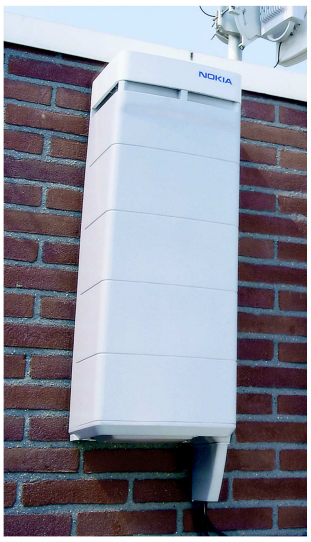
NOKIA

C33525.90_H0
Nokia MetroHub Transmission Node Rel. C3

Release Description for Nokia MetroHub Release C3



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CE Hereby, Nokia Corporation, declares that these Transmission Node units measured in Nokia MetroHub are in compliance with the essential requirements of the Directive 1999/5/EC (R&TTE Directive) of the European Parliament and of the Council.

UL Complies with UL 1950, CSA 22.2 NO. 950 Information Technology Equipment. This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions. (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Contents

1 About this publication

1.1 Statutory statements for ITN C3 transmission units

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1.2 Trademarks

Nokia, Nokia Connecting People and MetroHub are trademarks or registered trademarks of Nokia Corporation. Other product and company names mentioned herein may be trademarks or tradenames of their respective owners.

1.3 Warnings and cautions

1.3.1 Warnings

Warning

MAINS VOLTAGE! Follow the national legislation when working with the power supply. All power and grounding cabling must meet the requirements of the local and national safety regulations.

Warning

Nokia MetroHub must be permanently wired to a disconnecting device (e.g. circuit breaker) in accordance with current local and national regulations. The power switch of the power supply unit of Nokia MetroHub does not disconnect it from the power network (AC and/or DC) but leaves it in the stand-by mode. The switch in the power supply unit has two positions: ON and STAND-BY.

Warning

Always make sure that voltage is switched off before starting the installation. There is a risk of electric shock and hazardous energy level under the cover of the power interface panel (DIPx). The cover of DIPx may only be opened by authorised personnel.

Warning

The use of incorrect AC polarity can cause a hazard. Follow the polarity markings on the AC connector under DIPx cover.

Warning

To guarantee the safety of service personnel and other users of the telecommunications network, additional protective grounding is always required as stated in EN 60950, "Safety of information technology equipment, including electrical business equipment" and UL 1950 3rd edition.

Warning

Ensure that the cabinet main ground connection (the connector is located in the metal net of the battery tray) is established before the power inlet is connected to the power interface panel (DIPx). All ground connections must be secure and non-removable.

Warning

The following warning applies to the AC power supply: the protective ground wire can only be used for protective conductor installations. Using the protective ground conductor for other purpose is dangerous to life.

Warning

The external DC source must be grounded positive in the source. A negative-grounded system cannot be used.

Warning

The primary and secondary circuits of the external DC source must be separated by reinforced insulation, because the DC input and DC outputs of MetroHub are not isolated.

Warning

If the optional battery unit is used, switching off the AC does not switch off MetroHub.

Warning

Do not handle the battery cable carelessly or open plastic parts of the battery unit. There is a hazardous energy level present even if the battery is disconnected from the power interface panel (DIPx).

Warning

The fully equipped MetroHub weighs 45 kg (99.1 lb), or without a battery unit, 32 kg (70.5 lb). Lifting the equipment requires at least two persons.

Warning

Read Warnings and cautions carefully before starting to connect the cables.

Warning

Read Warnings and cautions carefully before working with any unit of the power system.

Warning

Read Warnings and cautions carefully before performing any maintenance tasks.

Warning

There is a risk of electric shock and hazardous energy level under the front cover of the power interface unit (DIPx).

Warning

Always make sure that voltage is switched off before starting installation. There is a risk of electric shock and hazardous energy level under the cover of the power interface panel DIPx. The cover of DIPx may only be opened by authorised personnel.

Warning

This product uses a semiconductor laser system and is classified as a laser class 1 product acc. FDA, complies with 21CFR 1040.10 and 1040.11. Also, this product is a laser class 1 product acceptable IEC 60825. Using this equipment in ways other than those specified in this document may result in exposure to laser radiation exceeding the limits of laser class 1.

1.3.2 Cautions

Caution

Installation, commissioning and maintenance measures concerning Nokia MetroHub Transmission Node may be performed only by properly trained and authorised personnel.

Caution

In case of rain or snow, the installation space must be weather-guarded.

Caution

Do not place the equipment in vertical position, when removing it from the package. Place it horizontally on the packing material.

Caution

When the lock is opened, the key remains in the lock. Make sure you do not damage the key when handling MetroHub.

You can also remove the key by turning the lock into locked position. In this case you must turn the lock in the open position when reinstalling the cover.

Caution

Handle the units with care. Do not place the removed units so that their connectors face the ground. Cover the removed units with the packing material.

Caution

Do not use any paint that contains alkalis, esters, ketones, aromatic, chlorinated, or fluorinated hydrocarbons, since these may damage the cover. Paint containing these chemicals can only be used if approved by the manufacturer for painting polycarbonate objects.

Caution

Do not use washing agents that contain alkalis, aromatic, chlorinated, or fluorinated hydrocarbons, esters or ketones.

Caution

Avoid setting the alarm monitoring delay to a very small value when monitoring a network element remotely. This places a strain on the Q1 bus resources and causes delays for other activities.

Caution

The battery cable connector must be disconnected from the DIPx during maintenance.

Caution

Replace the battery unit only with the type recommended by Nokia. Dispose of the used battery unit by handing it in at a collection point. Never dispose of old batteries as domestic waste.

Caution

Setting a Flexbus loop cuts the connection to the outdoor unit until the loop is cancelled or expires. This includes all data and management information. Setting an outdoor unit loop cuts the connection to the outdoor unit until the loop expires.

2 Environmental information for Nokia MetroHub

2.1 RoHS statement

Nokia MetroHub complies with the European Union RoHS Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment. The directive applies to the use of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE) in electrical and electronic equipment put on the market after 1 July 2006.

2.2 Product collection and safe disposal of the equipment within the European Union

Guidelines for product collection and safe disposal of the equipment are indicated with a sticker placed on the equipment, shown in the figure below.

Product collection and disposal within European Union

Do not dispose the product as unsorted municipal waste. The crossed-out wheeled bin means that at the product end-of life the product must be taken to separate collection.

Note: this is applicable only within European Union (see WEEE Directive 2002/96/EC)

DN0577953

Figure 1. Product collection and disposal within the European Union

3 End of life of Nokia MetroHub

Nokia Networks customers can contract with Nokia for environmentally responsible end of life (EoL) treatment of obsolete equipment. The purpose is to recover the material and energy content of the obsolete products and to ensure safe treatment of substances that can cause harm to people or the environment, if disposed of untreated. In a life-cycle perspective, EoL treatment can compensate for some of the environmental impacts of the earlier stages of the product's life cycle.

Depending on customer needs, Nokia Networks offers a Recycling Service covering disassembly, transportation, selection of an authorised recycling company, contracts with the recycling company, and reporting. The Recycling Service is available per agreement for all Nokia Networks products sold globally. The service can also include third-party products and packaging, if the customer provides the necessary material information. Product treatment is subcontracted to a local, authorised recycling company. Nokia Networks has set requirements for EoL subcontractors and regularly audits them. Nokia requires that all subcontractors comply with the laws and settlements of local authorities and that they conduct business in an ethical manner.

In order to further facilitate EoL management, Nokia Networks provides information about the materials used in its products and disassembly instructions to recycling companies. This helps in choosing the optimal treatment method and results in minimised waste streams to landfill sites.

4 Guide to documentation for Nokia MetroHub

4.1 Guide to documentation

4.1.1 Product documentation

Nokia MetroHub Transmission Node product documentation is delivered via Nokia Online Services (NOLS) and on CD-ROM. The documentation is available both in online and PDF format via Nokia Electronic Documentation (NED). The NED content can also be downloaded via NOLS.

The content of the information is the same regardless of the delivery and publishing format. The online documentation can be viewed with any standard browser. PDFs can be viewed using Adobe Acrobat Reader.

NED enables unified access to all product documentation via one interface, that is, the user interface. Navigation and search methods are the same both in NOLS and on CD-ROM.

NED is a platform-independent software application that can be installed on several platforms in PC and UNIX environments. To view the PDF documents, click on the PDF tab, which is located on the upper left-hand side of the NED. The NED Help button opens the help function which includes instructions on, for example, how to search and print in NED.

4.1.2 Online help

Each manager application offers a context-sensitive help function that allows the user to find context-specific help, for example, on the dialogue box at hand.

The application's software build includes GUI-specific help that is launched directly from the application. The help is displayed using JavaHelp, a platform-independent help system. The help and the rest of the documentation are separate from one another, that is, the user cannot access the NED or PDF documentation through the help system.

4.1.3 Release documentation

The Nokia MetroHub C3 release also includes release documentation for ITN C3, including *Generic Failure Report (GFR)*, *Release Note*, and *Compatibility* documents. The release documents are published as PDFs in NOLS.

4.1.4 PDF documents

The table below lists the PDF documents included in the Nokia MetroHub release C3 product documentation.

The content of the information is the same regardless of the delivery and publishing format. Therefore, the PDF documents have the same contents as the online documentation: the information is only structured differently.

Table 1. PDF documents in Nokia MetroHub C3 product documentation

Category		**Document name**	**Document identifier**
Descriptions			
		Release Description for Nokia MetroHub Release C3	dn0420718, issue 2
		Product Description for Nokia MetroHub	dn02250506, issue 3
Instructions			
		Installing Nokia Metro-Hub	dn02250448, issue 3
		Upgrading Nokia Metro-Hub	dn03311125, issue 3
		Commissioning Nokia MetroHub	dn02250451, issue 3

Table 1. PDF documents in Nokia MetroHub C3 product documentation (cont.)

Category		Document name	Document identifier
		Optimising and expanding capacity in Nokia MetroHub	dn0420784, issue 2
		Monitoring Nokia MetroHub	dn0420772, issue 2
		Troubleshooting Nokia MetroHub	dn02250499, issue 3
		Maintaining Nokia MetroHub	dn0420757, issue 2
		Managing Nokia MetroHub Software	dn0420769, issue 2
Reference			
		Technical Specifications for Nokia MetroHub	dn0420706, issue 2
		Alarms and LEDs in Nokia MetroHub	dn0420699, issue 2

4.2 Conventions used in Nokia MetroHub documentation

Warnings and cautions

Warning

Warnings alert the reader to dangers which may cause loss of life, physical injury, or ill health in any form.

Caution

Cautions are used to indicate possible damage to equipment, when no danger to personnel exists.

About screenshots

Note

Screenshots included in the documentation are representations only. The actual node manager program may vary slightly from the screenshots depicted.

Use of abbreviations

In this information set the abbreviated term 'Nokia BTS' is used to refer to the following: Nokia UltraSite EDGE BTS and Nokia MetroSite EDGE BTS. To find out for which BTS variant a certain feature is valid, refer to the Nokia ITN C3 Integrated Transmission Node Release, Compatibility document, which is available in NOLS.

In this information set the plug-in units of Nokia MetroHub are referred to either with their full name or their abbreviation, which is also marked on the front of the unit. These abbreviations consist of four letters, the last one (x) indicating the version. For example: interface unit (DIUx), power interface panel (DIPx).

5 Changes between releases ITN C2.2 and C3

5.1 Nokia MetroHub as a part of Nokia ITN C3

Nokia ITN C3 Integrated Transmission Node

Nokia ITN C3 is a new release for FXC E1, FXC E1/T1, FXC RRI, FXC STM-1 and FXC Bridge transmission units and their related node managers. ITN C3 is used with three BSS elements: Nokia UltraSite EDGE Base Station, Nokia MetroSite EDGE Base Station and Nokia MetroHub Transmission Node. ITN C3 allows BSS network elements to be connected with each other in an efficient manner. It forms a highly compact all-in-one hub site that gives you the freedom to easily upgrade and change network topology. Thanks to the integrated nature of ITN C3, you are allowed to place the media change and grooming/cross-connection functionality exactly where it is needed. When used together with Nokia microwave radios, it provides a unique, cost efficient and flexible transmission solution for mobile networks. ITN also provides traffic protection via loop configuration and hot standby protection for radio connections. The SDH solution in ITN provides support for the mixed use of FXC STM-1 and the other FXC units in the same node.

Nokia MetroHub Transmission Node

The stand-alone version of ITN C3 is MetroHub C3. It is also possible to get power supply redundancy and battery backup with MetroHub. MetroHub can be installed outdoors and indoors without any additional housing. MetroHub together with Nokia radios can form a stand-alone hub site or it can be located at a Nokia base station site. Smaller sites can use the traffic collection capability of an UltraSite transmission Hub, whereas larger transmission sites, which require protection and long transmission back-up times, use MetroHub. MetroHub can act as traffic collection point for tens of Nokia base stations.

ITN C3 is controlled and monitored with a set of node managers included on the Nokia SiteWizard CD package, which is a PC-based NetAct compatible management tool. Specifically, Nokia MetroHub Manager is a PC-based software application used for controlling and monitoring MetroHub. It belongs to Nokia's node manager product range and is especially designed to manage the cross-connections of the transmission node in an easy way.

5.2 Changes in alarms between releases Nokia ITN C2.2 and C3

New alarms

The following alarms are new in Nokia ITN C3 release:

- Common node alarms:
  - *122 Synchronizing fault*
- Specific alarms for FXC STM transmission units:
  - *221 Version mismatch*
- Specific alarms for FXC STM-1 interface X:
  - *59 Incoming signal level incorrect*
- Specific alarms for FXC Bridge PDH:
  - *221 Version mismatch*
- Specific alarms for Nokia FlexiHopper (Plus) outdoor units:
  - *267 Licence expired*
  - *268 Licence will expire in near future*
  - *269 Licence for feature is not available*
  - *23 Test mode active*
- Specific alarms for Nokia MetroHopper outdoor units:
  - *145 Temperature alarm*

Updated alarms

The following alarms have been updated in Nokia ITN C3 release:

- Specific alarms for Nokia FlexiHopper (Plus) outdoor units:
  - *59 Incoming signal level incorrect*

- Common node alarms:
  - *125 Loss of synchronisation signals*
  - *140 Subrack has excessive units*
- Specific alarms for FXC STM transmission units:
  - *141 Forced control on*
- Specific alarms for FXC STM-1 interface X:
  - *141 Forced control on*
- Specific alarms for FXC Bridge PDH:
  - *32 Loss of outgoing signal*
  - *126 Unit function degraded*
- Specific alarms for FXC Bridge SDH:
  - *47 Payload mismatch*
  - *81 Loss of frame alignment*
- Specific alarms for Nokia MetroHopper outdoor units:
  - *60 Loss of incoming radio signal*

Removed alarms

The following alarms have been removed from Nokia ITN C3 release:

- Specific alarms for FXC Bridge PDH:
  - *25 Test Generator On*
  - *150 Fault in unit*

5.3 Changes in hardware between releases Nokia ITN C2.2 and C3

5.3.1 Restriction on the use of certain hazardous substances (RoHS)

The hardware IDs (resistor codes) have been updated as a result of RoHS. The changes can be seen in the start-up and compatibility tables (hardware-software compatibility) of the start-up software of the referring units. All units have been updated: FXC STM-1, FXC Bridge, FXC E1/T1, FXC RRI, FC E1/T1, FC STM-1, FC RRI.

5.4 Changes in delivery content between releases Nokia ITN C2.2 and C3

Contents of the Nokia SiteWizard has changed since Integrated Transmission Node (ITN) release C2.2. In ITN C3 release, Nokia SiteWizard 4.15 contains the following managers:

- Nokia BTS Manager CX(M) 4.1 CD1.0
- Nokia BTS HW Configurator CX(M) 4.1 CD1.0
- Nokia UltraSite BTS Hub Manager C4.0
- Nokia MetroHub Manager C4.0
- Nokia RRI Manager C4.0
- Nokia E1/T1 Manager C4.0
- Nokia STM-1 Manager C2.0
- Nokia FC STM-1 Manager C2.0
- Nokia Bridge Manager C2.0
- Nokia Hopper Manager C4.8
- PSM Manager * 4.07
- Nokia GCS R4.2 **(Service Pack 3 CD1)

* Remote functions are optional for PSM Manager.

** Nokia general communication service (GCS) is required for communication to Nokia equipment.

Note

The SCF Editor is no longer supported.

For more information, see *Contents of Nokia SiteWizard*.

5.5 Changes in documentation between releases Nokia ITN C2.2 and C3

New topics in Nokia MetroHub's product documentation

The following information is new in Nokia MetroHub's product documentation:

Instructions:

- *Checklist for installing Nokia MetroHub*
- *Using the licence manager*
- *Change of unit*
- *Software licence key is not available*
- *Typographic errors in the licence key*
- *Enabling user access level control*
- *Disabling user access level control*
- *Administering user access level control*
- *Checking the access rights status*

Descriptions:

- *Technical description of software licensing*
- *Technical description of user access levels*
- *Q1 management options for Nokia MetroHub*

Reference:

- For information on new alarms, see *Changes in alarms between releases Nokia ITN C2.2 and C3*.

Legal and safety statements:

- *RoHS statement*
- *Product collection and safe disposal of the equipment within the European Union*
- *Statutory statements for ITN C3 transmission units*

Removed topics in Nokia MetroHub's product documentation

Reference:

- For information on removed alarms, see *Changes in alarms between releases Nokia ITN C2.2 and C3*.

5.6 Changes in features between releases Nokia ITN C2.2 and C3

Nokia MetroHub / Integrated Transmission Node (ITN) release C3 includes the features of the previous ITN releases. In addition, Nokia ITN C3 provides new features that are listed below.

For more information on ITN C3 features and functions, see *Product Description for Nokia MetroHub*.

New features in ITN C3

The table below lists the new features in ITN C3.

Table 2. New features in ITN C3

Functional area	Feature	Impact	See
RoHS			
	RoHS compliance of FXC/FC units	FXC/FC units are designed free of hazardous substances as required within the environmental requirements.	*RoHS statement*
Tetra BTS interoperability			
	Interoperability of FXC E1, FXC E1/T1 within Tetra BTS	Interoperability with Tetra BTS. Tetra BTS provides one transmission slot for FXC units.	
		The required temperature is from -10 to +55 C°.	

Table 2. New features in ITN C3 (cont.)

Functional area	Feature	Impact	See
	Required ambient temperature within Tetra BTS		
	Identifying Tetra BTS cabinet	The FXC unit identifies that it works within a Tetra BTS.	
FIU 19 / RRI alignment			
	Hot standby and space diversity support	This feature needs support from the connected indoor unit, because the actual switching itself takes place in the indoor unit. In combination with hot standby protection, space diversity is supported by FIU19(E) and RRIC indoor units. FXC RRI unit and the relating unit manager have supported hot standby switching since ITN C2.1 release. Hot standby and space diversity are supported by FXC RRI unit in ITN C3.0.	*Technical description of hot standby with the FXC RRI transmission unit*
	Storing and restoring of OU settings in FXC RRI	To ease the replacement process, and avoid possible failures (for example, when reconfiguring microwave radio link parameters, like the frequency), FXC RRI now offers the possibility to store all settings of the connected outdoor units. Storing is done for each outdoor unit individually. It is possible to: • manually store the outdoor unit settings in FXC RRI • automatically store the outdoor unit settings in FXC RRI • select between manual and automatic mode	

Table 2. New features in ITN C3 (cont.)

Functional area	Feature	Impact	See
		• manually restore the outdoor unit settings from FXC RRI The storing process of the outdoor unit configuration data in the FXC RRI indoor unit can be either initiated automatically (initiated by outdoor unit (OU) software (SW) when the outdoor unit settings have been changed), or manually (initiated by the user). The user can enable/ disable the automatic mode. With the manual restore action, the user can restore the outdoor unit settings (stored in the indoor unit) for each outdoor unit individually via the unit manager. This feature is already supported by other indoor units (FIU19(E) and RRIC) and by all Nokia microwave radio outdoor units. The features are valid for FXC RRI HW from version 2.1 onwards.	
	Scrambling polynome selection	The indoor unit manager supports the possiblity of selecting a different scrambling polynome for each connected outdoor unit. The selection is possible for each outdoor unit individually. This feature requires support in the FXC RRI unit manager. This feature is already supported by HopperManager and by all Nokia FlexiHopper family microwave radio outdoor units.	

Table 2. New features in ITN C3 (cont.)

Functional area	Feature	Impact	See
	G.826 Flexbus PM data history records	The FXC RRI unit and the relating unit manager support the collection and display of performance data history records for each individual Flexbus interface. The collection is based on the quality of the received Flexbus signal (detected bit errors on the Flexbus connection between far-end and near-end indoor units), and reflects the signal quality between the local and remote indoor unit. This feature is already supported by other indoor units (FIU19(E) and RRIC).	*Technical description of the performance management of FXC transmission units*
	G.826 PM data history records for 2M platform interfaces on FXC RRI	FXC RRI unit and the relating unit manager support the collection and display of performance data history records for each 2M signal extracted from a Flexbus interface and dropped via a platform interface towards the 8k cross-connect bus. The collection is based on the quality of the received and terminated 2M signal extracted from the FlexBus interface, and reflects the signal quality between the point where the 2M signal is generated and the 2M termination point on the FXC RRI unit. This feature requires support from the FXC RRI node SW and FXC RRI unit manager.	*Technical description of the performance management of FXC transmission units*

Table 2. New features in ITN C3 (cont.)

Functional area	Feature	Impact	See
		Note: This is already supported by FXC RRI node SW, only the support to display the 2M PM history records via the FXC RRI unit manager is supported with ITN C3.0 release. This feature is an FXC RRI specific feature. FIU19(E) or RRIC do not offer a similar feature. The feature is valid for FXC RRI HW version C2.1 onwards.	
	RX level min/max performance records	The FXC RRI unit manager supports the display of RX level min/max history records collected in each outdoor unit connected to FXC RRI. The feature is already supported by HopperManager and by all Nokia microwave radio outdoor units.	*Technical description of hot standby with the FXC RRI transmission unit*
	Reset of 'Incoming signal level incorrect' alarm	It is possible to reset the alarm when C&M activities at a site are finished. This feature brings changes in the FXC RRI unit manager. The FXC RRI node SW is not affected.	*Configuring with the Commissioning Wizard*
	G.826 OU PM data history records	The FXC RRI unit manager is able to display the outdoor unit microwave radio performance data history records separately for each connected outdoor unit. The collected outdoor unit history performance data records offer the possibility to see an actual link degradation before real bit errors are visible to the end user.	*Technical description of the performance management of FXC transmission units*

Table 2. New features in ITN C3 (cont.)

Functional area	Feature	Impact	See
		16 history records for 15 minute and 16 history records for 24 hour records are stored. The records can be read remotely via Nokia NetAct and locally via FXC RRI unit manager. This feature requires support from the FXC RRI unit manager. The Nokia FlexiHopper family outdoor units and HopperManager already support this feature.	
	Selection between ALCQ and ATPC	It is possible to select between ALCQ and ATPC mode for the Nokia FlexiHopper family outdoor units connected to FXC RRI. This feature requires support from the FXC RRI unit manager. The feature is valid for both the old (C2.0) and new (C2.1) FXC RRI unit HW versions.	*Technical description of fading margin measurement in Nokia FlexiHopper (Plus)*
	E-licensing support	The licensed features in Nokia MetroHub are modulation and the Flexbus capacity of the FlexiHopper radio. In FlexiHopper Plus C2.0 release the high bandwidth (16 state) modulation mode is only available when a valid licence is downloaded to the FlexiHopper device. With FlexiHopper Plus C2.5 the capability to licence FB capacity was released. Even though the function is configured in the FXC RRI unit, the licence is loaded to the outdoor unit and processed there. If no valid licence is available and the	*Technical description of software licensing* *Using the licence manager* *Configuring with the Commissioning Wizard*

Table 2. New features in ITN C3 (cont.)

Functional area	Feature	Impact	See
		indoot unit wants to switch to a different FB capacity, the request is rejected by the outdoor unit. • A notification is displayed if the user configures a parameter to a value only available by licence and the licence is not yet downloaded. • In commissioning FlexiHopper the user can download a licence to proceed with the commissioning and outdoor unit alignment process. • The same behaviour and reduction of errors is implemented as in FlexiHopper and FIU 19(E) HopperManager. • It is possible to view the licence dialogue box directly from the main equipment view of element manager.	
Synchronisation			
	Automatic configuration of PDH node clock to SDH node clock	When the FXC Bridge is the node master, the PDH node clock is automatically synchronised to the SDH node clock. The user does not need to configure the PDH node clock synchronisation.	*Technical description of the synchronisation of FXC transmission units*
FXC RRI			
	Configurable capacity used for D-bus access at BTS	The amount of 2M capacity added/dropped towards the D-bus of a Nokia BTS is configurable, allowing the customer to utilise the available capacity to its maximum.	*Technical description of the FXC RRI transmission unit*

Table 2. New features in ITN C3 (cont.)

Functional area	Feature	Impact	See
		Note that this is not valid for an FXC RRI operating within MetroHub.	
SW download			
	SDH SWDL interruption recovery	In ITN C2.1, a new feature was introduced for the ITN PDH units, where you were allowed to continue the software download after a loss of the Q1 management connection. With this new feature, you can continue the software download manually or automatically (as the ITN element manager continuously tries to re-establish the connection and if it succeeds, the manager continues with the software download). If this happens, the interruption counter is increased by 1 in the software download dialogue box. This feature is now implemented for the SDH units (FC STM-1, FXC STM-1, FC Bridge SDH, FXC Bridge SDH) as well.	*Overview of upgrading the transmission node manager and transmission unit software*
Equipment management			
	Display of boot code in SDH units	With the FXC E1, E1/T1 and RRI units it is possible (also with previous releases) to obtain the boot code and version as part of the identification information. Since this information can be helpful for troubleshooting purposes, this information is made available for the user with FXC STM and FC STM, as well.	*Adjusting FXC STM-1 identification settings*

Table 2. New features in ITN C3 (cont.)

Functional area	Feature	Impact	See
	Support of XML formatted files	It is possible to backup all parameters to an XML formatted file.	*Saving node information in a file*
	Display of un-installed, uncompatible units	In ITN C3.0, a pattern indicating an un-installed unit is displayed.	
Cross-connection and protection			
	End-to-end PDH SDH cross-connections	It is possible to create cross-connections directly to an STM-1 interface with the Traffic Manager without the need to define the used internal Bridge interface. This function has been aligned with the FC STM-1 manager, where end-to-end SDH-PDH cross-connections are now supported.	
	Display of actual cross-connection status information	The node software provides a checksum about the cross-connection data.	
Performance management			
	Support of additional E1/T1 error event counters	It is possible to collect and display line code violations and controlled slip events.	*Technical description of performance management of FXC transmission units*
Element Manager			
	User access levels	There are two different access levels for the management tools.	*Technical description of user access levels*

Table 2. New features in ITN C3 (cont.)

Functional area	Feature	Impact	See
			Enabling user access level control *Disabling user access level control* *Administering user access level control* *Checking the access rights status*
	Element manager support of Windows 2003 server	The ITN element manager supports Windows 2003 OS.	*System requirements for Nokia SiteWizard*
	Refresh of TTI/path label information	A **Refresh** button has been added to the dialogue boxes in manager applications of FC and FXC STM-1.	

5.7 Changes in software between releases Nokia ITN C2.2 and C3

For more information of changes in features, see *Changes in features between releases Nokia ITN C2.2 and C3*.

If you upgrade an old FXC unit, the node software can be downloaded to older unit versions. The new software versions are listed below.

Table 3. New software versions

Product	Software code
FXC E1 (VXTA)	S36122.01-F0
FXC E1/T1 (VXTB)	S36122.01-F0
FXC RRI (VXRB)	S55837.01-C0 (new HW)
	S55832.01-G0 (old HW)
FXC STM-1 (VXOA)	P32682.01-C0
FXC Bridge (VXOB)	P32684.01-C0 (SDH)
	S32685.01-C0 (PDH)

5.7.1 Restriction on the use of certain hazardous substances (RoHS)

Due to the new coding scheme of Nokia, the software (SUMO, BIST; PTSW applications) supported identifier has been adapted from the old, fixed 'aaaaaa.bb cc' to 'ddddddddddd ee'. Because of the changes in the application software to support the new codes and due to the update of old hardware, the earlier scheme is still supported.

If the base driver needs to be changed (for example, Flash, administrative computer (AdC), SDH equipment timing source (SETS), partial load disconnector unit (PLD)), a new start-up software (FC E1/T1), BIST/PT software, and new application software is released for all related units. FXC STM-1, FXC Bridge, and FC STM-1 are synchronous digital hierarchies (SDHs) units.

You only need to change the BIST/PT software if the drivers are needed for testing software (for example, Flash) or if the new components need to be tested with the BIST/PT software.

Independent application software is released for different hardware versions per type (for example, FXC E1 and RoHS free FXC E1).

5.7.2 TETRA BTS interoperability

As all products need to be RoHS compliant in the near future, the TRUA transmission unit in the Tetra unit needs either to be made RoHS compliant or be replaced. Due to end-of-life components that cannot be replaced for the TRUA, FXC units are used within the Tetra BTS.

The Tetra BTS provides the electrical and mechanical changes needed to house the FXC units and to avoid changes needed in the node software.

Main software adaptations are related to the detection and support of the new backplane type, as no other new features are required for the Tetra BTS. Via the backplane type application, software launches special services and the unit identifiers are controlled. Thus:

- a new backplane type has been introduced (hardware ID code required)
- janitor functions have been adapted to the new backplane type (for example: poller functions, temp control, fan control, backplane S/N functions, battery pack adaptations, available EAC, and so on)
- identifier control has been adapted for the new backplane type; thus, the element manager can ensure a proper released function for the Tetra BTS
- the fault code table needs to be adapted

Changes in the element manager:

- **Type detection**
  EM fetches the type from node software and that is identified in EM.
- **Help update**
  The online help has been updated.

5.7.3 FIU19/RRI alignment

The software architecture for ITN C2.1 was based on an outdoor unit GW approach to route all data for outdoor unit and indoor unit support software via a routing module. This module now enhances new features. For example, the indoor unit software platform support is a new feature but will be not available for the FXC RRI indoor unit software. In addition, the communication concept between FIU and FXC RRI is different. In FIU, all units can reach each other with the far-end manager (FEM) software module. Although this module is available in the FXC RRI, it is limited to the running FXC RRI unit, meaning that no slave unit can send data via FEM to any other slave FXC RRI units and also the outdoor units can not see each other.

For providing backup handling support, the node software has been enhanced by the services for the outdoor unit and also for the outdoor unit GW. In addition, special checks have been enabled to ensure that the outdoor unit backup does not overwrite indoor unit data.

Hot standby and space diversity support

A new Q1 menu for hot standy and space diversity (SD) has been implemented. The calculation point of BER has been changed for HSB+SD according to the FIU19(E) implementation.

A new setting '1IU + 2OU HSB Protected + Space Diversity' has been added to the **OU settings** dialogue box.

Storing and restoring of outdoor unit settings

The FXC RRI unit software forwards the Q1 commands to the outdoor unit. The FXC RRI software is able to communicate with the outdoor unit when the actual backup or restore of backup is performed, after outdoor unit has received the respective Q1 commands.

A new dialogue box has been added where the user can instruct the node to backup the outdoor unit settings to the indoor unit. There is a possibility to select between automatic and manual mode.

Scrambling polynome selection

A new setting has been added in the **OU settings** dialogue box.

G.826 Flexbus PM data history records

Q1 menus for retrieving history records for both Flexbus interfaces have been added. The node software implementation for collection/compilation of the data has been adapted from FIU19(E) software. For access of the data, the FIU software provides an ASFP interface that is used in Q1 menus to access the function.

A new dialogue box has been added to read and display these results.

G.826 PM data history records for 2M platform interfaces on FXC RRI

New Q1 menus for retrieving of records have been implemented. The collection of values is already supported (statistics for 2M interfaces already exist in previous releases). The generation and storage of records has also been implemented.

A new dialogue box has been added to read and display this data.

Rx level min/max performance records

A new dialogue box has been added for reading and displaying the results of Rx level min/max performance records.

Reset of 'Incoming signal level incorrect' alarm

The element manager provides the function to reset the alarm in the Commissioning Wizard. For more information, see *Configuring with the Commissioning Wizard*.

G.826 outdoor unit PM data history records

A new dialogue box has been added for reading and displaying the results of G.826 outdoor unit performance management (PM) data history records.

Selection between ALCQ and ATPC

A new option has been provided in the **OU settings** dialogue box to select ALCQ, ATPC, or none. Previously, there was an option to set the ATPC on or off. This has been changed to a combobox so that the user can select one of the three choices. The EM then sends the selected option to the node.

E-licensing

Support for e-licensing has been added to the software.

5.7.4 Transmission functions

Support of CRC multi-frame/basic frame selection at FC STM

Implementation of FXC STM has been copied and adapted to the FC STM environment.

Implementation of FXC STM has been ported to FC STM Manager.

If a signal is looped back, AIS shall be transmitted in the forward direction

Implementation of FXC STM has been copied and adapted to the FC STM environment.

Implementation of FXC STM has been ported to the FC STM Manager. The related loop command is sent to FXC STM node instead of the PDH node.

5.7.5 Synchronisation

Automatic configuration of PDH node clock to SDH node clock

When FXC Bridge is master, the default PDH priority list (1 internal, 2 none, 3 none, 4 none) is converted to (1 STM-clock, 2 none, 3 none, 4 none) at start-up. When E1 signal is set on priority 1 in the PDH synchronisation list, the STM clock is set on priority 2 automatically.

The default settings for the offline mode are adapted towards the default PDH priority list with STM clock at priority 1, when FXC Bridge is master.

5.7.6 FXC RRI

Configurable capacity used for D-bus access at BTS

The configuration of platform interfaces 13 and 16 either for D-bus or cross-connection purposes have been enabled.

The following areas have been updated in the element manager:

- Traffic Manager
- D-bus allocation
- cross-connections
- commissioning
- RBS
- EOC
- PDH Sync
- HubMan
- RRI Man communication
- RRI manager indoor unit settings
- RRI manager statistics
- RRI manager loops
- backward compatibility
- new dialogue box to set the number of D-buses

5.7.7 Software download

Check of correct software image prior to software download

The element manager checks the file name before downloading.

Transparent software activation at units where software is not switched over

The software implementation has been changed.

Duration of software download with BSC

The element manager software supports Q1 logical channel 8.

SDH SWDL interruption recovery

The related menus and counters have been added to the STM node software.

The existing PDH implementation has been copied and the correct interworking with the SDH units has been verified.

5.7.8 Compatibility management

Hardware/software compatibility check

The hardware/software compatibility method has been adapted for all FXC units and FC STM.

5.7.9 Equipment management

Display of boot code at SDH units

FXC STM-1, FC STM-1, FXC Bridge, FC-Bridge, and SDH software have Q1 menus for retrieving the boot code version from the lower layer software (CBM component).

The information from the node is read and displayed.

Definition of default settings

Node default settings have been changed.

Offline mode default settings have been changed.

Support for XML formatted files

Support for missing parameters has been added. Also, added support for `.nod` file. The XML format has been aligned to common XML specification.

Display of un-installed not compatible units

The uninstalled state of a unit in software mismatch state is displayed.

5.7.10 Cross-connection and protection

Force of protection groups at FC STM

The configured status of a protection group can be retrieved.

End-to-end PDH SDH cross-connections

End-to-end cross-connections have been ported to the FC STM-1 manager. Traffic Manager has been extended.

5.7.11 Performance management

Support of additional E1/T1 error event counters

The new counters are read and displayed.

5.7.12 Element manager

User access levels

The element manager provides a means to differentiate between allowed and prohibited actions dependent on the user role.

Element manager support of Windows 2003 server

The compatibility has been verified.

Refresh of TTI/path label information

Refresh buttons have been added to the related dialogue boxes.