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C33525.90_H0
Nokia MetroHub Transmission Node Rel. C3

Commissioning Nokia MetroHub

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1 Overview of commissioning Nokia MetroHub

Purpose

The following sections detail how to commission Nokia MetroHub.

Steps

1. **Prepare to commission Nokia MetroHub (connect cables, power up, and set site configuration parameters offline).**
2. **Learn to use the Nokia MetroHub manager (start up the software and use the online help).**
3. **Prepare to commission Nokia MetroHub in the Network: connect to the transmission node online or connect to the transmission node offline.**
4. **Use the Commissioning Wizard to commission, test, and configure Nokia MetroHub.**
5. **For cabinet chaining (including commissioning), refer to Working order for chaining the Nokia BTS to a Nokia MetroHub.**

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2 Preparing to commission Nokia MetroHub

2.1 Overview of preparing to commission Nokia MetroHub

Purpose

Commissioning is the process of bringing a newly installed network element into use. It configures the system for operational use and defines all the system parameters needed for the system to function.

Before you start

Check that the hardware and software that you are about to commission is compatible. See the ITN hardware and software compatibility information in the *Nokia ITN Integrated Transmission Node Release C3.0, Compatibility* document, which is available in the Release Binder in NOLS.

Summary

Nokia node managers provide a Commissioning Wizard that guides the user through the whole commissioning process. The commissioning process is divided into two phases: testing and configuration.

The easiest way to commission a node is to use the Commissioning Wizard. In order to use the Commissioning Wizard one needs a configuration file containing a valid configuration. There are two kinds of configuration files: site configuration files (SCF), with the extension .xml, and node offline files, with the extension .nod or .dat. Of these, MetroHub supports creating files in the .xml and .nod formats. Site configuration files (with the extension .xml) are usually provided by network transmission planning.

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If a site configuration file cannot be obtained from transmission network planning, it is possible to use a node offline file to commission Nokia MetroHub with the Commissioning Wizard. No matter what format the configuration file is in, the file has to contain a valid configuration.

Configuration files are used to rapidly commission a large number of nodes that share a lot of the same settings. A particular configuration file may contain some, most or all of the settings neded to commission a certain node. In other words, it is possible to create node-specific, highly detailed files as well as templates. In the course of the commissioning process, the settings are automatically read from the file and configured in the node.

Note

The SCF provided by network transmission planning does not include all the settings required for commissioning. The file has to be edited to some extent.

Note that it is also possible to commission a node manually, in which case no configuration file is needed. Manual commissioning simply means that the user proceeds through all the relevant setting menus one by one. In this case, no commissioning report can be obtained.

Steps

1. **Check that the node has been installed correctly, following the instructions in Overview of installing Nokia MetroHub.**

2. **Check that the node manager has been installed in your PC.**

   For instructions, see *Installing transmission node manager software from Nokia SiteWizard*.

3. *If* network transmission planning has provided you with a site configuration file

   Then

   Edit the SCF offline by adding the settings needed for commissioning.

   For more detailed instructions, see *Setting site configuration file parameters before commissioning*.

   If the installation includes a Nokia FlexiHopper or Nokia FlexiHopper Plus radio, refer to *Setting Nokia FlexiHopper and Nokia FlexiHopper Plus settings* for instructions.

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If the installation includes a Nokia MetroHopper radio, refer to *Setting Nokia MetroHopper settings* for instructions.

4. *If* you do not have a site configuration file provided by network transmission planning

   Then

   Create a node offline file.

   For more detailed instructions, see *Setting site configuration parameters in a node offline file*.

   If the installation includes a Nokia FlexiHopper or Nokia FlexiHopper Plus radio, refer to *Setting Nokia FlexiHopper and Nokia FlexiHopper Plus settings* for instructions.

   If the installation includes a Nokia MetroHopper radio, refer to *Setting Nokia MetroHopper settings* for instructions.

5. **Check that a valid site configuration file exists on the PC hard disk.**

6. **Check that you have the cable to connect the PC to the LMP port of the node before moving to the site to commission the node locally.**

   For instructions for connecting the cable, see *Connecting cables for commissioning Nokia MetroHub*.

7. **Commission the transmission node with the Commissioning Wizard.**

2.2 Connecting cables for commissioning Nokia MetroHub

Purpose

To manage the node locally with MetroHub Manager, the computer must be connected to the local management port (LMP) of MetroHub on the interface unit (DIUx) using a communication cable. This LMP cable is a separate sales item (see *Technical overview of Nokia MetroHub hardware*).

Steps

1. **Connect the BQ connector of the cable to the LMP port of MetroHub, on the interface unit (DIUx). See the following diagram.**

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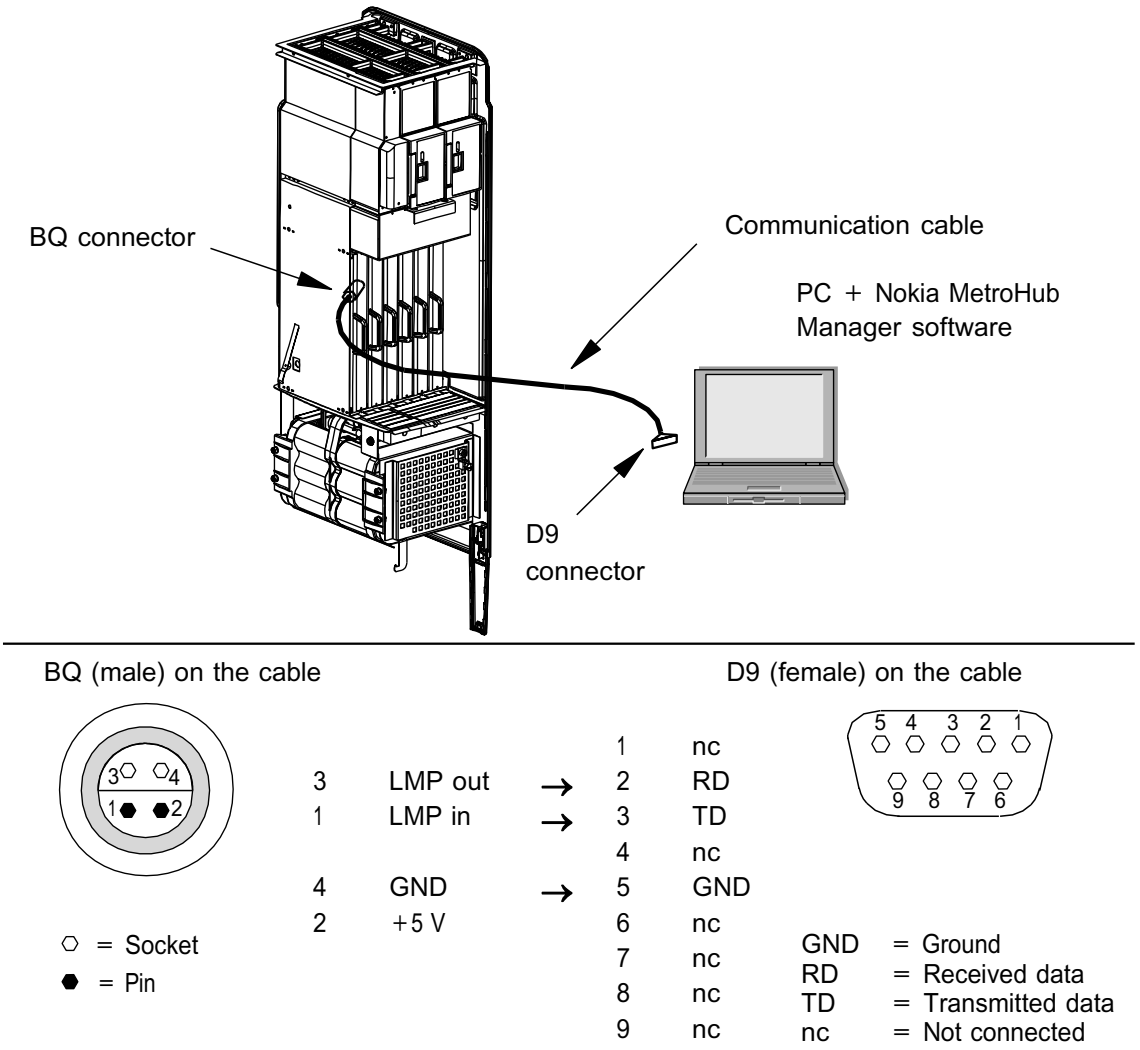

Figure 1. Connecting the communication cable and connector pinouts

2. Connect the serial connector to the COM port of the PC.

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2.3 Powering on the uncommissioned Nokia MetroHub

Steps

1. **Turn the stand-by switch to ON position in the power supply unit (DSUx).**
2. *If* there is a redundant power supply in the cabinet
   Then

   switch it on, too.

Expected outcome

The green LED is lit in the power supply unit in five seconds.

The interface unit (DIUx) LED stays red until the software of the FXC unit functioning as node control unit is ready and updates the DIUx LED state. This typically takes less than 30 seconds.

Note

The node is not ready and it cannot be accessed with the node manager until the red state changes.

If the temperature of the unit falls below -10°C/14°F, the unit cannot be started. When this happens, the power supply unit LED turns a constant yellow when the unit is switched on. *Cold start* logic automatically starts unit heating and the operating voltages are connected once the units have been heated up. Heating the unit usually takes a few minutes.

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2.4 Setting site configuration file parameters before commissioning

Summary

There are some settings that need to be added to the site configuration file (SCF) before commissioning the node. This section lists the parameters which are not supported by Transmission Planner 4.0 (which is a part of the NetAct Planner 4.0). The missing parameters are added to the existing site configuration file using transmission node managers. Some of these parameters are obligatory and marked in the table with a star (*).

Table 1. Settings to be added to the SCF before commissioning

Settings	
Identifications	Equipment name Group name Site location Node and unit installation information
Cross-connections	Cross-connection label
Q1 management	Q1 group address Q1 baud rate Hybrid switches* (processor, internal 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)

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Table 1. Settings to be added to the SCF before commissioning (cont.)

Outdoor unit information	Equipment name Tx Frequency* (FlexiHopper) Maximum Tx power* (FlexiHopper) Bandwidth (FlexiHopper Plus) Temporary Hop ID* (MetroHopper) Hop Mode* (MetroHopper) Channel Selection* (MetroHopper) Channel Spacing (MetroHopper) Active Synchronizing (MetroHopper)

Steps

1. **Open the node manager.**

2. **Select File → Open.**

3. **Select the site to be edited in the Site Selection dialogue box.**

4. **Check the cross-connections.**

   You can give a label to a cross-connection.

5. **Add the necessary settings to the units and the node (see the table above).**

   Interface settings:

   - For FXC E1/T1:
     - use of interface, CRC usage mode of interface
   - For FXC RRI:
     - Flexbus setting: use of Flexbus interface, Flexbus capacity, Flexbus DC
     - Platform interface settings: use of interface, CRC usage mode of interface

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- Operation mode: single or 1 IU + 2 OU protected or 1 IU + 2 OU protected + Space Diversity
- Radio settings (see *Setting Nokia FlexiHopper and FlexiHopper Plus settings* or *Setting Nokia MetroHopper settings* and refer to the documentation of the corresponding radio).

Q1 transmission control bus settings:

- Q1 address, Q1 speed, Q1 hybrid switches, and EOC channel settings

Synchronisation related settings:

- Synchronisation sources and *loop bits* in case of a PDH loop network
- Synchronise PDH to SDH if SDH units are in use

Identification-related settings and other settings:

- Node ID (equipment and site name)
- Node installation information (power units, DIU and fan unit)
- Transmission unit names and installation dates (in the corresponding transmission unit's menu)

6. Select File → Save As...

The manager opens the *Save Node Settings dialogue box*.

7. Select either Select all or select the individual units that you want the settings to be saved for, and click OK.

The manager opens the **Save As** dialogue box.

8. Give the file a name, select a file type and a place to save the file to, and click Save.

If you are using the so called multiple SCF which can include several site configurations, you can save the edited configuration into the original multiple SCF by selecting the same file in the **Save As** dialogue box. In that case saving replaces only the edited configuration in the multiple SCF.

Expected outcome

Now you have a complete file for commissioning the node.

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2.5 Setting site configuration parameters in a node offline file

Purpose

The node offline file can be used for two purposes. It can be used in the commissioning process and later as a backup file.

Summary

Also a node offline file (with the extension .nod or .dat) can be used to commission Nokia MetroHub or UltraSite BTS Hub with the Commissioning Wizard if a site configuration file (with the extension .xml) cannot be obtained. All files used have to contain a valid configuration.

The user creates the node offline file and includes all the necessary settings for the configuration in the file, as provided by transmission network planning. All defined parameters are automatically read from the node offline file and sent to the node during the commissioning process.

By editing the configuration file offline, a considerable part of the commissioning-related work can be done off-site.

It is recommended to use a separately saved node offline file (with the extension . nod) as the backup file. To create a separate backup file, save the settings after the node has been successfully commissioned and is functioning in the desired way.

Steps

1. **Select File → New.**

2. **Install the desired FXC units, radios and optional second power supply and battery backup units in Equipment View.**

3. **Create the cross-connections.**

   Create the cross-connections in the **Cross-connections** window. Activate the created cross-connection bank before creating any other settings.

Note

The maximum number of PDH cross-connections is 254. If this number is exceeded, it cannot be guaranteed that the previously active cross-connections will be active again after rebooting the system. Therefore, it is not recommended to create more than 254 PDH cross-connections.

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4. Perform the necessary settings to the units and the node.

Synchronisation-related settings:

- Synchronisation sources and *loop bits* in case of a PDH loop network
- Synchronise PDH to SDH if SDH units are in use

Interface-related settings:

- For FXC E1/T1 Use of interface, CRC usage mode of interface
- For FXC STM-1 Interfaces 1 and 2:
  - Laser Control State set to **On**
  - Performance Collection settings for RS, MS, and VC-4
  - TTI settings.
- For FXC RRI Flexbus settings (use of Flexbus interface, Flexbus capacity), Platform interface settings (use of interface, CRC usage mode of interface), operation mode settings, and radio settings. For more information on radio settings, see *Setting Nokia FlexiHopper and Nokia FlexiHopper Plus settings* or *Setting Nokia MetroHopper settings* and refer to the documentation of the corresponding radio.
- *EAC programmable alarms*
- Alarm Monitoring States settings; activate alarm monitoring to receive alarms (FXC STM-1)
- SDH-PDH Channels settings:
  - TTI settings, Performance Collections (FXC STM-1)
  - PDH channels set to **In Use** (FXC Bridge)

Q1 transmission control bus-related settings:

- Q1 address, Q1 bus speed, Q1 hybrid switches and EOC channel settings

Identification-related settings and other settings:

- Node ID (equipment name and site name)
- Node installation information (date, time and person)
- Cabinet unit installation dates (power units, DIU and fan unit)
- Transmission unit names and installation dates (in the corresponding transmission unit menu)

5. Select File → Save as...

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The manager opens the **Save Node Settings** dialogue box.

6. **Select either Select all or select the individual units that you want the settings to be saved for, and click OK.**

   The manager opens the **Save As** dialogue box.

7. **Give the file a name, select a file type and a place to save the file to, and click Save.**

Expected outcome

Now you have a complete file for commissioning the node.

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3 Using Nokia MetroHub manager

3.1 Overview of using the Nokia MetroHub manager to commission and manage Nokia MetroHub

Purpose

The following sections outline the basic use of the Nokia MetroHub manager software.

Steps

1. **Start the node manager.**
2. **Use the online help whenever necessary.**

3.2 Starting the node manager

Before you start

Nokia node managers have been installed in your computer. For instructions, see *Installing transmission node manager software from Nokia SiteWizard*.

Steps

1. **Start Windows.**
2. **Click Start, and then point to Programs → Nokia Applications.**
3. **Click the node manager.**

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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

3.3 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

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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.

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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:

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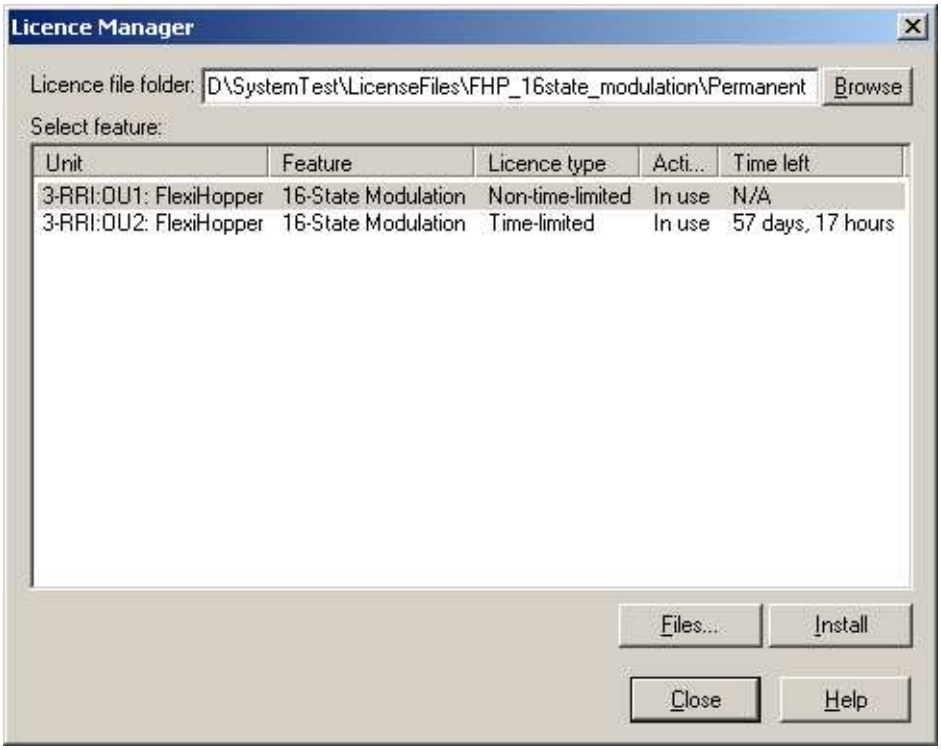

Figure 2. Licence Manager dialogue box

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.

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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.

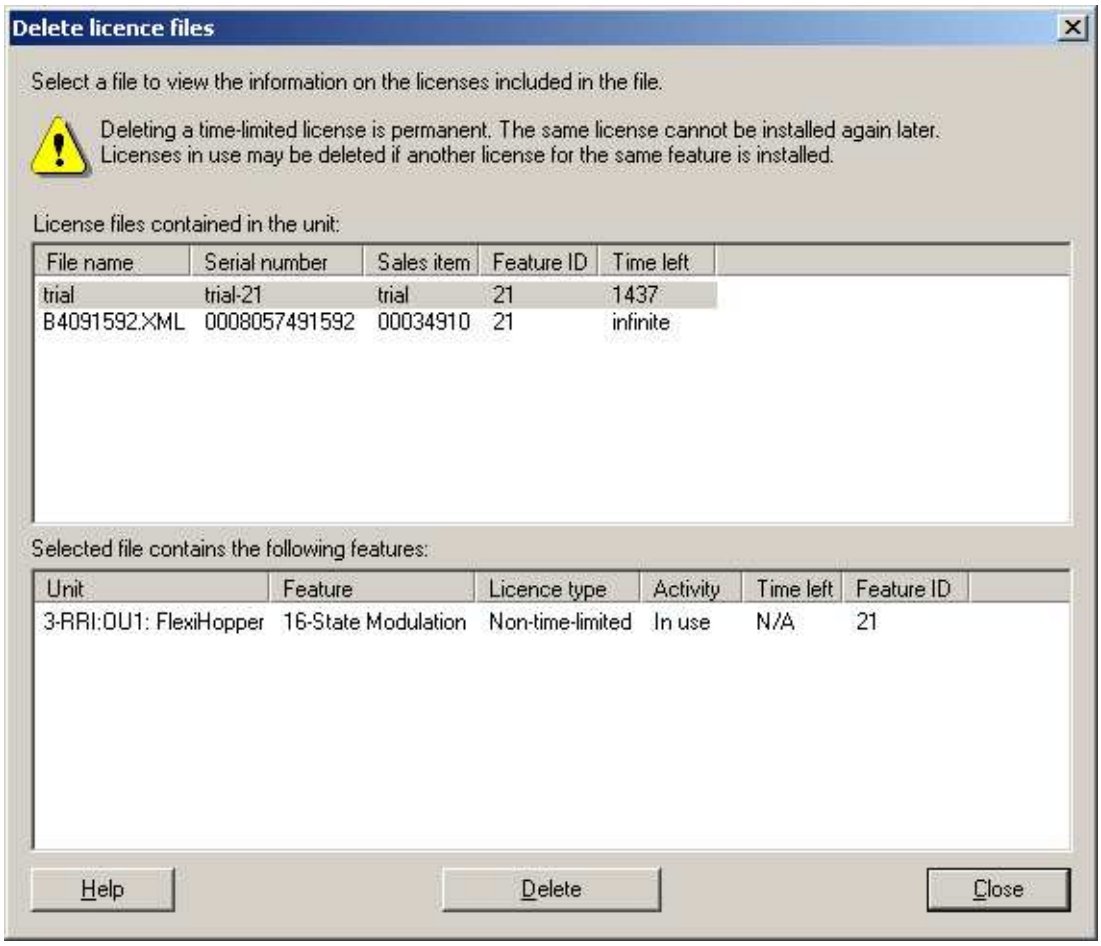

Figure 3. Delete licence files dialogue box

b. In the Delete licence files dialogue box, select the file to be removed.

c. Click Delete.

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Expected outcome

A licence file is installed or removed.

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5 Connecting to the transmission node

5.1 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

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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.

5.2 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

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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.

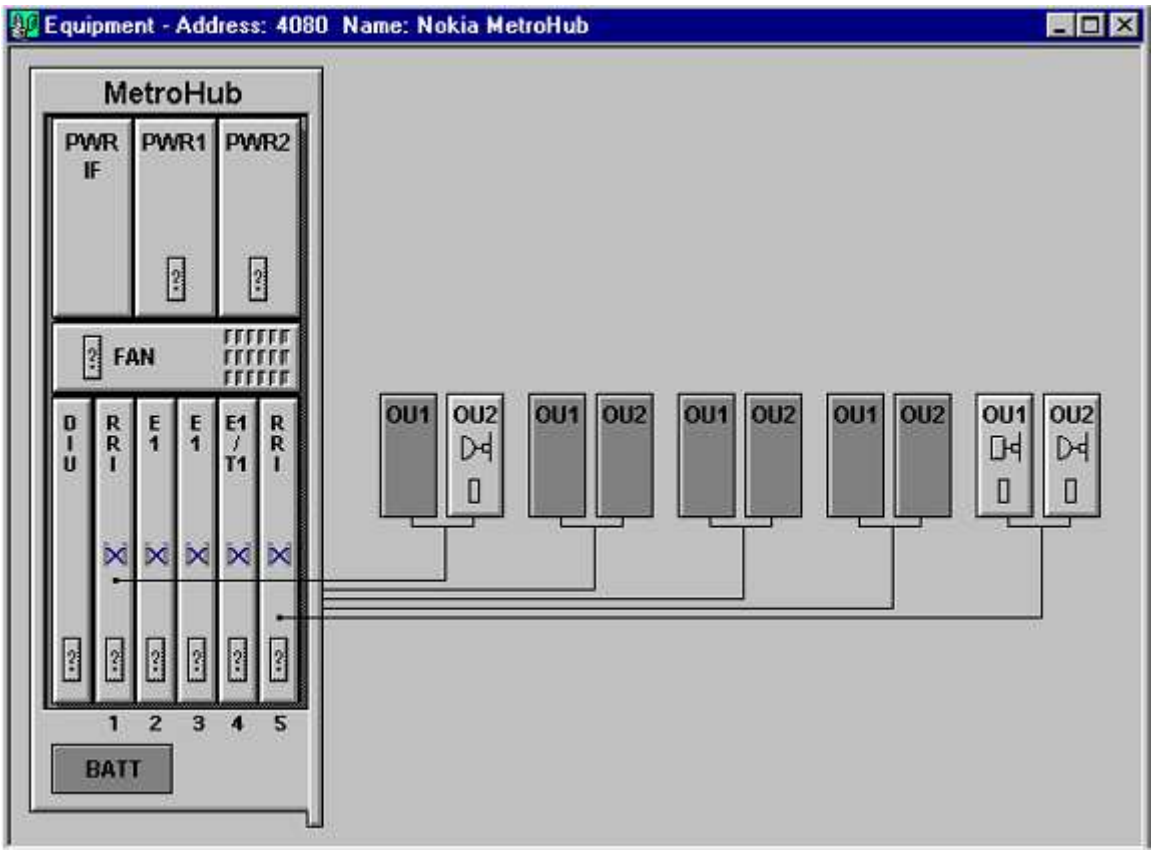

Figure 4. MetroHub or UltraSite BTS Hub Manager Equipment window (Connected to node)

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

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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 2. 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.*

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5.3 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.

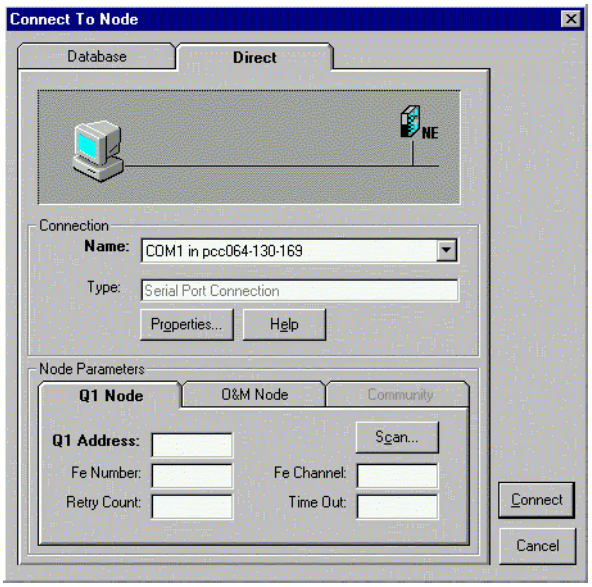

Figure 5. Nokia Connection Tool (Connect to Node dialogue box)

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*.

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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.**

5.4 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.**

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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.

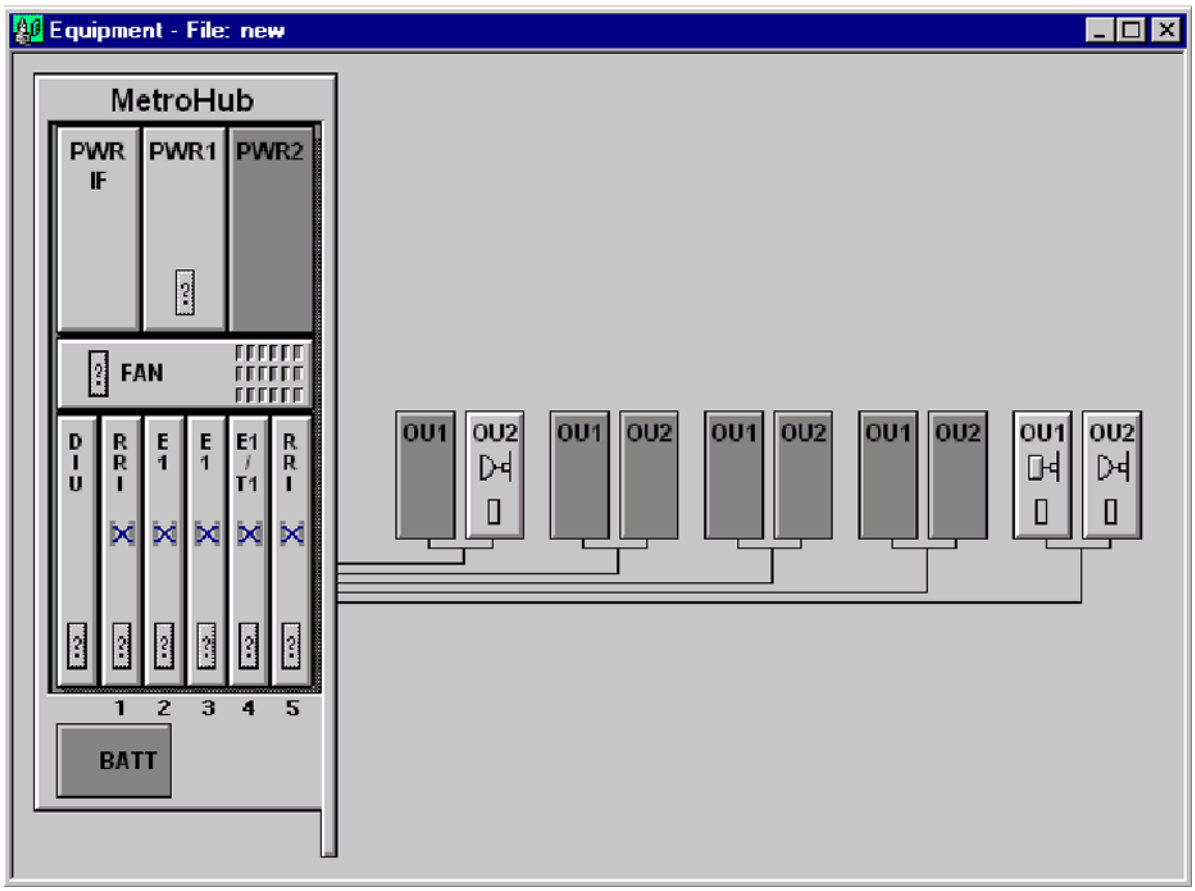

Figure 6. MetroHub or UltraSite BTS Hub Manager Equipment window (offline mode)

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6 Using the Commissioning Wizard

6.1 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

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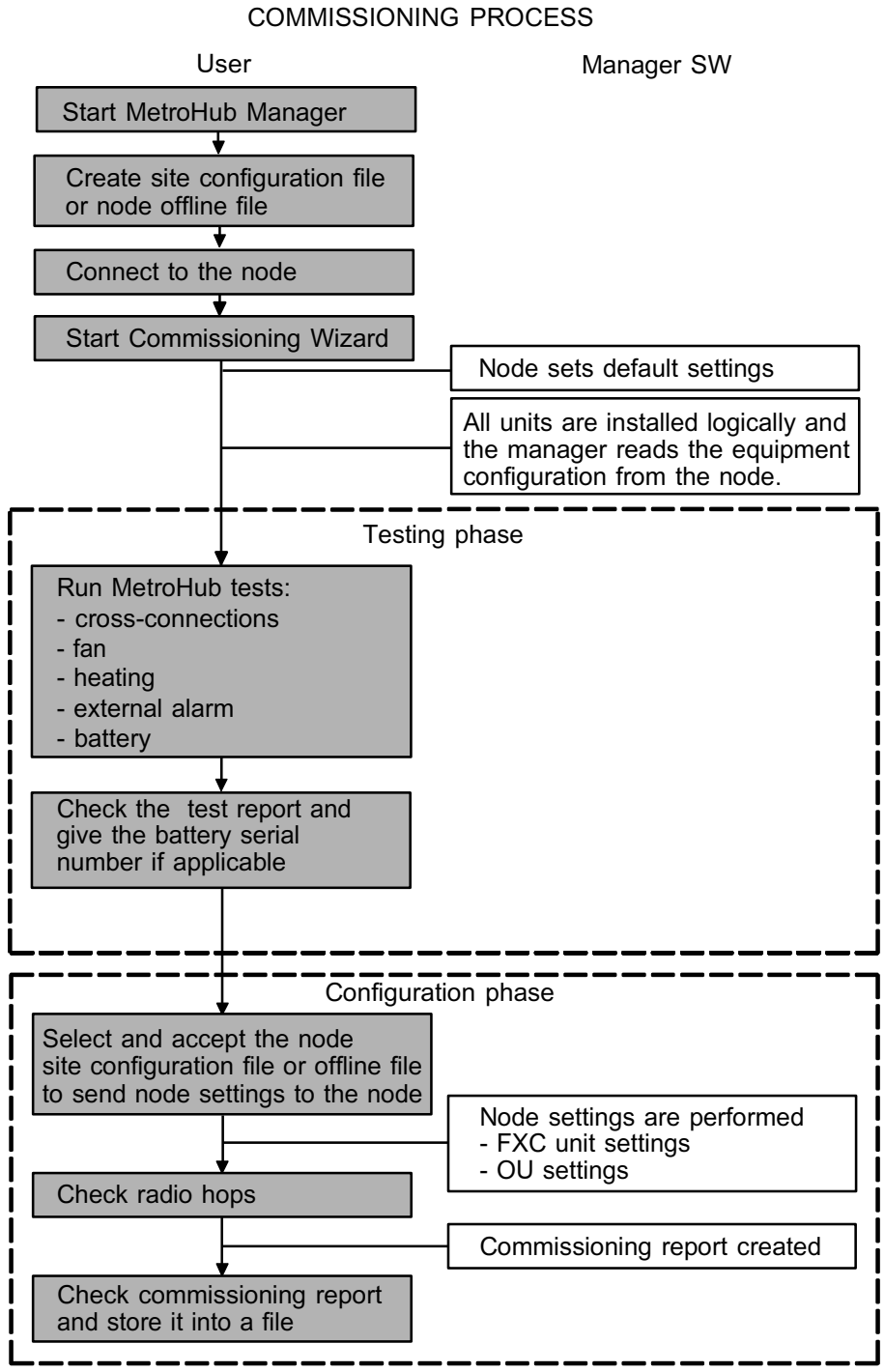

Figure 7. Commissioning process

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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.

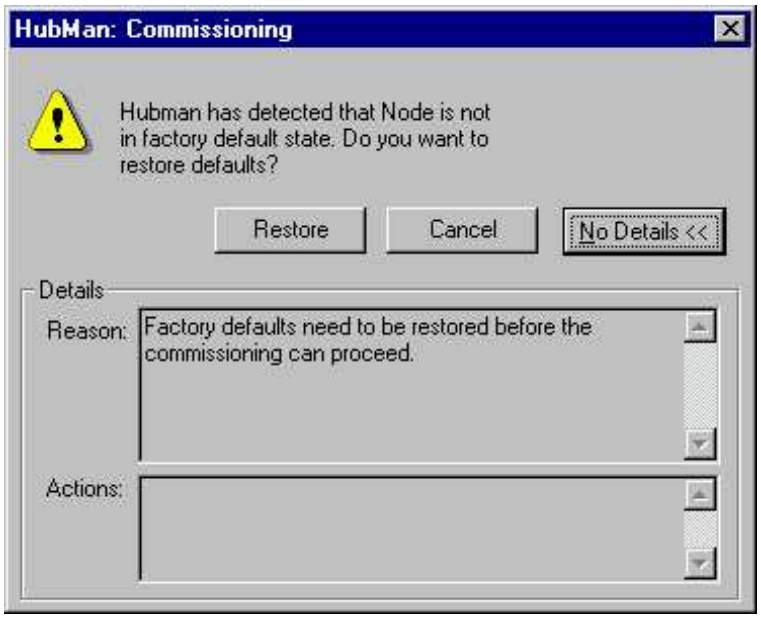

Figure 8. Commissioning note

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

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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.

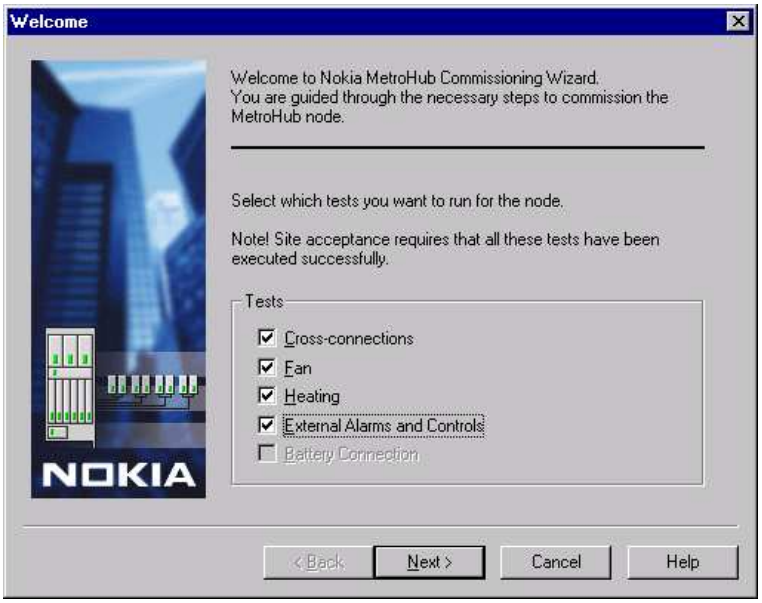

Figure 9. Welcome dialogue box

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...

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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.

6.2 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.

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

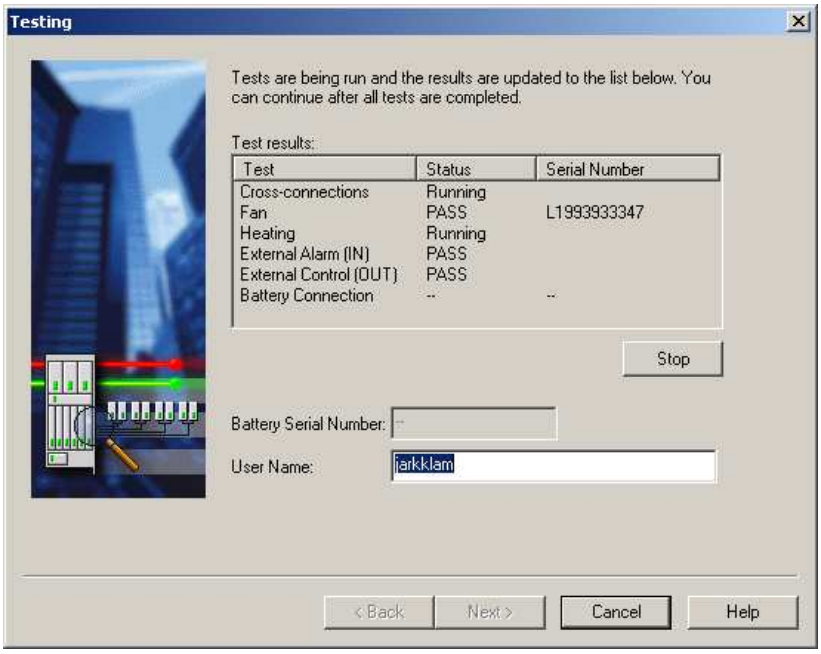

Figure 10. Testing dialogue box

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.**

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6.3 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.

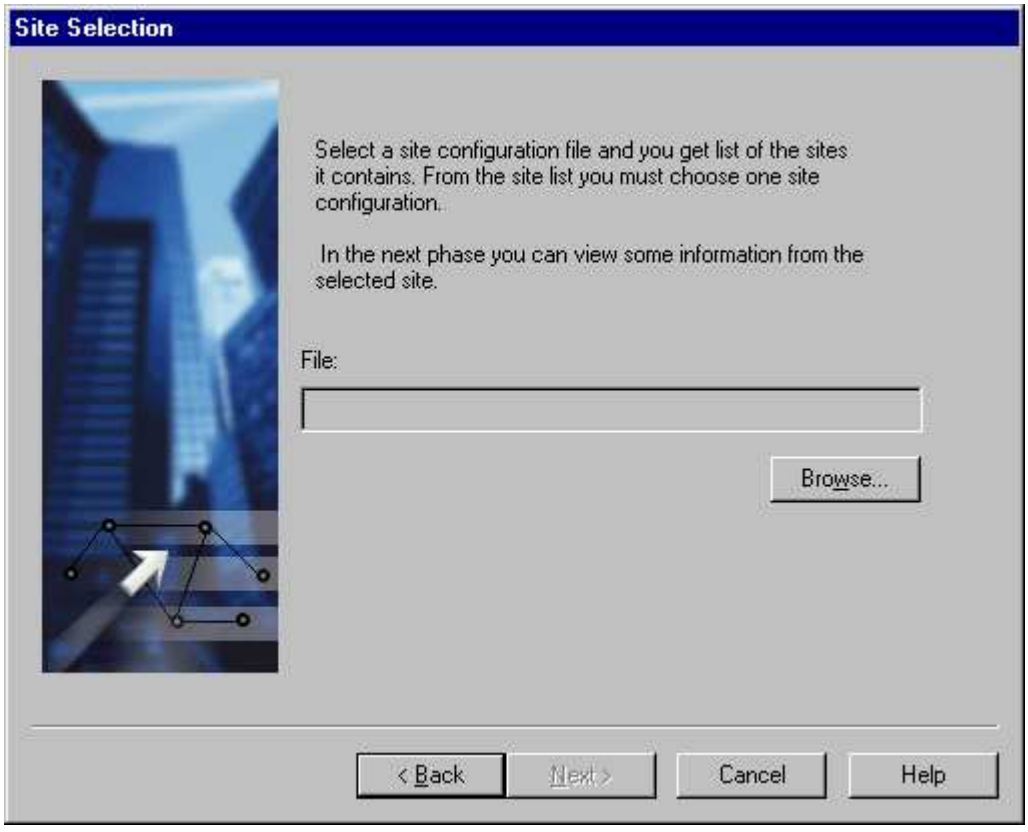

Figure 11. Site Selection dialogue box

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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.

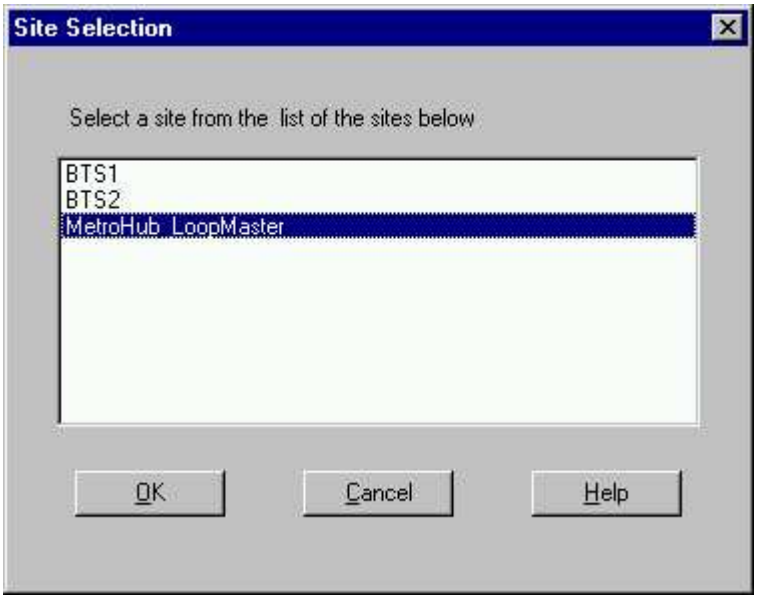

Figure 12. Site selection list dialogue box

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

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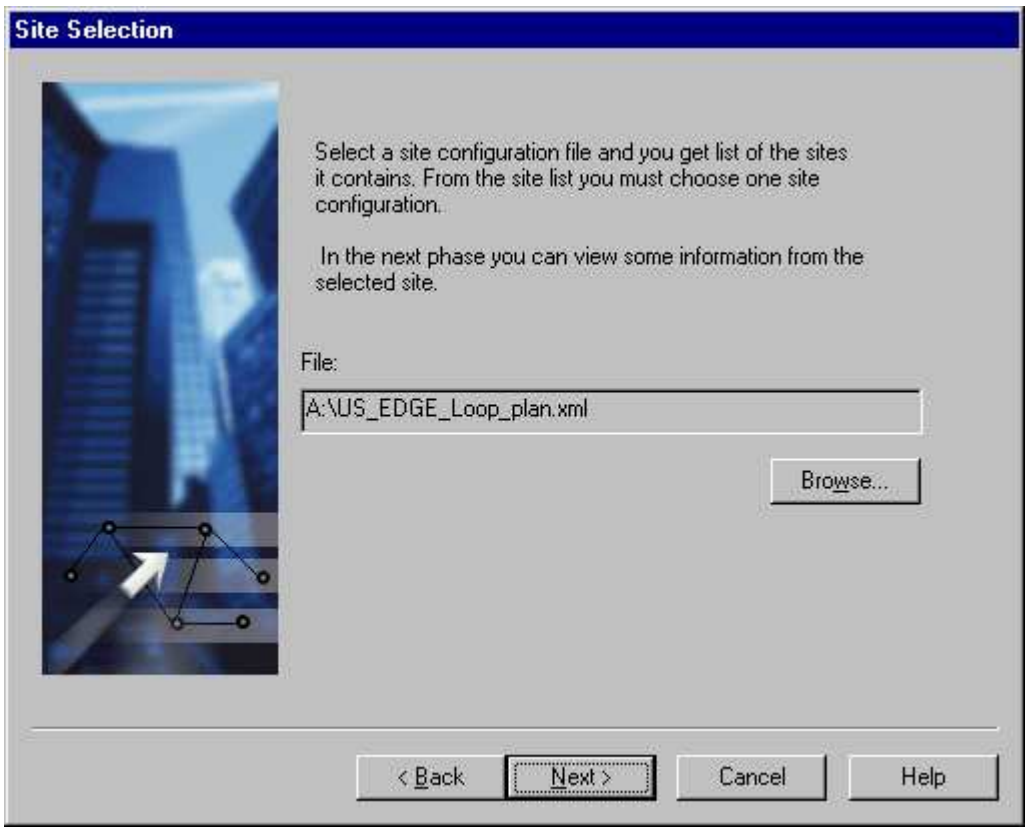

Figure 13. Site Selection dialogue box

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.

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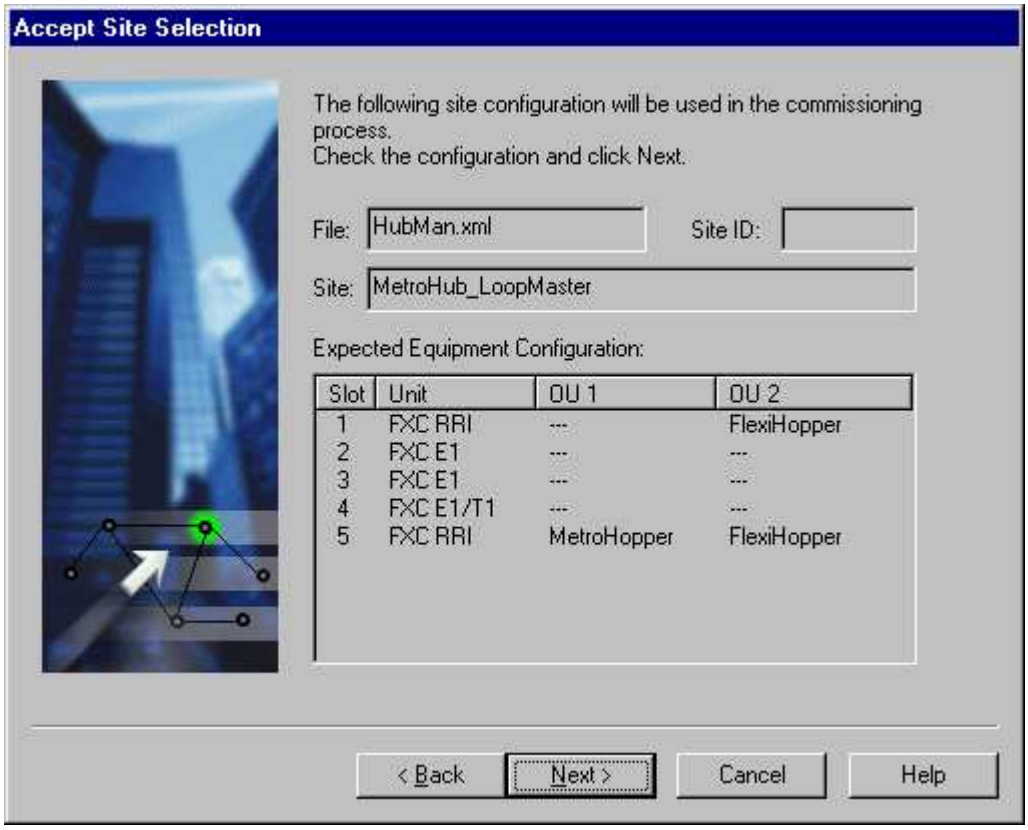

Figure 14. Accept Site Selection dialogue box

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.

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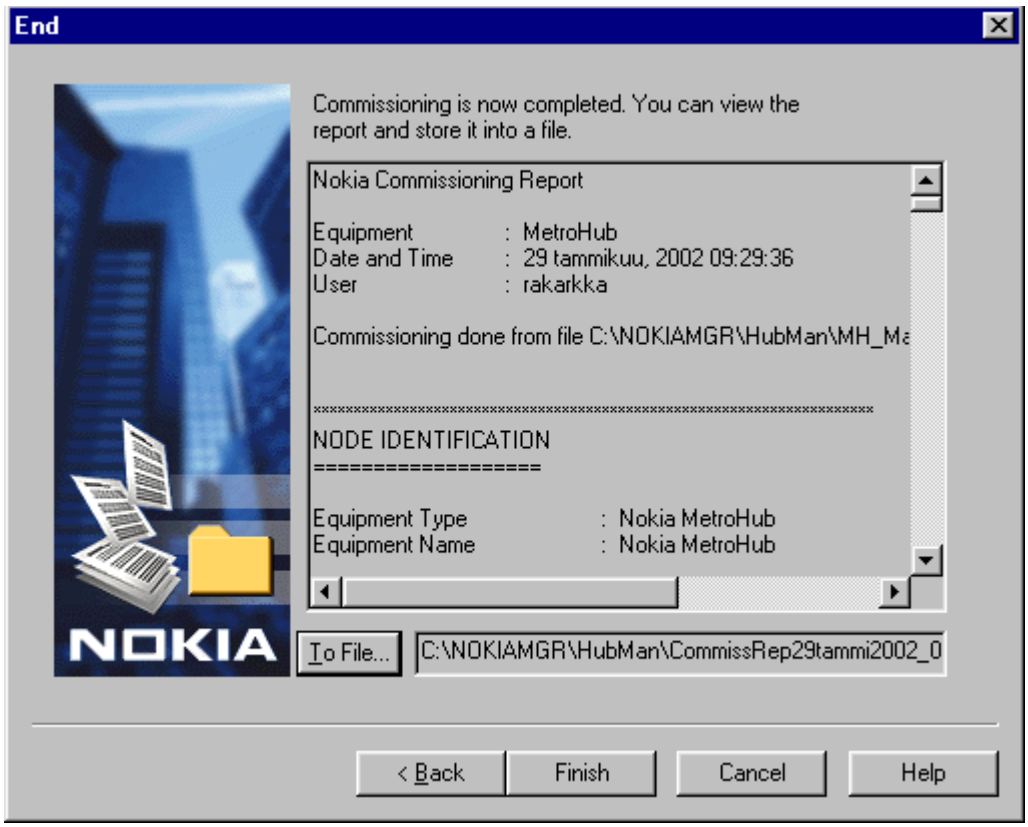

Figure 15. End dialogue box

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.

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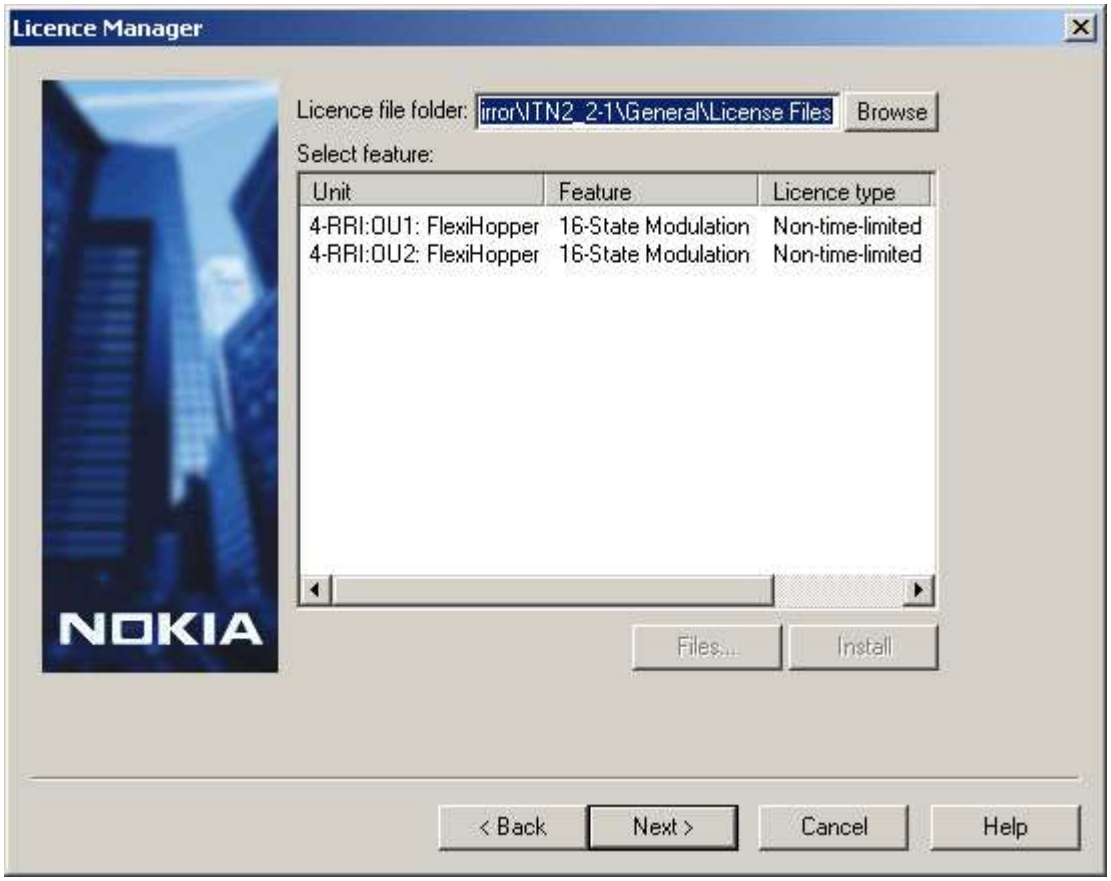

Figure 16. Licence Manager in Commissioning Wizard

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

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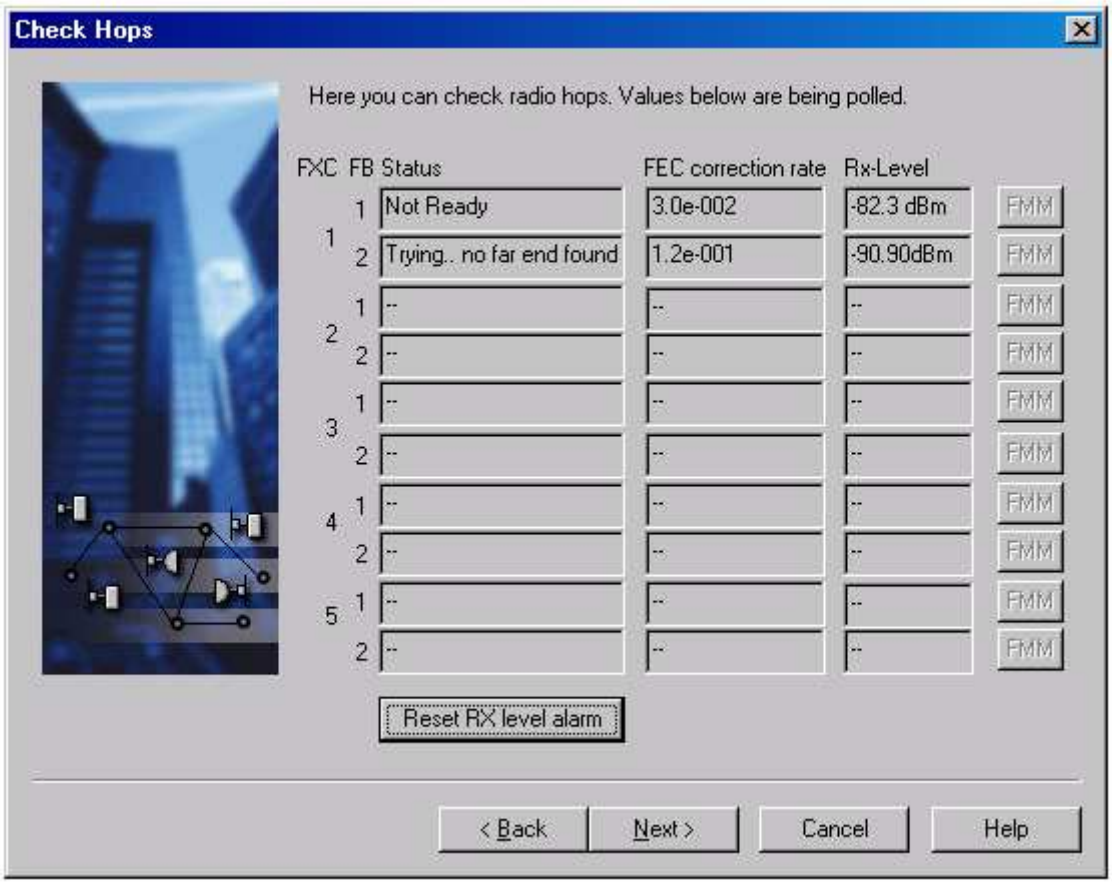

Figure 17. Check Hops dialogue box

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.

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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.

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7 Commissioning with a Nokia BTS chained to a Nokia MetroHub

7.1 Working order for chaining a Nokia BTS to a Nokia MetroHub

Purpose

This section presents the procedures you should complete to chain a Nokia BTS to a Nokia MetroHub, in the proper working order.

Steps

1. **Read the information in the relevant *Nokia BTS Base Station Product Description* and in *Nokia MetroHub Product Documentation.***

2. **Follow the installation procedures as described in Nokia BTS Product Documentation. Do not place the cover over the cabinet yet.**

3. **Follow the procedures for connecting the chaining cable to the Nokia BTS.**

4. **Follow the installation procedures as described in *Nokia MetroHub Product Documentation.* Do not place the covers over the cabinet yet. Remember to install the MetroHub in the limits of the chaining cable length (max. 35 meters) from the Nokia BTS.**

5. **Follow the procedures for preparing for commissioning the Nokia MetroHub with a chained Nokia BTS.**

6. **Follow the procedures for completing the installation after commissioning, as described in the *Nokia BTS Base Station Product Description* and in *Nokia MetroHub Product Documentation.***

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Expected outcome

The Nokia BTS is successfully chained to Nokia MetroHub.

7.2 Preparing for commissioning Nokia MetroHub with a chained Nokia BTS

Purpose

Complete these preliminary checks and procedures before the actual process of commissioning Nokia MetroHub with a chained Nokia BTS.

Before you start

Warning

The FXC STM-1 unit uses a semiconductor laser system and is classified as a laser class 1 product acc. FDA, complying with 21CRF 1040.10 and 1040.11. FXC STM-1 is also a laser class 1 product, IEC 60825.

Using this equipment in ways other than those specified may result in exposure to laser radiation exceeding the limits of laser class 1.

Steps

1. **Connect the MetroHub end of the D-bus cable to the interface unit (DIUx) of Nokia MetroHub.**

   Connect the MetroHub end of the D-bus cable to the extension interface of the interface unit (DIUx) of Nokia MetroHub. The cable is marked 'MetroHub' on the end that should be connected to MetroHub. The other end of the cable is marked with the name of the BTS.

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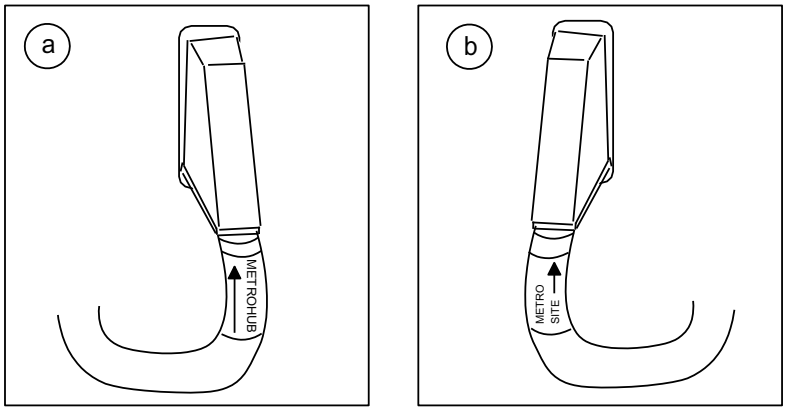

Figure 18. D-bus connectors

See *Connecting interface cables to the interface unit (DIUx)* for details.

2. Check that the transmission units are physically installed in MetroHub.

Check that the transmission units are physically installed in MetroHub. If they are not installed, install them now.

3. Connect the transmission cables to the FXC transmission unit.

Connect the transmission cables to the appropriate FXC transmission unit. See the relevant instructions for details.

4. Check that the D-bus cable is connected to the interface unit of the BTS.

5. Make sure that all weather shields are properly attached after installing the cables.

6. Connect the LMP cable to the LMP port of the interface unit (DIUx) of Nokia MetroHub.

7. Turn the Nokia BTS power On.

8. Turn the Nokia MetroHub power On.

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9. **Check that you have the correct version of the manager software installed on your PC. Check the manager version in the About dialogue box.**

10. **If you are commissioning from a file, ensure that you have the node offline file for Nokia MetroHub.**

7.3 Manual commissioning with a Nokia BTS chained to a Nokia MetroHub

Steps

1. **Start Nokia MetroHub Manager.**

2. **Establish a connection to the node.**

3. **Set the Installation settings of the new units logically with the Manager.**

4. **Set the Abis allocation settings with Traffic Manager under the Configuration menu, according to the Commissioning instructions in the Nokia BTS User Manual.**

   Set the Abis allocation settings with **Traffic Manager** under the **Configuration** menu, according to the Commissioning instructions in *Configuring D-bus allocation with the Traffic manager, with a Nokia BTS chained to a Nokia MetroHub*:

   - Allocate the OMUSIG signalling channel.
   - Allocate the TRXSIG signalling channels and the TCH traffic channels for each TRX.

5. **Set the following settings in the Nokia MetroHub Manager.**

   - **Synchronization** settings
     - Check the synchronisation settings and reconfigure if necessary.
   - **Q1 Management** settings
     - Check if there is a need to configure bypass management channels.
     - Set all Q1 hybrid switches to **not in use** (open position) in the **Routing** tab.
   - **Cross-connections**

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  - For FXC Bridge and FXC STM-1 usage, you need to configure at least one cross-connection between the FXC Bridge and FXC STM-1 unit, for dropping traffic from the STM-1 signal towards the BTS.
  - Do not forget to copy the settings in the active bank to the inactive bank before starting the cross-connection configuration and to activate the inactive cross-connection bank after the cross-connection configurations have been done.
  - You may encounter some cross-connections in the cross-connect bank even before configuring the cross-connections. These cross-connections were added automatically when the Traffic Manager was used.
- **Service Interface** settings for the whole node (necessary only in exceptional cases)
- **Identifications** settings for the whole node
- **D-bus cable length** settings.

Note

This setting is only necessary if the MetroHub is chained to a Nokia BTS using a D-bus cable.

Note

Note the following when the FXC RRI operates as the node master unit (leftmost slot position) in a Nokia MetroHub chained to a Nokia BTS.

If you mark the **Chained** check box to enable the chaining configuration, platform interface 15 is automatically taken out of use, with the following effects:

  - Any ongoing transmission via platform interface 15 is interrupted.
  - If platform interface 15 was used for remote management, then remote management towards the node is cut.
  - If platform interface 15 was used for synchronisation, the node switches to the next synchronisation source in the priority list.

Make sure that the last FXC RRI platform interface is not in use before enabling the chaining configuration.

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Note

The maximum number of PDH cross-connections is 254. If this number is exceeded, it cannot be guaranteed that the previously active cross-connections will be active again after rebooting the system. Therefore, it is not recommended to create more than 254 PDH cross-connections.

To configure the D-bus cable length:

a. Click **Configuration → Chaining** to open the **Chaining** dialogue box.

b. Mark the **Chained** check box. See the following figure.

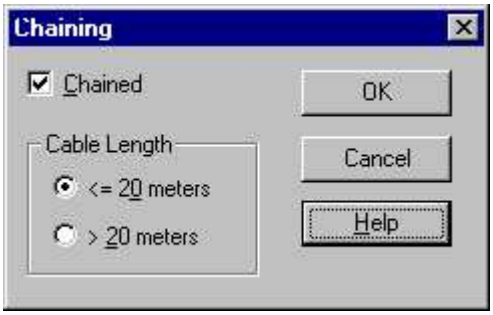

Figure 19. D-bus chaining configuration dialogue box

c. If the D-bus cable length is 20 m or below, mark the **<=20 meters** option in the **Cable Length** frame. If the cable length is longer than 20 m, mark the **>20 meters** option.

d. Click **OK** to close the window and activate the settings.

6. Set the following unit settings (see Setting site configuration parameters in a node offline file for details):

- Unit **Identifications** (optional but recommended)
- Interface Settings.

7. Set any additional settings with the managers (optional).

8. Reset the error counters and statistics.

9. Save a copy of the node into a file.

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- Select **File → Save** or **File → Save as** to open the **Save node settings** dialogue box.
- Select **Save all** to select and save all settings, or select individual units to save the settings of the selected units and the node settings.
- Click **OK** to open a browser dialogue box. Here you can add the file name and location where to store the file. Note that the file will be saved directly if you selected **File → Save** and have already entered the file name and location previously.

10. Exit the Nokia MetroHub Manager.

11. Start the Nokia BTS Manager.

12. Start the Commissioning Wizard.

13. Follow the Commissioning Wizard process presented in the Nokia BTS User Manual:

- Only if the BTS is already commissioned, you first need to run the '**Undo Commissioning**' procedure from the BTS Commissioning Wizard.
- Check the **LIF and Synchronization** settings on Set Transmission Parameters page.
  - Do not modify the settings.
- Open **Traffic Manager** from Transmission Configuration page to check Abis allocation.
- Set the **EAC input and output** settings.
- Save the BTS Commissioning Report.

14. Check the operational state of the site.

Check the **operational state** of the site. If locked, request a 'site unlock', including TRXs, from the BSC or NMS.

15. Exit the Nokia BTS Manager.

16. Remove the LMP cable from the LMP port of the Nokia BTS.

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7.4 Commissioning using a node offline file, with a Nokia BTS chained to a Nokia MetroHub

Purpose

This section presents the process for logically installing the transmission unit in the Nokia MetroHub Manager, and commissioning them using an offline node file.

Steps

1. **Select Nokia MetroHub Manager on the Nokia Applications submenu on the Start → Programs menu in Windows.**

2. **Select File → New in the Nokia MetroHub Manager.**

3. **Install the desired transmission unit logically in the Equipment view.**

   Install the unit logically in the **Equipment** view:

   - Right-click on the unit to be installed.
   - Select the **Unit** menu from the emerging dialogue box.
   - From the emerging unit selection, select the unit type to be installed in the selected slot.

4. **Set the necessary settings to the units and the node. See Manual commissioning with a Nokia BTS chained to a Nokia MetroHub.**

5. **Save the node offline file with the File → Save as command. Once the offline node file is created, it can be used in the commissioning process.**

6. **After establishing a connection to the node, select Configuration → Commissioning Wizard in the Nokia MetroHub Manager.**

7. **Select and run the MetroHub tests and check the results.**

8. **Browse the correct node offline file (check that the correct extension is selected) and send the file to the node.**

9. **Check the Commissioning Report and save it to a file.**

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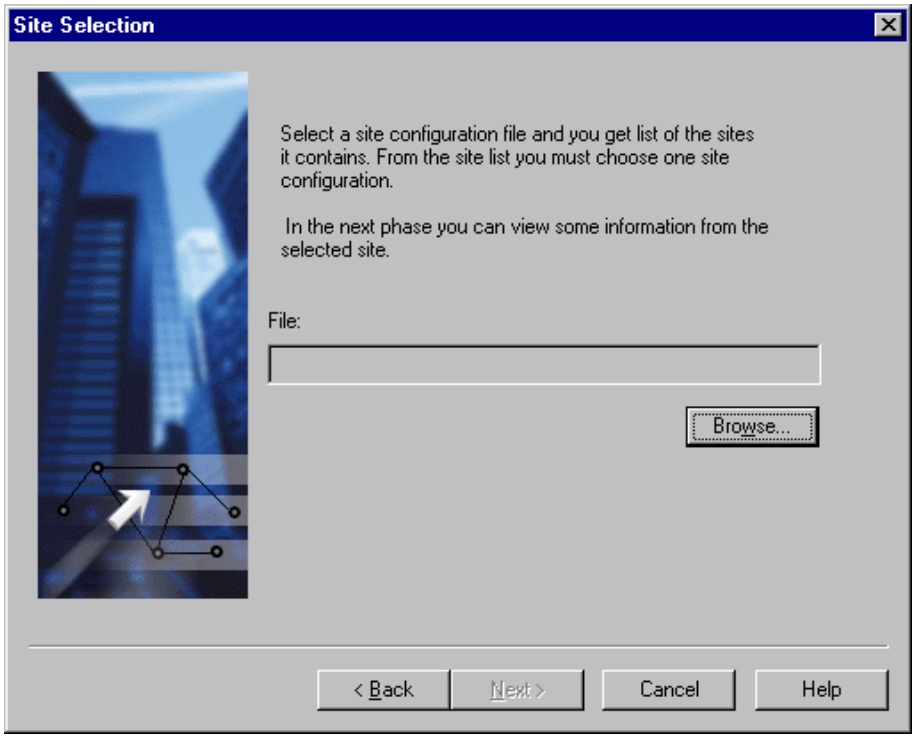

Figure 20. Commissioning with a node file

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Figure 21. Selecting the node file

10. Continue the commissioning procedure from step 10 in Manual commissioning with a Nokia BTS chained to a Nokia MetroHub.

7.5 Configuring D-bus allocation with the Traffic manager, with a Nokia BTS chained to a Nokia MetroHub

Purpose

The Traffic Manager is a graphical tool for allocating BTS transmission capacity on the D-bus, independently of the transmission units used by the Nokia BTS. You need only to 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.

You can create Abis allocation settings beforehand and save it in a file via the **Export** button. The **Import** button allows you to import Abis allocation settings back into the traffic manager.

Note

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

The capacity to be used is defined by selecting its signal type and by reserving the required timeslots and bits. The signal types are as follows:

- **EDAP**. The Edge Dynamic Abis Pool (EDAP) optimises the needed A-bis capacity for EDGE. Whole timeslots (8 bits) can be allocated for an EDAP with an maximum of 12 timeslots per EDAP. It is possible to allocate several EDAPs. During the allocation process it is necessary to configure the TRX which will be associated to an EDAP.

  The EDAPs are connected to buses D12 and D13, and the first free place is used for the new DAP. The locations of the existing EDAPs are not changed on Abis. An EDAP can also be connected to bus D11, if there are no free places in other D-buses and the D11 bus can be used for this purpose.

  If Traffic Manager is used, then D-bus allocation is not required to be done separately, as Traffic Manager automates D-bus allocation during this process.

  Traffic Manager's EDAP support includes:

  - adding new EDAPs
  - adding a TRX to or removing a TRX from an existing EDAP
  - modifying the size of the existing EDAPs
  - removing EDAPs.

- **OMUSIG**. The BTS can have one OMUSIG, which allocates 2, 4 or 8 bits in one timeslot depending on the link speed used (16, 32 or 64 kbit/s).

- **TCHs**. The BTS must be allocated at least as many TCHs as there are TRXs installed in it (1 - 12). Each TCH allocates 2 contiguous timeslots (16 bits) for a single TRX each of which is marked with the TRX number. The TCHs are numbered from 1 to 12 in order of which they are defined.

- **TRXSIG**. The BTS must be allocated at least as many TRXSIGs as there are TRXs installed in it (1 - 12). Each TRXSIG can allocate 2, 4 or 8 bits in one timeslot depending on the link speed used (16, 32 or 64 kbit/s). The TRXSIGs are numbered from 1 to 12 in order of which they are entered.

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- **TRXSIG on TCHs**. The TRXSIG can be reserved on a traffic channel (TCH) but then up to 4 radio timeslots (8 bits) are lost. The signal type must always start from the first bit of the channel.
- **OMUSIG/TRXSIG1**. The BTS can have one combined OMUSIG/ TRXSIG1 that allocates 2, 4, or 8 bits in one time-slot, depending on the link speed used (16, 32, or 64 Kbit/s). When a compressed Abis time-slot allocation is used, the OMUSIG/TRXSIG1 can be located in radio time-slots 1 - 4 (starting from bit 1), which means that it overlaps the TCHs that are reserved for TRX 1.

Note

If Nokia MetroHub is chained to a BTS that is using D-bus chaining, only D11 is available for passing traffic through to the BTS.

Steps

1. **Open Traffic Manager by selecting Configuration → Traffic Manager in the manager.**

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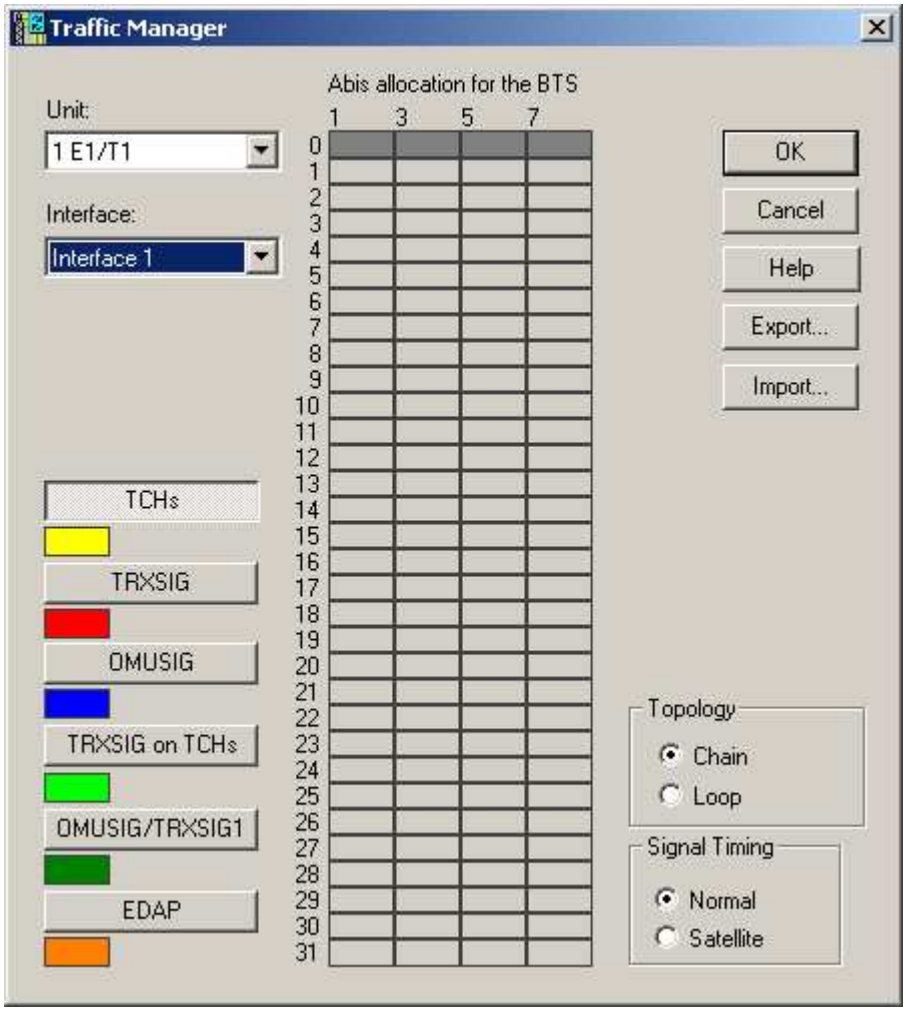

Figure 22. Traffic Manager for an E1 link

2. Select the Unit.

3. Select the line Interface used.

Select the line interface used. Interface 1 - 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. In case of STM-1, you can select the optical interface 1 or 2. You then need to configure the location of the VC-12 by clicking the button located on the right side of the frame that displays the location of the VC-12 frame.

4. Click the TCHs button and then click in a cell in the Abis timeslot allocation table.

5. Repeat step 4 to allocate transmission capacity to all TRXs in the BTS configuration.

6. Proceed according to one of the following alternatives:

Either:

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

or:

a. Click the **TRXSIG on TCHs** button and then click the first bit in a timeslot you reserved for TCHs in step 3 of this procedure.
b. Select the link speed from the pop-up menu. Repeat for all TRXs in the BTS configuration.
c. Click the **OMUSIG** button and then click a cell in the Abis allocation table.
d. Select the link speed from the pop-up menu.

Note

If you want to modify the allocation table at this point, you have to first delete prior allocations. Right-click the mouse button on the cell to be modified and delete either one signal allocation, all signal allocations or delete all allocations for the selected port.

Note

Selecting **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 allocation procedure again.

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7. Allocate the EDAP if needed.

Steps

a. Click the EDAP button and the first time-slot to be used for the EDAP at the Abis allocation table.

b. In the pop-up dialogue box that appears, configure the amount of time-slots the EDAP pool must encompass and the TRXs that are associated with the EDAP.

8. If necessary, click Export to save the allocation to a file, or Import to import the allocation from an existing file.

The file is stored with the extension `.tmn`.

9. Set the topology to Chain (the default value) or Loop.

If you clicked **loop**, the **Protection Info** dialogue box appeared; select the appropriate settings as follows:

- Select the **Protecting Unit** and **Protecting Interface**, in that order.
- Set the **Condition Type** to Equal or Priority.
- If necessary, click **Condition** and specify the settings in the **Condition** dialogue box, which allows you to create a condition type for a protected connection. The Condition dialogue box contains two tabbed Condition pages if the Condition type is Equal, and one tabbed Condition page if the Condition type is Priority. When the condition settings are correct, click **OK**.
- If necessary, click **Create** in **Pilot Bit** to create a Bi-Directional Masked cross-connection for a condition bit(s). Create the cross-connection between a protected (incoming) port and a protecting port.

Click **OK** in the **Protection Info** dialogue box.

10. Check that the signal timing (either Normal or Satellite) is set correctly.

11. 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.

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7.6 Optimising D-bus allocation with the D-bus allocation menu, with a Nokia BTS chained to a Nokia MetroHub

Purpose

The **D-bus Allocation** menu can be used for optimising the amount of cross-connections towards the D-buses. When the amount of cross-connections is optimised, it speeds up local and remote configuration management and, in some cases, simplifies site configuration. This is a manual process of allocation whereas the Traffic Manager performs this operation automatically.

By performing manual D-bus allocations, the timeslots used for the different signals (EDAP, OMUSIG, TCH, TRXSIG, OMUSIG/TRXSIG1) in the D-bus can be defined for the BTS.

If D-bus allocation is used the cross-connections must be created manually in the cross-connection window. This method of allocation is used to optimise the traffic in the D-bus.

Note

If Nokia MetroHub is chained to a BTS that is using D-bus chaining, only D11 is available for passing traffic through to the BTS.

Steps

1. **Select Configuration → D-Bus Allocation to open the D-Bus Allocation dialogue box. See the following figure:**

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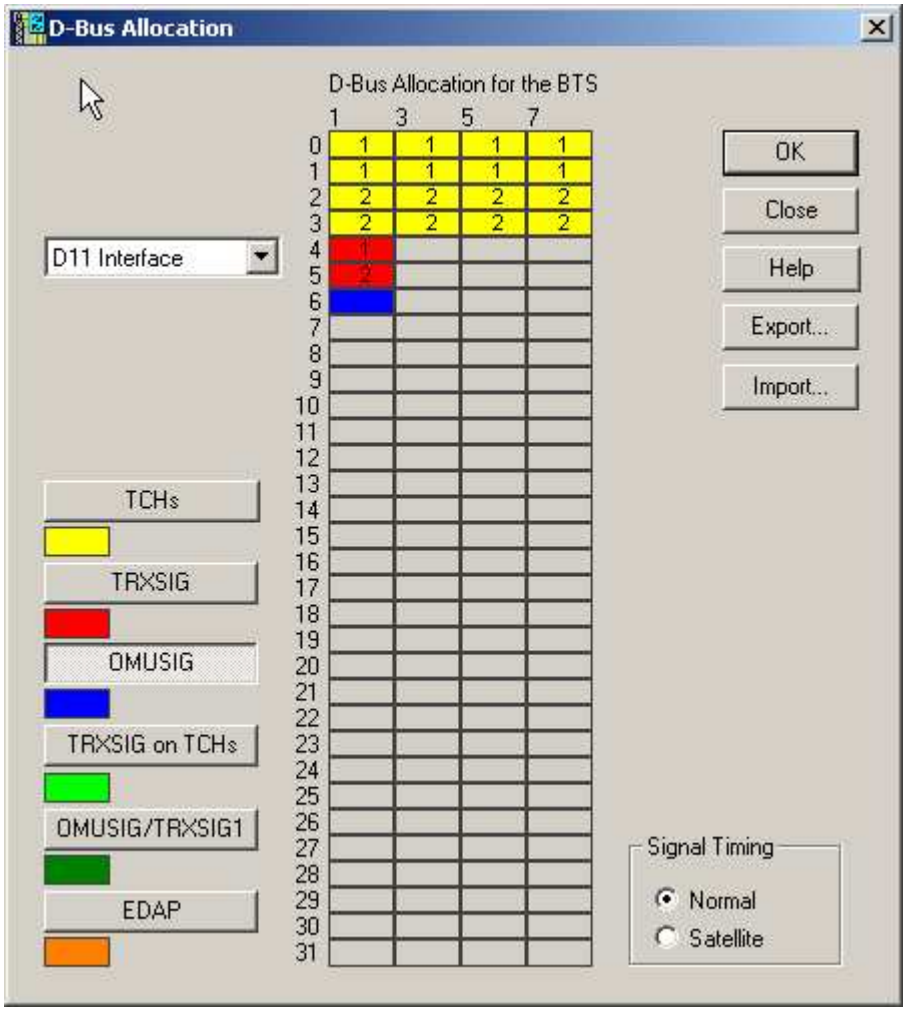

Figure 23. D-Bus Allocation dialogue box

2. Allocate the transmission capacity on the D-buses (TCHs, TRXSIGs, OMUSIG, OMUSIG/TRXSIG1s and EDAPs).

The actual allocation process does not differ from the allocation done with Traffic Manager (see *Configuring D-bus allocation with the Traffic Manager, with a Nokia BTS chained to a Nokia MetroHub*). The only exception is that with D-bus allocation you can select where to allocate the transmission capacity on the D-bus. By using continuous time slots at the D-bus, the free capacity at the D-bus can be sorted to one continuous range. As a result, adding later additional transmission capacity can be easier.

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Click **Export** to save the allocation to a file, or **Import** to import the allocation from an existing file.

3. **When all the necessary signals have been labelled, click OK in the D-Bus Allocation dialogue box.**

   When all the necessary signals have been labelled, click **OK** in the **D-Bus Allocation** dialogue box. The modified D-bus allocation is sent to the transmission master unit (FXC unit in slot 1). The dialogue box does not create any cross-connections, it only manages the D-bus allocation information. When this tool is used to configure the Abis allocation of the BTS, cross-connections have to be created in the **Cross-connection** dialogue box between interfaces and the D-buses. Select **Configuration → Cross-connections** to open the **Cross-connection** dialogue box.

4. **Select Tools → Update Abis Allocation in the BTS Manager to update the allocation in the BTS.**

   Select **Tools → Update Abis Allocation** in the BTS Manager to update the D-bus allocation in the BTS. The Abis allocation information is read from the transmission master unit and sent to the BTS. The TRXs start to use the received allocation settings.

   Reducing the number of cross-connections reduces the time needed for configuring and modifying the transmission settings.

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8 Checklist for commissioning

In order to get a site running and integrated into the network, that is, connected to the NMS, the following mandatory settings have to be implemented to the node:

Management-related settings:

- LMP speed
- Q1 address, Q1 bus speed
- Q1 hybrid switch and EOC channel settings

Transmission connection related settings:

- Use of interfaces, CRC usage, mode of interface (only FXC E1/T1)
- If an FXC RRI is used, the Flexbus capacity and Flexbus DC power status. For details on further radio settings, refer to related radio documentation of the corresponding radio.
- Synchronisation source
- Cross-connections

Identification-related settings (none of these are mandatory but strongly recommended to be filled in):

- Node ID (equipment name and site name)
- Node installation information (date, time and person)
- Cabinet unit installation dates (power units, DIUx, fan unit)
- Transmission unit names and installation dates (in the corresponding transmission unit menu)

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