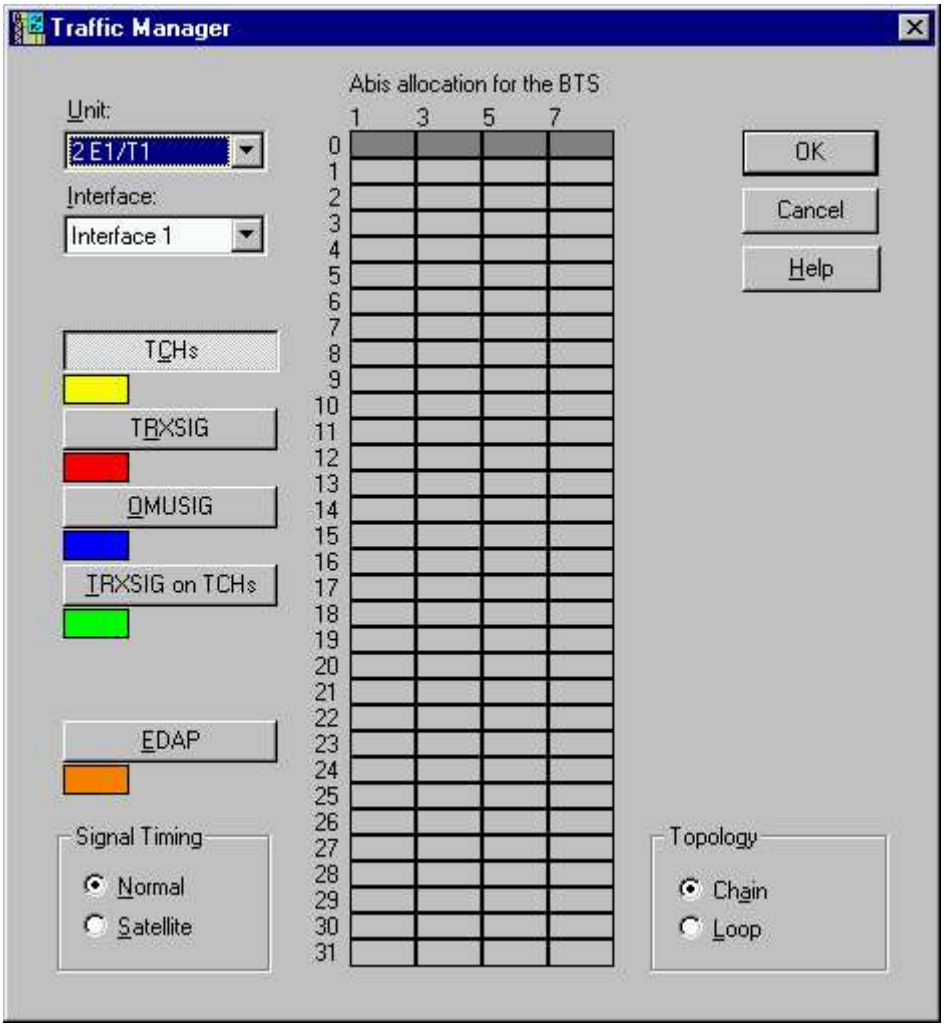


Figure 35. Traffic Manager for an E1 link

2. Select the line interface being used.

Select from Interface 1 to Interface 4 with FXC E1(/T1) and up to 16 Channels/FlexBus with RRI transmission units. The number of available channels is decreased when FlexBus capacity is set to other than 16 x 2M. An FC E1/T1 unit has only Interface 1 available, because it has only one line interface. For FXC STM-1, the maximum interface of the node is 190 x 2M (with 2 FXC STM1 and 4 Flexbus interfaces).

3. Allocate the transmission capacity.

a. Click *TCHs*.
b. Click in a cell in the *Abis allocation for the BTS* time slot table.
c. Repeat step b to allocate transmission capacity to all TRXs in the BTS configuration.

4. Select the link speed (alternative 1).

a. Click *TRXSIG*.
b. Click the first bit in a timeslot in the Abis allocation table.
c. Select the TRX to be defined from the pop-up menu.
d. Select the link speed from the pop-up menu.
e. Repeat steps b through d for all TRXs in the BTS configuration.
f. Click *OMUSIG*.
g. Click a cell in the Abis allocation table.
h. Select the link speed from the pop-up menu.

Or

5. Select the link speed (alternative 2).

a. Click *TRXSIG on TCHs*.
b. Click the first bit in a timeslot you reserved for TCHs in step 3.
c. Select the link speed from the pop-up menu.
d. Repeat step c for all TRXs in the BTS configuration.
e. Click *OMUSIG*.
f. Click a cell in the Abis allocation table.
g. Select the link speed from the pop-up menu.

6. *If* you want to modify the allocation table at this point,

Then

You must first delete prior allocations.

a. Right-click on the cell to be modified.
b. Delete either one signal allocation, all signal allocations, or all allocations for the selected port.

Note

Choosing *Delete all* while modifying the allocation table deletes all transmission capacity allocation from the D-bus without a warning. If you execute the command by mistake, click *Cancel* and start the allocating procedure again.

7. **Verify the signal timing.**

   Verify that the signal timing (either *Normal* or *Satellite*) is correctly set.

8. **Click OK to send the information to the BTS.**

Note

When the link capacity restricts normal signal allocation, you can use the *TRXSIG on TCHS* signal type.

---

9. *If* you wish to automatically allocate D-buses and create required cross-connections,

   Then

   Select an EDAP signal.

   a. Make the first EDAP signal selection from the signal selection group.
   b. After the EDAP signal selection, mark a new EDAP. The EDAPs connect to buses D12 and D13. Use the first free place for the new EDAP.

Note

Do not change the locations of the existing EDAPs on Abis. If there are no free places in other D-buses, connect an EDAP to bus D11.

Note

If you use Traffic Manager, then the D-bus allocation is NOT required to be performed separately since Traffic Manager automates D-bus allocation during this process.

9.12 Creating bi-directional cross-connections

Summary

Because there is no cross-connections file available, cross-connections for each transmission unit are created with the BTS Hub Manager's cross-connections tool. This FXC transmission unit configuration work includes also cross-connections on the D-bus.

Cross-connections define how signals are routed from an FXC transmission unit to another transmission unit. Cross-connections are created into banks that are either active or inactive. The cross-connections in the active banks are in use, whereas you can use those in the inactive banks for creating or editing cross-connections. This procedure describes how to manually create bi-directional cross-connections.

For more detailed information about cross-connections, see the *Nokia MetroHub Transmission Node* documentation set.

Steps

1. **Start creating cross-connections.**

   Select the *Cross-connections* menu in the *Configuration* menu.

2. **Open the active bank page.**

3. **Copy cross-connection bank.**

   Click *Copy* to copy the active bank into the inactive bank.

4. **Open the Add Cross-connection Wizard.**

   Go to the *Inactive Bank* and click *Add* to open the *Add Cross-connection Wizard*.

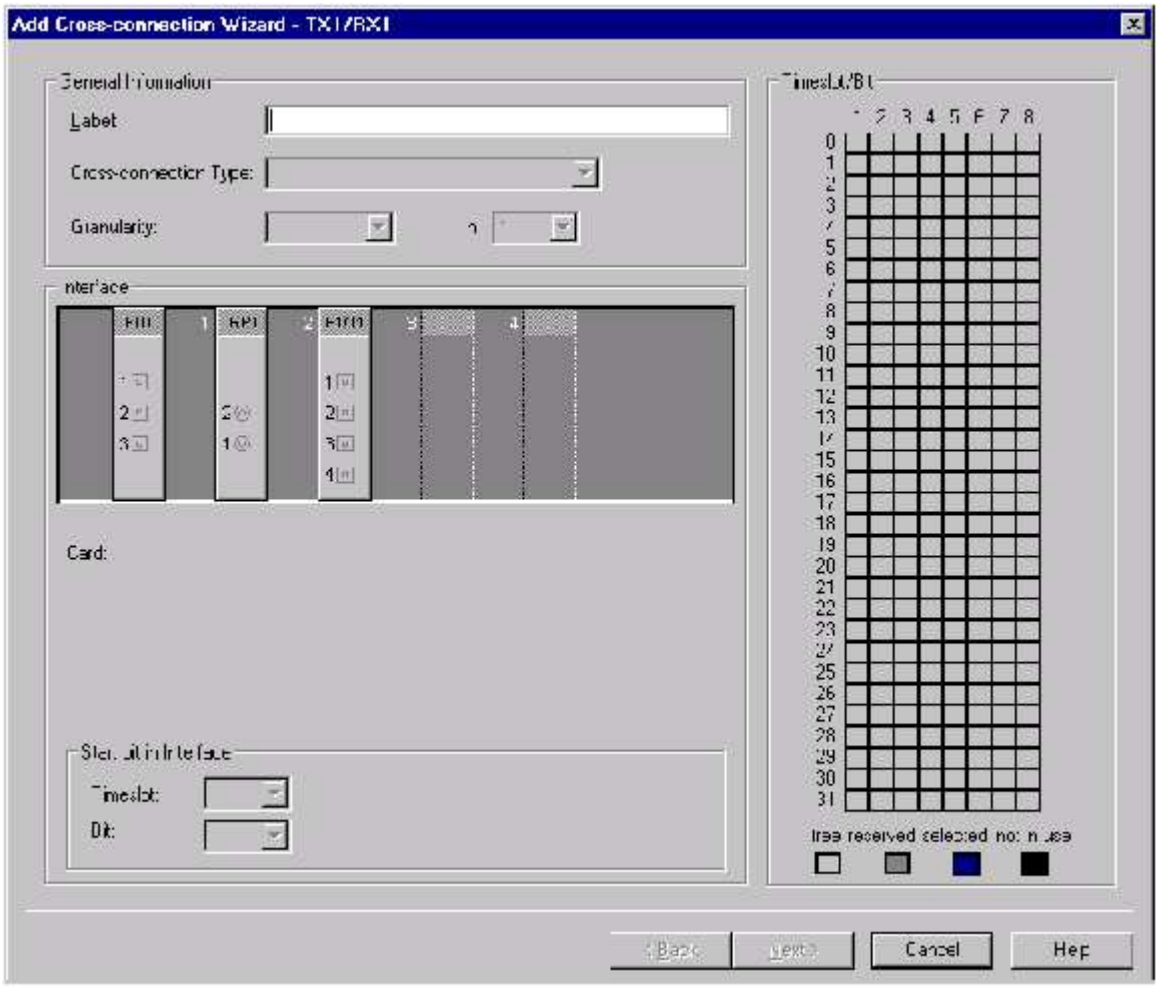


Figure 36. Add Cross connection Wizard

Or

5. **Alternatively, initiate a cross-connection from the graphical view.**

   The *Add Cross-connection Wizard* displays.

6. **Define the cross-connection settings.**

   Define the following settings according to the cross-connection plan:

- label (name) of the new cross-connection (maximum 80 characters)
- cross-connection type; in this case, the type is *bi-directional*
- granularity (with nx64k set also its coefficient n)

7. Select the termination point settings.

Click *Next* to display the Overview window, where you can edit the termination point(s).

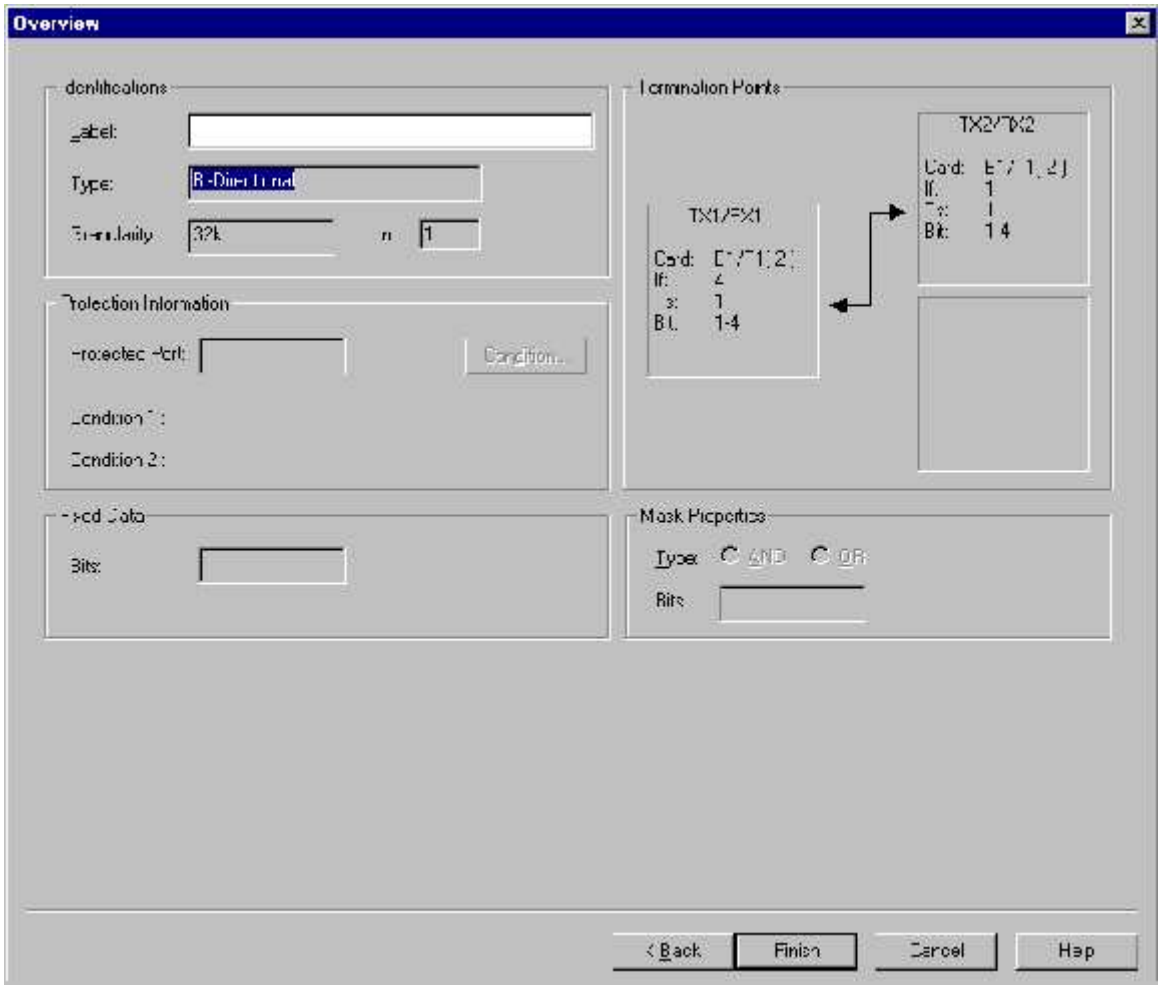


Figure 37. Edit Termination Point view

8. *If* the FXC card is of *E1T1* type,

Then

Select the interface as the first termination point.

9. *If* the FXC card is of *RRI* type,

   Then

   Select the Flexbus as the first termination point.

10. *If* the RXC card is of *RRI* type,

    Then

    Select the *Channel* and the *Interface*.

Note

In the timeslot table, the reserved timeslots and bits are grey, while the selected ones are blue. (If you modify your Windows colour settings, these timeslot colours will change accordingly.)

---

11. Define the start bit of the frame.

Click a cell in the table to define the start bit of the frame. Click *Next*.

12. Repeat steps 7 through 11 to select the second termination.

13. *If* the cross-connection is of *Protected* type,

    Then

    Set the condition.

    Click *Condition* to set the condition.

14. *If* the cross-connection is of *Masked* type,

    Then

    Set the Mask bits.

15. *If* the cross-connection is of *Unidirectional Fixed Data* type,

    Then

    Set the Fixed Data bits.

16. Exit the Add Cross-connections Wizard.

Click *Finish* in the *Overview* window. The Wizard closes and you can view the cross-connection in the cross-connection list and the graphical view.

17. To create other types of cross-connections, if necessary, repeat steps 5 through 16.

18. Activate the bank.

Either click *Activate* or right-click the *Inactive Bank* window and select *Activate* to activate the bank.

19. If you wish to change cross-connection settings, you will need to modify a bank.

a. To modify settings in an inactive bank, double-click the connection in the *Cross-connection* list view in the *Add Cross-connection Wizard* window.

b. Alternatively, you can select the connection and select *Modify* in the pop-up menu (which displays when you right-click the mouse), or you can select the connection and click *Modify*.

c. If you have activated the bank, you need to copy the cross-connection information to the inactive bank for modification because you cannot modify active banks.

Note

The copy command is also available in the pop-up menu.

20. Close the Cross-connection view.

10 Adjusting transmission node settings

10.1 Overview of adjusting transmission node settings

Summary

It is possible to adjust the following settings using the manager:

- identification settings
- service interface settings
- synchronisation settings
- synchronisation loop bit settings
- alarm property settings
- Q1 management settings

Note

Circuit management settings are for Nokia internal use only. Trunet is a 2-bit control channel.

Steps

1. *If* you want to adjust identification settings

   Then

   See Adjusting identification settings

2. *If* you want to adjust service interface settings

   Then

See Adjusting service interface settings

3. *If* you want to adjust synchronisation settings

   Then

   See Adjusting sychronisation settings

4. *If* you want to adjust synchronisation loop bit settings

   Then

   See Adjusting sychronisation loop bit settings

5. *If* you want to adjust alarm property settings

   Then

   See Adjusting alarm property settings

6. *If* you want to adjust Q1 management settings

   Then

   See Adjusting Q1 management settings

10.2 Adjusting node identification settings

Purpose

You can adjust the identification settings for the managed node using the **Hardware Identifications** dialogue box. The user can fill in the name, site name, group name and site location, and these are valid for the whole node.

Summary

Identification-related settings are not mandatory but it is strongly recommended to use them.

Note

If you change the master FXC unit of the node, User Notes, Node Identifications, and Node installation information is lost. The identification settings of remaining units do not disappear.

Steps

1. **Connect to the node or open a file.**

2. **Select Configuration → Identifications.**

   The **Hardware Identifications** dialogue box opens.

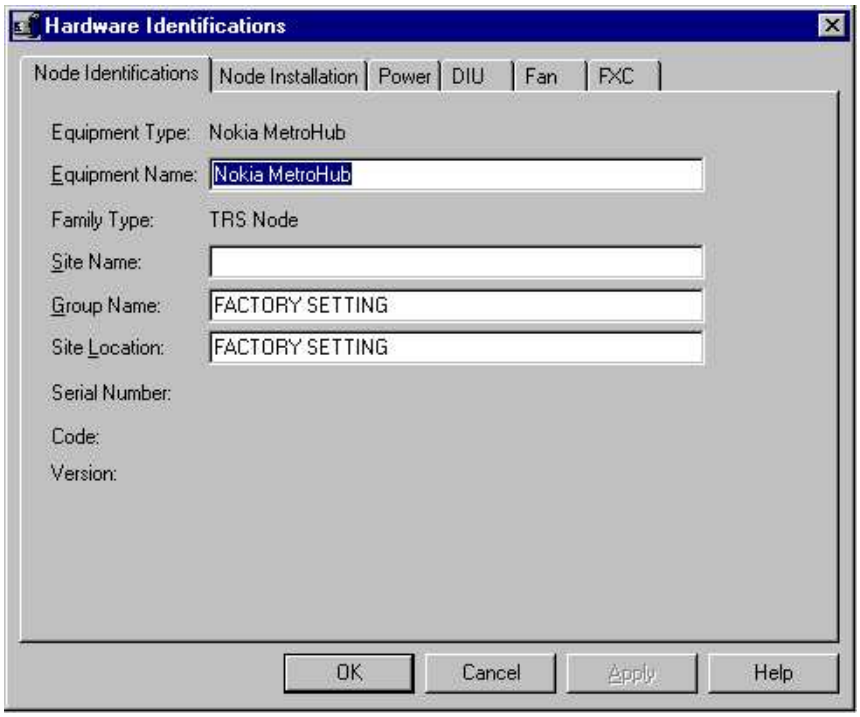


Figure 38. Hardware Identifications dialogue box (MetroHub)

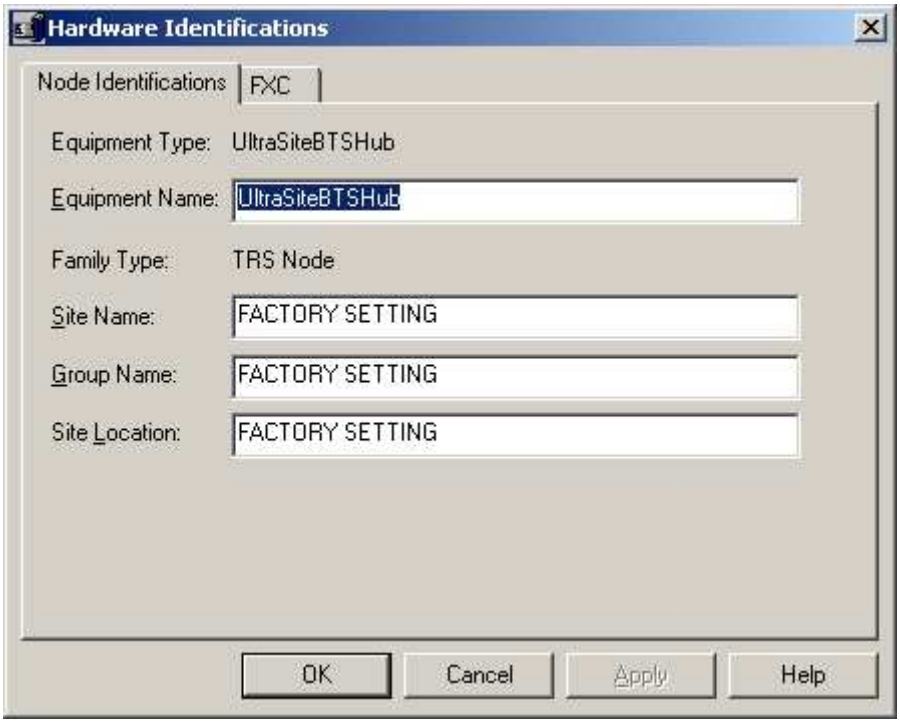


Figure 39. Hardware Identifications dialogue box (UltraSite BTS Hub)

3. Click the tabs to switch between the pages.

Click the tabs to switch between the pages. The tabbed **FXC** page allows you to view the codes, versions and serial numbers of the FXC units in the node.

Note

The **Outdoor Units** button opens an **Outdoor Units** dialogue box where available outdoor units are listed with the same information as shown in the **FXC Identifications** dialogue box.

The **Outdoor Units** button is disabled if no outdoor units are present.

The following pages are specific to Nokia MetroHub:

- The tabbed **Node Identifications** page, which allows you to view and modify the following ID information: Equipment Name, Site Name, Group Name and Site Location.
- The tabbed **Node Installation** page, which allows you to view installation information, including user notes from the node.
- The tabbed **Power** page, which allows you to view power identification information.
- The tabbed **DIU** page, which allows you to view DIU identification information.
- The tabbed **Fan** page, which allows you to view Fan identification information.

4. Select the identifications data you want to adjust, fill in the required information and click OK.

10.3 Adjusting transmission unit identification settings

Purpose

This chapter instructs you in configuring FXC transmission unit identification settings.

Summary

Identification-related settings are not mandatory but it is strongly recommended to use them. Through the 'Identifications' dialogue box for each transmission unit, unit names and installation dates can be specified.

Steps

1. Connect to the node or open a file.

2. Click the unit to be configured in the equipment view.

3. Click FXC (UNIT NAME) → Identifications to open the window (the following diagram shows the FXC STM-1 window).

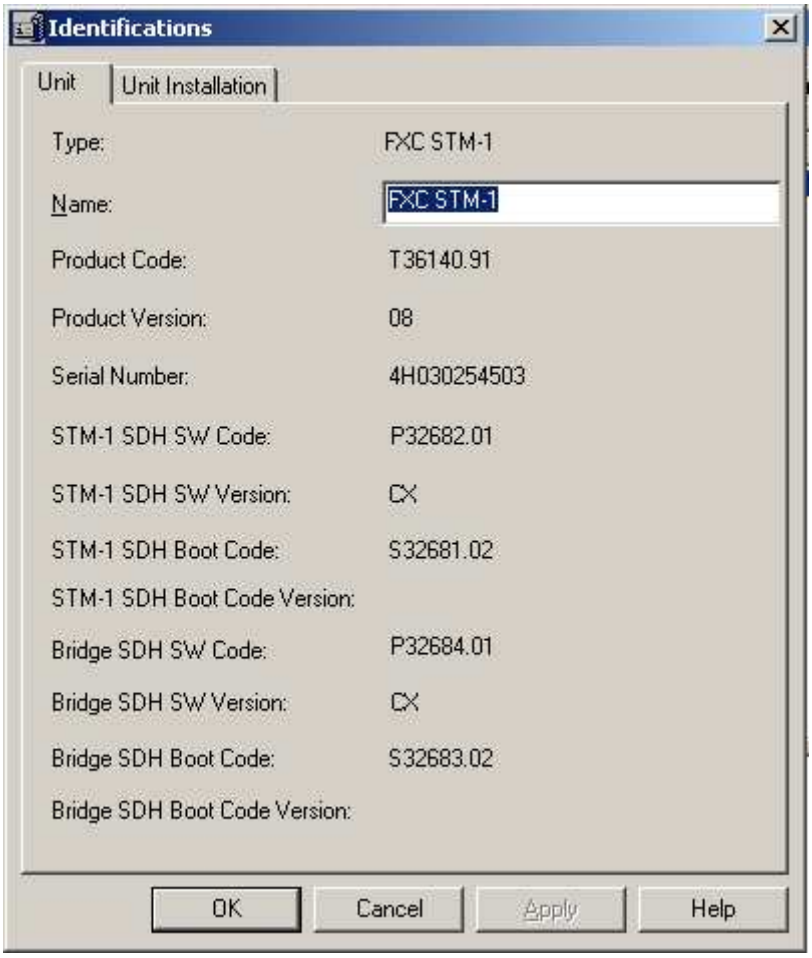


Figure 40. FXC STM-1 Identifications, Unit page

4. **Click the tabs (Unit / Unit Installation) to switch between the pages.**

5. **On the Unit page, type a Name for the unit.**

6. **On the Unit Installation page, insert installation Date and Time manually or click Now.**

7. **Type the name of the Person who installed the equipment in the field.**

8. **Type possible additional information in the User Notes field.**

The maximum length for the notes is 900 characters. The text field above the User Notes field shows the number of characters entered (for example 15/900).

9. **Click Apply to confirm settings.**

10. **Click OK to close the dialogue box.**

10.4 Adjusting service interface settings

Summary

You can adjust the settings of the LMP and the Q1 port. The settings are baud rate, Q1 address and Q1 group address. It is also possible to adjust time-outs under this menu.

The time-out settings concern the temporary settings of the whole node. These include, for example, interface loops and forced controls.

Steps

1. **Connect to the node or open a file.**

2. **Select Configuration → Service Interface.**

   The **Service Interface** dialogue box opens.

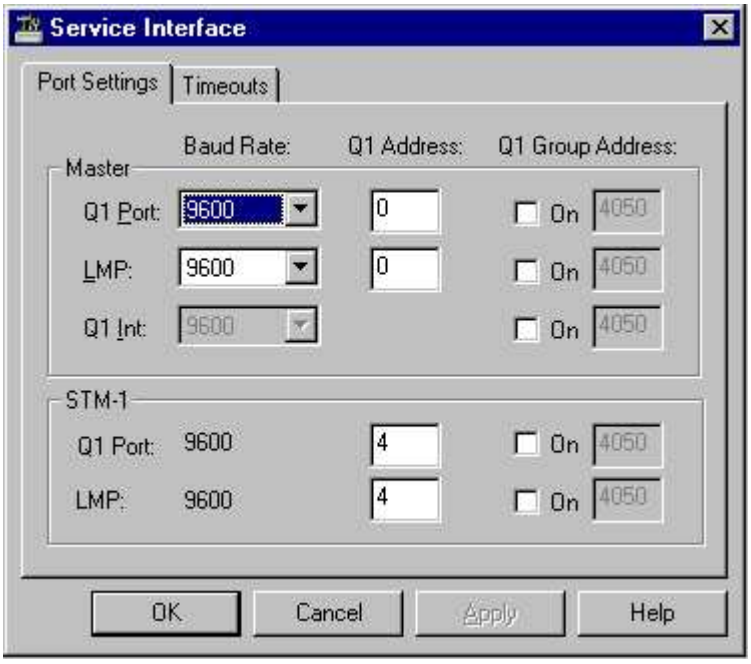


Figure 41. The Service Interface dialogue box

3. **Select either Port Settings or Timeouts.**

4. **Adjust the settings.**

   The supported baud rates for LMP are 9600–115 200 bit/s.

   Supported remote Q1 connection rates are 1200 - 115200 bit/s (recommended baud rate: 9600).

   When using a Q1 external management port and a FXC RRI unit as master unit, the maximum baud rate is 19200.

   The default baud rate is 2400 bit/s for Q1 and 9600 for LMP. The default address is 1 for the ports.

   The **Default** buttons in the **Timeouts** tab set the default values (600 seconds) stored in the node (range is 60 - 6000).

5. **Click Apply to apply the settings.**

6. **Click OK to close the window.**

10.5 Adjusting FXC E1/T1 and FXC E1 interface settings

Summary

Configuring the Line Interface (LIF) settings for a FXC E1/T1 or FXC E1 unit is, with one exception, common and as result this section describes the possible settings and options for both unit types.

Steps

1. **To open the LIF settings dialogue box, select FXC E1/T1 → LIF Settings, or FXC E1 → LIF Settings.**

   The LIF settings dialogue box opens.

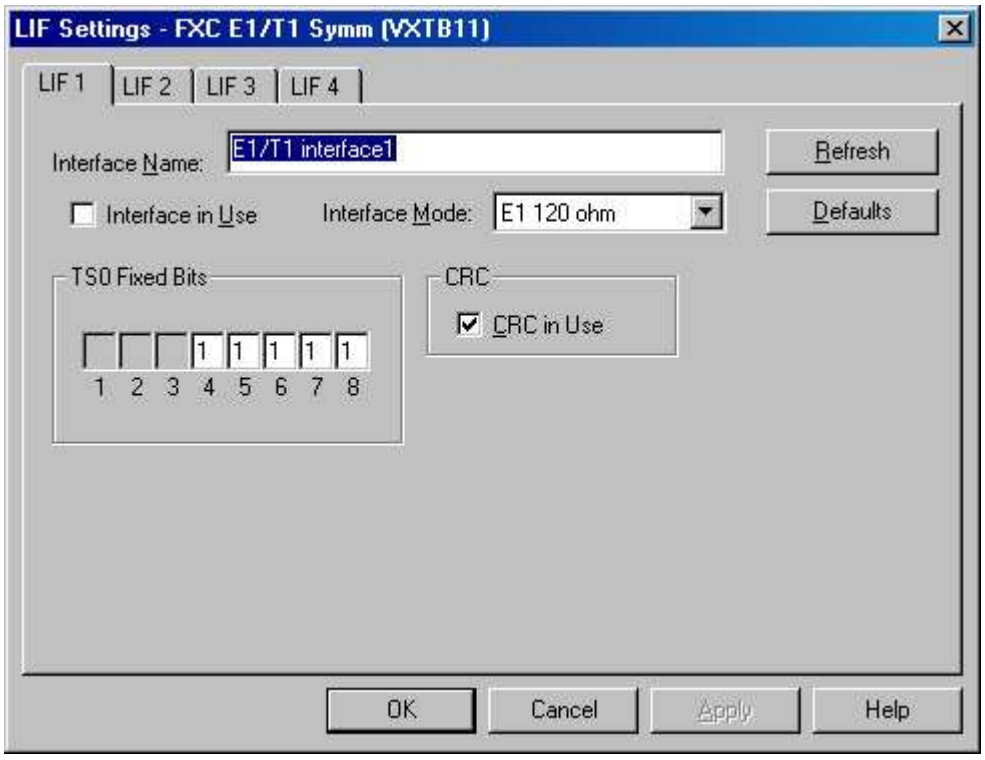


Figure 42. The LIF settings dialogue box

2. **Select the LIF1, LIF2, LIF3, or LIF4 tab.**

3. **Add a specific name for the LIF in the 'Interface Name' field.**

4. **Click the Interface In Use check box to mark the LIF for activation.**

   Check the 'Interface in Use' check box to mark the LIF for activation. If this check box is not checked, the interface will be not operational; it will supply an AIS signal, and all interface-related alarms will be suppressed.

5. *If* you are adjusting FXC E1/T1 interface settings

   Then

   Select the Interface Mode in the drop-down menu.

   Select the **Interface Mode** in the drop-down menu. The alternatives are E1 120 Ohm and T1 100 Ohm.

Note

An interface configured to the E1 mode operates as an ITU G.703/ITU G.704 Interface with 2048Kbit/s. An interface configured to the T1 mode operates as an ANSI T1.102/ANSI T1.403 Interface with 1544Kbit/s.

Note

For the FXC E1 unit, E1 75 Ohm is displayed. This value is fixed and cannot be changed.

---

6. *If* the interface mode is T1 100 Ohm

   Then

   Adjust the settings for Framing Format, Line Code, and T1 Interface Type.

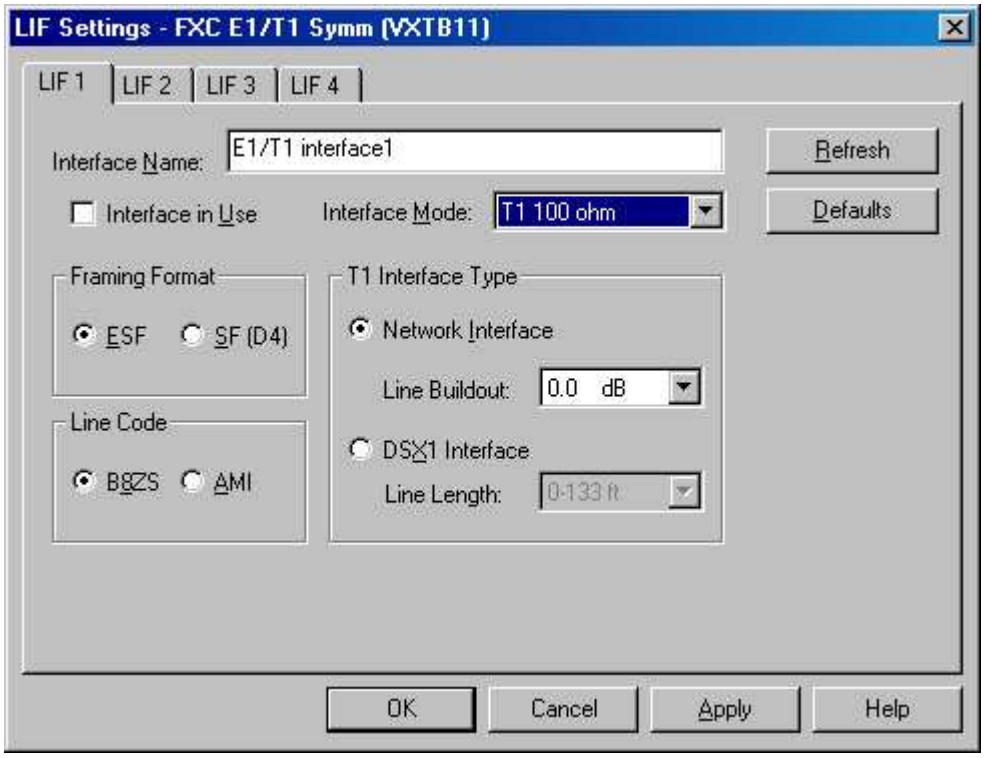


Figure 43. The LIF settings dialogue box, T1 Interface Mode

Adjust the settings for **Framing Format**, **Line Code**, and **T1 Interface Type**:

- Under **Framing Format**, select either **Extended Super Frame (ESF)** or **Super Frame (SF)**.
- Under **Line Code**, select **B8ZS** or **AMI**.
- Under **T1 Interface Type**, select and configure either **Network Interface** or **DX1 Interface**:
  - Select **Network Interface** to insert additional attenuation into the transmitter of the line interface, for standard T1 interface operation. Configure the line build (7.5, 15, 22.5,or 0.0 B).
  - Select **DX1 Interface** if the T1 line interface of the FXC E1/T1 unit is connected to a device whose interfaces operate as DSX1 interfaces. Configure the line length up to that device.

7. *If* the interface mode is E1 120 Ohm or E1 75 Ohm

   Then

   Adjust the settings for TSO Fixed Bits and CRC.

Adjust the settings for TSO Fixed Bits and CRC:

- By checking the CRC in use check box, the transmitted and expected E1 frame is configured to be of CRC-4 multi-frame structure. If the check box is not checked, a E1 basic frame structure will be send and expected to be received.
- With the TS0 fixed bit settings it is possible to set the TS0 Sa bits either to one or zero or T (transparent), dependent on the policy or need within the network. If it is set to T then it represents the status of the loops set by the software (M: Master control bit, L: Loop control bit, E: EOC).

8. Click OK or Apply to activate the interface settings.

10.6 Adjusting FXC RRI interface settings

Purpose

The flexbus signal of the FXC RRI unit can multiplex up to 16 E1 signals. Each of these 16 E1 signals can be made operational, and the frame format can be selected (just as for the E1 line interface settings of a FXC E1/T1 or FXC E1 unit).

Steps

1. Select FXC RRI → Settings → Unit.

2. Select the Flexbus 1 Interface tab or the Flexbus 2 Interface tab (depending on the interface to be configured).

The Flexbus (1/2) Interface tab is displayed.

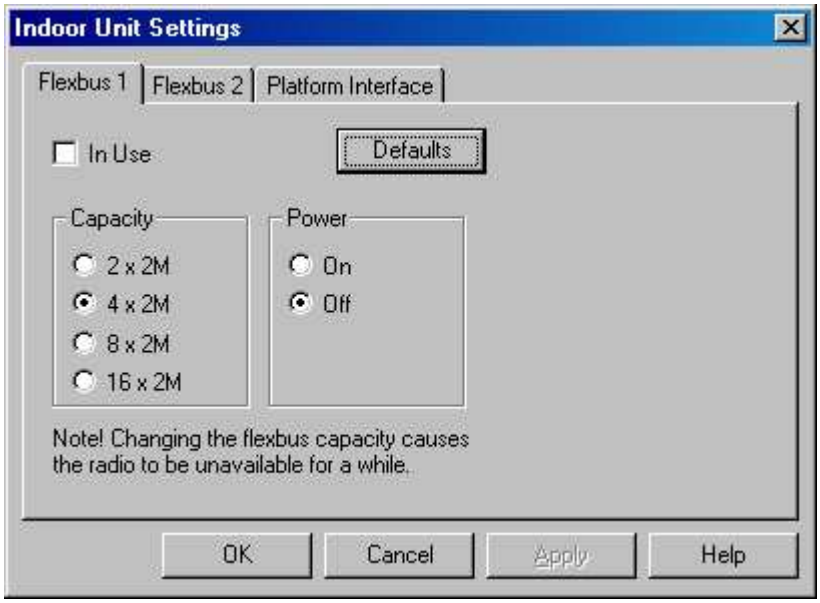


Figure 44. The Flexbus (1/2) interface tab

3. Click the In Use check box to mark the interface for activation.

If this check box is not marked, the interface will be not operational; it will supply an AIS signal, and all interface-related alarms will be suppressed.

4. Select the interface capacity (2 - 16 x 2M).

Select the interface capacity according to the capacity of the microwave radio link to be connected to it.

5. *If* the FXC RRI unit is directly connected to an outdoor unit (radio)

Then

select the Power On option.

Select the **Power On** option to switch on the power for the outdoor unit.

Note

Do not use the Power On setting when two FXC RRI units are connected with a flexbus cable, or when an FXC RRI and FIU 19(E) are connected with a flexbus cable. This could damage the units.

6. **Click OK or Apply to activate the Flexbus interface settings.**

7. **Select the Platform Interface tab.**

   The Platform Interface tab is displayed.

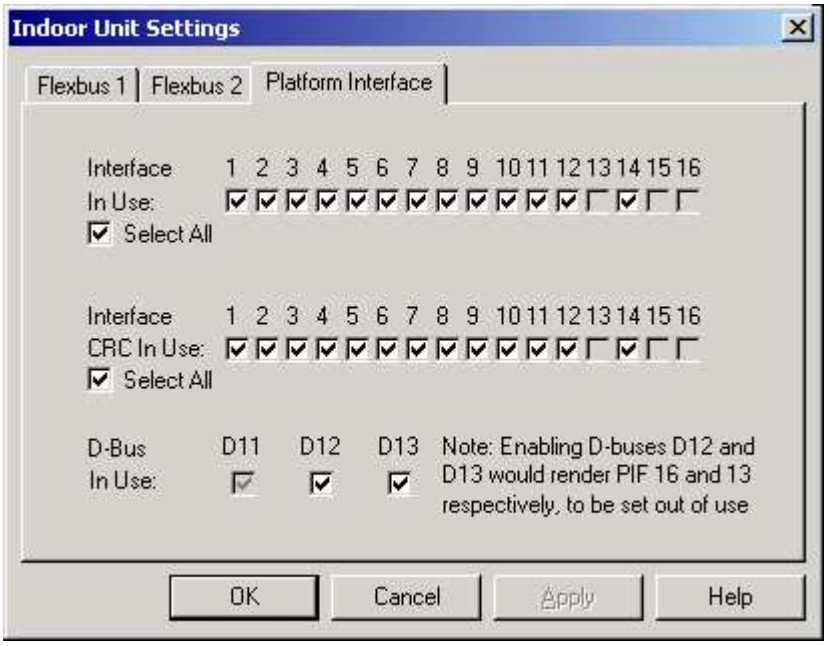


Figure 45. The Platform Interface tab

8. **Click theInterface In Use check box for each interface to be activated.**

   If its check box is not marked, an interface will not be operational once the settings are activated. The interface will send AIS signals, and all interface-related alarms will be suppressed.

Note

Platform interfaces 13, 14, and 16 are disabled if D-bus D12 or D13 is enabled.

If a Nokia MetroHub is chained to a Nokia BTS, the platform interface 15 is always allocated to relay capacity to the BTS internal D-bus. The interface cannot be enabled.

9. **Alternatively, click the Select All check box so that all the interfaces are activated.**

10. **Click the CRC In Use check box for each interface to use a CRC-4 multi-frame structure.**

    If its**CRC in use** check box is not marked, an interface will use E1 basic frame structure.

11. **Alternatively, click the Select All check box so that CRC In Use is activated for all the interfaces.**

12. **Click the D-Bus In Use check box for each D-bus to be activated.**

13. **Click OK or Apply to activate the platform interface settings.**

10.7 Adjusting external alarm inputs and control outputs

Purpose

In MetroHub, there are ten external alarm inputs that can be activated by connecting the input to GND. If an external alarm input is set in use, an active alarm can be seen in the node manager and remote management system. The polarity that generates the alarm can also be set (open or closed circuit).

There are also four open collector control outputs for external devices that are controlled by the node manager.

Steps

1. **Connect to the node or open a file.**

2. **Select Configuration → Programmable alarms.**

The **Programmable Alarms** dialogue box opens.

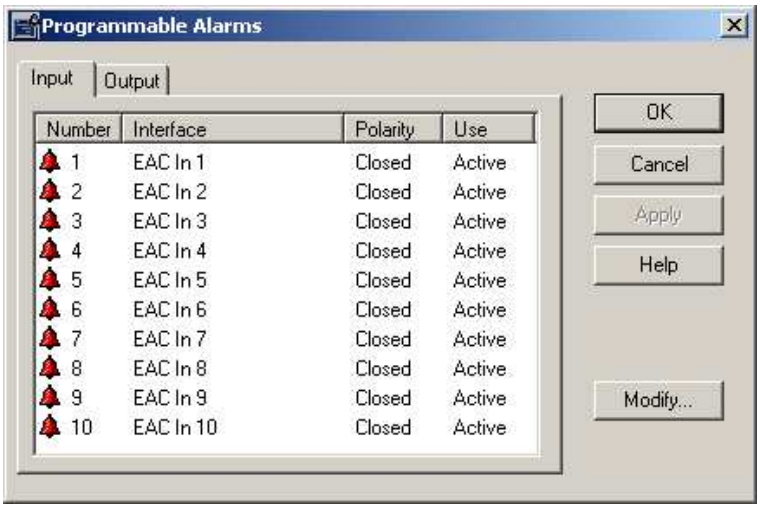


Figure 46. Programmable Alarms dialogue box

3. Select the Input or Output tab, depending on what you want to modify.

Note

To save the changes you have made, always click the **Apply** button before switching between the **Input** and **Output** tabs.

---

4. Select the alarm input or control output you want to modify.

5. Click Modify.

The **Modify Alarm** dialogue box opens.

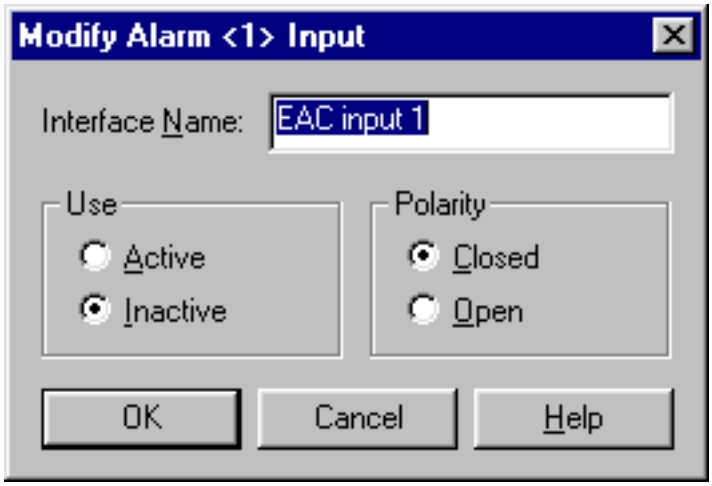


Figure 47. Modify Alarm dialogue box

6. Click the Active radio button to put the alarm into use.

7. Select the desired polarity (open or closed).

8. *If* you want to edit the name of the alarm

   Then

   Change the name of the alarm in the Interface Name field.

Note

The changed input alarm name is not transferred to the generated alarm when the alarm point is active.

9. Click OK.

10. *If* you want to modify more programmable alarms

    Then

    Repeat the procedure above as many times as needed.

11. Click OK after you have modified all the desired inputs and outputs.

10.8 Adjusting alarm property settings

Purpose

The **Alarm Properties** dialogue box allows you to view and modify the alarm properties of a node, FXC transmission unit, and outdoor unit.

Steps

1. **Select Configuration → Alarm Properties to view and/or modify node alarm properties.**

   Or

   Select **FXC (UNIT NAME) → Alarm Properties** to view and/or modify FXC transmission unit or outdoor unit alarm properties.

   Expected outcome

   The **Alarm Properties** dialogue box opens.

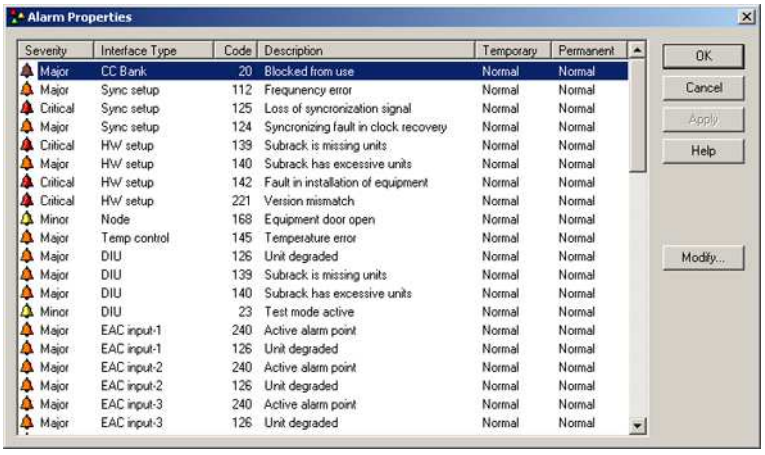


Figure 48. Alarm Properties dialogue box

Further information

The **Severity** column shows a coloured alarm bell and text explaining the severity of the alarm. The severity can be Critical, Major, Minor, or Warning.

The **Interface Type** (on FXC STM-1) column shows the interface the alarm relates to.

The **Code** column shows the fault code.

The **Description** column shows the name of the alarm.

The **Temporary** column (not on FXC STM-1) shows the temporary state of the alarm. The possible temporary states are normal, inhibited and forced ON. If the temporary state is inhibited or forced ON, the state is cancelled by the node's control timeout.

The **Permanent** column (not on FXC STM-1) shows the permanent state of the alarm, that is, the state that will remain even after a HW reset. The possible permanent states are normal, inhibited and forced ON.

The **Section** column is present for the FXC STM-1 only. It shows the name of the functional entity that was the source of the alarm.

Table 5. Sections and their descriptions

Section	Description
FXC STM	covers SDH node wide functions, such as synchronisation or real-time clock
FXC STM-1	covers functions specific to FXC STM-1, such as unit faults
FXC STM-1 IF 1	covers STM OS/RS/MS functions for STM interface 1
FXC STM-1 IF 2	covers STM OS/RS/MS functions for STM interface 2
FXC STM-1 S4 1	covers functions related to the S4 structure of STM signal 1
FXC STM-1 S4 2	covers functions related to the S4 structure of STM signal 2
FXC Bridge SDH	covers functions related to added/dropped S12 structures and PDH channels

2. Click the Modify button (not possible for warnings).

Or

Click the right mouse button over an alarm row and select **Modify** (not possible for warnings).

Expected outcome

The **Modify Alarm Properties** dialogue box for the node opens.

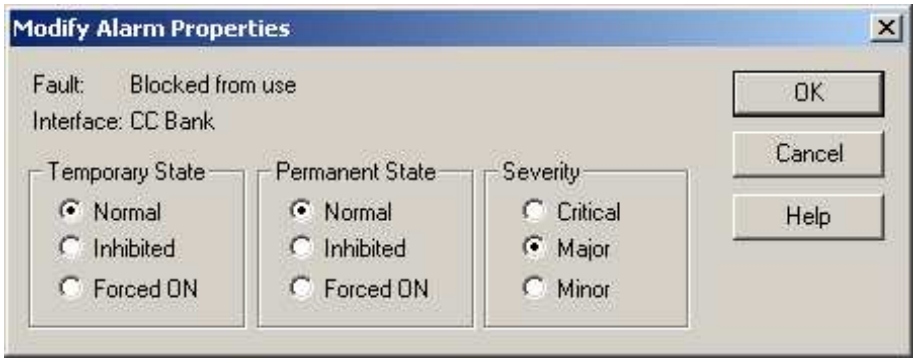


Figure 49. Modify Alarm Properties dialogue box

You can adjust temporary state, permanent state, and severity of the alarm.

Note

For an FXC STM-1 transmission unit, you can only adjust the severity of an alarm. When you click the **Modify** button, the **Modify Alarm Severities** dialogue box appears.

Note

Alarm severity can be modified in the **Modify Alarm Properties** dialogue box. The modified alarm severity is visible in the local manager alarm window. The alarm is reported to the NMS and BSC with an alarm code. Local alarm severity modification does not override global severity settings in the NMS or BSC.

3. Adjust the settings as desired and click OK.

Further information

Alarm property default settings can only be restored by *resetting the transmission node or units*.

11 Adjusting FXC STM-1 interface settings

11.1 Overview of adjusting FXC STM-1 interface settings

Steps

1. **Click FXC STM-1 → STM-1 Interfaces.**
2. **Select an interface (Interface 1 or Interface 2).**

   A window for the selected interface opens.

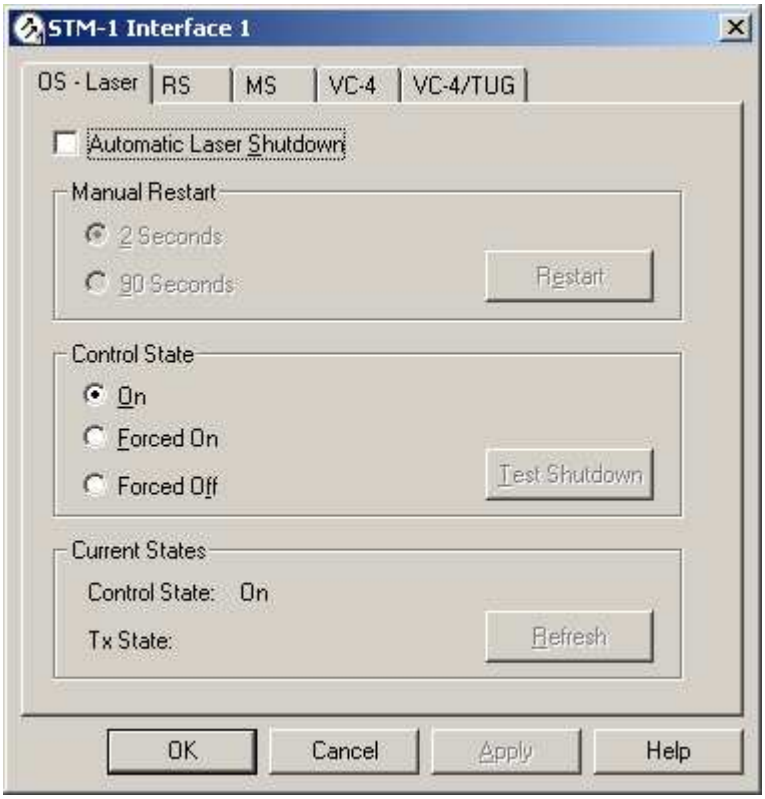


Figure 50. FXC STM-1 Interface 1, OS page

3. **Click the tabs (OS / RS / MS / VC-4 / VC-4/TUG) to switch between the pages.**

11.2 Adjusting the OS interface settings

Purpose

On the Optical Selection (OS) interface settings page for the FXC STM-1 transmission unit, you can:

- change the **Control State** of the laser. The default state is on, but the laser can be forced on or off for test and security reasons.
- see the latest fetched control state in the **Current States** selection. This information is read from the node when the dialogue box opens.

- switch on the **Automatic Laser Shutdown** (ALS) feature, which shuts down the laser transmitter if the incoming optical signal is missing (the laser then sends a two-second test pulse every 100 seconds, and restarts automatically if the incoming signal is received again).
- restart the laser manually in cases of laser shut-down.

Steps

1. Select the OS tab to access the OS settings page.

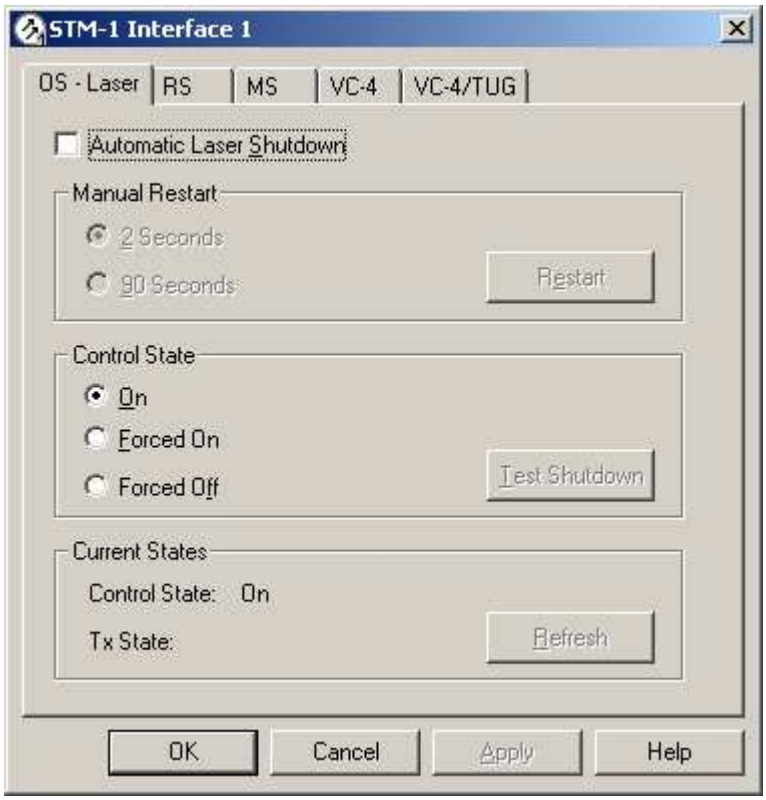


Figure 51. FXC STM-1 Interface 1, OS page

2. Activate ALS by clicking the Automatic Laser Shutdown check box.

It is recommended to activate ALS by clicking the **Automatic Laser Shutdown** check box. ALS is only available when the **Control State** of the laser is **On**.

Click **Apply**.

3. *If* you need to restart the laser manually after ALS

   Then

   Select the time you want the laser turned on, 2 seconds or 90 seconds, and click Restart.

   If the laser is shut down because of ALS, you do not have to wait for the next test pulse (that occurs after 100 seconds have passed); you can manually start the test pulse, which will turn on the laser for two or 90 seconds.

   Select the time you want the laser turned on.

   2 Seconds is used to check that the fibre is functional, and 90 Seconds is used for measurement purposes. Both the 2 and 90 second modes send a test pulse. If there is an input signal during the test pulse, the laser stays on. If there is not, the laser is switched off again.

   After selecting the time, click **Restart**.

4. **Select the Control State of the laser.**

   Select the **Control State** of the laser by clicking on the following check boxes/buttons:

   - **On** is the default setting.
   - With **Forced On**, the laser stays on even if there is no input signal (however, if the hardware fails, the laser is automatically shut down).
   - With **Forced Off**, the laser is forced off.


Note

You need a local management connection to switch the laser on after a **Forced Off** state.


Note

Forced settings do not persist if the unit is reset by power cycle or explicit unit reset. After a reset, the control state of the laser returns to **On**.

- With **Test Shutdown**, the laser is switched off for test purposes; it is switched on automatically (the old value is restored) after a control timeout. The control timeout is displayed in the **Service Interface** dialogue box.

If you changed the **Control State** of the laser, click **Apply**.

5. **If required, click Refresh in the Current States frame to read the new laser state.**

Click **Refresh** in the **Current States** frame to read the new laser state after changes:

- If the Tx State is **Off**, the laser is currently switched off.
- If the Tx State is **On**, the laser is currently switched on.
- A Tx State of **ALS Sending Pulses** means that the laser is currently switched off because of ALS, but is sending test pulses for starting up the link again (when the fibre connection is intact).

11.3 Adjusting the RS interface settings

Before you start

The Regenerator Section (RS) interface settings page for the FXC STM-1 transmission unit has two frames:

- **Performance Collection**
- **Trail Trace Identifier**

A Trail Trace Identifier (TTI) is a string of 15 definable characters that is used to make sure the trails are routed correctly. Two TTIs are defined for each termination point: **Transmitted** is sent to the remote end of the trail, and **Expected** is expected to be received from the remote end of the trail. Different TTIs are used in different directions to detect possible loopbacks.

The received TTI status field displays the current received TTI. It can be used to verify that the received TTI matches the expected TTI.

Use the **Refresh** button to update the Received TTI status (the Received TTI status is not automatically updated).

The use of TTIs is recommended, but not obligatory.

Steps

1. **Select the RS tab to access the RS settings page.**

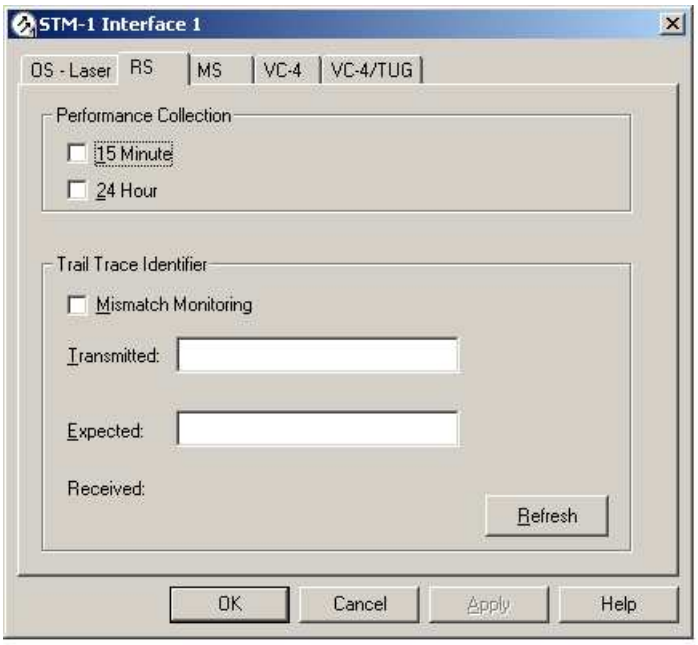


Figure 52. FXC STM-1 Interface 1, RS page

2. **Select 15 minute and/or 24 Hour performance collection for RS.**

   Select the required checkbox to enable 15 minute and/or 24 Hour performance collection for RS. Both functions can be employed separately.

3. **Click on the Mismatch Monitoring checkbox to turn switch Mismatch Monitoring on or off.**

Note

The expected TTI is only monitored against the received TTI if mismatch monitoring is switched on.

The expected TTI and the received TTI are compared only if the **Mismatch Monitoring** check box is checked.

4. **It is recommended that you fill in the Transmitted and Expected TTI fields.**

   It is recommended that you fill in the **Transmitted** and **Expected** TTI fields. All 15 characters must be used, for equipment compatibility reasons. An empty space is a valid character. The lines under the fields indicate the number of characters used.

Note

The values are not read from the node when the dialogue box opens, which means that earlier configured values are visible.

If a mismatch occurs between the expected and the received TTI, the *Trace identifier mismatch* alarm is displayed.

11.4 Adjusting MS interface settings

Purpose

On the Multiplex Section (MS) interface settings page for the FXC STM-1 transmission unit, you can enable **15 Minute** and/or **24 Hour** performance collection for MS. Both functions can be employed separately.

Steps

1. **Select the MS tab to access the MS settings page.**

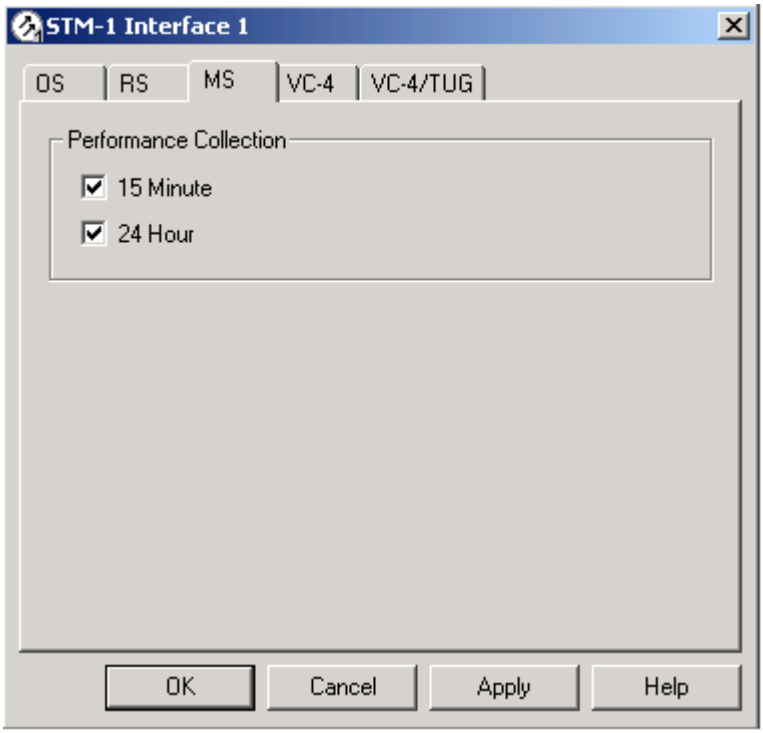


Figure 53. FXC STM-1 Interface 1, MS page

2. **Click on the 15 minute checkbox to enable 15 minute performance collection for MS.**

3. **Click on the 24 Hour checkbox to enable 15 minute performance collection for MS.**

4. **Click Apply.**

11.5 Adjusting the VC-4 interface settings

Purpose

The Virtual Container 4 (VC-4) interface settings page for the FXC STM-1 transmission unit has two frames:

- **Performance Collection**
- **Trail Trace Identifier**

A Trail Trace Identifier (TTI) is a string of 15 definable characters that is used to make sure the trails are routed correctly. Two TTIs are defined for each termination point: **Transmitted** is sent to the remote end of the trail, and **Expected** is expected to be received from the remote end of the trail if monitoring is on. Different TTIs are used in different directions to detect possible loopbacks.

Use the **Refresh** button to update the Received TTI status (the Received TTI status is not automatically updated).

The use of TTIs is recommended, but not obligatory.

Steps

1. Select the VC-4 tab to access the VC-4 settings page.

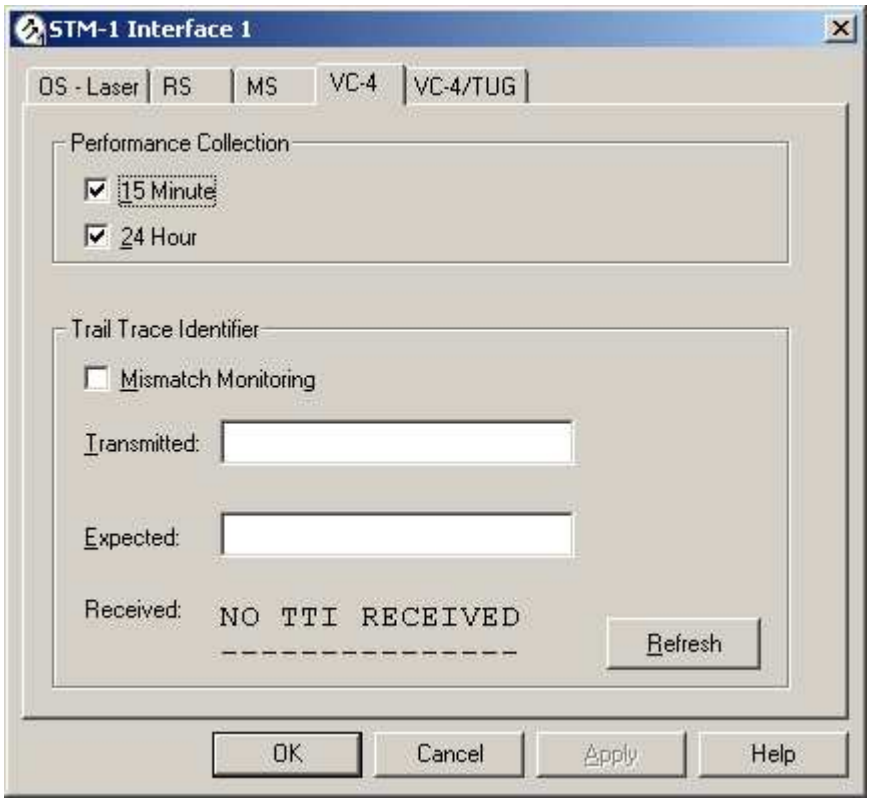


Figure 54. FXC STM-1 Interface 1, VC-4 page

2. Select 15 minute and/or 24 Hour performance collection for VC-4.

Select the required checkbox to enable 15 minute and/or 24 Hour performance collection for VC-4. Both functions can be employed separately.

3. **Click on the Mismatch Monitoring checkbox to turn switch Mismatch Monitoring on or off for VC-4.**

4. **It is recommended that you fill in the Transmitted and Expected TTI fields.**

   It is recommended that you fill in the **Transmitted** and **Expected** TTI fields for the VC-4 interface. All 15 characters must be used, for equipment compatibility reasons. An empty space is a valid character. The lines under the fields indicate the number of characters used.

Note

The values are not read from the node when the dialogue box opens, which means that earlier configured values are visible.

If a mismatch occurs between the expected and the received TTI, the *Trace identifier mismatch* alarm is displayed.

11.6 Adjusting VC-4/TUG interface settings

Purpose

The Virtual Container 4/Tributary Unit Group (VC-4/TUG) interface settings page for the FXC STM-1 transmission unit contains one frame, **VC-4 Path label**.

VC-4 Path label carries information about the payload type and indicates how the signal is constructed.

In this release, the only possible VC-4 Path Label is **TUG Structure**; you cannot modify the settings.

Steps

1. **Select the VC-4/TUG tab to access the VC-4/TUG settings page.**

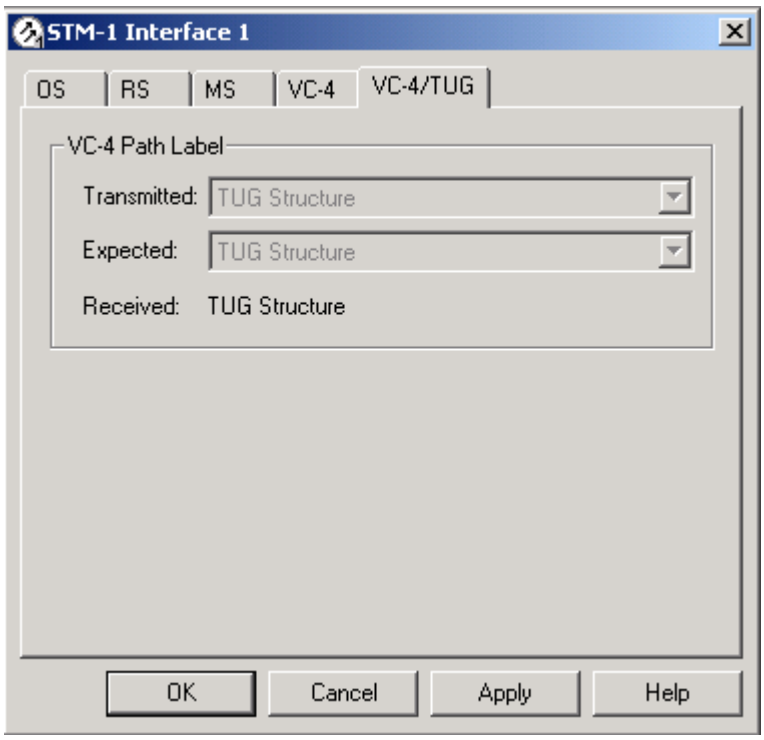


Figure 55. FXC STM-1 Interface 1, VC-4/TUG page

2. If required, use the pop-up Refresh to refresh the data.

12 Adjusting FXC STM SDH-PDH channel settings

12.1 Overview of adjusting FXC STM-1 SDH-PDH channels settings

Purpose

The FXC STM-1 unit supports adding/dropping 20 VC-12 (containing a 2M signal each).

Steps

1. **Click FXC STM-1 → SDH-PDH Channels to open the window.**

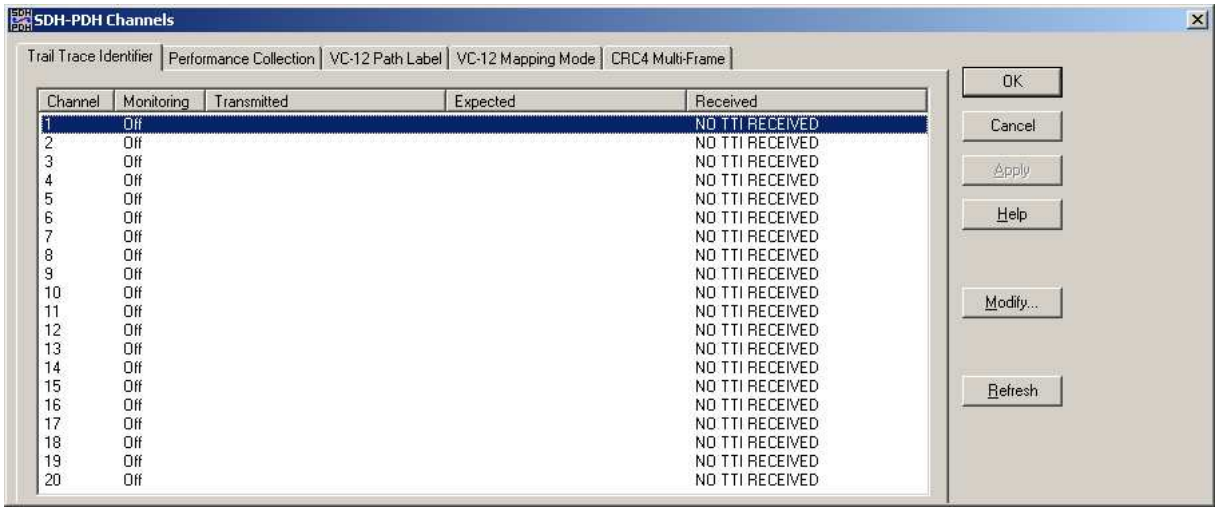


Figure 56. FXC STM-1 SDH-PDH Channels, Trail Trace Identifier page

2. **Click on a tab (Trail Trace Identifier / Performance Collection / VC-12 Path Label / VC-12 Mapping Mode) to view and modify the respective settings.**

12.2 Adjusting TTI settings

Purpose

On the **Trail Trace Identifier** (TTI) page, you can view and modify trail trace settings for the 20 SDH-PDH channels.

The **Channel** column shows the unique channel identification number, which determines the order of the items in the list. The **Monitoring** column shows whether mismatch monitoring is **Monitoring** or **Off**. The **Transmitted** column shows the transmitted trace identifier. The **Expected** column shows the expected trace identifier. The **Received** column shows the received trace identifier.

Use the **Refresh** button to update the Received TTI status (the Received TTI status is not automatically updated).

You can modify the settings for one or several channels at a time.

Steps

1. **Select FXC STM-1 → SDH-PDH channels.**

2. **Select the Trail Trace Identifier tab to access the TTI settings.**

   The Trace Trail Identifier settings are displayed.

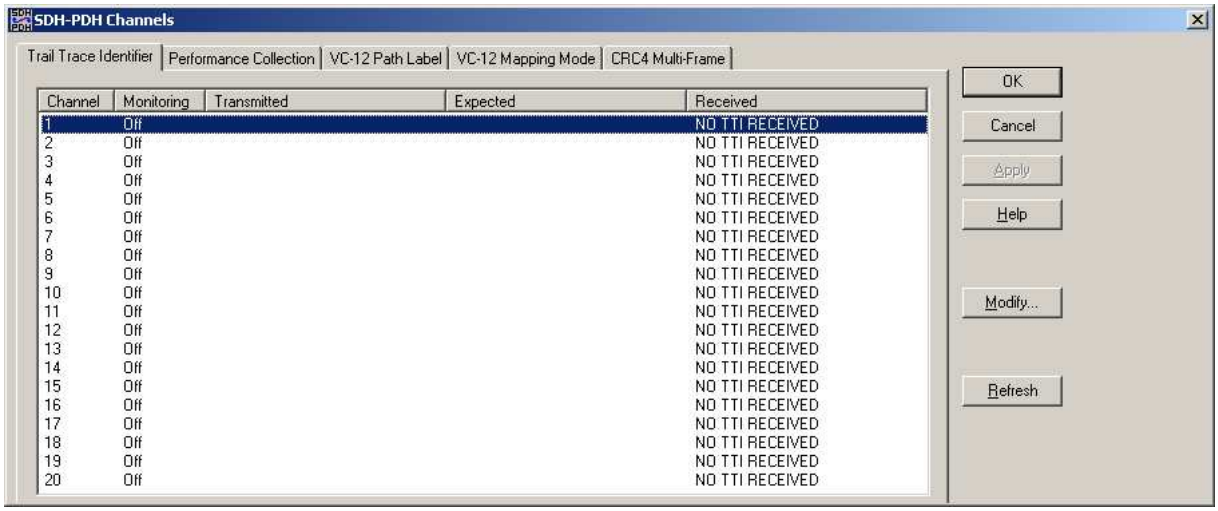


Figure 57. The Trace Trail Identifier settings

If a mismatch occurs between the expected and the received TTI, the *Trace identifier mismatch* alarm is displayed.

3. Select the channel/channels you want to modify.

Select the channel/channels you want to modify. To select multiple channels, hold down the Ctrl key or the SHIFT key on your pc keyboard while clicking.

4. Click Modify to open the Trail Trace Identifier dialogue box.

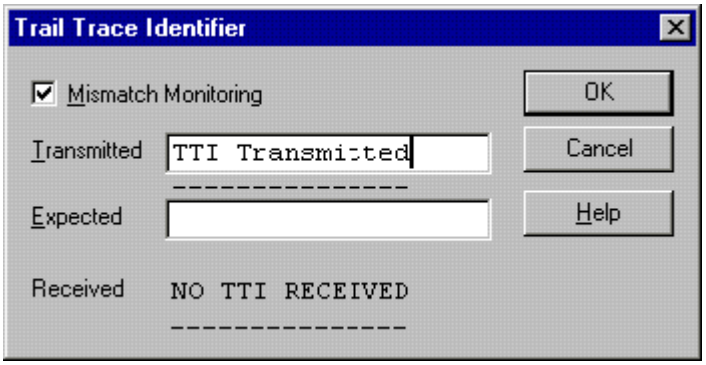


Figure 58. Modify Trail Trace Identifier dialogue box

5. **Switch Mismatch Monitoring on/off by selecting/clearing the checkbox.**

6. **Fill in the Transmitted and Expected TTIs, using all 15 characters.**

   Fill in the Transmitted and Expected TTIs. The lines under the fields indicate the number of characters used.

Note

Fill in all 15 characters, for equipment compatibility reasons. Use empty spaces, for example.

7. **Click OK to apply the settings to all selected channels.**

8. **Click Apply to send the changes to the node.**

12.3 Modifying Performance Collection settings

Purpose

In the **Performance Collection** page, you can view and modify performance collection settings. The **Channel** column shows the unique channel identification number, which determines the order of the items in the list. The **15 minute** column shows whether 15 minute performance collection is On or Off. The **24 hour** column shows whether 24 hours performance collection is On or Off.

You can modify the settings for one or several channels at a time.

Steps

1. **Select FXC STM-1 → SDH-PDH channels.**

2. **Select the Performance Collection tab.**

   The Performance Collection settings are displayed.

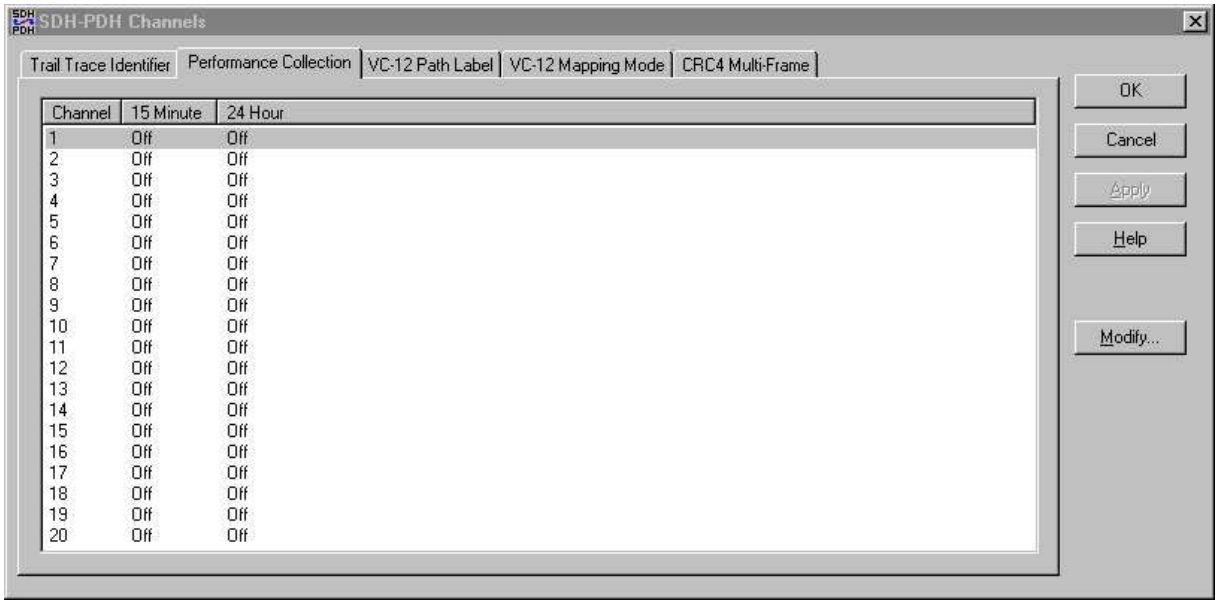


Figure 59. The Performance Collection settings

3. **Select the channel/channels you want to modify.**

   Select the channel/channels you want to modify. To select multiple channels, hold down the Ctrl key or the SHIFT key on your pc keyboard while clicking.

4. **Click Modify to open the Performance Collection dialogue box.**

5. **By selecting/clearing the boxes, switch 15 minute and/or 24 hour performance collection on/off.**

6. **Click OK to apply the settings to all selected channels.**

7. **Click Apply to send the changes to the node.**

Further information

You can check the monitoring results in the Statistics History dialogue box.

12.4 Viewing the VC-12 Path Label

Purpose

In the **VC-12 Path Label** page, you can view VC-12 path labels for the SDH-PDH channels. The **Channel** column shows the unique channel identification number, which determines the order of the items in the list. The **Transmitted** column shows the path label transmitted. The **Expected** column shows the path label expected. The expected path is the same as the transmitted one. The **Received** column shows the path label received.

Note

You cannot modify the path labels in the current version of the software.

If a mismatch occurs between the expected and the received VC-12 Path Label, either alarm *Unequipped signal* or *Payload mismatch* occurs.

Steps

1. **Select FXC STM-1 → SDH-PDH channels.**
2. **Select the VC-12 Path Label tab.**

   The VC-12 Path Label settings are displayed.

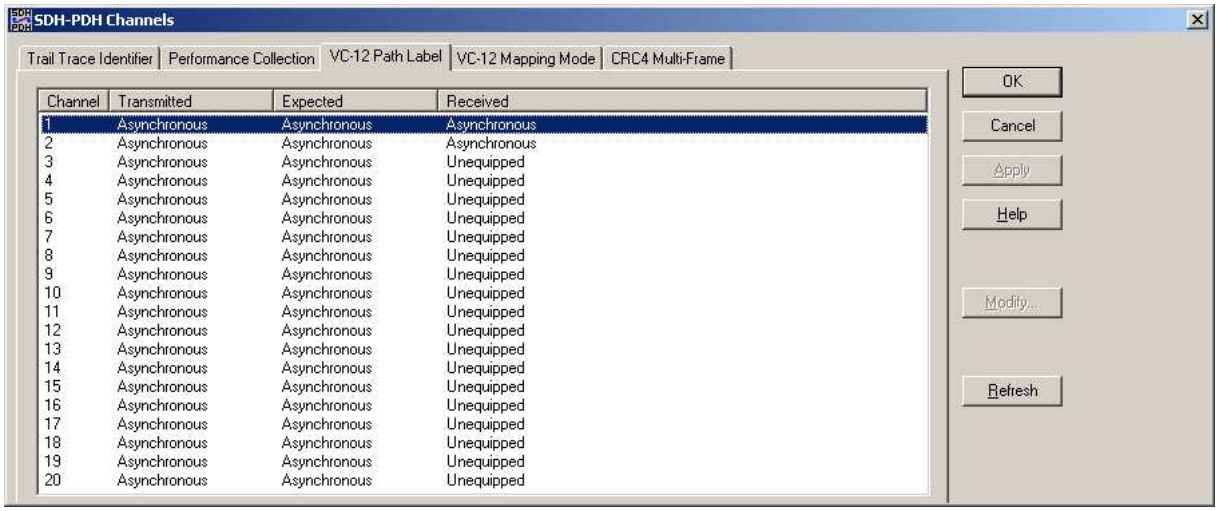


Figure 60. The VC-12 Path Label settings

3. Click on a channel to highlight it.

12.5 Viewing and adjusting the VC-12 Mapping Mode

Purpose

In the **VC-12 Mapping Mode** page, you can view and modify the mode of the transmitted mapping for each of the 20 SDH-PDH channels. The **Channel** column shows the unique channel identification number, which determines the order of the items in the list. The **Mapping Mode** column shows the mapping mode, which is **Asynchronous** or **Byte Synchronous** (2048 kbit/s).

The 31*64 kbit/s bytesynchronous mapping mode is not supported and cannot be configured.

You can modify the settings for one or several channels at a time.

Steps

1. Select FXC STM-1 → SDH-PDH channels.

2. Select the VC-12 Mapping Mode tab to access the VC-12 Mapping Mode settings.

The VC-12 Mapping Mode settings are displayed.

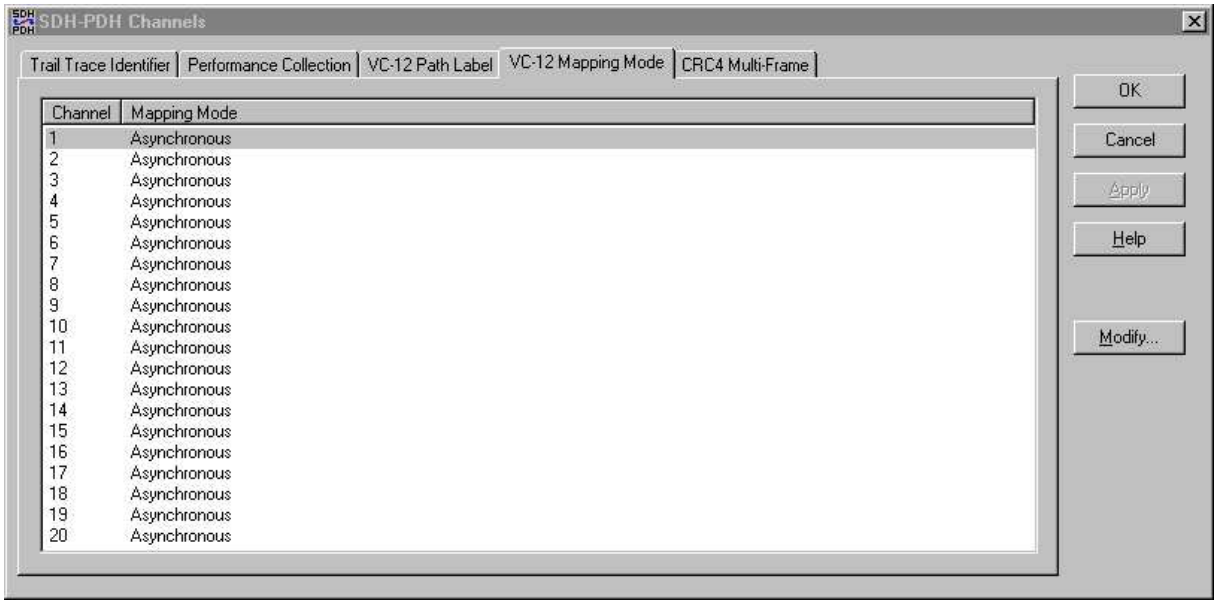


Figure 61. The VC-12 Mapping Mode settings

3. **Select the channel/channels you want to modify.**

   Select the channel/channels you want to modify. To select multiple channels, hold down the Ctrl key or the SHIFT key on your pc keyboard while clicking.

4. **Click Modify to open the VC-12 Mapping Mode dialogue box.**

5. **Select eitherAsynchronous or Byte Synchronous.**

6. **Click OK to apply the settings to all selected channels.**

7. **Click Apply to send the changes to the node.**

12.6 Configuring 2M multiframe CRC4 settings for FXC STM transmission units

Purpose

From the **CRC4 Multi-Frame** page, you can view and modify the CRC-4 Multi-Frame settings for each SDH-PDH channel. The **Channel** column shows the unique channel identification number, which determines the order of the items in the list. The **CRC4 Multi-Frame** column shows the CRC4 Multi-Frame setting, which is **Auto** (not supported by current release), **In Use**, or **Not in Use**. The default setting is In Use.

You can modify the settings for one or several channels at a time.

Steps

1. **Select FXC STM-1 → SDH-PDH channels.**
2. **Select the CRC4 Multi-Frametab.**

   The CRC4 multiframe settings are displayed.

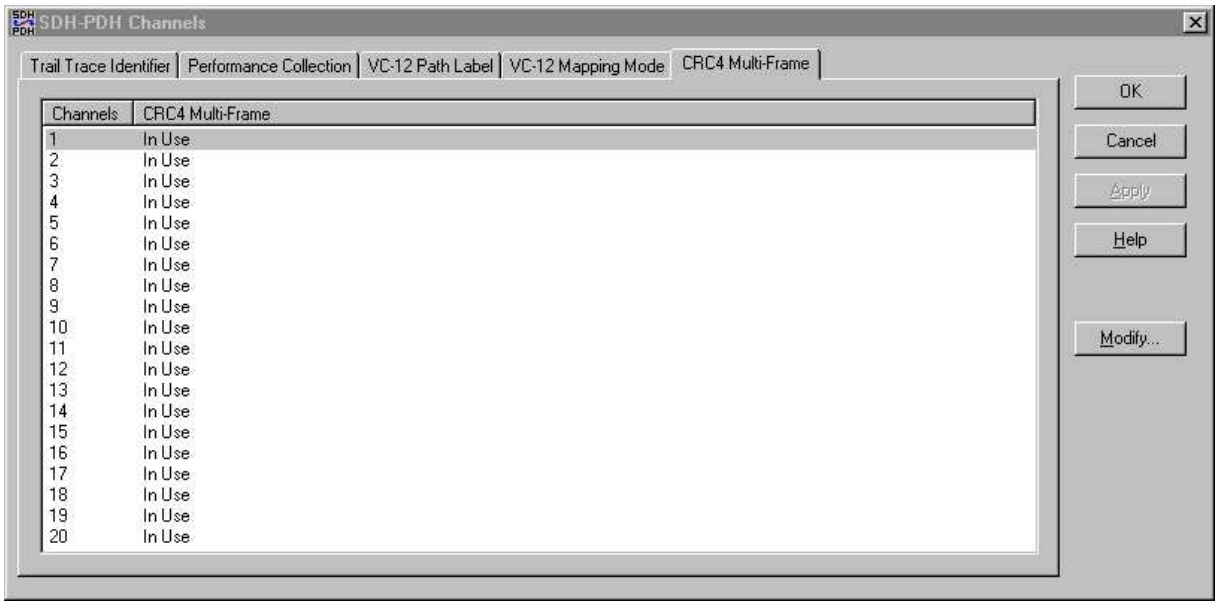


Figure 62. The CRC4 Multi-Frame settings

3. Select the channel/channels you want to modify.

Select the channel/channels you want to modify by clicking. To select multiple channels, hold down the Ctrl key or the SHIFT key on your pc keyboard while clicking.

4. Click Modify to open the CRC4 Multi-Frame dialogue box.

The CRC4 multiframe dialogue box opens.

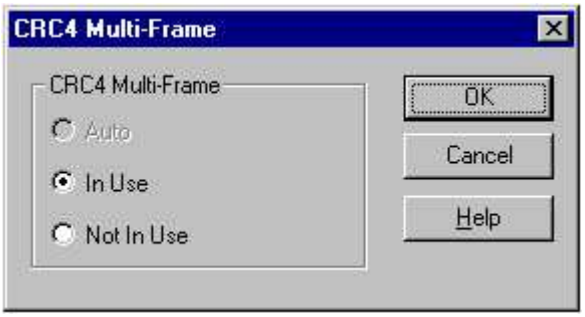


Figure 63. The CRC4 Multi-Frame dialogue box

5. Select either In Use or Not in Use.

6. Click OK to apply the changes to all selected channels.

7. Click Apply to send the changes to the node.

13 Adjusting management settings

13.1 Overview of adjusting management settings

Purpose

The following sections detail how to adjust the management settings of the transmission node.

Steps

1. **Adjust SDH management channel settings.**
2. **Adjust node synchronisation settings.**
3. **Manage cross-connections.**

Further information

For information on the Q1 settings, see *Technical description of Q1 management* and *Q1 management options for Nokia MetroHub*.

13.2 Adjusting SDH management channel settings

Purpose

In the **SDH Bus** page, you can:

- select **DCCm-DCCm (D4-D12)** to make a transparent connection between both STM-1 interfaces via the DCCm channel, which any management transmission data can pass through. DCCm is an STM-embedded management channel in the multiplex section.
- add, modify and delete SOH-SOH Embedded Operating Channel (EOC) settings. With these settings, you can establish transparent connections of SOH bytes between both STM-1 interfaces. This allows the bypass of any management data transmitted via an SOH byte.

There is no add/drop function for DCCm and for the SOH cross-connection.

Steps

1. **Click Configuration → Q1 Management to open the Q1 Management channel dialogue box.**

2. **Select the SDH Bus tab to access the SDH management channel settings.**

   The SDH management channel settings are displayed.

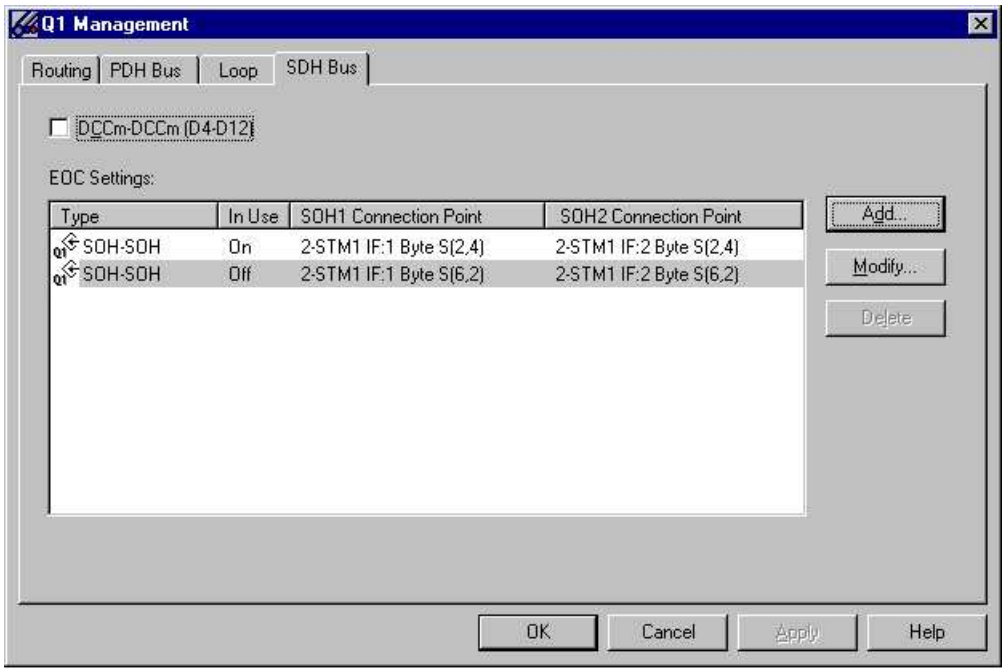


Figure 64. Q1 Management, SDH Bus page

3. **If necessary, activate the DCCm channel connection.**

If necessary, click the **DCCm-DCCm (D4-D12)** check box to activate the DCCm channel connection. Click **Apply**.

4. To add SOH-SOH channel connections

Steps

a. Click Add to open the Add SDH EOC dialogue box.

The **Add SDH EOC** dialogue box opens.

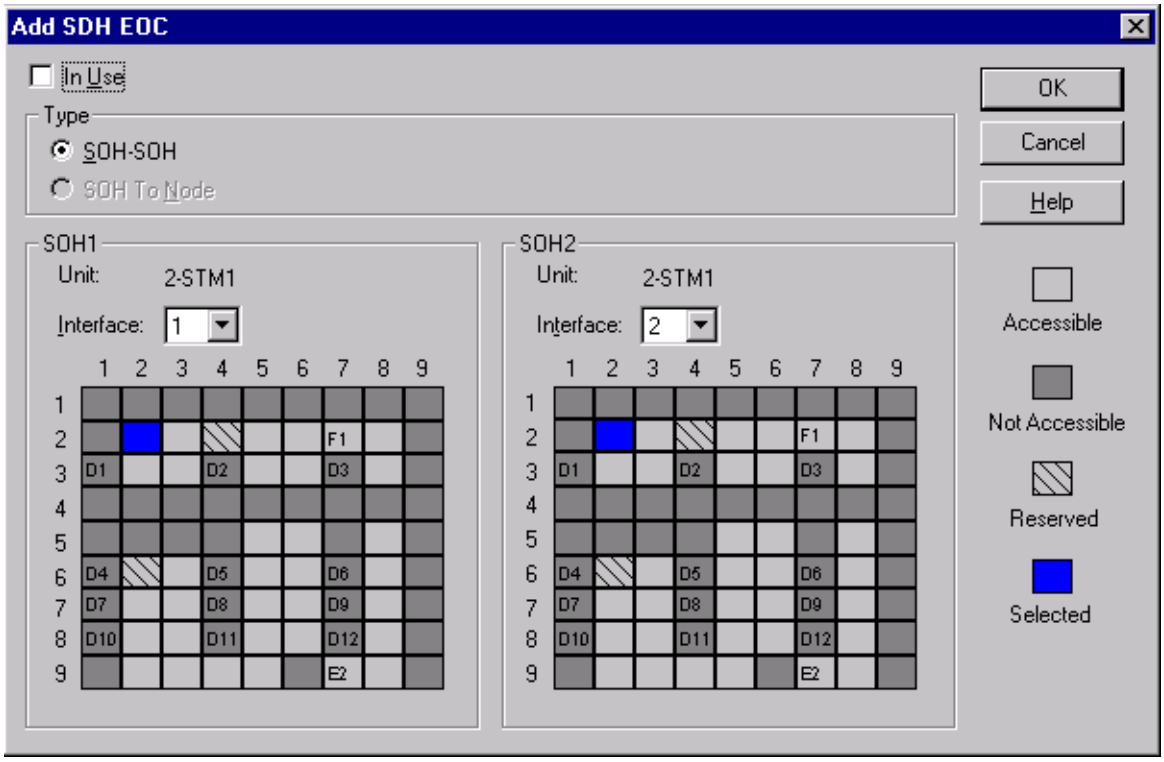


Figure 65. Add SDH EOC dialogue box

b. Assign the first connection point by select Interface 1 or 2 in the SOH1 frame.

c. Click to select an accessible (light-grey) SOH byte in the SOH1 selection graph.

d. Repeat steps 4-b and 4-c for the second connection point, in the SOH2 frame.

e. Click the In Use check box at the top of the window.

With the In Use check box, you can activate or deactivate SOH-SOH connections in the FXC STM unit, without deleting them from the node manager.

f. Click OK.

g. Repeat steps 4-a to 4-f as required, to add further SOH-SOH connections.

Note

Up to 16 SOH cross-connections can be configured.

---

h. Click Apply to create the SOH-SOH connections in the FXC STM unit.

Click Apply to create the SOH-SOH connections in the FXC STM unit. If **In Use** was selected for an SOH-SOH connection, it will be activated.

5. To modify an SOH-SOH channel connection

Steps

a. Click on an existing SOH-SOH connection in the EOC setting list.

b. Click Modify to open the Modify SDH EOC dialogue box.

The **Modify SDH EOC** dialogue box opens.

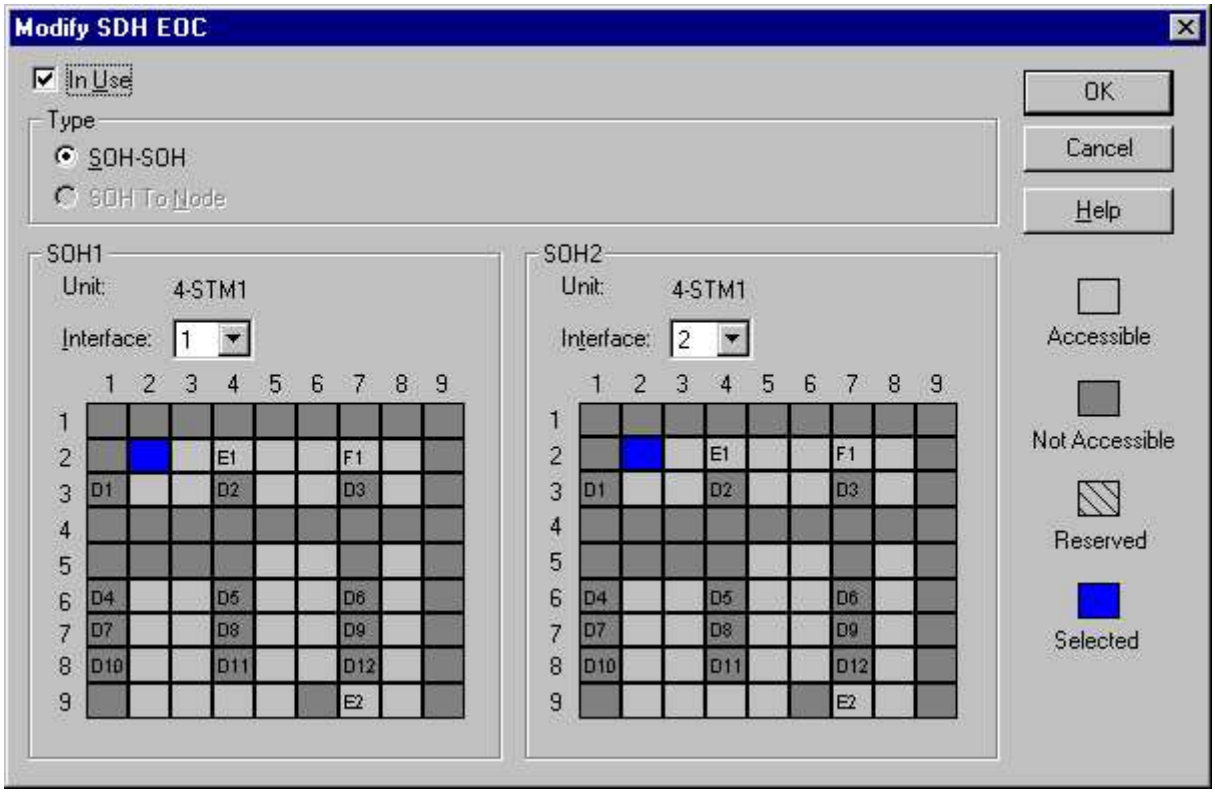


Figure 66. The Modify SDH EOC dialogue box

c. Modify the settings, then click OK.

d. Click Apply to set the changes in the FXC STM unit.

6. To delete SOH-SOH channel connections

Steps

a. Click on a existing SOH-SOH connection in the EOC setting list.

b. Click Delete.

c. Click Apply to delete the connection, and to set the changes in the FXC STM unit.

13.3 Adjusting Q1 management settings

Purpose

You can adjust the Q1 management settings of a node. These settings enable remote management when used.

Summary

To enable remote management, a transmission channel for Q1 has to be created. With UltraSite BTS Hub, Q1 is embedded in the OMUSIG channel. With MetroHub, a dedicated Q1 DCN channel has to be created.

To get MetroHub under Q1 management, you must further set up a Q1 hybrid.

Steps

1. **Connect to the node or open the node file.**

2. **Select Configuration → Q1 Management.**

   The **Q1 Management** dialogue box opens. The Q1 routing switches (Q1 hybrid) are displayed in the graphical form.

   The external and processor switches (see figure below) are closed by default in Nokia MetroHub.

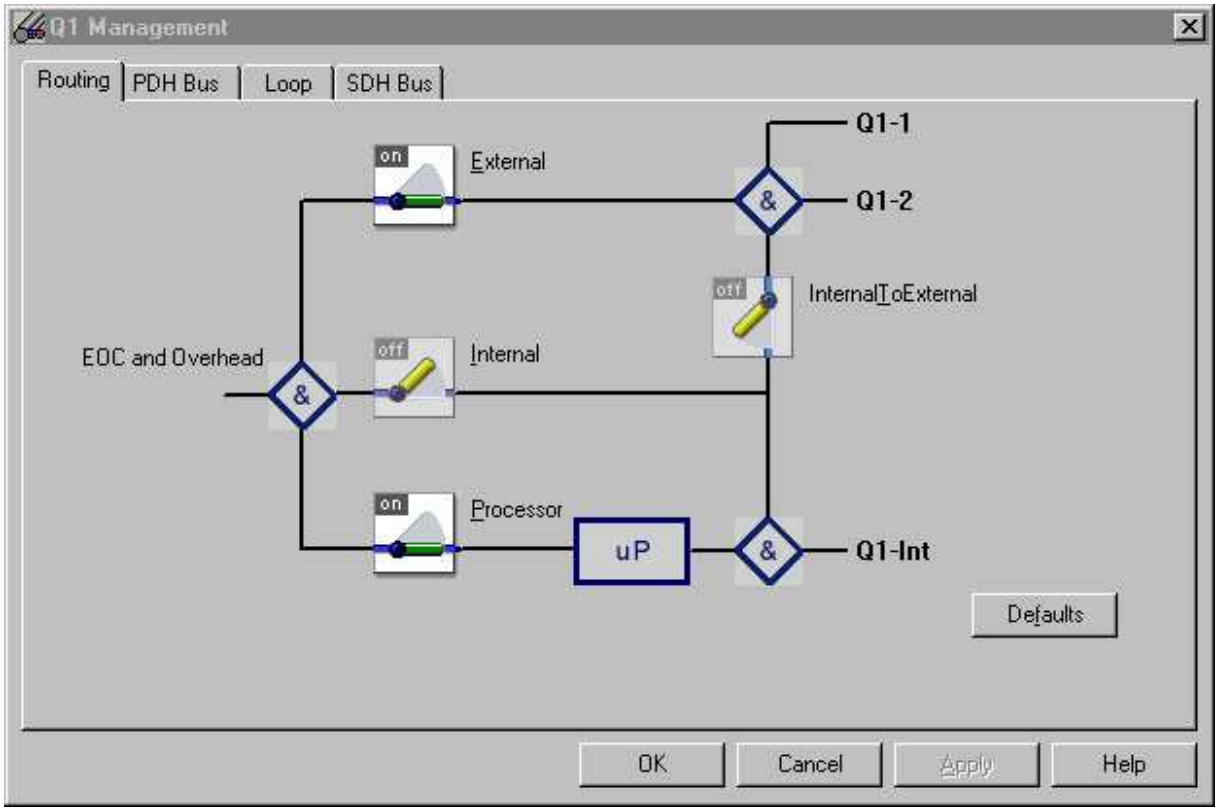


Figure 67. The Q1 management dialogue box

3. Select the PDH Bus tab.

The **PDH Bus** tab opens.

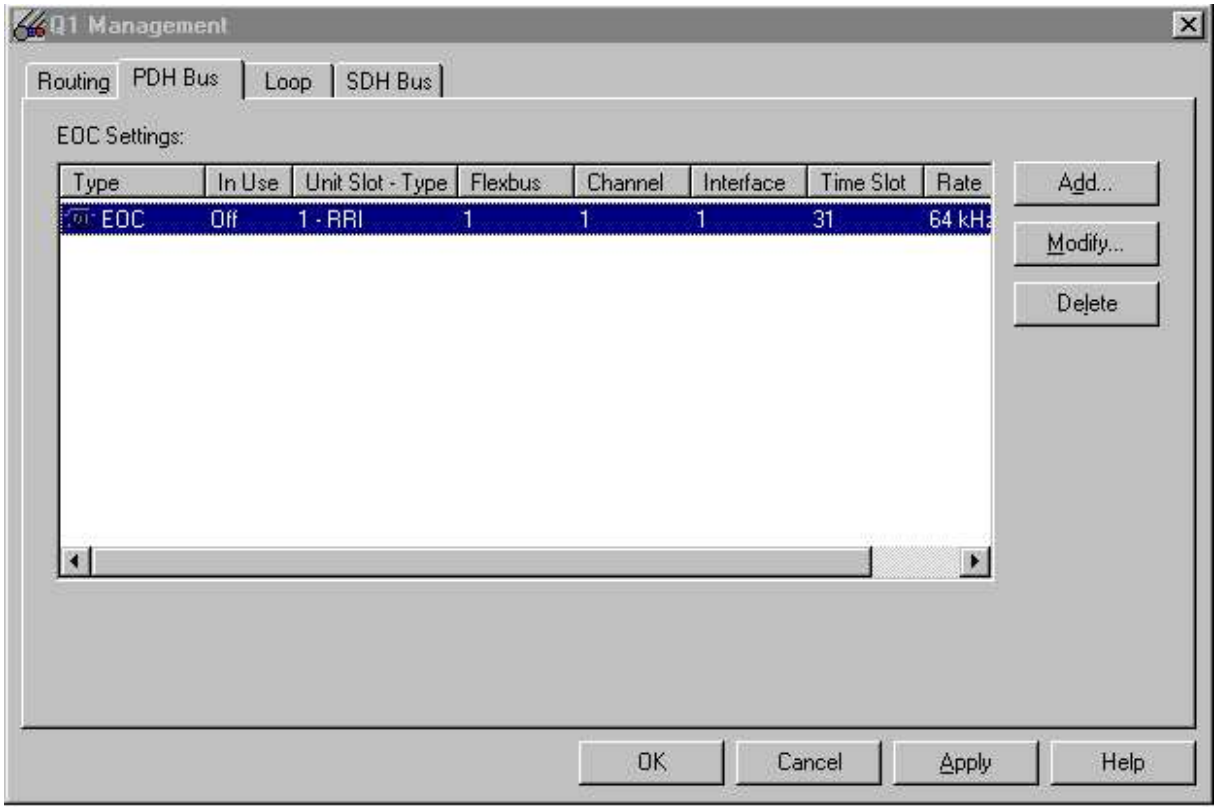


Figure 68. The PDH Bus tab

4. Click Add.

The **Add EOC** dialogue box opens.

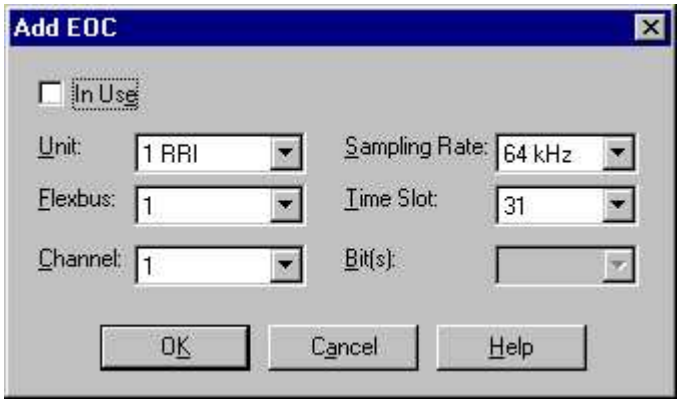


Figure 69. The Add EOC dialogue box

5. Select the unit to be configured.

6. Select the interface to be configured.

In FXC E1 and FXC E1/T1, there are four interfaces to choose from.

In FXC RRI, there are two Flexbuses and up to 16 channels available per Flexbus, depending on the Flexbus capacity setting. There are also two possibilities for Q1 channel, the EOC in the payload and the EOC in the radio overhead.

In FXC Bridge, there are 20 interfaces to choose from.

7. *If* you want to carry the Q1 management in the payload

Then

Select a timeslot and sampling rate on the selected interface or channel.

If 64 kbit/s sampling rate is selected, the whole timeslot is reserved for Q1 and no bit selection is required. If a lower sampling rate is selected, the bits inside the selected timeslot have to be selected. The sampling rate options are 64, 32, 16 and 8 kbit/s in timeslots 1−31 and 16, 8 and 4 kbit/s in timeslot 0. In case of timeslot 0, only the bits 5–8 are allowed for EOC usage.

Note

It is recommended that the sampling rate is at least four times higher than the baud rate used in the Q1 port.

8. *If* you want to carry the Q1 management in the radio overhead

   Then

   Select a Flexbus and overhead on the selected FXC RRI unit.

   Select either Overhead 1 or 2, depending on the selected Flexbus. Overhead 1 corresponds to Flexbus 1 and Overhead 2 corresponds to Flexbus 2. After this selection has been made, no further configurations for sampling rate are required because the sampling rate is fixed so that it is always at least 64 kbit/s.

   The advantage of using the overhead channel for Q1 is that it does not waste payload.

9. **Click OK to add Q1 information to the list of EOCs.**

10. **Click Apply or OK to apply the PDH Bus settings to the node.**

Further information

If the managed area is divided to different Q1 buses (see *Q1 management*) or the Q1 channel is otherwise forwarded over the transmission node, the EOC channel is just cross-connected as normal data towards other equipment.

14 Adjusting transmission node synchronisation settings

14.1 Overview of adjusting node synchronisation settings

Purpose

Node **Synchronisation** settings can be viewed and modified through the **Configuration** menu in the manager.

The following sections detail each possible step.

Steps

1. **Adjust synchronisation loop bit settings.**
2. **Adjust PDH synchronisation settings.**
3. **Adjust SDH synchronisation settings.**

14.2 Adjusting synchronisation loop bit settings

Steps

1. **Connect to the node or open a file.**
2. **Select Configuration → Synchronization...**

   The *Synchronization dialogue box* opens.
3. **Click the Loop Bits tab.**

   The **Loop Bits** tab opens.

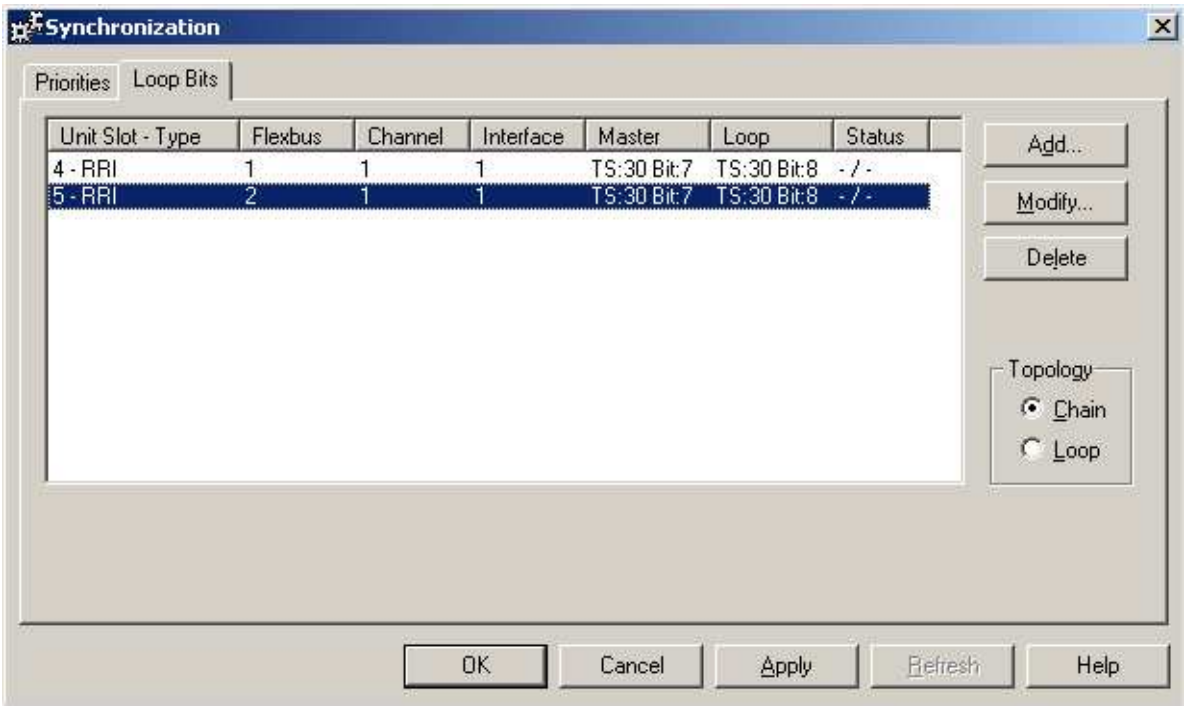


Figure 70. The Loop Bits tab in the Synchronization dialogue box

You can select between two topologies: **Chain** or **Loop**. It is recommended to use the *Chain* setting when the hub is used in a chain or tail configuration, and the *Loop* setting when the hub is a part of a loop configuration.

When configuring synchronisation loop bit settings and selecting *Loop*, a remote alarm indication in E1 (which is the active synchronation source) is interpreted as a synchronisation fail and the synchronation source switches to the protecting synchronation source. This way, undirectional faults are detected and protected in a loop network.

4. Click Add.

5. Select a transmission unit.

6. Select the interface.

7. *If* you selected FXC E1 or FXC E1/T1 unit

Then

Select interface for the loop bits.

8. *If* you selected FXC RRI unit

   Then

   Select Flexbus and channel for the loop bits.

9. **Select the desired settings for MCB (master clock bit) in the master group and LCB (loop control bit) in the loop group.**

10. **Click OK.**

14.3 Adjusting PDH synchronisation settings

Purpose

On the **Priorities** page, you can view and modify synchronisation priorities. The **PDH Priorities** section contains the following columns: **Priority number**, **Timing**, **Unit**, **FB/IF** (Interface), **Channel**, and **Platform interface**.

You can also modify PDH settings. The **Modify Priority** dialogue box contains entries for the following:

- **Priority number**. The timing entry with the highest priority is selected as timing source. If it fails, the node uses the next active timing entry as source, until the higher entry becomes active again.
- **Timing** shows the timing source:
  - **RX Clock**. This should be selected if the timing source is a 2.048 Mbit/s E1 signal (or 1.544 Mbit/s with T1) at the FXC E1, FXC E1/T1, or FXC RRI.
  - **Sync Input**. The fourth interface of an E1 or T1 interface can be configured as an external synchronisation input interface. A 2.048 kHz synchronisation input signal can be used to connect to this interface and act as synchronisation source.
  - **Internal Timing**. If Internal Timing is the source for a priority, all subsequent priorities will be disabled.
- **Unit**, which shows the unit type and slot number of the FXC units installed. If the timing source is **RX Clock** or **Sync Input**, **Unit** refers to the unit where the interface of the timing source is located.

- **FB/Interface**, which specifies the interface to be used as timing source. This need only be configured for an **RX Clock** timing source: for FXC RRI, an**FB** interface, and for FXC E1, FXC E1/T1, an **E1** or **T1** interface.
- **Channel**, which allows the E1 channel to be used within a Flexbus interface. If an E1 within a Flexbus is used as timing source, the location of the E1 with the Flexbus signal must be specified.

If an E1 within a Flexubs interface is configured as timing source, the related platform interface is displayed as static text.

Steps

1. Click Configuration → Synchronization to open the Synchronization dialogue box.

The Synchronization dialogue box opens.

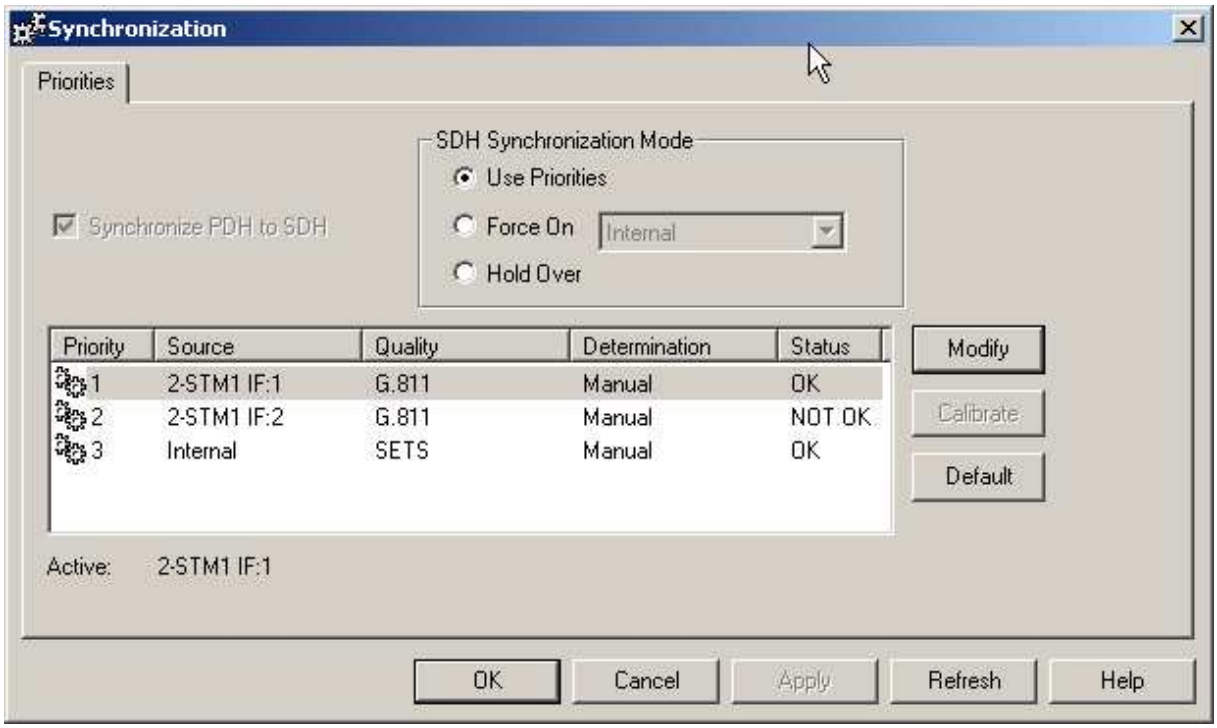


Figure 71. The Synchronization dialogue box

2. Select the tab Priorities to switch to the synchronisation settings (see the following figure).

3. **Select a priority by clicking on it.**

4. **Click Modify to access the Modify Priority dialogue box for that priority.**

   The **Modify Priority** dialogue box opens.

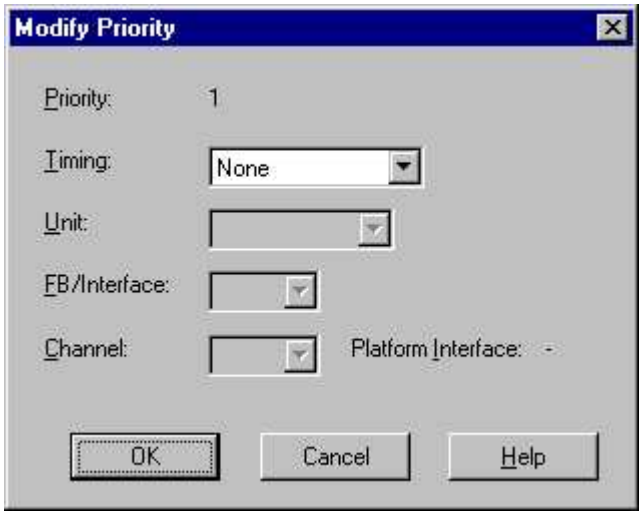


Figure 72. The Modify Priority dialogue box

5. **Select the timing source from the Timing pull-down menu.**

   Select the timing source from the **Timing** pull-down menu. The alternatives are **RX Clock**, **Sync Input**, **Internal Timing**, or **None**.

Note

If Internal Timing is the source for a priority, all subsequent priorities will be disabled. The Unit and Interface boxes for the selected internal timing source will also be disabled.

The use of Internal Timing for a priority generates a minor 'frequency error' alarm.

Note

If all higher priority synchronisation sources have failed, the internal clock will be selected as the synchronisation source - even if internal timing is not the designated source. Instead of the minor 'frequency error' alarm, a critical 'loss of synchronisation signals' alarm will be raised.

Note

You can only select Sync Input for an FXC E1(/T1) unit, and the interface is always 4. Remember also to change the Interface Mode setting in the FXC / LIF Settings dialogue box to **Sync Input**.

6. **Select the unit from the Unit pull-down menu.**

   Select the unit from the **Unit** pull-down menu. If you select Sync Input, the unit can only be FXC E1(/T1). The **Unit** menu is disabled if the **Timing** is **Internal Timing**.

7. **Select the interface from the FB/Interface pull-down menu.**

   Select the interface from the **FB/Interface** pull-down menu. The selection depends on the unit in question. The **FB/Interface** menu is disabled if the **Timing** is **Internal Timing** or **Sync Input**.

8. **Select the channel from the Channel pull-down menu.**

   Select the channel from the **Channel** pull-down menu. For FXC E1 or FXC E1(/T1), the **Channel** menu is disabled.

9. **Click OK.**

10. **Click Apply to apply the settings to the node.**

11. **Repeat steps 3 to 10 as necessary for other priorities.**

12. **If necessary, click Calibrate to calibrate the internal clock to the current active synchronisation source.**

    If necessary, click **Calibrate** to calibrate the internal clock to the current active synchronisation source.

Note

Before calibrating, check that the accuracy of the timing source used for calibration is within a range of +-40 ppm. The accuracy of the calibration is within a range of +-10 ppm, which is well within the limits of +-50 ppm required for a PDH clock. However, if the timing source used for caliberation has a frequency higher than +40 ppm, the calibrated clock may be out of range.

Note

This button is not available in offline mode or when the active synchronisation source is Internal Timing.

14.4 Adjusting SDH synchronisation settings

Purpose

On the **Priorities** page, you can view and modify SDH synchronisation priorities if an FXC Bridge and FXC STM unit are installed.

By default, three synchronisation sources can be selected and prioritised: STM interface 1 (STM-1 IF:1), STM interface 2 (STM-1 IF:2), and Internal. If the FXC Bridge unit is installed in slot 1 (the slot for the node master), and a FXC E1 or FXC E1/T1 unit is installed, it is also possible to specify an E1 signal from the first E1 interface of an FXC E1 or FXC E1/T1 as the synchronisation source.

The SDH priority settings are presented in the following columns:

- **Priority number**. In **Use Priorities** mode, priority is of secondary importance: if two synchronisation sources have the same quality, priority decides which synchronisation source will be selected.
- **Source**, which can be modified (with the exception of **Internal)**.
- **Quality**. In **Use Priorities** mode, quality is the of primary importance: unless two synchronisation sources have have the same quality, quality decides which synchronisation source will be selected.

- **Determination**, which can be **SSM** (Synchronisation Status Message) or **Manual**. With **SSM** , the quality of the synchronisation source is indicated by a signal that can be used as the synchronisation source. With **Manual**, the quality of the synchronisation source is configured manually. For an E1 signal, only **Manual** determination is available.
- **Status**.

You can also modify the **SDH Synchronisation Mode**: the alternatives are **Use Priorities**, **Force On**, and **Hold Over**.

Before you start

The **Synchronize PDH to SDH** check box allows the PDH network to be synchronised to SDH.

If the FXC Bridge is installed in slot 1, the **Synchronize PDH to SDH** check box is checked and disabled in the view.

If the FXC bridge is installed in a slot other than 1, and a PDH unit is installed in slot 1, then the **Synchronize PDH to SDH** check box is empty, and enabled in the view. The PDH synchronisation list is also displayed below the SDH synchronisation list - this means that the PDH and SDH node are currently running on independent clocks, and that both priority lists can be altered. To synchronise the PDH node to the SDH, check the **Synchronize PDH to SDH** check box, then click **OK**; the next time you open the **Priorities** page, the PDH priority list will not be visible.

Steps

1. Click Configuration → Synchronization to open the Synchronization dialogue box.

The **Synchronization** dialogue box opens.

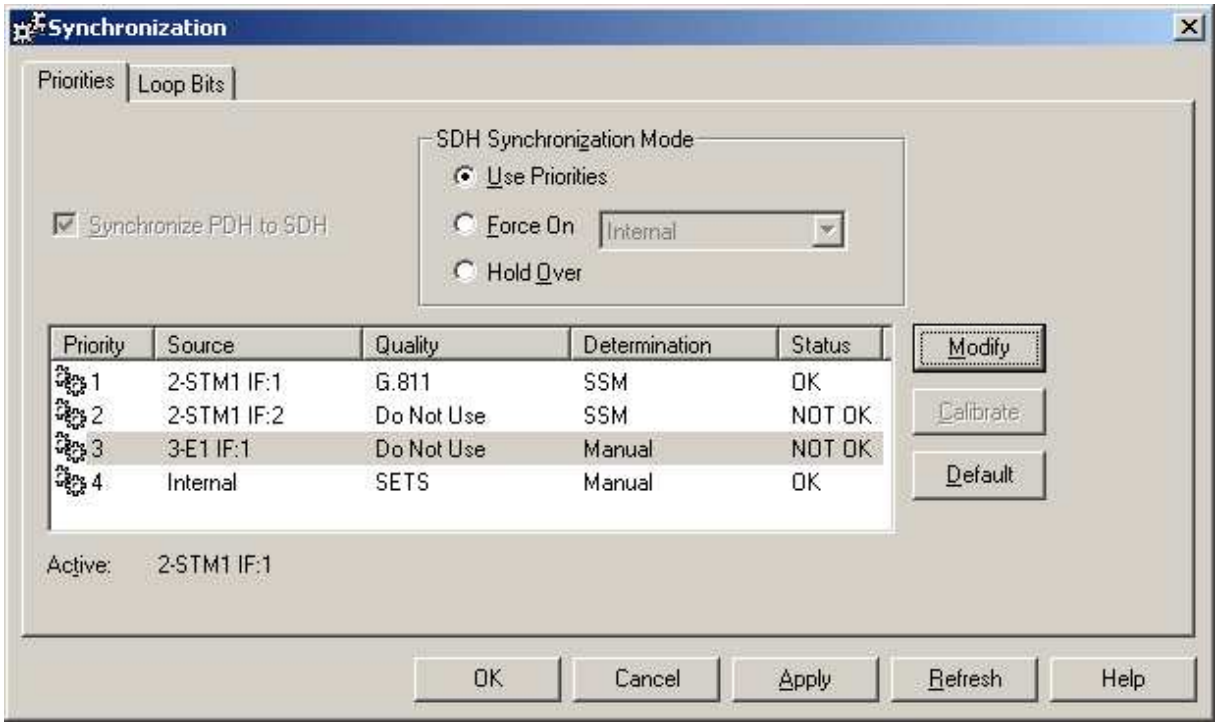


Figure 73. The Synchronization dialogue box

2. Select the Priorities tab.

3. Select the SDH Synchronisation Mode: the alternatives are Use Priorities, Force On, and Hold Over.

Select the **SDH Synchronization Mode**:

- With **Use Priorities,** the timing source is selected automatically, based on the priority and quality of the synchronisation sources.
- With **Force On**, you can force the use of a particular synchronisation source; select the source from the pull-down menu.
- **Holdover** switches the FXC STM to holdover mode (disabling the Calibrate button).

4. To modify a synchronisation source

Steps

a. Click on a synchronisation source in the SDH Priorities: frame.

b. Click Modify to access the Modify Source dialogue box.

The **Modify Source** dialogue box opens.

Figure 74. The Modify Source dialogue box

c. Select the Unit where the interface of the synchronisation source is located.

d. Select the Quality Determination: Use SSM or Manual.

Select the **Quality Determination** as follows:

- Select **Use SSM** if the Quality Determination of the synchronisation source should be automatically based on the SSM of the synchronisation source.
- Select **Manual** to allow the selection of a specific quality from the list. See the following table for details.

Table 6. Hierarchy of quality levels

Value	Description	Priority
G.811	Primary reference clock quality according to G.811	Highest
G.812 Transit	Transit slave clock according to G.812	|
G.812 Local	Local slave clock according to G.812	|
SETS	Synchronous Equipment Timing Source	|

Table 6. Hierarchy of quality levels (cont.)

Value	Description	Priority
Do not use	The signal should not be used for synchronisation	Lowest

Note

The quality selection is disabled when **Use SSM** is selected.

e. Select the Unit.

f. Select the Interface number; the alternatives are 1 or 2.

g. Click OK.

h. Click Apply to apply the settings.

5. To determine the current synchronisation source quality and status, click the Refresh button to read the priority list from the FXC STM node.

6. If necessary, view the Active source.

One synchronization source is **Active** at a time. The active source cannot be edited – it only shows the current situation.

Further information

If something went wrong and you want to start from a clean dialogue box, click **Default** to set the SDH priority settings back to their default status.

15 Managing cross-connections

15.1 Overview of managing cross-connections

Purpose

A cross-connection defines how the signals are routed between FXC units in a node.

If there is no cross-connection file available for commissioning the node, the cross-connections must be created manually with the MetroHub or UltraSite BTS Hub Manager.

Summary

Cross-connections are created into banks. The node contains two cross-connection banks. The state of a cross-connection bank can be active or inactive. Only the cross-connections that are in the active bank are in use in the node.

If you want to start using the cross-connections in the inactive bank, you must manually activate that bank.

Note

Adding new cross-connections or editing existing cross-connections is possible only in an inactive bank.

Note

Export the cross-connections from the inactive bank to a file before power reset, as the inactive bank is cleared from the node memory. Later, the same file can be imported to the inactive bank to restore the cross-connections.

You can edit cross-connections and banks only through the **Cross-connections** window.

Steps

1. To open the **Cross-connections** window

Steps

a. Create an online access to the node or an offline access to the file.

b. Select Configuration → Cross-connections...

The **Cross-connections** window is divided into two parts. The upper window includes a cross-connection list view and on the right-hand side of the window you can find, for example, the buttons for adding, removing and modifying connections. The lower window includes a cross-connections graphic view.

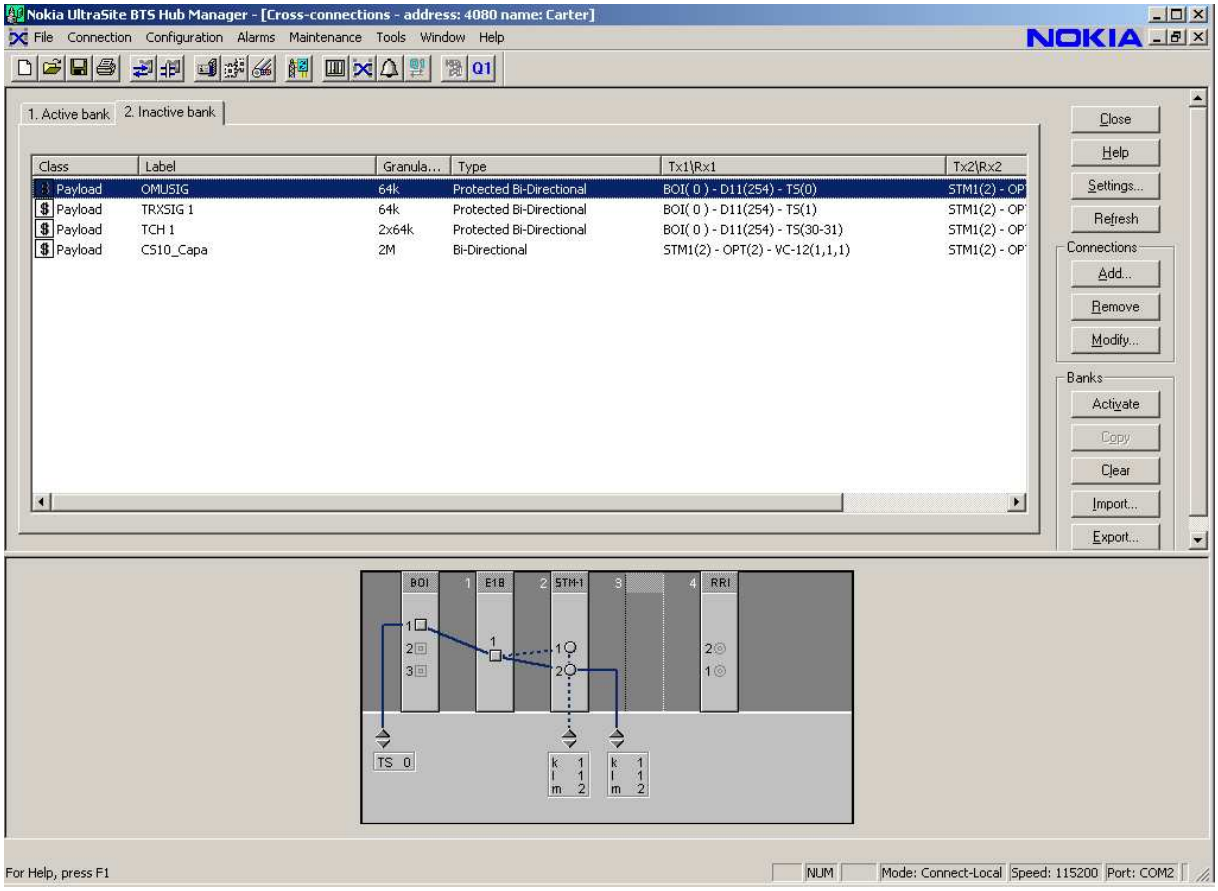


Figure 75. Cross-connections window

There is a list view for both the active bank and the inactive bank. The list view shows cross-connection related information in text format. A connection is always presented in one row. You can select several connections in the list. The view also provides a pop-up menu to carry out certain functionality for the selected cross-connection(s). It also provides buttons to carry out cross-connection-related or bank-related operations.

You can use the graphic view to create cross-connections and also to show how the selected connection in the cross-connections list view progresses from one FXC unit to another. The graphic view shows only one connection at a time.

Tip

The view also includes a **Refresh** button which you can use for refreshing the cross-connection data.

2. To open the **Cross-connection Properties** dialogue box

Steps

a. Select an active or inactive bank.

b. Right-click the desired cross-connection.

A pop-up menu opens.

c. Select Properties.

Complete details about the selected cross-connection are shown in the **Cross-connection Properties** dialogue box.

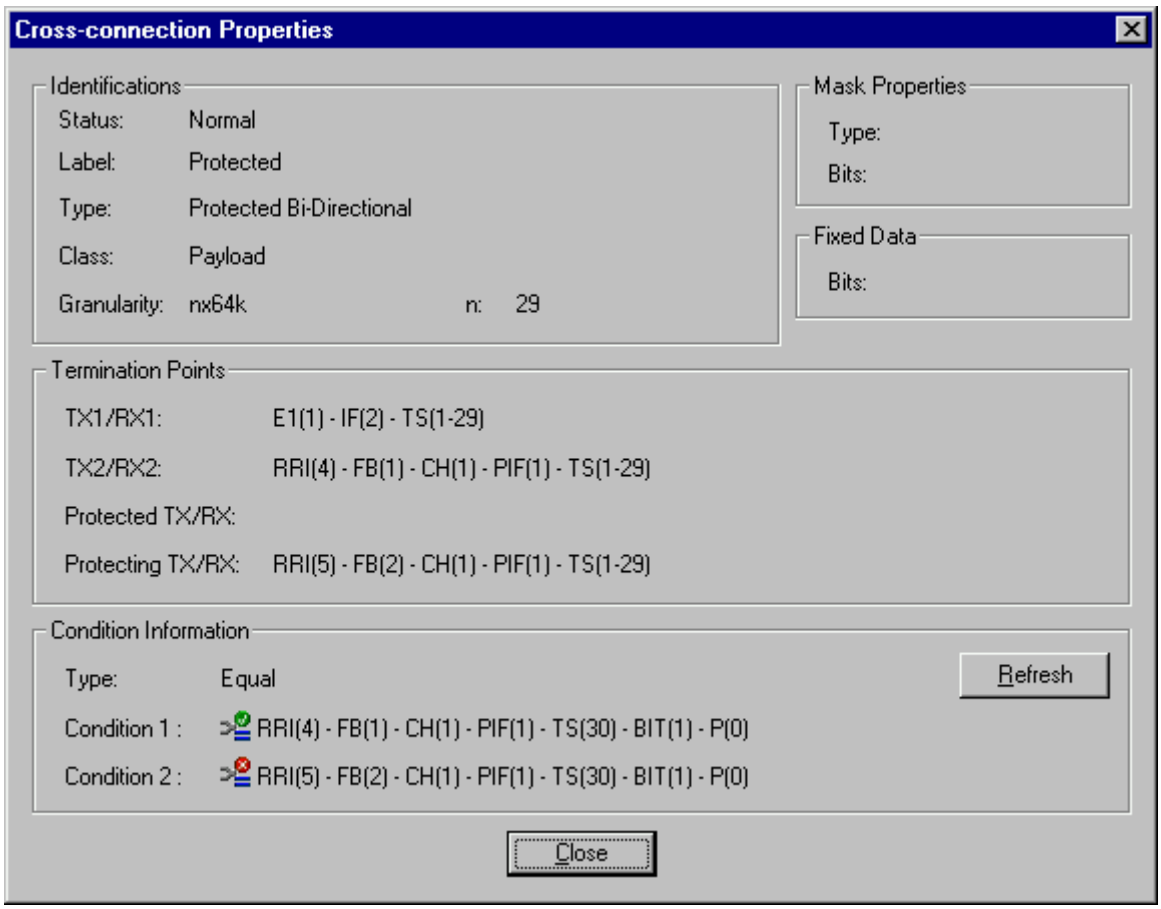


Figure 76. Cross-connection Properties dialogue box

While managing a node (NE) with a protected cross-connection in the active bank, the dialogue box also displays the condition bit status for Condition 1 and/or Condition 2. In such a case, the **Refresh** button is also available for refreshing the condition bit status. Once the condition bit status is read, the status is also displayed in the list view of the **Cross-connections** window for one or more cross-connections having the same condition(s).

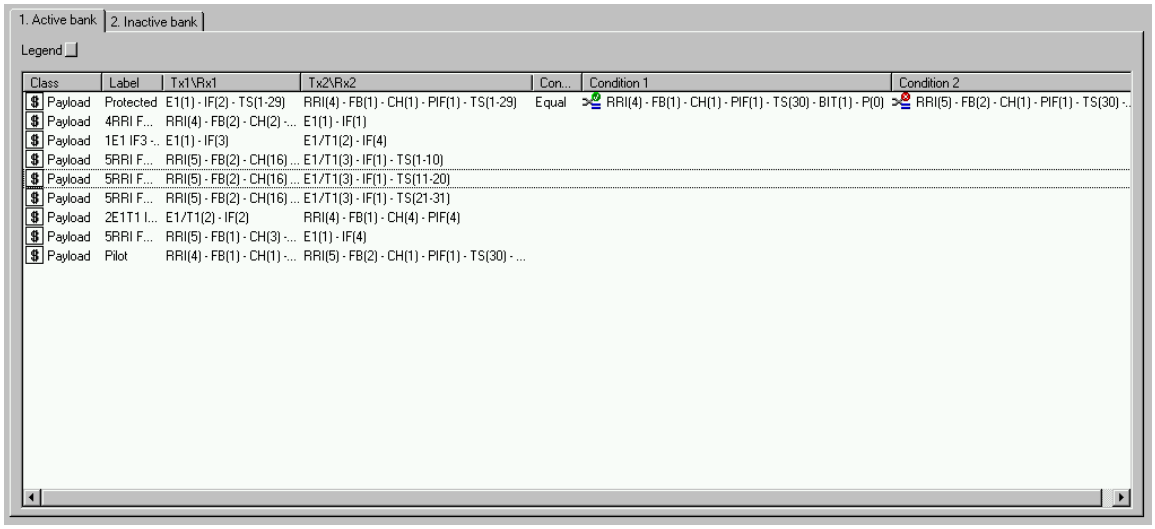


Figure 77. List view of the cross-connections window

Press the **Legend** button to see an explanation of the symbols.

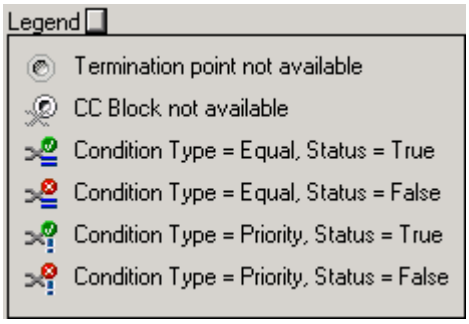


Figure 78. Symbols used in the cross-connections window

The condition bit status can also be read for selected cross-connections in the **Refresh bank** pop-up menu. The **Refresh bank** pop-up menu, which is available for the cross-connections active bank, refreshes the condition bit status for all the protected cross-connections in the bank.

3. *If* you want to add a cross-connection

   Then

See Adding cross-connections and Adding cross-connections in the graphic view.

Further information

Bypass connections are always bi-directional and the granularity is 2M. These connections are only available for FXC RRI units.

A fast and easy way to add bypass cross-connections is via the graphical view in the **Cross-connections** window. Refer to *Adding cross-connections in the graphic view* for more information.

4. *If* you want to modify a cross-connection

   Then

   See Modifying cross-connections.

5. *If* you want to remove a cross-connection

   Then

   See Removing cross-connections.

6. *If* you want to create a cross-connection file

   Then

   See Creating and exporting a cross-connection file.

7. *If* you want to import a cross-connection file

   Then

   See Importing a cross-connection file.

Further information

Usability tips for cross-connections:

- The easiest way to edit an active cross-connection bank is to take a copy of it to an empty inactive bank, edit the connections there and activate the edited bank.
- When clicking the **settings** button you can choose which cross-connection attribute is displayed in the **Cross-connections** window.
- Controls, for example, the Q1 EOC channel and MCB/LCB bits, are shown in the **Cross-connections** window as reserved capacity. These are also marked and seen as uni-directional connections, even though they are bi-directional by nature. It is only a way of marking.

  It should be noted that control connections are just indicating the reservation of the cross-connection capacity, so they cannot be removed or edited in the **Cross-connections** window. They are reserving the capacity from both banks.

  When the user chooses to create the EOCs/Sync loop bits, the contents of both active and inactive bank are validated for possible conflict.

  If any conflict is detected, the manager displays a dialogue box with EOC/ Sync loop bits in conflict.

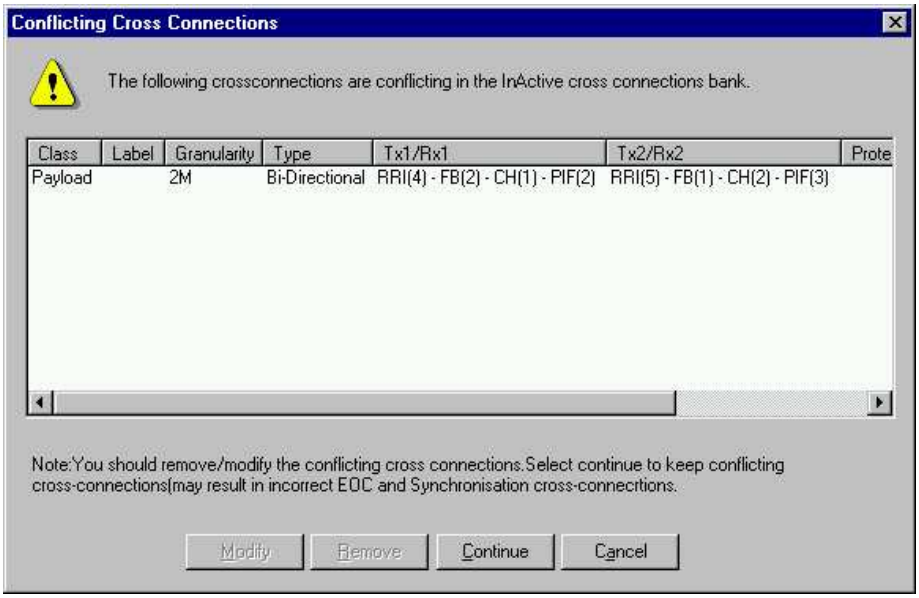


Figure 79. Conflicting cross-connections

The dialogue box provides an option for the user to clear or preserve the inactive bank contents and to cancel or continue with current selections. The manager creates the required 2M cross-connections in the active or inactive bank depending on the user's decision.

15.2 Adding cross-connections with the Add Cross-connection Wizard

Summary

Each type of cross-connections supported by the node can be created using the **Add Cross-connection Wizard**. The wizard guides you through the different steps of adding a new cross-connection into an inactive bank. Should you forget a setting when adding a new connection, the wizard informs you of the mistake.

The first dialogue box that opens is for the first termination point, TX1/RX1, and the second dialogue box is for the second termination point, TX2/RX2. If the cross-connection type is protected bi-directional, a third dialogue box opens allowing you to specify the parameters of the protecting termination point. All three dialogue boxes are similar in appearance and function.

The last dialogue box of the wizard is the **Overview** dialogue box, which shows you the configuration of the added cross-connection. Depending on the type of connection, you can enter protection information, mask properties or fixed data in this dialogue box.

Note

You can also *create cross-connections in the graphic view* of the **Cross-connections** window.

Steps

1. **Click Configuration → Cross-connections.**
2. **Select Inactive bank.**
3. **Select Add to open the Add Cross-connection Wizard dialogue box.**

   The **Add Cross-connection Wizard** dialogue box opens.

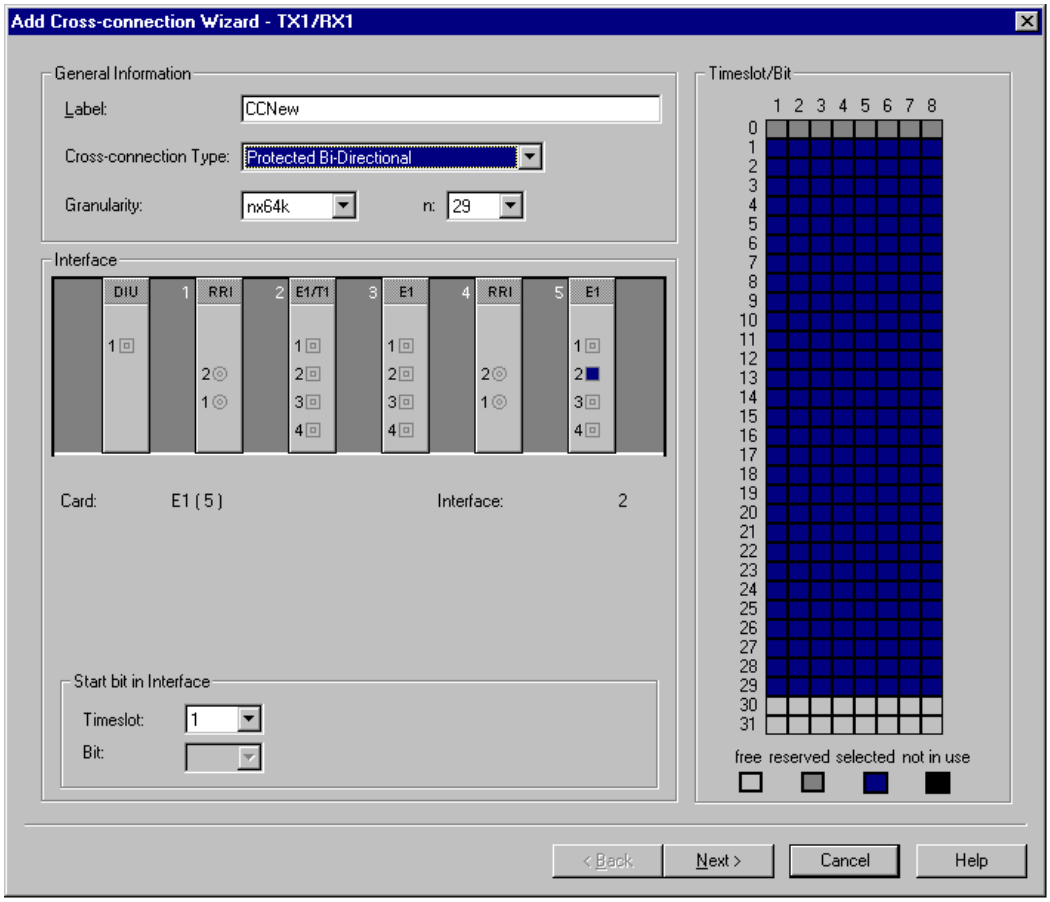


Figure 80. The Add cross-connection wizard TX1/RX1 dialogue box

4. Specify the parameters of Tx1/Rx1, the first termination point.

Steps

a. Label the new cross-connection (optional).

Label the new cross-connection by entering its name in the text field. The name may not exceed 80 characters.

b. Select the first termination point (TX1/RX1): click on the appropriate Interface symbol.

Select the first termination point by clicking on the appropriate **Interface** symbol in the **Interface** graphical field.

c. For an FXC RRI flexbus interface, select a channel from the Channels graphical field.

For an FXC RRI flexbus interface, select a channel from the **Channels** graphical field. The **Channels** graphical field shows the channels for the interface of the unit as a row of buttons.

Note

If a channel is selected from the free channels available, the appropriate button is painted in blue. The reserved channels are shown in grey, and cannot be selected.

d. For an FXC STM-1 optical interface, select the capacity in the VC-4 frame matrix.

Select the capacity of an FXC STM-1 optical interface in the VC-4 frame matrix. Changes in selection in the matrix are reflected in the Subsignal identification boxes (**K**,**L**,**M**) and vice-versa.

The **K** identification box specifies subsignal **TUG-3**, which can have a value of **1**, **2**, or **3**. The **L** identification box specifies subsignal **TUG-3**, which can have a value of **1** to **7**. The **M** identification box specifies subsignal **VC-12**, which can have a value of **1**, **2**, or **3**.

e. For the FXC Bridge interface, select one of the PDH/SDH channels from the Interface (PDH) graphical field, or the Interface (SDH) graphical field.

Note

If you are modifying cross-connections, perform this step. However, if you are adding cross-connections, you can ignore this step and move to the next step.

For the FXC Bridge interface, select one of the 20 PDH/SDH channels from the **Interface (PDH)** graphical field, or from the **Interface (SDH)** graphical field. Both graphical fields show the channels for the (PDH/SDH) interface of the unit as a row of buttons.

Note

If a channel is selected from the free channels available, the appropriate button is painted in blue. The reserved channels are shown in grey, and cannot be selected.

f. Select a Cross-connection Type from the drop-down menu.

Select a **Cross-connection Type** from the drop-down menu. The default is **Bi-Directional**. The cross-connection types are explained in *Transmission unit cross-connections*.

g. Select the Granularity.

Select the **Granularity**. The alternatives are **2M**, **nx64k**, **64k**, **32k**, **16k**, **8k**, and **nx8k**. The default value is **2M**.

Note

The granularity selection can disable/enable spin control n:. Spin control n: is enabled if granularity is n x 64k.

h. If the granularity is nx64k or nx8k, select n:.

n: is the coefficient of granularity when the granularity is nx64 k or nx8k. If the granularity is nx64k or nx8k, select n: (the alternatives are 1-31 for nx64k and 2-248 for nx8k; the default value is 1 for nx64k and 2 for nx8k).

i. Select the Timeslot/Bit (if the granularity is not the same as the interface size).

Click to select the Timeslot/Bit from the Timeslot/Bit matrix, or from the **Timeslot** and **Bit** boxes:

- The time-slot can be **0**-**31**, depending on the availability. The default value is the least available time-slot. The **Timeslot** box is disabled if the selected granularity is the same size as the interface or if an interface has not been selected.
- The bit can be **1**-**8**, depending on the granularity. For **8k** granularity, the alternatives are **1**-**8.** For **16k** granularity, the alternatives are **1**,**3**,**5**, and **7**. For **32k** granularity, the alternatives are **1** and **5**. The **Bit** box is disabled if the granularity is >= 64k.

Changes in selection are reflected in the **Timeslot** and **Bit** boxes, and vice-versa. The selected capacity is shown as painted in blue, and the reserved capacity is shown in grey and cannot be selected.

5. **Click Next.**

The **Add Cross-connection Wizard - TX2/DX2** dialogue box opens.

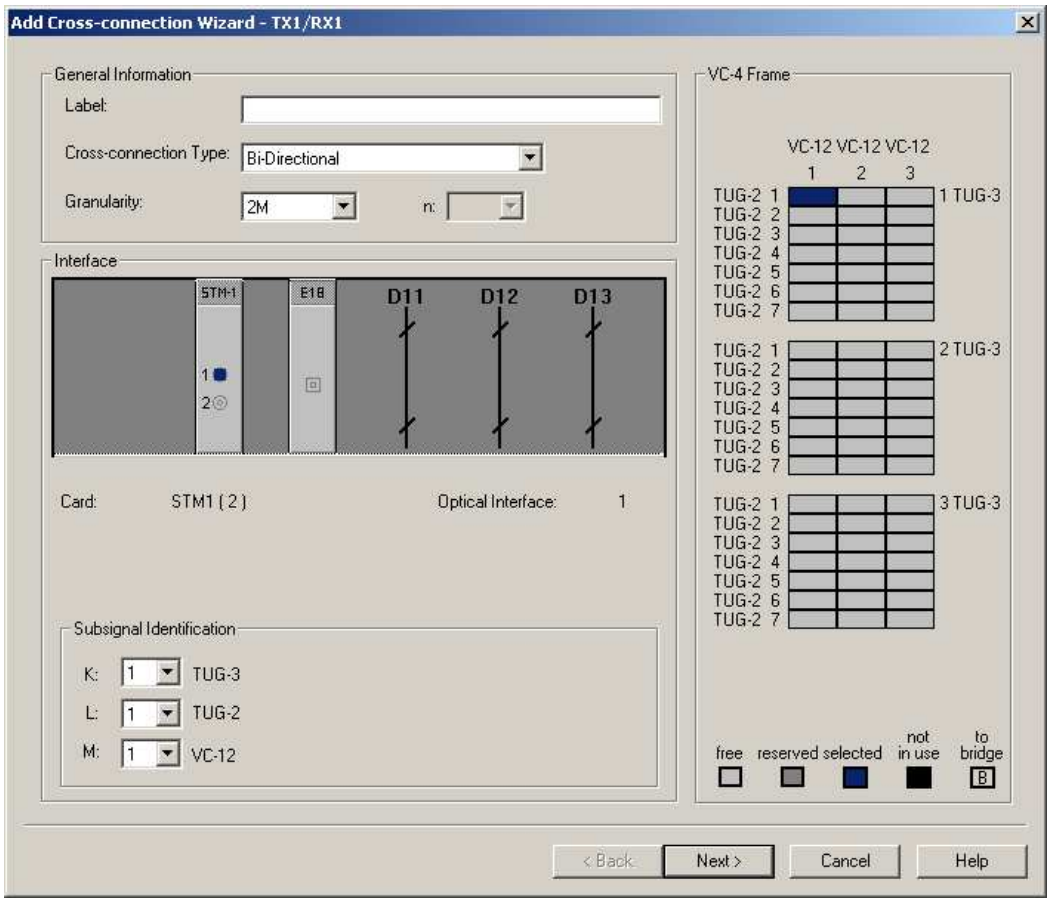


Figure 81. The Add Cross-connection Wizard - TX2/DX2 dialogue box

6. Specify the parameters for TX2/RX2, the second termination point.

Steps

a. Select the second termination point (TX1/RX2): click on the appropriate Interface symbol.

Select the second termination point by clicking on the appropriate **Interface** symbol in the **Interface** graphical field.

b. Configure any other available settings referring to the relevant instructions in steps 4-b to 4-i of this procedure.

Configure any other available settings; refer to steps 4-b to 4-i of this procedure. Depending on the cross-connection, some of the settings will not be available for TX2/RX2.

7. Click Next.

8. Specify the parameters for the protecting termination point (only for Protected Bi-directional cross-connections).

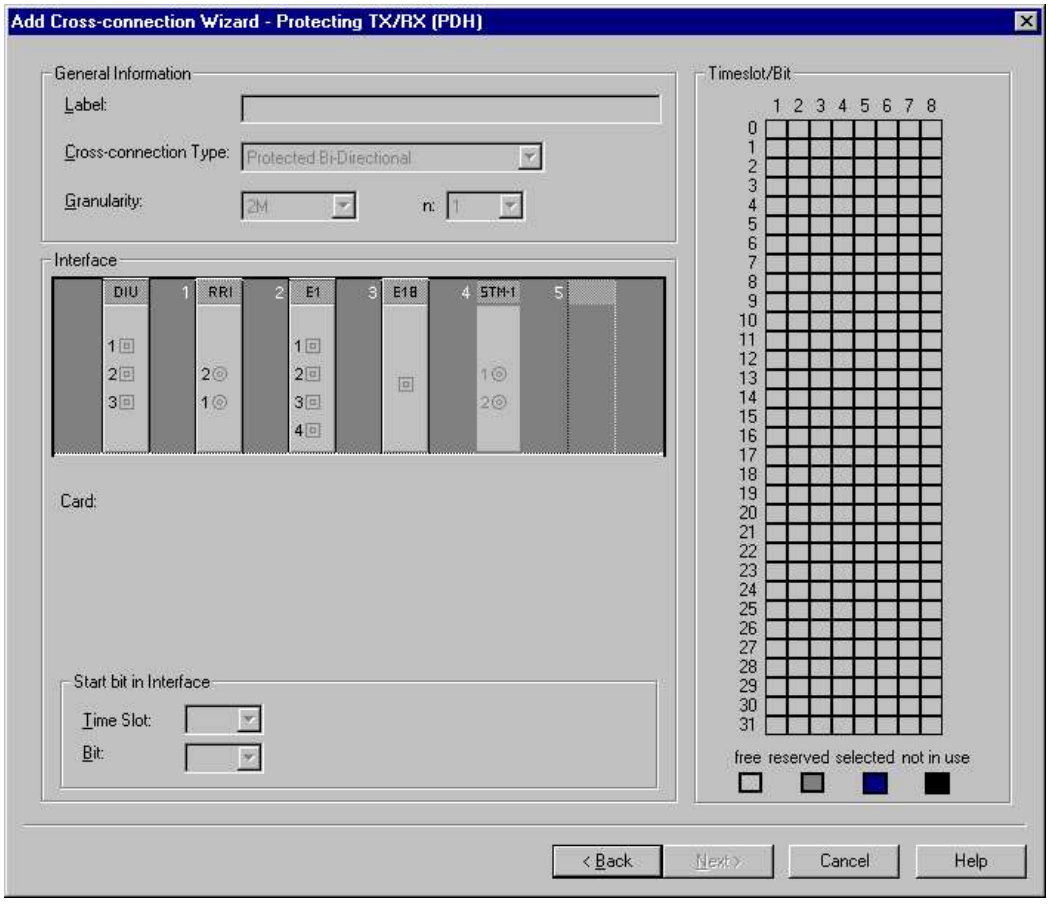


Figure 82. The Add cross-connection Wizard - Protecting TX/RX dialogue box

The **Add cross-connection Wizard - Protecting TX/RX** dialogue box will open if the cross-connection type is **Protected Bi-directional**. Specify the parameters for the protecting termination point, referring to the relevant instructions in steps 4-b to 4-i of this procedure.

Click **Next** to continue.

9. View the settings in the Overview dialogue box.

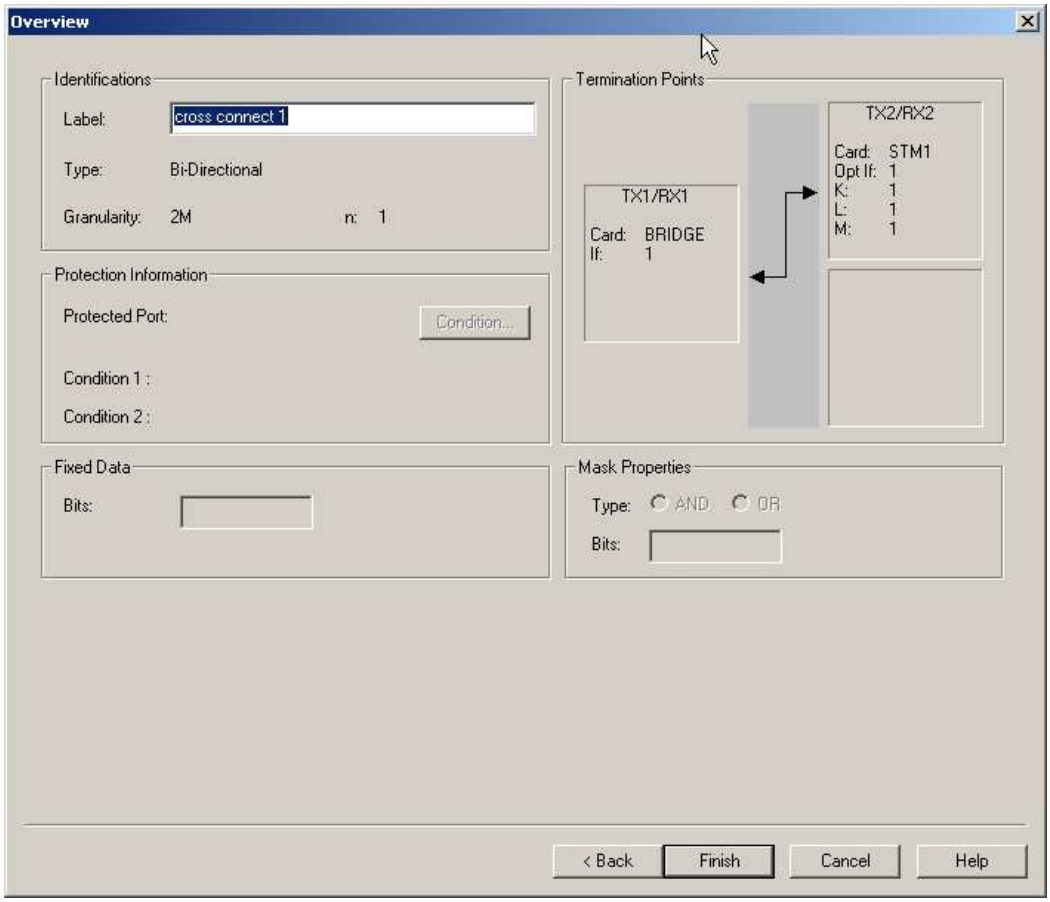


Figure 83. The Overview dialogue box

The **Overview** dialogue box shows the configuration of the added cross-connection. The arrows drawn in the space between termination point buttons indicate the direction of the cross-connection and its type.

10. Modify any required control settings in the **Overview** dialogue box.

Summary

According to the cross-connection type, the required control settings will be enabled in the **Overview** dialogue box.

Steps

a. Modify the Condition of the cross-connection (if the cross-connection type is Protected Bi-Directional).

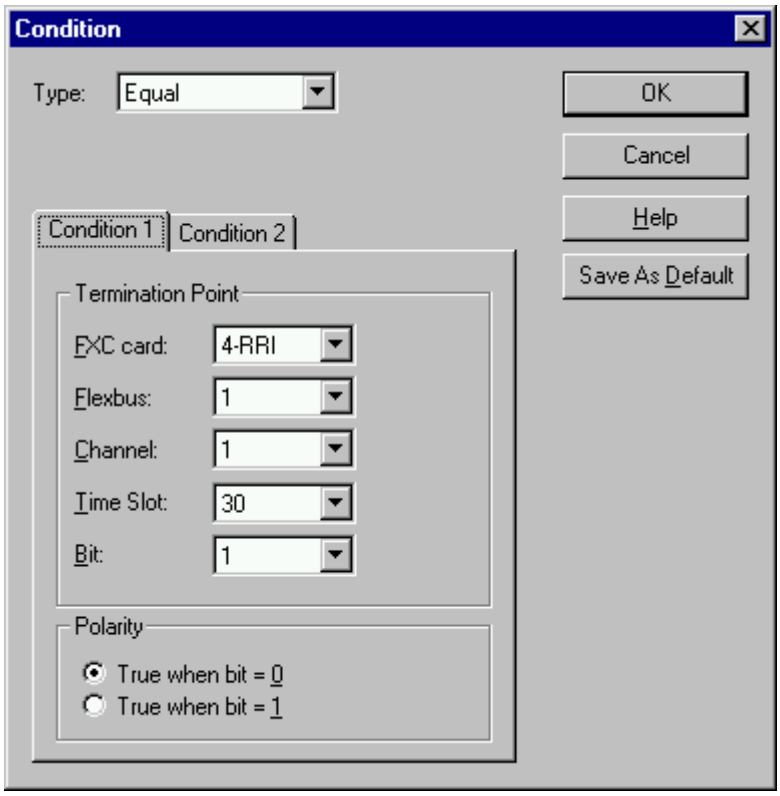


Figure 84. The Condition dialogue box (enabled only for protected cross-connections)

Modify the **Condition** of the cross-connection as follows:

i. Click the **Condition** button in the **Protection Information** frame to access the **Condition** dialogue box.

ii. Select the **Condition type** for the protected connection. The default value is **Priority**, which specifies a direct switch (revertive). **Equal** specifies a best signal source selection (non-revertive).

Note

An **Equal** condition type has two tabbed pages in the dialogue box. A **Priority** condition type has one tabbed page in the dialogue box.

iii. Modify the condition settings in the **Condition 1** and/or **Condition 2** tab.

i. Select an **FXC card**.

ii. If the unit is an FXC RRI, select a **Flexbus** (**1** or **2**) and **Channel1** to **4**).

iii. If the unit is not an FXC RRI, select an **Interface** (**1** to **4** for FXC E1(/T1), **1** to **20** for FXC Bridge).

iv. Select a **Timeslot** in the FXC unit (**1** to **31**; the default value is **1**).

v. Select a **Bit** in the FXC unit (**1** to **8**; the default value is **1**).

vi. Set the **Polarity** (**0** or **1**; the default value is **0**.)

Note

'Local' (valid inside the 2 Mbit/s signal) or 'Global' (valid inside the whole node) common conditions are not supported in MetroHub or UltraSite BTS Hub protected cross-connections.

Note

You can use the same condition bit for different protected cross-connections.

Note

If you need to create several protected connections with common condition data, you can store the condition data by clicking **Save As Default**. The data is saved for the duration of the session and it is always taken into use by default for new protected connections.

iv. Click **OK**.

b. Adjust the Mask Properties controls (if the cross-connection type is Bi-Directional Masked).

Adjust the **Mask Properties** controls as follows:

- Select the mask **Type**; the alternatives are **AND** or **OR**. The default choice is **AND**.
- Enter a bit pattern to use as a mask for the cross-connection in the **Bits** edit box. The number of bits depends on the granularity.

c. Adjust the Fixed Data control (if the cross-connection type is Uni-Directional Fixed Data).

Enter a bit pattern in the**Bits** edit box of the **Fixed Data** frame.

11. Click Finish.

Expected outcome

The cross-connection is successfully added.

15.3 Adding cross-connections in the graphic view

Summary

A fast and easy way to add cross-connections is via the graphic view in the **Cross-connections** window. You can select the unit, physical interface, and granularity, as shown in the figure below.

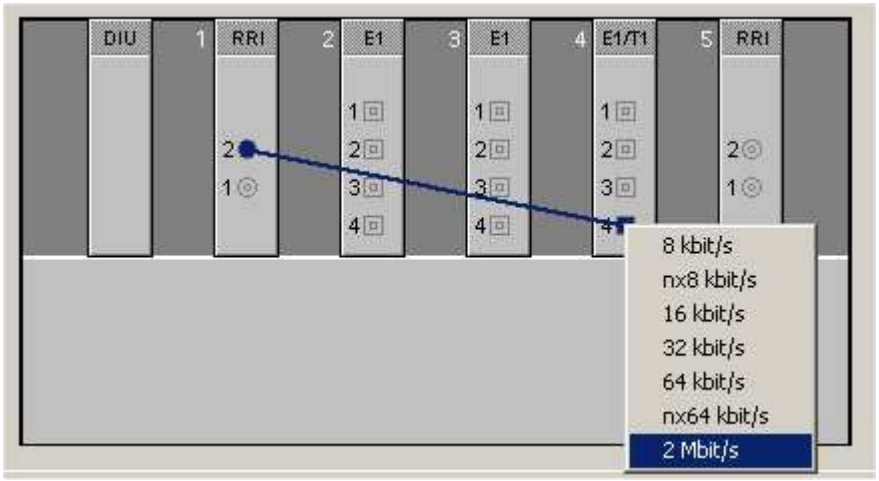


Figure 85. Selecting interface and granularity in the graphic view

Steps

1. **Press down the left mouse button to select an interface.**
2. **Drag the line to the second termination point and release the mouse button.**

   A pop-up menu is displayed.
3. **Select the granularity.**

   The Cross-connection wizard opens.
4. **On the first page of the wizard, select the cross-connection type and the parameters of Tx1/Rx1, the first termination point.**

   On the first page of the wizard, select the cross-connection type and the parameters of Tx1/Rx1, the first termination point. For information on individual settings, refer to *Adding cross-connections with the Add cross-connections wizard*.
5. **Click Next.**
6. **Select the parameters of Tx2/Rx2, the second termination point.**

   Select the parameters of Tx2/Rx2, the second termination point. For information on individual settings, refer to *Adding cross-connections with the Add cross-connections wizard*.
7. **Click Next.**
8. **Click Finish.**

15.4 Modifying cross-connections

Purpose

You can modify existing cross-connections.

Steps

1. **Click Modify in the Cross-connections window.**

The **Modify Cross-connection Wizard** opens. The layout of this wizard is exactly the same as in the **Add Cross-connection Wizard** (see *Adding cross-connections with the Add Cross-connection Wizard*).

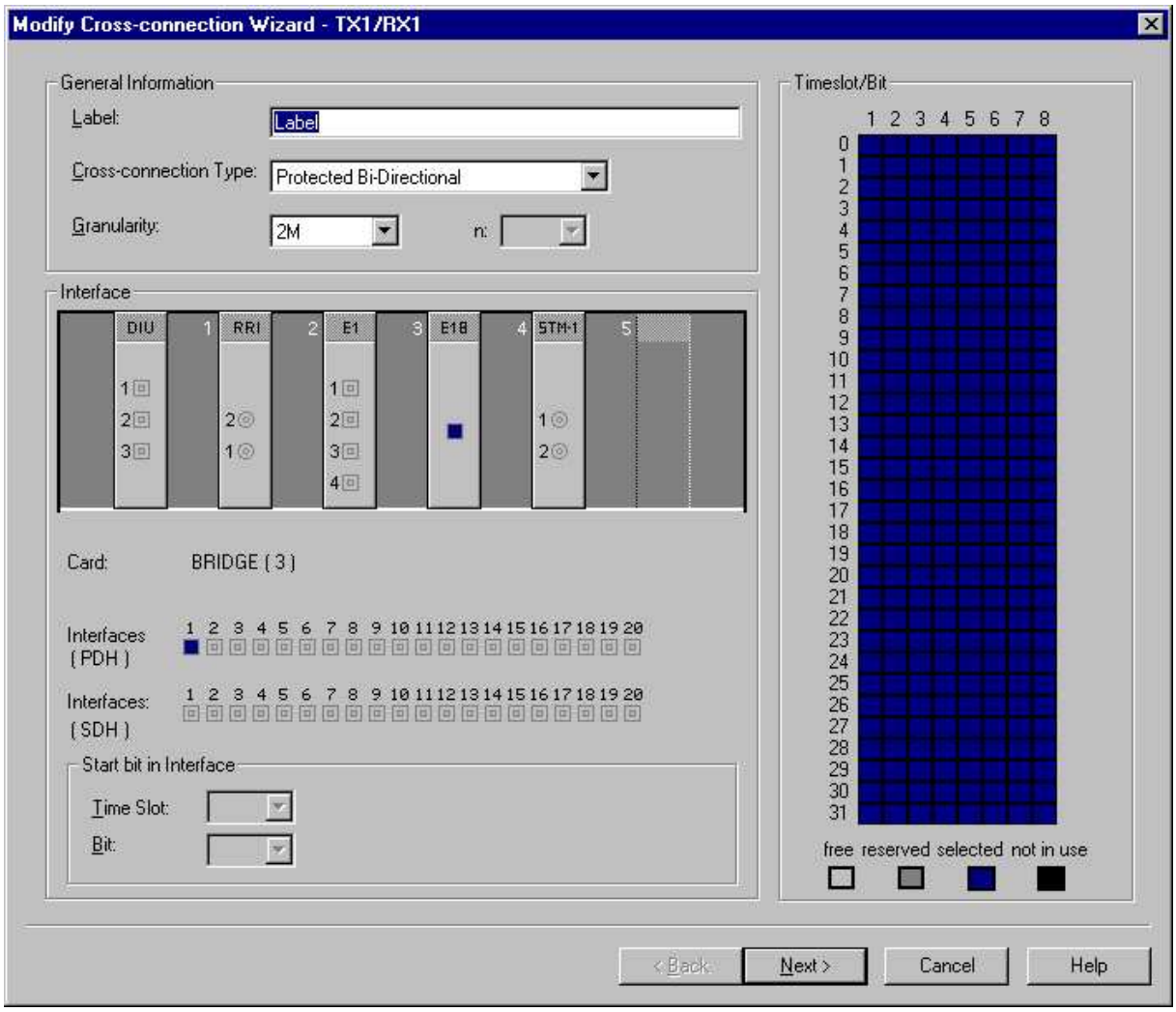


Figure 86. The Modify Cross-connection Wizard - TX1/RX1 window

Note

In the connection mode, only connections in the inactive bank can be edited.

In order for the modified cross-connections to take effect, you must activate the bank manually. For instructions, see *Managing cross-connection banks*.

2. **Modify the settings as desired.**

   Modify the settings as desired. For information on the settings, see *Adding cross-connections with the Add Cross-connection Wizard*.

Further information

You can also modify cross-connections via a pop-up menu. Right-click the selected cross-connection in the inactive bank.

15.5 Creating and exporting a cross-connection file

Steps

1. **Open the manager and start the file mode by selecting File → New.**

2. **Install the desired FXC units in the Equipment window.**

Note

To restore the settings stored in a previously exported node (or cross-connection 'xcs') file, the hardware configuration of the node/xcs file must match the hardware configuration of the node where it will be restored.

3. **Open the Cross-connections window by selecting Configuration → Cross-connections.**

   The **Cross-connections** window opens.

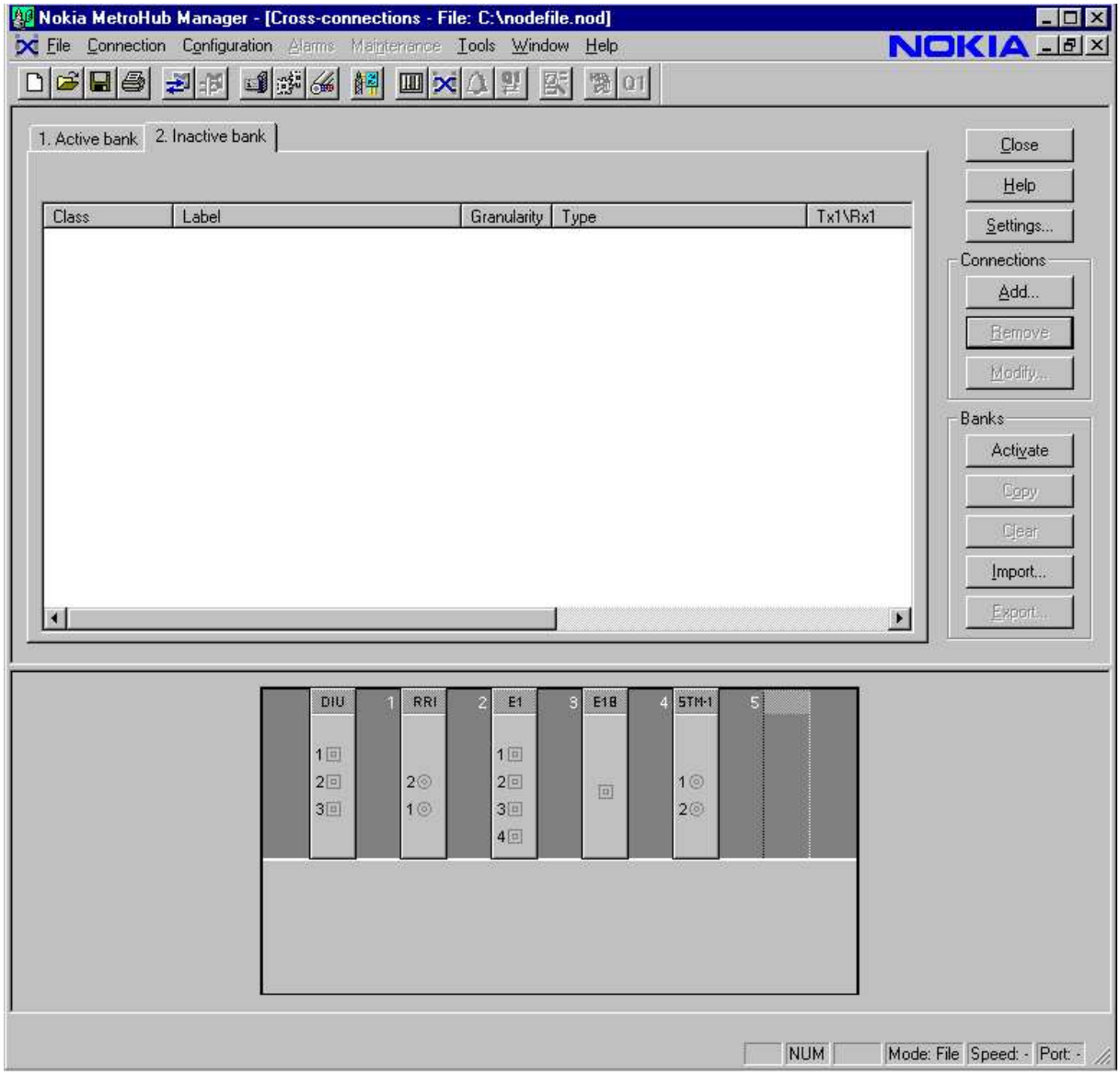


Figure 87. The Cross-connections window

4. Create all needed connections into an inactive bank.

See *Adding cross-connections with the Add Cross-connection Wizard*.

5. Click Activate to activate the inactive bank with the newly created cross-connections.

6. Click the Export button in the Cross-connections window.

The **Export** dialogue box opens.

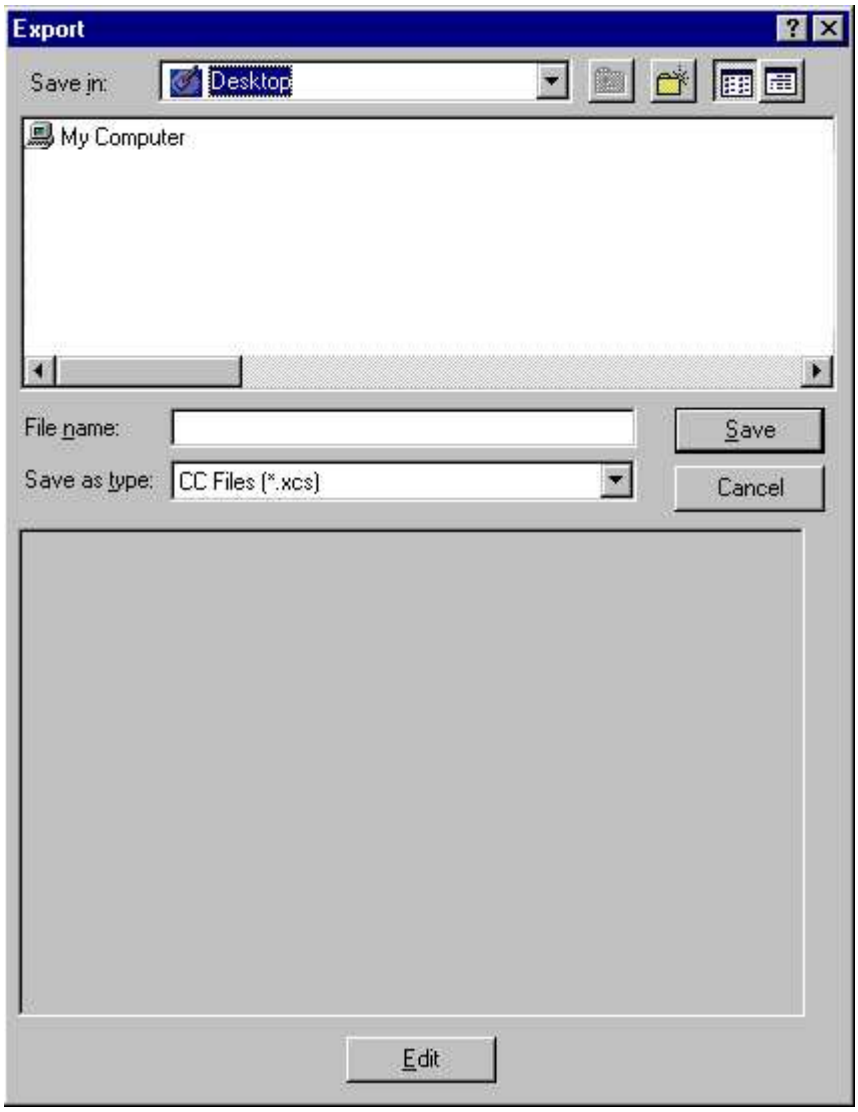


Figure 88. The Export dialogue box

7. Save the exported file in the desired location.

15.6 Importing a cross-connection file

Steps

1. **Connect to the node or open a file.**
2. **Select Configuration → Cross-connections.**

   The **Cross-connections** window opens.

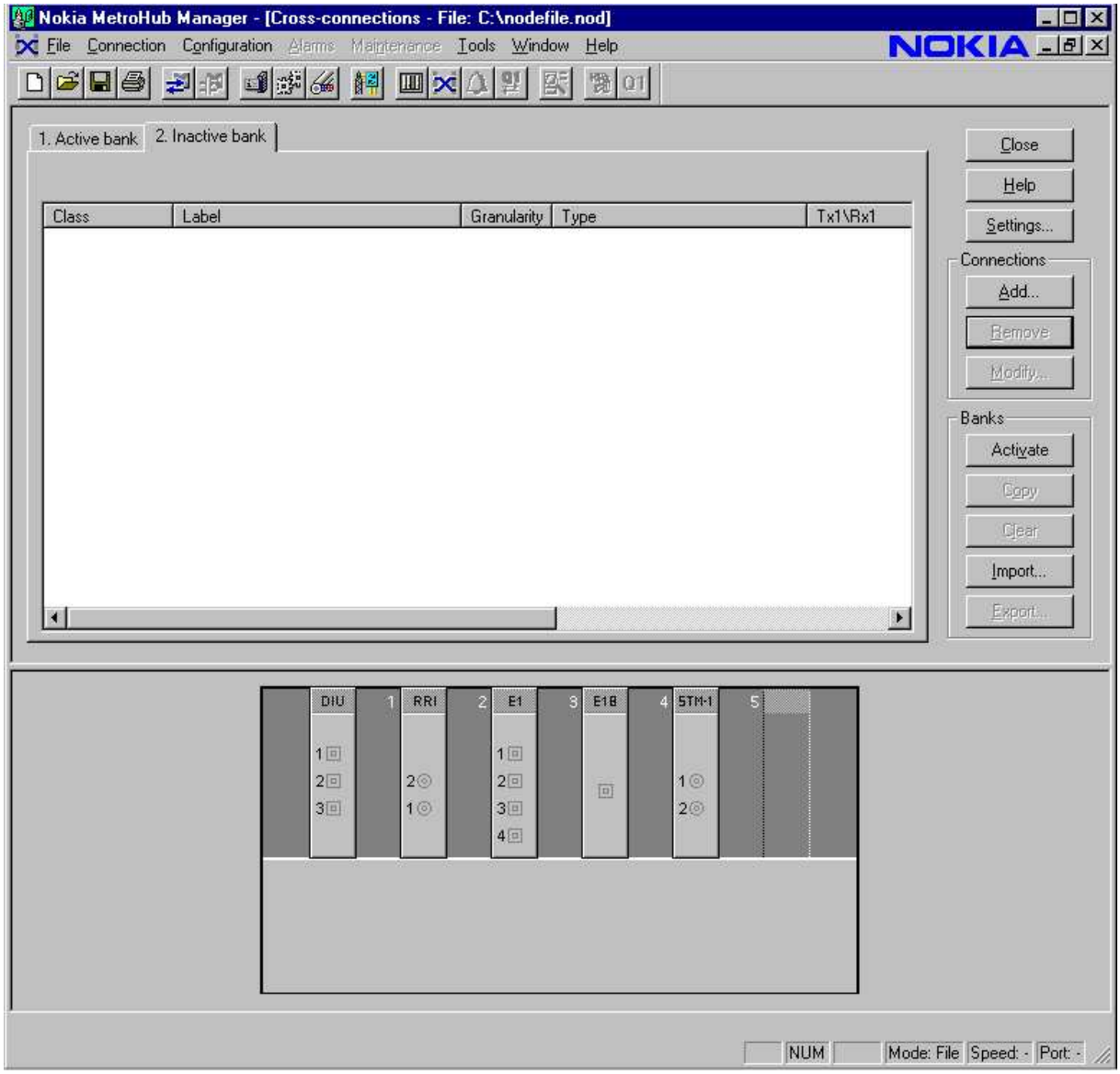


Figure 89. The Cross-connections window

3. Select the inactive bank.

4. Click the Import button in the Cross-connections window.

The **Import** dialogue box opens.

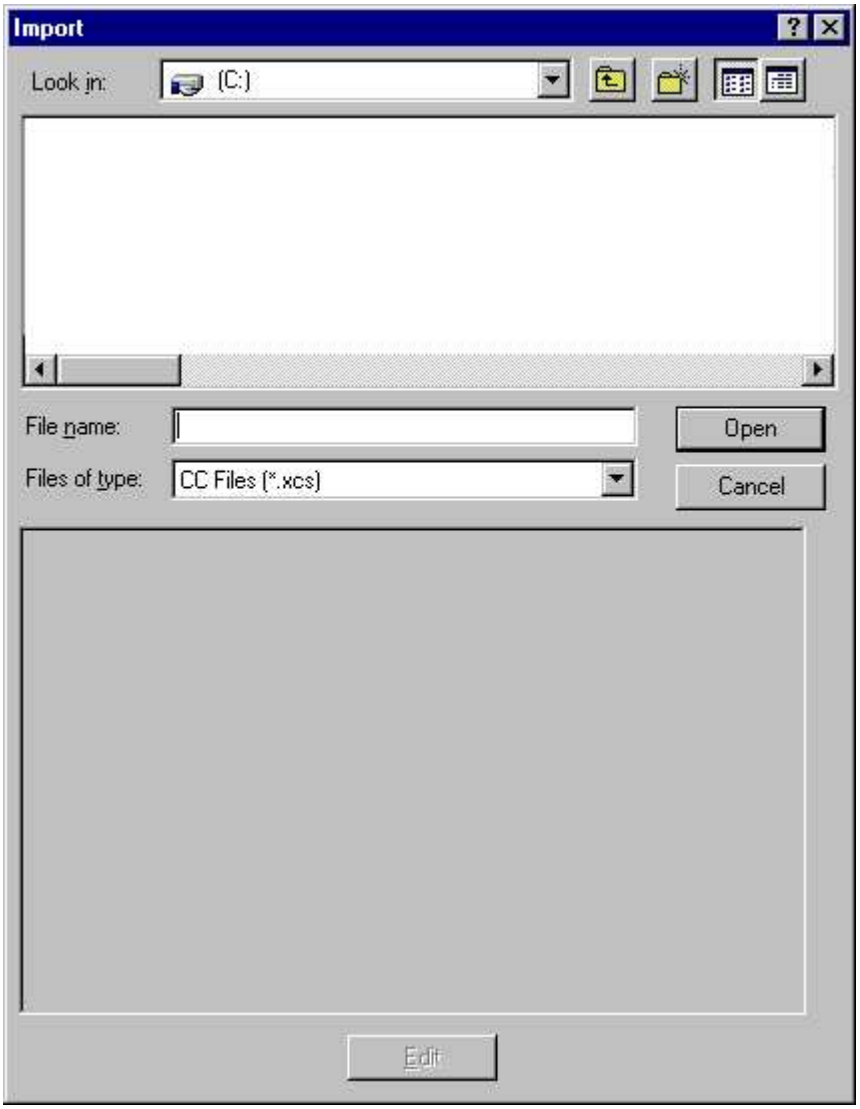


Figure 90. The Import dialogue box

5. Select the desired file.

6. Click the Open button.

Expected outcome

The file is imported to the inactive cross-connection bank.

Note

Cross-connections can only be imported to the inactive bank. For the imported settings to take effect, the bank has to be activated.

15.7 Managing cross-connection banks

Summary

Cross-connection banks can be activated, copied, and cleared.

Steps

1. *If* you want to activate an inactive bank

   Then

   Click Activate in the Cross-connection view.

2. *If* you want to copy an inactive bank

   Then

   Click Copy in the Cross-connection view.

   This creates a copy of the cross-connections from an active bank to inactive bank. This is useful if you want to create another cross-connection bank with only minor differences from the original.

3. *If* you want to clear an inactive bank

   Then

   Click Clear in the Cross-connection view, or select all cross-connections in the bank and click Remove.

   This removes all cross-connections from the inactive bank.

15.8 Removing cross-connections

Purpose

You can permanently remove a cross-connection from an inactive bank.

Steps

1. **Select the connection or connections you wish to delete.**

2. **Click Remove in the Cross-connections window.**

   Before removing the cross-connections, the manager asks you to confirm if you want to go ahead with the removal. After you have confirmed the removal, the manager removes the cross-connection(s) from the bank.

Further information

You can also remove cross-connections via a pop-up menu. Right-click the selected cross-connection in the inactive bank.

15.9 Forcing an SDH protection switch group

Purpose

With a protected cross connection (protection group) configured, you can force the working path to protecting or protected.

The force protection switch command will be active until an automatic protection switch mode is selected, or until the unit performs a reset and the protection switch mode returns to automatic by default.

The current working path can be determined by the green point displayed in front of the working path in the cross-connection list.

Summary

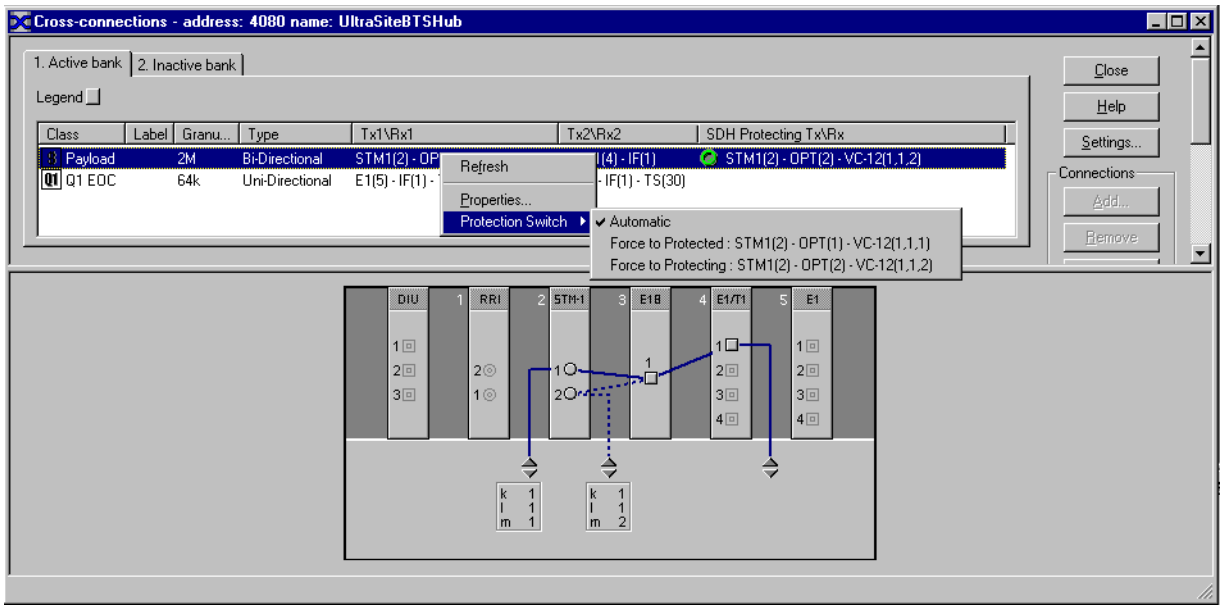


Figure 91. Forcing a protection switch group

Steps

1. **Select Configuration → Cross-connections.**
2. **Right-click at the SDH protection group, and select the Protection Switch menu.**
3. **Select either Automatic, Force to Protected, or Force to Protecting.**

   Select one of the following options:

- **Automatic**. In case of failure at the protected path, a switch will automatically occur, to the protecting path. The protecting path will now be used until a failure in this path occurs and a switch to the protected path takes place.
- **Force to Protected**. The working path is forced to be the protected path. Check that the protected path is working without any alarms shown. The protected path will continue as the working path, despite the failures.
- **Force to Protecting**. The working path is forced to be the protecting path. Check that the protecting path is working without any alarms shown. The protected path will continue as the working path, despite the failures.

Note

If you selected a **Force to Protected** or **Force to Protecting** path was selected, a "Forced Control On" alarm will be raised to notify that the transmission path is not longer protected. When switching back to automatic mode, the alarm will be cleared.

Expected outcome

A confirmation window is displayed to confirm that the selected action was successfully performed by the node.

16 Administering UltraSite BTS Hub

16.1 Administering user access level control

Purpose

The procedure below instructs how to add users to the *Nokia BTS_Admins* user group.

Before you start

Check that you have administrator's rights for the Windows operating system (OS). Administering user access level control is only possible with Windows operating system administrator rights.

Steps

1. **In the Windows OS, click Start → Settings → Control Panel → Administrative Tools → Computer Management → Local Users and Groups → Groups.**

2. **Double-click Nokia BTS_Admins.**

   The **Properties** dialogue box opens.

3. **In the Properties dialogue box, click Add.**

   The **Select Users or Groups** dialogue box opens.

4. **Add users or user groups according to your needs.**

Tip

You can also create a domain user group called *Nokia BTS_Admins*. With domain groups, it is possible to manage the access rights by adding users to the domain group only.

5. **Click OK.**

16.2 Starting the node manager

Before you start

Nokia node managers have been installed in your computer.

Steps

1. **Start Windows.**
2. **Click Start, and then point to Programs → Nokia Applications.**
3. **Click the node manager.**

Expected outcome

When the node manager is started, an application window appears. The application window gives you access to all the other windows in the manager. No other windows are initially open.

The node manager application window has a toolbar that provides short-cuts to frequently needed menu commands. The window also has a status bar, which displays:

- connection parameters
- help information on the currently selected menu command
- COM-port that is currently connected
- if the application is running in file mode or connected mode

16.3 Using online help

Purpose

Nokia node managers feature comprehensive context-sensitive online help that provides help on all aspects of using the manager. Help is available at any time when you are using the manager.

Steps

1. Give the menu command Help → Help Topics.

Or

Press the **F1** button.

Or

Click the **Help** button of a dialogue box.

Expected outcome

The manager opens the **Help Topics** window.

The manager displays the context-sensitive help of the current dialogue box.

Further information

The context-sensitive help describes only the purpose and the layout of the dialogue box or window in question. If you want to find more information about the node manager functions, it can be viewed by clicking the **Help Topics** button and then selecting the **Contents** tab and double-clicking the topic.

2. Select a topic from the Contents or the Index.

Expected outcome

The selected topic is displayed.

Further information

The FXC unit-related online help is available from **Help → Transmission Unit Managers**. The help covers all the FXC units.

For further information on using online help in Microsoft Windows, refer to the Microsoft Windows user manuals.

16.4 Using the licence manager

Purpose

In the **Licence Manager** dialogue box you can maintain the software feature licences in the network element. You can, for example, view licence files in the network element and select files to be removed.

Note

The licensed features are modulation, accessed via the RRI settings, and the Flexbus capacity of the FlexiHopper (Plus) radio.

Note

Modification of data is possible only with Full Control. For more information, see *Enabling user access level control*.

Steps

1. **On the menu, select Configuration → Licences.**

   The **Licence Manager** dialogue box opens:

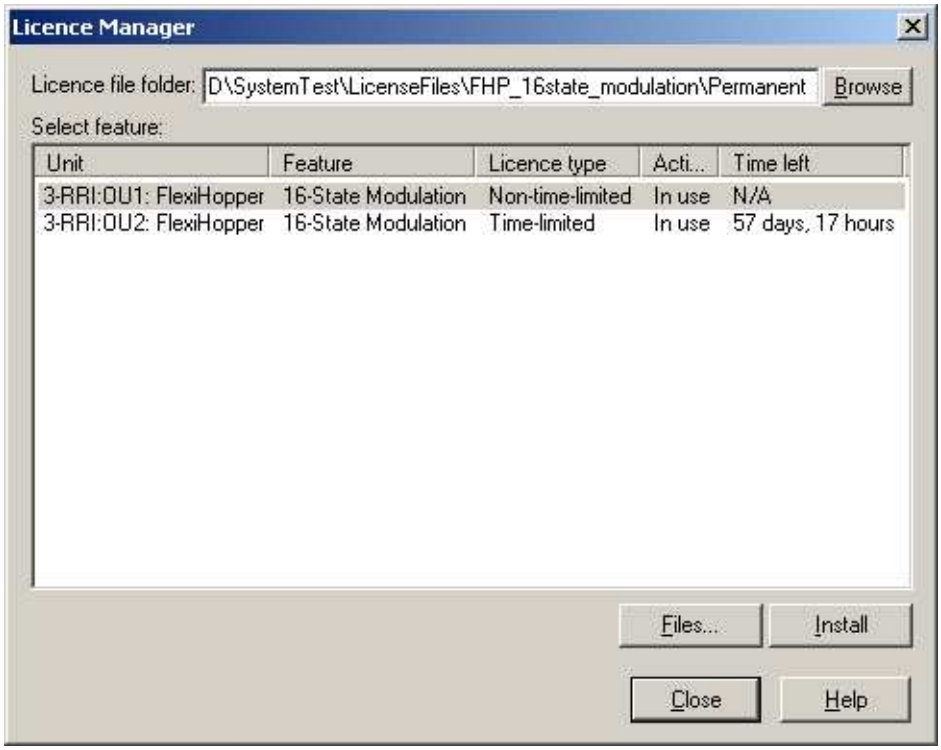


Figure 92. Licence Manager dialogue box

The dialogue box contains a list of all licence files in the previously selected unit. A list of features contained in the licence file is displayed for each licence file.

2. To install a licence:

Steps

a. Ensure that the licence file folder path is set to the correct location in the Licence file folder text field.

You can browse the files by clicking the **Browse** button next to the text field.

b. Click the feature to be installed.

c. Click the Install button to download the licence file to the network element.

3. To remove a licence:

Steps

a. In the Licence Manager dialogue box, click the Files button.

The **Delete licence files** dialogue box opens. You can view the currently installed licence files in the network element.

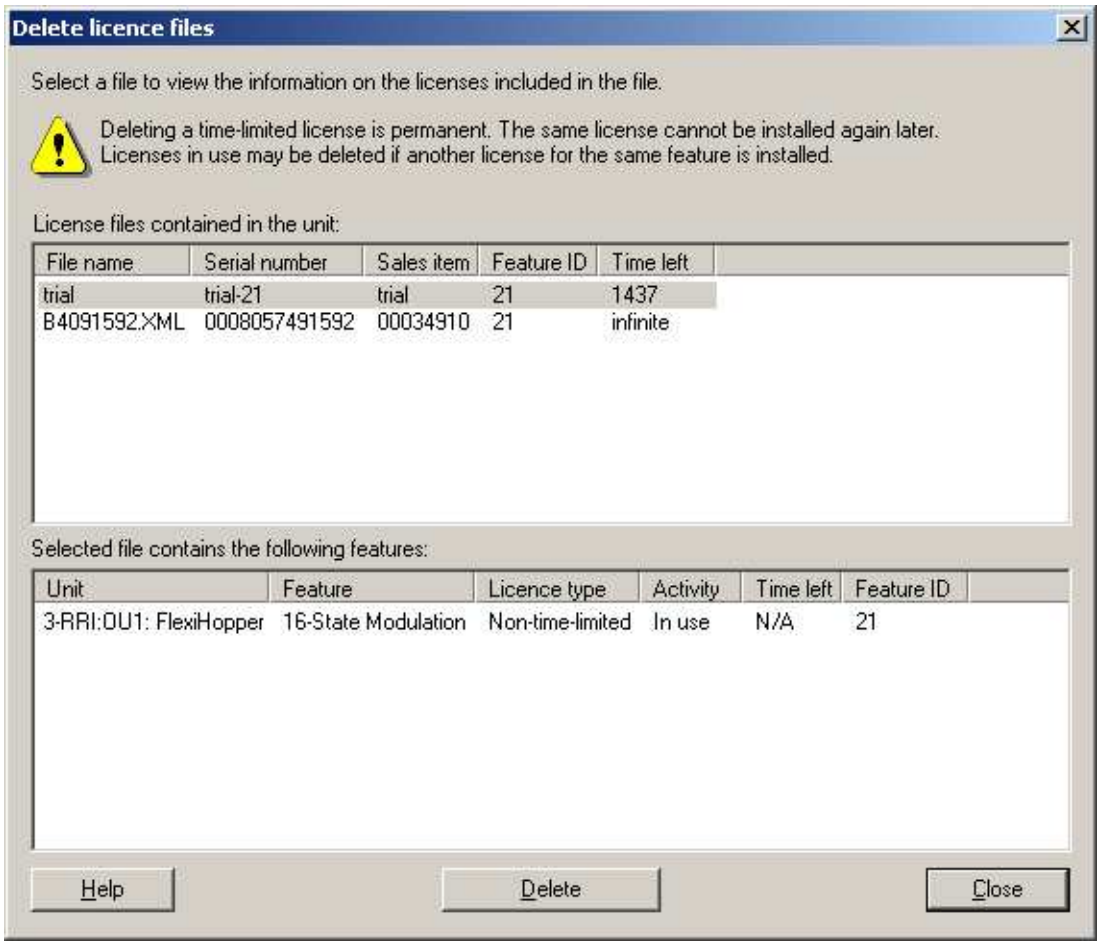


Figure 93. Delete licence files dialogue box

b. In the Delete licence files dialogue box, select the file to be removed.

c. Click Delete.

Expected outcome

A licence file is installed or removed.

16.5 Overview of connecting to the transmission node online

Purpose

Nokia MetroHub or UltraSite BTS Hub Manager offers two ways to work: online and offline. In the online mode you can manage an actual node and all changes are made directly to the node. The offline mode allows you to manage a virtual node.

Note

You cannot fully manage the node in the offline mode. For example, not all settings can be modified.

Before you start

Start Hub or MetroHub Manager. Select the node that you want to manage by establishing a connection to the FXC unit acting as the *node control unit*. This may be done in three alternative ways:

Steps

1. **Connect to the transmission node via LMP.**

   Or

   Connect to the transmission node via Q1 address.

   Or

   Connect by launching the HubManager from the NetAct Top Level User Interface.

   When launching the HubManager from the NetAct Top Level User Interface, the application connects to the network element using the connection parameters stored in the GCS database.

Further information

Accessing the node remotely via NMS

Security in Hub or MetroHub Manager is governed by the operating environment of the manager.

- Windows NT4.0 / Windows 2000

  When using an NMS system for remote management, the user must have the proper rights. To access a node manager, a user has to have the appropriate privileges in NetAct and Node Manager Server.

- Windows 95 and 98

  Hub and MetroHub Manager do not support NMS use in Windows 95 and 98.

16.6 Connecting to the transmission node via LMP

Before you start

Ensure that the LMP cable is connected.

Steps

1. **Select Connection → Connect Locally.**

Note

This menu command can only be used if the local management port is used.

Expected outcome

The manager connects to the *node control unit* (any FXC unit in slot 1) using the fixed LMP address 4080 (default port settings: COM1, speed: 9600; these settings can be changed in the **Local Connection** folder which is opened by selecting **Tools → Options...**).

When the connection to the node has been established, the **Equipment** window opens automatically.

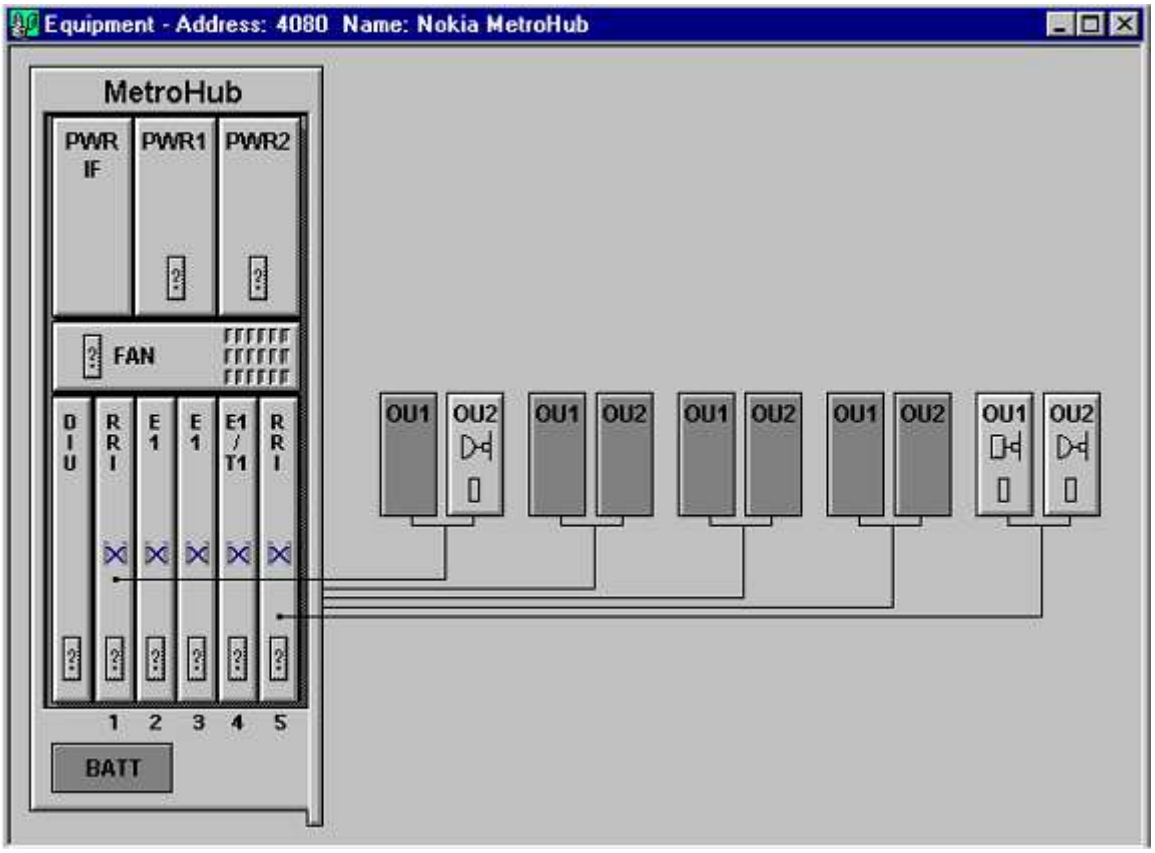


Figure 94. MetroHub or UltraSite BTS Hub Manager Equipment window (Connected to node)

The window presents a schematic overview of the node. You can select a unit by clicking it. When an FXC unit or an outdoor unit is selected, a unit-specific menu appears on the menu bar, on the left side of the MetroHub or UltraSite BTS Hub Manager **Tools** menu. Outdoor units are managed through FXC RRI units.

Note

Closing the **Equipment** window causes the connection to the node or file to be lost.

The status of the units is indicated by means of colour coding.

Table 7. Colour codes indicating the status of units

Colour code	Status of unit
Dark grey	Empty slot
Diagonal stripes	Physically inserted, logically uninstalled
Light grey	Physically inserted, logically installed (=operational unit)
Dark grey with a light grey border; type of unit indicated	Physically removed, logically installed (=missing unit)
Light grey with a red border; type of unit indicated	Physically inserted, wrong unit logically installed (=mismatched unit)
Light grey with a blue border; type of unit indicated	*Software version mismatch*. The unit's software is not compatible with the master unit's software.

Non-FXC units have to be ‘installed’ in order to be operational. By default, the following units are in use: power supply unit (on the left), power interface panel, fan unit, and interface unit.

Further information

If several nodes are chained via LMPs, the connection must be established as described in *Connecting to the transmission node via Q1 address*.

For information on installing and uninstalling the units logically with the manager, see *Installing and uninstalling transmission units logically with the manager*.

16.7 Connecting to the transmission node via Q1 address

Purpose

The MetroHub or UltraSite BTS Hub node can also be accessed via the Nokia Connection Tool.

Steps

1. **Select Connection →Connection Tool...**

   The **Connect to Node** dialogue box opens.

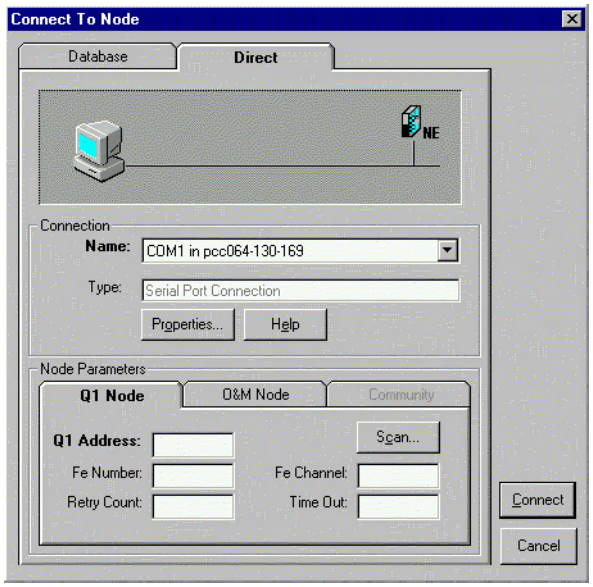


Figure 95. Nokia Connection Tool (Connect to Node dialogue box)

2. Define the needed parameters.

Or

Select a previously configured connection.

Further information

Detailed information on using the Nokia Connection Tool is available in *General Communication Service User's Manual*.

3. Fill in the LMP or Q1 address of the equipment to the Q1 Address field, depending on the connection used.

Further information

If the LMP is chained, a unique Q1 address must be selected for the LMP, and the connection to the node is established with the **Connection Tool...** option in the manager.

4. Click Connect.

16.8 Connecting to the transmission node offline

Purpose

The offline mode allows you to manage a virtual node. All the information is saved in a file in your computer and this file represents an image of a real node.

By using this feature, it is possible to create a template which may be used to commission numerous installations with similar configurations. You can also use this to make changes to an installation while at the office before going on-site.

Summary

You can connect to the node offline either by creating a new virtual node offline file or by opening an existing file. For instructions on how to create a new node file, see the MetroHub or UltraSite EDGE BTS documentation set.

Steps

1. To open an existing file

Steps

a. Select File → Open...

b. Select the file to be opened.

c. Click Open.

Further information

When in the offline mode, MetroHub or UltraSite BTS Hub Manager does not verify the entered configuration. The configuration is verified with the actual equipment when it is sent to the node. If the created configuration does not correspond to the actual installed equipment, a warning is displayed.

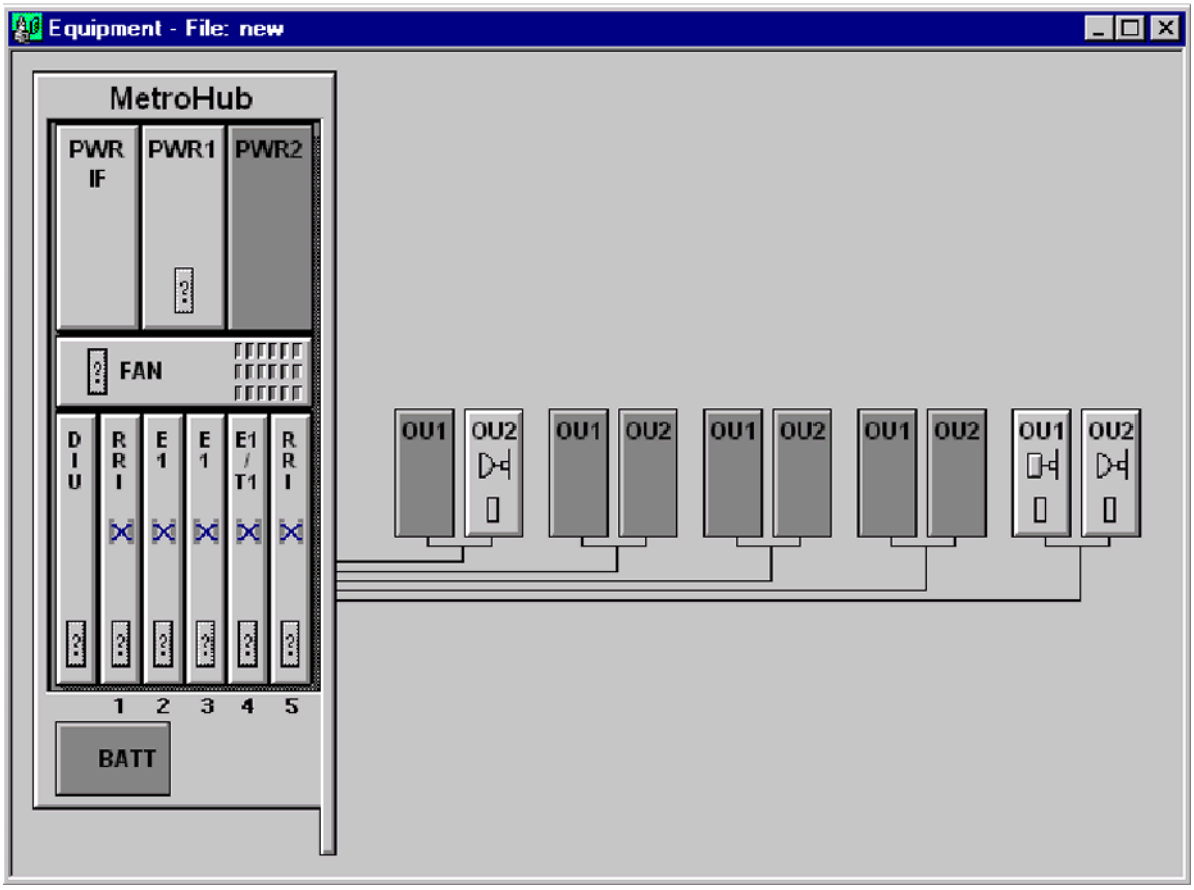


Figure 96. MetroHub or UltraSite BTS Hub Manager Equipment window (offline mode)

16.9 Resetting the transmission node or units

Purpose

Resetting a node is an exceptional situation in normal operation, but when the network is initially built, a situation may occur when resetting the node is necessary. Generally, there are two kinds of resets: one for the whole node and the other for a single transmission unit. All resets can be given using the node manager.

In the **Resets** dialogue box you can select the type of reset and the targeted units. The reset dialogue box is only accessible in the connected mode and factory settings are only allowed in LMP connections. Hardware resets are possible for all units.

The node settings are not unit-specific settings maintained by the master unit like the cross-connection settings. Factory reset restores the default factory settings but the connection speed for LMP remains unchanged. The factory reset is automated when you start the Commissioning Wizard or restore backup settings.

Steps

1. **Select Maintenance → Resets.**

   The **Resets** dialogue box opens.

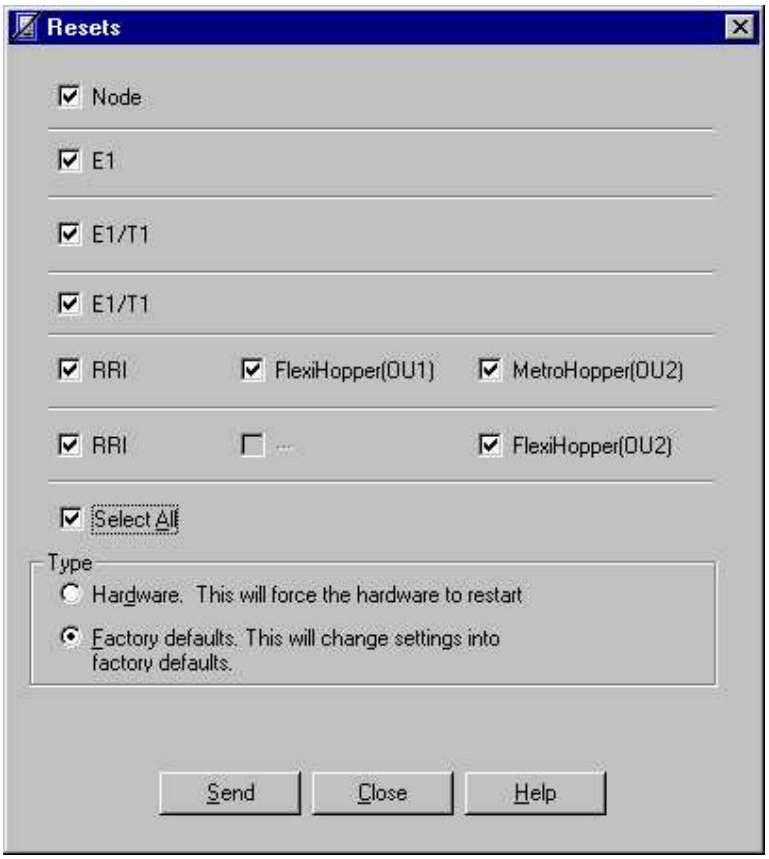


Figure 97. Resets dialogue box

Further information

In this dialogue box you can select which part of the UltraSite BTS Hub or MetroHub to reset. Selecting a unit resets the corresponding unit, and selecting the node resets the master unit of the node. When the command is sent to the node, UltraSite BTS Hub or MetroHub carries out the desired resets.

There are two different kinds of node resets:

- **Hardware**

  This reset equals hardware reset to a power off/on of transmission units. The traffic is cut and all settings remain unaffected. In case of a hardware reset to the node, the selection is disabled because a reset is always executed for each unit.

- **Factory defaults**

  This reset restores the node to its original settings. For a node selection, all node settings (cross-connections, synchronisation, EOC and so on) are deleted. If a unit is selected, the unit settings are deleted. After the settings have been deleted, the corresponding unit is reset and the default settings are taken into use. There are, however, few settings that are not reset, these are:

  - connection speed for the LMP port
  - node and unit identification settings
  - Flexbus power and capacity settings

2. **Select the units to be reset.**

3. **Click Send.**

Expected outcome

If you select all units, the resets are executed in the following order:

1. Reset of the outdoor units.
2. Reset of the FXC units.
3. Waiting for the master unit to recover.
4. Reset of the node.
5. Waiting for the node to recover.
6. The initial value for LMP speed is restored.

16.10 Saving node information in a file

Purpose

Node information can be saved in a file for later use both online and offline.

The file can be used in commissioning the node.

Before you start

The **Equipment** view is open.

Steps

1. **Select File → Save... or Save As...**

   The manager opens the **Save Node Settings** dialogue box.

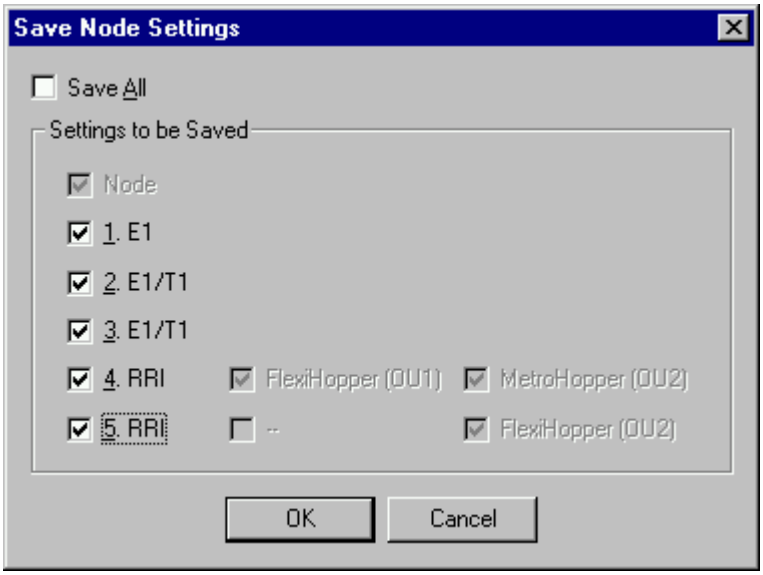


Figure 98. Save Node Settings dialogue box

2. **Select either Select all or select the individual units that you want the settings to be saved for.**

Note

Node settings are always saved.

When a particular RRI is selected, all OUs connected to it are automatically selected (and cannot be unselected). Thus, the settings of the OUs are automatically saved along with those of the corresponding FXC RRI.

3. **Click OK.**

   The manager opens the **Save As** dialogue box.

4. **Give the file a name and select a file type.**

5. *If* you want to edit the file header

   Then

   Click the Edit button to access the File Header Edit dialogue box, then edit the header.

   Click the **Edit** button to access the **File Header Edit** dialogue box. Edit the header as follows:

   - Adjust the **Date** if necessary, from the pull-down menu, or click **<- Now** to enter the current date.
   - Fill in the **User Name** and **User Comment** fields, if required.

   Once you have edited the header, click **OK** to the return to the **Save As** dialogue box.

6. **Click Save.**

   Expected outcome

   The file is saved.

Further information

Changes to alarm properties are not saved with the node file.

When you save node information, FXC STM-1 unit settings and FXC RRI unit settings are also saved automatically (if those units are present). This is because node parameters are also distributed over these units, and those parameters must be available for backup or commissioning purposes.

UltraSite BTS Hub or MetroHub supports two site configuration file formats, .nod (for node offline file) and .xml. It is also possible to read older node files with the extension .dat.

16.11 Restoring backup settings from a file

Purpose

It is possible to save node and unit settings into a backup file (both extensions .xml and .nod), see *Saving node information in a file*. The backup file can be used in restoring backup settings of the node or the units.

Before you start

To be able to restore backup settings, the user must have a backup file. It is recommended to make a backup file (in .nod format) after a node has been commissioned and it has been verified that it functions as planned.

Note

Previously the backup file has been saved in .dat format. A file in .dat format can still be used, but all new backup files as well as old .dat files that have been modified are saved in the .nod format.

The backup dialogue box is only accessible in the connected mode.

Note

Before restoring the settings at the node level, the node must be in the factory defaults state. If it is not, the factory settings are restored automatically.

Steps

1. **Select Maintenance → Restore Backup Settings.**

   The **Restore Backup Settings** dialogue box opens.

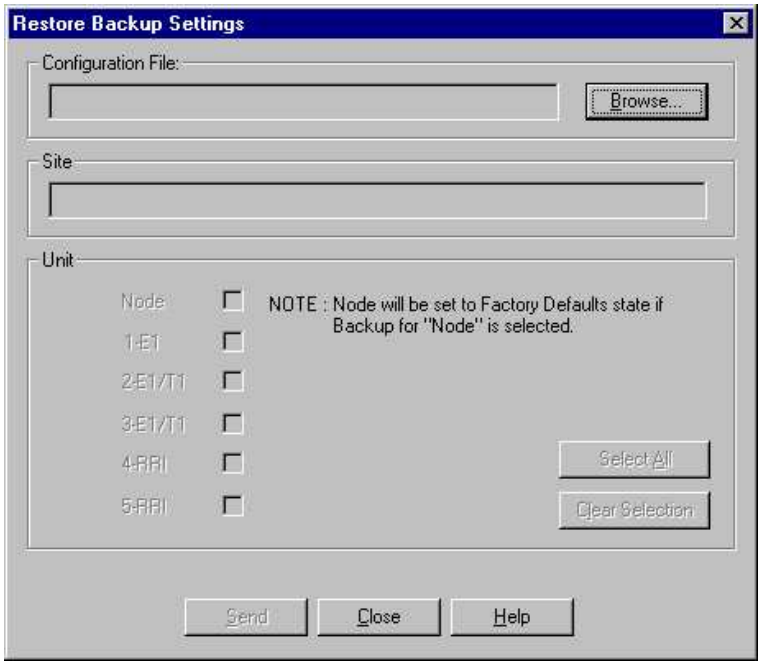


Figure 99. Restore Backup Settings dialogue box

2. Click Browse...

The manager opens the standard Windows open file dialogue box.

3. Browse to the file, select it and click Open.

The file is opened in the backup dialogue box, and the manager type and unit configuration is checked.

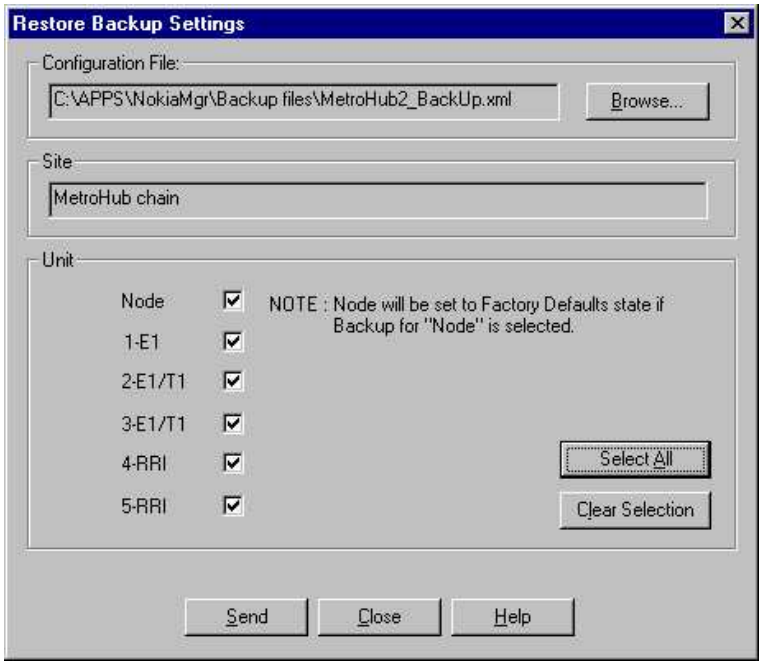


Figure 100. Restore Backup Settings dialogue box

If the file contains correct data for the unit, the settings can be sent to the selected units.

If the file contains data that does not match to the configuration of the node, the manager gives a note and the user has to select a file containing the right configuration.

4. Select the units that you want to send the file to.

5. Click Send.

Expected outcome

The manager sends the settings to the selected units. During sending, the manager displays a progress dialogue box. When the settings have been sent, the dialogue box is closed.

Further information

When you restore node settings from a backup file, FXC STM-1 unit settings and FXC RRI unit settings are also restored automatically (if those units are present). This is because node parameters are also distributed over these units.

16.12 Creating a configuration report

Summary

The configuration report contains all the configuration information of the connected Nokia MetroHub or BTS transmission Hub.

Steps

1. **Select Tools → Reports → Configuration Report.**

   The **Configuration Report** window opens.

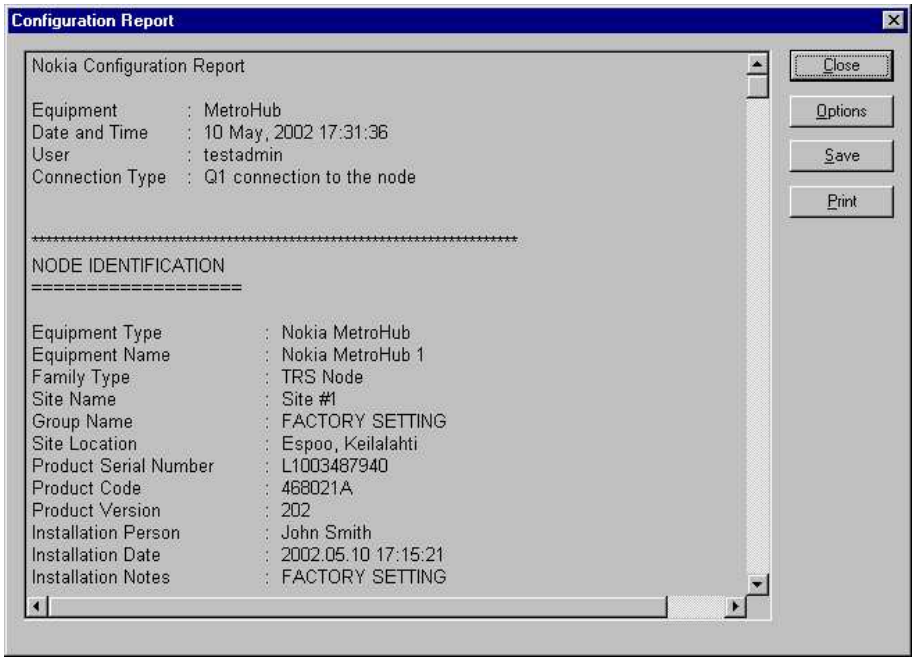


Figure 101. Configuration report

   The configuration report contains all the configuration information of the connected Nokia MetroHub or BTS transmission Hub. You can also modify the contents of the configuration report.

2. Modify the contents of the configuration report.

Steps

   a. **Click the Options button.**

The **Configuration Report Options** dialogue box opens.

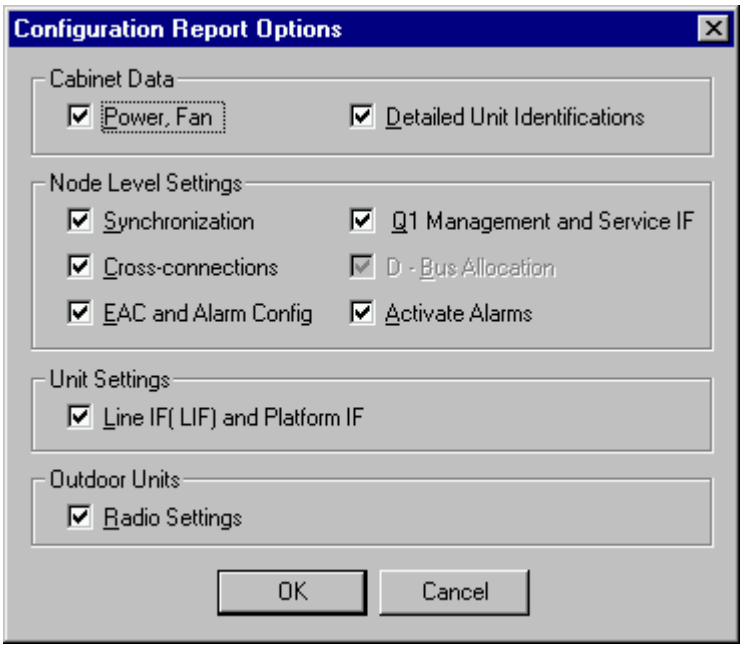


Figure 102. Configuration Report Options dialogue box

b. Select what to include in the report.

Further information

The following options exist:

- Power, Fan. When selected, the information on the power and fan units are included in the report.
- Detailed Unit Identification. When selected, the hardware/ software configuration part of the report contains information on the hardware and software versions.
- Synchronisation. When selected, information about node synchronisation is included.
- Q1 Management and Service IF. When selected, the report includes information on Q1 management and service interface of the node.
- Cross-connections. When selected, the report includes information on cross-connections.
- D-bus allocation. When selected, the report includes information on D-bus allocation. (Valid only in Nokia UltraSite BTS Hub Manager.)

- EAC and Alarm Config. When selected, the report includes information on EACs and alarm configuration.
- Include Alarms in Report. When selected, the report includes information on active alarms.
- Line IF (LIF) and Platform IF (PIF). When selected, the report includes information on LIF and PIF.
- Radio Settings. When selected, the report includes information on outdoor units (radios) of the FXC RRI units.

Note

These selections are not saved when you close the **Configuration Report** dialogue box.

c. Click OK.

3. Click Save to open the Save As dialogue box.

Note

If you have not entered the **Site Name** in the **Hardware Identifications** dialogue box (**Node Identifications** tab), the **Node Identifications** tab will appear. Enter the **Site Name** and click **OK**.

4. Save the .cnr file to a suitable location.

Expected outcome

The configuration report is saved as a text file with the extension .cnr and has to be opened with a text editor.

16.13 Printing information

Summary

You can print information from **Equipment**, **Cross-connections** and **Alarm** windows.

Steps

1. **Open the window which you want to print information from.**
2. **Select File → Print.**
3. **Adjust the settings in the Print dialogue box as required.**
4. **Click OK to print.**

17 Configuring the BTS for manual commissioning

17.1 Creating a new hardware configuration

Summary

The hardware configuration is defined with the BTS HW Configurator.

The quickest way to create a new BTS HW configuration is to run the Wizard (*Configuration* | *Wizard*). The Wizard takes you through the task sequence in the correct order and provides instructions for each task. Additional information is available through the *Help* button.

If there is not a predefined hardware configuration file available for the BTS, you can create the configuration with the *Create New Configuration* option in the Wizard. Creating a new configuration with the Wizard does not require a BTS connection, so you can create the configuration in advance and save it as an .hwc file.

The *Passive Units* view in the BTS HW Configurator allows you to enter information concerning all units that are not autodetected. This information includes part and serial numbers. This information is not required during commissioning and is not needed to get the BTS operating. It is possible to enter and update this information any time before, during, and after commissioning.

You can enter passive unit information with the BTS HW Configurator offline and online. You can also use a barcode reader to scan the part and serial numbers off of stickers on the units. The software recognizes the part number and identifies the unit type. One problem is that using a barcode reader with the PC requires the use of one serial port, and many laptop computers have only one serial port. In this case, you must use the BTS HW Configurator offline to scan the part and serial numbers. Once this is completed and the information is saved to a file, the hardware information file (.hwi) can be downloaded to the BTS.

Note

If you change the hardware configuration in any way after the BTS commissioning has been finished, you will have to perform a BCF reset to activate the changes.

Steps

1. **Open the BTS HW Configurator.**

   Select *Nokia BTS HW Configurator* from the *Nokia Applications* submenu in the **Start | Programs** menu in Windows.

2. **Start the HW Configurator Wizard.**

   Select the *Wizard* command on the *Configuration* menu.

3. **Set up the new configuration.**

a. Select the *Create New Configuration* option from the *Configuration Wizard* window and click *Next*.

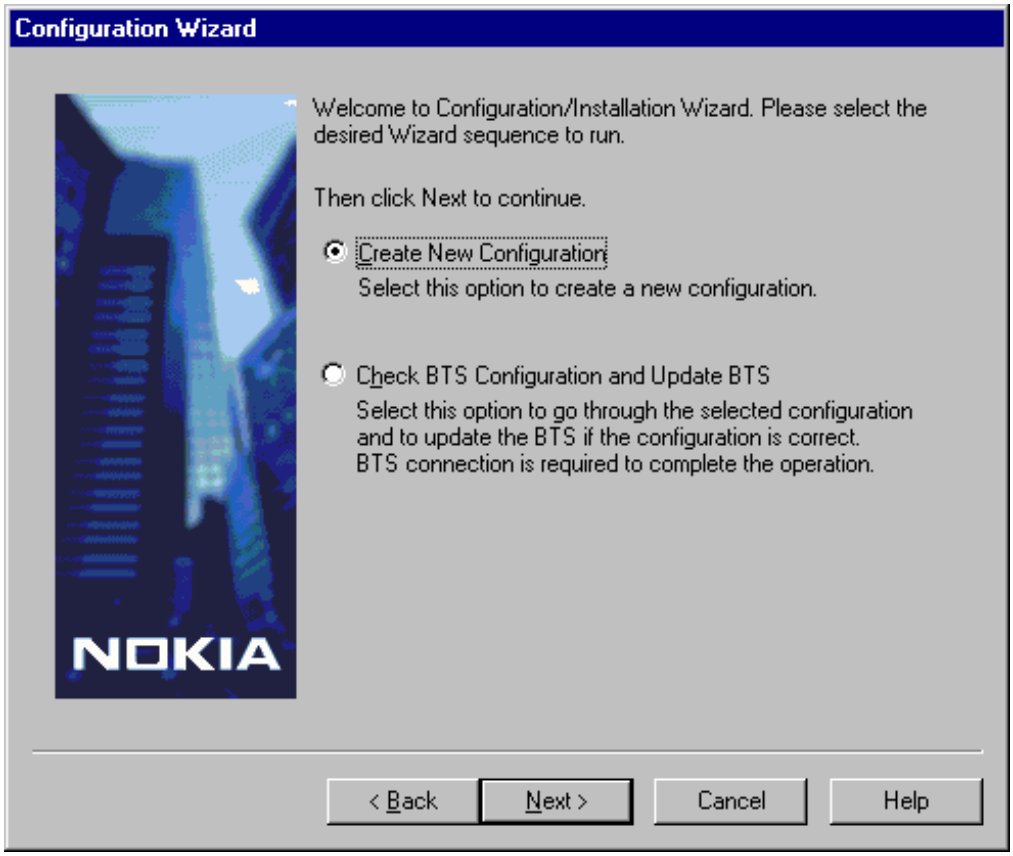


Figure 103. New Configuration Wizard welcome page

b. Select *<New>* from the *Sector Configuration* window list and common network type from the drop-down list.

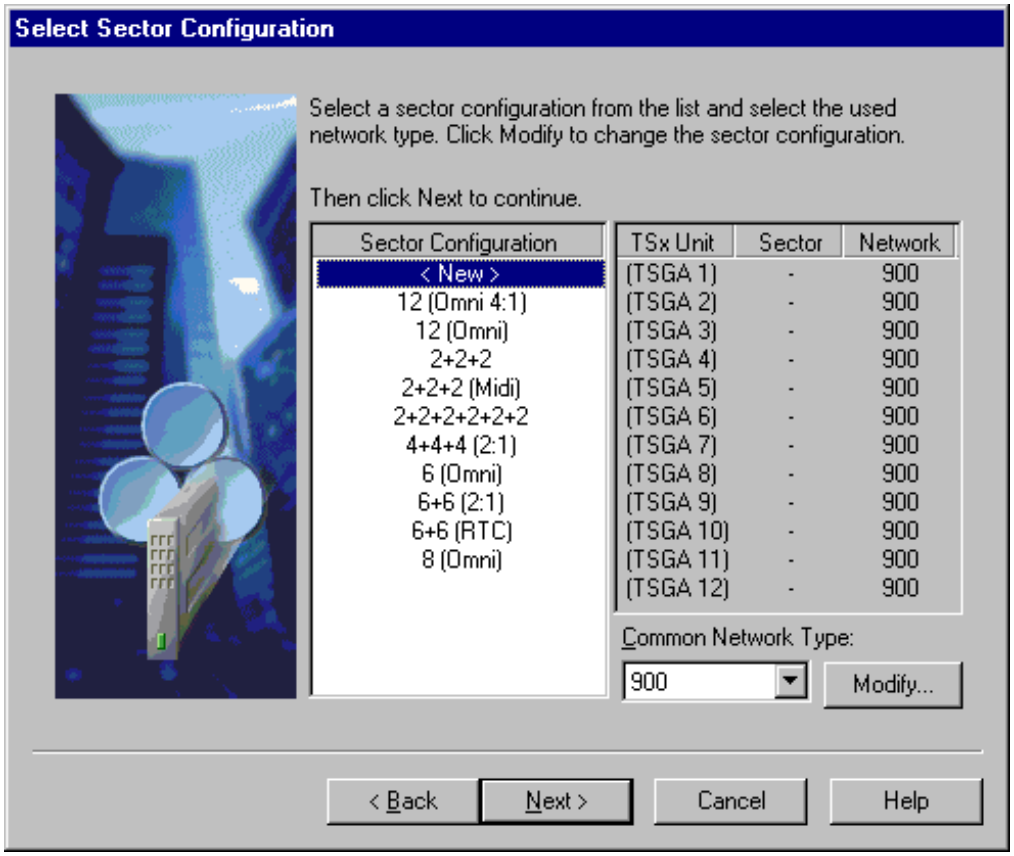


Figure 104. Sector Configuration

c. If you want to change the network type of individual TSx units, click *Modify*.

Or

Alternatively, you can select one of the predefined configurations from the Modify Sector and Network list to be modified further.

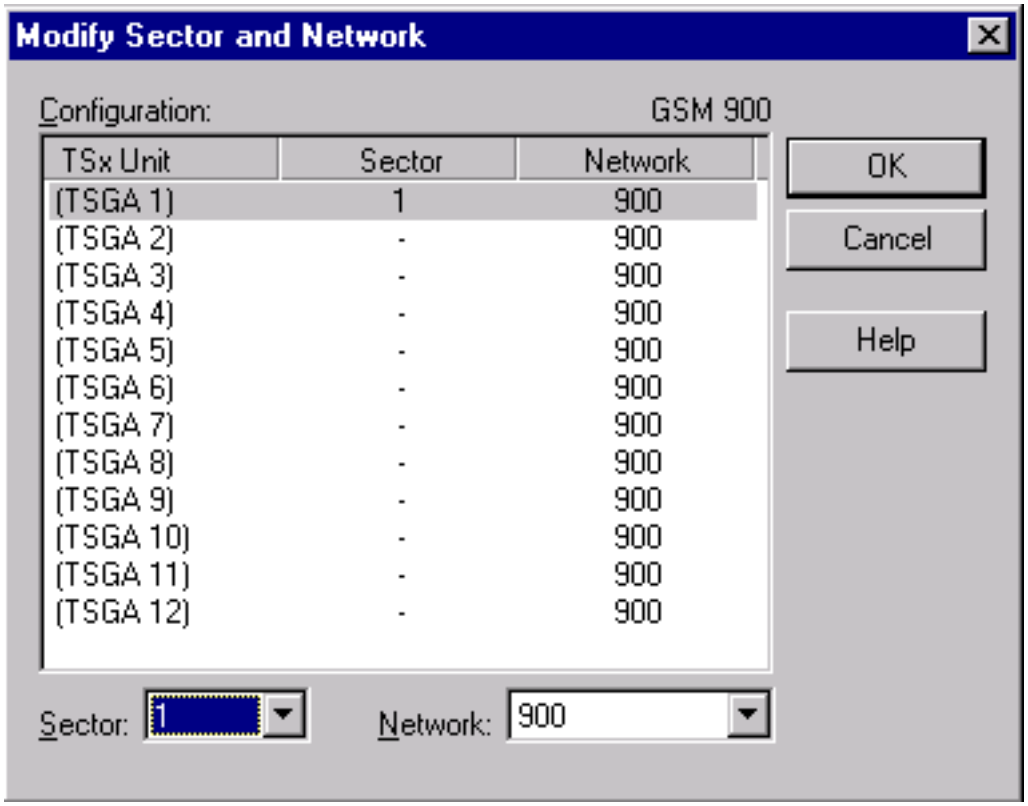


Figure 105. Modify Sector and Network configuration dialog box

4. Define the TSx configuration on the *Define TSx Configuration* window.

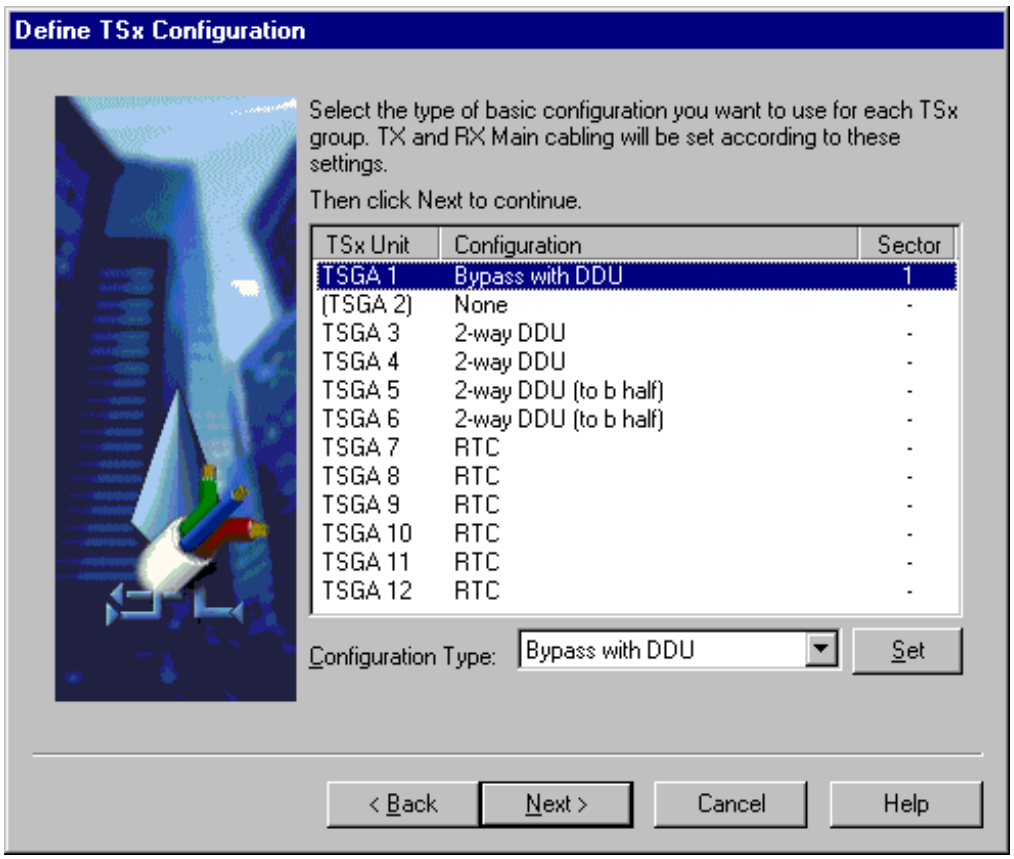


Figure 106. Define TSx Configuration

a. Select the TSx unit from the *Define TSx Configuration* window list.

b. Select the basic configuration for the selected TSx unit from the *Configuration Type* drop-down list.

Note

Select from the following configuration types:

- *Bypass with DDU* stands for one TSx unit connecting to a DDU half.
- *2-way DDU* stands for two TSx units connecting to a DDU half.

- *4-way DDU* stands for four TSx units connecting to a DDU half.
- *RTC* stands for six TSx units RTC.

c. Click *Set* for each TSx unit selected.

d. Click *Next*.

5. Define RX diversity for each TSx unit on the *Define RX Diversity Cabling* window.

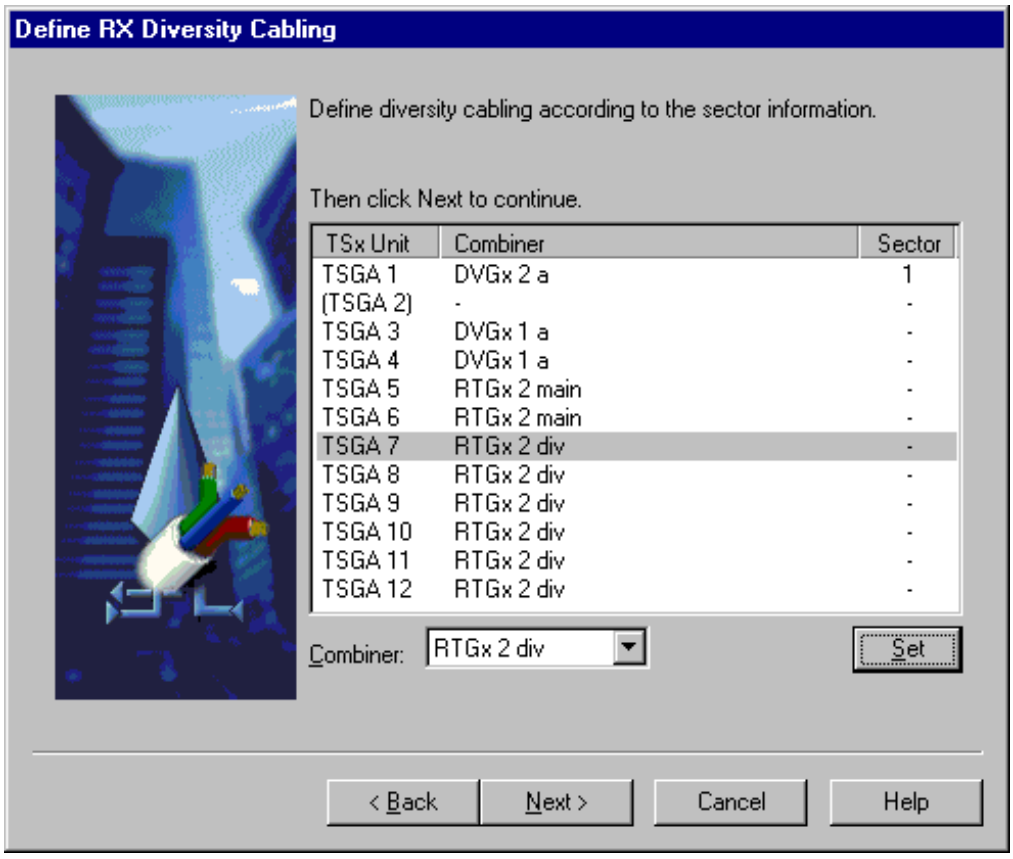


Figure 107. RX Diversity Cabling

a. Select the TSx unit from the *Define RX Diversity Cabling* window list.

b. Select the combiner unit for the selected TSx unit from the drop-down list.

c. Click *Set* to update the defined cabling configuration.

d. Click *Next*.

6. Define antenna settings in the *Define Antenna Settings* window.

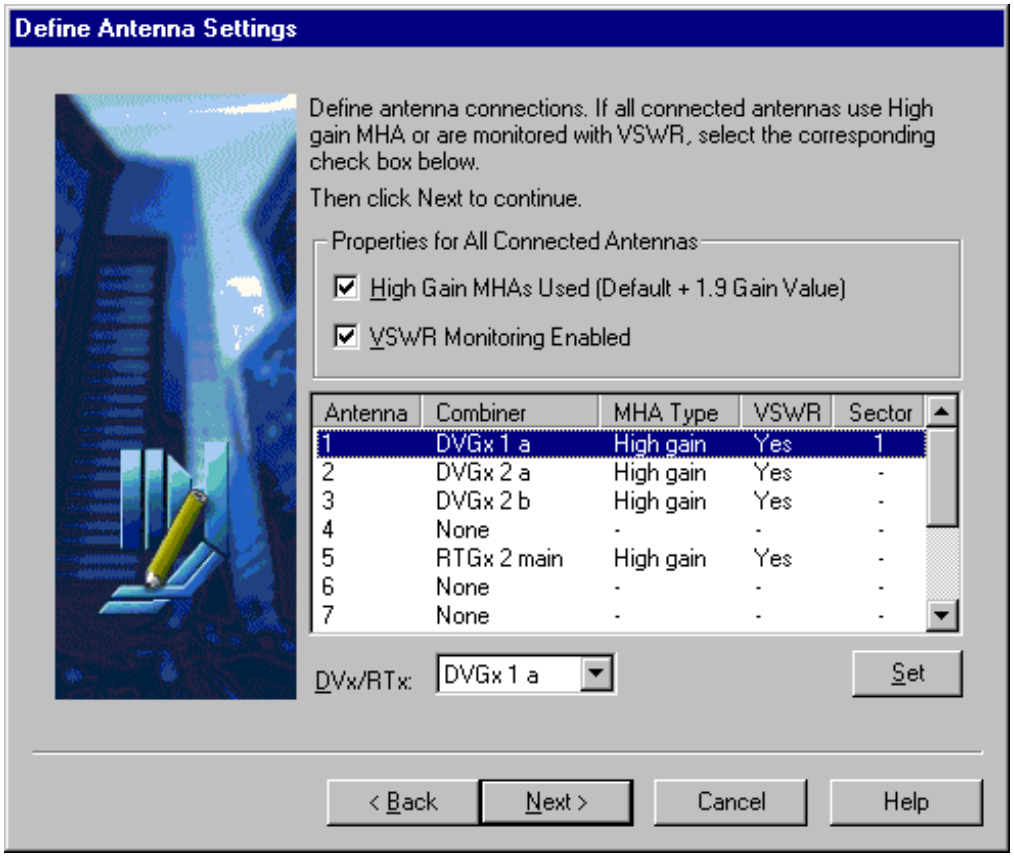


Figure 108. Antenna Settings

a. If all antennas use high-gain MHAs and/or VSWR monitoring, select the corresponding options in the *Properties for All Connected Antennas* group box of the *Define Antenna Settings* window.

Note

All UltraSite-specific MHA (MNxx) units are high-gain type. All other MHA units are low-gain type.

---

b. Select an antenna in the *Antennas* list.

c. Select a unit for the selected antenna from the *DVx/RTx* list.

d. Click *Set* to update the defined antenna information to the configuration.

e. Click *Next*.

7. Verify report on *Report of New Configuration* window and exit Wizard.

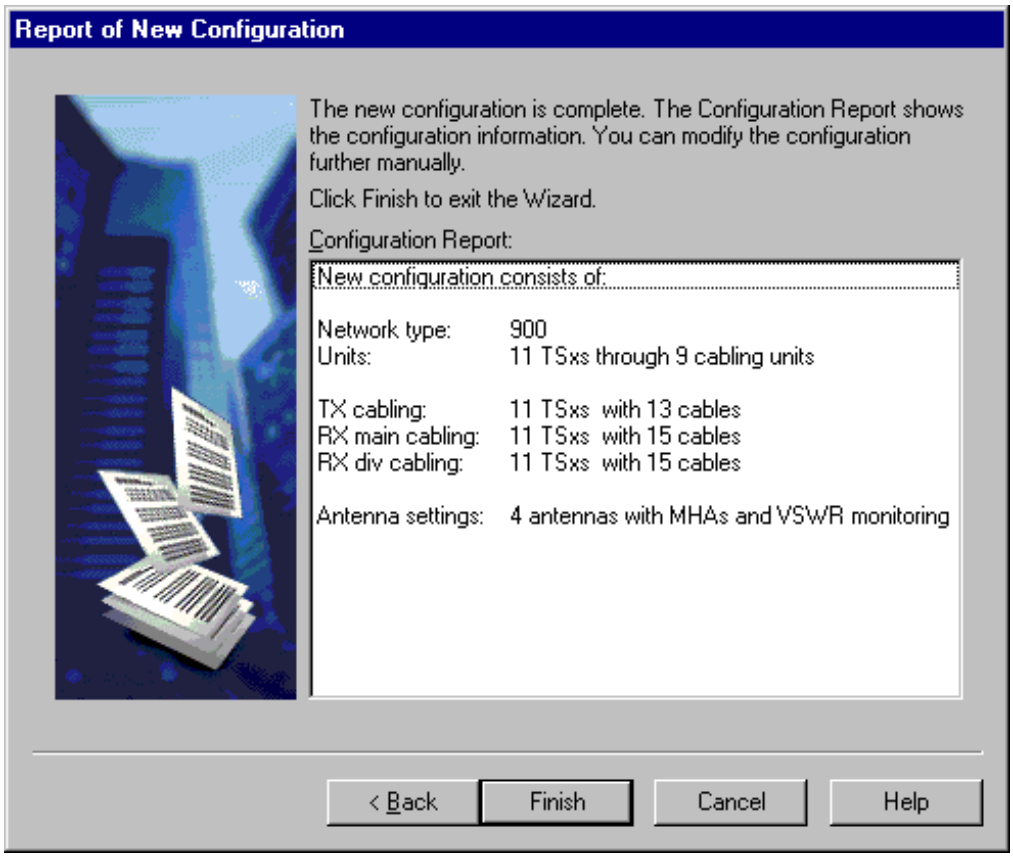


Figure 109. New configuration report

Verify the new configuration report and click *Finish* to exit the Wizard.

You can modify the configuration manually through the Properties pages after the Wizard is closed.

8. Save the new configuration.

Save the new configuration to the hard drive by selecting *Save* from the *File* menu.

Note

Before saving the new configuration to a file, you can manually make changes to the unit properties, if necessary.

Or

Alternatively, send the configuration information to the BTS from the *BTS* menu using the *Send BTS Configuration* command.

9. **Proceed to the *Overview of using Hub Manager of Site Wizard.***

17.2 Using an existing hardware configuration

Before you start

This procedure requires a predefined hardware configuration file (with file name extension .hwc). For more information, see *Creating a new hardware configuration*.

Note

Creating a new configuration with the Wizard requires no BTS connection, so you can create the configuration in advance and save it as an .hwc file. A BTS hardware configuration file (Basic Configs.hwc) with basic BTS configurations is delivered with Nokia BTS HW Configurator. You can use the configurations as such, if possible, or you can modify them to suit your purposes.

Summary

Hardware configuration information is defined with BTS HW Configurator.

Steps

1. **Open the BTS HW Configurator.**

   Select *Nokia BTS HW Configurator* from the *Nokia Applications* submenu in the *Start* | *Programs* menu in Windows.

2. **Start the HW Configurator Wizard.**

Select the *Wizard* command in the *Configuration* menu.

3. **Retrieve the desired HW configuration.**

   a. Select the *Check BTS Configuration and Update BTS* option from the *Wizard Welcome* window.

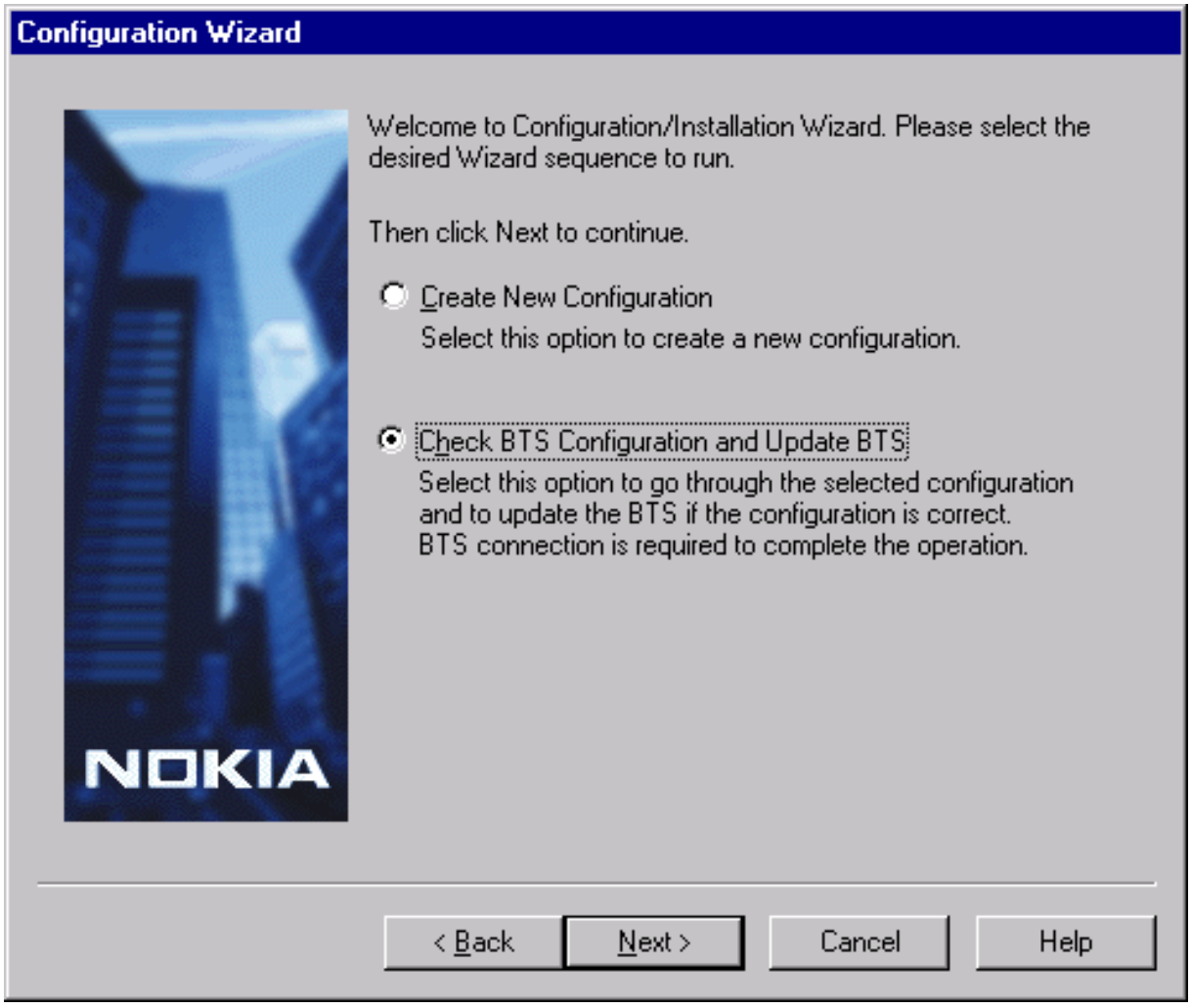


Figure 110. Wizard welcome page

The Wizard automatically displays the BTS HW configuration file that was used last.

b. Select the BTS to be configured in the *Select Configuration* window.

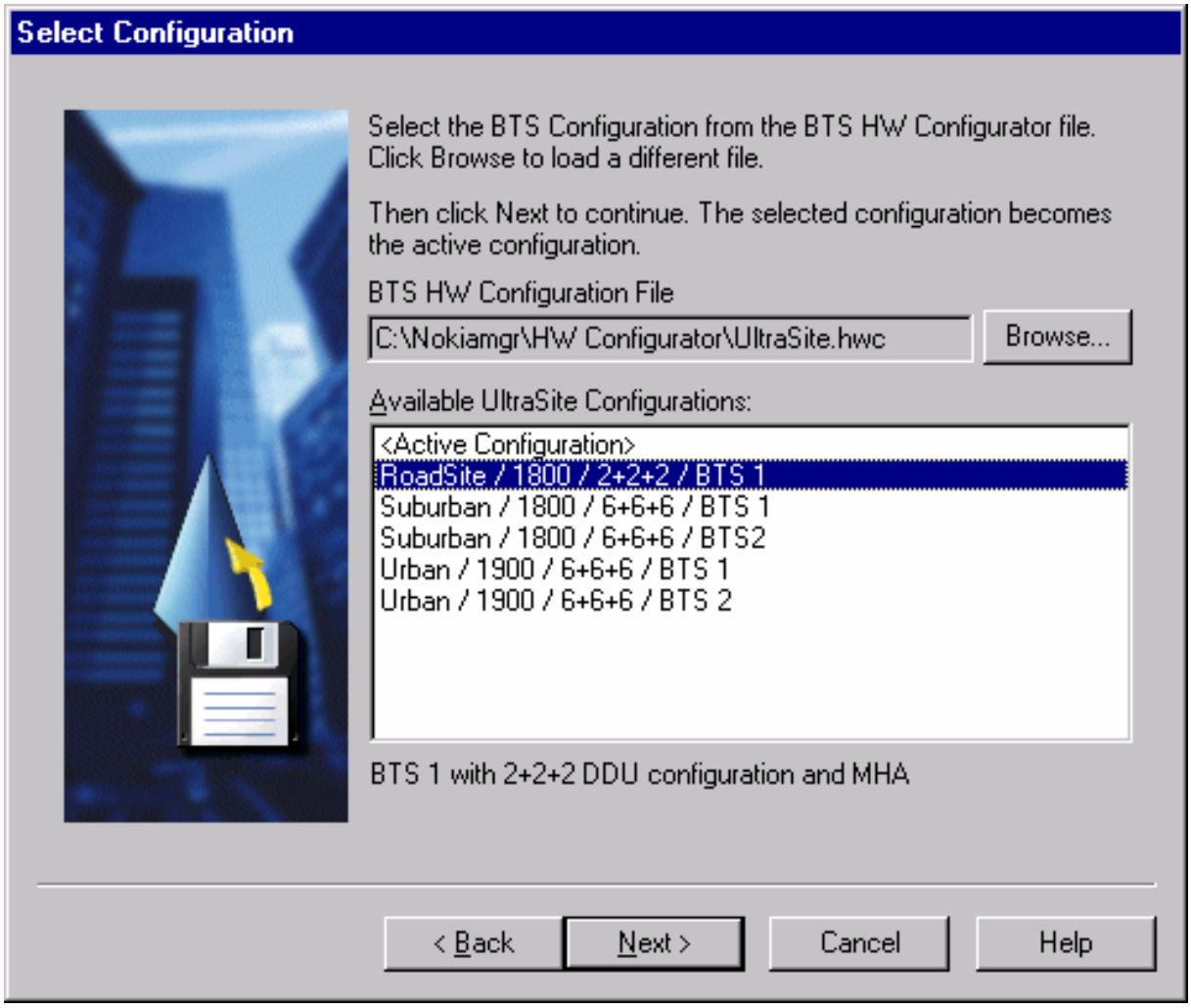


Figure 111. Select Configuration

c. Click *Next.*

4. *If* the configuration you want is not in the list,

   Then

   Locate the appropriate configuration file.

a. Click *Browse* to load the appropriate .hwc file.
b. Click *Next*.
c. If the BTS connection is not enabled, the BTS HW Configurator asks if you want to activate it.

Note

The BTS connection requires that the LMP cable is connected from the PC to the BTS. For more information, see *Connecting LMP cable for commissioning*.

5. Ensure that the configuration information is correct on the *BTS Connection* window.

The *BTS Connection Status* list displays information about the BTS connection and the state of the BCF.

Click *Next* when the BCF is in the correct state.

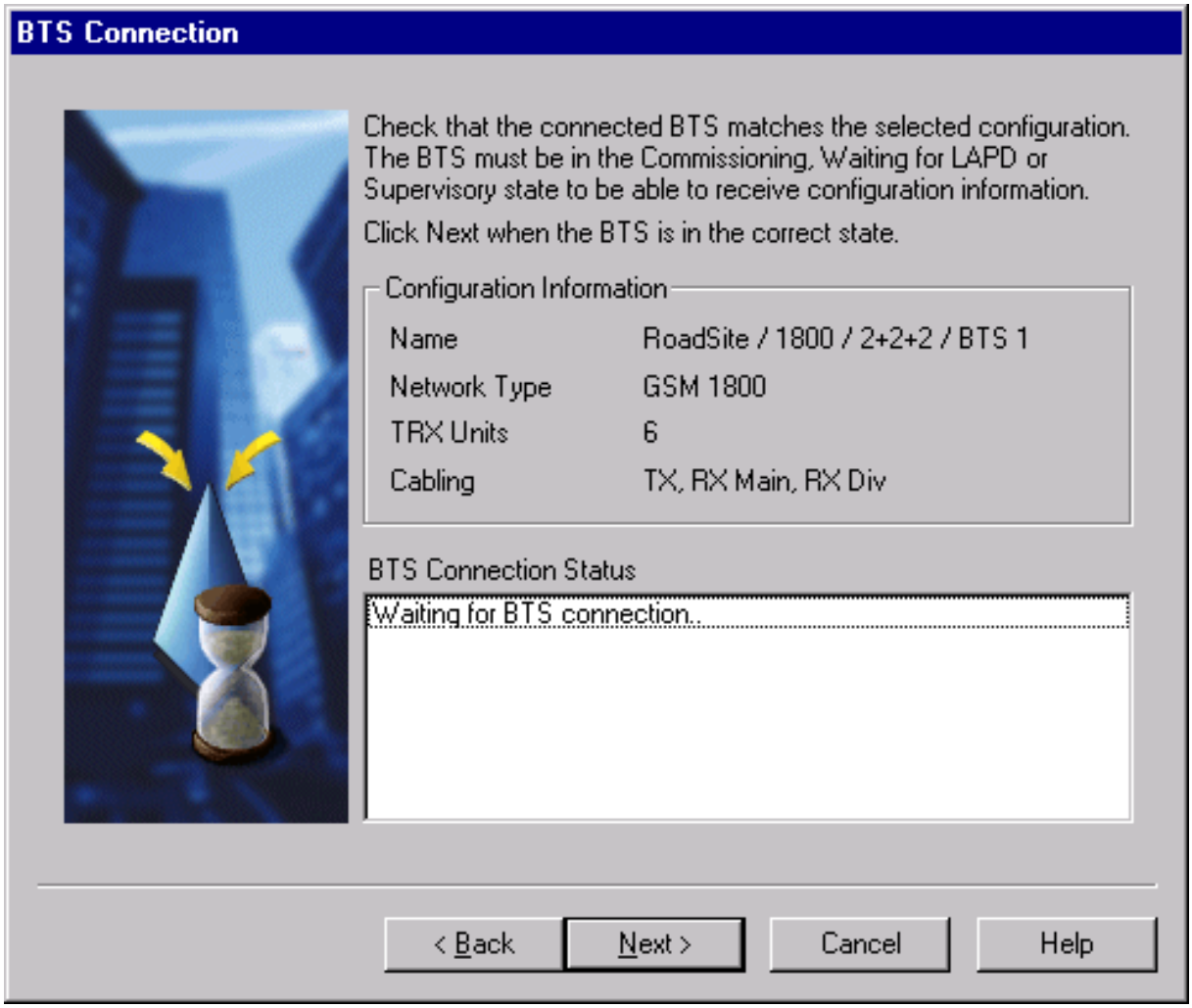


Figure 112. BTS Connection

6. Verify other associated information in the *Cabinet Information* window.

You can view information concerning the BTS cabinet type, clock synchronisation, and Line Terminal Equipment (LTEs) in the Site Support cabinet.

When finished, click *Next*.

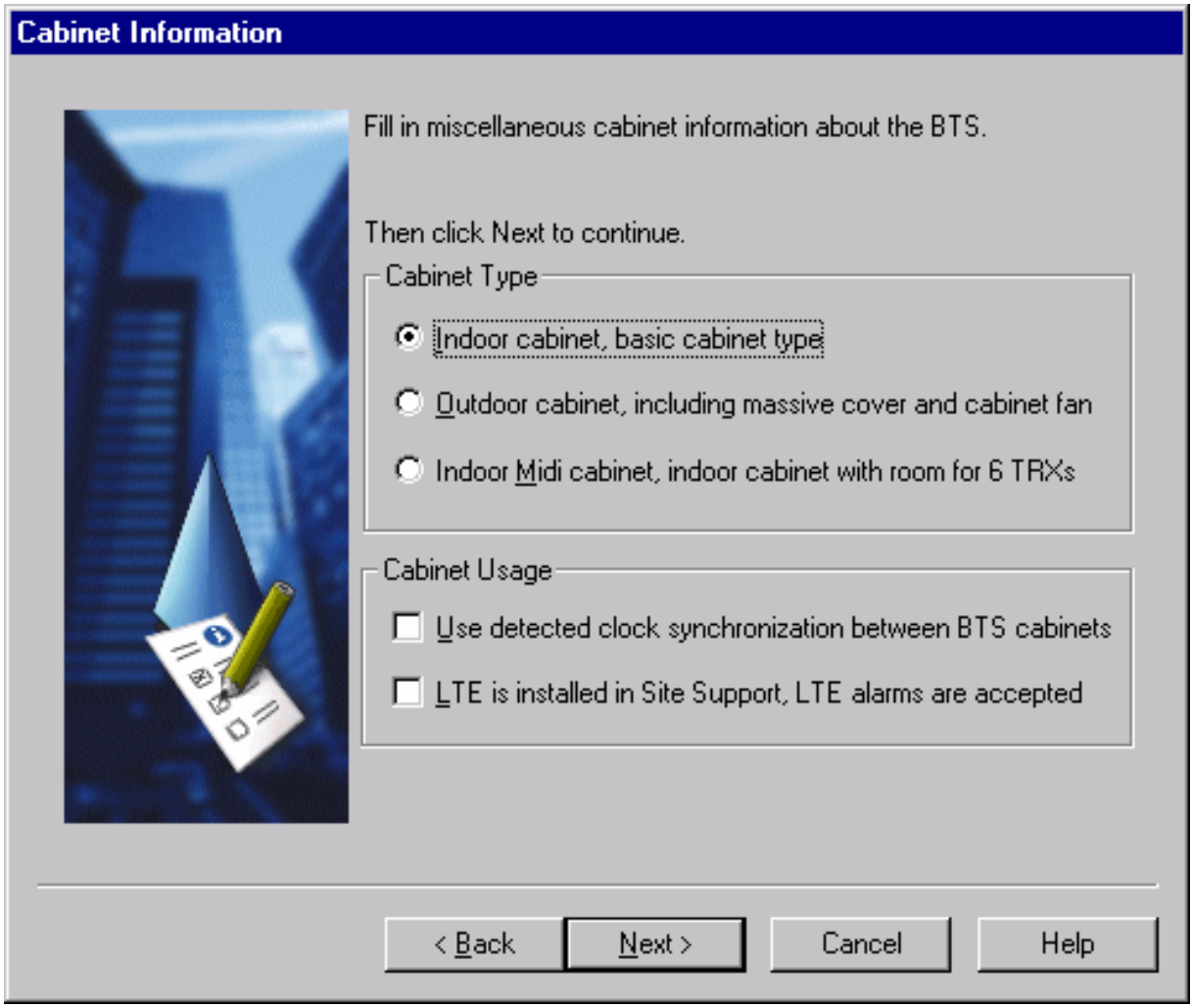


Figure 113. Cabinet Information

7. Verify cross-connections on the *BB2-TSx Cross-connections* window.

Verify the BB2 cross-connection to the TSxx units.

When finished, click *Next.*

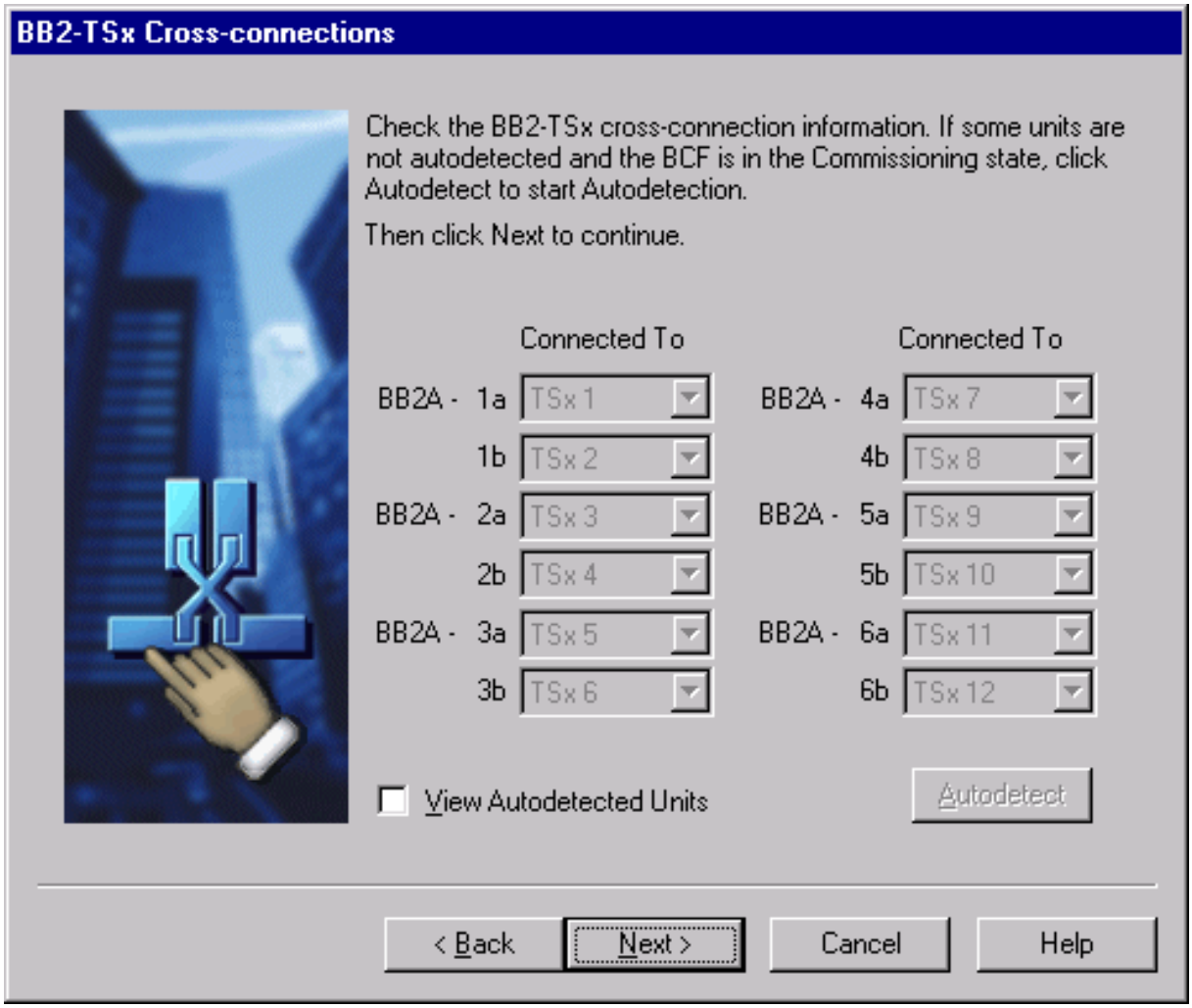


Figure 114. BB2 connections

Note

If there are units that have not been detected automatically, click *Autodetect*. The BCF must be in the *BCF Commissioning* state. You can select the *View Autodetected Units* option to see the autodetected units in the *Graphical* view in BTS HW Configurator.

Note

- BSS 9 - All BSS 9 features can be used with the CX3.0/3.3 SW releases and the current SW release PU1.0-3 with the cross-connection functionality in case existing equipment has not been configured to use default connections. However, Nokia recommends that sites are reconfigured so that the cross-connection functionality is not used, especially if technical problems occur.
- BSS 10/10.5 - The cross-connection functionality is not supported in CX3.0/3.3 SW releases when the new BSS10/10.5 features are used. To use these features, you must reconfigure the sites to use default connections.
- BSS 11 - The cross-connection functionality will be permanently removed in the CX4.0 SW release.

Note

If a TSx unit does not exist in the configuration, the unit will be in brackets and greyed out.

8. Verify the TX, RX main, and RX diversity cable connections for TRX1 to TRX12 on the *Current Cabling* window.

Clicking a cabling option in the list displays the selected cabling in the *Graphical* view on the left. The *View Settings* group box specifies the appearance of the *Graphical* view enabling you to show/hide wideband and multicoupler units and non-active cabling.

When finished, click *Next*.

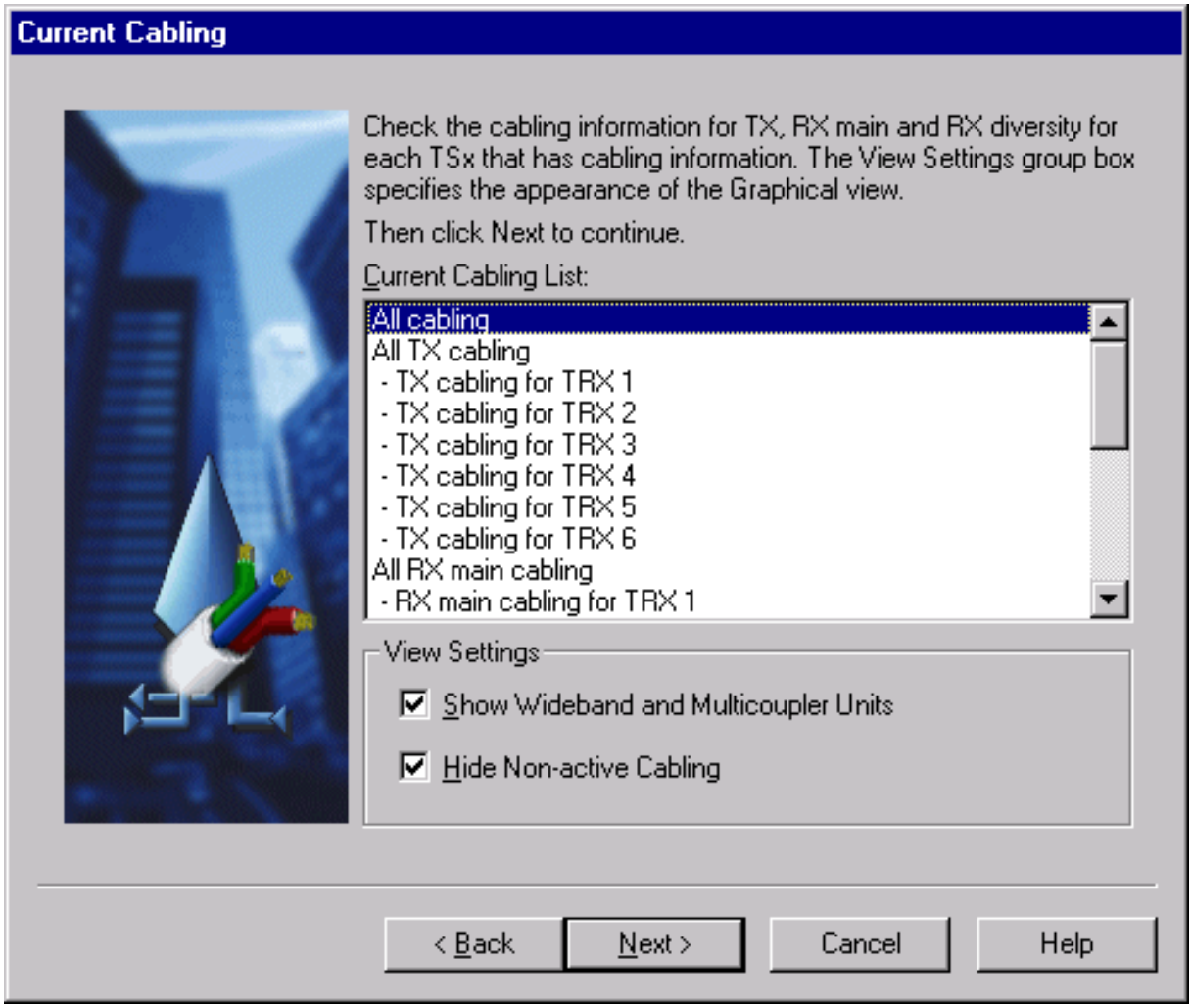


Figure 115. TSx Cable Connections

9. Verify antenna unit connections shown in the *Antenna Settings* window.

To enable VSWR monitoring for an antenna,

a. Select the antenna from the list.

b. Select the *VSWR Monitoring Enabled* option.

c. Click on an antenna in the list to display the corresponding antenna cable in the *Graphical* view.

d. If the MHA type is high gain, change attenuation values, if required.

Note

All UltraSite-specific MHA (MNxx) units are high-gain type. All other MHA units are low-gain type.

e. Click *Next*.

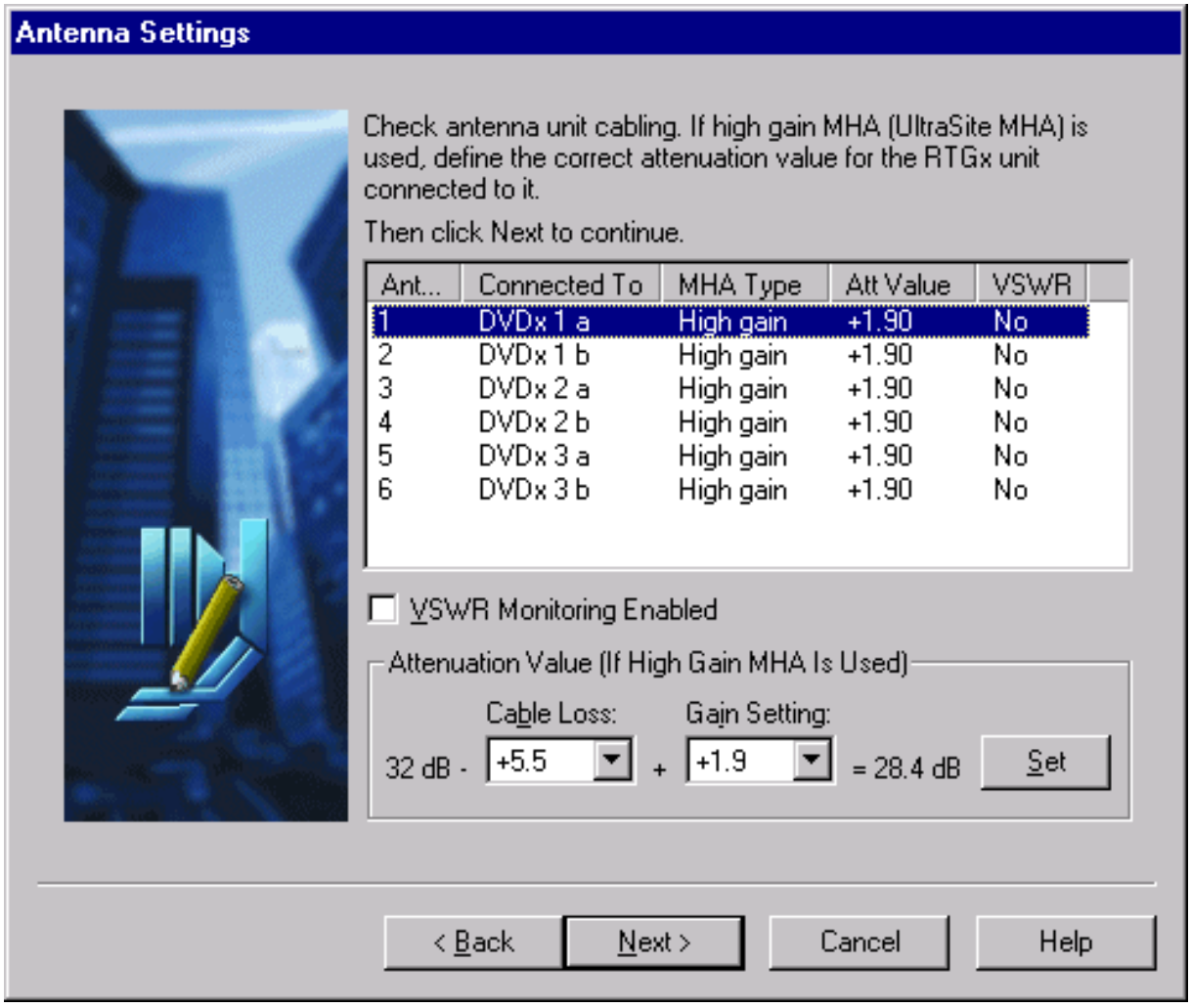


Figure 116. Antenna information

10. **Open a HW information file from the *Passive Units* window.**
    a. Click the desired folder to expand it and then click the required hardware unit.
    b. Click *Import* to open the corresponding hardware information file (. hwi).
    c. When finished, click *Next.*

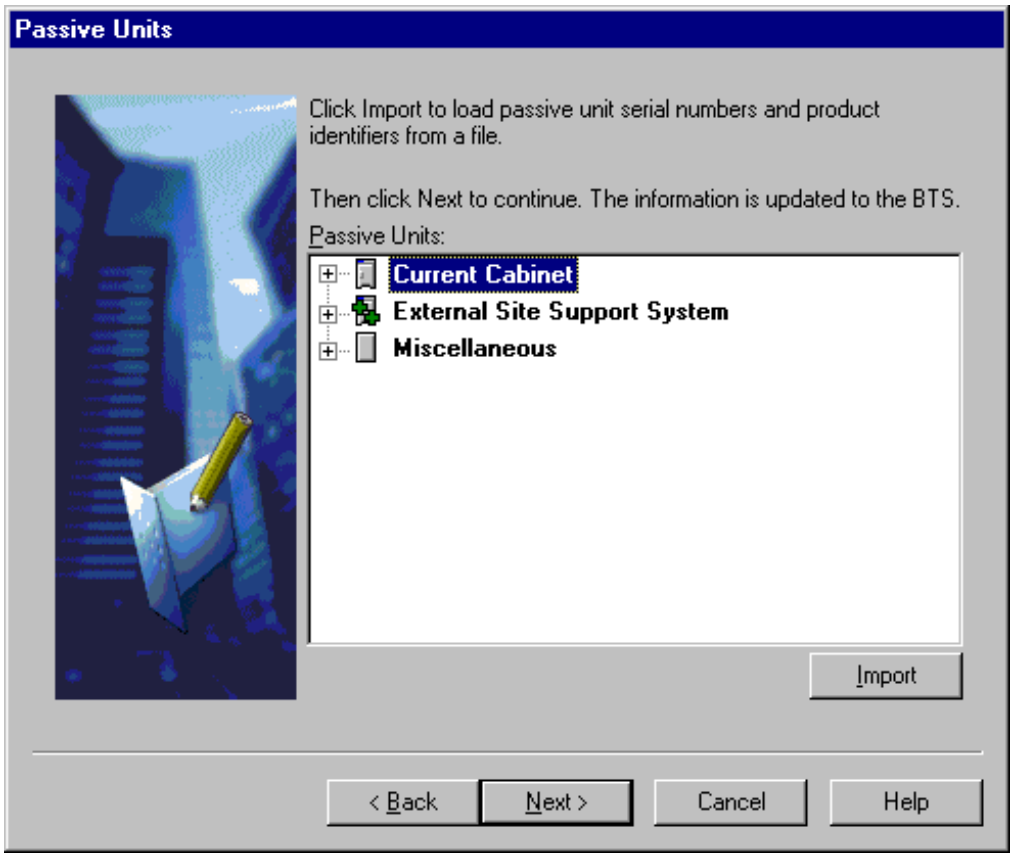


Figure 117. Passive Unit information

Note

Passive unit information is not needed to make the BTS operational.

11. *If* you want to save the configuration report to a file,

    Then

Select the location and filename in the *BTS Configuration Report* window.

Enter the path and filename in the *Save As* field or click *Browse* to specify the location and filename.

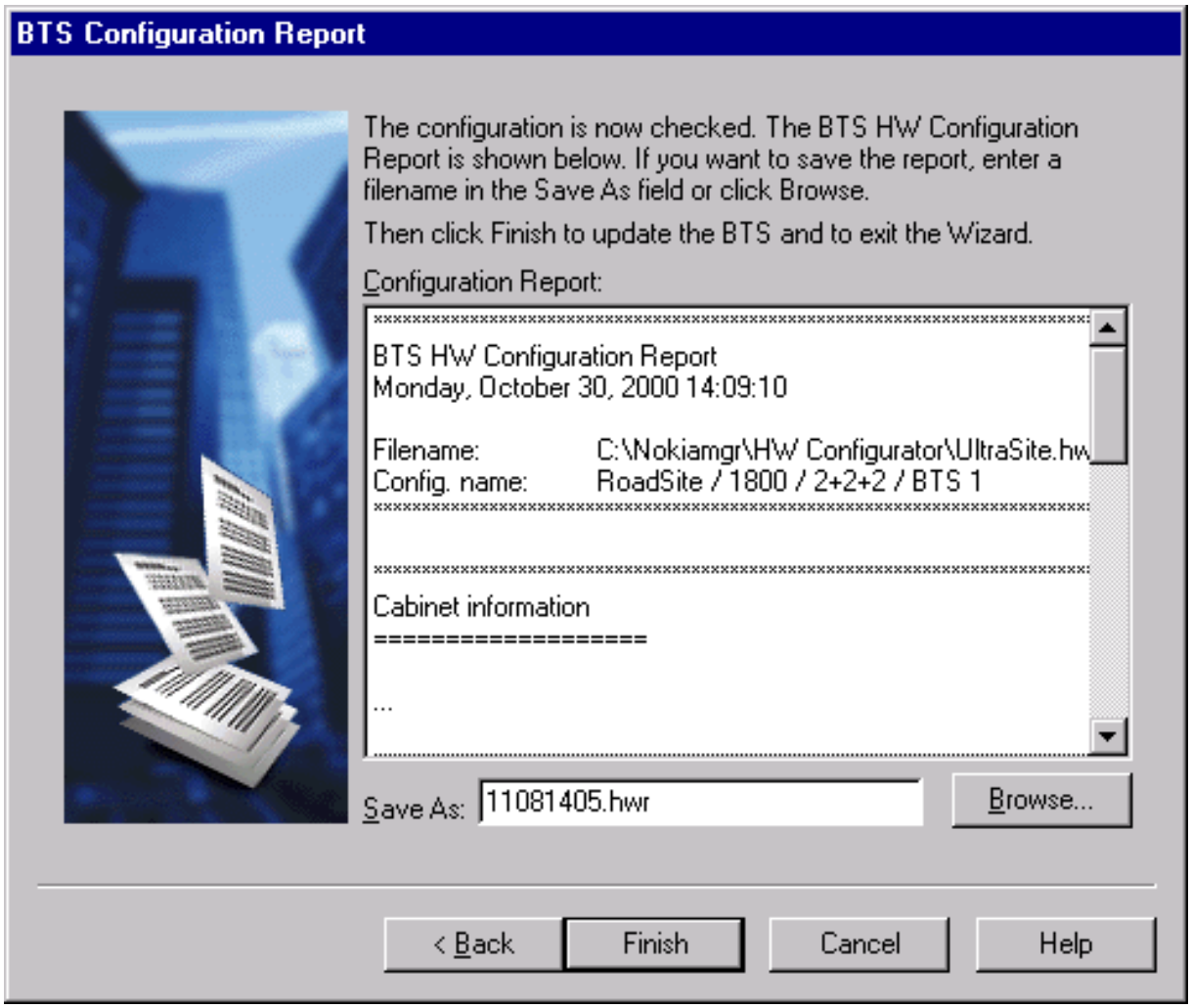


Figure 118. Configuration Report Page

12. Save the configuration information and exit the Wizard.

Click *Finish* to save the configuration information in the BTS and exit the Wizard.

13. **Exit the BTS HW Configurator.**

14. **Proceed to the *Overview of using Hub Manager of Site Wizard.***

18 Commissioning with XML Configuration File

18.1 Commissioning based on an off-line node file

Summary

To commission the BTS transmission with a node file, send the file to the node during the commissioning procedure with the Nokia UltraSite BTS Hub Commissioning Wizard. This allows more network setup to be performed offsite. The site configuration file (.xml extension) is usually provided by network transmission planning.

Nokia NetAct Transmission Planning Tools do not support all the required parameters of the BTS needed to fully commission the BTS. Missing settings are added to the file using UltraSite BTS Hub Manager.

The *Unsupported XML parameters* table lists the XML parameters that are not supported by the Nokia NetAct Planning Tools. Obligatory parameters that must be added are marked with an asterisk.

Table 8. Unsupported XML parameters

Category	Parameters
TruNet	TruNet Status IP Address Site Data
D-bus Allocation	Signalling Type EDAP Allocation

Table 8. Unsupported XML parameters (cont.)

Category	Parameters
Identifications	Equipment Name Group Name Site Allocation Node and Unit installation information
Cross-connections	Cross-connection label
Q1 Management	Q1 group address Q1 baud rate Hybrid switches* (‘processor’, ‘internal’, ‘internal to external’ and ‘external’ EOC settings*
Synchronisation	Synchronisation sources*
Unit	Unit name and installation information Interface mode* (FXC E1/T1) Interface name (FXC E1 and FXC E1/T1) Interface CRC usage* Operation mode* (FXC RRI)
Radio Hop Information	Hop name Hop frequency* Hop maximum TX power* Hop temporary ID* Hop mode* Hop accept channels*

Note

One XML file can contain commissioning configurations for many BTS sites. You can only configure one site at a time with UltraSite BTS Hub Manager.

You can add other elements, such as cross-connections, with UltraSite BTS Hub Manager, but this procedure assumes that all other necessary elements for the site are already properly planned with Nokia NetAct Planner.

Steps

1. **Edit the existing XML file, if available, to add unsupported parameters.**
2. *If* a valid XML configuration file cannot be obtained from transmission network planning,

   Then

   Create a node off-line file.
3. **Set the obligatory radio settings for FlexiHopper.**
4. **Set the obligatory radio settings for MetroHopper.**
5. **Use the off-line node file to commission the BTS Hub node with the commissioning wizard.**

18.2 Editing an XML file

Summary

Note

The detailed instructions of manual commissioning apply for all settings in this section, except for radio settings. For detailed instructions on creating radio settings for a node file, see *Setting obligatory settings for FlexiHopper and FlexiHopper Plus* and *Setting obligatory settings for MetroHopper*.

Steps

1. **Start UltraSite BTS Hub Manager and open the XML file.**

   To open the XML file, select **File | Open...**.
2. *If* the XML file contains many sites,

   Then

   From the *Site Selection* window, select the site to be modified.

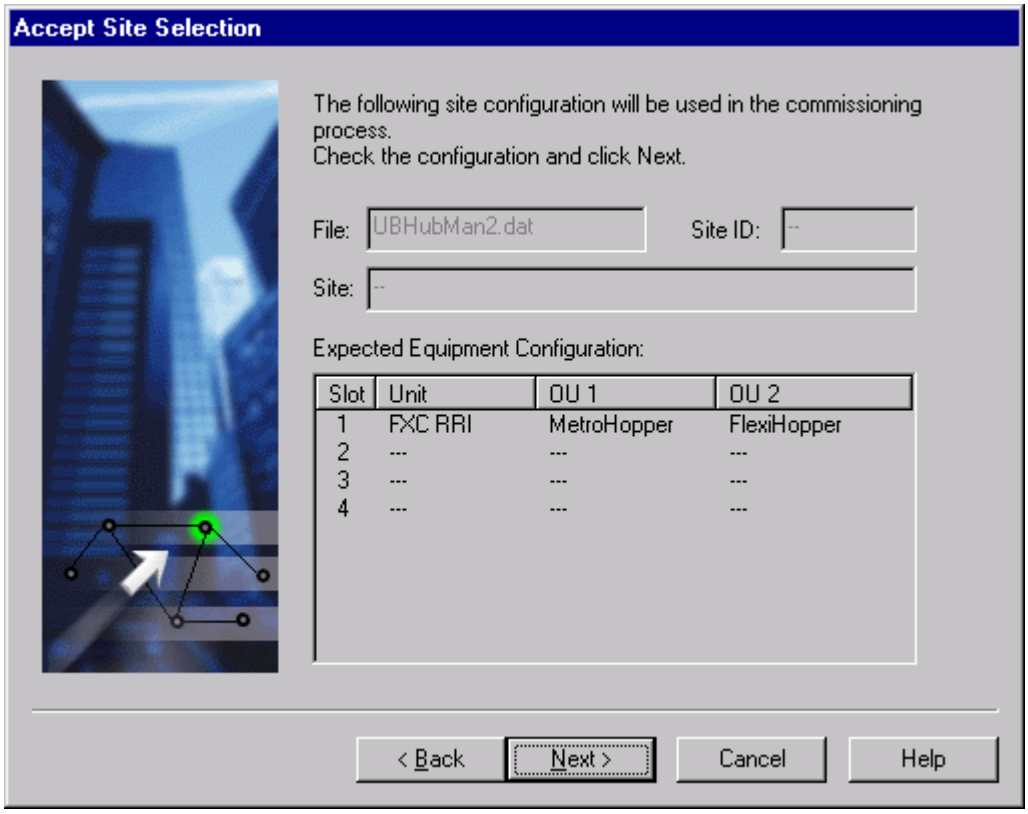


Figure 119. Accept Site Selection dialog box

The *Equipment View in Nokia UltraSite BTS Hub Manager* displays.

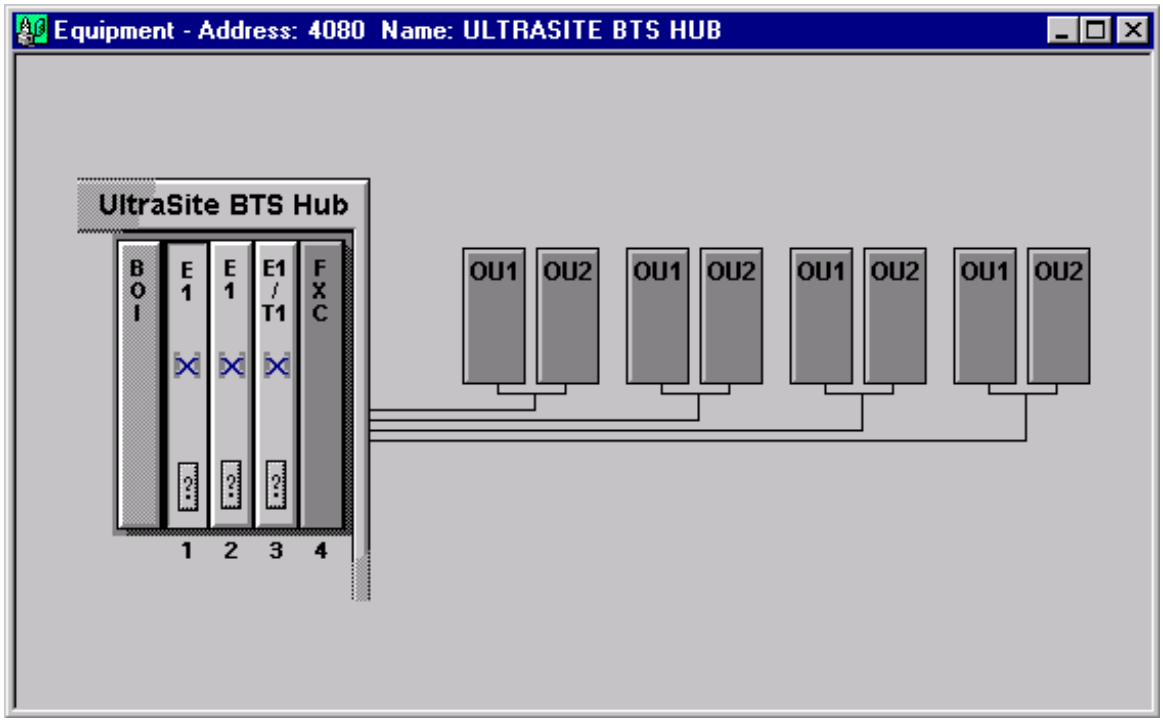


Figure 120. Equipment View in Nokia UltraSite BTS Hub Manager

3. Add or modify the required parameters to the node file.

For a list of unsupported XML parameters, see the table in *Commissioning based on an off-line node file*.

4. Save the modified XML Site configuration file.

Select menu **File | Save** or **File | Save As...**.

5. *If* you want to modify more than one site,

Then

Save the file after each site modification.

6. Repeat this procedure until you modify all of the required sites.

18.3 Creating a node off-line file

Summary

If you cannot obtain a valid site configuration file from transmission network planning, you can create the node off-line file (with .dat extension) and include all of the necessary settings in the file, as provided by transmission network planning.

Note

The detailed instructions of manual commissioning apply for all settings in this section, other than radio settings. For detailed instructions on how to create radio settings for a node file, see *Setting obligatory settings for FlexiHopper and FlexiHopper Plus* and *Setting obligatory settings for MetroHopper*.

Steps

1. **Open the UltraSite BTS Hub Manager.**

   Select *Nokia UltraSite BTS Hub Manager* in the **Start | Programs | Nokia Applications** menu in Microsoft Windows.

2. **Create a new file.**

   Select **File | New** in UltraSite BTS Hub Manager.

3. **Install the required FXC units and radios in the *Equipment View*.**

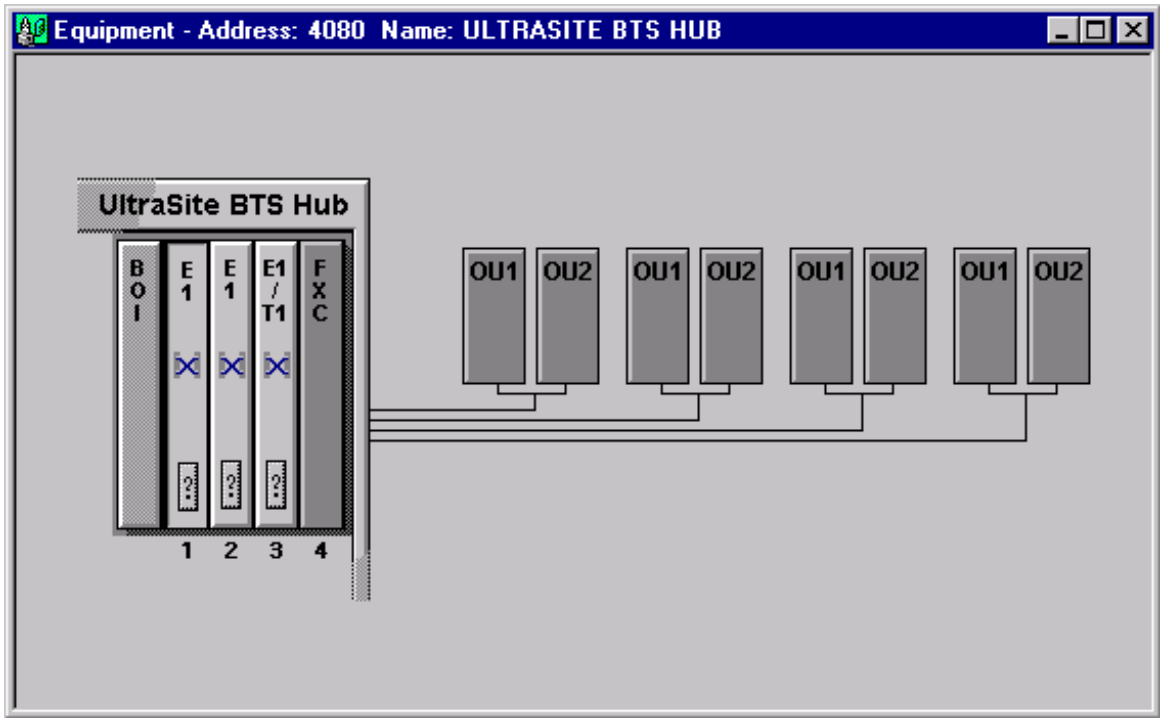


Figure 121. Equipment View in Nokia UltraSite BTS Hub Manager

4. **Perform the necessary settings to the units and the node.**

   For more information, see *Manual Hub configuration* (except for the radio settings).

5. **Save the node off-line file.**

   Select **File | Save as...**.

18.4 Setting Nokia FlexiHopper and Nokia FlexiHopper Plus settings

Before you start

Note

Familiarise yourself with the *Nokia FlexiHopper with FXC RRI User Manual*'s *Commissioning and Maintenance* document before setting Nokia FlexiHopper radio settings. Refer to the commissioning instructions in *Nokia FlexiHopper Plus Product Documentation* before setting FlexiHopper Plus radio settings.

Steps

1. **Click the FXC RRI unit corresponding to the Nokia FlexiHopper or FlexiHopper Plus radio in the Equipment View window.**

   A unit-specific menu appears.

2. **Select Settings → Operation Mode on the FXC RRI menu.**

   The **Operation Mode** dialogue box opens.

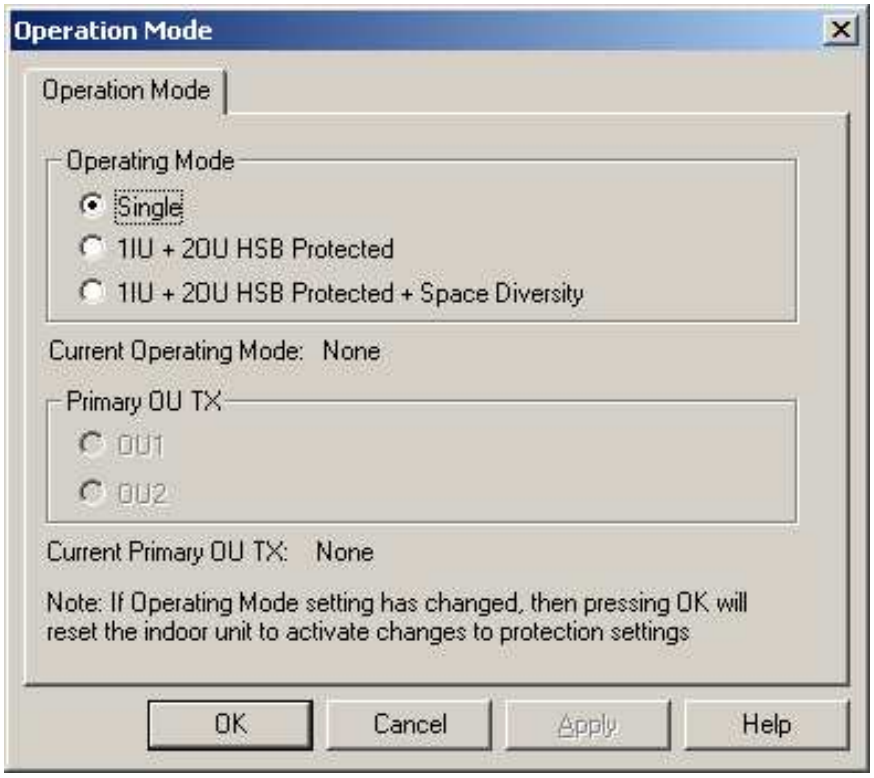


Figure 122. Operation Mode dialogue box

The operation mode of an FXC RRI unit can be single (no hot standby (HSB) protection) or 1 IU + 2 OU HSB Protected or 1 IU + 2 OU HSB Protected + Space Diversity. The **Operation Mode** dialogue box also allows the user to select which of the units should be the primary OU, which is the active protected OU when both OUs are operational.

3. **Select the operation mode, and in case of 1 IU + 2 OU HSB or 1 IU + 2 OU HSB + Space Diversity, also the primary OU Tx, and click OK.**

   When the operation mode of an FXC RRI unit is set to 1 IU + 2 OU HSB Protected, the protected radio hop is displayed in the **Equipment View** of the hub managers.

   The protected hop is only visible if the RRI unit has been selected in the **Equipment view**. If another unit was selected, the protected hop is not displayed.

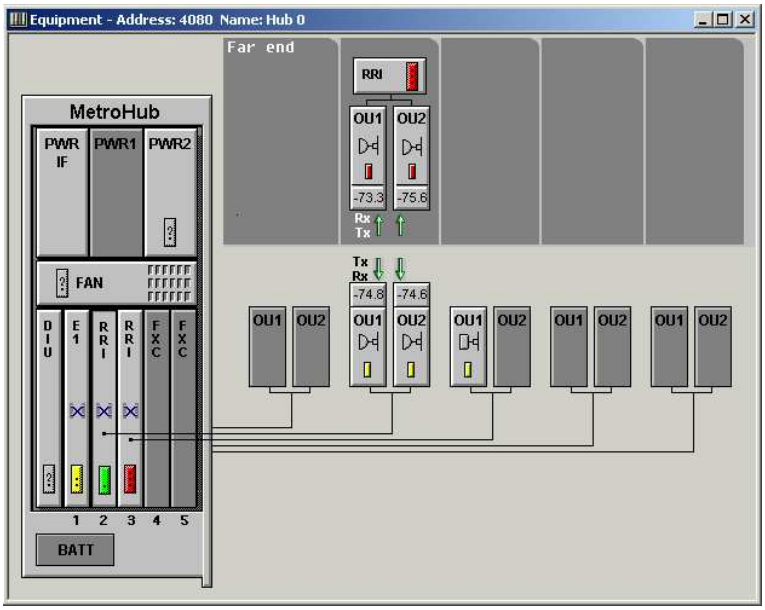


Figure 123. Protected radio hop in the Equipment View

The far-end outdoor units and indoor unit are shown for each protected hop together with information on the hop status. The status information includes:

- an arrow representing the receive status of each OU:
  - Green arrow = receiving at an acceptable level
  - Red cross over the arrow = not receiving
- numbers displaying the receive level of each OU in dBm, and
- text “Tx” and/or “Rx” beside each OU representing the currently active transmitter and receiver.

4. Select Settings → Outdoor Unit on the FXC RRI menu corresponding to the Nokia FlexiHopper or FlexiHopper Plus radio.

The settings dialogue box opens. The same dialogue box is used for Nokia FlexiHopper and FlexiHopper Plus, but the options vary.

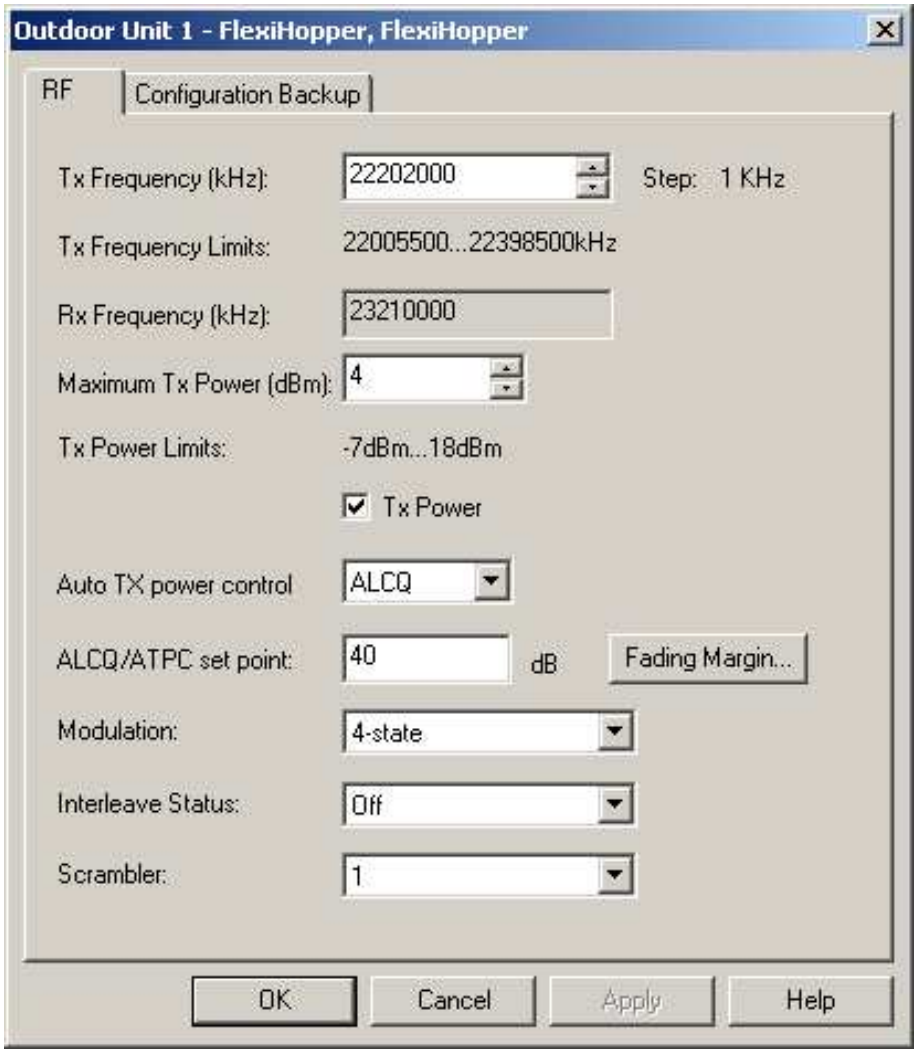


Figure 124. Nokia FlexiHopper or FlexiHopper Plus settings, single

In hot standby mode, the Flexbus capacity and OU settings are common for both radios, except for the Maximum Tx power and ALCQ / ATPC set point settings.

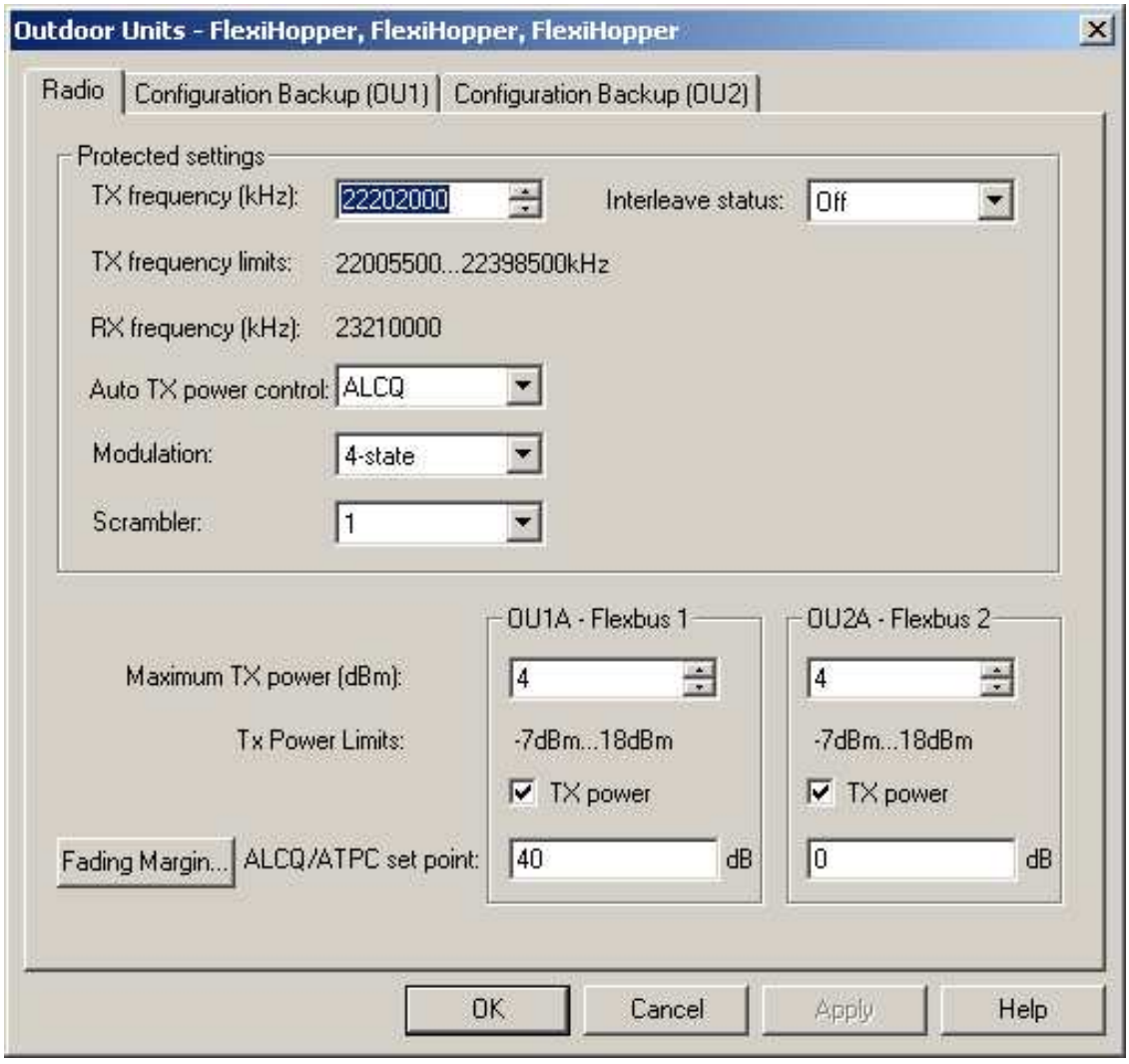


Figure 125. Nokia FlexiHopper or FlexiHopper Plus settings, HSB protected

5. Set the Tx frequency.

Use the Tx frequency provided by radio frequency planning.

6. Set the maximum Tx Power.

This value is also provided by radio frequency planning. The value is dependent on the frequency band. For example, for a 38 GHz frequency band radio, the maximum allowed value is 16 dBm.

7. **Set the Tx power ON.**

8. **Set the ALCQ (Adaptive Level Control with Quality Measure) or ATPC (Automatic Transmit Power Control).**

   If needed, ALCQ/ATPC can be switched on after the hop has been commissioned and the fine-alignment of the antenna has been performed. The Rx input level, determined by the radio frequency planning, must also be correct.

9. **For the ALCQ/ATPC to function, set the ALCQ/ATPC set point value (dB).**

   This value can be calculated by radio frequency planning.

10. *If* the installation includes a Nokia FlexiHopper Plus

    Then

    Set the Modulation.

    The 16-state mode is available for Nokia FlexiHopper Plus outdoor units with 8x2M and 16x2M capacities. Compared to using Nokia FlexiHopper, it is possible to achieve the same capacity using only half the bandwidth.

Note

16-state mode requires a software license. To use 16-state mode, license the feature via the **Licence Manager** dialogue box. For more information, see *Using the licence manager*.

Note

For a link to be established, the same modulation has to be used at both ends of the radio hop. Changing the modulation resets the radio and interrupts management traffic for one minute.

Further information

The Nokia FlexiHopper Plus supports higher modulation, which translates into higher density in terms of bandwidth for the existing channels. FlexiHopper Plus is fully compatible with FlexiHopper. However, to benefit from the increased capacity, it requires a FlexiHopper Plus at both ends of the radio link, that is, both radios have to support the 16-state setting.

In hot standby mode, the modulation selection is common for both radios. If one of the radios is a FlexiHopper, then both radios will have to use the 4-state setting, which is the only setting supported by FlexiHopper.

For more detailed information, refer to *Nokia FlexiHopper Plus documentation*.

11. Set Interleaver Status, if needed.

Possible values for the interleaver status are **Off**, **Depth 2** and **Depth 4** in 4-state modulation. In 16-state modulation, the interleaver status is fixed to Depth 4.

Change the setting accordingly at the other end of the hop (the status must be the same at both ends of the hop).

Note

The outdoor unit stops transmitting while the interleave status is being changed.

12. Set the scrambler, if needed.

13. Measure the fading margin by clicking the Measure button.

The **Fading Margin Measurement** dialogue box opens.

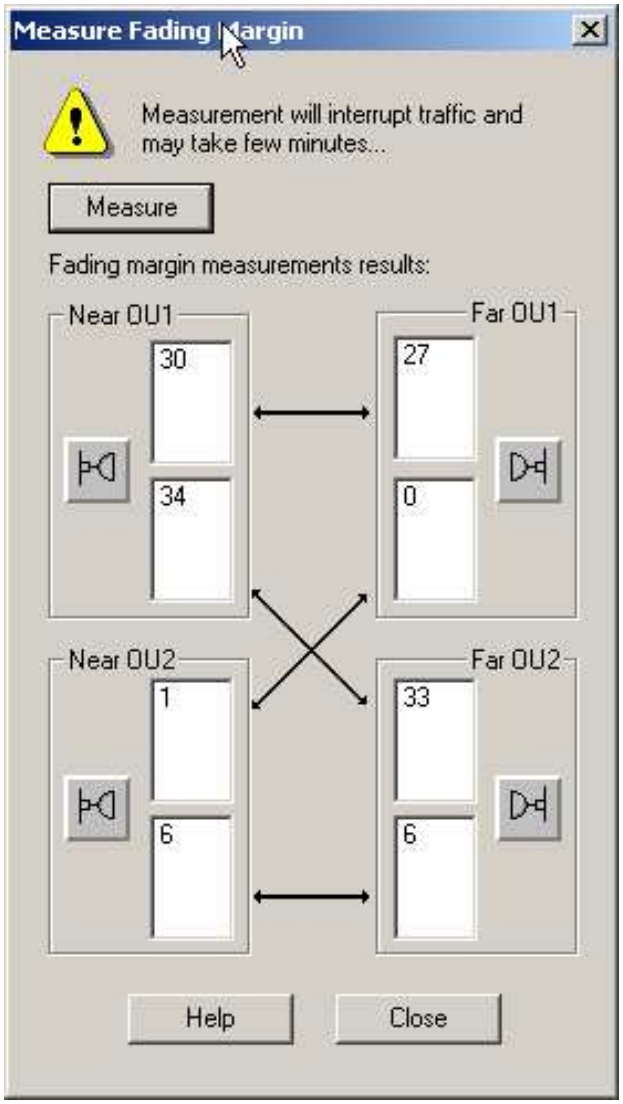


Figure 126. Fading margin measurement dialogue box

The *fading margin measurement (FMM)* is an optional part of the *radio hop (single or HSB protected) commissioning* process. FMM can also be executed manually for an already commissioned hop. If far-end indoor unit type is not supported, the measurement field is grey.

Note

The measurement interrupts the traffic.

Further information

For single hop, the fading margin is measured for one radio (outdoor unit) at a time: the measurement result fields for the selected outdoor unit are enabled (white) and the result fields for the other outdoor unit are disabled (greyed).

The fading marging measurement is also not supported (it is greyed) if the **HSB + Space Diversity** is selected.

The **Fading Margin Measurement** dialogue box result field can contain up to three measurement results at the same time from which the most sensible should be seen as a valid result. The uppermost value is the last measured.

When the measurement is started, the outdoor units at both ends of the hop stop transmitting, that is, they both switch to MUTE. Both outdoor units start their timers, which determine how long they stay in MUTE mode. The measurement stops automatically after the timers are elapsed.

14. Set the backup/restore settings.

Steps

a. In the Outdoor Unit dialogue box, select the Configuration Backup tab.

The **Configuration Backup** view is displayed:

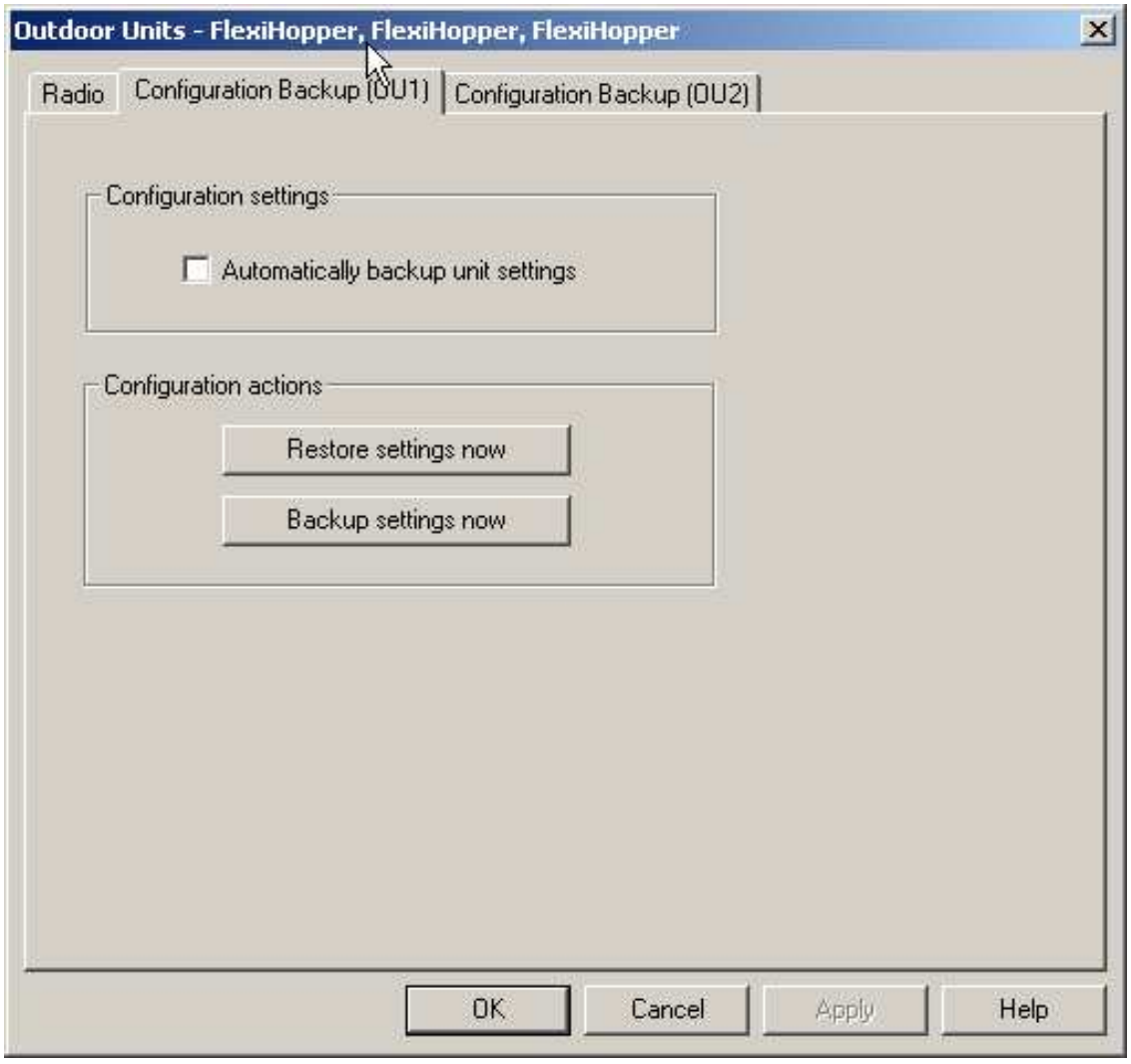


Figure 127. Configuration Backup tab

b. *If* you want to set the automatic backup on
Then

Check the Automatically backup unit settings check box.

If this check box is checked, the system saves the settings for the indoor unit each time they are changed.

c. To backup the settings immediately, click the Backup settings now button.

The current settings are saved for the indoor unit.

d. To restore the settings immediately, click the Restore settings now button.

Click the **Restore settings now** button when the settings have been changed and you want to revert to the previous settings.

Manually stored settings are restored.

15. Click the OK button.

18.5 Setting Nokia MetroHopper settings

Before you start

Note

Familiarise yourself with the *Commissioning and Maintenance* documents in *Nokia MetroHopper with FXC RRI User Manual* before setting Nokia MetroHopper radio settings.

Steps

1. Click the FXC RRI unit corresponding to the Nokia MetroHopper radio in the Equipment View window.

A unit-specific menu appears.

2. Select Settings → Outdoor Unit on the FXC RRI menu corresponding to the Nokia MetroHopper radio.

The settings dialogue box opens.

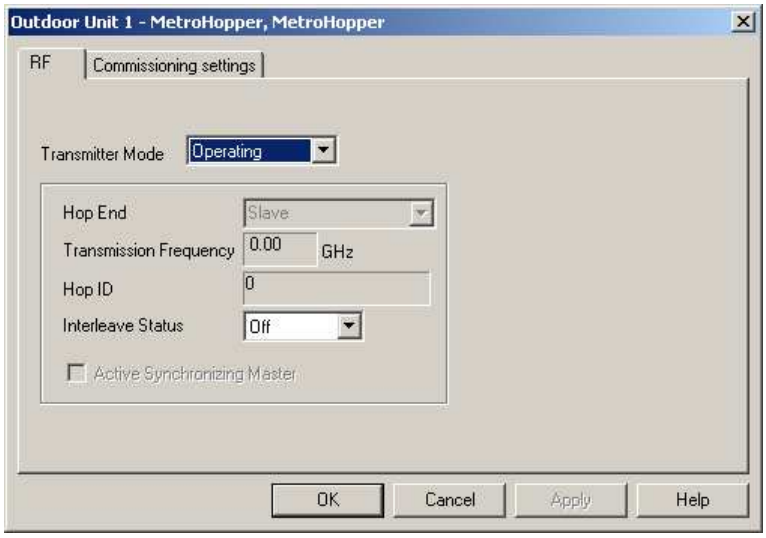


Figure 128. Nokia MetroHopper's RF settings for the outdoor unit in FXC RRI

3. Click the Commissioning settings tab.

The commissioning settings dialogue box opens. This tab is only visible in the offline mode.

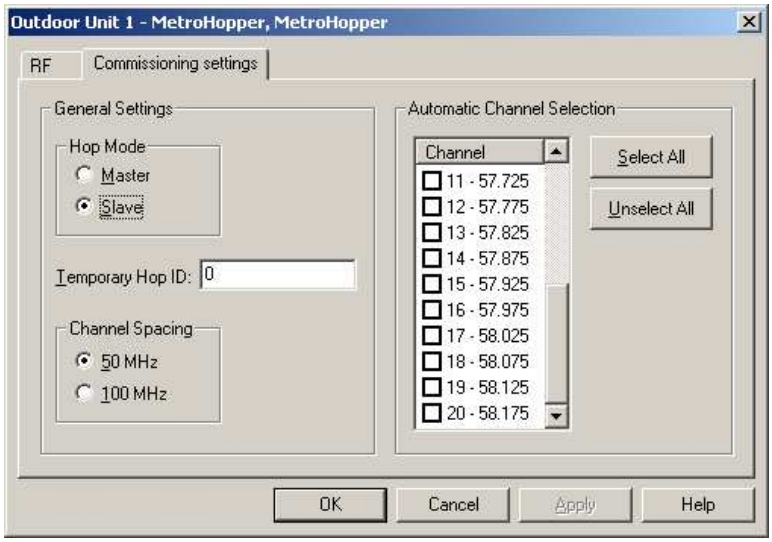


Figure 129. Nokia MetroHopper's commissioning settings for the outdoor unit in FXC RRI

4. **Set the Hop Mode.**

   One end of the hop must be set as the master and the other end as the slave.

5. **Set the Temporary Hop ID.**

   This value must be the same for both the master and the slave.

6. **Select channel spacing.**

   When the channel spacing is changed, the automatic channel selection list is updated accordingly. Changing the spacing mode online resets the MetroHopper OU.

   For more information on channel spacing, see *Nokia MetroHopper Radio with FIU 19/FIU 19E User Manual*.

7. **Use the Select All button to select all channels in the Automatic Channel Selection.**

8. **Click the Apply button.**

9. **Click the RF Settings tab to view the RF settings again.**

10. **Set the Interleave Status, if needed.**

    The status must be the same at both ends of the hop.

11. **Set the Forced Synchronising Master, if needed.**

    This check box is available only if you set the **Hop Mode** as the master in step *Set the Hop Mode*.

12. **Click the OK button.**

18.6 Using off-line node file for commissioning

Before you start

Review *Commissioning based on an off-line node file*.

Nokia delivers all units with factory settings. If you have already configured the units, you must restore the factory settings by using Factory Defaults on each FXC unit. Afterwards, you can run the Commissioning Wizard.

Steps

1. **Open UltraSite BTS Hub Manager.**

   Select *Nokia UltraSite BTS Manager* from the Microsoft Windows **Start | Programs | Nokia Applications** menu.

   Wait until the BTS Manager has properly started and then move on to the next step.

2. **Connect BTS Hub Manager.**

   Start UltraSite BTS Hub Manager from the BTS Manager's *Tools* menu.

   The *Equipment View in Nokia UltraSite BTS Hub Manager* opens automatically when the connection has been established.

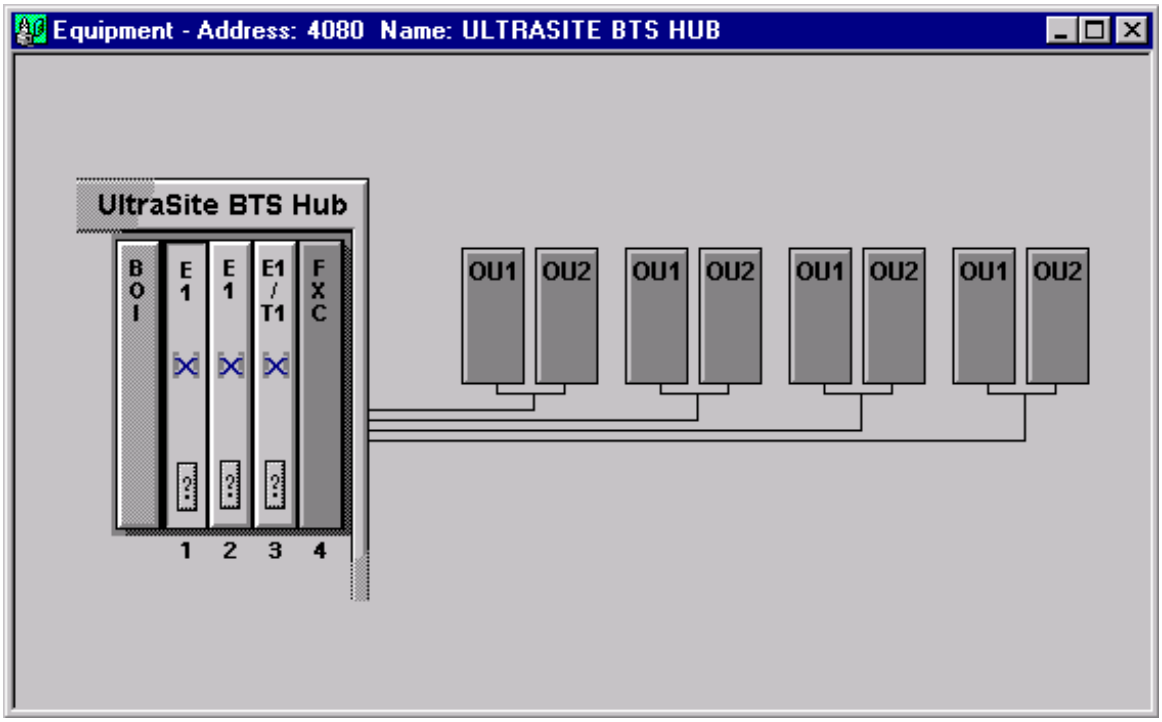


Figure 130. Equipment View in Nokia UltraSite BTS Hub Manager

3. *If* the connection fails,

   Then

Verify the connection parameters using one of the following actions.

- Select **Tools | Options | Manager** and verify the connection speed and LMP cable connection.
- Select **Connection | Connect...** and verify the connection speed and LMP cable connection in the *Connect to Node* window.
- Using the Nokia Connection Tool, refer to the application's online Help.

Note

The units must not contain modified settings (such as cross-connections) when you run the Commissioning Wizard.

---

4. **Open the Commissioning Wizard.**

   From the menu bar, select **Configuration | Commissioning Wizard**.

5. **Run all Hub tests described in *Testing with the Commissioning Wizard.***

6. **From the *Testing window of UltraSite BTS Hub Commissioning Wizard*, verify the results of the tests and fill in the required fields.**

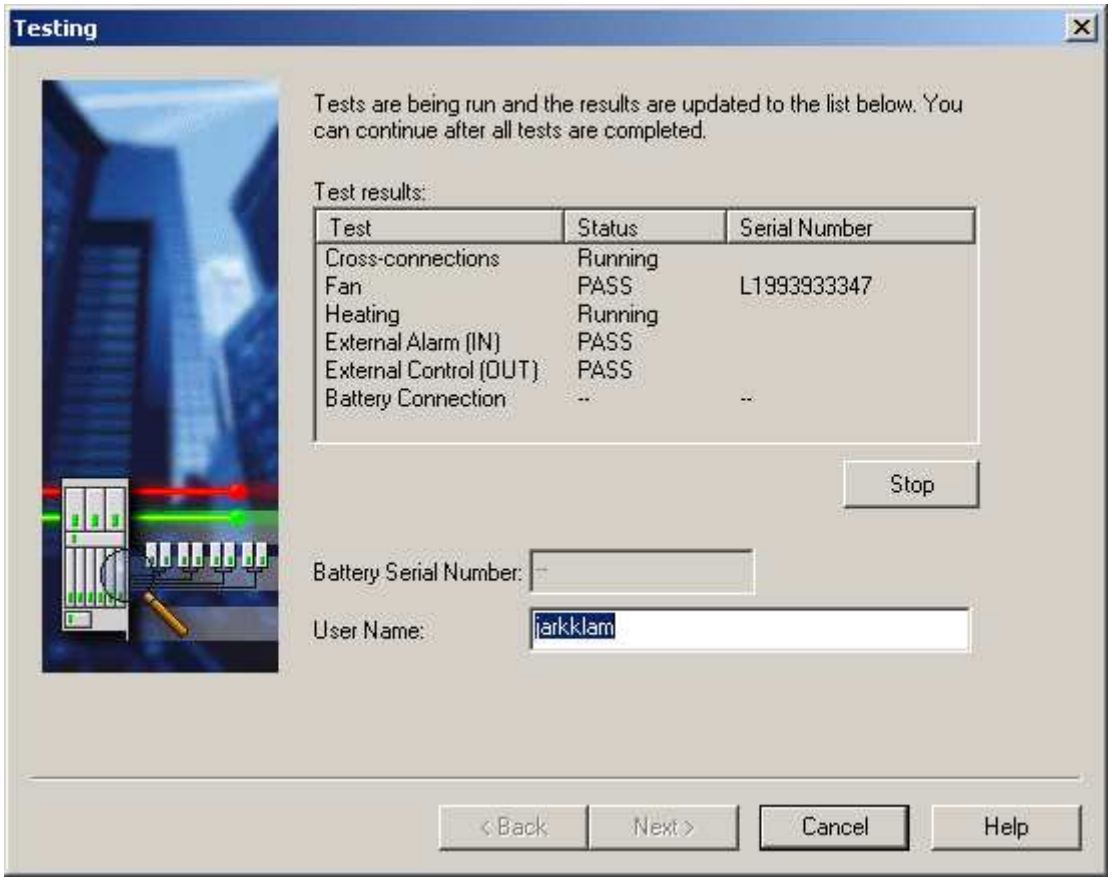


Figure 131. Testing dialog box

7. Click *Next* to open the *Site Selection window.*

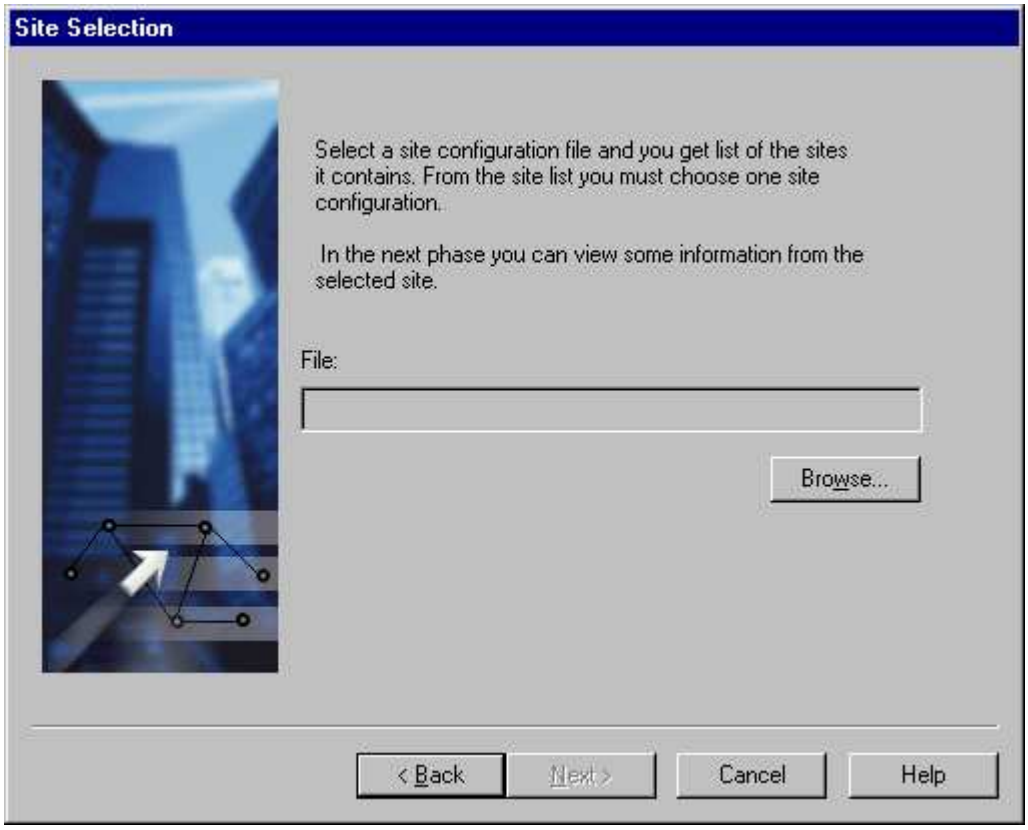


Figure 132. Site Selection dialog box

8. Browse the node off-line file.

9. *If* the file is an XML file (received from NetAct planner),

   Then

   Select a site from the *Site Selection* window.

10. Ensure that the selected site is correct.

Click *Next* to open the *Accept Site Selection* window.

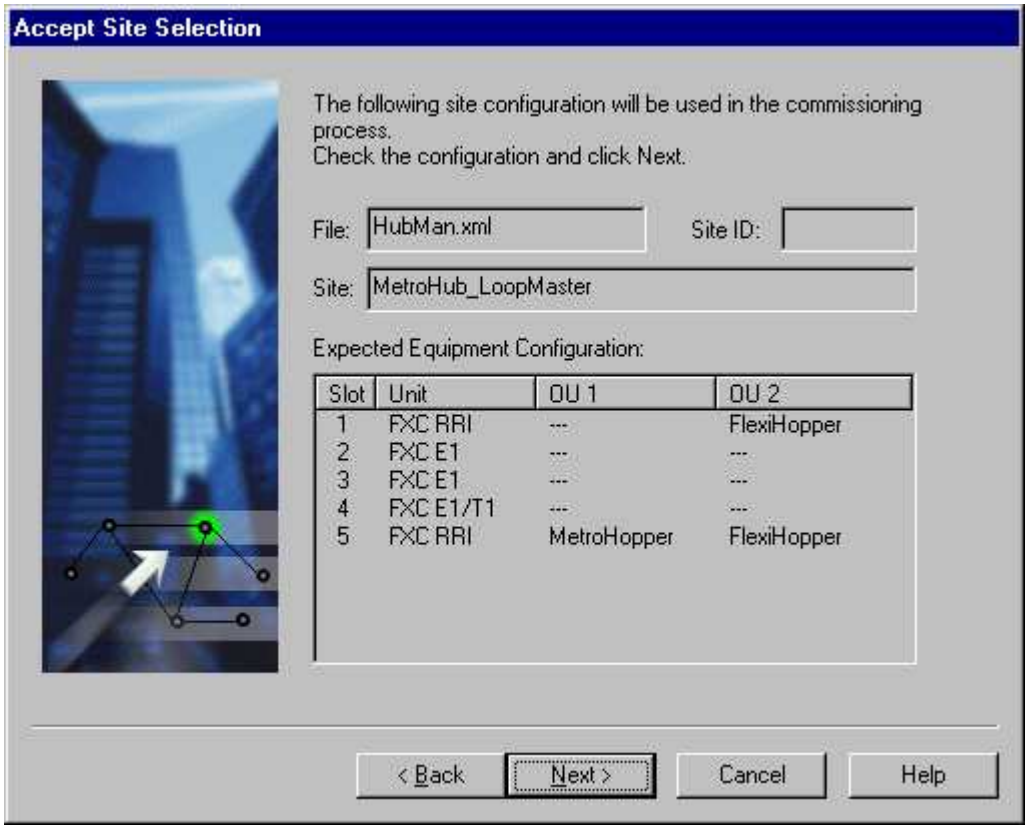


Figure 133. Accept Site Selection

11. Accept the node off-line file and the site.

Click *Next* to accept the selected node off-line file and the site and to send the node settings to the node.

12. *If* no FXC RRI units are used,

Then

The *End window* displays.

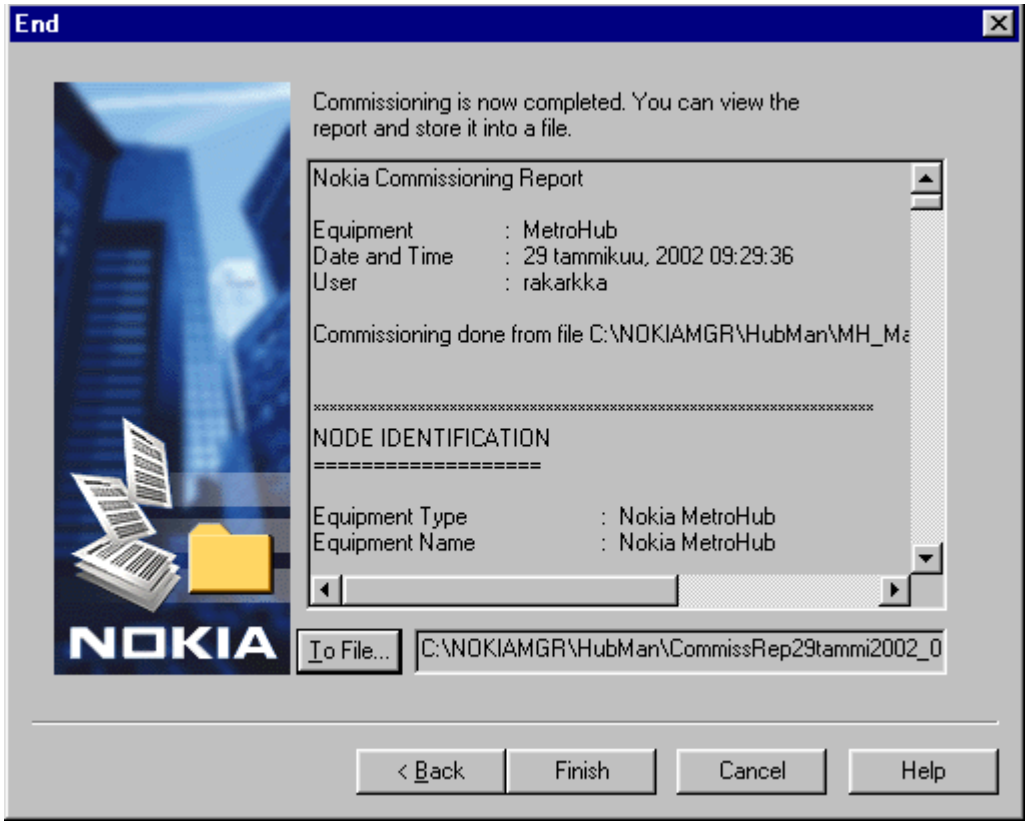


Figure 134. End dialog box

The program then performs the node configuration.

13. *If* radios are included in the configuration,

    Then

    The *Check Hops window* displays.

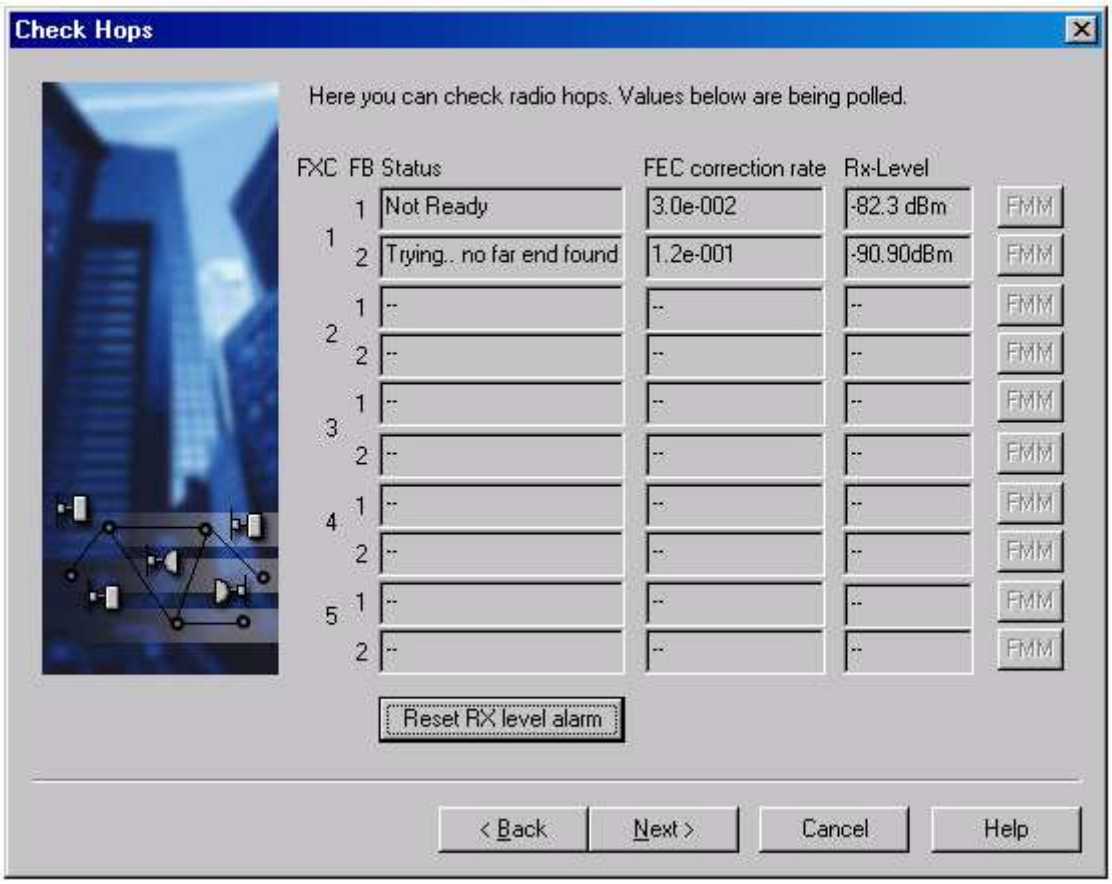


Figure 135. Check hops dialog box

This step is optional.

a. Verify and fine-tune radio hops.

b. Click *Next* when the required hop statuses are OK. The *End* window displays.

14. Save Commissioning Report on the *End window*.

a. Verify the Commissioning Report.

b. Give the file a name.

c. Click *Finish* to store the report on the disk.

19 Commissioning the BTS manually

19.1 Manual commissioning

Before you start

Manual commissioning can be performed only with a non-commissioned BTS. If the BTS to be commissioned is already commissioned, first you need to run the *Undo Commissioning* procedure in the BTS Commissioning Wizard.

Summary

The BTS commissioning is performed with the BTS Commissioning Wizard. It is assumed that the LAPD links and the PCM port are activated at the BSC. The BCF is still in *Locked* state.

Note

BTS software is loaded to the BTS by the manufacturer. There is usually no need to locally load software to the BTS during commissioning.

Steps

1. **Open Nokia BTS Manager.**

   Select *Nokia BTS Manager* from the *Nokia Applications* submenu in the **Start | Programs** menu in Windows.

2. **Start BTS Commissioning Wizard.**

   From the Commissioning menu, select *Wizard*. The *BTS Commissioning Wizard* window of Nokia BTS Manager displays.

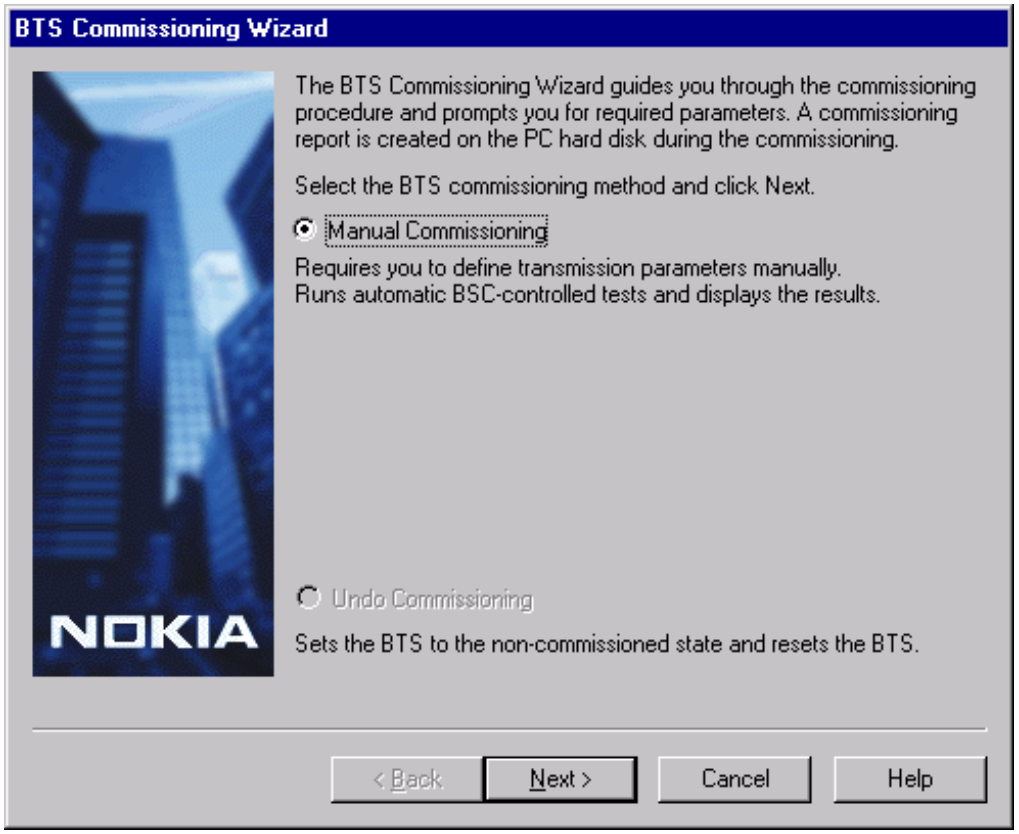


Figure 136. Manual Commissioning option

3. Select manual commissioning.

Select the *Manual Commissioning* option and click *Next*.

4. Enter initial settings for manual commissioning.

5. Verify the *BTS Commissioning Report.*

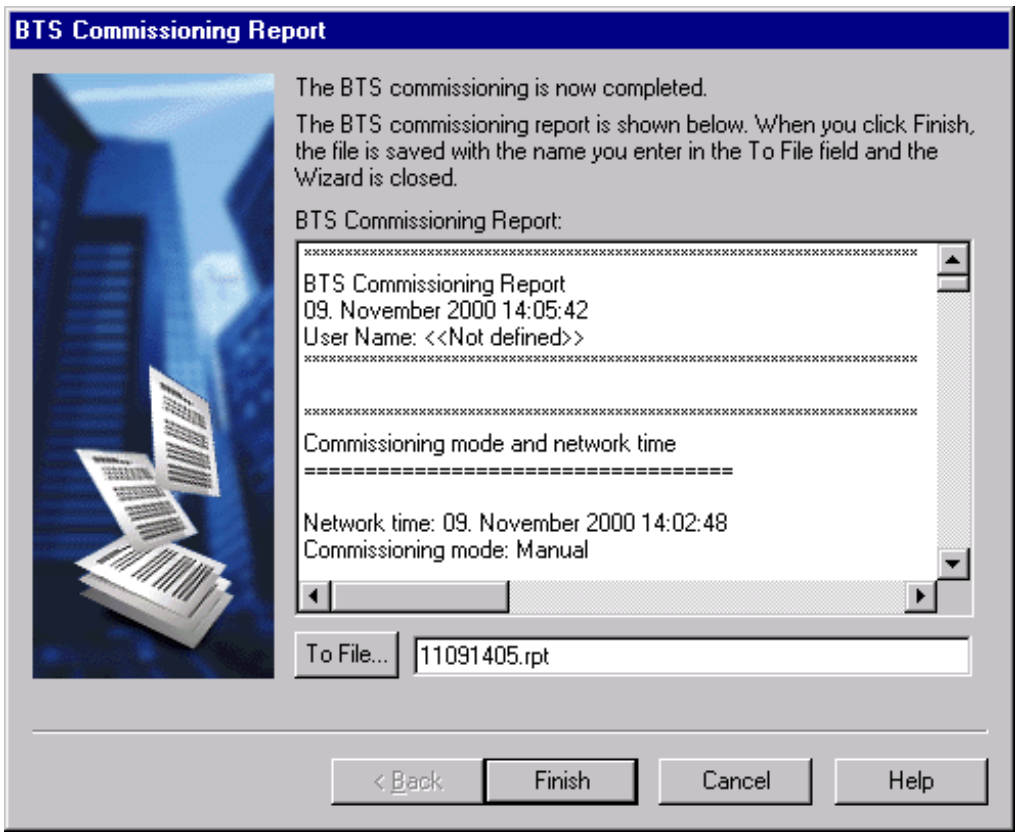


Figure 137. BTS Commissioning Report

6. Save the report and exit the Wizard.

Click *Finish* to save the report and exit the BTS Commissioning Wizard.

7. Exit the BTS Manager.

To quit BTS Manager, select *Exit* from the *File* menu.

8. Disconnect your laptop PC from the BTS's LMP port.

The commissioning parameters are stored in the BOIA memory.

Note

To start the BTS, unlock it at the BSC.

19.2 Entering initial settings

Steps

1. **Enter the following optional information in the *Set Transmission Parameters* window of the BTS Commissioning Wizard, and click *Next.***
   - Site name
   - Site ID
   - BCF ID
   - BSC ID
   - IP Address
   - Network ID

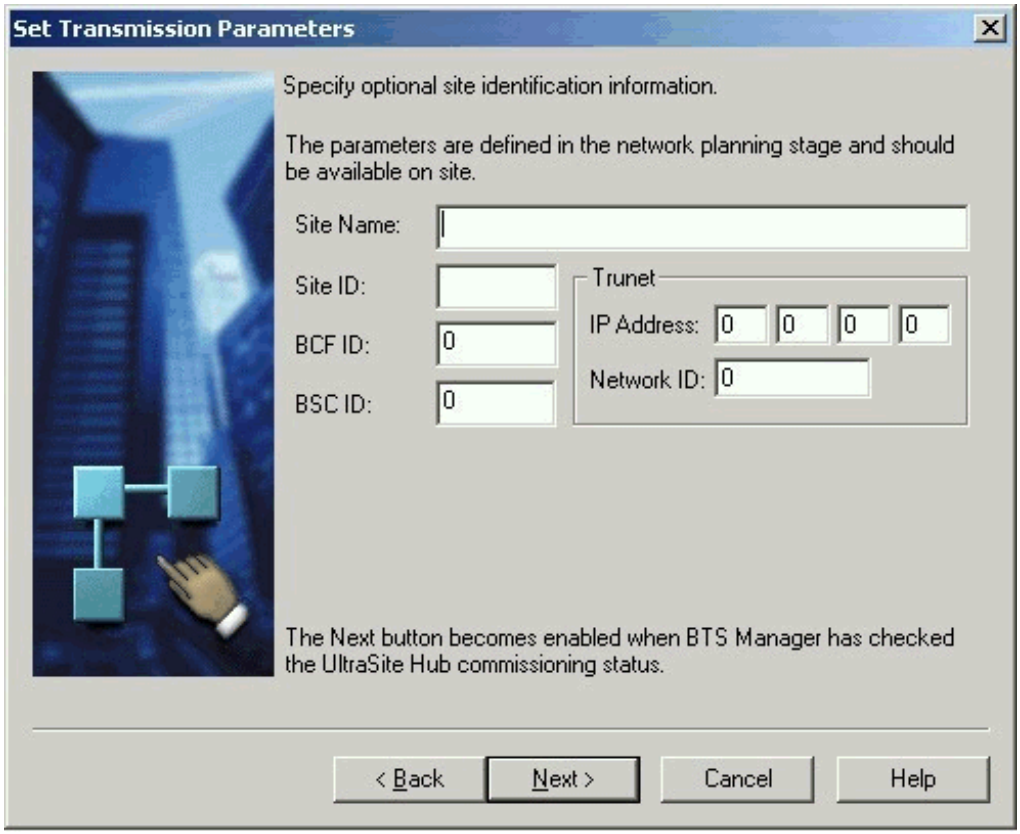


Figure 138. Set Transmission Parameters page - FC unit

2. *If* there is a FC E1/T1 transmission unit in the BTS configuration,

   Then

   Define the LIF and synchronisation settings.

   a. Click *LIF Settings* to define the line interface (LIF) settings for manual commissioning of FC E1/T1 units.

   b. Click *Synchronisation* to define the synchronisation settings for manual commissioning of FC E1/T1 transmission units.

   c. When finished, click *Next* to continue. The *Transmission Configuration* window for FXC E1(/T1) unit displays.

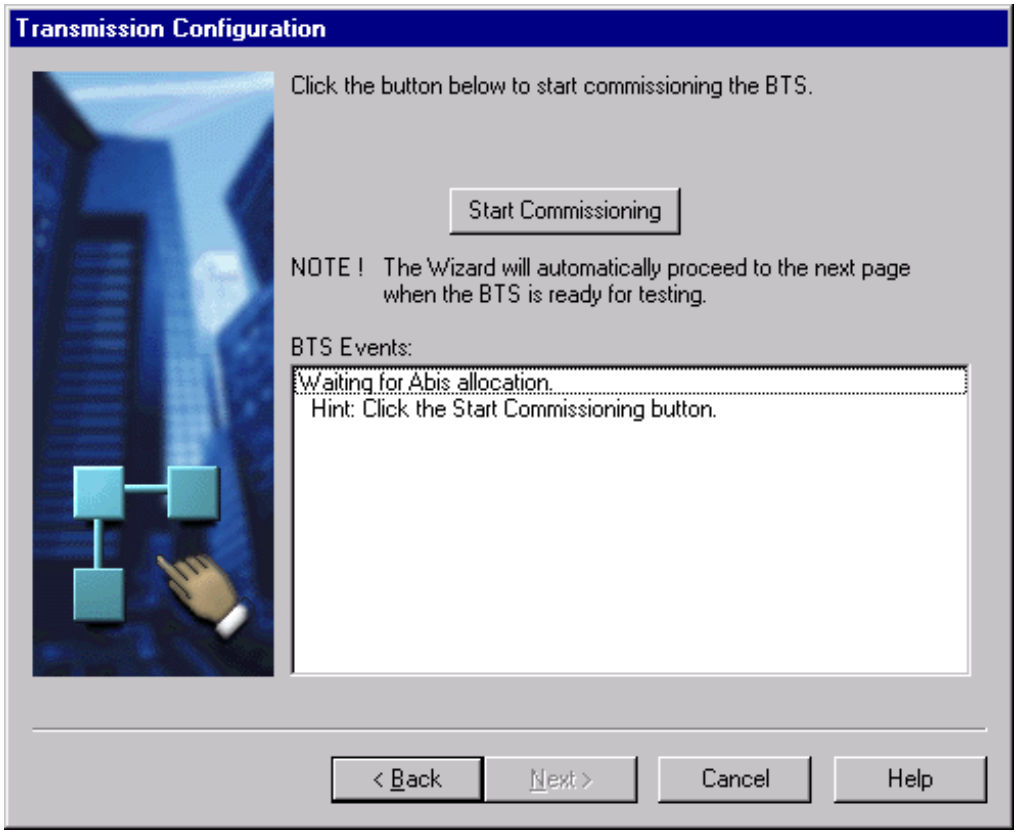


Figure 139. Transmission Configuration page for FXC E1(/T1) unit

Note

If any transmission card other than an FC E1/T1 is used, then *LIF Settings* and *Synchronisation* do not display in the *Set Transmission Parameters* window.

3. **Send commissioning parameters to the BTS.**

   In the *Transmission Configuration* window, click *Start Commissioning* to send the commissioning parameters to the BTS.

4. *If* there is an FC E1/T1 transmission unit in the configuration,

   Then

   Allocate F(X)C transmission capacity.

The appearance of the *Transmission Configuration* Wizard window is different. Click *Traffic Manager* to allocate FC transmission capacity. This action establishes a transmission connection between the BTS and the BSC.

Note

If the connection fails, see *Trouble management of BTS commissioning*.

Note

When you click *OK* in the Traffic Manager, the *Transmission Configuration* window reappears. The *Back* button is disabled, because the transmission parameters have already been sent to the BTS. If you need to change any parameters you have specified prior to this point, run the *Undo Commissioning* procedure and then re-commission the BTS.

5. *If* BTS software is incorrect,

   Then

   BSC loads software to the BTS.

   During the BTS/BSC start-up scenario the BSC checks the BTS software, and if it is incorrect, the BSC loads software to the BTS. This process takes between 5 and 20 minutes, depending on the link speed. The BCF is reset automatically, which means that the *Supervision and Alarms* windows disappear for a few seconds, but the commissioning procedure continues after the BTS has started normally.

   Else

   If no software download takes place, the process takes about 10 seconds.

   After that, the BSC sends the configuration data to the BTS.

6. **Wait for the oven oscillator to warm up.**

   It takes a few minutes for the oven oscillator to warm up after the BTS is powered on. If the oven oscillator has not yet warmed up, the BCF remains in the *Configuring* state. The *BTS Events* list displays a message when the oven oscillator is ready.

7. **Run TRX tests.**

   The TRX tests run automatically during BTS commissioning, or you can run them manually. When the BTS is ready for testing, the Wizard automatically proceeds to the next window, and the BSC runs automatic tests on the Abis link and on each TRX installed in the BTS. For detailed information on TRX tests, see *Running a TRX test.*

! Caution

In order not to interfere with the operation of other sites, ensure an RF attenuator is connected to every TRX in the BTS before you start local TRX tests.

---

8. *If* there is no BSC connection,

   Then

   The Wizard asks if you want to use the software stored currently in the BOIx unit memory.

   If there is no BSC connection (the BCF remains in the *Waiting for LAPD* state) and you click *Next*, the Wizard asks if you want to give the *Use Current* command.

9. *If* you indicate you want to use the software stored in the BOIx unit memory,

   Then

   Click *Yes.*

   The BTS starts to use the BTS software in the BOIx unit memory and the Wizard proceeds to the *BTS Test Reporting* window.

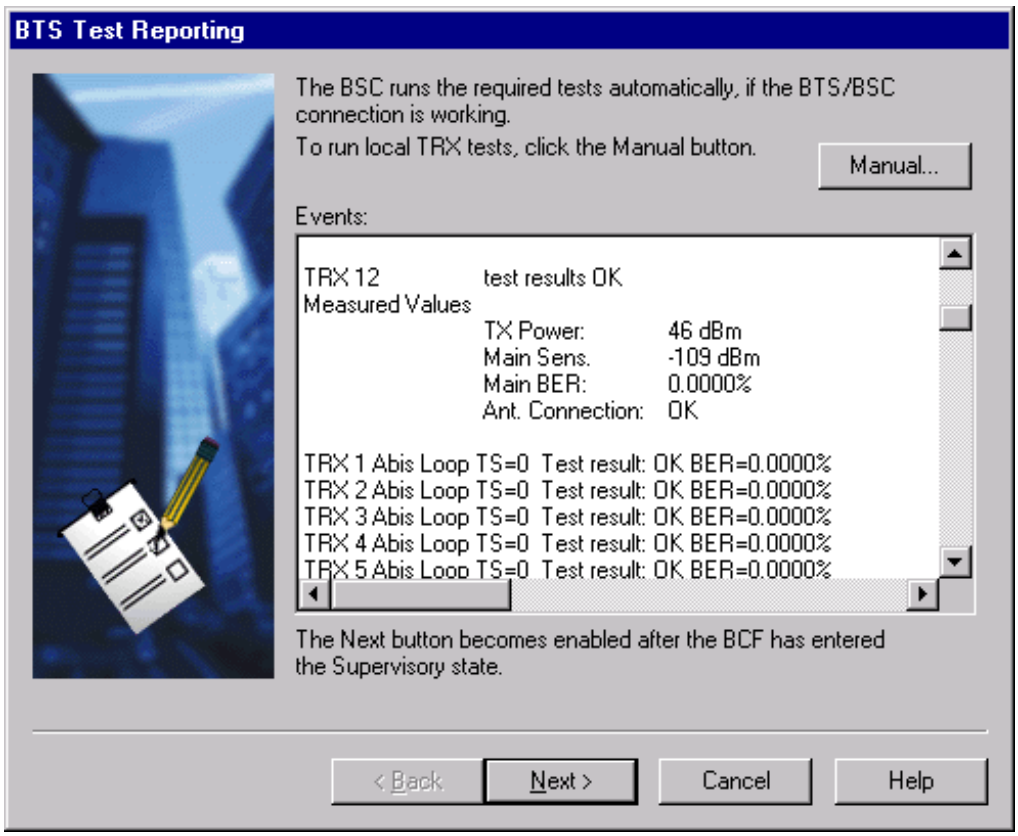


Figure 140. Test Events

Else

Click *No.*

The BCF remains in the *Waiting for LAPD* state until the BSC connection (OMUSIG link) is created.

10. Verify EAC inputs 1 to 12 in *EAC Input Settings window of BTS Commissioning Wizard.*

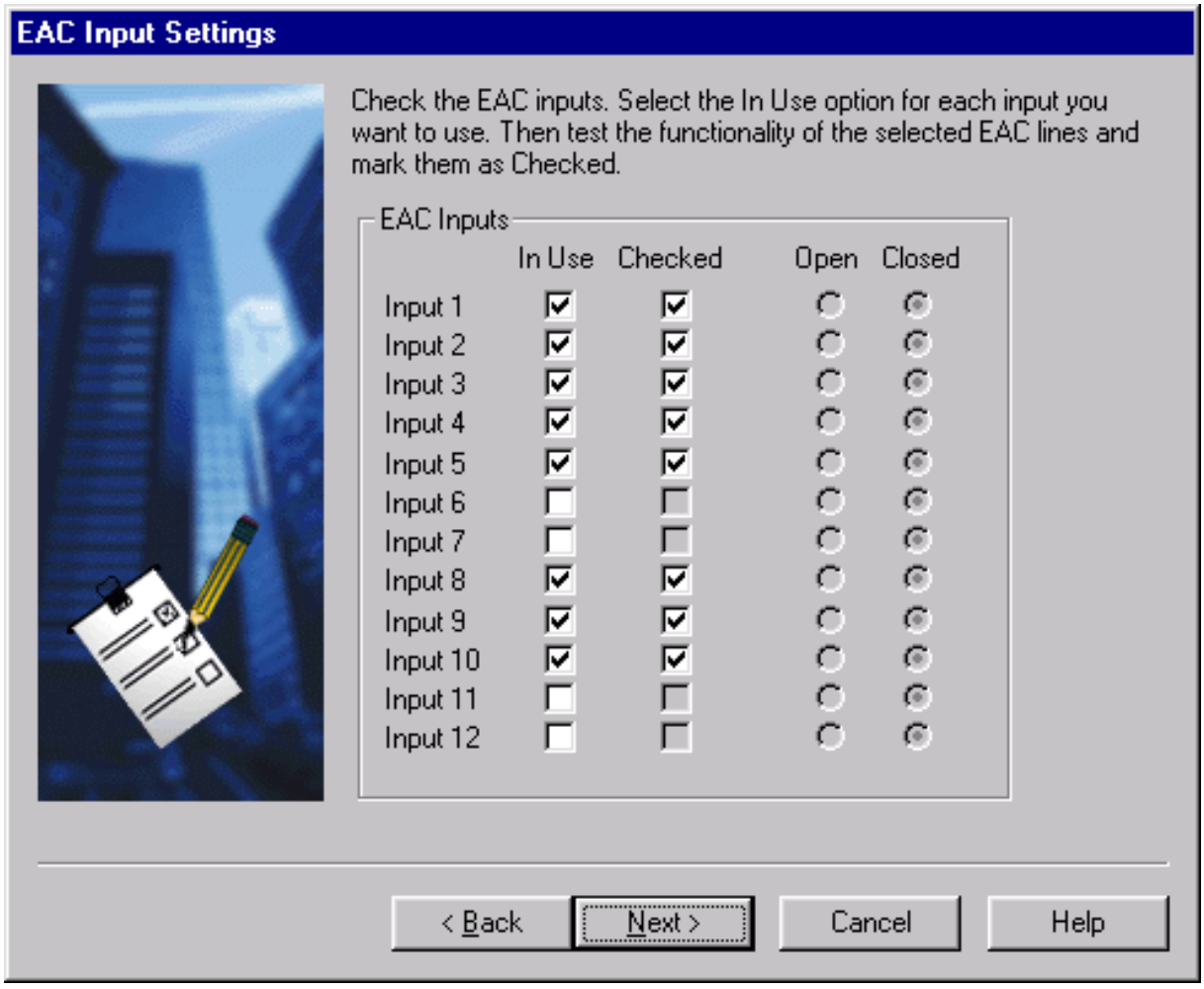


Figure 141. EAC inputs

a. Mark the required EACs as *In Use*.

   The state of each EAC changes in real time as you test it. For example, when you blow some smoke on the smoke detector, the appropriate state changes from *Open* to *Closed*, or the other way round.

b. After testing the EACs, mark them *Checked*.

c. When you have completed the testing (or verifying), click *Next*.

Note

The *Next* button remains disabled until you select the checkbox for all inputs that are marked *In Use*.

11. Verify EAC outputs in the *EAC Output Settings* window of the BTS Commissioning Wizard.

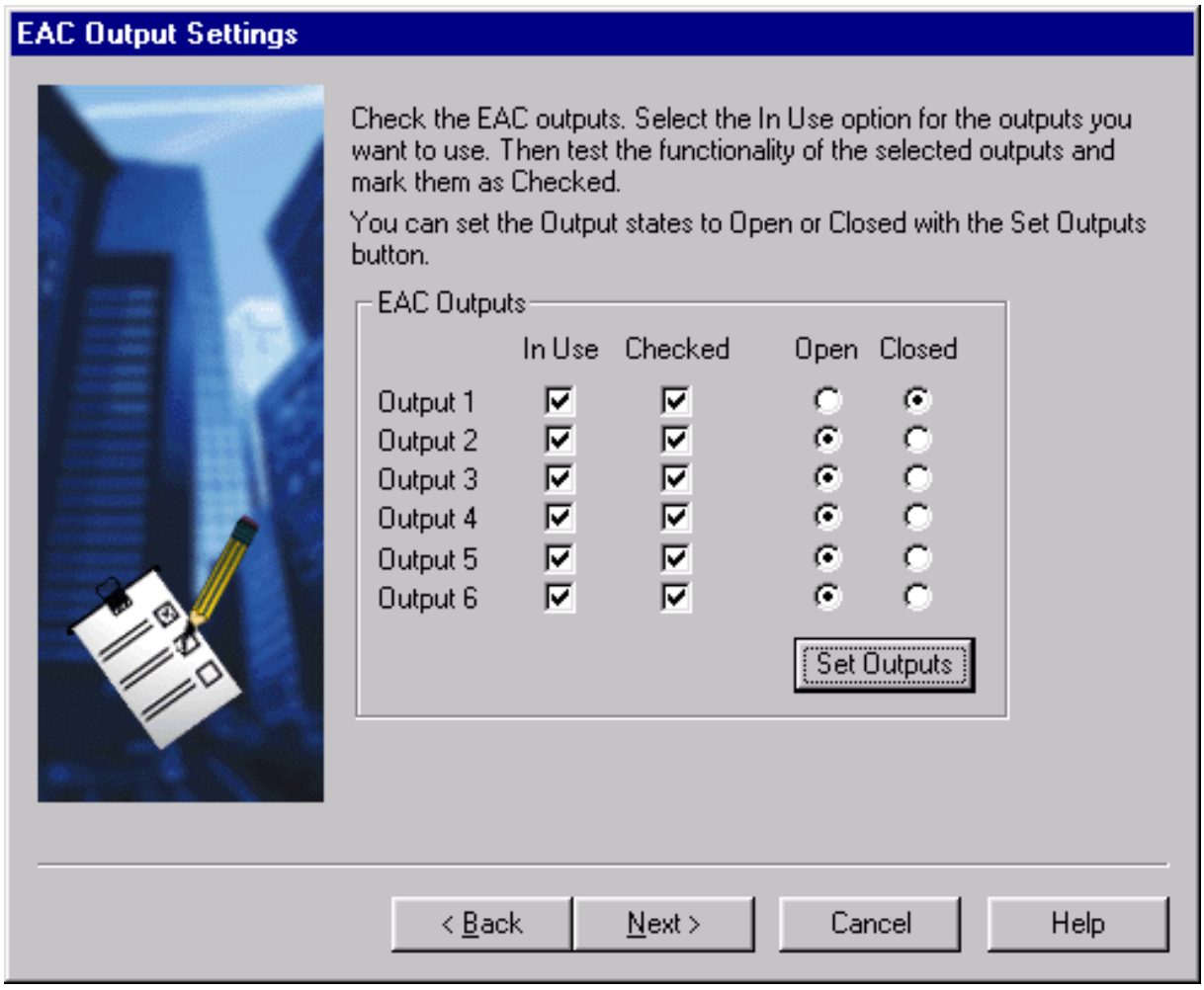


Figure 142. EAC outputs

a. Verify the EAC outputs by changing the EAC states.
b. Mark the required EACs as *In Use*.

12. Verify EAC inputs 13 to 24.

a. Verify EAC inputs 13 to 24 in the same way you verified inputs 1 to 12 (see step 10).

b. When you have completed the testing (or verifying), or if you do not use these EAC inputs, click *Next*.

13. Verify EAC outputs.

a. Verify the EAC outputs by changing the EAC states. Mark the required EACs as *In Use*.

b. When you have finished the EAC output settings, click *Set Outputs* to send the information to the BTS.

c. After you have completed verifying, click *Next*.

Note

The *Next* button remains disabled until you select the checkbox for all outputs that are *In Use*.

Note

EAC inputs and outputs windows are only for testing the lines. Recommissioning is not necessary if new EAC lines are added later. EAC lines are defined at the BSC, which activates the lines.

Note

The EAC names and polarities are defined at the BSC.

19.3 Defining Line Interface (LIF) settings of transmission (FC E1/T1) units

Steps

1. Display the LIF settings.

a. Click *LIF Settings* in the *Set Transmission Parameters* window.

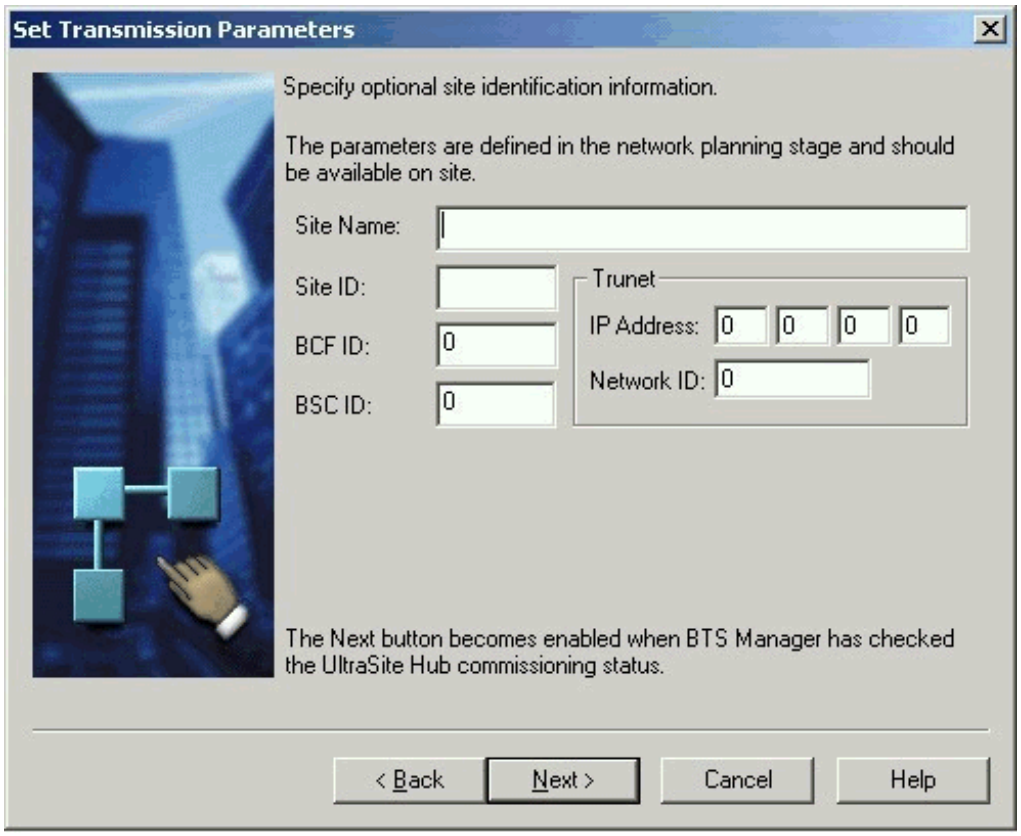


Figure 143. Set Transmission Parameters Page - FC unit

b. The *LIF Settings* window displays.

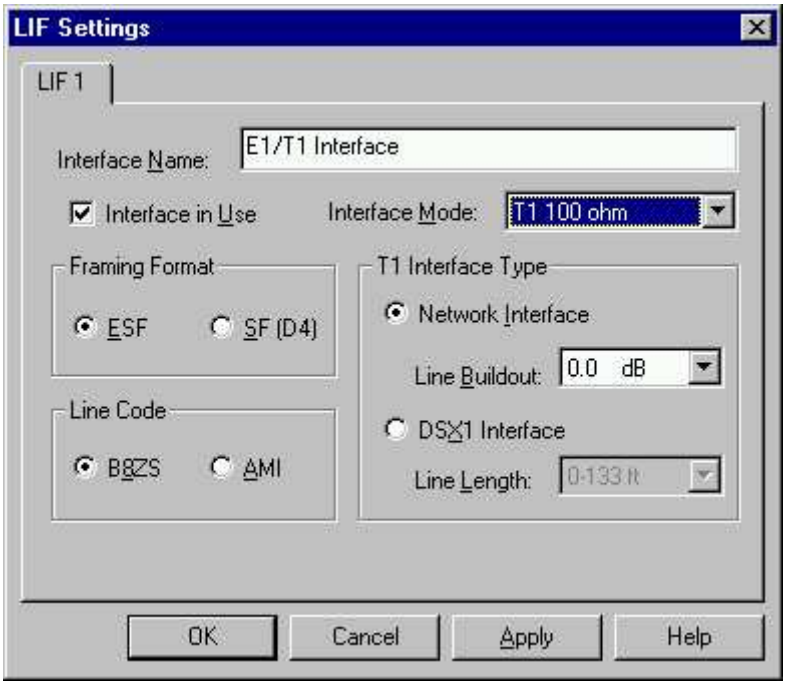


Figure 144. LIF Settings (E1/T1 interface)

2. Select the *Interface in Use* option.

3. Select the interface mode from the list.

4. *If* you selected the E1 750 ohm interface mode or the E1 120 ohm interface mode,

   Then

   Define the TS0 fixed bits in the *LIF Settings* window for E1 120 ohm mode.

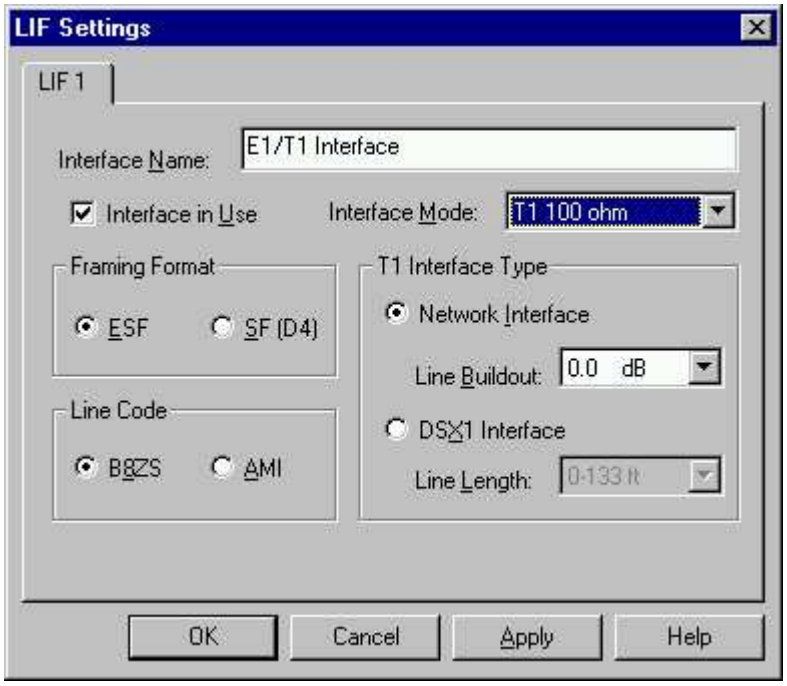


Figure 145. LIF Settings for FC E1/T1 unit in T1 mode

TS0 fixed bits 1 to 3 are reserved for CRC and frame locking. Bits 4 to 8 are used for alarms and data transfer in national connections.

Select the *CRC in Use* option the way it is defined at the BSC.

5. *If* you selected the T1 100 ohm interface mode,

   Then

   Define the Framing Format, Line Code and T1 Interface Type settings in the *LIF Settings* window for T1 100 ohm mode of the UltraSite BTS Hub Manager.

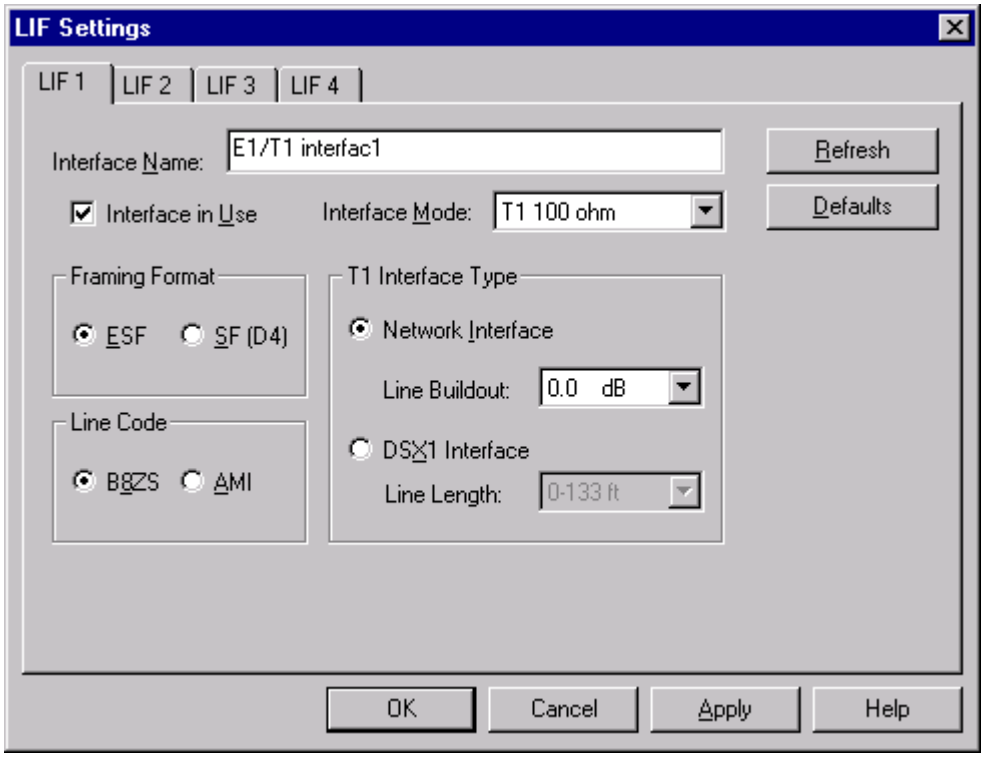


Figure 146. LIF Settings window for T1 100 ohm mode of the UltraSite BTS Hub Manager

6. Click *OK* to accept the changes.

19.4 Defining synchronisation settings of transmission (FC E1/T1) units

Steps

1. Display the synchronisation settings.

a. Click *Synchronisation* in the *Set Transmission Parameters* window.

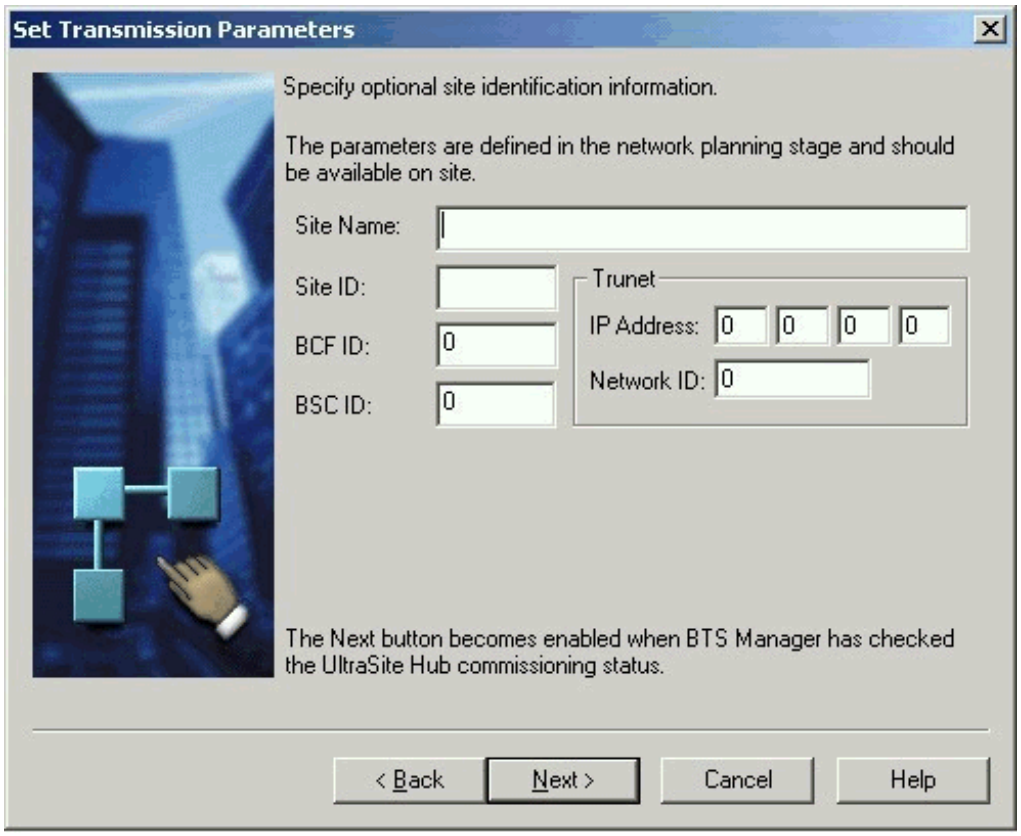


Figure 147. Set Transmission Parameters page - FC unit

b. The Synchronisation window of the UltraSite BTS Hub Manager displays.

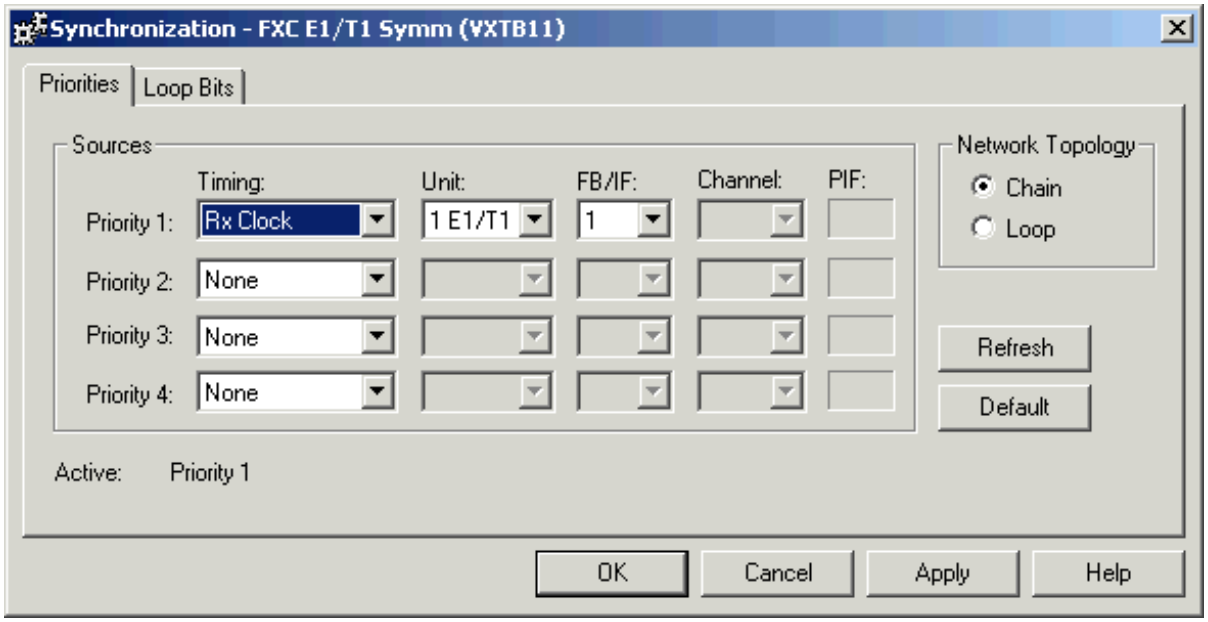


Figure 148. Synchronization Settings for FC E1/T1 unit

2. Set the timing.

Select the *RX Clock* timing option for *Priority 1*.

3. Click *OK* to accept the changes.

20 Using the Macro Recorder

20.1 Recording a macro

Purpose

This procedure describes how to record a macro with Nokia AXC Manager. The Macro Recorder function of Nokia AXC Manager can be used to record, store, and run sequences of operations.

For instructions on how to run a recorded macro, see *Running a macro*.

Steps

1. **Click Tools → Macro → Record.**

   The Record Macro dialogue box opens.

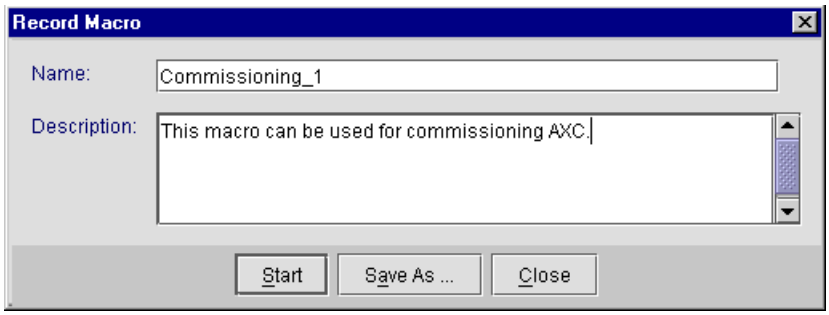


Figure 149. Recording a new macro

2. **Enter the name and description for the macro.**

   The description field is optional, but it is recommended that this field is filled.

3. **Save the macro.**

   Click **Save As...** and select a directory for the macro. By default, the macro is saved in the File Storage directory.

4. **Start recording the macro.**

   When you are ready to start recording the macro, click **Start**. The recording control dialogue appears with the name of the macro visible in the title bar.

Figure 150. Recording control: recording

When the Macro Recorder is recording, all operations performed with Nokia AXC Manager are recorded in the open macro.

Note

An operation must be completed and successfully sent to the AXC by Nokia AXC Manager before it is recorded in the macro.

Note

No software management operations, such as software download or activation of new software, should be carried out during macro recording because of differences between software versions.

Refresh, Inspect, Logout and Disconnect are not recorded in the macro.

5. *If* you want to carry out operations on Nokia AXC Manager that you do not want to be stored in the macro

   Then

Pause recording the macro.

Click **Pause** to pause recording. You can now carry out operations that will not be recorded in the macro.

Figure 151. Recording control: paused

Click **Resume** to resume recording the macro. Operations carried out are now recorded in the macro.

6. **Stop recording and store the macro.**

Click **Stop** to stop recording the macro. A request to confirm the action appears. Click **No** to continue recording the macro. Click **Yes** to save the macro.

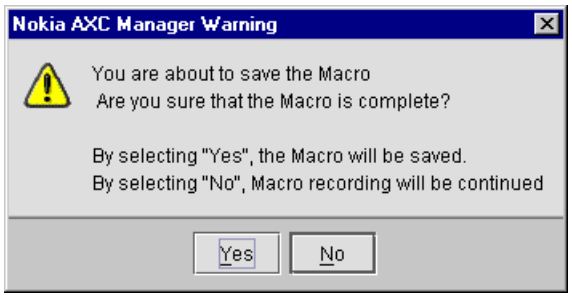


Figure 152. Saving a macro

7. *If* you want to delete a macro

Then

Click Tools → Macro → Delete.

The Delete a Macro dialogue box opens. Select the macro you want to delete. The dialogue provides information about the selected macro.

Click **Delete**. Confirm the deletion by clicking **Yes**.

20.2 Running a macro

Purpose

This procedure describes how to run macros with Nokia AXC Manager. The pre-recorded macros can be used to run a sequence of operations in order to, for example, commission Nokia AXC or restore its configuration after the hardware has been reset. For instructions on how to record a macro, see *Recording a macro*.

Before you start

Note

When executing a macro, the configuration of Nokia AXC should be the same as when the macro was recorded.

Steps

1. **Click Tools → Macro → Run.**

   The Run Macro dialogue box opens. Select the macro you want to run by clicking **Browse...**

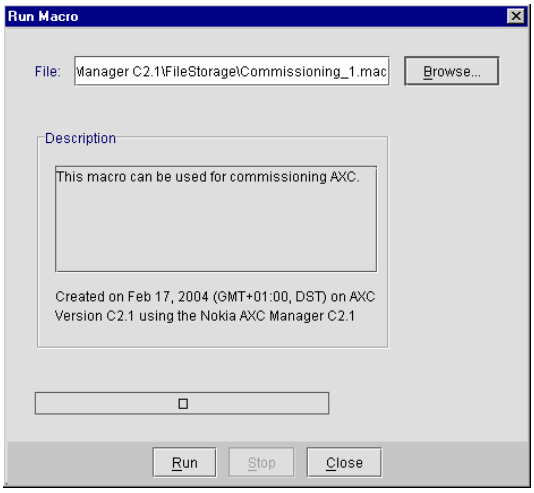


Figure 153. Running a recorded macro

2. Run the macro.

Click **Run** to run the macro.

Expected outcome

The macro is executed. A progress bar on the Run Macro dialogue box displays the progress of macro execution. If the macro is executed successfully, the message next to the progress bar changes to "Completed". You can see the new settings after Nokia AXC Manager has performed an automatic refresh.

Unexpected outcome

If the macro execution is unsuccessful, a message box displays with a list of errors that occurred during execution. The message next to the progress bar changes to failed.

21 Commissioning reports

21.1 HW configuration report

Purpose of the report

The HW Configuration Report is an ASCII text file (.hwr extension) that you can open and check with any word processor. This report, along with the*Transmission configuration report* and the *BTS commissioning report*, serves as the Site Acceptance document. It is recommended to use the same filename for the different reports of the same site.

Understanding the report

Table 9. Report fields

Field Name	Description and possible values
Report title	
Date and time	
HW configuration filename	Displayed if applicable
BTS configuration name	Displayed if applicable
Cabinet information	
BB2-TSx connection information	
Cabling information	
Antenna settings	
HW information filename	

21.2 Transmission Configuration Report

Purpose of the report

The Transmission Configuration Report is an ASCII text file (.cmr extension) that you can open and check with any word processor. This report, along with the*HW configuration report* and the *BTS commissioning report*, serves as the Site Acceptance document. It is recommended that you use the same filename for the different reports of the same site.

Note

For UltraSite EDGE BTS installations using FXC Transmission units, you can obtain the Transmission Configuration Report by choosing **Tools | Configuration Report | Save...** from the Nokia UltraSite BTS Hub Manager.

Note

If there are no separate FXC transmission units in the BTS configuration, there is no separate transmission configuration report. In this case, the FC E1/T1 transmission unit is configured during the BTS commissioning.

Understanding the report

Table 10. Report fields

Name	Description and possible values
Report title	• Equipment • Date and Time • User • File used in commissioning
Node Identification	• Equipment Type • Equipment Name • Family Type • Site Name • Group Name • Site Location

Table 10. Report fields (cont.)

Name	Description and possible values
Node test report	• Test Time • Node Name • Node Address • Test Person • Cross-connections

HW/SW configuration	• Installed FXC units by slot:
	  • Unit type
	  • Serial Number
	  • Code
	  • Version
	  • SW version

Node settings	• Service interface
	  • Q1 port address, speed and group address
	  • LMP address, speed and group address
	  • Q1 int speed and group address
	  • Control and confirmation timeouts
	• Q1 management
	  • State of the Q1 hybrid switches
	• Synchronisation settings

Alarm Configuration	• All active alarms listed
LIFs and Flexbuses	• Interfaces are listed and Flexbus capacities are shown
D-Bus allocation - D11-D13 (Traffic Management)	• Signal Timing mode • OMUSIG • TCHs • TRXSIGs • EDAPs
Cross-connections in active bank	
Outdoor units	• Radio measurements • Active alarms in radios

21.3 BTS commissioning report

Purpose of the report

The BTS Commissioning Report is an ASCII text file (.rpt extension) that you can open and check with any word processor. The report includes test results and configuration information. This report, along with the*HW configuration report* and the *Transmission configuration report*, serves as the Site Acceptance document. It is recommended to use the same filename for the different reports of the same site.

Understanding the report

Table 11. Report fields

Field Name	Description and possible values
Report title	
Date and time	
User name	
Commissioning mode and network time	
BTS logical configuration	
Telecom status in TRXs	
BTS HW versions	
BTS SW versions	
EAC input and output test	
BTS test results	In the test reports, each test gives one of the following test results: • OK • Partially failed • Failed
Abis test results	
TRX test results	
BTS alarm test report	
External TREs in Q1 port	
Abis allocation report	Available if an FC E1/T1 unit exists in the configuration

22 Completing commissioning

22.1 Completing the commissioning

Summary

The configuration phase contains activities needed to make the node functional in the network. These activities include the node ID, Q1, and synchronisation settings for the node, unit-specific settings for the transmission units, radio parameters, and cross-connection.

Steps

1. Browse the node off-line file.

Click *Browse* in the *Site Selection window*. *Browse* opens a standard *Open* window where you can look for the file.

The *Next* button is disabled until a valid file is selected.

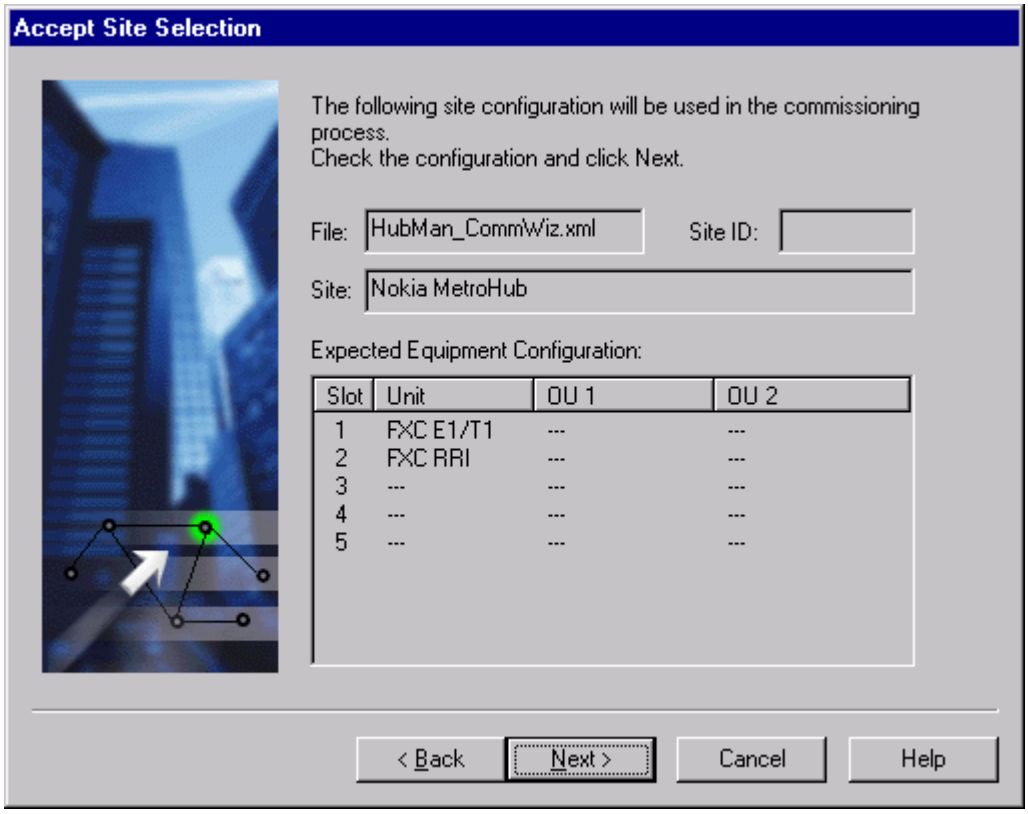


Figure 154. Site Selection dialogue box

2. Verify that the selected site is the correct one.

Some of the node off-line file data displays in the *Accept Site Selection window*. Click *Next* to accept the selected file.

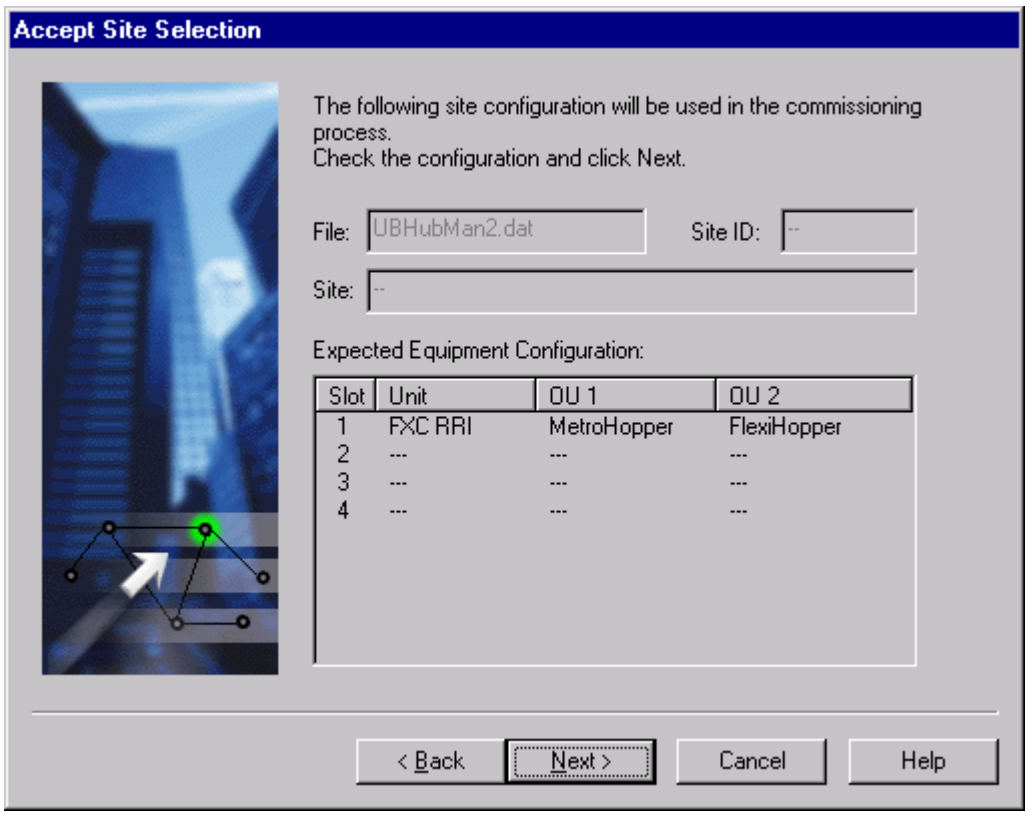


Figure 155. Accept Site Selection dialogue box

3. **The BTS Manager compares the file equipment configuration against the node configuration.**

   If there are differences, you are notified about them with the following message: *Fix the configuration and restart the commissioning process.*

4. **Send settings to the nodes and units.**

   After the configuration is correct, all the settings are sent to the node and units. The UltraSite BTS Hub Manager takes care of the node level settings and the integrated FXC unit managers take care of the FXC unit-related settings and possible outdoor unit settings.

5. **Monitor and fine-tune hops in the *Check Hops window.***

In the *Check Hops window*, you can monitor possible radio hops and fine-tune them. Only FXC RRI units are enabled. The UltraSite BTS Hub Manager polls each unit and updates the status of the radio outdoor units to the window.

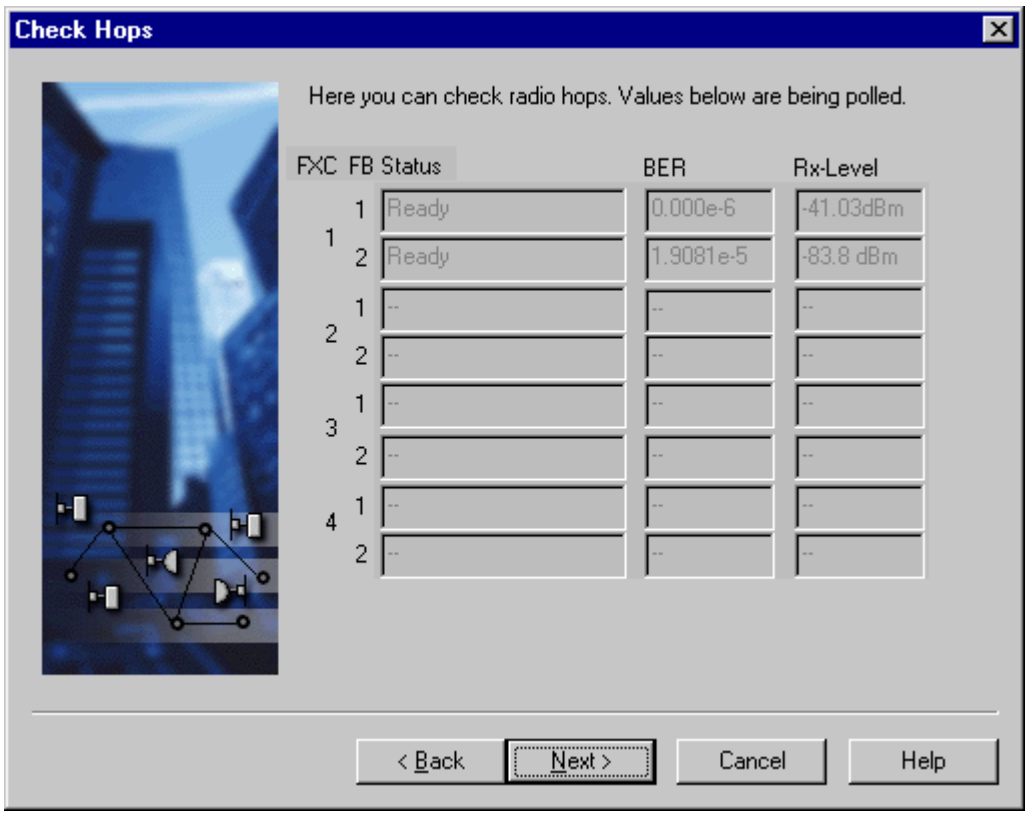


Figure 156. Check Hops dialogue box

When you click *Next*, the polling ends, and the *End* window opens.

6. View the Commissioning Report in the *End window.*

A Commissioning Report is gathered containing the test results and the node configuration information (node settings, settings of each unit, cross-connections). The report displays in the *End* window. This report is then protected and stored into a file which can be used, for example, for site acceptance.

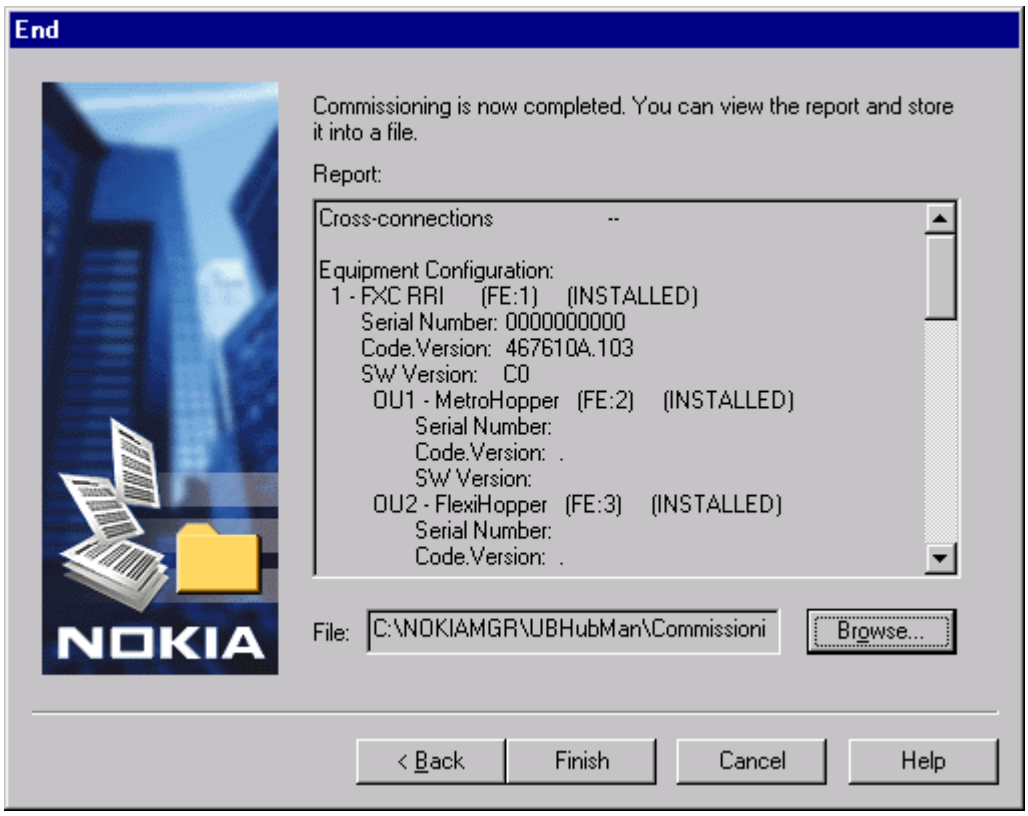


Figure 157. End dialogue box

Note

After the first end of the hop is commissioned, the hop status in the *Check Hops* window and in the commissioning report is shown as *Not ready* or *Trying, no far-end found* until the first end of the hop is commissioned.

A complete commissioning report can be obtained after the far-end of the hop has been commissioned.

22.2 Powering down UltraSite EDGE BTS

Before you start

Familiarise yourself with the installation procedures for the additional site equipment before powering down the site.

Summary

Warning

Risk of lethal voltages and electric shock exist when routing power cables. Verify that the mains power breaker is off and that the unit is properly grounded before attempting any connections to the unit.

Note

Follow all applicable national regulations when working with power supply and power cables.

Maximum site downtime recommendations are provided by your Network Planning Engineer.

Steps

1. **Read the site downtime recommendations before powering down the site.**
2. **Collect site equipment information.**
3. **Follow the powering down procedures of the relevant BTS or site support equipment's user manual.**

Related Topics

Overview of commissioning the BTS

Descriptions

Nokia Sitewizard software

Overview of using Hub Manager of Site Wizard

Reference

Transmission configuration report

Overview of using BTS Manager of Site Wizard

Reference

BTS commissioning report

Commissioning the transmission node with the Commissioning Wizard

Instructions

Installing transmission node manager software from Nokia SiteWizard

Setting site configuration file parameters before commissioning

Setting site configuration parameters in a node offline file

Saving node information in a file

Testing with the Commissioning Wizard

Configuring with the Commissioning Wizard

Testing with the Commissioning Wizard

Instructions

Commissioning the transmission node with the Commissioning Wizard

Configuring with the Commissioning Wizard

Configuring with the Commissioning Wizard

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Testing with the Commissioning Wizard

Descriptions

Technical description of fading margin measurement in Nokia FlexiHopper (Plus)

Overview of upgrading the transmission node manager and transmission unit software

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Installing transmission node manager software from Nokia SiteWizard

Downloading FXC transmission unit software

Copying transmission unit software between transmission units

Installing transmission node manager software from Nokia SiteWizard

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Adjusting service interface settings

Adjusting sychronisation settings

Adjusting sychronisation loop bit settings

Adjusting alarm property settings

Adjusting Q1 management settings

Adjusting alarm property settings

Instructions

Resetting the transmission node or units

Overview of adjusting management settings

Instructions

Adjusting SDH management channel settings

Overview of adjusting node synchronisation settings

Overview of managing cross-connections

Descriptions

Technical description of Q1 management

Q1 management options for Nokia MetroHub

Overview of adjusting node synchronisation settings

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Adjusting PDH synchronisation settings

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Technical description of PDH transmission network protection using loop topology

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Adding cross-connections in the graphic view

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Creating and exporting a cross-connection file

Importing a cross-connection file

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Adding cross-connections with the Add Cross-connection Wizard

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Removing cross-connections

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Overview of managing cross-connections

Administering user access level control

Descriptions

Technical description of user access levels

Starting the node manager

Instructions

Using online help

Using online help

Instructions

Starting the node manager

Using the licence manager

Descriptions

Technical description of software licensing

Overview of connecting to the transmission node online

Instructions

Connecting to the transmission node via LMP

Connecting to the transmission node via Q1 address

Descriptions

Technical description of the node control unit

Connecting to the transmission node via LMP

Instructions

Overview of connecting to the node online

Installing and uninstalling transmission units logically with the manager

Reference

221 Version mismatch

Descriptions

Technical description of the node control unit

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Restoring backup settings from a file

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Saving node information in a file

Creating a new hardware configuration

References

HW configuration report

Using an existing hardware configuration

References

HW configuration report

Setting Nokia FlexiHopper and Nokia FlexiHopper Plus settings

Descriptions

Technical description of hot standby with the FXC RRI transmission unit

Technical description of fading margin measurement in Nokia FlexiHopper (Plus)

Using off-line node file for commissioning

Reference

BTS commissioning report