

**Lucent Technologies**  
Bell Labs Innovations



**Network Communications  
Controller  
Release 3.2**  
User's Guide

365-370-107  
Issue 2  
August 2000

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1. Language of statute.

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User's Guide

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## Using this Manual

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### Introduction

This manual provides the following information about the Network Communications Controller, Release 3.2:

- product description
  - applications
  - installation, test, and turn-up
  - operations, maintenance, and Task Oriented Procedures
  - technical specifications
  - ordering information
- 

### Intended Audience

This manual is written for:

- Installers and Craftpersons who will use the Network Communications Controller
- Engineers involved with Network Planning and Ordering.

In addition, others who need specific information about the features, applications, operation, and engineering of the Network Communications Controller will find the information in this manual useful.

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## Using this Manual, *continued*

### Chapter Descriptions

Table 1 briefly describes the type of information found in each chapter

**Table 1. Chapter Descriptions**

| Chapter | Title                                       | Description  |
|---------|---|--|
| Preface | About This Document                         | <ul style="list-style-type: none"> <li>■ describes the guide's purpose, intended audience, and organization</li> <li>■ references related documentation</li> <li>■ explains how to comment on this document</li> </ul> |
| 1       | Introduction                                | <ul style="list-style-type: none"> <li>■ provides a high-level product overview</li> <li>■ describes the product family</li> </ul>   |
| 2       | Product Description                         | describes the hardware and features of the NCC   |
| 3       | Applications                                | describes applications in which the NCC can be used  |
| 4       | Technical Specifications and Ordering Codes | lists the technical specifications and ordering codes for the NCC  |
| 5       | Installation, Test and Turn-up              | describes hardware installation of the NCC and initial turn-up procedures  |
| 6       | Operations and Maintenance                  | describes command structure of NCC- specific commands for the WaveStar-CIT   |
|         | Task Oriented Procedures                    | describes how to manage, provision, and clear trouble for a NCC via the WaveStar-CIT   |
|         | Index                                       | lists specific subjects and their corresponding page numbers   |

## Documentation Set

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### Introduction

The Lucent Technologies documents listed in this section provide additional information about the WaveStar family of products.

### Table

Table 2 lists the documents included in the WaveStar family of products.

**Table 2. WaveStar Family Documentation Sets**

| Document Number               | Title  |
|-------------------------------|--|
| 365-370-107                   | Network Communications Controller User's Guide Release 3.2                         |
| 365-370-108                   | Network Communications Controller Operations Systems Engineering Guide Release 3.2 |
| 108763426                     | Network Communications Controller Software Release Description 3.2.1               |
| 365-370-101                   | WaveStar BandWidth Manager Applications, Planning, and Ordering Guide              |
| 365-370-104                   | WaveStar BandWidth Manager Operations Systems Engineering Guide                    |
| 365-370-106                   | WaveStar BandWidth Manager Technical Description                                   |
| 365-370-100                   | WaveStar BandWidth Manager Installation Manual                                     |
| 365-370-109                   | WaveStar BandWidth Manager User Operations Guide                                   |
| 365-575-700                   | WaveStar 400G Optical Line System Applications, Planning, and Ordering Guide       |
| 365-575-701                   | WaveStar 400G Optical Line System User Service Manual                              |
| 365-575-702                   | WaveStar 400G Optical Line System Operations System Engineering Guide              |
| <i>Continued on next page</i> |  |

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**Documentation Set, *continued***

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**Table, *continued*****Table 2. WaveStar Family Documentation Sets, *continued***

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| <b>Document Number</b> | <b>Title</b>   |
|------------------------|--|
| 365-371-201            | WaveStar TDM 2.5G/10G (2-Fiber), R4.0 Applications, Planning, and Ordering Guide |
| 365-371-210            | WaveStar TDM 2.5G/10G (2-Fiber), R4.0 User Operations Guide                      |
| 365-371-207            | WaveStar TDM 2.5G/10G (2-Fiber), Operations Systems Engineering Guide            |
| 365-371-206            | WaveStar TDM 2.5G/10G (2-Fiber), R4.0 Installation Manual                        |

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## Description of Documentation Set

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### Introduction

This section briefly describes the documents that are in the WaveStar documentation set.

---

### Installation Manuals

*Installation Manuals* are step-by-step guides to system installation and setup. They also include information needed for pre-installation site planning and post-installation acceptance testing.

---

### Applications, Planning, and Ordering Guides

*Applications, Planning, and Ordering Guides* are created for use by the Lucent Account Team, customer network planners, analysts, and managers. They present a detailed overview of the system, describe its applications, give planning requirements, engineering rules, ordering information, and technical specifications.

---

### User/Service Manuals

*User/Service Manuals* provide step-by-step information for use in daily system operations. The manuals demonstrate how to perform system provisioning, operations, and administrative tasks. They also provide procedures for routine maintenance, troubleshooting, diagnostics, component replacement, and acceptance testing.

---

### Job Aids

*Job Aids* are laminated 8.5- x 11-inch sheets with information organized in diagram and table form. The various sheets provide unit numbering diagrams, system mappings, equipment module diagrams and tables, system test procedures, and performance monitoring procedures.

---

### Operations Systems Engineering Guide

The *Operations Systems Engineering Guide* provides detailed information on TL1 commands, messages, and error codes.

---

### Software Release Descriptions

*Software Release Description* provide information about known software problems and workarounds, as well as software installation information.

---

## Documentation Ordering

### Introduction

This section describes ordering documentation

- additional copies of this document and requesting placement in the standing order list
- electronic documentation (CD-ROMs)
- product drawings from the Lucent Technologies Customer Information Center (CIC)

### Ordering Standard Documentation

This section provides the address and telephone numbers necessary to order documents or request placement on the standing order list (for reissues of any document).

#### Commercial Customers

Table 3 provides the information necessary for commercial customers to order standard documentation by mail, internet, telephone, or fax.

**Table 3. Placing an Order**

| Mailing and Internet Addresses  | Telephone Numbers   | Fax Numbers           |
|---|---|-----------------------|
| Mailing Address:<br>Lucent Technologies Inc.<br>Customer Information Center<br>Attention: Order Entry Section<br>2855 N. Franklin Road<br>P.O. Box 19901<br>Indianapolis, IN 46219<br><br>Internet Address:<br>www.lucentdocs.com | From USA:<br><b>1-888 LUCENT-8</b><br><b>(1-888-582-3688)</b>                                       | <b>1-800-566-9568</b> |
|   | From North American Region (NAR):<br><b>1-317-322-6619</b>  | <b>1-317-322-6359</b> |
|   | From Asia/Pacific Region and China; Caribbean/Latin America Region (CALA):<br><b>1-317-322-6411</b> | <b>1-317-322-6699</b> |
|   | From Europe/Middle East/Africa (EMEA):<br><b>1-317-322-6416</b>                                     | <b>1-317-322-6699</b> |

(Continued on next page)

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## **Documentation Ordering, *continued***

---

### **RBOC/BOC Customers**

RBOC/BOC customers should process orders through your Company Documentation Coordinator.

---

### **Ordering CD-ROMs**

The WaveStar Product Family documentation is available on CD-ROM. Table 4 lists the contacts for specific information about CD-ROM documentation.

**Table 4. Ordering CD-ROM Documentation**

---

| <b>IF you wish to...</b>                       | <b>THEN contact...</b>  |
|--|---|
| order an annual subscription                   | <ul style="list-style-type: none"> <li>■ your Account Executive.</li> <li>■ Lucent Technologies Customer Information Center at either:<br/>1-888-582-3688, or<br/>www.lucent8.com.</li> </ul> |
| obtain pricing information                     |   |
| obtain a list of documents available on CD-ROM |   |

---

### **Ordering Drawings**

To order any of the drawings listed in Table 5, contact Lucent Technologies' Customer Information Center (contact information is provided in table 3 on page xxiii).

---

(Continued on next page)

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## Documentation Ordering, *continued*

---

### Available Drawings

Table 5 lists the drawings available from the Customer Information Center (CIC). These drawings provide valuable product information.

**Table 5. Drawings Available from CIC Payment**

---

| Drawing Number | Drawing Title                              |
|----------------|--|
| ED9C280-45     | Network Communications Controller          |
| ED9C280-46     | Network Communications Controller Software |

---

### Payment

One of the following methods of payment is required with orders from commercial customers:

- check (payable to Lucent Technologies)
- money order (payable to Lucent Technologies)
- purchase order number
- charge number



**NOTE:**

Lucent Technologies entities should use form IND 1-80.80 FA, which is available from the Customer Information Center.

---

## **Commenting on Documents**

---

### **Introduction**

Because customer satisfaction is extremely important to Lucent Technologies, every attempt is made to encourage feedback from information product customers.

---

### **Customer Comment Form**

A customer comment form is located immediately after the title page of this document. Please fill out the form and fax it to the number provided on the form.

---

### **Address for Comments**

If the customer comment form is missing, send or fax comments about this document to:

Lucent Technologies Inc.  
Customer Training and Information Products  
Building 21, Room 3A-06  
1600 Osgood Street  
North Andover, MA 01845

Fax: 1-978-960-6835

---

## **Training**

---

### **Introduction**

The Customer Training and Information Products (CTIP) organization offers a formal training package to complement your product needs.

---

### **On-Site Training**

On-site training is available for all NCC-related training courses.

---

### **Registering for a Course or Arranging an On-site Training Session**

To enroll in a training class at one of Lucent's corporate training centers or to arrange an on-site training session at your facility, please call **1-888-LUCENT8 (582-3688): Prompt 2.**

---

## **Training Courses**

---

### **Introduction**

This section describes the NCC-related training courses.

---

### **WaveStar Product Family Overview**

#### **Content**

The WaveStar Product Family Overview Course (LW2260) provides an introduction to the Network Communications Controller, WaveStar TDM 2.5G/10G, WaveStar Bandwidth Manager, WaveStar SNMS, WaveStar OLS 40G/80G, and WaveStar OLS 400G. Emphasis is placed on the products' network topologies and the relationships among the individual products.

#### **Audience**

Lucent sales, marketing, and product management; prospective customers.

#### **Course Length**

1 day

---

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# Part I

---

## Descriptive and Installation Information



---

# Introduction

# 1

---

## Contents

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- WaveStar Family of Products 2
  - Introduction to the NCC 3
-

---

## **WaveStar Family of Products**

---

### **Introduction**

This sections give a brief overview of the WaveStar family of products.

---

### **Lucent Products**

Lucent Technologies offers the industry's widest range of high-quality transport systems and related services designed to provide total network solutions.

---

### **Family Members**

The product family offers a series of products designed to bring customer's networks forward into the next century. The family includes:

- WaveStar BandWidth Manager
  - WaveStar TDM 2.5G (OC48)
  - WaveStar TDM 10G (OC192)
  - WaveStar 40G Optical Line System
  - WaveStar 400G Optical Line System
  - Network Communications Controller
- 

### **Family Features**

The product family offers customers:

- a full portfolio of SONET-based and SDH-based services
  - scalable multiplex, transport and cross-connection services
  - network consolidation and reliability
  - seamless interworking with embedded base products
  - interoperability with other vendor's products
  - coordination of network element and element management services
-

---

## Introduction to the NCC

---

### **NCC Services**

The NCC plays an important role in the operation of the Lucent Technologies WaveStar product family. The NCC provides directory services, file transfers, and protocol conversion services to WaveStar Network Elements (NEs) and the systems that manage them.

---

### **Standards Based**

The NCC communication services play an important role in providing standards-based operations by providing standard LAN/WAN access to mixed generation and multi-vendor networks.

---

### **More Efficient use of NEs**

The NCC offers significant improvements in the ways that management systems find and establish connections to Network Elements (NEs), both decreasing cost and increasing standardization in operations.

In other transmission products, facilities such as protocol conversions were built into every NE, even though they were only used in a small percentage of the NEs. By factoring network operations out of the NEs and into a separate controller, the NCC conserves NE resources for transmission features, and avoids costly NE controller upgrades.

---

### **The NCC and the WaveStar Family of Products**

NCC services are intended for use throughout the WaveStar product family. Products that use the NCC include:

- WaveStar BandWidth Manager
- WaveStar TDM 2.5G
- WaveStar TDM 10G

Additionally, the NCC can be used with these other Lucent products:

- DDM-2000
  - FT-2000
-



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---

## Hardware Description

### NCC Hardware Overview

---

**Description**

The Network Communications Controller includes the following hardware:

1. An Operations Shelf, which holds the Operations Controllers and Alarm Unit described below, as well as other hardware such as power supplies, fan unit, etc.,
  2. Multiple Operations Controllers, each of which acts as an independent entity while providing protocol conversion, file transfer, and directory services,
  3. An Alarm Unit
- 

**Alternate Terminology**

The Operations Shelf is also referred to as the NCC Operations Shelf or just the NCC Shelf.

The Operations Controllers are often referred to as NCC Operations Controllers or simply as NCCs. In particular, the name NCC is used frequently when referring to an Operations Controller in the non-hardware related sections of this document, which further emphasizes the fact that each Operations Controller acts as an independent entity when providing NCC services.

The Alarm Unit is also referred to as the NCC Alarm Unit.

---

## Operations Shelf

### Introduction

This section provides information on the NCC Operations Shelf.

### Description

The Operations Shelf is a 23" rack mount chassis that can be miscellaneously mounted in a standard cabinet. There are two versions of the Operations Shelf which can be differentiated by the serial number and CLEI labels on the rear of the chassis. The original shelf is compliant with NEBS Level 2. The revised Operations Shelf, labeled "Comcode 408446078" on the serial number label, incorporates a modified fan unit and additional power filtering for NEBS Level 3 compliance.

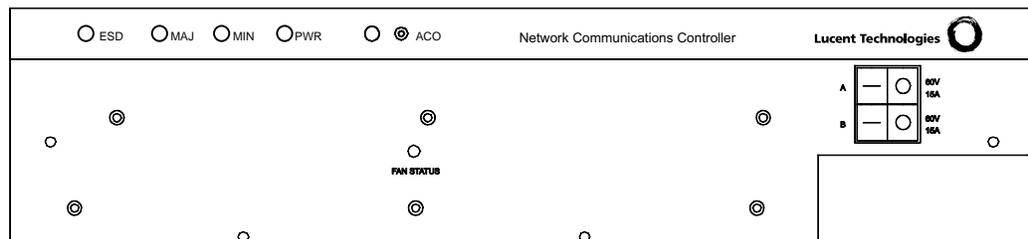
The shelf has 4 vertical slots in which circuit packs can be inserted and 1 vertical slot in which the Alarm Unit can be inserted.

Slots 1, 2, 4, and 6 of the Operations Shelf can be used for Operations Controller circuit packs.

The shelf also has two power supplies to provide redundant powering in case of a power supply failure.

### Figure

Figure 2-1 shows the Operations Shelf Front Panel.



NC-NCC0012

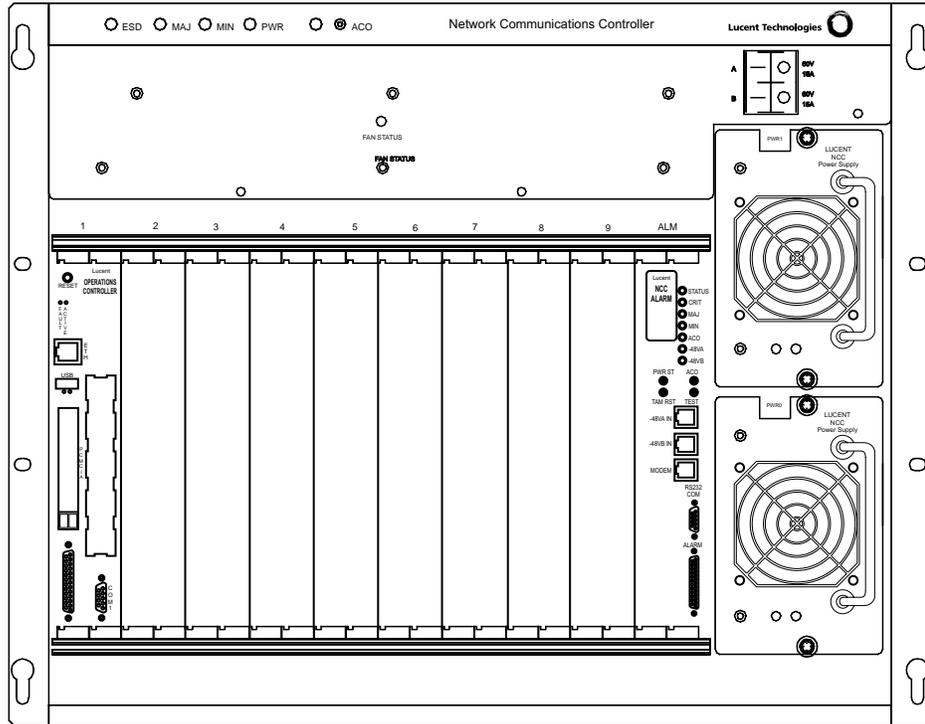
**Figure 2-1. Operations Shelf Front Panel**

(Continued on next page)

## Operations Shelf, *continued*

**Figure**

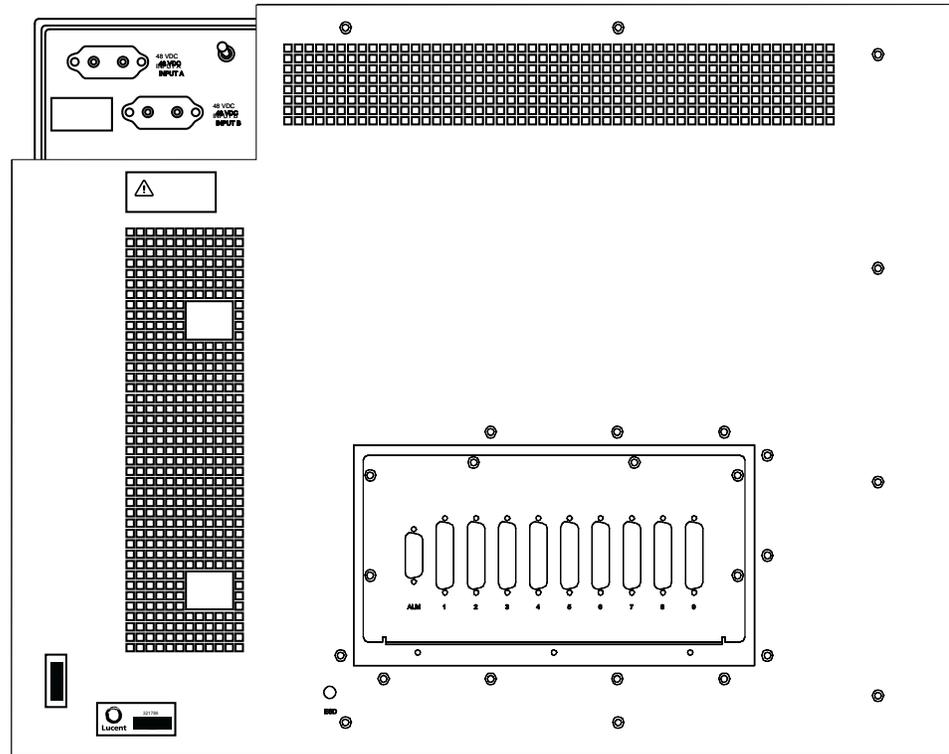
Figure 2-2 shows the Operations Shelf Front View (with front cover removed). There is an Operations Controller circuit pack in slot 1 and the Alarm Unit is in the right most slot.



**Figure 2-2. Operations Shelf Front View**

## Operations Shelf, *continued*

**Figure** Figure 2-3 shows the Operations Shelf rear view.



NC-NCC0011

**Figure 2-3. Operations Shelf Rear View**

### Shelf Powering

Powering for the shelf is comprised of:

- Two redundant (1 + 1 protected) power supplies
- Two redundant -48V power feeds (A and B) with circuit breakers

The shelf will remain fully powered if one power supply and/or feeder fails. In the event of a powering failure, the Alarm Unit will raise an alarm.

---

## **Operations Shelf, *continued***

---

### **Rear of the Operations Shelf**

The rear of the Operations Shelf provides connectors for the Alarm Unit office alarm and X.25 connectors for any Operations Controller circuit packs equipped with an X.25 PCMCIA card.

Cables are routed from the faceplate of the Operations Shelf under the power supplies to the back of the shelf. See Chapter 5 for information on cabling new X.25 cards to the connectors. Table 4-5 provides information on the pinouts for the Alarm Unit connector.

---

### **Fan Unit**

The Operations Shelf is equipped with a fan unit just under the Users Panel.

The Fan Unit has fans providing ventilation to the circuit packs. It will provide complete ventilation even if one of the fans in the tray should fail.

The Fan Unit is monitored for trouble. In the event that 1 fan fails a minor alarm is raised. If 2 or more fans should fail a major alarm is raised.

In the event of a fan failure the entire unit must be replaced. Spares should be kept on hand for this purpose.

---

## Operations Controller

---

### Introduction

This section describes the NCC Operations Controllers.

---

### Description

Each Operations Controller acts as an independent entity when providing protocol conversion, file transfer, and directory services.

Some features of the Operations Controller are:

- Support for "Hot Swapping" - Operations Controller circuit packs can be removed or inserted at any time
  - Auto-reset in the event of a lock-up (sanity timer)
- 

### Faceplate LEDs

The Operations Controller Faceplate is equipped with LEDs for a visual indication of the status of the circuit pack. The two status LEDs are:

- Active
- Fault

The table below details the LED sequences for various conditions of the NCC Operations Controller.

**Table 2-1. Operations Controller LED Status Indicators**

---

| Status                         | Active LED Color | Fault LED Color |
|--------------------------------|------------------|-----------------|
| Operating Normally             | Green            | —               |
| Fault                          | —                | Red             |
| Booting                        | Red to Green     | Red to Green    |
| Writing to PCMCIA <sup>a</sup> | Blinking         | Blinking        |

a. **IMPORTANT** Do not remove the PCMCIA card when the Active and Fault LEDs are blinking.

There are four additional LEDs that provide status indicators for the Hard Drive, and Ethernet Connector. They are:

- HD — This LED blinks to indicate activity of the hard disk drive.
  - Ethernet — Two LEDs adjacent to each port blink to indicate LAN activity
  - Unused — There is one LED located to the right of the "HD" LED that is not used at this time.
-

---

## **Operations Controller, *continued***

---

### **Switches**

The Operations Controller has one switch on it, the **Reset** switch. Pressing the reset switch results in a hardware reset of the Operations Controller.

---

### **Dual LAN Ports**

In Release 3.2<sup>\*</sup> the Operations Controller provides two RJ-45 LAN ports for connecting to the OSI Central Office LAN, and optionally to a TCP/IP LAN. Additional information on the dual LAN ports is available on page 2-17.

---

### **Faceplate Connectors**

There are three connectors on the Operations Controller faceplate that are not for customer use. They are:

- USB
- COM1
- Parallel I/O

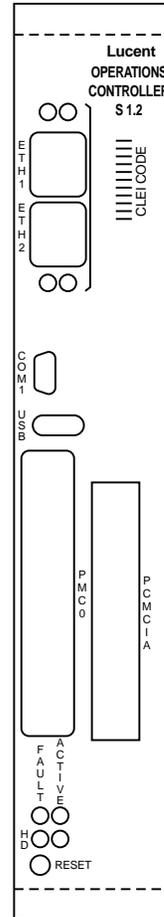
Attempts to use these connectors may cause a failure of the Operations Controller and a loss of related services.

---

\* Only one LAN port was available on the Operations Controller prior to release 3.2.

## Operations Controller, *continued*

**Figure** Figure 2-4 shows a Release 3.2 Operations Controller.

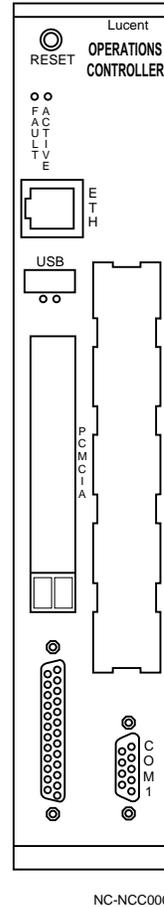


NC-NCC0020

**Figure 2-4. Release 3.2 Operations Controller**

## Operations Controller, *continued*

**Figure** Figure 2-5 shows a Release 3.1 (and prior) Operations Controller.



**Figure 2-5. Release 3.1 (and prior) Operations Controller**

---

## Alarm Unit

---

### Introduction

The NCC Alarm Unit monitors the shelf and Operations Controller circuit packs for hardware failures. The Alarm Unit also controls office alarm indications (audible and visual relays), and controls the user panel LEDs.

---

### Alarm Monitoring

When Alarm Monitoring is enabled for an Operations Controller in slots 1 or 2, the NCC Alarm Unit will report any failures on the shelf to that Operations Controller, which in turn notifies the Management OS.

Alarm Monitoring can be enabled or disabled using the WaveStar-CIT or an OS.

---

### Faceplate LEDs

The Alarm Unit is equipped with LEDs for a visual indication of the status of the pack. The LEDs are:

- Status - Green when powered.
  - Crit - Red when Critical alarm is triggered
  - Maj - Amber when Major alarm is triggered
  - Min - Amber when Minor alarm is triggered
  - ACO - Green when ACO button on unit or User Panel is pushed
  - -48VA - Amber when -48V A Power feeder has failed or -48VA alarm cable fails
  - -48VB - Amber when -48V B Power feeder has failed or -48VB alarm cable fails
- 

### Faceplate Switches

The Alarm Unit faceplate has four switches:

- PWR RST — Resets power to the NCC Shelf Alarm
  - ALM RST — Resets all alarms
  - ACO — Alarm Cutoff, silences audible alarms only
  - TEST — Tests the LEDs on the NCC Shelf Alarm
-

## **Alarm Unit, *continued***

---

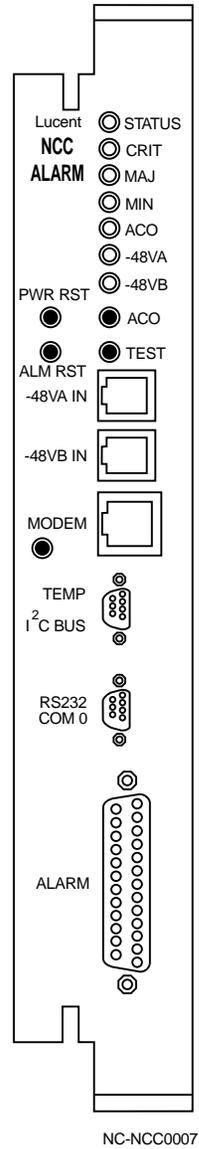
### **Faceplate Connectors**

There are seven connectors on the Alarm Unit.

- -48VA IN — Sense input for 48 volt input A
  - -48VB IN — Sense input for 48 volt input B
  - Modem — Not for Customer Use
  - Temp I<sup>2</sup>C Bus — Not for Customer Use
  - RS232 Com0 — Not for Customer Use
  - ALARM — Alarm relay contacts; provided cable brings these relay contacts to the rear panel.
-

## Alarm Unit, *continued*

**Figure** Figure 2-6 shows the Alarm Unit.



**Figure 2-6. Alarm Unit**

## **Air Impedance Modules**

---

### **Description**

The Air Impedance Modules regulate air-flow within the Operations Shelf.

Please note these considerations when installing Operations Controllers in the Operations Shelf:

- Slots 3, 5, 7, 8, and 9 are equipped with AIMs (Air Impedance Modules) that must not be removed.
  - Slots 2, 4, and 6 come equipped with removable AIMs. Please note that if there are no Operations Controllers equipped in slots 2, 4, or 6, then the AIMs should not be removed from those slots.
-

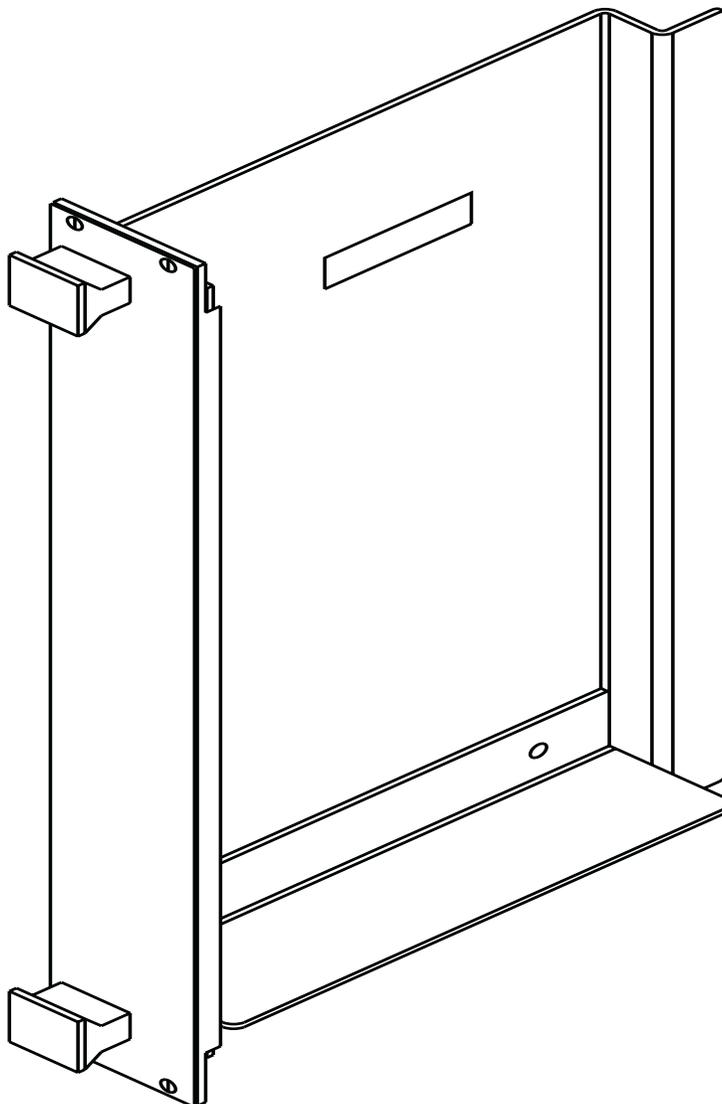
---

## **Air Impedance Modules, *continued***

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**Figure**

Figure 2-7 shows the Air Impedance Module.



NC-NCC0015

---

**Figure 2-7. Air Impedance Module**

---

## Dual LAN Ports

---

### Introduction

The dual LAN ports hardware feature in the NCC Operations Controller enables the separation of the OSI and TCP/IP domains in a management communications network. Additionally, the dual LAN ports can provide redundant connections towards the OS or management system.

These two LAN ports are identified and labeled respectively, as ETH1 and ETH2. Each port can support:

- the OSI protocol stack (OSI),
- the TCP/IP protocol stack (TCP/IP),
- both OSI and TCP/IP protocol stacks (ALL), or
- no protocol stack (NONE).

### Dual LAN Port Configuration

The dual LAN ports on the Operations Controller are configured by using the **ED-NE** TL1 command. (For more complete information on this TL1 command see NCC OSEG Chapter 3, TL1 Message Details.)

By default the LAN port, ETH1 is set to ALL; the port, ETH2 defaults to NONE. Additionally, the dual LAN ports can be configured according to the options shown in the following table:

**Table 2-2. Dual LAN Port Configuration Settings**

| If ETH1 is set to.... | Then ETH2 can... |
|-----------------------|------------------|
| ALL                   | NONE             |
| NONE                  | ALL              |
| OSI                   | TCP/IP           |
| TCP/IP                | OSI              |

---

## Dual LAN Ports, *continued*

---

### Dual LAN Port Engineering Rules and Restrictions

In order to use the dual LAN ports of the Operations Controller the following engineering rules and restrictions must be followed:

1. The OSI protocol must be supported on one of the two LAN ports.
  2. The OSI protocol can not be supported on both LAN ports simultaneously.
  3. The TCP/IP protocol must be supported on one of the two LAN ports.
  4. The TCP/IP protocol can not be supported on both LAN ports simultaneously.
- 

### Separation of the OSI and TCP/IP Domains

The dual LAN ports enable port-based separation of the OSI and TCP/IP protocols. Support for the OSI protocol on one LAN port, and the TCP/IP protocol on the other port, enables the separation of an OSI-based Central Office LAN and a TCP/IP-based WAN.

---

### Backup Link

Support for TCP/IP and OSI protocols on the same LAN port enables connectivity to the OS to be maintained if one of the two LAN ports should fail. If one of the two LAN ports fails, a user can manually switch the port setting on the remaining working port to ALL and the failed port to NONE to restore connectivity between the OS and the OSI network.

---

### Backward Compatibility

Backward-compatibility is maintained with previous NCC releases by having port ETH1 default to supporting both OSI and TCP/IP protocols and port ETH2 default to supporting neither.

---

---

## Protocol Conversions

### Operations Systems (OS) Interface

---

#### Description

The NCC is managed using Transaction Language 1 (TL1) for commands and messages, and File Transfer and Access Management (FTAM) for software downloads and provisionable data backup and restore. These interfaces are supported by the WaveStar SubNetwork Management System (SNMS) and the WaveStar CIT. The TL1 interface is also compatible with Telcordia's Network Monitoring and Analysis (NMA) and Telcordia's Transport - Element Management System (T-EMS).

The NCC supports the following operations communications interfaces and protocol conversion services:

- OSI/LAN (to SNMS or other compatible OS)
- TCP/IP (via NCC to SNMS)
- X.25 (via NCC to NMA, T-EMS, or other compatible OS)
- TCP/IP (via NCC to NMA, T-EMS, or other compatible OS).

**NOTE:**

In this and the following sections of the documentation not directly describing the hardware, each Operations Controller is referred to as an NCC.

---

## **TCP/IP (RFC1006) Bridge**

---

### **Description**

The NCC provides the ability to convert the TCP/IP RFC1006 protocol from an OS to the OSI protocol that the NEs in the network use to communicate with each other. The NCC acts in this capacity as a Transport Service Bridge.

Multiple NCCs can be used on one or more shelves to provide redundancy and/or extra protocol conversion capacity.

The Transport Service Bridge is responsible for establishing and maintaining connections with the OSI based subnetwork based upon requests which originate from the TCP/IP based subnetwork. As such, the Transport Service Bridge establishes OSI connections from the bridge to the OSI NE based upon connection requests from the user of the bridge on the TCP/IP side, maintains a mapping between the connections on the TCP/IP based subnetwork and the OSI TP4/CLNP based subnetwork, and monitors both connections for errors which will cause subsequent action on the corresponding connection.

---

---

## TL1 TCP/IP Gateway

---

### Introduction

The NCC provides the ability to run a TL1 TCP/IP Gateway function. This function allows a user (or OS) to connect to a NCC via a telnet session from any computer that can access the TCP/IP network that the NCC is on.

The NCC supports three encodings for TL1 over TCP/IP (from an OS) to TL1 over OSI (to the NE) protocol conversions. Each encoding method is detailed below.

---

### TL1 TCP/IP Gateway in Length-Value mode

Starting in Release 3.1, the NCC provides a TCP/IP to OSI gateway for TL1 using length-value encoding.

This variation of the TL1 TCP/IP gateway is used with OSs that use length-value encoding for transmitting TL1. With length-value encoding, each TL1 message is encapsulated into the TCP data stream as follows:

- Version Number (1 byte, value set to 3)
- Reserved (1 byte)
- Length (2 bytes, value set to length in bytes of TL1 message + 4)
- TL1 Message (variable length)

The TL1 TCP/IP Gateway with length-value encoding uses port number 3081<sup>\*</sup>. The length-value encoding is provided for machine-machine interactions.

---

### TL1 TCP/IP Gateway in Raw mode

Starting in Release 3.1, the NCC provides a TCP/IP to OSI gateway for TL1 using raw encoding.

This variation of the TL1 TCP/IP gateway is used with OSs that use raw encoding for transmitting TL1. With raw encoding, the TL1 message is transmitted in a TCP data stream of length 1 - 4096 bytes. The TL1 message must be parsed to find the boundary between successive TL1 messages. The TL1 TCP/IP Gateway with raw encoding uses port number 3082<sup>\*</sup>. The raw encoding is provided for machine-machine interactions.

---

\* This port is not provisionable on the NCC.

## **TL1 TCP/IP Gateway, *continued***

---

### **TL1 TCP/IP Gateway in Telnet mode**

Starting in Release 3.1, the NCC provides a TCP/IP to OSI gateway for TL1 using Telnet encoding.

The user can issue TL1 commands via the telnet session and receive responses from the NEs via the NCC.

The TL1 TCP/IP Gateway with Telnet encoding uses Telnet port number 3083\*. The telnet encoding is primarily used for human-machine interactions.

---

\* This port is not provisionable on the NCC.

## **TL1 X.25 Gateway**

---

### **Description**

This application allows operations communications between an Operations System (using TL1/X.25) and a Network Element (using TL1/OSI) anywhere within a SONET subnetwork. The purpose of this communication is for operations, administration, maintenance, and provisioning of the NE.

This application is specifically based on Bellcore's requirement for TL1 messaging between the OS and the NEs using the X.25 "short stack".

An NCC acting as a TL1 X.25 gateway supports communications towards the OS using an X.25 interface (Eicon C-class interface) and communications towards the NEs using LAN connectivity and OSI layers.

---

## **RS-232 Support**

---

**Description**

The NCC can be used to support a third party RS-232 interface for OSs that use asynchronous communication.

---

**Terminal Server Application**

A third party Terminal Server can multiplex multiple RS-232s from an OS to a single TCP/IP connection on an NCC. The NCC then sends the commands on to the NEs through the OSI LAN.

The NCC serves as the TCP/IP to OSI Gateway for TL1 when the RS-232 Terminal Server interface is used.

The TCP/IP Gateway must be enabled on the NCC to support this feature.

See the NCC OSEG for more details on the Terminal Application Server.

---

---

## File Transfers

---

### FTP to FTAM Gateway

---

#### Introduction

The FTP to FTAM Gateway is used to transfer files to/from a TCP/IP-based network from/to an OSI-based network. This gateway performs translation between the FTP file transfer protocol in the TCP/IP network and the FTAM file transfer protocol in the OSI network without intermediate storage of the files being transferred.

The three common uses of this feature are:

- software download from a TCP/IP based server,
- database backup to a TCP/IP based server, and
- database restore from a TCP/IP based server.

The FTP to FTAM Gateway is initiated using the TL1 **CPY-MEM** command with an FTP-based file specification. The FTP to FTAM Gateway is also referred to as a File Transfer Translation Device (FT-TD).

---

#### Software Downloads

Software downloads (OS to NE) are accomplished by issuing the **CPY-MEM** TL1 command and specifying an FTP site (ftp://servername). The files are transferred from the external FTP server on the TCP/IP network, across the FTP to FTAM Gateway, then through the OSI network to the specified NE.

---

#### Database Backups and Restores

Database backups (NE to OS) are similar to software downloads (OS to NE), with the exception that the files are transferred from the NE, across the FTP to FTAM Gateway, to the FTP server.

For database restores (OS to NE) the requested files are transferred from the external FTP server through the FTP to FTAM Gateway to the NE that received the initial TL1 (**CPY-MEM**) command.

---

#### Addressing Files in the FTP Server

When using the FTP to FTAM Gateway, a user must specify the address of the FTP server and the location of the source/destination file in that server. This address is specified in the TL1 **CPY-MEM** command using an FTP Universal Resource Locator (URL).

---

---

## FTP Server

---

### Overview

The FTP server feature of the NCC provides a local repository for NE software downloads and NE database backups/restores. The feature allows the NCC to act as a file server in both the OSI and TCP/IP networks. NE software generics can be downloaded to the NCC FTP server and later loaded onto an NE. Similarly, the file store of the NCC FTP server can serve as an intermediate or final data storage repository for NE database backups/restores.

---

### FTP Server Features

The NCC uses an FTP server which is compliant with the Internet Standards RFC 959, File Transfer Protocol.

---

### Comparison with FTP to FTAM Gateway

The FTP to FTAM Gateway feature on the NCC allows the file transfer between an OSI network that uses FTAM, and an IP network that uses FTP without intermediate storage of the files being transferred.

In comparison, the NCC FTP server allows a store-and-forward mechanism for transferring files between an OSI network and an IP network. The FTP server feature on the NCC uses the following two protocols independently of each other:

- FTP (between the external file server and the NCC file server), and
  - FTAM (between the NCC file server and the NE)
- 

### Copying Files Using FTP

An FTP-based file transfer between the NCC and an external server often accompanies an FTAM-based file transfer between the NCC and an NE. For example, prior to downloading software generics from the NCC to an NE, the generic needs to be copied into the NCC. (A single copy of the generic in the NCC will likely be downloaded into the NEs several times.) Similarly, NE database backup/restore using a NCC may need an FTP-based file copy between the NCC and an external server on the IP network.

---

---

## **FTP Server, *continued***

---

### **FTP Server File Management using TL1 Commands**

The files in the NCC FTP server can be managed by an OS using TL1 commands. The NCC supports four TL1 commands: **CPY-FTP**, **RTRV-FTP**, **DLT-FTP**, and **ENT-FTP** for accessing and maintaining files on the FTP server through the OSI network.

---

### **Alternate FTP Server File Management**

Access from the TCP/IP network can be initiated a number of ways by using a:

- Web browser such as Netscape or Internet Explorer
  - Command line FTP interface
  - Third-party FTP application such as FTP Voyager
- 

### **Web Browser Access**

Access to the NCC FTP server from a web browser is initiated by specifying the username, password, and IP address of the NCC in the following format:

```
ftp://user:password@ip_address/
```

---

### **Text-based Access**

Access to the FTP server from a command line interface such as Windows NT command line FTP client or the UNIX FTP client is detailed in the Internet Standard, RFC 959.

---

### **Third-party FTP Application Access**

Please see your vendor user-documentation if you are using a third-party FTP client application to access the NCC FTP server.

---

## Directory Services

### Directory Services Overview

---

**Introduction**

The NCC plays a key role in several directory services functions. The following sections give a general overview of directory services.

---

**Purpose**

A Directory Service provides information about network entities in a network. This information is stored in a directory. The information in the directory may consist of:

- TIDs
- NSAPs
- vendor names
- entity types, etc.

The information in the directory may be centralized or decentralized, depending on the type of Directory Service used.

---

**Features**

A Directory Service primarily provides client services for obtaining information from the directory. The service also supports appropriate responses when the information sought is not present in the directory or the connection with the directory has been dropped.

Directory Service also provides administrative services for:

- first-time storage of the information in the directory
  - maintenance of this information by means of add, delete and modify functions.
-

---

## **Directory Services Overview, *continued***

---

### **Directory Services Provided by the NCC**

The NCC supports two types of Directory Services:

1. SDS — SONET Directory Services
2. TARP — TID Address Resolution Protocol

A Lucent OS/NE will first attempt to perform an SDS directory query. If the SDS directory query fails, then by default, the TARP directory query will be used.

**Table 2-3. Directory Service Characteristics**

---

| <b>Service Type</b> | <b>Main Characteristics</b>   | <b>Standard Reference</b>          |
|---------------------|---|------------------------------------|
| <b>SDS</b>          | Centralized Server;<br>Distributed Clients  | ANSI T1.245                        |
| <b>TARP</b>         | Decentralized; relies on responses to queries which are propagated throughout the network | Telcordia <sup>a</sup> GR-253-CORE |

a. Formerly Bellcore.

---

---

## SONET Directory Services

---

### SDS Standard

SONET Directory Services (SDS) are defined by the ANSI T1.245 standard. This standard is a profile of the ITU-T X.500 (1993) Directory standard, adapted for use in support of management communications in a SONET environment.

SDS selects the X.500 features most appropriate to management communications in a SONET network, and includes additional features specifically created for SONET directory applications. Most notable among these are the definition of supplementary objects as well as a new protocol designed for auto-population of network element information in the SDS directory.

---

### SDS Components and Functions

A network element participating in a SONET Directory Service (SDS) may be a server, a client, or both. As such, it may assume one or more functional roles. The functional components of SDS are:

- Directory Information Base (DIB)
  - Directory System Agent (DSA)
  - Directory User Agent (DUA)
  - Registration Manager (RM)
  - Registration Agent (RA)
- 

### Directory Information Base (DIB)

The DIB is a centralized information repository that resides on the NCC. Hereafter, the DIB is simply referred to as the **directory**.

In the current SDS implementation, there is only one directory and one directory domain. However, it is possible to have multiple directory domains, and multiple directories in each domain.

---

### Directory System Agent (DSA)

A DSA is an OSI application process which acts as a **server**. The DSA provides user access to the directory. One can only communicate with the directory via the DSA. There is only one DSA in the directory domain. One NCC or SNMS in the directory domain must act as the DSA.

---

---

## **SONET Directory Services, *continued***

---

### **Directory User Agent (DUA)**

A DUA is an OSI application process which in its *client* role represents a user or an application-process accessing the directory. There is one DUA per NE, and one for each administrator (or Operations System) of the directory.

Users gain access to the Directory by DUA communication with the DSA. This communication occurs with help of the Directory Access Protocol (DAP).

---

### **Registration Manager and Registration Agent**

The Registration Manager (RM) and Registration Agent (RA) are used for automatic registration of NEs into the directory and are described later in this chapter.

---

### **Originating Directory Entries**

There are entries in the directory for each NE in the network. The entries are organized hierarchically. The information includes a variety of attributes about an NE. Such attributes may include the NEs:

- name (TID)
  - address (NSAP)
  - type (for example, BandWidth Manager, 2.5G, etc.)
  - vendor (Lucent Technologies)
  - supported applications.
- 

### **Storing Directory Entries**

Entries may be stored in the SDS Directory by one or more of the following ways:

- Automatic self-registration by all NEs in the network;
  - Manual registration of individual NEs based on provisioned information;
  - An NE or NCC may automatically register other NEs that do not have the ability to register themselves
  - Administrator may load a file or script containing all the information for all NEs.
- 

### **Updating Directory Entries**

Entries are updated automatically if the automatic process is in operation. If the Directory fails for whatever reason, the automatic process will update the new Directory.

---

---

## Automatic Registration of NEs in the SDS Directory

---

### Introduction

Lucent supports an optional feature of ANSI T1.245 called Automatic Registration to automate the process of initializing the Directory and keeping it up-to-date. The Automatic Registration feature populates the directory with the SDS information about all of the NEs in the directory domain.

The process of automatically\* registering network element information in the Directory requires the prior knowledge of the physical location of the Directory and the logical place in the Directory where the information has to be stored. This is achieved by using the Registration Manager (RM) and Registration Agent (RA) and a protocol for interaction between them: Registration Request Protocol (RRP).

Each network element has an RA and there is one RM per OSI Network Layer Level 1 routing area. At least one NCC or WaveStar BandWidth Manager must be enabled for RM services in the Level 1 routing area.

---

### Automatic Registration Process

The process of automatic registration follows these steps:

1. When a network element is powered up and initialized, it uses the OSI Network Layer facilities to announce its presence in the network.
2. This presence is detected by the Registration Manager (RM). The RM has been previously manually provisioned with:
  - the network address of the location of the Directory, and
  - a naming prefix to use when adding objects to the Directory.
3. The RM then uses the Registration Request Protocol (RRP) to interact with the RA on the newly detected system to inform it of the two pieces of information listed above.
4. The RA then transfers the information to its co-located DUA.
5. The network element's DUA can now communicate with the DSA, using the DAP protocol, to initialize or modify the Directory.

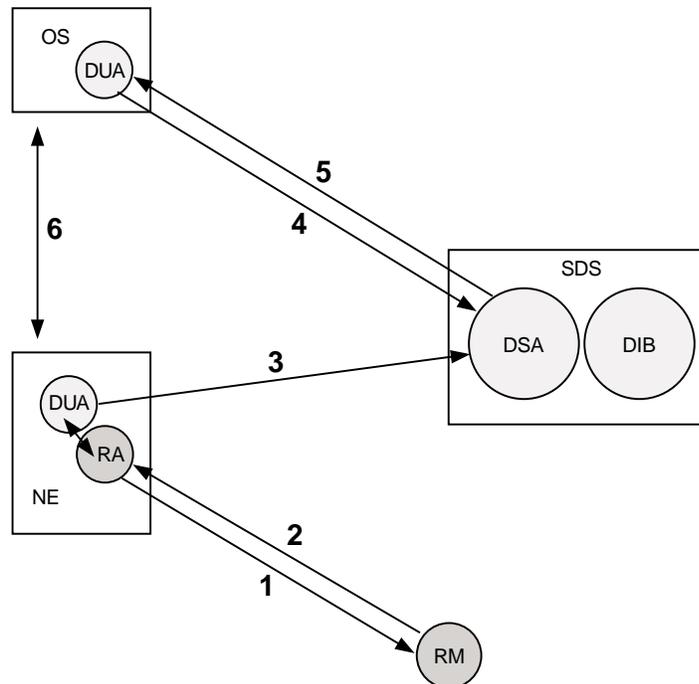
---

\* It is also possible to manually enter entries into the SDS directory using the WaveStar CIT or an external OS.

## Automatic Registration of NEs in the SDS Directory, *continued*

### Figure

Figure 2-8 shows an overview of the steps that occur for a new NE to be added to the SDS directory and the resulting OS to NE communication.



1. Network Layer of NE makes the NE presence known in the network
2. RM detects presence of NE and sends address of Directory and Naming Prefix
3. Based on the information in Step #2, the DUA in the NE registers the NE in the SDS Directory
4. OS queries DSA to get NE information
5. DSA responds to OS Query
6. OS communicates with the NE

NC-OSEG-32

**Figure 2-8. Overview of SDS Interaction and OS to NE Communication**

---

## Structure of NE Information in the SDS Directory

---

### Relationships between Directory Entries

The highest-level entry in the Directory information tree is the “**root**” and all entries are attached below it. This is a mandatory entry.

Subordinate to root is the **Country** specification. The default value of Country is **US**; it will be different for an international service provider. This is also a mandatory entry.

Subordinate to Country is the **Organization** entry. The default value of Organization is **Lucent**; this will be different for each service provider. This is also a mandatory entry.

Subordinate to Organization is an optional entry called **Organizational Unit 1** and **Organizational Unit 2**, of which there can be none or one or several instances. Organizational Unit 1 entries pertain to the OSI subnetwork. Organization Unit 2 entries are comprised of Level 1 areas within each subnetwork.

Below the Org. Unit 1 and Org. Unit 2 entries are objects called the `trnNE`, `applicationProcess` and `applicationEntity`.

---

### Sample SDS Directory Conventions

A sample convention for naming Organizational units is the following:

- Org. Unit 1 entries group together NEs that are within the same OSI subnetwork.
  - Org. Unit 2 entries group together NEs that are within the same OSI Level 1 area within each subnetwork.
-

---

## Directory Update Notification

---

### Introduction

The service for NCC directory update notification:

- Detects the addition and removal of NE and NCC entries in the T1.245 directory
- Provides automatic notification of the affected TIDs.

The service periodically checks the contents of the T1.245 directory (using an LDAP query) and determines what entries have been added or removed since the previous check.

---

### Notification Messages and Log

The notification messages contain the following information for each directory update that is detected:

- Time stamp (yyyy:mm:dd:hh:mm:ss)
- TID
- Type of update (added or removed)

A record of these notification messages is kept in a local log.

---

### Using Directory Update Notification

Directory update notification is provided to address a specific OS need. After receiving notification that an NE has been added, the OS can make a standard directory query to obtain full information on the new NE. The notification log can be used by the OS to discover NE changes made when the OS was either not in operation or unable to communicate with the NCC.

---

### Availability of Update Notification

Directory update notification is available to any system which has permission to receive it. As with other notification messages, permission to receive the directory update notification is assigned on a per-login basis.

---

## **Directory Update Notification,** *continued*

---

### **Enable/Disable Directory Update Notification**

Directory update notification service can be enabled or disabled on the NCC by a user command. The service is only possible to enable on a NCC with an active DSA. The frequency of checking the directory for updates is user-provisionable. Notification is sent upon completion of each check, if any additions or deletions are detected.

---

---

## TARP Directory Services

---

### Introduction

TARP (TID (Target Identifiers) Address Resolution Protocol) is a name/address resolution mechanism. It provides TID-to-NSAP and NSAP-to-TID translation in SONET TL1 environments.

An OS (Operations System) has to communicate with NEs in order to perform various functions. The OS addresses a remote network element by its "name" or TID (Target ID), and communicates with it by means of TL1 messages. However, the OSI communications infrastructure, particularly the Network Layer, only knows an NE's "address", the NSAP (Network Service Access Point) or at least the NET (Network Entity Title). Before the OS - NE communication can take place, name - address resolution must occur.

---

### Name/Address Resolutions

A system that needs to resolve a TID to an NSAP does not know the network address of the target and hence it broadcasts the TID in the form of TARP queries to adjacent network elements in the network. If an adjacent network element is the target, it provides the NSAP to the originating system using a TARP response.

It is more likely, however, that the adjacent network element is not the target. In that case the second network element "propagates" the TARP queries to its network adjacencies but excluding the one from which it received it in the first place. In this way the TARP queries migrate through the network until they reach the target network element. It is, of course, possible that the target could not be found or the lifetime of the query expired. The user will get an appropriate indication in these cases

For NSAP-to-TID resolution, since the network address is known, the target system is queried directly.

---

---

## **TARP Directory Services, *continued***

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### **Query-Response**

The Query - Response information that TARP sends and receives are packaged as TARP PDUs (Protocol Data Units). TARP PDUs are transported around the network in the payload section of CLNS PDUs. Hence it is essential that the OSI CLNS mechanism be supported.

In TARP terminology, a "propagation rule" addresses the question- "If this PDU is not for me, to whom should I forward it"? TARP Propagation rules are designed so as to minimize network traffic and looping of messages in the network

---

### **Splitting the routing domain into areas**

The set of all NEs which are reachable by CLNS is said to comprise the ***routing domain***. Within this domain, NEs in the End System role send and receive CLNS PDUs, while NEs in the IS role "route" or forward CLNS PDUs.

For reasons of convenience and efficiency, the routing domain may be subdivided into contiguous ***areas*** and ISs redefined. Each NE will find itself in some area. Some ISs are only given the capability to route within the local area of that NE. These ISs are called Level 1 ISs. Other ISs are given the additional capability to route from one area to another. These are called Level 2 ISs.

---

---

## **T5GW (TARP-X.500 Gateway)**

---

### **Introduction**

The T5 Gateway feature of the NCC permits intermixing of TARP-only and X.500-only (SDS capable) systems in the network. TARP-only NEs include Lucent's DDM-2000 Multiplexers and FT-2000 Lightwave products.

This functionality allows the interoperability of the TARP and SDS environments and works in a variety of network topologies.

---

### **Description**

Using information obtained by the OSI IS-IS protocol, the NCCs T5GW feature discovers TARP systems in its area and creates DIB entries for them as needed, thus acting as "registration proxy" for the non-X.500 NEs. After the Directory entry is made, the OS is free to obtain its NETs from the Directory via the standard query - response approach. It uses both X.500 Directory Access Protocol (DAP) and TARP in response to TARP request PDUs. It also alleviates the need for TARP connectivity between OSI routing areas because it effectively uses the DIB as a repository for storing TID/NSAP information.

Additionally, since T5GW registers TARP-only systems in the Directory, TARP-only subnetworks can discover other TARP-only subnetworks which they would normally not be able to do.

---

### **Limited Information retrieved from TARP-only NEs**

Since the T5GW uses TARP mechanisms to discover TARP-only NEs, the information available to it is limited to only the TID and NET of the TARP-only NE. Mappings into the directory for TARP-only NEs will contain only a TID and NET.

---

### **T5GW Area Cache**

The T5GW Area Cache (TAC) contains the list of TID/NET mappings representing the systems supporting TARP that are in the same level 1 area as the T5GW, and which have TARP connectivity to the TG5W. Entries in this cache are either in the directory, or are in the process of being added into the directory. Entries are added to the TAC as a result of the T5GW Discovery Procedure.

The T5GW does not respond to TARP type 1 or 2 requests if the target TID is present in the TAC, since the T5GW can assume that the target system itself will respond to the query. This reduces network traffic between the system and the managing DSA.

TAC entries for which TARP no longer respond are flushed from the TAC.

---

## Engineering Rules

### Engineering Rules

---

#### Introduction

This section provides information on the engineering rules of the NCC.

---

#### Engineering Rules

The following engineering rules should be considered when planning for and using the NCC Operations Controller.

- The TL1 TCP/IP Gateway can support a maximum of 30 TL1 logins to NEs over a single TCP/IP connection between the OS and the Operations Controller.
  - The TL1 X.25 gateway can support a maximum of 29 TL1 logins to NEs per X.25 virtual circuit between the OS and the Operations Controller.
  - A maximum of 63 TCP/IP connections is supported between the OS and the Operations Controller.
  - A maximum of 20 X.25 virtual circuits is supported between the OS and the Operations Controller.
  - The maximum number of TL1 logins to NE that can be supported by one Operations Controller is 250. For example, one Operations Controller can provide protocol conversion services for up to 50 nodes in a network, when each node uses 5 TL1 login sessions and at least 9 TCP/IP connections or X.25 virtual circuits are available between the Operations Controller and the OS.
-

---

# Applications

# 3

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| ■ DSA and RM functions in Multiple Areas Application | 4 |
| ■ TCP/IP to OSI Protocol Conversion Application      | 5 |
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## **Overview**

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### **Introduction**

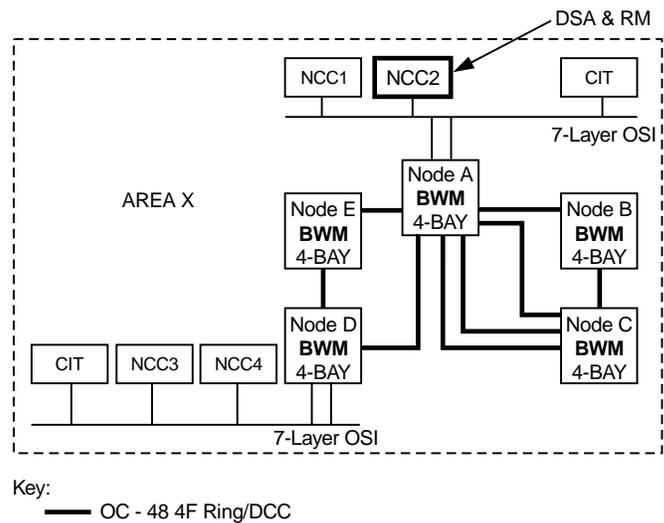
This chapter illustrates some of the basic applications for the NCC.

---

## Directory System Agent and RM Application

### Description

The following example application depicts a WaveStar network with 5 BandWidth Manager Nodes and 4 NCCs in a single area (Area X). NCC 2 is enabled as the T1.245 Directory and DSA, and performs the RM function for Area X. The other NCCs can be used for redundancy and for TCP/IP to OSI protocol conversion.

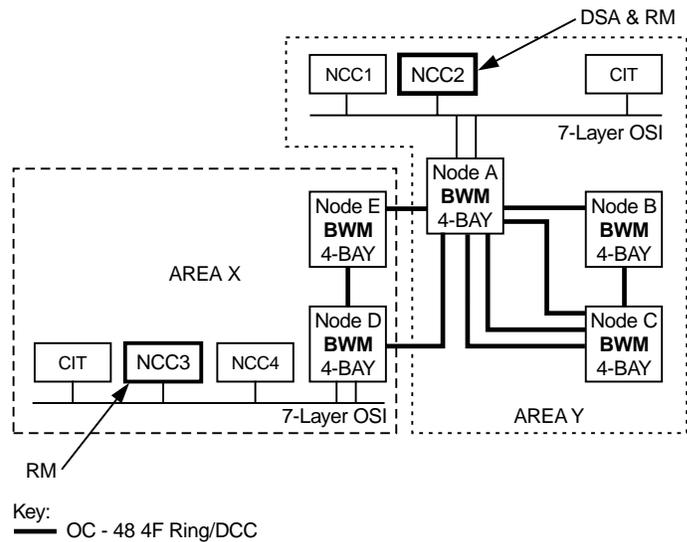


**Figure 3-1. NCC Providing Directory Services in One Area**

## DSA and RM functions in Multiple Areas Application

### Description

The following example application depicts a WaveStar network with 5 BandWidth Manager Nodes and 4 NCCs in two areas (Areas X and Y). NCC 2 is enabled as the T1.245 Directory and DSA for Areas X and Y, and performs the RM function for Area Y. NCC 3 is performing the RM function for Area X. The other NCCs may be used for redundancy and for TCP/IP to OSI protocol conversion.

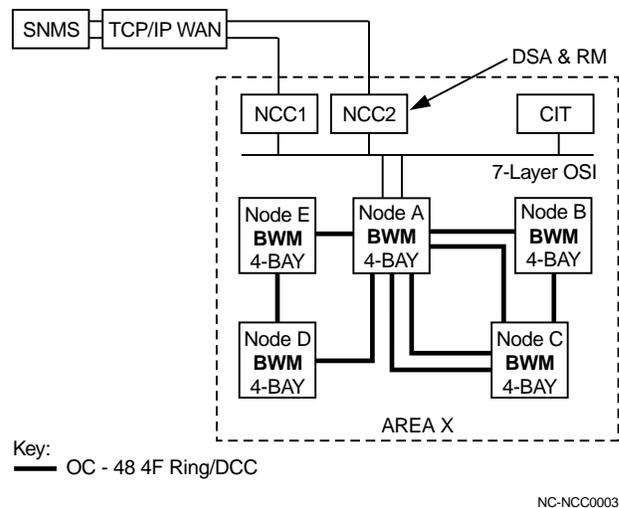


**Figure 3-2. NCC Providing Directory Services in Two Areas**

## TCP/IP to OSI Protocol Conversion Application

### Description

The following example application depicts an example WaveStar network populated with WaveStar BandWidth Manager nodes. NCC 1 & NCC 2 are providing TCP/IP to OSI LAN protocol conversion the WaveStar SNMS. Only one NCC has to be enabled for Protocol Conversion for the WaveStar SNMS, but multiple NCCs may be enabled, as in this example, for redundancy to provide service should one NCC fail.

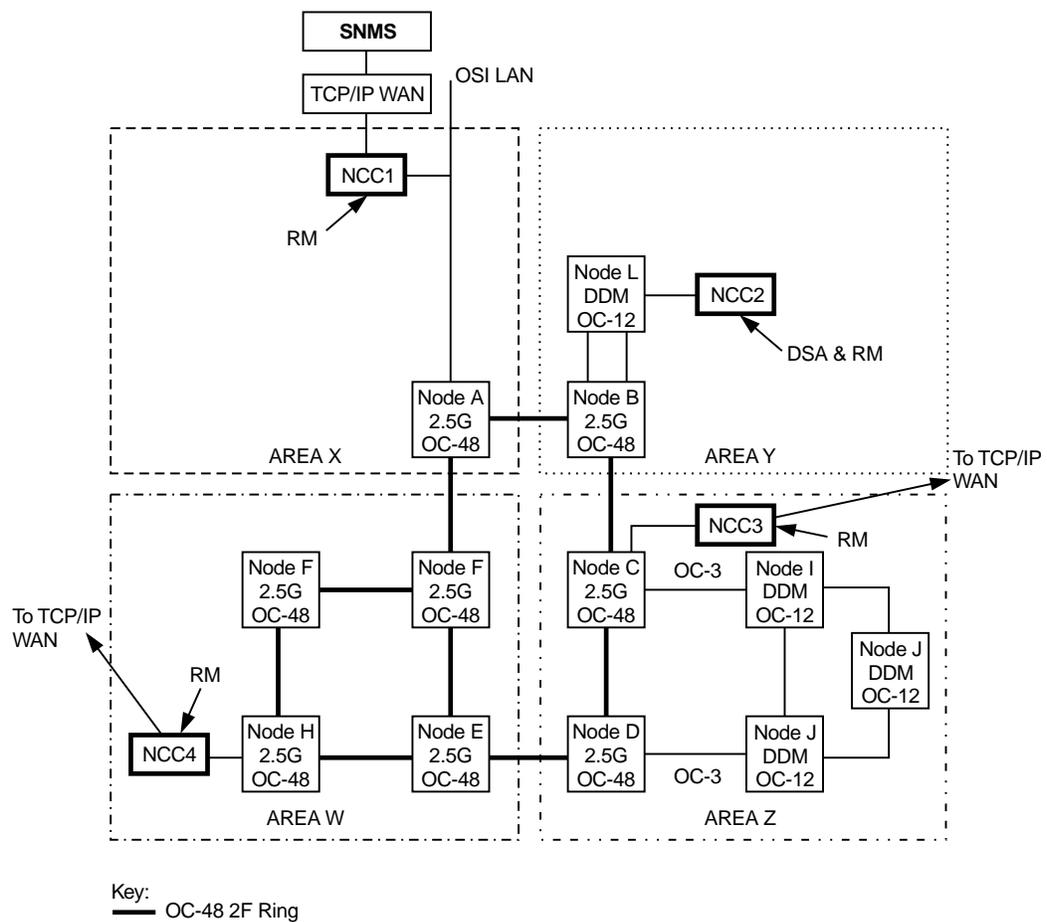


**Figure 3-3. NCC Providing Protocol Conversions for Management OS**

## Multiple Area Application

### Description

The following example application depicts 4 areas. NCC 2 is enabled as the DSA for all 4 areas. Each area has an NCC that can provide RM functions for the area. The WaveStar 2.5G Nodes all register automatically in the T1.245 Directory. The DDM nodes can be registered by the T5GW running on the NCC in their area or can be manually entered in the T1.245 Directory. NCC 1, NCC 3, and NCC 4 provide TCP/IP to OSI protocol conversions for OSs.



**Figure 3-4. NCCs in a Multiple Area Network**

---

# Technical Specifications and Ordering Codes

# 4

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| ■ NCC Ordering Codes                                 | 10 |

---

# Technical Specifications

## NCC Operations Shelf Technical Specifications

**Introduction** This section provides the technical specifications for the NCC Operations Shelf.

**Power Supply** Complete operating and voltage specifications for the NCC Operations Shelf are detailed in the following table

**Table 4-1. NCC System Power Specifications**

|                               |   |
|-------------------------------|---|
| Input Voltage (DC):           | -40 to -57 VDC  |
| Input Current: <sup>a</sup> . | 6.6 A maximum @ -40 VDC<br>5.5 A maximum @ -48 VDC<br>4.7 A maximum @ -57 VDC |

a. Shelf fully configured with 4 NCC Operations Controllers.

## NCC Operations Shelf Technical Specifications, *continued*

### Fusing Information

The following table illustrates the maximum amperage draw for the NCC at 48V with Dual Power Supplies and 4 Operations Controllers installed (steady state consumption is 5.5Amp@48V).

**Table 4-2. NCC Amperage Draw**

| Time, ms | NCC Amperage Draw |
|----------|-------------------|
| 0        | 0.0               |
| 4        | 48.3              |
| 8        | 25.9              |
| 13       | 16.1              |
| 18       | 10.7              |
| 23       | 7.1               |
| 28       | 5.5               |
| 33       | 5.5               |
| 38       | 5.5               |
| 43       | 5.5               |



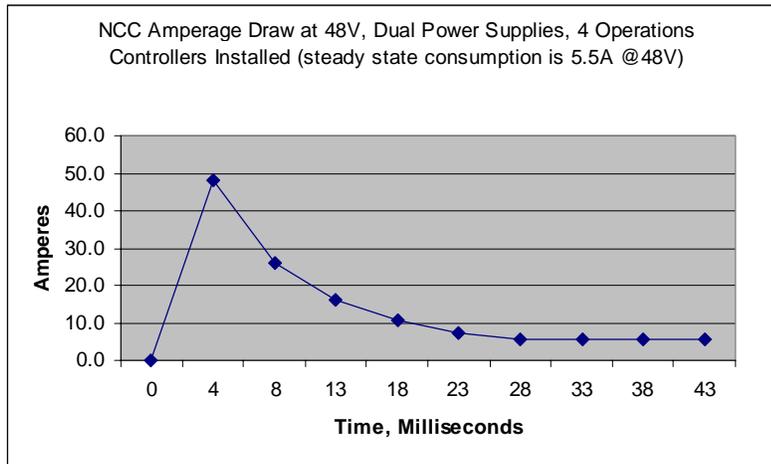
**NOTE:**

The numbers in this table are also mapped out into the figure graph on the following page.

## NCC Operations Shelf Technical Specifications, *continued*

### Fusing Information, *continued*

The following figure illustrates the maximum amperage draw for the NCC at 48V.



**Figure 4-1.** NCC Amperage Draw

## NCC Operations Shelf Technical Specifications, *continued*

### Chassis Physical Specifications

Table 4-3 provides physical specifications for the NCC Operations Shelf.

**Table 4-3. NCC Shelf Physical Data**

| Specification  | Value  |
|--|--|
| Dimensions (WxDxH)<br>Without Mounting Flanges   | 53.3 x 38.1 x 45.7 cm<br>(21 x 15 x 18 inches)   |
| Width,<br>Including Mounting Flanges   | 58.4 cm<br>(23 inches)   |
| Weight <sup>a</sup> , Standard System<br>with 1 NCC, Alarm Unit, and 2<br>Power Supplies | <ul style="list-style-type: none"> <li>■ Shipping Weight — 47.6 kg (105 lb.)</li> <li>■ Net Weight — 29.5 kg (65 lb.)</li> </ul> |

a. Each Additional NCC Operations Controller adds 1.36 kg (3 lb.) of weight.

### Chassis Environmental and Operating Specifications

Table 4-4 provides environmental and operating specifications for the NCC Operations Shelf.

**Table 4-4. NCC Operations Shelf Environmental Specifications**

| Specification | Value                     |
|---------------|---------------------------|
| Temperature   | 0 to 40 degrees Celsius   |
| Humidity      | 5% to 85%, Non Condensing |
| Altitude      | Maximum 3,000 meters      |

## **NCC Operations Shelf Technical Specifications, *continued***

### **Chassis Storage Specifications**

Table 4-5 provides storage specifications for the NCC Operations Shelf.

**Table 4-5. NCC Operations Shelf Storage Specifications**

| <b>Specification</b> | <b>Value</b>              |
|----------------------|---------------------------|
| Temperature          | -20 to 70 degrees Celsius |
| Humidity             | 5% to 95%, Non Condensing |

---

## **NCC Operations Controller Technical Specifications**

---

### **Introduction**

This section describes the technical specifications for the NCC Operations Controller circuit packs.

---

### **NCC Operations Controller Circuit Pack**

The NCC Operations Controller circuit pack is a single-board computer.

The NCC provides two PCMCIA slots for use with an X.25 PCMCIA card and a PCMCIA disk.

---

## NCC Alarm Unit

### Introduction

This section describes the pinouts for the NCC Alarm Unit office alarm connector.

### Description

The office alarm connector is located on the rear I/O panel of the NCC Operations Shelf. The pinout and functions are shown in the following table.

**Table 4-6. NCC Alarm Unit — Office Alarm Connector Pinouts**

| Signal                  | Pin # | Normal State  | non-powered State |
|-------------------------|-------|---------------|-------------------|
| Major Audible           | 4     | Normally Open | Closed            |
| Major Audible Return    | 12    |               |                   |
| Major Visible           | 5     | Normally Open | Closed            |
| Major Visible Return    | 13    |               |                   |
| Minor Audible           | 6     | Normally Open | Open              |
| Minor Audible Return    | 14    |               |                   |
| Minor Visible           | 7     | Normally Open | Open              |
| Minor Visible Return    | 15    |               |                   |
| Critical Audible        | 2     | Normally Open | Open              |
| Critical Audible Return | 10    |               |                   |
| Critical Visible        | 3     | Normally Open | Open              |
| Critical Visible Return | 11    |               |                   |
| Alarm Cut Off           | 1     | Normally Open | Open              |
| Alarm Cut off Return    | 9     |               |                   |

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## Standards, Safety and Emissions Certification

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**Introduction** This section lists the Standards, Safety and Emissions certifications for the NCC.

---

### GR-63 and GR-1089 Compliance

The NCC complies with the relevant NEBS Level 2 criteria defined in Telcordia Technologies SR-3580.

Specifically the NCC complies to the following standards:

- Telcordia Technologies GR-63
  - Criteria 72, 73, 80 - 103, 110, 114, 115, 122, 123, 125
- Telcordia Technologies GR-1089
  - Criteria 1 - 8, 10, 11, 13-19, 25, 29, 42, 44, 46 - 49, 51, 54 - 71, 74 - 93

The updated NCC, Comcode 408446078, also complies with GR63 Criteria 128, and GR1089 Criteria 9.

---

### Additional Standards Compliance

The NCC complies with the following standards:

General Standards Certifications:

- RNSA-NEB-95-0003, Rev. 8, Bell Atlantic Fire Resistance Requirements over and above Telcordia requirements.
- Underwriters Laboratories: UL 1950
- Canadian Standards Association (CSA): Electrical safety requirements
- Federal Communications Commission (FCC): Part 15, subpart J, Class A

Regulatory Compliance Markings:

- FCC
  - CSA
-

# Ordering Codes

## NCC Ordering Codes

### Introduction

This section lists the ordering codes for the NCC hardware, software and documentation.

### NCC System Ordering Codes

Table 4-7 lists ordering codes applicable to a base NCC system.

**Table 4-7. NCC System Ordering Codes**

| Ordering Code  | Description  |
|----------------|--|
| ED9C280-45 G1  | Startup NCC Kit complete with one (1) NCC, one (1) NCC Shelf Alarm Monitor, Chassis, Cables, and Power Supplies. |
| ED9C280-45 G10 | X.25 Interface Card and Cable for one (1) NCC  |

## **NCC Ordering Codes, *continued***

### **NCC Software and Documentation Ordering Codes**

**Table 4-8. NCC Software and Documentation**

| <b>Ordering Code</b>     | <b>Description</b>  |
|--------------------------|---|
| ED9C280-46 G6            | Software R3.2 - Includes CD-ROM and Software Release Description.                                   |
| ED9C280-46 G7            | Software R3.2 - CN Application - Includes CD-ROM and Software Release Description.                  |
| ED9C280-46 G8            | Software R3.2 - CN Application - Includes 85 MB PCMCIA and Software Release Description.            |
| ED9C280-46 G9            | Software R3.2 - Spare - Includes CD-ROM only.   |
| ED9C280-46 G10           | Software R3.2 - Initial - Includes CD-ROM, programmed PCMCIA card and Software Release Description. |
| 365-370-107 <sup>a</sup> | NCC User's Guide Release 3.2 Issue 2  |
| 365-370-108 <sup>a</sup> | NCC OSEG Release 3.2 Issue 2  |
| 848151254                | Blank panel for use when the NCC is mounted in the WaveStar BandWidth Manager Control Bay.          |

a. These documents are orderable from CIC. See "Ordering Documentation" in the About this Document section of this book.

**NCC Ordering Codes, *continued***

**NCC Spares  
Ordering Codes**

**Table 4-9. NCC Spares Ordering Codes\***

| Ordering Code  | Description                                     |
|----------------|---|
| 408391431      | NCC Operations Controller                       |
| 408446078      | Bare NCC Chassis (Includes cables and fan unit) |
| 408267649      | NCC Alarm Unit                                  |
| 408091155      | NCC Power Supply                                |
| 408329274      | Air Filter                                      |
| 408301091      | Fan Unit  |
| ED9C280-45 G10 | X.25 Unit                                       |
| ED9C280-46 G5  | Blank 85 MB PCMCIA Card                         |

\* See Recommended Spares List, Table 4-11

**NCC Ordering Codes, *continued***

**NCC Cabling  
Ordering Codes**

**Table 4-10. NCC Cabling Ordering Codes**

| Ordering Code    | Description                                  |
|------------------|--|
| ED8C724-22, G15  | X.25 Cable, Length 50 Feet                   |
| ED8C724-22, G16  | X.25 Cable, Length 75 Feet                   |
| ED8C724-22, G17  | X.25 Cable, Length 100 Feet                  |
| ED8C724-22, G18  | X.25 Cable, Length 125 Feet                  |
| MED8C900-21, G50 | LAN Cable, Straight Through, Length 50 Feet  |
| MED8C900-21, G51 | LAN Cable, Straight Through, Length 100 Feet |
| MED8C900-21, G52 | LAN Cable, Straight Through, Length 150 Feet |
| MED8C900-21, G53 | LAN Cable, Straight Through, Length 200 Feet |
| MED8C900-21, G54 | LAN Cable, Straight Through, Length 300 Feet |
| MED8C900-21, G20 | Alarm Cable, Length 50 Feet                  |
| MED8C900-21, G21 | Alarm Cable, Length 100 Feet                 |
| MED8C900-21, G22 | Alarm Cable, Length 150 Feet                 |
| MED8C900-21, G23 | Alarm Cable, Length 200 Feet                 |
| MED8C900-21, G24 | Alarm Cable, Length 300 Feet                 |

## **NCC Ordering Codes, *continued***

### **Recommended Spares**

The following tables details the recommended number of spares that should be ordered with your NCC system.

**Table 4-11. Recommended Number of Spare Parts**

| <b>Item</b>             | <b>Spares per Office</b> | <b>Spares per System</b> |
|-------------------------|--------------------------|--------------------------|
| NCC                     | 1                        | —                        |
| NCC Shelf Alarm Monitor | 1                        | —                        |
| NCC Power Supply        | 1                        | —                        |
| NCC Air Filter          | —                        | 1                        |
| NCC Fan Unit            | 1                        | —                        |
| X.25 Unit               | 1                        | —                        |
| Blank 85MB PCMCIA Card  | 1                        | —                        |

**Contents**

---

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---

## Electrostatic Discharge (ESD) Considerations

---

### ESD Notice

**CAUTION:**

*Industry experience has shown that all integrated circuit packs can be damaged by static electricity that builds up on work surfaces and personnel. The static charges are produced by various charging effects of movement and contact with other objects. Dry air allows greater static charges to accumulate. Higher potentials are measured in areas with low relative humidity, but potentials high enough to cause damage can occur anywhere.*

---

### Precautions for Handling Circuit Packs

Observe the following precautions when handling circuit packs to prevent damage by electrostatic discharge:

- Assume all circuit packs contain solid-state electronic components that can be damaged by ESD.
  - When handling circuit packs (storing, inserting, removing, etc.) or when working on the backplane, always wear a grounded wrist strap or wear a heel strap and stand on a grounded, static-dissipating floor mat.
  - Handle all circuit packs by the faceplate or latch and by the top and bottom outermost edges. Never touch the components, conductors, or connector pins.
  - Observe warning labels on bags and cartons. Whenever possible, do not remove circuit packs from antistatic packaging until ready to insert them into slots.
  - If possible, open all circuit packs at a static-safe work position, using properly grounded wrist straps and static-dissipating table mats.
  - Always store and transport circuit packs in static-safe packaging. Shielding is not required unless specified.
  - Keep all static-generating materials, such as food wrappers, plastics, and Styrofoam containers away from all circuit packs. On removal from bay, immediately put circuit packs into static-safe packages.
  - Whenever possible, maintain relative humidity above 20 percent.
  - Keep the electromagnetic interference (EMI)/ESD protective front covers on the shelves at all times except during an upgrade or maintenance procedure. Once a circuit pack is placed in the shelf, close the front cover immediately.
-

## Electrostatic Discharge (ESD) Considerations, *continued*

### Using a Grounded Wrist Strap

To reduce the possibility of ESD damage, shelves are equipped with grounding jacks to enable personnel to ground themselves using wrist straps while handling circuit packs or working on a shelf. The wrist straps should be checked periodically with a wrist strap tester to ensure that they are working properly.

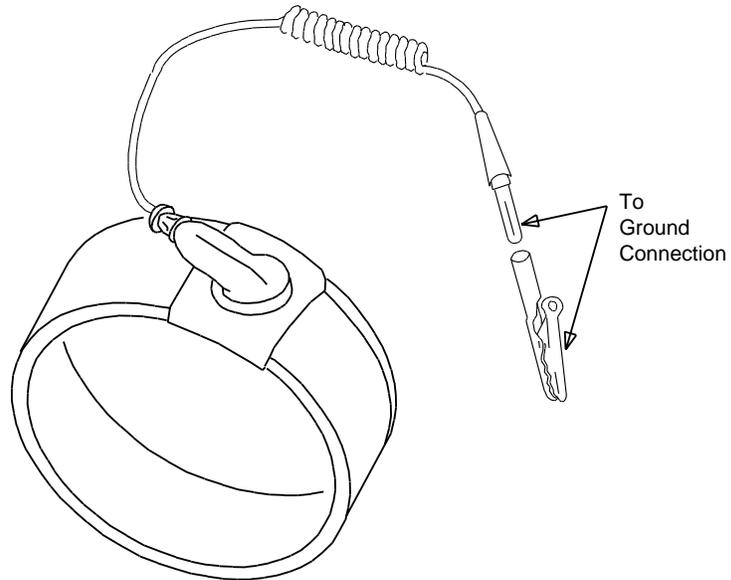


Figure 5-1. Static Control Wrist Strap

---

## **Important Safety Instructions**

---

### **Introduction**

This section list some important safety instructions that all users of the system should be aware of.

---

### **Safety Instructions**

#### **READ AND UNDERSTAND ALL INSTRUCTIONS**

When using this telecommunications equipment, basic safety precautions should always be followed to reduce the risk of fire, electrical shock, and injury to persons, including the following:

1. Follow all warnings and instructions marked on the product.
2. Slots and openings in this product and the back or bottom are provided for ventilation. These openings must not be blocked or covered to protect the unit from overheating.
3. Opening or removing rear covers or sheet-metal parts may present exposure to high current or electrical energy levels, or other risks. Refer all servicing in those areas to qualified service personnel.
4. Never put objects of any kind into this product through slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electrical shock. Never spill liquid of any kind on the product.
5. Refer servicing to qualified personnel.

---

## Installation Information

---

### Introduction

This section contains important information to be reviewed before installing the NCC Operations Shelf.

---

### Pre-Installation Instructions

Visually inspect the product for any physical damage. The product was shipped fully assembled and in working order. Any product damage must immediately be reported to Lucent Technologies. Save the shipping carton and enclosed packing material in case the system must be reshipped in the future.

---

### Shelf L-Brackets

The NCC Operations Shelf is intended primarily for mounting in a standard 23-inch equipment rack. The NCC Operations Shelf is shipped from the factory with the L-brackets mounted in the fourth set of mounting holes (counting from the front). This allows for the front of the Operations Shelf to be flush with the front of WaveStar BandWidth Manager shelves when the Operations Shelf is mounted in the same rack as the BandWidth Manager.

---

### Shelf Installation Considerations

Please note the following considerations when installing the NCC Operations Shelf:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
  - When mounting the unit in a partially filled rack (such as a BandWidth Manager rack), use the lowest available open space in the rack. Always load the rack from the bottom to top with the heaviest components at the bottom of the rack.
  - If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the rack.
- 

### Ventilation and Airflow

Cooling in the NCC Operations Shelf is provided by a three-fan tray module and a fan on each power supply. Adequate space must always exist around the fans and the air inlets and outlets for successful airflow. Allow at least 3-1/2" at the front and back of the self to allow for proper airflow.

---

## NCC Operations Shelf Installation Instructions

---

### Instructions

1. Prepare your 23-inch equipment rack for mounting the NCC Operations Shelf.
  - Position the rack on a stable, level floor-surface within reasonable distance of a power source.
  - Place the necessary eight mounting screws and eight lock washers on a nearby surface.



#### NOTE:

The lock washers must be installed on all eight mounting screws to ensure proper electrical grounding.

2. Take one mounting screw and install it in a hole on the right vertical facing rail of the rack. The screw should be at the approximate height where you want the top of the NCC Operations Shelf to be aligned. The screw should be screwed in roughly 3/4 of the way, to allow the mounting brackets to slide over the screw head and hang securely.
3. Install a second mounting screw on the left vertical facing rack at the same height as you did the first mounting screw. The two screws should be horizontally aligned. The screw should also be screwed in roughly 3/4 of the way.
4. Position the NCC Operations Shelf on the equipment rack so that the two installed mounting screws rest in the top mounting holes of the NCC Operations Shelf's mounting brackets. The unit will hang securely but loosely on the rack.
5. Take the remaining six mounting screws and lock washers and attach the to the rack through the bottom holes on the unit's mounting brackets.
6. Remove the top two screws and reinstall using the remaining two lock washers.
7. Securely tighten the eight mounting screws.
8. Working at the back of the shelf, connect the ground lug (located next to the power-feeder inputs) to the bay ground using the grounding cable provided with the shelf.\*

---

\* If your shelf mounting brackets are unpainted, the grounding cable provided is not required. The ground cable is only required if the mounting brackets are painted.

## Power-up Procedures

### Introduction

This section describes the initial procedure used to power up a newly installed NCC Operations Shelf.

### Power-up Procedure



#### CAUTION:

*Connections between peripherals of computer equipment must be made with low-voltage, shielded computer data cables.*

To activate the NCC Operations Shelf:

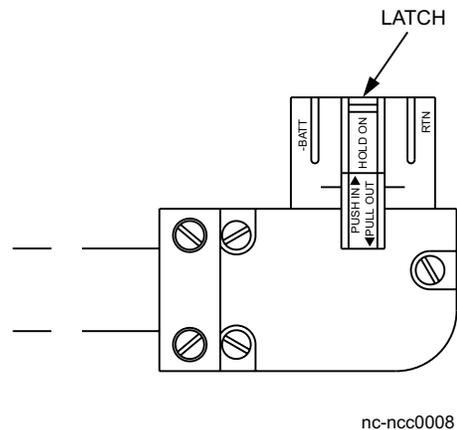
1. Verify that the two power switches above the power supplies are in the **Off** position and that all circuit packs and power supplies are properly seated.
2. Connect the red power cable to connector A at the top left rear of the NCC Shelf. The power connector is keyed to ensure that the connector is inserted with the correct polarity.



#### NOTE:

If your chassis is painted you must be sure to install a grounding wire from the stud to the bay frame uprights or other suitable ground connection.

3. Connect the blue power cable to Connector B at the top left rear of the NCC Operations Shelf.\*



**Figure 5-2. DC Power Connector**

(Continued on next page)

\* While only 1 DC power cable needs to be connected to power the shelf, it is recommended that two are connected at all times to supply redundant powering in case of cable or power source failure.

---

## **Power-up Procedures, *continued***

---

### **Power-up Procedure, *continued***

4. At the front of the NCC Operations Shelf, turn on both circuit breakers A & B.
5. Verify proper operation of the system as follows:

| <b>Component</b>                     | <b>Indicators</b>  |
|--------------------------------------|--|
| User Panel/Fan Tray                  | "PWR" LED lit Green.<br>"Fan Status" LED lit Green       |
| NCC Shelf Alarm Monitor              | "Status" LED lit Green                                   |
| Operations Controller(s)             | "Active" LED lit Green                                   |
| Power Supplies                       | "Power Present" LED lit Green<br>"DC Good" LED lit Green |
| <b>All Other LEDs should be off.</b> |  |

---

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## **Cabling Installation**

---

### **Introduction**

This section describes cabling instructions and considerations.

---

### **Pre-installed Cabling**

The cabling for the NCC Alarm Unit (Rear Alarm Connector and Power Supply alarm cables) is installed and tested in the factory. Additional cabling is required if the NCCs are used with X.25 PCMCIA cards — see Below.

---

### **LAN Cabling**

The LAN cables which connect to the front of the NCC Operations should be routed out the slot on the left side of the NCC Operations Shelf. An alternative opening is provided on the right side of the shelf.

---

### **X.25 Cabling Considerations**

There are two options for cabling if the NCC is going to be used with an X.25 PCMCIA card.

1. The primary option is to route the cabling from the X.25 PCMCIA cards out the left side of the NCC Operations Shelf through an adjustable slot.
  2. The secondary option is to route the cabling from the X.25 PCMCIA card underneath the NCC Power Supplies and to the back of the NCC Operations Shelf where there is a special faceplate to accommodate the X.25 25 pin connector (procedure described next page).
-

---

## **Cabling Installation, *continued***

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### **X.25 Rear Cabling Procedure**

The following procedure describes the steps to install rear-facing X.25 connectors.

1. Using a #2 Phillips-head screwdriver, remove the six flat head screws securing the X.25-connector bulkhead panel at the rear of the chassis
2. Open the bulkhead panel.
3. Using a #1 Phillips-head screwdriver, remove the two screws securing the X.25 connector cover panel from the bulkhead. Remove the cover and store it with the screws in a suitable location.
4. A slim DB-25 female-female gender changer is provided with the EICON cable assembly. Mount the gender changer on the interior of the cover panel and secure it by tightening the nuts from the outside using a nut driver.
5. Feed the rectangular PC-Card connector end of your EICON cable into the grommated opening inside the bottom left hand side of the shelf - directly under the power-supplies. Fasten the DB-25 connector of the EICON cable to the female-female DB-25 gender changer on the inside of the bulkhead panel with the hardware provided.
6. Close the bulkhead panel and re-install the six flathead screws.
7. At the front of the chassis, remove the front cover by loosening the three fasteners at the top and lifting up and away from the chassis.
8. **If equipped**, the cover below the bottom power supply must be removed. If not equipped skip to step 15.
9. Loosen the screws securing the alarm cable connector to the NCC Operations Shelf Alarm Monitor faceplate and disconnect the cable.

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(Continued on next page)

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## **Cabling Installation, *continued***

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### **X.25 Rear Cabling Procedure, *continued***

10. Remove the 2 RJ-11 connectors for -48 Volt sensing A and B from the NCCNCC Shelf Alarm Monitor faceplate.
  11. Tuck the freed cables under the card cage.
  12. Using a #2 Phillips-head screwdriver, remove the 3 screws that secure the cover below the bottom power supply.
  13. Slide the cover to the left and remove it from the shelf. This part may be discarded.
  14. The PC-Card connector end of the EICON cable should now be visible below the bottom power supply. Using a suitable grasping tool, reach in and draw EICON cable out to the front.
  15. Feed the EICON cable through the opening in the power supply/card cage bulkhead and plug it in to the EICON card already installed in the front of the NCC.
  16. **If you have removed the NCC alarm and power sense cables**, plug them back in to the NCC Shelf Alarm Monitor faceplate.
  17. Power up the shelf.
  18. Replace the front cover and secure the three fastening screws.
-



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## NCC Operation and Maintenance Commands Overview

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**Introduction** This section gives a high-level overview of the commands a user can issue to the NCC from the WaveStar CIT. If you need information on loading the product SW and the WaveStar CIT and logging in to the WaveStar CIT, you can refer to the Software Release Description packaged with the NCC product release CD.

---

**Menu-Bar** Figure 6-1 shows a screen capture of the NCC NE View Menu Bar.



---

**Figure 6-1. Main Menu bar for NCC NE View on the CIT**

---

## NCC Operation and Maintenance Commands Overview, *continued*

**Table 6-1** The following table lists the menu structure for NCC Operations and Maintenance on the CIT.

**Table 6-1. NCC O&M Commands Overview**

| Menu Bar Item | 1st Modifier                | 2nd Modifier/Description  |
|---------------|-----------------------------|---|
| File          | Enable TL1 Logging          | Allows user to enable TL1 Logging   |
|               | Disable TL1 Logging         | Allows user to disable TL1 Logging  |
|               | Set/Change TL1 Logging File | Allows user to  |
| View          | Equipment Details           | Displays basic information on the NCC. See <b>Table 6-2</b>   |
|               | NE Data                     | Displays: <ul style="list-style-type: none"> <li>■ Software Version</li> <li>■ Date and Time of Software Backup</li> <li>■ Data State</li> <li>■ Date and Time of Data Backup</li> <li>■ State of SDS Database</li> <li>■ Date and Time of SDS data Backup</li> </ul> |

## NCC Operation and Maintenance Commands Overview, *continued*

**Table 6-1,**  
*continued*

**Table 6-1. NCC O&M Commands Overview, *continued***

| Menu Bar Item | 1st Modifier      | 2nd Modifier/Description  |
|---------------|-------------------|---|
| Fault         | Alarm List        | Displays Current Alarms for this NCC  |
|               | NE Alarm Log      | Displays Alarm Log for this NCC   |
|               | Reset             | <ul style="list-style-type: none"> <li>■ System Reset</li> <li>■ Reset Another NCC</li> </ul>   |
|               | Test LED          | Test to see if LED on NCC Operations Controller, NCC Alarm Unit, and NCC Shelf are functioning properly.  |
| Configuration | Provision         | Provision Date/Time on NCC.   |
|               | Software          | <ul style="list-style-type: none"> <li>■ Backup</li> <li>■ Restore</li> <li>■ Backup SDS Directory</li> <li>■ Restore SDS Directory</li> <li>■ Software Generic Download</li> <li>■ Install</li> </ul>  |
|               | NCC Functionality | <p>The following items can be set for <b>Enabled</b> or <b>Disable</b>:</p> <ul style="list-style-type: none"> <li>■ Shelf Alarm Monitor</li> <li>■ Registration Manager</li> <li>■ TARP/X.500 Gateway</li> <li>■ Directory System Agent</li> <li>■ TCP/IP Bridge</li> <li>■ TL1 TCP/IP Gateway</li> <li>■ FTP Server</li> <li>■ TL1 X.25 Gateway</li> <li>■ Directory Update Notification</li> </ul> |

(Continued on next page)

## NCC Operation and Maintenance Commands Overview, *continued*

**Table 6-1,**  
*continued*

**Table 6-1. NCC O&M Commands Overview, *continued***

| Menu Bar Item  | 1st Modifier                      | 2nd Modifier/Description   |
|----------------|-----------------------------------|--|
| Administration | Change Password                   | Allows user to change password.  |
|                | Change Notifications              | Allows User to change Notification Messages received.  |
|                | Security                          | <ul style="list-style-type: none"> <li>■ View User Logins</li> <li>■ User Provisioning</li> </ul>    |
|                | View NE Administration            | Displays: <ul style="list-style-type: none"> <li>■ TID</li> <li>■ NSAP</li> <li>■ NE Type</li> </ul> |
|                | Set TID                           | Allows user to set TID for this NCC.   |
|                | Data Communications               | See <b>Table 6-3</b>   |
| Reports        | NE Alarm List                     | Displays Log files.  |
|                | NE Alarm Log                      |  |
|                | NE User Log                       |  |
|                | NE Security Log                   |  |
|                | NE Notification Log               |  |
|                | Directory Update Notification Log |  |
| Help           | About This NE                     | Brief Description of the NCC NE.   |
|                | Help Contents, Index & Find       | HTML Help Files  |
|                | View Documents                    | View PDF versions of the NCC Documentation Set.  |

---

## Equipment Views

---

### Introduction

This section describes the command for **View -> Equipment Details**.

---

### Table 6-2

The following table lists the objects and their descriptions when the **View -> Equipment Details** command is invoked from the CIT.

---

**Table 6-2. Equipment View Details**

---

| <b>Object</b> | <b>Description/Behavior</b>                       |
|---------------|---|
| TID           | Displays the TID for the NCC.                     |
| Date          | Displays the Date on the NCC.                     |
| Time          | Displays the Time on the NCC.                     |
| Slot Number   | Displays the slot number that the NCC is in (1-9) |
| Alarm Level   | Highest Level currently on the NCC.               |

---

## Administration Data Communications Menu

**Introduction** This section describes the command for **Administration -> Data Communications**.

**Table 6-3** The following table lists the objects and their descriptions when the **Administration -> Data Communications** command is invoked from the CIT.

**Table 6-3. Administration Data Communications Menu**

| Object                        | Description  |
|-------------------------------|--|
| Network Layer                 | <ul style="list-style-type: none"> <li>■ Primary Area Address NSAP (See <b>Table 6-4</b>)</li> <li>■ Multiple Area Address 1</li> <li>■ Multiple Area Address 2</li> <li>■ Intermediate System (IS) Routing Capability</li> <li>■ Intermediate System Configuration Timer (ISCT)</li> <li>■ End System Configuration Timer (ESCT)</li> </ul> |
| TARP Provisioning             | <ul style="list-style-type: none"> <li>■ TARP Originator (See Table 6-5 for Parameters) (default is disabled on NCC)</li> <li>■ TARP Propagation Function Enable (default is disabled on NCC)</li> <li>■ TARP Responder Function Enable (default is enabled on NCC)</li> </ul>   |
| TCP/IP                        | <ul style="list-style-type: none"> <li>■ IP Address</li> <li>■ IP SubnetMask</li> <li>■ IP Default Router Address</li> <li>■ Domain Name</li> <li>■ Domain Name Server Address</li> </ul>  |
| <i>Continued on next page</i> |  |

## Administration Data Communications Menu, *continued*

**Table 6-3, *continued***    **Table 6-3. Administration Data Communications Menu, (*continued*)**

| Object              | Description   |
|---------------------|---|
| X.500 Gateway       | <ul style="list-style-type: none"> <li>■ Discovery Timer (Timer E)</li> <li>■ Anti-Flooding Timer (Timer F)</li> </ul>  |
| X.25 Gateway        | <ul style="list-style-type: none"> <li>■ OS</li> <li>■ OS Type</li> <li>■ Modified OS Address</li> </ul>  |
| T1.245 Reg. Manager | <ul style="list-style-type: none"> <li>■ T1.245 DSA NSAP</li> <li>■ Country Name Prefix</li> <li>■ Org. Name Prefix</li> <li>■ Org. Unit 1 Name Prefix</li> <li>■ Org Unit 2 Name Prefix</li> </ul> |
| TCP/IP Gateway      | <ul style="list-style-type: none"> <li>■ OS Name</li> <li>■ OS Type</li> <li>■ IP Address</li> <li>■ Host Name</li> </ul>   |
| Transport Bridge    | <ul style="list-style-type: none"> <li>■ Called Port</li> <li>■ Listening Port</li> </ul>   |

## NSAP Provisioning

---

### Introduction

This section describes the command for  
**Administration -> Data Communications -> Network Layer (NSAP).**

---

### Table 6-4

The following table lists the NSAP Fields and their description for  
**Administration -> Data Communications -> Network Layer (NSAP).**

**Table 6-4. NSAP Provisioning**

---

| NSAP Field                  | Description  |
|-----------------------------|--|
| DSP Format Identifier (DFI) | This field represents the DFI portion of the NSAP. The value is displayed as a 2 character hexadecimal string. The default value is 0x80.  |
| Operator ID (ORG)           | This field represents the ORG (Organization Identifier or Operator Identifier) portion of the NSAP. The value is displayed as a 6 character hexadecimal string. The default value is 0x00 00 00. |
| DSP Reserved                | This field represents the DSP Reserved portion of the NSAP. The values is displayed as a 4 character hexadecimal string. The default value is 0x00 00  |
| Routing Domain (RD)         | This field represents the Routing Domain portion of the NSAP. It is displayed as a 4 character hexadecimal string. The default value is 0x00 00.   |
| Area                        | This field represents the Area portion of the NSAP. It is displayed as a 4 character hexadecimal string. The default value is 0x00 00  |
| Current NSAP                | This field displays the NSAP in its entirety as a string of 20 ocets.  |

---

## TARP Originator Parameters

---

### Introduction

This section describes the command for **Administration -> Data Communications -> TARP Originator Parameters**.

---

The following table lists the provisionable TARP Originator Parameters for the NCC

**Table 6-5. TARP Originator Parameters**

---

| Parameter Name         | Value(s)                      |
|------------------------|-------------------------------|
| TARP Lifetime          | Measured in Hops (Integer)    |
| TARP T1 Timer          | Measured in Seconds (Integer) |
| TARP T2 Timer          |                               |
| TARP T3 Timer          |                               |
| TARP T4 Timer          |                               |
| TARP Data Cache        | Enable/Disable                |
| TARP Clipping Function | Enable/Disable                |
| Clipping Limit         | Measured in PDUs (Integer)    |
| Clipping Interval      | Measured in Seconds (Integer) |

---

---

## NCC Software Management

---

### Introduction

This section describes the software management functions of the NCC. The functions are:

- Software Generic Download
- Software Install
- Backup
- Restore

---

### Software Generic Download

The NCC Software Generic Download function allows you to download an NCC software generic to the NCC Operations Controller from the WaveStar CIT or from a PCMCIA disk inserted into the Operations Controller.

The Software Generic Download process is initiated by selecting **Configuration -> Software -> Software Generic Download...** from the NCC System View screen in the WaveStar CIT.

A Dialog box appears after selecting the **Software Generic Download** command prompting you to select the location of the software generic that you want to download. The location can be either CIT (the PC on which the WaveStar CIT is running) or the secondary NVM (Non-Volatile Memory) on the Operations Controller (a PCMCIA disk inserted into the NCC).

After selecting the correct drive, you must select the sub folder that the software generic is in, and then select the software generic you wish to download into the NCC.

**NOTE:**

Software Generics that already reside in the primary NVM of the NCC will not be selectable for download into the NCC.

After you have selected the software generic that you wish to download, simply click the **Download** button and the download begins. A progress bar will appear displaying the progress of the download.

Once the download is complete, the new software generic can be installed immediately or at a later date.

---

---

## **NCC Software Management, *continued***

### **Software Install**

The NCC Software Install function allows you to install a new software generic into the NCC. The software generic that is to be installed must already have been downloaded to the NVM of the NCC by using the Software Generic Download function.

The Software Install process is initiated by selecting **Configuration -> Software -> Install...** from the NCC System View screen in the WaveStar CIT.

A Dialog box appears after issuing the **Install** command that displays the current active version of the software, and a list of software generics that reside on the Primary NVM of the NCC and which can be installed.

To install a software generic simply choose one from the list and click the **OK** button. This initiates the software install and also initiates a subsequent test phase during which the NCC proves in the new software. A progress bar appears displaying the progress of the new software generic installation.

---

### **Backup**

The NCC provides the ability to backup its software's current provisioned state to a secondary location in case of a software or hardware failure that results in all of the provisioned data being lost. The data can be backed up (copied) to the WaveStar CIT or to an PCMCIA Disk inserted into the Operations Controller.

The Backup process is initiated by selecting **Configuration -> Software -> Remote Backup...** from the NCC System View screen in the WaveStar CIT.

A file selection screen appears after issuing the **Remote Backup** command that allows you to choose the location where you want to backup the data. After selecting the location click the **OK** button to initial the backup.

A progress bar appears displaying the progress of the backup. After the backup is completed a summary screen appears displaying the details of the backup and the location and filename of the file that was backed up.

---

---

## **NCC Software Management, *continued***

### **Restore**

The NCC also provides the ability to restore provisioned data to an NCC from a backup file.

The Restore process is initiated by selecting **Configuration -> Software -> Remote Restore...** from the NCC System View screen in the WaveStar CIT.

A Dialog box appears after selecting the **Remote Restore** command prompting you to select the location of the restore file (backed up file) that you want to restore into the NCC. Different locations can be selected to restore a file from, such as the WaveStar CIT or a PCMCIA disk if one is inserted into the Operations Controller.

You must first select the location of the file(s) you want to restore. After selecting the location a dialog box appears displaying:

- The filename of the backup file
- the source of the file (such as the WaveStar CIT)
- the software generic release of the backed up file
- the date and time of backup.

After selecting the file you wish to restore click the **OK** button and the restoration commences. A progress bar appears displaying the progress of the restoration.



**NOTE:**

Backed up data files contain a field that identifies the TID of the NCC from which the data was backed-up. Because of this, the TID of the NCC must match that of the TID in the backed-up file. If it does not, the restoration will fail.

---

## **SDS Database Backup and Restore**

---

### **Introduction**

This section describes the SDS database backup and restore functions on the NCC. The database can be backed-up/restored wither remotely or locally (via a PCMCIA card inserted into the NCC Operations Controller).

---

### **SDS Directory Backup**

The NCC has the ability to backup the SDS database to a file.

The SDS Directory Backup process is initiated by selecting **Configuration -> Software -> Backup SDS Directory...** from the NCC System View screen in the WaveStar CIT.

---

### **Restore SDS Directory**

The NCC has the ability to restore the SDS database from a backed up file.

The SDS Directory Restore process is initiated by selecting **Configuration -> Software -> Restore SDS Directory...** from the NCC System View screen in the WaveStar CIT.

---

---

## Security Management

---

### User logins and passwords

**NOTE:**

User logins and passwords are case sensitive.

You must enter a login and password to gain access to the WaveStar CIT. You must enter another login and password to gain access to a WaveStar node if your login or password is different than the one you use to login to the WaveStar CIT. The WaveStar CIT automatically tries to login to a selected node if your login and password are the same for both the node and WaveStar CIT. Parameters in the security database (for example, logins and passwords) must be administered on a per-node basis. You may have a different login and/or password on one NCC than you have on other NCCs.

---

### WaveStar CIT default logins and passwords

Two Super User logins and passwords are pre installed in the WaveStar CIT. The default values for the Super User logins are LUC01 and LUC02 (LUC-zero-one and LUC-zero-two). The associated passwords are LUC+01 and LUC+02 (LUC-plus sign-zero-one and LUC-plus sign-zero-two).

---

### Super User logins

The Super User logins have user privilege codes (UPCs) of five (5) in all functional categories. All functions are controlled by the UPC assigned to the function and to each user login. The UPCs cannot be changed and no other user can be assigned UPCs of 5 for **all** functional categories. The Super User logins cannot be removed and no other Super User logins can be added. The default passwords can be changed. If both Super User logins and passwords are forgotten, the software containing the logins must be reloaded to recover the logins.

---

### Valid login

A valid login consists of any sequence of characters ranging from a minimum of one character to a maximum of ten characters. The word ALL in any combination of uppercase or lowercase letters cannot be used for a valid login.

---

### Valid password

A valid password consists of a sequence of characters ranging from a minimum of six characters to a maximum of ten characters. The password must start with a letter. Table 6-6 lists the characters that are **not** allowed in a password. Table 6-7 lists the characters that **are** allowed in a password.

---

(Continued on next page)

**Security Management, *continued*****Valid password,**  
*continued***Table 6-6. Characters Not Allowed in a Password**

| Character | Description       | Character | Description                    |
|-----------|-------------------|-----------|--------------------------------|
|           | Space             | ;         | Semicolon                      |
| @         | Commercial at     | &         | Ampersand                      |
| (         | Left parenthesis  | %         | Percent sign                   |
| )         | Right parenthesis | :         | Colon                          |
| ,         | Comma             | #         | Number sign                    |
| =         | Equals sign       | –         | horizontal bar<br>(underscore) |
| “         | Quotation mark    | ?         | Question mark                  |

**Table 6-7. Characters Allowed in a Password**

| Character | Description        | Character | Description             |
|-----------|--------------------|-----------|-------------------------|
| A ... Z   | Upper case letters | *         | Asterisk                |
| a ... z   | Lower case letters | [         | Left square<br>bracket  |
| 0 ... 9   | Digits             | ]         | Right square<br>bracket |
| '         | Apostrophe         | ^         | Caret                   |
| -         | Hyphen             | ‘         | Grave accent            |
| {         | Left curly brace   |           | Vertical bar            |
| }         | Right curly brace  | .         | Period (full stop)      |
| /         | Slash (Solidus)    | <         | Less than               |
| +         | Plus sign          | >         | Greater than            |
| !         | Exclamation mark   | ~         | Tilde                   |

## Operations Controller Login Administration

---

### Introduction

The Administration > Change Password menu allows you to change your password. The Administration > Security menu allows an authorized user to view existing user logins or perform user provisioning for access to the WaveStar NCC. User provisioning may consist of

- Adding new users and assigning user privileges
  - Deleting users
  - Changing passwords
  - Modifying user privileges
- 

### NCC default logins and passwords

Two Super User logins and passwords are pre installed in the NCC. The default values for the Super User logins are LUC01 and LUC02 (LUC-zero-one and LUC-zero-two). The associated passwords are NCC+01 and NCC+02 (NCC-plus sign-zero-one and NCC-plus sign-zero-two).

---

---

## Operations Controller Login Administration, *continued*

---

### Super User

The *Super User* login has a security authorization level of 5 (S5). An S5 level is required to perform user security provisioning. You are either permitted or denied access to a menu or submenu item based on your security level. Permitted access means that the menu or submenu item is “enabled” and can be selected. Denied access means that the menu or submenu item is “dimmed” and cannot be selected.

The NCC's database (including the security database) is maintained in the NCC's nonvolatile memory (NVM). At the users option, this database can be backed-up onto the WaveStar CIT hard disk or SNMS. Subsets of the database (for example, the security database) can be backed up separately.

A user with the following Privilege Codes may be called a Super User:

- M5
- P5
- S5

Super Users have the following capabilities:

- adding and deleting users
  - modifying user passwords and user priority levels
  - assigning user privilege codes and user priority levels
  - assigning and modifying the maximum set of notification types on the user notification registration list
  - access to all user commands
  - do backups and restores
-

---

## Operations Controller Login Administration, *continued*

---

**Privileged user** A user with the following Privilege Codes may be called a Privileged User:

- M5
- P5
- S1

Such users shall have access to all user commands including those that are service affecting.

---

**General User** A user with the following Privilege Codes may be called a General User:

- M4
- P3
- S1

Such users shall have access to all user commands except the following:

- NE security administration (capable of changing own password)
  - system initialization capabilities
  - software installation capabilities
  - NE access capabilities
-

## **Operations Controller Login Administration, *continued***

---

**Maintenance user** A user with the following Privilege Codes may be called a Maintenance User:

- M4
- P3
- S1

Maintenance Users have the following capabilities:

- test capability
  - retrieve NE information
  - limited service affecting commands
  - change own password
  - modifying the set of notification types on their own User Notification Registration List within the maximum list set up by the Security Administrator
-

## **Operations Controller Login Administration, *continued***

---

**Reports only user** A user with the following Privilege Codes may be called a Reports Only User:

- M1
- P1
- S1

Reports Only Users have access to those capabilities which retrieve information but do not modify the system, with the following exceptions:

- changing your own password
  - test LED
- 

**Default user** A user with the following Privilege Codes may be called a Default User:

- M1
  - P1
  - S1
-

---

## Operations Controller Login Administration, *continued*

---

**NCC authorization levels** Access privileges are defined by the authorization level you are given when your login is created. The authorization level is the one- or two-letter and one-digit number associated with predefined functional categories or job types. The authorization level is assigned by the system security administrator when the login is set up or may be subsequently modified by the system security administrator for your login. You are permitted to execute only the commands for which you have proper access privileges. Proper access means that you have a privilege level that is equal to or greater than that required for the functional category required for the command. The one-digit number ranges from 1 to 5. Number 1 is the default and is the lowest access. The three functional categories are as follows:

- Maintenance (not specified, M1, M2, M3, M4, M5)
- Provisioning (not specified, P1, P2, P3, P4, P5)
- Security (not specified, S1, S2, S3, S4, S5)

---

**Command priority level** The command priority level assigns a priority for the execution of commands. For example, if two commands are executed at the same time for the same NCC, the command from the user with the highest command priority level is executed first. The command priority level range of values is from one to five. The highest command priority level is five. The default command priority level is one.

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(Continued on next page)

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## Operations Controller Login Administration, *continued*

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### **NCC security administrator**

Administration on the user security database requires a login with a security privilege level of S5. An S5 system security administrator can select the `Administration > Change Password` command to change passwords, or the `Administration > Security` command to perform the following:

- `View User Logins (S2)` – Opens the View User Login window which lists all NE user logins and their associated security information.
- `View Logged-In Users (S5)` – Opens the View Logged In Users window which lists all the users logged into the NE.
- `User Provisioning (S5)` – Opens the User Provisioning window to allow the addition of new user logins or change parameters for existing logins.

---

### **Select user and password**

`Select User and Password` allows you to establish a new user with associated password and authorization levels. You may also select an existing user to view or change associated security information.

---

### **Password aging**

Password aging is the interval before you have to change your password. The password aging interval default is 90 days. The password aging interval range is from 0 to 999 days. A value of 0 disables password aging.

---

---

## Operations Controller Login Administration, *continued*

---

### Notification registration and response types

The notification registration indicates the type of autonomous message that you may receive. The notification registration is initially set by the system security administrator when your login is set up. You may subsequently change the notification types that you receive. Table 6-8 lists the seven Notification and Response types.

**Table 6-8. Notifications and Responses**

---

|    | <b>Notification/Response</b>                   | <b>Summary</b>           |
|----|--|--------------------------|
| 1  | Modification Notification                      | DataBase changes (DBCHG) |
| 24 | Alarm notifications                            | ALARMS                   |
| 3  | Responses to commands from other UIDs          | Responses (RESPONS)      |
| 4  | Receive <u>ALL</u> Notifications and Responses | ALL                      |
| 5  | Directory Update Notification                  | Directory Changes        |

---

---

## Operations Controller Security

---

### Introduction

A user with S4 permission or greater can select the Administration > Security > Security Provisioning menu to display the Security Provisioning window with the following fields:

- User ID Lockout Threshold
  - User Id Lockout Period
- 

### User Id Lockout Threshold

The User Id Lockout Threshold is the number of sequential invalid login attempts permitted before raising a security alarm. This parameter is defined for the entire Operations Controller. This value is set to 3 and is not provisionable.

---

### User Id Lockout Period

The User Id Lockout Period is the number of minutes before you are locked out after exceeding the lockout threshold. This parameter is defined for the entire Operations Controller. This value is set to 1 and is not provisionable.

---

---

## **NCC Fault management**

---

### **Introduction**

This section describes the fault management and alarm functions of the NCC.

---

### **NCC Operations Controllers**

Each NCC Operations Controller monitors its own internal alarm status and reports it to management systems and to the NCC Alarm Unit.

---

### **NCC Alarm Unit**

The NCC Alarm Unit is the main interface for fault management for the NCC. The Alarm Unit monitors the equipment in the NCC shelf and handles all Central Office alarm interfaces directly. One NCC Operations Controller in each shelf (in slot 1 or 2) is assigned to obtain status from the Alarm Unit and relay it to an OS (such as the SNMS).

Additionally, the NCC Operations Controller assigned to obtains status from the Alarm Unit also monitors that alarm unit for failure. If failure of the Alarm Unit should occur the NCC Operations Controller reports the failure back to the management system.

The NCC Alarm Unit also has the ability to perform a hard reset on an NCC Operations Controller that has stopped responding. This feature can be activated by using the WaveStar CIT, or by an OS.

---

### **Sanity Timers**

In the event that an NCC Operations Controller has a software problem that causes the NCC to stop processing, the NCC Operations Controller will automatically reboot itself after a period of time.

The non-powered state of the relays on the Alarm Unit will indicate a major alarm.

---

---

## NCC Alarming

---

### Introduction

This section describes some of the main Alarm features of the NCC.

---

### Equipment Alarms

The NCC Alarm Unit monitors the following items:

- NCC Operations Controllers
- Power Supplies and Backplane Voltages
- Fans and Shelf Temperatures
- -48V input feeds

If a problem occurs with one of the monitored entities, the NCC Alarm Unit is responsible for office alarm relay activation.

---

### Remote Alarm Indicators

Possible equipment failures that are reported to remote management systems are:

- NCC Operations Controller circuit pack failure
  - NCC Shelf Power Converter Failure
  - NCC Shelf Fan Failure
  - NCC Shelf -48v Power Input Failure
  - NCC Alarm Unit circuit pack failure
- 

### Local Alarm Indicators

The NCC provides visible alarm indicator LEDs on all circuit packs within the NCC Shelf, as well as alarm LEDs on the shelf itself.

---

### Alarm Notifications and Logging

The NCC automatically notifies management systems of all changes in alarm conditions, both occurrences and clearing of alarms. Office Audible and Visual office alarm relays are also provided.

Additionally, the NCC records in a local log this same information. The alarm logs can be view from within the WaveStar CIT.

---



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## Part II

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# Operations and Maintenance Tasks



## **Background**

---

**When to use**

Use this procedure to configure and provision an NCC Operations Controller for initial turn-up.

---

**Required Equipment**

Equipment required to complete this task

- WaveStar Craft Interface Terminal (CIT)
  - Null Modem Ethernet (RJ-45) Cable
-

## Task Instructions

**Task** Complete the following steps to configure and provision an NCC for initial turn-up.

| Step                                 | Action   | Reference   |
|--------------------------------------|--|---|
| <b>Configure Required Parameters</b> |  |   |
| 1                                    | Download NCC Software Generic to PCMCIA Card   | See WaveStar™ NCC Network Communications Controller Release 3.0.11 Software Release Description C108611369 — Chapter 5. |
| 2                                    | Connect PC-CIT to NCC for initial provisioning | Directly Connecting the WaveStar-CIT to an NCC (T 114)  |
| 3                                    | Set TID  | Set/Change TID for an NCC (T 102)   |
| 4                                    | Set Time/Date                                  | Set/Change Time and Date for an NCC (T 103)   |
| 5                                    | Connect NCC to LAN                             | Directly Connecting the WaveStar-CIT to an NCC (T 114)  |
| 6                                    | Install X.25 Hardware if necessary             | See Chapter 5   |
| <b>Configure NCC Functionality</b>   |  |   |
| 7                                    | DSA Services                                   | Enabling T1.245 Directory System Agent (T 104)  |
| 8                                    | RM Services                                    | Enable Registration Manager Services on an NCC (T 105)  |
| 9                                    | TCP/IP Transport Bridge                        | Enabling TCP/IP Transport Bridge Function (T 106)   |
| 10                                   | TARP/X.500 Gateway                             | Enabling TARP/X.500 Function (T 107)  |
| 11                                   | TL1/X.25 Gateway                               | Enabling the TL1/X.25 Gateway (T 108), setting up X/25 OS DTN (T 108)   |
| 12                                   | Shelf Alarm Monitoring                         | Enable/Disable NCC Alarm Monitor (T 111)  |
| 13                                   | TL1 TCP/IP Gateway                             | Enabling The TL1 TCP/IP Gateway (T 109)   |
| <i>Continued on next page</i>        |  |   |

---

**Task Instructions, *continued***

---

**Task, *continued***

| <b>Step</b>                 | <b>Action</b>            | <b>Reference</b>                                  |
|-----------------------------|--------------------------|---|
| 14                          | SDS Update Notifications | Configure SDS Update Notification for NCC (T 112) |
| <b>Put NCC into Service</b> |                          |   |
| 15                          | Reset NCC                | Reset an NCC (T 113)                              |

---



---

## Logging in to an NCC from the WaveStar CIT

# 101

---

### Background

---

**When to use** Use this procedure to remotely login to an NCC Operations Controller from the WaveStar CIT.

---

**Before you begin** Prior to performing this task, you must:

1. Connect the CIT, via a hub, to the Local Area Network (LAN) of the subject NE/ring.
2. Have a valid login on both the WaveStar CIT and all subject NE(s) within the ring.

---

**Related information** For related information, see:

- WaveStar BandWidth Manager User/Service Manual (365-370-102), Introduction to Operations chapter.
- WaveStar 2.5G User/Service Manual (365-371-102, Introduction to Operations Chapter

---

## Task Instructions

**Task** Complete the following steps to remotely login to an NCC from the WaveStar CIT.

| Step | Action   |
|------|--|
| 1    | Log in to the WaveStar CIT.  |
| 2    | <p>At the WaveStar CIT, connect to the NCC by selecting the icon for the NCC in the domain/view, then selecting the <b>Network Element-Connect</b> command.</p> <p>A legal notice appears.</p> <p> <b>NOTE:</b><br/>You can also connect to the network element by keying its target ID into the <b>TID</b> field and selecting the <b>Connect</b> button. This may prove useful if you do not have an icon (in the view) for the network element you want to connect to.</p> <p>A copy of the network element icon is displayed in the <b>Established Network Associations</b> field to indicate that the network element is connected. The <b>System View</b> form is displayed for that network element.</p> |
| 3    | <p>Dismiss the legal notice by clicking the <b>OK</b> button.</p> <p>The NCC NE View window appears.</p>   |
| 4    | <p>You are now logged in to the NCC.</p> <p><b>Stop! You Have Completed This Procedure!</b></p>  |

## **Background**

---

**When to use**

Use this procedure to set/change the TID for an Operations Controller.

---

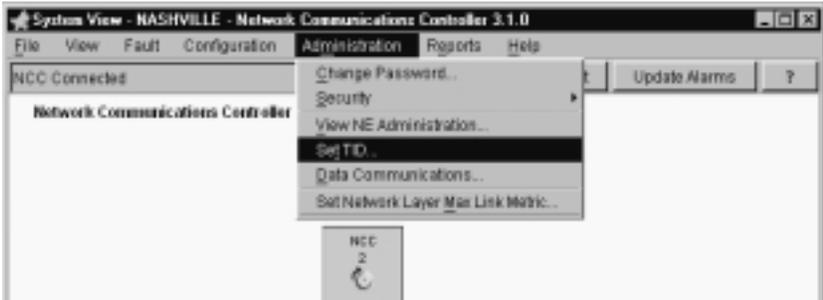
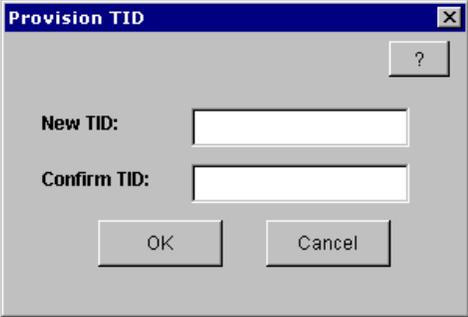
**Required  
Equipment**

WaveStar Craft Interface Terminal (CIT).

---

## Task Instructions

**Task** Complete the following steps to Configure the TID for an NCC.

| Step                          | Action   |
|-------------------------------|--|
| 1                             | If not already connected, connect to the NCC Operations Controller which you wish to set/change the TID.<br>See T 101, Logging in to an NCC from the WaveStar CIT  |
| 2                             | Select <b>Administration -&gt; Set TID</b> from the NCC NE View Menu.<br><br> <p>The Set TID screen appears.</p>   |
| 3                             | <b>Provision TID Screen</b><br><br> <p>From your work order, enter the new TID in the TID field and click OK.</p> <p><b>NOTE:</b><br/>The TID name is <b>NOT</b> case-sensitive.</p> <p>A Confirmation Dialog Box appears.</p> |
| <i>Continued on next page</i> |  |

## **Task Instructions, *continued***

### **Task, *continued***

|   |   |
|---|---|
| 4 |  <b>NOTE:</b><br>After changing the TID the NCC Operations Controller automatically resets itself. You need to log back in after the Operations Controller reboots to do any further provisioning to the Operations Controller |
| 5 | <b>Stop! End of Task.</b>   |



---

**Set/Change Time and Date for an  
NCC**

# 103

---

## **Background**

---

**When to use**

Use this procedure to set/change the time and date for an NCC.

---

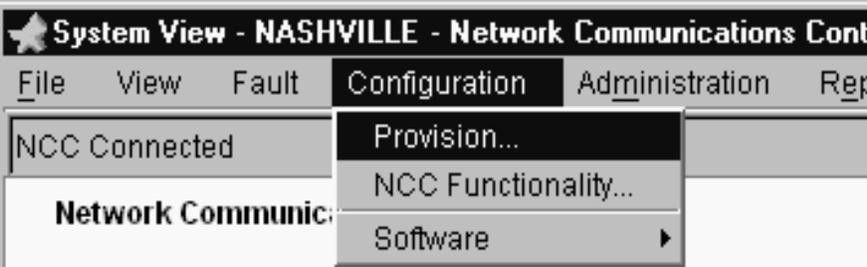
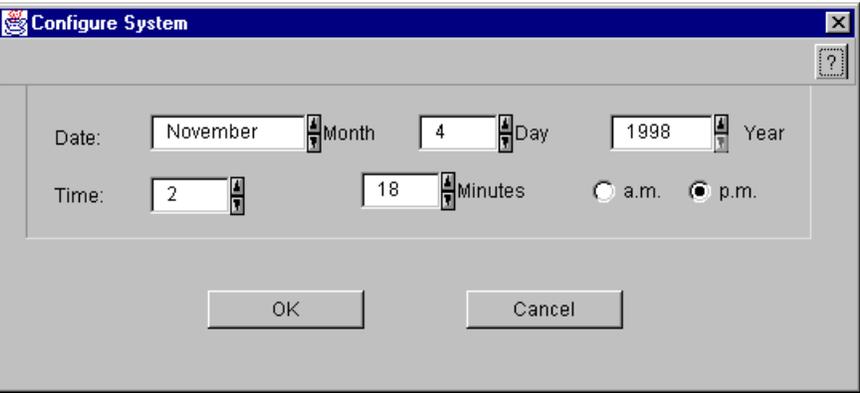
**Required  
Equipment**

WaveStar Craft Interface Terminal (CIT).

---

## Task Instructions

**Task** Complete the following steps to set/change the time and date for an NCC.

| Step | Action   |
|------|--|
| 1    | If not already connected, connect to the NCC which you wish to set/change the Date and Time.<br>See T 101, Logging in to an NCC from the WaveStar CIT  |
| 2    | Select <b>Configuration -&gt; Provision</b> from the NCC NE View Menu.<br><br> <p>The Configure System screen appears.</p>                                 |
| 3    | <b>Configure System Screen</b><br> <p>Enter the new Time and Date into the Time and Date Fields and click OK.<br/>A Confirmation Dialog Box appears.</p> |
| 4    | Click OK in the Confirmation Dialog Box.   |
| 5    | The Time and Date has been set/changed for this NCC.<br><b>Stop! You Have Completed This Procedure!</b>  |

---

## Enabling T1.245 Directory System Agent

# 104

---

### **Background**

---

**When to use** Use this procedure to enable the Directory System Agent on the Operations Controller.

---

**Before you Begin** If you need to create new Entries in the SDS Database (such as Country, Organizational Unit1, etc.) See Task 119, Manually Add an Entry into the SDS database

**Required Equipment** WaveStar Craft Interface Terminal (CIT).

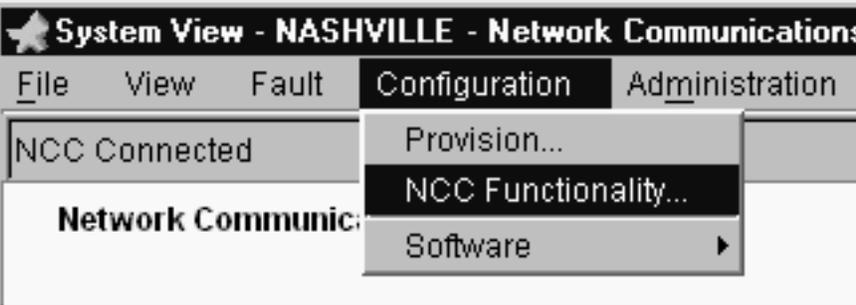
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**Related Information** For related information see Chapter 2.

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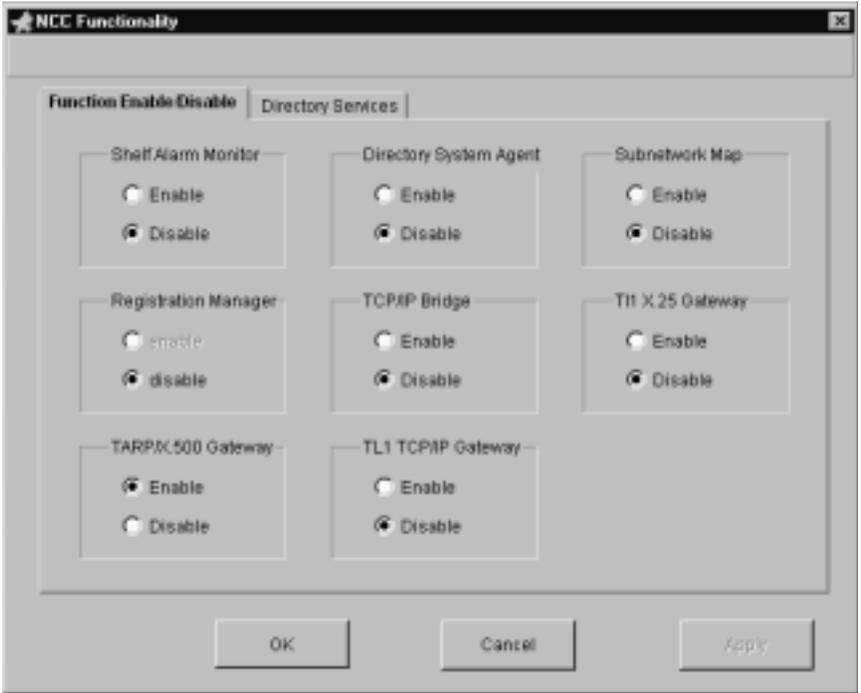
## Task Instructions

**Task** Complete the following steps to enable the T1.245 Directory System Agent for an NCC.

| Step                          | Action  |
|-------------------------------|---|
| 1                             | If not already connected, connect to the NCC which you wish to enable DSA services.<br>See T 101, Logging in to an NCC from the WaveStar CIT  |
| 2                             | From the NCC NE View screen menu bar:<br>Select <b>Configuration -&gt; NCC Functionality</b><br><br><br><br>The NCC Functionality Screen appears. |
| 3                             | Select the "Function Enable/Disable" Tab.<br><br>The "Function Enable/Disable" screen appears.  |
| <i>Continued on next page</i> |   |

## Task Instructions, *continued*

### Task, *continued*

| Step | Action  |
|------|---|
| 4    | <p><b>Function Enable/Disable Tab</b></p>  <p>Click in the box marked "Enable" for Directory System Agent.</p> |
| 5    | <p>The Directory System Agent is now Enabled for this NCC Operations Controller.</p> <p style="text-align: center;"><b>Stop! You Have Completed This Procedure!</b></p>                           |



## **Background**

---

**When to use** Use this procedure to enable registration manager services on an NCC.

---

**Required  
Equipment** WaveStar Craft Interface Terminal (CIT)

---

**Before you begin** You must:

- Enable the Directory System Agent on this NCC before the Registration Manager can be enabled on this NCC Operations Controller or know the NSAP address where the DSA resides. See Enabling T1.245 Directory System Agent (T 104).
- Have OSI or RFC1006 connectivity from the local area to the DSA

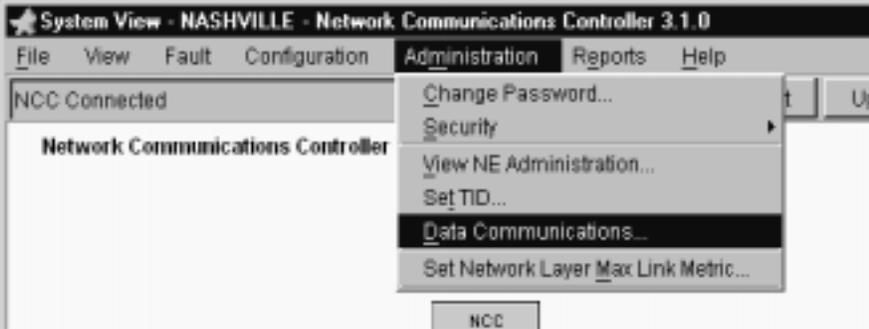
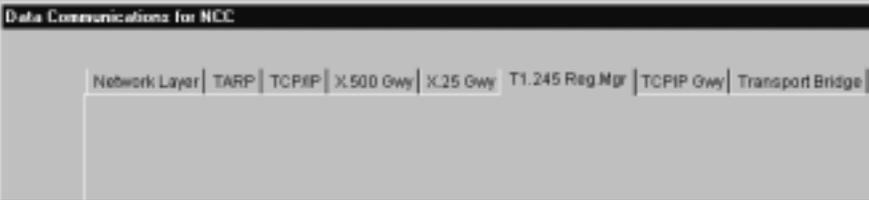
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**Related  
Information** For related information see Chapter 2.

---

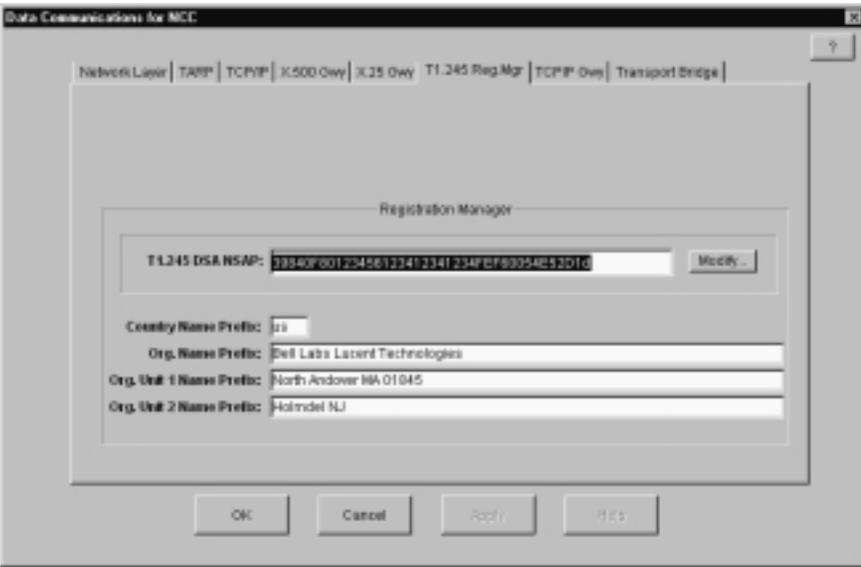
## Task Instructions

**Task** Complete the following steps to enable registration manager services on an NCC.

| Step                          | Action   |
|-------------------------------|--|
| 1                             | If not already connected, connect to the NCC which you wish to enable RM services.<br>See T 101, Logging in to an NCC from the WaveStar CIT  |
| 2                             | From the NCC NE View screen menu bar:<br>Select <b>Administration -&gt; Data Communications</b><br><br><br><br>The NCC Functionality Screen appears. |
| 3                             | Select the T1.245 Registration Manager tab.<br><br><br><br>The Registration Manager screen appears.  |
| <i>Continued on next page</i> |  |

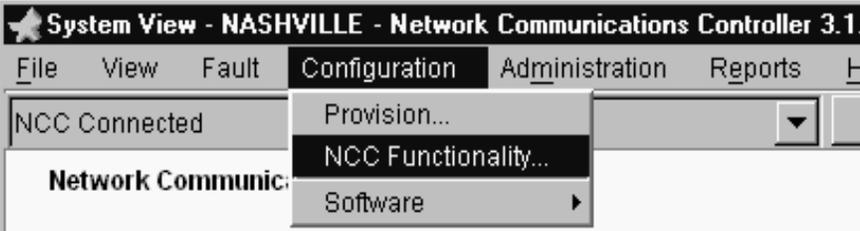
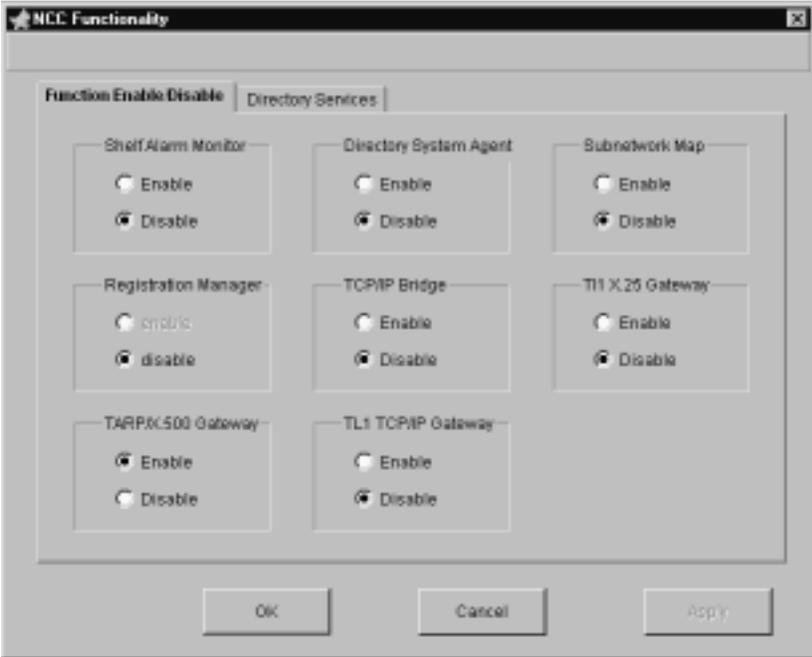
## Task Instructions, *continued*

### Task, *continued*

| Step                          | Action   |
|-------------------------------|--|
| 4                             | <p><b>T1.245 Registration Manager Tab</b></p>  <p>From your work order enter the values for:</p> <ul style="list-style-type: none"> <li>■ Primary DSA NSAP (See Task T 115)</li> <li>■ Name Prefix: Country</li> <li>■ Name Prefix: Organization</li> <li>■ Name Prefix: Organizational Unit 1</li> <li>■ Name Prefix: Organizational Unit 2</li> </ul> |
| <i>Continued on next page</i> |  |

**Task Instructions, *continued***

**Task, *continued***

| Step | Action   |
|------|--|
| 5    | <p>From the NCC NE View screen menu bar:<br/>Select <b>Configuration -&gt; NCC Functionality</b></p>  <p>The NCC Functionality Screen appears.</p>               |
| 6    | <p>Select the Function Enable/Disable tab.</p> <p><b>Function Enable/Disable Tab</b></p>  <p>Click in the box marked "Enable" for the Registration Manager.</p> |
| 7    | <p>Click "OK" in the "Function Enable/Disable" screen.</p> <p><b>Stop! You Have Completed this Procedure!</b></p>  |

---

## Enabling TCP/IP Transport Bridge Function

# 106

---

### **Background**

---

**When to use** Use this procedure to enable the TCP/IP Transport Bridge Function for an NCC.

---

**Required Equipment** WaveStar Craft Interface Terminal (CIT).

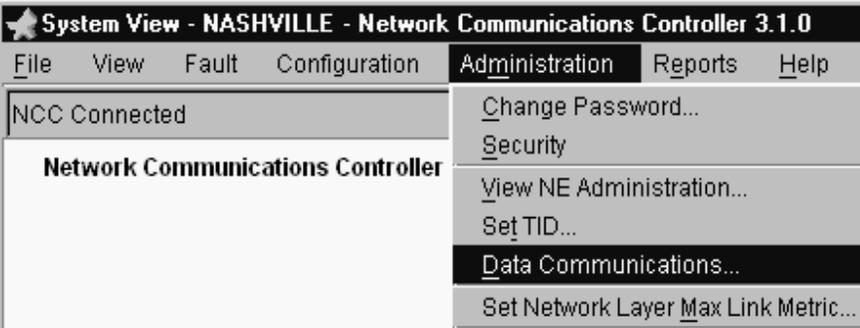
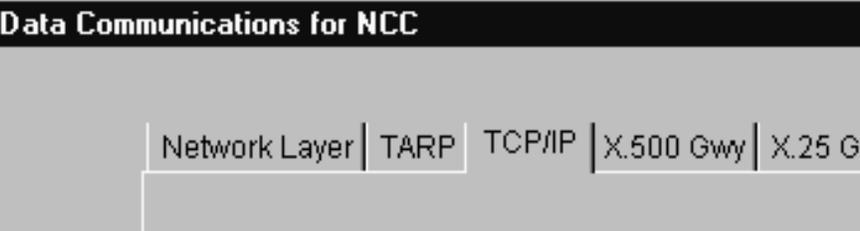
---

**Related Information** For related information see Chapter 2.

---

## Task Instructions

**Task** Complete the following steps to enable the TCP/IP Bridge function for an NCC.

| Step                          | Action   |
|-------------------------------|--|
| 1                             | If not already connected, connect to the NCC which you wish to enable the TCP/IP bridge function.<br>See T 101, Logging in to an NCC from the WaveStar CIT   |
| 2                             | Select <b>Administration -&gt; Data Communications</b> from the NCC NE View Menu.<br> <p>The Data Communications screen appears.</p> |
| 3                             | Select the "TCP/IP" Tab<br> <p>The "TCP/IP Bridge" screen appears.</p>   |
| <i>Continued on next page</i> |  |

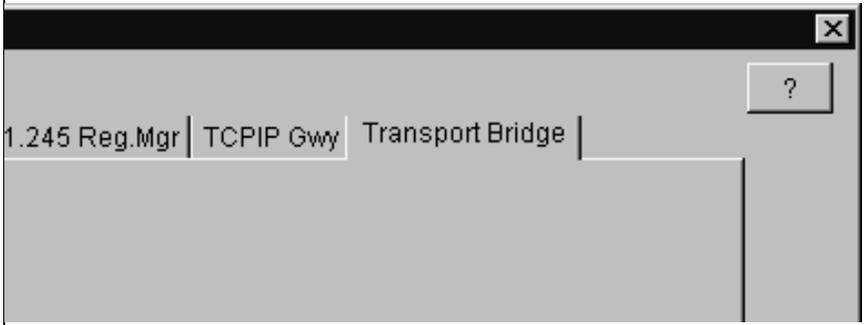
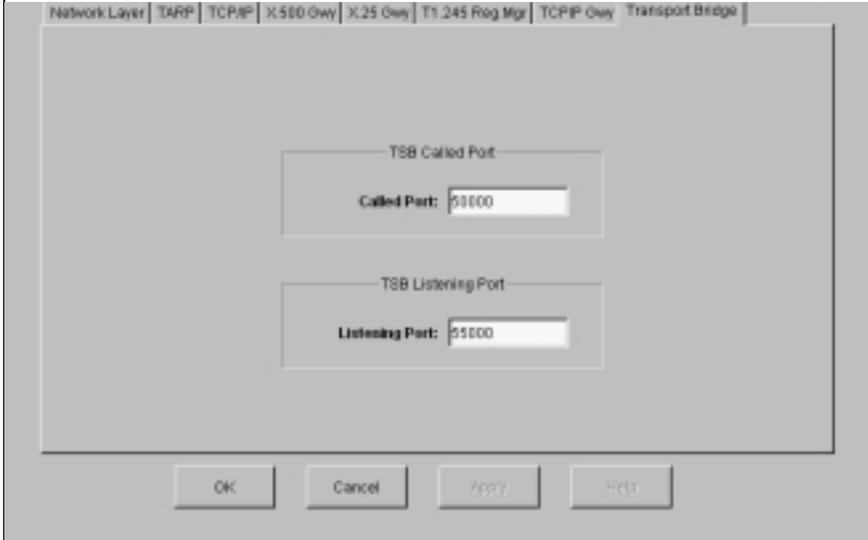
## Task Instructions, *continued*

### Task, *continued*

| Step                                 | Action  |
|--------------------------------------|---|
| 4                                    | <p><b>TCP/IP Screen</b></p>  <p>Verify that the IP information is correct.</p> <p><b>OR</b></p> <p>From your work order:</p> <ul style="list-style-type: none"> <li>■ Enter the IP Address into the “IP Address” field on the screen.</li> <li>■ Enter the Subnet Mask into the “Subnet Mask” field on the screen.</li> <li>■ Enter the IP Default Router into the “IP Default Router Address” field on the screen.</li> </ul> |
| 5                                    | <p>Click “OK” at the bottom of the “TCP/IP Bridge” screen.</p> <p>A confirmation Dialog Box appears.</p>  |
| 6                                    | <p>Click “OK” in the Confirmation Dialog Box.</p>   |
| <p><i>Continued on next page</i></p> |   |

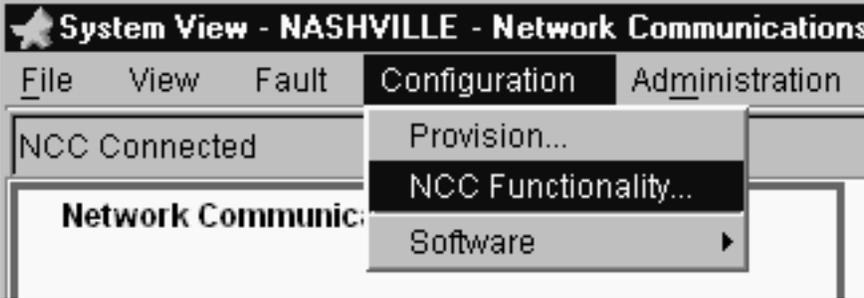
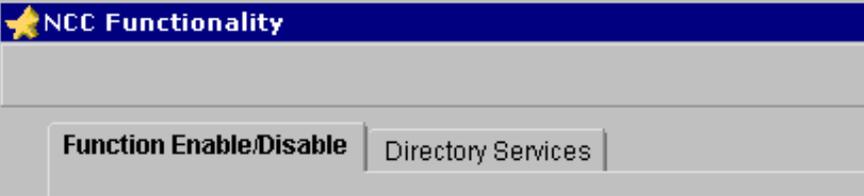
**Task Instructions, *continued***

**Task, *continued***

| Step                                 | Action  |
|--------------------------------------|---|
| 7                                    | <p>Select the Transport Bridge Tab</p>  <p>The screenshot shows a menu bar with several tabs: '1.245 Reg.Mgr', 'TCPIP Gwy', 'Transport Bridge', and a help icon '?'. The 'Transport Bridge' tab is highlighted with a white border.</p>   |
| 8                                    | <p><b>Transport Bridge Screen</b></p>  <p>The screenshot shows a configuration window titled 'Transport Bridge'. At the top, there is a menu bar with tabs: 'Network Layer', 'TARP', 'TCP/IP', 'X.500 Gwy', 'X.25 Gwy', 'T1.245 Reg.Mgr', 'TCPIP Gwy', and 'Transport Bridge'. The 'Transport Bridge' tab is active. Below the menu bar, there are two input fields: 'TSB Called Port' with 'Called Port: 51000' and 'TSB Listening Port' with 'Listening Port: 51000'. At the bottom of the window, there are four buttons: 'OK', 'Cancel', 'Apply', and 'Help'.</p> <p>Verify that the IP information is correct.</p> <p><b>OR</b></p> <p>From your work order:</p> <ul style="list-style-type: none"> <li>■ enter the Called Port Setting.</li> <li>■ Enter the Listening Port Setting</li> </ul> |
| <p><i>Continued on next page</i></p> |   |

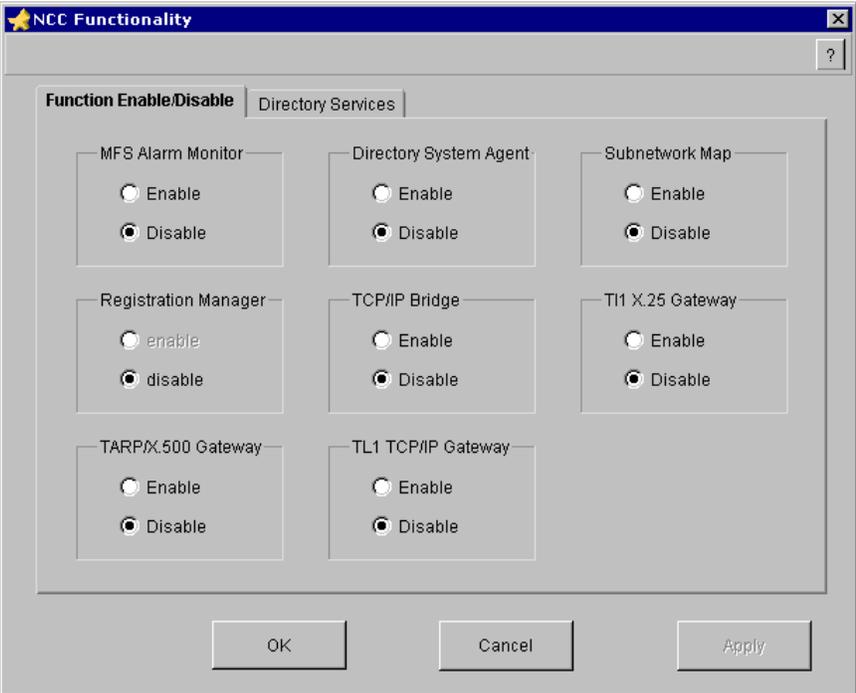
**Task Instructions, *continued***

**Task, *continued***

|                                      |  |
|--------------------------------------|--|
| 9                                    | <p>Click "OK" at the bottom of the "TCP/IP Bridge" screen.</p> <p>A confirmation Dialog Box appears.</p>   |
| 10                                   | <p>Click "OK" in the Confirmation Dialog Box.</p>  |
| 11                                   | <p>From the NCC NE View screen menu bar:<br/>Select <b>Configuration -&gt; NCC Functionality</b></p>  <p>The NCC Functionality screen will appear.</p> |
| 12                                   | <p>Select the "Function Enable/Disable" Tab.</p>  <p>The "Function Enable/Disable" screen will appear.</p>   |
| <p><i>Continued on next page</i></p> |  |

**Task Instructions, *continued***

**Task, *continued***

| Step | Action  |
|------|---|
| 13   | <p><b>Function Enable/Disable Tab</b></p>  <p>The screenshot shows a window titled "NCC Functionality" with a "Function Enable/Disable" tab selected. Under the "Directory Services" section, there are several options, each with "Enable" and "Disable" radio buttons. The "TCP/IP Bridge" option has the "Enable" radio button selected. Other options include MFS Alarm Monitor, Directory System Agent, Subnetwork Map, Registration Manager, T11 X.25 Gateway, TARP/X.500 Gateway, and TL1 TCP/IP Gateway. At the bottom are "OK", "Cancel", and "Apply" buttons.</p> <p>Choose "Enable" for "TCP/IP Bridge" by clicking in the box marked "Enable".</p> |
| 14   | <p>Click "OK" at the bottom of the TCP/IP Bridge" Screen.</p> <p>A confirmation Dialog Box appears.</p>   |
| 15   | <p>Click "OK" in the Confirmation Dialog Box.</p>   |
| 16   | <p>The NCC has now been enabled for the TCP/IP Bridge function.</p> <p><b>Stop! You Have Completed this Procedure!</b></p>  |

## **Background**

---

**When to use** Use this procedure to enable the TARP/X.500 Gateway Function for an NCC.

---

**Before you Begin** Verify:

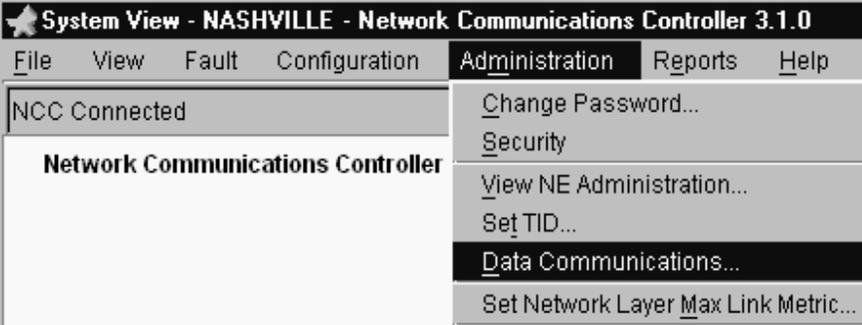
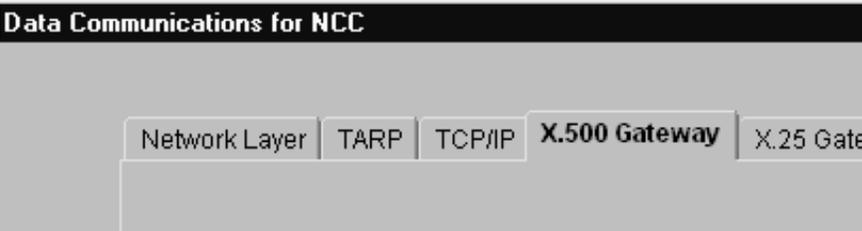
- That the DSA is running See Task 104, Enabling T1.245 Directory System Agent
- That the RM is running Task 105, Enable Registration Manager Services on an NCC

**Required Equipment** WaveStar Craft Interface Terminal (CIT).

---

## Task Instructions

**Task** Complete the following steps to enable the TARP/X.500 Gateway function for an NCC.

| Step                          | Action   |
|-------------------------------|--|
| 1                             | If not already connected, connect to the NCC which you wish to enable the TARP/X.500 Gateway function.<br>See T 101, Logging in to an NCC from the WaveStar CIT  |
| 2                             | Select <b>Administration -&gt; Data Communications</b> from the NCC NE View Menu.<br> <p>The Data Communications screen appears.</p> |
| 3                             | Select the "X.500 Gateway" Tab<br> <p>The "X.500 Gateway" screen appears.</p>  |
| <i>Continued on next page</i> |  |

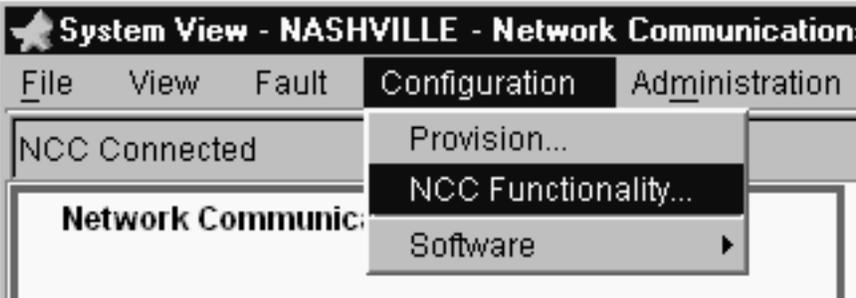
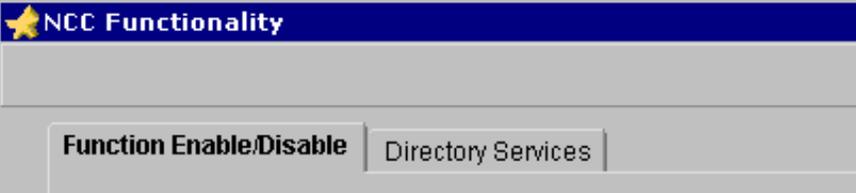
## Task Instructions, *continued*

### Task, *continued*

| Step                                 | Action   |
|--------------------------------------|--|
| 4                                    | <p><b>X.500 Gateway Screen</b></p>  <p>From your work order:</p> <ul style="list-style-type: none"> <li>■ Enter the Discovery Timer (Timer E) value into the field on the screen.</li> <li>■ Enter the Anti-flooding Timer (Timer F) value into the field on the screen.</li> </ul> |
| 5                                    | <p>Click "OK" at the bottom of the screen.</p> <p>A confirmation Dialog Box appears.</p>   |
| 6                                    | <p>Click "OK" in the Confirmation Dialog Box.</p>  |
| <p><i>Continued on next page</i></p> |  |

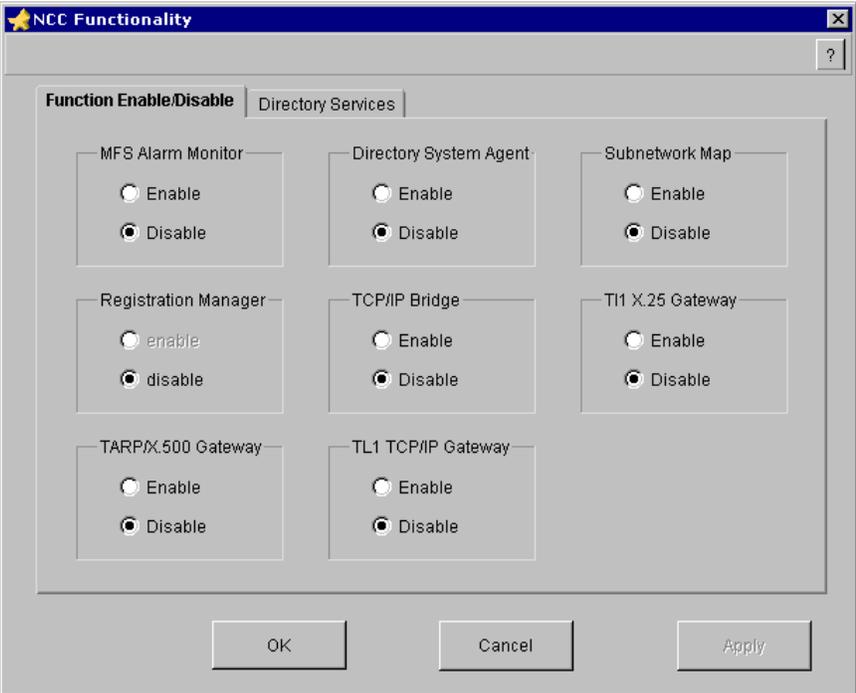
## Task Instructions, *continued*

### Task, *continued*

| Step   | Action  |
|--|---|
| 7  | <p data-bbox="565 447 1089 506">From the NCC NE View screen menu bar:<br/>Select <b>Configuration</b> -&gt; <b>NCC Functionality</b></p>  <p data-bbox="565 877 1062 909">The NCC Functionality screen will appear.</p> |
| 8  | <p data-bbox="565 930 1057 961">Select the "Function Enable/Disable" Tab.</p>  <p data-bbox="565 1224 1154 1255">The "Function Enable/Disable" screen will appear.</p>   |
| <p data-bbox="1149 1293 1406 1325"><i>Continued on next page</i></p> |   |

## Task Instructions, *continued*

### Task, *continued*

| Step | Action   |
|------|--|
| 9    | <p><b>Function Enable/Disable Tab</b></p>  <p>Choose "Enable" for "X.500 Gateway" by clicking in the box marked "Enable".</p> |
| 10   | <p>Click "OK" at the bottom of the Screen.</p> <p>A confirmation Dialog Box appears.</p>   |
| 11   | <p>Click "OK" in the Confirmation Dialog Box.</p>  |
| 12   | <p>The NCC has now been enabled for the TARP/X.500 Gateway function.</p> <p><b>Stop! You Have Completed this Procedure!</b></p>  |



**Background**

---

**When to use** Use this procedure to enable the TL1/X.25 Gateway Function for an NCC.

---

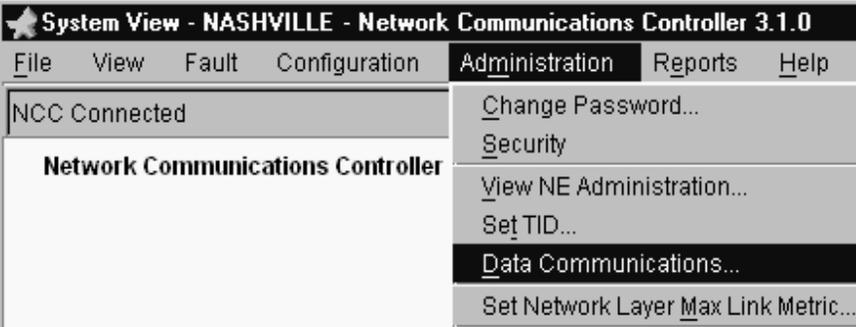
- Before you Begin**
- The X.25 PCMCIA card must be installed in one of the PCMCIA slots
  - The NCC must be reset after you insert the PCMCIA card into the PCMCIA slot.
- 

**Required Equipment** WaveStar Craft Interface Terminal (CIT).

---

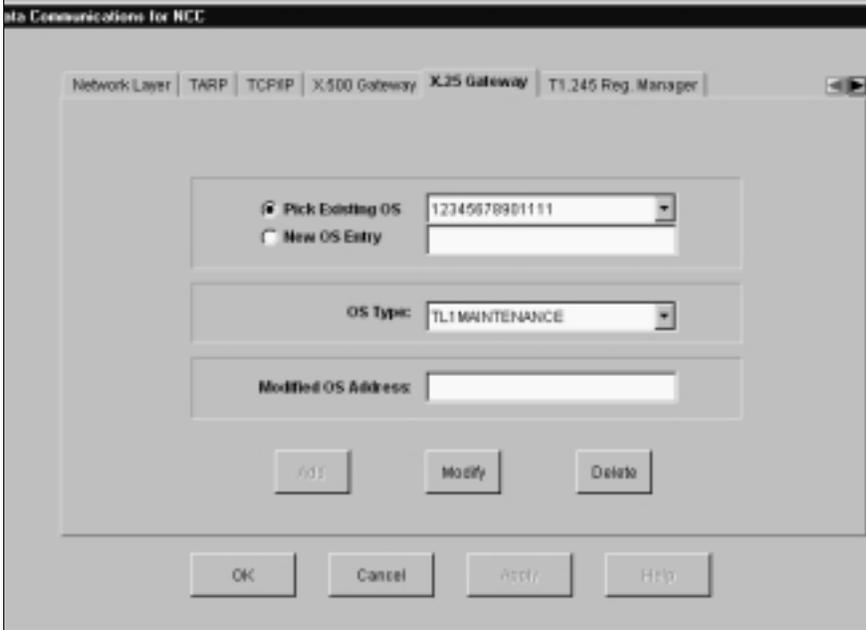
## Task Instructions

**Task** Complete the following steps to enable the TL1/X.25 Gateway function for an NCC.

| Step                          | Action   |
|-------------------------------|--|
| 1                             | If not already connected, connect to the NCC which you wish to enable the TL1/X.25 Gateway function.<br>See T 101, Logging in to an NCC from the WaveStar CIT  |
| 2                             | Select <b>Administration -&gt; Data Communications</b> from the NCC NE View Menu.<br> <p>The Data Communications screen appears.</p> |
| 3                             | Select the "X.25 Gateway" Tab<br> <p>The "X.25 Gateway" screen appears.</p>  |
| <i>Continued on next page</i> |  |

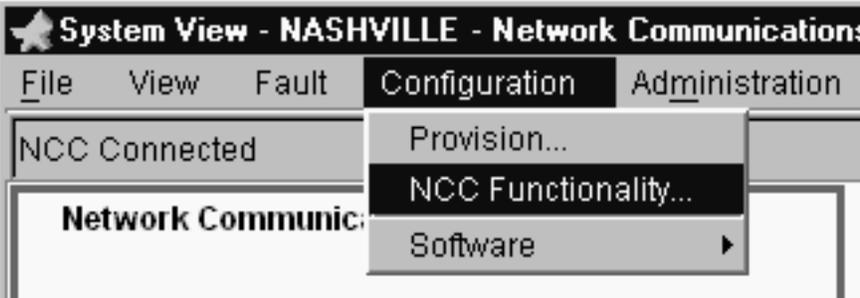
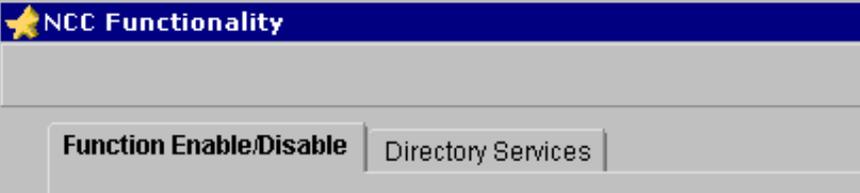
## Task Instructions, *continued*

### Task, *continued*

| Step                                 | Action   |
|--------------------------------------|--|
| 4                                    | <p><b>X.25 Gateway Screen</b></p>  <p>From your work order:</p> <ul style="list-style-type: none"> <li>■ Enter the appropriate values into the fields.</li> </ul> |
| 5                                    | <p>Click "OK" at the bottom of the screen.</p> <p>A confirmation Dialog Box appears.</p>   |
| 6                                    | <p>Click "OK" in the Confirmation Dialog Box.</p>  |
| <p><i>Continued on next page</i></p> |  |

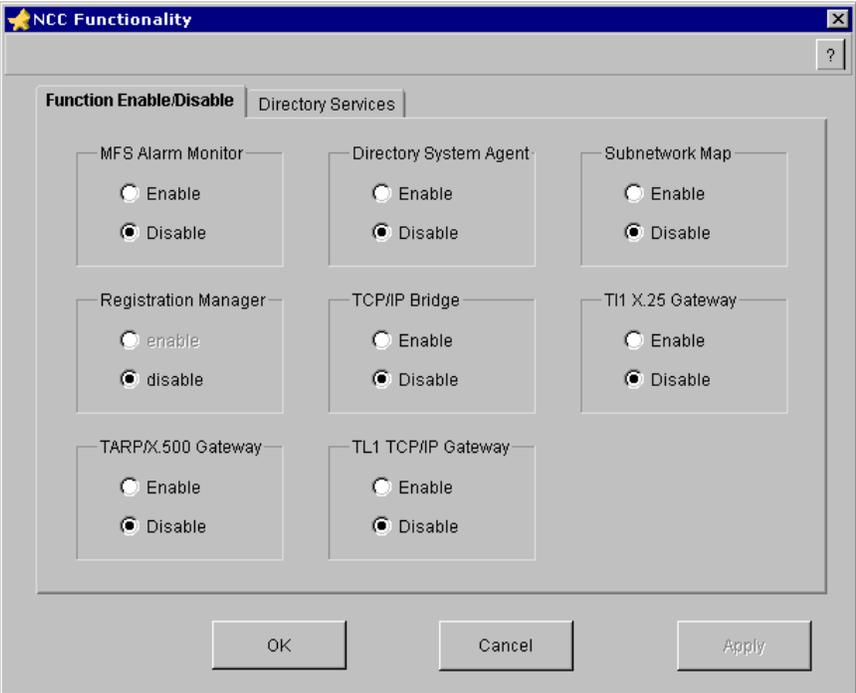
## **Task Instructions, *continued***

### **Task, *continued***

| Step   | Action  |
|--|---|
| 7  | <p data-bbox="565 443 1089 506">From the NCC NE View screen menu bar:<br/>Select <b>Configuration</b> -&gt; <b>NCC Functionality</b></p>  <p data-bbox="565 877 1062 909">The NCC Functionality screen will appear.</p> |
| 8  | <p data-bbox="565 926 1057 957">Select the "Function Enable/Disable" Tab.</p>  <p data-bbox="565 1224 1154 1255">The "Function Enable/Disable" screen will appear.</p>   |
| <p data-bbox="1149 1293 1406 1325"><i>Continued on next page</i></p> |   |

## Task Instructions, *continued*

### Task, *continued*

| Step | Action  |
|------|---|
| 9    | <p><b>Function Enable/Disable Tab</b></p>  <p>Choose "Enable" for "X.25 Gateway" by clicking in the box marked "Enable".</p> |
| 10   | <p>Click "OK" at the bottom of the Screen.</p> <p>A confirmation Dialog Box appears.</p>  |
| 11   | <p>Click "OK" in the Confirmation Dialog Box.</p>   |
| 12   | <p>The NCC has now been enabled for the TL1/X.25 Gateway function.</p> <p><b>Stop! You Have Completed this Procedure!</b></p>   |



---

## Enabling The TL1 TCP/IP Gateway

# 109

---

### **Background**

---

**When to use** Use this procedure to enable the TL1 TCP/IP Gateway Function for an NCC.

---

**Before You Begin** You must provision the TARP originator before beginning this task. See Task 117, Enabling TARP Functions.

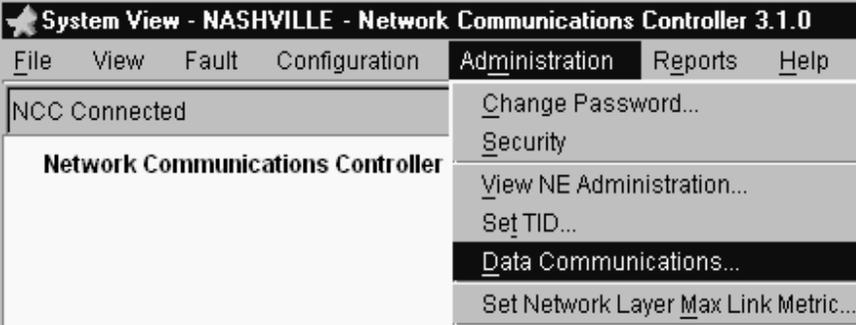
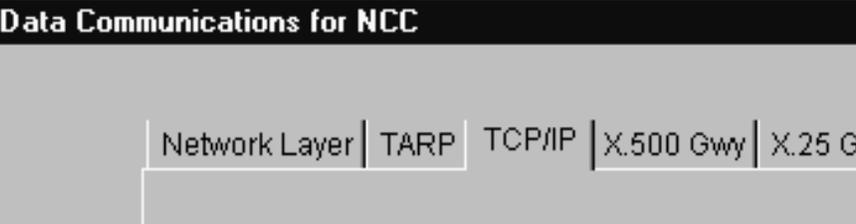
---

**Required Equipment** WaveStar Craft Interface Terminal (CIT).

---

## Task Instructions

**Task** Complete the following steps to enable the TL1 TCP/IP Gateway function for an NCC.

| Step                          | Action   |
|-------------------------------|--|
| 1                             | If not already connected, connect to the NCC which you wish to enable the TL1 TCP/IP Gateway function.<br>See T 101, Logging in to an NCC from the WaveStar CIT  |
| 2                             | Select <b>Administration -&gt; Data Communications</b> from the NCC NE View Menu.<br> <p>The Data Communications screen appears.</p> |
| 3                             | Select the "TCP/IP" Tab<br> <p>The "TCP/IP Bridge" screen appears.</p>   |
| <i>Continued on next page</i> |  |

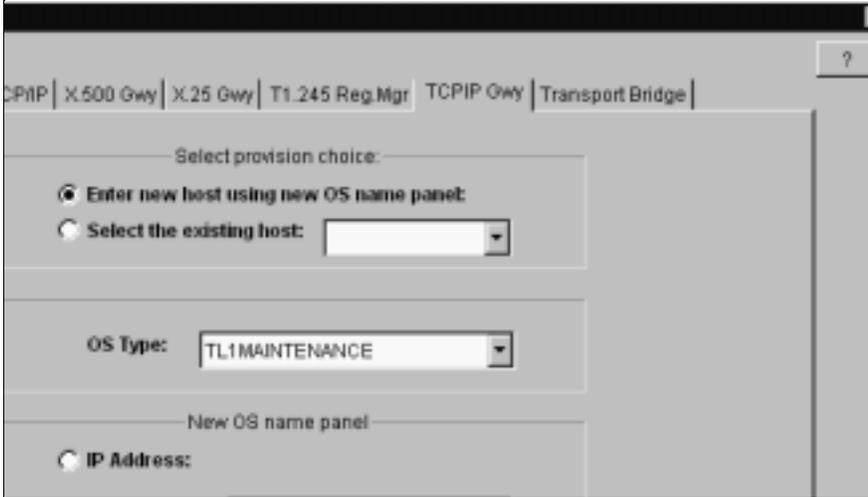
## Task Instructions, *continued*

### Task, *continued*

|                                      |  |
|--------------------------------------|--|
| 4                                    | <p><b>TCP/IP Screen</b></p>  <p>Verify that the IP information is correct.</p> <p><b>OR</b></p> <p>From your work order:</p> <ul style="list-style-type: none"> <li>■ Enter the IP Address into the “IP Address” field on the screen.</li> <li>■ Enter the Subnet Mask into the “Subnet Mask” field on the screen.</li> <li>■ Enter the IP Default Router into the “IP Default Router Address” field on the screen.</li> <li>■ Enter the Domain Server Name and IP address into the “Domain Name Server Name and IP Address” fields on the screen.</li> </ul> |
| 5                                    | <p>Click “OK” at the bottom of the “TCP/IP Bridge” screen.</p> <p>A confirmation Dialog Box appears.</p>   |
| <p><i>Continued on next page</i></p> |  |

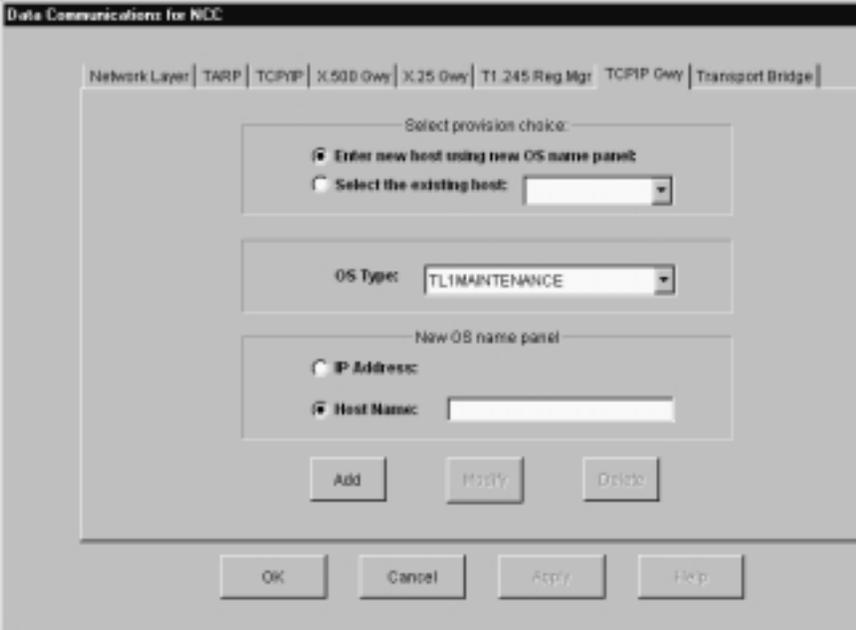
## Task Instructions, *continued*

### Task, *continued*

|                               |  |
|-------------------------------|--|
| 6                             | Click "OK" in the Confirmation Dialog Box.   |
| 7                             | <p>Select the "TCPIP Gwy" Tab</p>  <p>The "TCPIP Gateway" screen appears.</p> |
| <i>Continued on next page</i> |  |

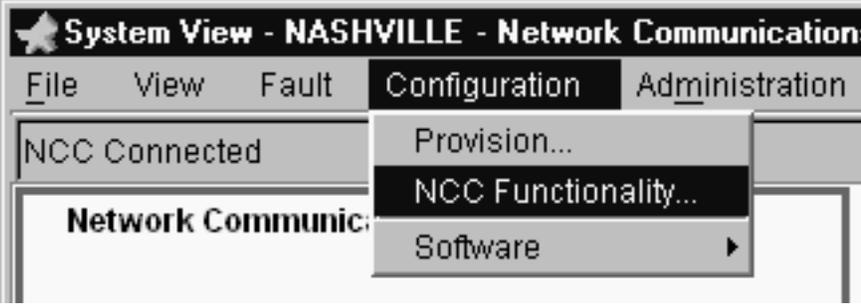
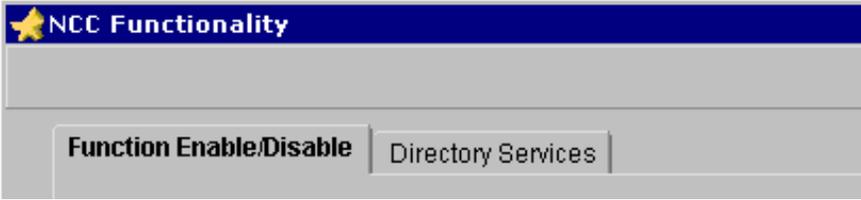
## Task Instructions, *continued*

### Task, *continued*

| Step                                 | Action  |
|--------------------------------------|---|
| 8                                    | <p><b>TCPIP Gateway Screen</b></p>  <p>From your work order:</p> <ul style="list-style-type: none"> <li>■ Enter the appropriate values into the fields.</li> </ul> |
| 9                                    | <p>Click "OK" at the bottom of the screen.</p> <p>A confirmation Dialog Box appears.</p>  |
| 10                                   | <p>Click "OK" in the Confirmation Dialog Box.</p>   |
| <p><i>Continued on next page</i></p> |   |

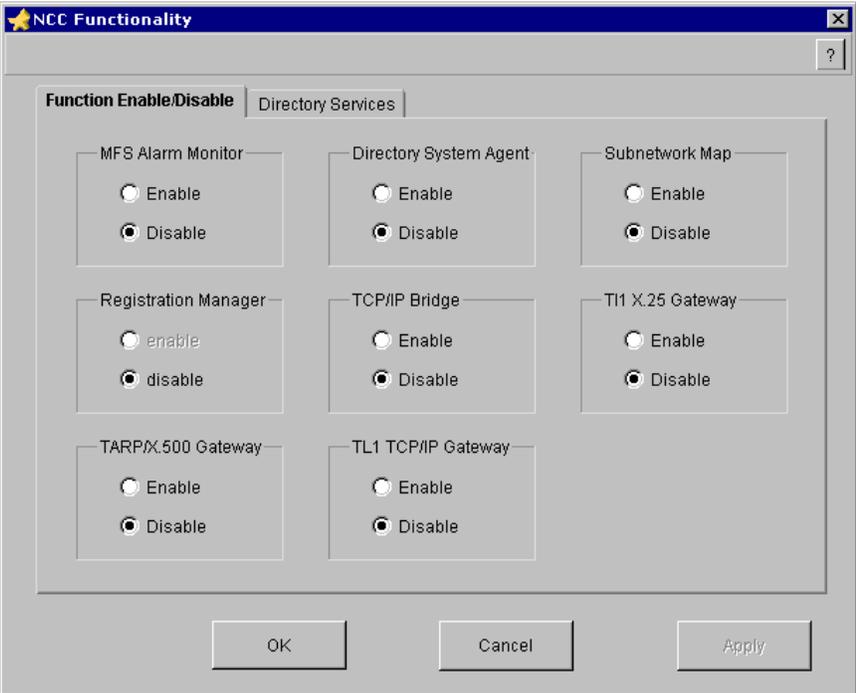
**Task Instructions, *continued***

**Task, *continued***

| Step                                 | Action  |
|--------------------------------------|---|
| 11                                   | <p>From the NCC NE View screen menu bar:<br/>Select <b>Configuration</b> -&gt; <b>NCC Functionality</b></p>  <p>The NCC Functionality screen will appear.</p> |
| 12                                   | <p>Select the "Function Enable/Disable" Tab.</p>  <p>The "Function Enable/Disable" screen will appear.</p>   |
| <p><i>Continued on next page</i></p> |   |

**Task Instructions, *continued***

**Task, *continued***

| Step | Action   |
|------|--|
| 13   | <p><b>Function Enable/Disable Tab</b></p>  <p>The screenshot shows a dialog box titled "NCC Functionality" with a "Function Enable/Disable" tab selected. The "Directory Services" sub-tab is active. It contains several function groups, each with "Enable" and "Disable" radio buttons. The "TL1 TCP/IP Gateway" group has the "Enable" radio button selected. Other groups include MFS Alarm Monitor, Directory System Agent, Subnetwork Map, Registration Manager, TCP/IP Bridge, T11 X.25 Gateway, and TARP/X.500 Gateway. At the bottom are "OK", "Cancel", and "Apply" buttons.</p> <p>Choose "Enable" for "TL1 TCP/IP Gateway" by clicking in the box marked "Enable".</p> |
| 14   | <p>Click "OK" at the bottom of the Screen.</p> <p>A confirmation Dialog Box appears.</p>   |
| 15   | <p>Click "OK" in the Confirmation Dialog Box.</p>  |
| 16   | <p>The NCC has now been enabled for the TL1 TCP/IP Gateway function.</p> <p><b>Stop! You Have Completed this Procedure!</b></p>  |



**Background**

---

**When to use** Follow the steps below to use the TL1 TCP/IP Gateway feature of the NCC.

---

**Required Equipment** WaveStar Craft Interface Terminal (CIT).

---

**Related Documentation** For the complete list of TL1 commands that can be used with the NCC, consult the NCC Operations Systems Engineering Guide (Document Number 365-370-119).

## Task Instructions

**Task** The following steps outline the use of the NCC TL1 Gateway.

| Step  | Action  |   |                          |  |                          |   |                          |
|---|---|---|--------------------------|--|--------------------------|---|--------------------------|
| 1   | <p>From the Windows NT <b>Start</b> menu select "<b>Start -&gt; Run</b>", type the word "command" into the dialog box that appears and click "<b>OK</b>".</p> <p>A Windows NT Command Shell appears.</p>  |   |                          |  |                          |   |                          |
| 2   | <p>Type "ping <b>ip_address_of_ncc</b>" at the command prompt, where <b>ip_address_of_ncc</b> is the IP address of the NCC you wish make a connection.</p> <p>If you are unable to ping the NCC (host unreachable, request timed out, or bad IP address), you may not be properly connected to an IP network, the NCC may not be properly connected to an IP network, or there may be some other network error. If this is the case contact your next level of support.</p> <p>If this occurs <b>Go to Step 9</b>. If you were able to ping the NCC, <b>continue</b>.</p>   |   |                          |  |                          |   |                          |
| 3   | <p>Start a telnet session to the NCC from Windows NT by selecting "<b>Start -&gt; Run</b>" and typing "telnet <b>ip_address_of_ncc port_number</b>", where <b>ip_address_of_ncc</b> is the IP address of the NCC you wish make a connection and <b>port_number</b> is on of the port numbers below.</p> <table border="1" data-bbox="553 1087 1421 1329"> <tbody> <tr> <td data-bbox="553 1087 992 1167">If you want to use the gateway in Telnet Mode....</td> <td data-bbox="992 1087 1421 1167">Specify Port Number 3083</td> </tr> <tr> <td data-bbox="553 1167 992 1247">If you want to use the gateway in Raw Mode....</td> <td data-bbox="992 1167 1421 1247">Specify Port Number 3082</td> </tr> <tr> <td data-bbox="553 1247 992 1329">If you want to use the gateway in Length Value Mode....</td> <td data-bbox="992 1247 1421 1329">Specify Port Number 3081</td> </tr> </tbody> </table> <p>If Telnet cannot establish a connection to that particular NCC then the gateway and IP information on that NCC is not correctly provisioned. Go to <b>T 109, Enabling The TL1 TCP/IP Gateway</b> and verify that the NCC has been correctly provisioned for the TL1 TCP/IP Gateway.</p> <p>If a Telnet connection is established with the NCC, then <b>continue</b>.</p> | If you want to use the gateway in Telnet Mode.... | Specify Port Number 3083 | If you want to use the gateway in Raw Mode.... | Specify Port Number 3082 | If you want to use the gateway in Length Value Mode.... | Specify Port Number 3081 |
| If you want to use the gateway in Telnet Mode....       | Specify Port Number 3083  |   |                          |  |                          |   |                          |
| If you want to use the gateway in Raw Mode....          | Specify Port Number 3082  |   |                          |  |                          |   |                          |
| If you want to use the gateway in Length Value Mode.... | Specify Port Number 3081  |   |                          |  |                          |   |                          |
| <i>Continued on next page</i>                           |   |   |                          |  |                          |   |                          |

**Task Instructions, *continued*****Task, *continued***

| Step | Action   |
|------|--|
| 4    | <p>The gateway should start up and a prompt will appear with the TID if the NCC that you are using as a gateway. You can now enter TL1 commands into the telnet session.</p> <p><b>⇒ NOTE:</b><br/>The following three steps assume you have knowledge of the TL1 language as it relates to the NCC and the NE(s) you wish to connect to. For more information see the NCC Operations Systems Engineering Guide and the Operations Systems Engineering Guides of the NEs you wish to log in to. A list of related WaveStar Operations Systems Engineering Guides can be found in the "About this Document" section of this book.</p> |
| 5    | <p>Type "#EL;" at the prompt to get an element list of available elements to log in to.</p> <p><b>⇒ NOTE:</b><br/>The "#EL;" is only available if there is a DSA accessible to the NCC.</p>  |
| 6    | Type an "ACT-USER" command to the element you wish to log in to.   |
| 7    | Perform the necessary commands during your session.  |
| 8    | Terminate the session by typing "exit".  |
| 9    | Contact your next level of technical support.  |
| 10   | <b>Stop! End of Task.</b>  |



---

## Enable/Disable NCC Alarm Monitor

# 111

---

### Background

---

**When to use** Use this procedure to Enable/Disable the NCC Alarm Monitor for NCC Operations Controllers located in Slots 1 or 2 of the NCC Shelf.

---

**Before you begin** Before you begin this task, make certain that the NCC Operations Controller that you are enabling this feature for is physically located in Slots 1 or 2 of the NCC shelf.

---

**Required Equipment** WaveStar Craft Interface Terminal (CIT).

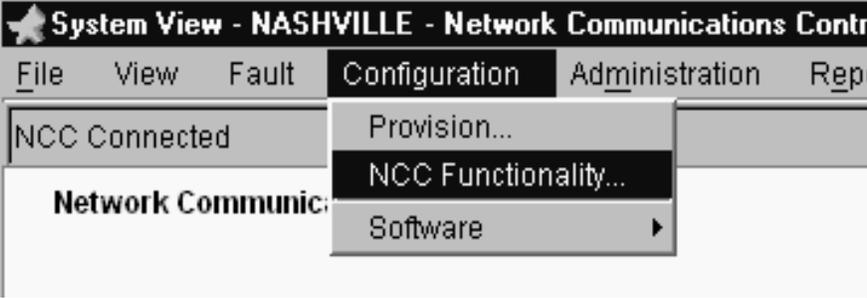
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**Related Information** For related information see Alarm Unit: page 2-12.

---

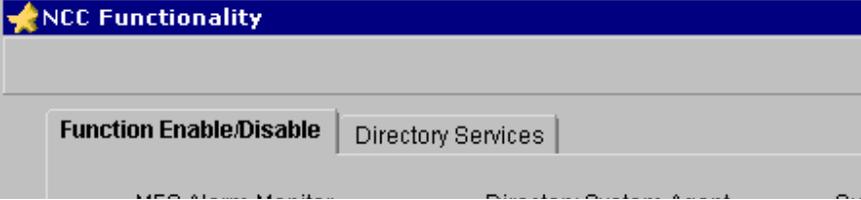
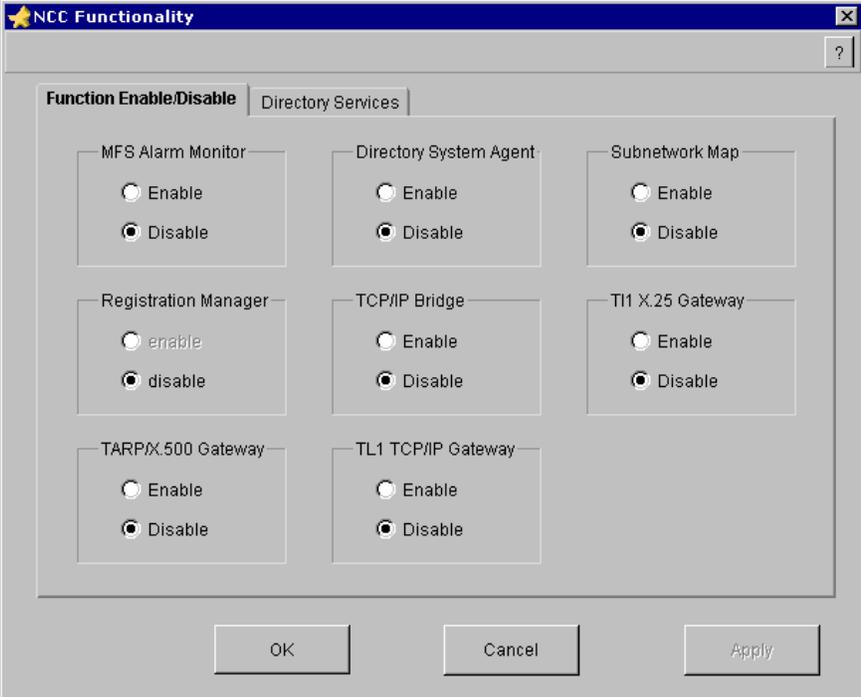
## Task Instructions

**Task** Complete the following steps to enable/disable the NCC Alarm Monitor for an NCC Operations Controller.

| Step                                 | Action   |
|--------------------------------------|--|
| 1                                    | <p>If not already connected, connect to the NCC which you wish to enable/disable MFS alarm monitoring.<br/>See T 101, Logging in to an NCC from the WaveStar CIT</p> <p><b>NOTE:</b><br/>NCC Alarm Monitoring is only available for NCC Operations Controllers located in Slots 1 or 2 of the MFS Shelf.</p> |
| 2                                    | <p>From the NCC NE View screen menu bar:<br/>Select <b>Configuration -&gt; NCC Functionality</b></p>  <p>The NCC Functionality screen appears.</p>  |
| <p><i>Continued on next page</i></p> |  |

## Task Instructions, *continued*

### Task, *continued*

| Step | Action  |
|------|---|
| 3    | <p>Select the "Function Enable/Disable" Tab.</p>  <p>The "Function Enable/Disable" screen appears.</p>  |
| 4    | <p><b>Function Enable/Disable Tab</b></p>  <p>Choose "Enable" or "Disable" (according to your work order) for the "MFS Alarm Monitor" by clicking on the proper box.</p> |
| 5    | <p>Click "OK" at the bottom of the "Function Enable/Disable" Screen</p> <p style="text-align: center;"><b>Stop! You have Completed this Procedure!</b></p>  |



---

## Configure SDS Update Notification for NCC

# 112

---

### **Background**

---

**When to use** Use this procedure to configure the SDS Update Notification for an NCC.

---

**Before You Begin** You must enable the DSA before beginning this task. See Task 104, Enabling T1.245 Directory System Agent

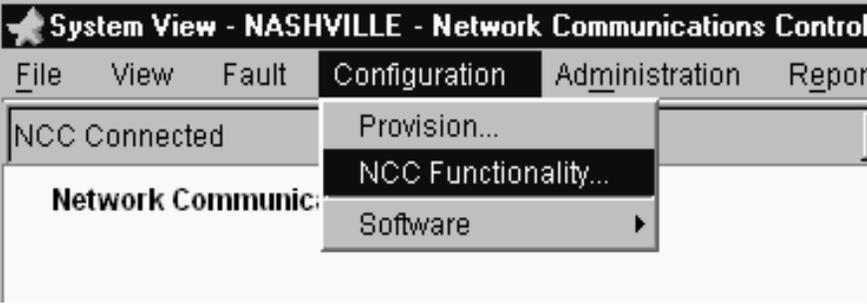
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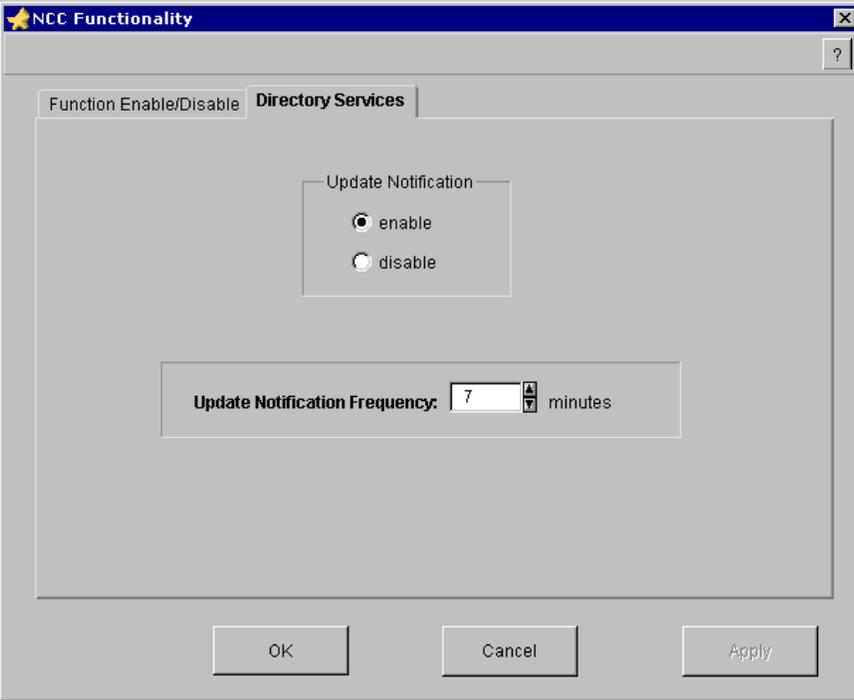
**Required Equipment** WaveStar Craft Interface Terminal (CIT).

---

## Task Instructions

**Task** Complete the following steps to Configure the SDS Update Notification for an NCC.

| Step                          | Action   |
|-------------------------------|--|
| 1                             | If not already connected, connect to the NCC which you wish to configure the SDS Update Notification.  |
| 2                             | <p>From the NCC NE View screen menu bar:<br/>Select <b>Configuration -&gt; NCC Functionality</b></p>  <p>The NCC Functionality screen will appear.</p> |
| <i>Continued on next page</i> |  |

| Step                   | Action   |       |         |                       |              |                        |              |
|------------------------|--|-------|---------|-----------------------|--------------|------------------------|--------------|
| 3                      | <p><b>NCC Functionality Screen</b></p>  <p>Select the "Directory Services" Tab.<br/>The "Directory Services" screen will appear.</p>  |       |         |                       |              |                        |              |
| 4                      | <p>Select "Enable" or "Disable" for Directory Services Update Notification according to your work order.</p>   |       |         |                       |              |                        |              |
| 5                      | <table border="1"> <thead> <tr> <th data-bbox="560 1192 992 1230">If...</th> <th data-bbox="992 1192 1408 1230">Then...</th> </tr> </thead> <tbody> <tr> <td data-bbox="560 1230 992 1276">You Selected "Enable"</td> <td data-bbox="992 1230 1408 1276">Go to Step 6</td> </tr> <tr> <td data-bbox="560 1276 992 1325">You Selected "Disable"</td> <td data-bbox="992 1276 1408 1325">Go to Step 7</td> </tr> </tbody> </table> | If... | Then... | You Selected "Enable" | Go to Step 6 | You Selected "Disable" | Go to Step 7 |
| If...                  | Then...  |       |         |                       |              |                        |              |
| You Selected "Enable"  | Go to Step 6   |       |         |                       |              |                        |              |
| You Selected "Disable" | Go to Step 7   |       |         |                       |              |                        |              |
| 6                      | <p>Enter the Update Notification Frequency from your work order by typing the number in the Update Notification Frequency Field. The number must be an integer from 1 to 60.</p>   |       |         |                       |              |                        |              |
| 7                      | <p>Click OK on the bottom of the Directory Services Tab.</p> <p>A Confirmation Dialog Box will appear.</p>   |       |         |                       |              |                        |              |
| 8                      | <p>Click OK in the Confirmation Dialog Box.</p>  |       |         |                       |              |                        |              |
| 9                      | <p>The SDS Update Notification Function is configured for this NCC.<br/><b>Stop! You Have Completed This Procedure!</b></p>  |       |         |                       |              |                        |              |



---

## Reset an NCC

# 113

---

### **Background**

---

**When to use**

Use this procedure to reset an NCC.

---

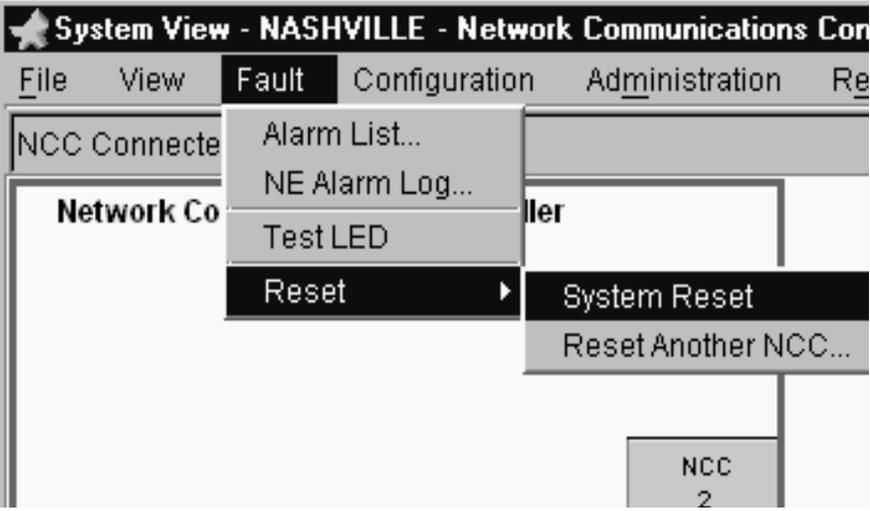
**Required  
Equipment**

WaveStar Craft Interface Terminal (CIT).

---

## Task Instructions

**Task** Complete the following steps to reset an NCC Operations Controller.

| Step                               | Action  | Action |
|------------------------------------|---|--------|
| 1                                  | If not already connected, connect to the NCC Operations Controller which you wish to reset.<br>See T 101, Logging in to an NCC from the WaveStar CIT  |        |
| 2                                  | Select <b>Fault -&gt; Reset -&gt; System Reset</b> from the NCC NE View Menu.<br><br> <p>The screenshot shows a software interface titled "System View - NASHVILLE - Network Communications Controller". The menu bar includes "File", "View", "Fault", "Configuration", "Administration", and "Reset". The "Fault" menu is open, showing options: "Alarm List...", "NE Alarm Log...", "Test LED", "Reset", and "System Reset". The "Reset" option is highlighted, and a sub-menu is open showing "System Reset" and "Reset Another NCC...". The "System Reset" option is highlighted in the sub-menu. In the background, a tree view shows "NCC Connecte" and "Network Co" with "NCC 2" selected.</p> |        |
| A Confirmation Dialog Box appears. |   |        |
| 3                                  | Click OK in the Confirmation Dialog Box.  |        |
| 4                                  | The NCC you are connected to resets.<br><b>Stop! You Have Completed This Procedure!</b>   |        |

---

## Directly Connecting the WaveStar-CIT to an NCC

# 114

---

### **Background**

---

#### **When to use**

Use this procedure to directly connect a WaveStar-CIT to an NCC.

---

#### **Required Equipment**

- Null Modem Cable
- WaveStar Craft Interface Terminal (CIT)

## Task Instructions

**Task** Complete the following steps to connect a PC-CIT to an NCC

| Step                      | Action  |  |
|---------------------------|---|--|
| 1                         | Shut down your PC running the WaveStar CIT.   |  |
| 2                         | Connect one end the provided null modem cable to your PC.   |  |
| 3                         | Connect the other end of the null modem cable to a normal RJ45 cable (for use as an extension).   |  |
| 4                         | Connect the other end of the extension RJ45 cable to the RJ45 jack on the faceplate of the NCC.   |  |
| 5                         | Turn on your PC.  |  |
| 6                         | Start the WaveStar CIT application.   |  |
| 7                         | If...   | Then...  |
|                           | This is a first time or new setup for this NCC.   | Continue with Step 9.  |
|                           | This is not a first time or new setup for this NCC  | Connect to the NCC as you normally would and <b>STOP, you have completed this procedure!</b> |
| 8                         | Enter the name <b>NCC</b> into the TID box in the lower left hand of the CIT View Screen.   |  |
| 9                         | Verify that the <b>System</b> radio box is checked next to the TID box and click the <b>Connect</b> button. A login dialog box appears.                       |  |
| 10                        | The initial logins for a newly installed NCC is:  |  |
|                           | <ul style="list-style-type: none"> <li>— Username:LUC01</li> <li>— Password:LUC+01</li> </ul> Enter the above username and password into the Login dialog box |  |
| <b>Stop! End of Task.</b> |   |  |

(Continued on next page)

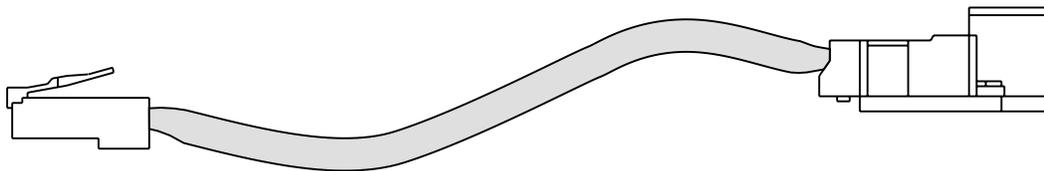
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**Task Instructions, *continued***

---

**Figure**

The figure below shows the 6 inch RJ45 Null Modem Cable included with the NCC Shelf.



nc-ncc-0014

---

**Figure 114-1. 6-IN. RJ45 Null Modem Cable (provided with NCC)**

**NOTE:**

It is suggested that you store the null modem cable in the bottom of the NCC Shelf (below the card cage) when it is not in use.

---

## Null Modem Cable Pin-outs

### Introduction

This section describes the pin configuration for building a spare null modem cable in the event that you have misplaced the null-modem cable provided with the NCC Shelf.

### Building a null modem cable

Consult the following chart and Figure 114-2 for the proper pin configuration of a null modem cable.

| Connect Pin... | ...to Pin |
|----------------|-----------|
| 1              | 3         |
| 2              | 6         |
| 3              | 1         |
| 6              | 2         |

### Null Modem Cable Illustration

Figure 114-2 shows the proper pin configuration for making a null-modem cable.

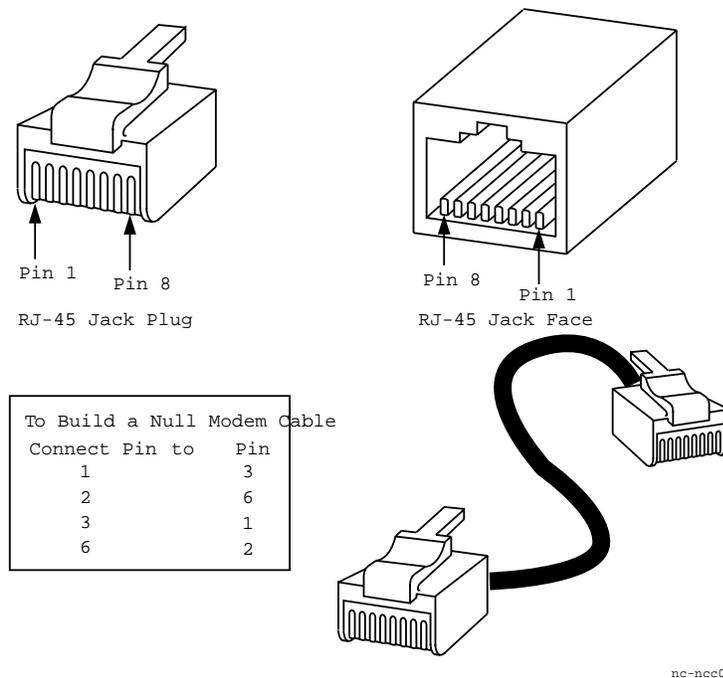


Figure 114-2. Null Modem Cable Pin-outs

**Background**

---

**When to use**

Use this procedure to configure an NSAP for an NCC Operations Controller.

---

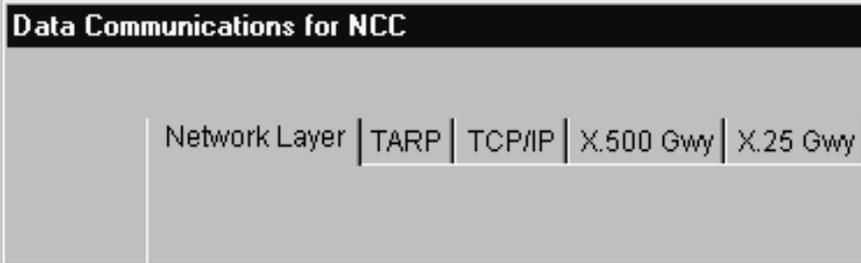
**Required  
Equipment**

WaveStar Craft Interface Terminal (CIT).

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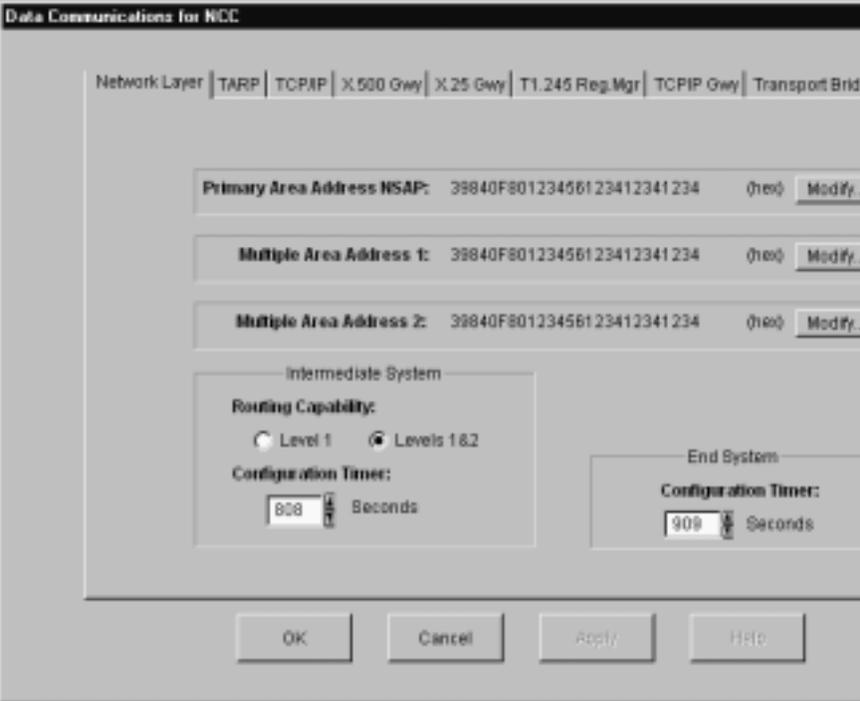
## Task Instructions

**Task** Complete the following steps to Configure the NSAP for an NCC.

| Step                          | Action  |
|-------------------------------|---|
| 1                             | If not already connected, connect to the NCC which you wish to configure the NSAP.<br>See T 101, Logging in to an NCC from the WaveStar CIT   |
| 2                             | Select <b>Administration -&gt; Data Communications</b> from the NCC NE View Menu.<br><br><br>The DCC Communications window appears. |
| 3                             | Select the "Network Layer" tab.<br><br><br>The Network Layer screen appears.  |
| <i>Continued on next page</i> |   |

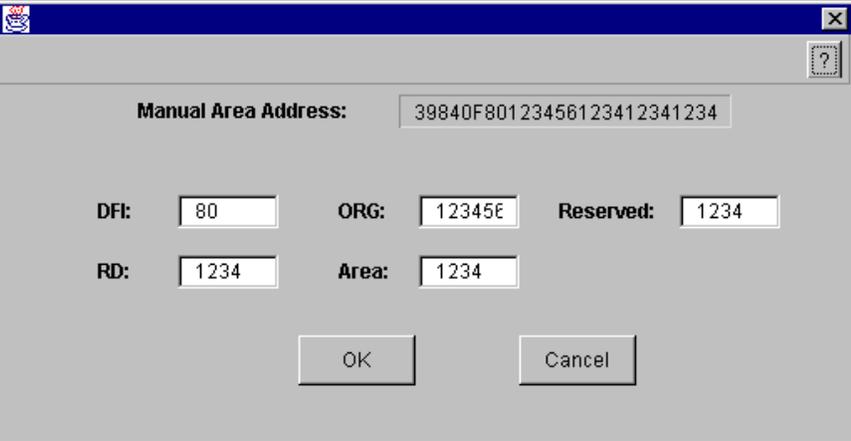
## Task Instructions, *continued*

### Task, *continued*

| Step | Action  |
|------|---|
| 4    | <p><b>Network Layer Tab</b></p>  |
|      | <p>Click on the “Modify” button for the NSAP you wish to change.</p> <p>The Modify NSAP screen appears.</p>         |
|      | <p style="text-align: right;"><i>Continued on next page</i></p>   |

## Task Instructions, *continued*

### Task, *continued*

| Step | Action  |
|------|---|
| 5    | <p><b>Modify NSAP Screen</b></p>  <p>From your work order, enter the information for each field on the screen for the new NSAP and click the OK button.</p> <p>A Confirmation Dialog Box appears.</p> |
| 6    | <p>Click on the OK button in the Confirmation Dialog Box.</p> <p>You return to the Network Layer Tab.</p>   |
| 7    | <p>Click on the OK button on the Network Layer Tab.</p> <p>A Confirmation Dialog Box appears.</p>   |
| 8    | <p>Click on the OK button in the Confirmation Dialog Box.</p>   |
| 9    | <p>The NSAP has been configured for this NCC.</p> <p style="text-align: center;"><b>Stop! You Have Completed This Procedure!</b></p>  |

---

**Configure TARP Manual Adjacencies  
for an NCC**

# 116

---

## **Background**

---

**When to use**

Use this procedure to configure TARP Manual Adjacencies for an NCC Operations Controller.

---

**Required  
Equipment**

WaveStar Craft Interface Terminal (CIT).

---

## Task Instructions

**Task** Complete the following steps to configure TARP Manual Adjacencies for an NCC.

| Step | Action  |               |
|------|---|---------------|
| 1    | If not already connected, connect to the NCC Operations Controller which you wish to configure TARP Manual Adjacencies. See T 101, Logging in to an NCC from the WaveStar CIT   |               |
| 2    | Select <b>Administration -&gt; Data Communications</b> from the NCC NE View Menu.<br><br>The Data Communications window appears.  |               |
| 3    | Select the "TARP Manual Adjacencies" tab.<br><br>The Tarp Manual Adjacencies screen appears.  |               |
| 4    | If...   | Then...       |
|      | you wish to <b>ADD</b> a new Manual Adjacency   | go to Step 5  |
|      | you wish to <b>MODIFY</b> an existing Manual Adjacency  | go to Step 8  |
|      | you wish to <b>Delete</b> an existing Manual Adjacency  | go to Step 13 |
| 5    |  <b>NOTE:</b><br>Only 2 Manual Adjacencies are supported. If 2 Manual Adjacencies already exist, one must first be removed before adding a new Manual Adjacency.<br><br>Enter the NSAP of the new Manual Adjacency in the "New Manual Adjacency" field and click the ADD button on the bottom of the Tarp Manual Adjacencies screen.<br><br>A Confirmation Dialog Box appears. |               |
| 6    | Click OK in the Confirmation Dialog Box.  |               |
| 7    | The New Manual Adjacency has been added.<br><b>Stop! You Have Completed This Procedure!</b>   |               |

(Continued on next page)

**Task, continued****Task, continued**

| <b>Step</b> | <b>Action</b>   |
|-------------|---|
| 8           | <p>Select the Manual Adjacency you want to modify by clicking on the entry in the Manual Adjacency List.</p> <p>The Manual Adjacency you selected is highlighted.</p> |
| 9           | <p>Click the MODIFY button on the bottom of the TARP Manual Adjacencies screen.</p> <p>A windows appears showing the NSAP of the Manual Adjacency</p>                 |
| 10          | <p>Modify the NSAP according to your work order and click OK.</p> <p>A Confirmation Dialog Box appears.</p>   |
| 11          | <p>Click OK in the Confirmation Dialog Box.</p>   |
| 12          | <p>The Manual Adjacency you selected is modified.</p> <p><b>Stop! You Have Completed This Procedure!</b></p>  |
| 13          | <p>Select the Manual Adjacency you want to delete by clicking on the entry in the Manual Adjacency List.</p> <p>The Manual Adjacency you selected is highlighted.</p> |
| 14          | <p>Click the DELETE button on the bottom of the TARP Manual Adjacencies screen.</p> <p>A Confirmation Dialog Box appears.</p>   |
| 15          | <p>Click OK in the Confirmation Dialog Box.</p>   |
| 16          | <p>The Manual Adjacency you selected is deleted.</p> <p><b>Stop! You Have Completed This Procedure!</b></p>   |



---

**Background**

---

**When to use**

Use this procedure to enable TARP functions for an NCC.

---

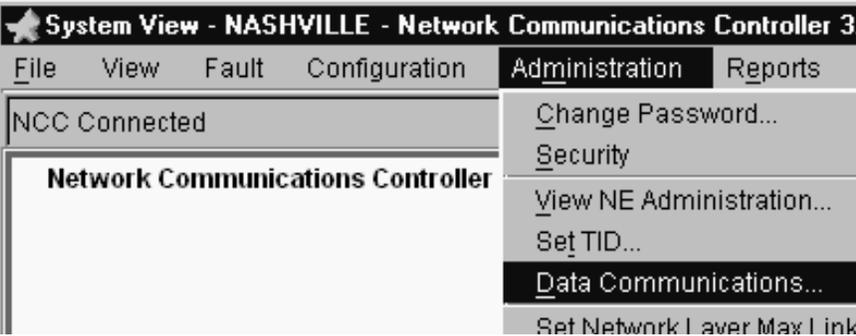
**Required  
Equipment**

WaveStar Craft Interface Terminal (CIT).

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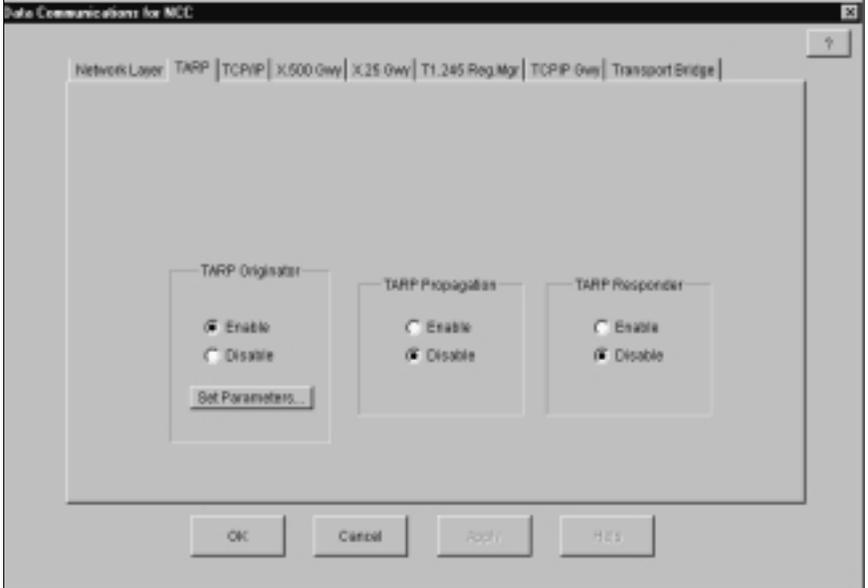
## Task Instructions

**Task** Complete the following steps to provision TARP Properties for an NCC.

| Step                          | Action   |
|-------------------------------|--|
| 1                             | If not already connected, connect to the NCC Operations Controller which you wish to set the TARP parameters.<br>See T 101, Logging in to an NCC from the WaveStar CIT   |
| 2                             | Select <b>Administration -&gt; Data Communications</b> from the NCC NE View Menu.<br><br> <p>The Data Communications window appears.</p> |
| 3                             | Select the "TARP" tab.<br><br> <p>The TARP Provisioning Screen appears.</p>  |
| <i>Continued on next page</i> |  |

## Task Instructions, *continued*

### Task, *continued*

| Step                                 | Action  |
|--------------------------------------|---|
| 4                                    | <p><b>TARP Parameters Tab</b></p>  <p>From your work order, select "Enable" or "Disable" for TARP Propagation Function by clicking in the corresponding check box.</p> <p>A check appears in the box you selected.</p> |
| <p><i>Continued on next page</i></p> |   |

---

**Task Instructions, *continued***

---

**Task, *continued***

| <b>Step</b> | <b>Action</b>   |
|-------------|---|
| 5           | From to your work order, select "Enable" or "Disable" for TARP Responder Function by clicking in the corresponding check box.<br><br>A check appears in the box you selected. |
| 6           | Click OK in the TARP Provisioning Screen.<br><br>A Confirmation Dialog Box appears.   |
| 7           | Click OK in the Confirmation Dialog Box.  |
| 8           | The TARP Properties have been provisioned for this NCC.<br><b>Stop! You Have Completed This Procedure!</b>  |

---

---

## Reset another NCC

# 118

---

### **Background**

---

**When to use**

Use this procedure to reset an NCC that you are unable to connect to (Resetting another NCC).

---

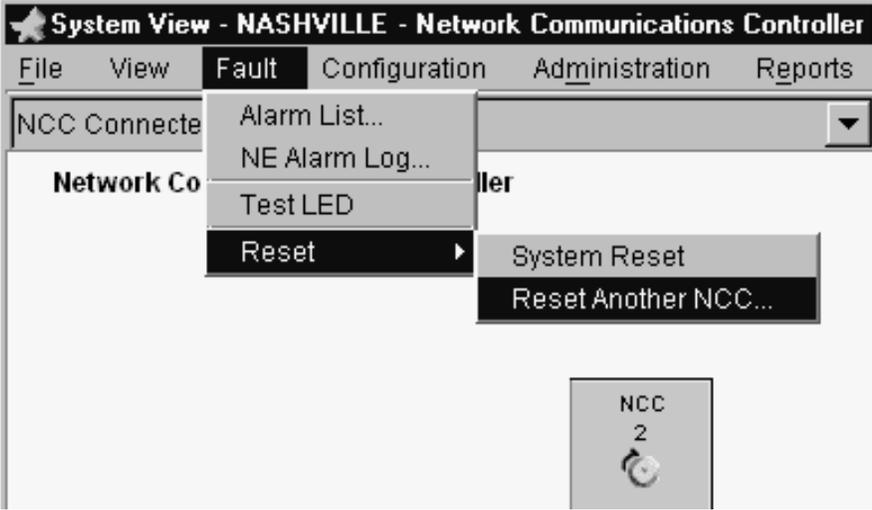
**Required  
Equipment**

WaveStar Craft Interface Terminal (CIT).

---

## Task Instructions

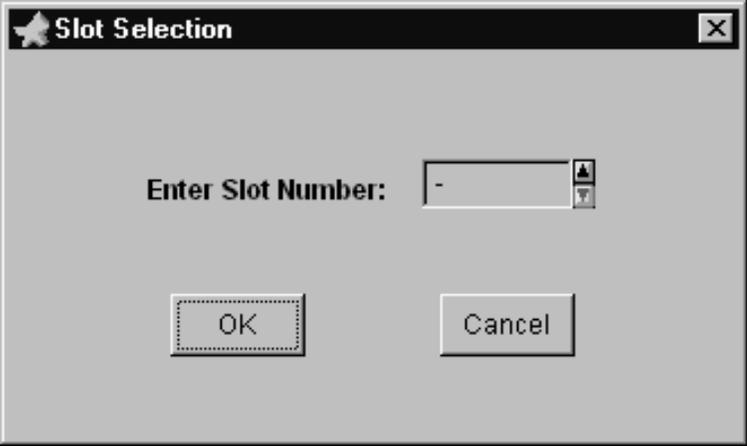
**Task** Complete the following steps to reset an NCC Operations Controller.

| Step   | Action  | Action |
|--|---|--------|
| 1  | If not already connected, connect to an NCC Operations Controller which in slot 1 or 2 of the shelf where the NCC Operations Controller that is not responding is located.<br>See T 101, Logging in to an NCC from the WaveStar CIT   |        |
| 2  | Select <b>Fault -&gt; Reset -&gt; Reset Another NCC</b> from the NCC NE View Menu.<br><br> <p>The screenshot shows a software interface titled "System View - NASHVILLE - Network Communications Controller". The menu bar includes File, View, Fault, Configuration, Administration, and Reports. The "Fault" menu is open, showing options: Alarm List..., NE Alarm Log..., Test LED, and Reset. The "Reset" option is selected, opening a sub-menu with "System Reset" and "Reset Another NCC...". Below the menu, a button labeled "NCC 2" with a refresh icon is visible.</p> |        |
| <p>S Selection Dialog Box Appears.</p> <p style="text-align: right;"><i>Continued on next page</i></p> |   |        |

(Continued on next page)

## **Task Instructions, *continued***

### **Task, *continued***

|   |   |
|---|---|
| 3 | Click OK in the Confirmation Dialog Box.  |
| 4 | Select the number of the NCC that you want to reset and click the <b>OK</b> button.<br><br> |
|   | A Confirmation Dialog Box appears.  |
| 5 | Click <b>OK</b> in the confirmation dialog box.   |
| 6 | The NCC you selected Resets.<br><b>Stop! You Have Completed This Procedure!</b>   |



---

**Manually Add an Entry into the SDS  
database**

# 119

---

**Background**

---

**When to use**

Use this procedure to manually add a new entry into the SDS database.

---

**Required  
Equipment**

WaveStar Craft Interface Terminal (CIT).

---

## Task Instructions

**Task** Complete the following steps to manually add a new entry into the SDS database.

| Step                          | Action   | Action         |
|-------------------------------|--|----------------|
| 1                             | From the WaveStar CIT, select <b>Administration -&gt; SDS Administration</b><br><br>A Directory Tree for the SDS Database appears in a two panel frame. The left panel shows the SDS database tree.  |                |
| 2                             | <b>If...</b>   | <b>Then...</b> |
| 3                             | You are only adding a new NE entry into the database and the rest of the folders exists  | Go to Step 12  |
| 4                             | You need to add a new Org. Unit 2 entry for the NE you are adding and the rest of the folders exist  | Go to Step 11  |
| 5                             | You need to add a new Org. Unit 1 entry for the NE you are adding and the rest of the folders exist  | Go to Step 10  |
| 6                             | You need to add a new Organization entry for the new NE and the rest of the folders exist  | Go to Step 9   |
| 7                             | You need to add a new Country for the NE   | Go to Step 8   |
| 8                             | Select the "Root" folder at the top of the Directory tree and click the <b>Add</b> button in the left hand frame.<br><br>A dialog appears prompting you to enter a 2 character string for the new "Country" entry.<br><br>Enter the two character code for the "Country" for which you wish to add the new NE entry. Go to Step 13 |                |
| <i>Continued on next page</i> |  |                |

**Task Instructions, *continued*****Task, *continued***

|                               |  |
|-------------------------------|--|
| 9                             | <p>Select the Country folder that you want to add a new Organization entry in and click the <b>Add</b> button in the left hand frame. Enter the two character code for the "Country" for which you wish to add the new NE entry. The Country folder is indented 1 levels from the root folder.</p> <p>A dialog appears prompting you to enter the organization name. The fields above the Organization name should already be filled in, based on the folder you selected to create the new entry in.</p> <p>Enter the Organization name in the text area. Go to Step 13</p>   |
| 10                            | <p>Select the Organization folder that you want to add a new Organizational Unit 1 entry in and click the <b>Add</b> button in the left hand frame. You can expand the SDS tree by clicking on the <b>[+]</b> signs next to each folder. The Organization folder is indented 2 levels from the root folder.</p> <p>A dialog appears prompting you to enter the Organizational Unit 1 name. The fields above the Organization Unit 1 name should already be filled in, based on the folder you selected to create the new entry in.</p> <p>Enter the Organizational Unit 1 name in the text area. Go to Step 13</p>         |
| 11                            | <p>Select the Organizational Unit 1 folder that you want to add a new Organizational Unit 2 entry in and click the <b>Add</b> button in the left hand frame. You can expand the SDS tree by clicking on the <b>[+]</b> signs next to each folder. The Org. Unit 1 folder is indented 3 levels from the root folder.</p> <p>A dialog appears prompting you to enter the Organizational Unit 2 name. The fields above the Organization Unit 2 name should already be filled in, based on the folder you selected to create the new entry in.</p> <p>Enter the Organizational Unit 2 name in the text area. Go to Step 14</p> |
| <i>Continued on next page</i> |  |

## **Task Instructions, *continued***

---

### **Task, *continued***

|    |   |
|----|---|
| 12 | <p>Select the Organizational Unit 2 folder that you want to add a new NE entry in and click the <b>Add</b> button in the left hand frame. You can expand the SDS tree by clicking on the <b>[+]</b> signs next to each folder. The Org. Unit 2 folder is indented 4 levels from the root folder.</p> <p>Go to step 14</p>                         |
| 13 | <p>If you have created a new <b>Country, Organization, or Org. Unit 1</b> you also need to create subfolders folders in this branch of the SDS tree.</p> <p>Continue filling in the information in the form from the top down until you come to the TID entry. Go to step 14</p>  |
| 14 | <p>Enter the TID name for the NE you are adding to the database in the TID field. From work orders, enter the following values in the form:</p> <ul style="list-style-type: none"><li>■ NSAP 1 (required)</li><li>■ NSAP 2</li><li>■ Vendor Name (required)</li><li>■ Locality</li><li>■ NE Type (required, select from drop-down list)</li></ul> |
| 15 | <p>Verify that all of the information on the form is correct and click the <b>OK</b> button.</p>  |
| 16 | <p><b>Stop! End of Task.</b></p>  |

---

---

**Manually Delete an Entry from the  
SDS database**

# 120

---

## **Background**

---

**When to use**

Use this procedure to manually delete an entry from the SDS database.

---

**Required  
Equipment**

WaveStar Craft Interface Terminal (CIT).

---

## Task Instructions

**Task** Complete the following steps to manually delete an entry from the SDS database.

| Step                      | Action   | Action |
|---------------------------|--|--------|
| 1                         | From the WaveStar CIT, select <b>Administration -&gt; SDS Administration</b>   |        |
|                           | A Directory Tree for the SDS Database appears in a two panel frame. The left panel shows the SDS database tree.  |        |
|                           | You can expand the SDS tree by clicking on the <b>[+]</b> signs next to each folder.   |        |
| 2                         |  <b>NOTE:</b><br>You cannot delete a "folder" from the SDS database tree unless all contents of the folder have been deleted first. |        |
|                           | Select the entry you wish to delete by expanding the tree and highlighting the entry you wish to delete.   |        |
| 3                         | Click the <b>Remove</b> button at the bottom left hand corner of the screen.   |        |
|                           | A Confirmation Dialog Box appears.   |        |
| 4                         | Click <b>OK</b> in the confirmation dialog box.  |        |
|                           | The entry has been deleted.  |        |
| <b>Stop! End of Task.</b> |  |        |

---

## Downloading Software from the WaveStar CIT to the NCC

# 121

---

### Background

---

#### When to use

Use this procedure to manually download software from the WaveStar CIT to the NCC.



#### NOTE:

You must have the WaveStar NCC Product Release CD running in your CD-ROM drive in order to do this task successfully.

---

#### Required Equipment

- WaveStar NCC Product Release CD
  - WaveStar Craft Interface Terminal (WaveStar CIT)
-

## Task Prerequisites

---

### Introduction

Before you download software onto the NCC, you will need to copy the software from the NCC Product Release CD onto your PC. This section will show you how to copy the NE Software from the NCC Product Release CD onto your PC.

---

### Product Release CD

Insert your WaveStar product release CD. The following screen appears. Click on the continue prompt at the lower right corner of the screen.



## **Task Prerequisites, *continued***

The following screen appears. Select the NE Software menu option. (Click Exit at the lower right corner of the screen if you wish to exit the download application, or select another menu option).



---

## **Task Prerequisites, *continued***

---

**Task, *continued***

The following screen appears. Click on the box on the right half of the screen that contains the text 'NE Software' to copy the NE Software onto the PC.



After you copy the software into your PC, click on Exit. Remove your CD and store the CD away in an appropriate place. Once you have exited from the WaveStar CIT CD Browser, you may download the software from the WaveStar CIT to the NCC.

## **Task Instructions**

---

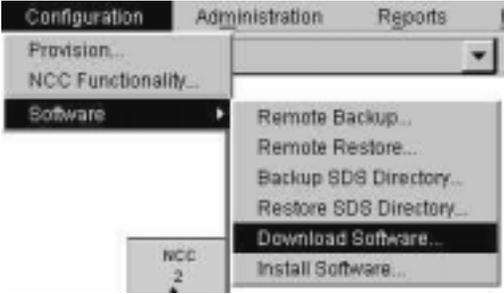
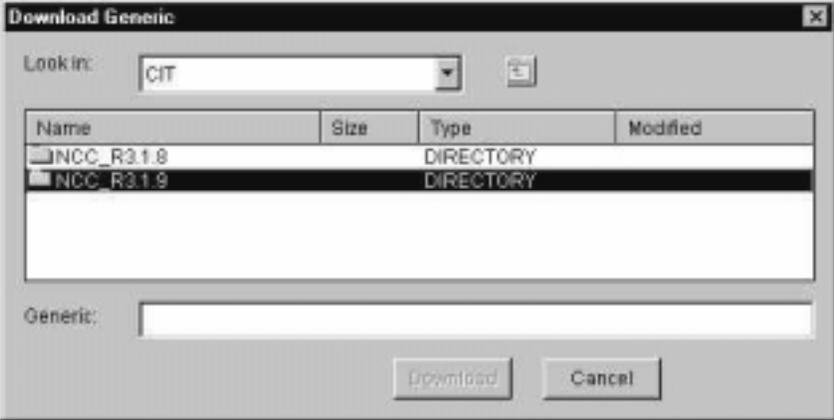
### **Before You Begin**

Before you begin this task you need to:

- Review the appropriate Software Release Description for details on any procedures or cautions that may apply to the software generic running on your system.
  - Make sure the WaveStar CIT is connected and logged in to the appropriate NCC.
  - Make sure that the NCC software has been copied from the NCC Product Release CD into your PC.
-

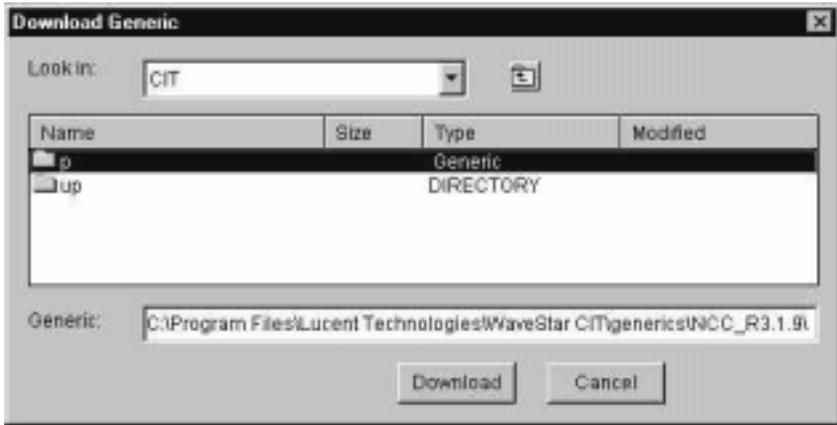
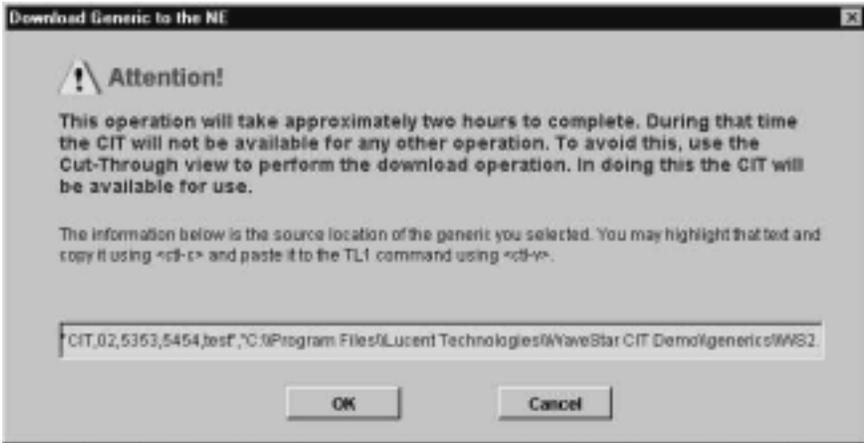
## Task Instructions, *continued*

**Task** Complete the following steps to download software from a local file area to an NCC.

| Step                          | Action  |
|-------------------------------|---|
| 1                             | <p>At the WaveStar CIT, select:<br/><b>Configuration&gt;Software&gt;Download Software.</b></p>  <p>The Download Generic Screen appears. The Download Generic Screen shows you what generics are loaded onto your PC.</p>  |
| <i>Continued on next page</i> |   |

## Task Instructions, *continued*

### Task, *continued*

| Step                                 | Action  |
|--------------------------------------|---|
| 2                                    | <p>Click on the version of the generic you want to download.</p> <p>The Download Generic will now display the packed and unpacked files on your PC. The packed and unpacked files are labeled as "p" and "up" respectively.</p>  |
| 3                                    | <p>Click on <b>Download</b>.</p> <p>A Download Generic dialog box appears.</p>    |
| <p><i>Continued on next page</i></p> |   |

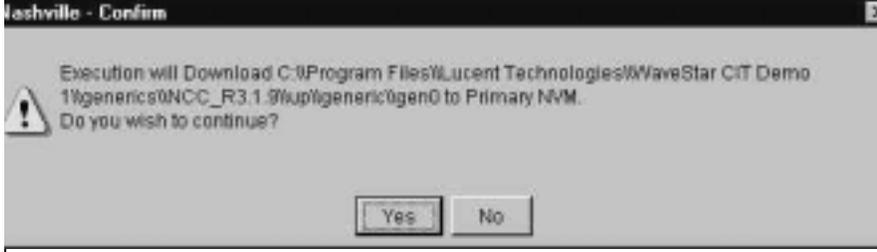
## **Task Instructions, *continued***

### **Task, *continued***

| <b>Step</b>                   | <b>Action</b>  |
|-------------------------------|--|
|                               | <p>The Download Generic dialog box warns you that the WaveStar CIT will be temporarily unavailable for further operations until the software download is complete unless you choose to download the software through the Cut-Through window.</p> <p>The Download Generic dialog box also displays the source location of the software generic, and allows you to highlight, copy, and paste elements of the software generic source location into the appropriate TL1 commands.</p> <p> <b>NOTE:</b><br/>While the Download Generic dialog box will tell you that your software download will take two hours to complete, usually, the NCC software will only take 3 to 4 minutes to download successfully.</p> |
| <i>Continued on next page</i> |  |

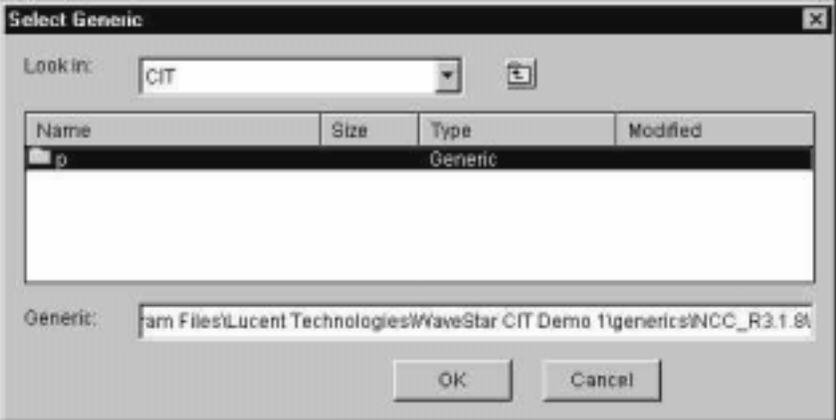
## **Task Prerequisites, *continued***

### **Task, *continued***

| <b>Step</b>                   | <b>Action</b>   |
|-------------------------------|---|
| 4                             | <p>Click <b>OK</b> if you wish to continue.</p> <p>A confirmation dialog box will appear, which will tell you what generic is being downloaded to the NCC, and ask you if you wish to continue.</p>   |
| 5                             | <p>Click <b>Yes</b> in the confirmation dialog box.</p> <p>An In Progress Screen will appear. The In Progress Screen will disappear once the software download is complete.</p> <p><b>⇒ NOTE:</b><br/>Heavy network traffic may prevent you from completing your download successfully. Should you have any problems downloading your software, repeat Steps 1 through 4.</p> |
| <i>Continued on next page</i> |   |

## Task Prerequisites, *continued*

### Task, *continued*

|                                  |   |
|----------------------------------|---|
| 6                                | <p>Select <b>View&gt;Software Generic</b> when the software download is complete.</p>  <p>The Select Generic Screen appears.</p>   |
| 7                                | <p>In the <b>Look In:</b> field, highlight the name of the NCC you just downloaded the software onto and click on <b>OK</b>.</p> <p>The Generic Info Screen appears. The Generic Info Screen will show you the current, secondary, and previous software on the NCC. “Current” software is the software currently running on your NCC. The “Secondary” software is the software you have on your PCMCIA card (SAN Disk), and the “Previous” software is the software you just downloaded onto your NCC.</p> |
| 8                                | <p>Look in the “Previous” software field in the Generic Info Screen to make sure that the description of the software you downloaded onto the NCC is correct, and click on <b>Close</b> to close the Generic Info screen.</p>   |
| <p><b>Stop! End of Task.</b></p> |   |

**Background**

---

**When to use**

Use this procedure to install software onto an NCC.

---

**Required  
Equipment**

WaveStar Craft Interface Terminal (WaveStar CIT)

---

## Task Instructions

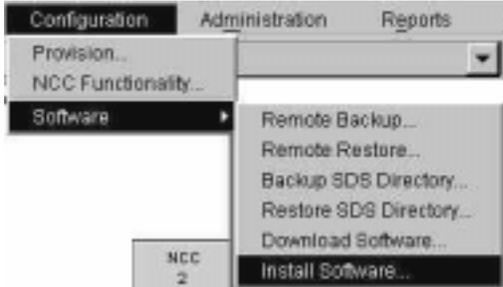
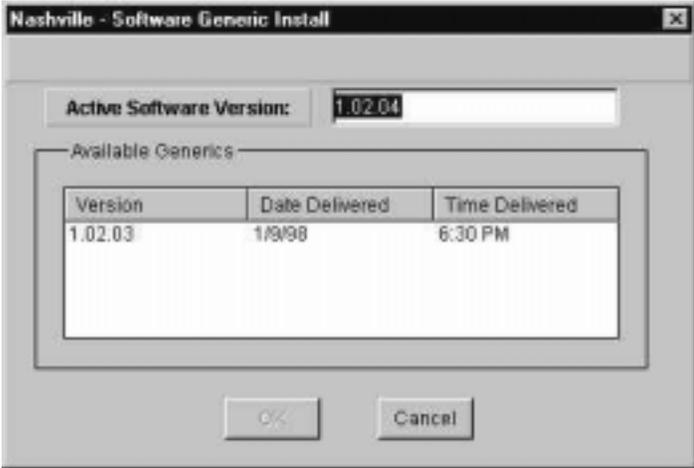
### Before you begin

Before you begin this task you need to:

- Review the appropriate Software Release Description for details on any procedures or caution that may apply to the software generic running on your system.
- Make sure that the WaveStar CIT is connected and logged in to the appropriate NCC.
- Look under **View>Software Generic** to make sure that the software displayed in the "Previous" field of the Generic Info Screen is the same as the software you want to install.

### Task

Complete the following steps to install software onto an NCC.

| Step                          | Action  |
|-------------------------------|---|
| 1                             | <p>At the WaveStar CIT, select: <b>Configuration&gt;Software&gt;Install</b>.</p>  <p>The Software Generic Install screen appears.</p>  |
| <i>Continued on next page</i> |   |

## Task Instructions, *continued*

### Task, *continued*

| Step                          | Action  |
|-------------------------------|---|
| 2                             | <p>Select the available generic you want to install and click <b>OK</b>.</p> <p>A confirmation dialog box will appear, which will tell you that installing software may cause a service interruption, and ask you if you still wish to continue with the installation procedure.</p>    |
| 3                             | <p>Click <b>Yes</b>.</p> <p>Another dialog box will appear, which will warn you that installing software will disconnect the PC-CIT from the network element, and ask you if you still wish to continue.</p>  <p><b>⇒ NOTE:</b><br/>To install your software successfully, you will need to click <b>Yes</b> in this dialog box to agree to execute the INSTALL command. The NCC will reset when you click <b>Yes</b> in this dialog box.</p> |
| 4                             | <p>Click <b>Yes</b> in the dialog box. The NCC will now disconnect from the NE and reset.</p>   |
| <i>Continued on next page</i> |   |

## Task Instructions, *continued*

### Task, *continued*

| Step                          | Action   |
|-------------------------------|--|
| 5                             | Log back in to the NCC. You will have to wait roughly two minutes before you can regain access to your NCC.  |
| 6                             | <p>Check the Release Number shown in the title bar of the System View Screen. Make sure the Release Number in the System View title bar is the same as that of generic you downloaded.</p> <p><b>⇒ NOTE:</b><br/>Steps 7 through 10 show you an alternate way of verifying that your software was installed successfully onto your NCC.</p>  |
| 7                             | <p>Select <b>view&gt;Software Generic</b> to verify that the installation was successful.</p> <div data-bbox="873 884 1117 1020" style="text-align: center;"> <p>A screenshot of a menu with the following items: View, Fault, Co, Equipment Details..., Software Generic... (highlighted), and NE Data..</p> </div> <p>The Select Generic Screen appears.</p> <div data-bbox="574 1121 1414 1545" style="text-align: center;"> <p>A screenshot of a dialog box titled 'Select Generic'. It has a 'Look in:' dropdown menu showing 'CASTLNCC8'. Below it is a table with columns 'Name', 'Size', 'Type', and 'Modified'. At the bottom, there is a 'Generic:' text field and 'OK' and 'Cancel' buttons.</p> </div> |
| <i>Continued on next page</i> |  |

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**Task Instructions, *continued***

---

**Task, *continued***

| <b>Step</b>               | <b>Action</b>  |
|---------------------------|--|
| 8                         | Highlight the name of your NCC in the <b>Look In:</b> field and click <b>OK</b> .<br>The Generic Info Screen appears.  |
| 9                         | Verify that your software was installed successfully by making sure that software displayed in the "Current" field of the Generic Info Screen is the same as the software you installed. |
| 10                        | Click <b>Close</b> to close the Generic Info Screen  |
| <b>Stop! End of Task.</b> |  |

---



---

## Manually Backing Up a Database to the WaveStar CIT

# 123

---

### **Background**

---

#### **When to use**

Use this procedure to manually backup the NCC database (current provisioned data) to the WaveStar CIT:

- before/after major provisioning data changes
  - periodically according to local policy
- 

#### **Required equipment**

- WaveStar Craft Interface Terminal (WaveStar CIT)
- 

(Continued on next page)

## Instructions

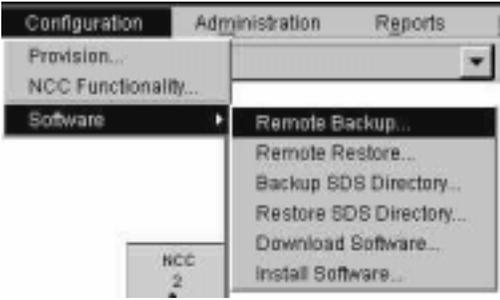
### Before you begin

Before you begin this task:

- Verify that a WaveStar CIT is connected and logged in to the NCC.

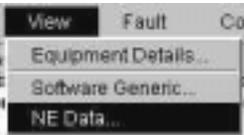
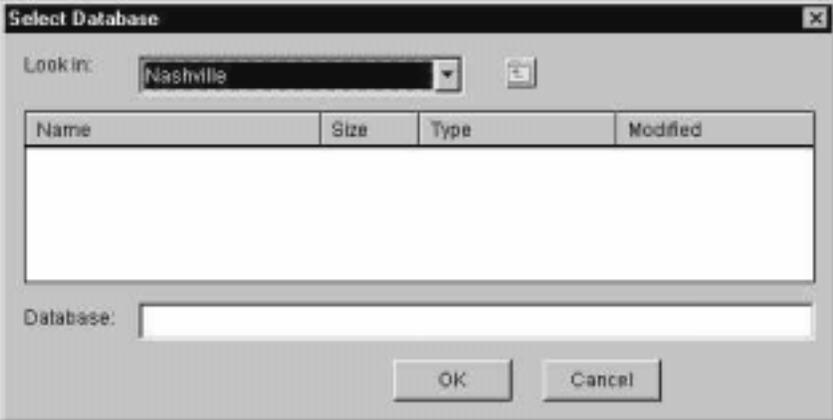
### Task

Complete the following steps to manually backup the NCC database to the WaveStar CIT.

| Step                                 | Action  |
|--------------------------------------|---|
| 1                                    | <p>At the WaveStar CIT, select:<br/>Configuration&gt;Software&gt;Remote Backup</p>  <p>A dialog box appears showing that the PRI database will back up to <b>C:\Program Files\Lucent Technologies\WaveStar CIT\backups\TID\DATE&amp;TIME</b> and asks if you wish to continue.</p> |
| 2                                    | <p>Record the path/destination of the backup folder/files and click on <b>Yes</b>.</p> <p>The NE Data Backup In Progress Screen appears. The In Progress Screen will disappear once the database backup is complete.</p>  |
| <p><i>Continued on next page</i></p> |   |

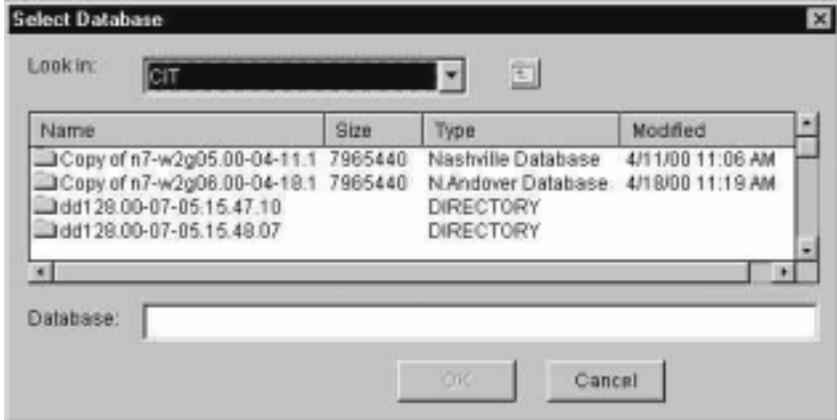
**Instructions, *continued***

**Task, *continued***

| Step                          | Action   |
|-------------------------------|--|
| 3                             | <p>Select <b>View&gt;NE Data</b> when the In Progress Screen disappears to make sure that the backup was completed successfully.</p>  <p>The Select Database screen will appear.</p>  |
| <i>Continued on next page</i> |  |

**Instructions, continued**

**Task, continued**

| Step                             | Action   |
|----------------------------------|--|
| 4                                | <p>Highlight <b>CIT</b> in the <b>Look In:</b> field if you have not done so already.</p> <p>The Select Database Screen for the CIT will display a list of the directories and databases currently on the CIT.</p>  |
| 5                                | <p>Double-click on the latest (modified) folder and click on <b>OK</b>.</p> <p>The Database Info Screen will appear.</p>   |
| 6                                | <p>Make sure that the Last Backup Time and Last Backup Destination parameters are correct.</p>   |
| 7                                | <p>Click on <b>Close</b> to close the Database Info Screen.</p>  |
| <p><b>Stop! End of Task.</b></p> |  |

---

## Manually Restoring a Database from the WaveStar CIT

# 124

---

### Background

---

**When to use**

Use this procedure to manually restore the NCC database (copied provisioning data) from the WaveStar CIT to primary memory after a known or suspected database corruption.

---

**Required  
equipment**

WaveStar Craft Interface Terminal (WaveStar CIT)

---

## Instructions

### Before you begin

Before you begin this task:

- Verify that a WaveStar CIT is connected and logged in to the NCC.

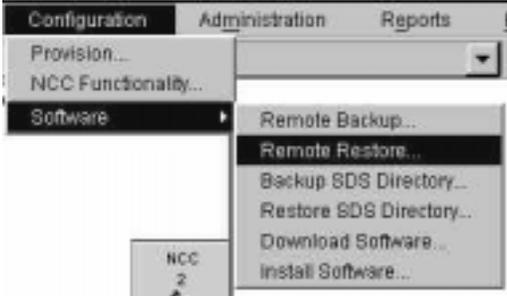


**NOTE:**

Depending on the number of database changes that have occurred since the last database backup, manually applying recent changes after a restore can be a time-consuming process. Make absolutely sure that a restore is necessary before performing this task.

### Task

Complete the following steps to manually restore the NCC database, which contains copied provisioning data on the WaveStar CIT, from the WaveStar CIT to primary memory.

| Step                          | Action   |
|-------------------------------|--|
| 1                             | <p>At the WaveStar CIT, select:<br/><b>Configuration&gt;Software&gt;Remote Restore.</b></p>  <p>The Restore Database screen appears.</p> |
| <i>Continued on next page</i> |  |

**Instructions, *continued*****Task, *continued***

| <b>Step</b>               | <b>Action</b>   |
|---------------------------|---|
| 2                         | <p>Highlight <b>CIT</b> in the <b>Look In:</b> field.</p> <p>After you select the database you want to restore, a confirmation dialog box will appear, telling you that executing a restore will cause a system reset, and asking you if you want to continue.</p>  |
| 3                         | <p>Click on <b>Yes</b> in the confirmation dialog box.</p> <p>Another confirmation dialog box will then appear, telling you that the NCC is copying the database onto primary non-volatile memory (NVM), and asking you if you wish to continue.</p>  |
| 4                         | <p>Click on <b>Yes</b> in the confirmation dialog box.</p> <p> <b>NOTE:</b><br/>The NCC will reset after you perform this step (Step 4). The NCC will take approximately 2 minutes to reset. You will not be able to perform steps 5 through 7 until after you log back on to the NCC.</p> |
| 5                         | <p>Log back on to the NCC to make sure that any provisioning data related problems you had with the NCC prior to the database restore are no longer evident.</p>  |
| <b>Stop! End of Task.</b> |   |



---

**Manually Backing Up the SDS  
Directory to the WaveStar CIT**

# 125

---

## **Background**

---

**When to use**

Use this procedure to manually backup the SDS Directory to the WaveStar CIT.

---

**Required  
Equipment**

WaveStar Craft Interface Terminal (WaveStar CIT)

---

## Task Instructions

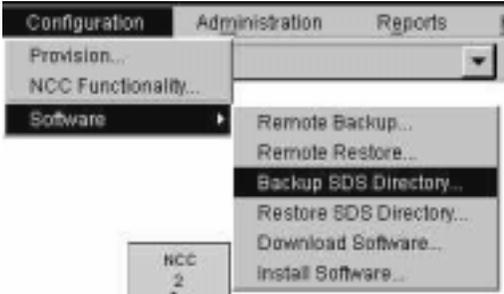
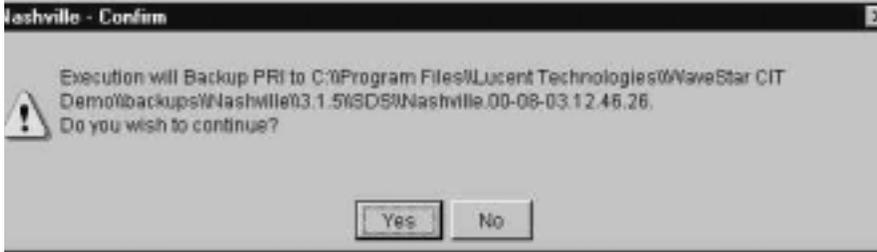
### Before you begin

Before you begin this task:

- Make sure that the WaveStar CIT is connected and logged in to the appropriate NCC.
- You only need to backup the SDS Database if you have the DSA enabled.

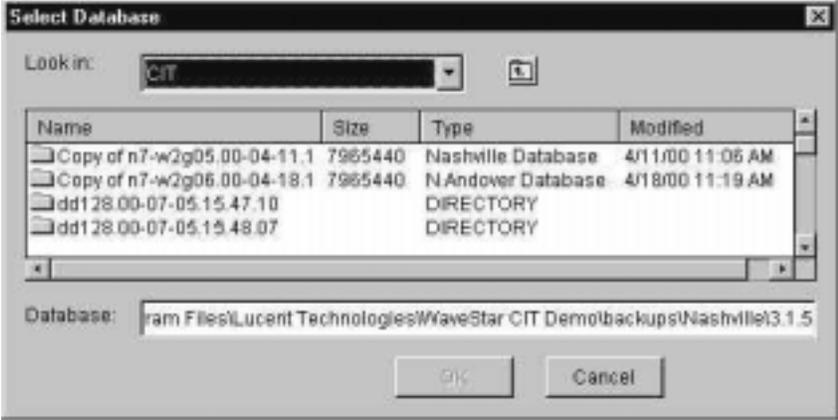
### Task

Complete the following steps to manually backup the SDS Directory to the WaveStar CIT.

| Step                                 | Action   |
|--------------------------------------|--|
| 1                                    | <p>At the WaveStar CIT, select <b>Configuration&gt;Software&gt;Backup SDS Directory</b>.</p>  <p>A confirmation dialog box will appear, telling you the destination of the SDS Directory Backup, and asking you if you wish to continue.</p>  |
| 2                                    | <p>Click <b>Yes</b> in the confirmation dialog box.</p> <p>An In Progress Screen will appear. The In Progress Screen will disappear once the SDS Directory Backup is complete.</p>   |
| <p><i>Continued on next page</i></p> |  |

## Task Instructions, *continued*

### Task, *continued*

| Step                          | Action  |
|-------------------------------|---|
| 3                             | <p>Select <b>View&gt;NE Data</b> to make sure that the SDS Directory Backup was completed successfully.</p>  <p>The Select Database Screen appears.</p>  |
| 4                             | Expand the <b>Look In:</b> field and click on <b>CIT</b> to display the listing of Directories, if you haven't done so already.   |
| 5                             | <p>Double-click on the name of your NCC.</p> <p>The Select Database Screen will take you to the directory of your NCC.</p>  |
| 6                             | <p>Click on the appropriate software release for the NCC you selected.</p> <p>The Select Database Screen will display a listing of the directories on the NCC.</p>  |
| 7                             | <p>Double-click on the directory named 'SDS.'</p> <p>The Select Database screen will take you inside the folder containing the directory you backed up.</p>   |
| <i>Continued on next page</i> |   |

---

## **Task Instructions, *continued***

---

### **Task, *continued***

| <b>Step</b>               | <b>Action</b>  |
|---------------------------|--|
| 8                         | Double-click on the directory you backed up and click <b>OK</b> .<br><br>The Database Info Screen will appear. |
| 9                         | Verify that the Last Backup Time and Last Backup Destination parameters are correct.                           |
| 10                        | Click <b>Close</b> to close the Database Info Screen.  |
| <b>Stop! End of Task.</b> |  |

---

---

**Manually Restoring the SDS  
Directory from the WaveStar CIT**

# 126

---

## **Background**

---

**When to use**

Use this procedure to manually restore the SDS Directory from the WaveStar CIT to primary memory after a known or suspected database corruption.

---

**Required  
equipment**

WaveStar Craft Interface Terminal (WaveStar CIT)

---

## Instructions

---

### Before you begin

Before you begin this task:

- Verify that a WaveStar CIT is connected and logged in to the NCC.



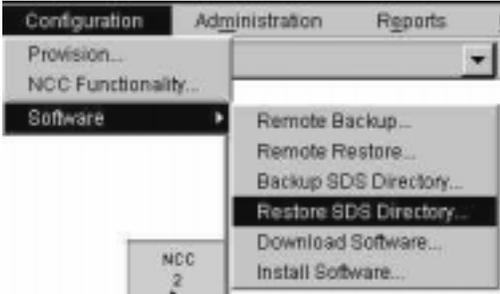
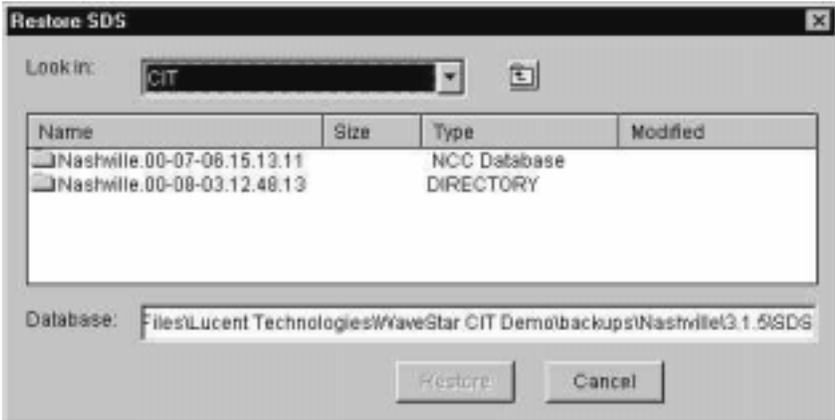
**NOTE:**

Depending on the number of changes that have occurred since the last SDS Directory backup, manually applying recent changes after a restore can be a time-consuming process. Make absolutely sure that a restore is necessary before performing this task.

---

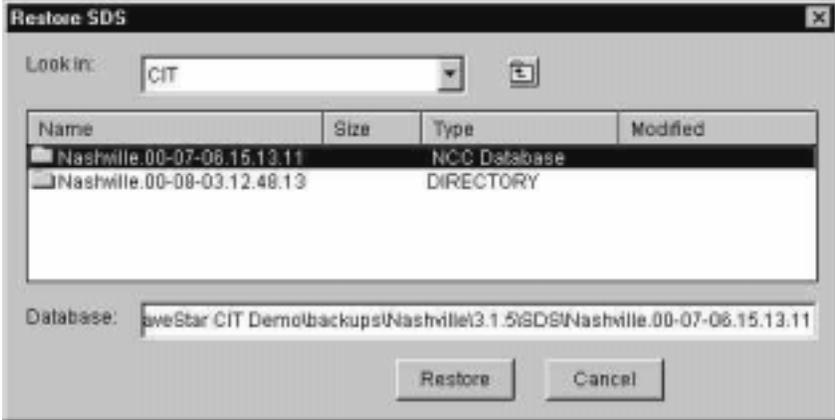
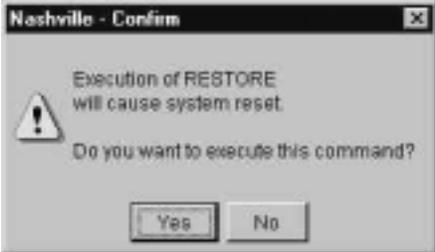
## Instructions, *continued*

**Task** Complete the following steps to manually restore the SDS Directory from the WaveStar CIT to the NCC.

| Step                          | Action  |
|-------------------------------|---|
| 1                             | <p>At the WaveStar CIT, select:<br/><b>Configuration&gt;Software&gt;Restore SDS Directory.</b></p>  <p>The Restore SDS screen appears.</p>  |
| <i>Continued on next page</i> |   |

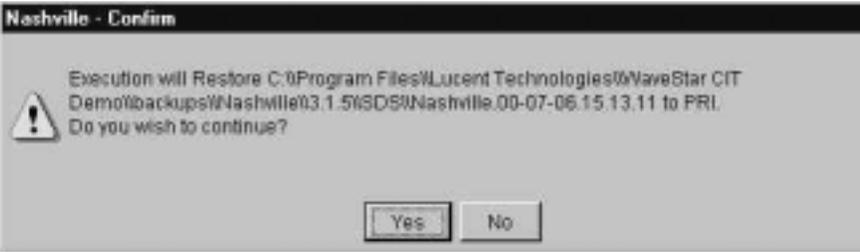
## Instructions, *continued*

### Task, *continued*

| Step                          | Action  |
|-------------------------------|---|
| 2                             | <p>Double-click on the SDS database you want to restore, and then click on <b>Restore</b>.</p>  <p>After you select the SDS database you want to restore, a confirmation dialog box will appear, telling you that executing a restore will cause a system reset, and asking you if you want to continue.</p>  |
| <i>Continued on next page</i> |   |

## **Instructions, *continued***

### **Task, *continued***

| <b>Step</b>               | <b>Action</b>   |
|---------------------------|---|
| 3                         | <p>Click on <b>Yes</b> in the confirmation dialog box.</p> <p>Another confirmation dialog box will then appear, telling you that the NCC is copying the SDS database onto primary non-volatile memory (NVM), and asking you if you wish to continue.</p>  |
| 4                         | <p>Click on <b>Yes</b> in the confirmation dialog box.</p> <p><b>⇒ NOTE:</b><br/>The NCC will reset after you perform this step (Step 4). The NCC will take approximately 2 minutes to reset. You will not be able to perform steps 5 through 7 until after you log back on to the NCC.</p>   |
| 5                         | <p>Log back on to the NCC to make sure that any problems you had with the NCC prior to the database restore are no longer evident.</p>  |
| <b>Stop! End of Task.</b> |   |



---

## Replace the Fan Tray

# 127

---

### **Background**

---

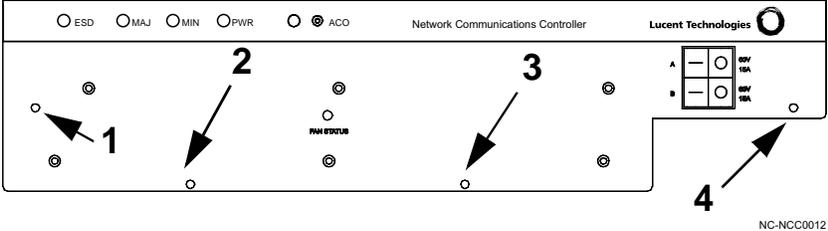
#### **When to use**

Use this procedure to replace the Fan Tray in an Operations Shelf.

---

## Task Instructions

**Task** Complete the following steps to replace the Fan Tray in an Operations Shelf.

| Step                             | Action  |
|----------------------------------|---|
| 1                                | <p>Have a spare Fan Tray ready to install as soon as the old fan tray has been removed.</p> <p><b>NOTE:</b><br/>Replace the old Fan Tray with a new Fan Tray within 5 minutes in a powered Operations Shelf. Overheating may result if the fan tray is left out too long.</p>   |
| 2                                | <p>Unscrew the four screws on the front of the user panel. The screws will not come completely out. See the illustration below for the location of the four screws.</p>  <p>The diagram shows a rectangular user panel with several status LEDs at the top: ESD, MAJ, MIN, PWR, and ACO. To the right of these LEDs is the text 'Network Communications Controller' and the 'Lucent Technologies' logo. Four screws are indicated by numbered arrows: arrow 1 points to a screw on the left side; arrow 2 points to a screw in the lower-left quadrant; arrow 3 points to a screw in the lower-right quadrant; and arrow 4 points to a screw on the right side, near a connector panel with labels 'A' and 'B'.</p> <p style="text-align: right; font-size: small;">NC-NCC0012</p> |
| 3                                | <p>Pull the user panel straight back towards yourself. Be sure to pull it out evenly. The tray should come out with minimal resistance.</p> <p>There are no wires or connectors that need to be disconnected on the Fan Unit.</p>   |
| 4                                | <p>Once the old Fan Tray has been removed, slide the new Fan Tray into position and gently push it straight back.</p>   |
| 5                                | <p>As the plug on the back of the fan tray comes into contact with the connector on the backplane the Fan Tray will power up and you should be able to feel/hear the fans starting. The Power LED will also illuminate on the User Panel. Continue pushing the fan tray back until the User Panel is flush against the shelf.</p>   |
| 6                                | <p>Screw in the four screws on the faceplate of the User Panel.</p> <p>Any alarms caused by the removal of the fan tray should clear themselves within a few seconds.</p>   |
| <p><b>Stop! End of Task.</b></p> |   |

---

## Assigning Communication Protocol to LAN Ports

# 128

---

### **Background**

---

#### **When to use**

Use this procedure to assign communication protocols to the dual LAN ports on the NCC Operations Controller.

---

#### **Required Equipment**

WaveStar Craft Interface Terminal (WaveStar CIT)

---

## Task Instructions

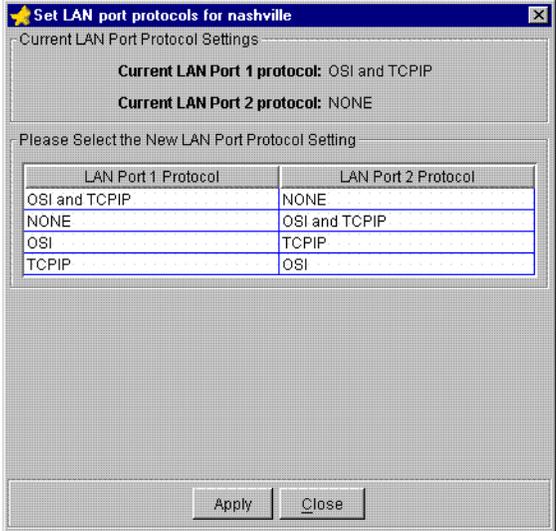
**Before You Begin** Make sure that a WaveStar CIT is connected and logged into the NCC.

**Task** Complete the following steps to assign communication protocols to the dual LAN ports on the NCC Operations Controller.

| Step                          | Action   |
|-------------------------------|--|
| 1                             | <p>At the WaveStar CIT, select <b>Administration&gt;Set LAN Port Protocol</b>.</p>  <p>The screenshot shows a menu with the following items: Administration (highlighted), Reports, Change Password..., Change Notifications..., Security (with a right-pointing arrow), View NE Administration..., Set TID..., Data Communications..., Ping IP..., SDS Administration (with a right-pointing arrow), Set LAN Port Protocol... (highlighted), OSI Routing Map..., and OSI Neighbor Map...</p> |
| <i>Continued on next page</i> |  |

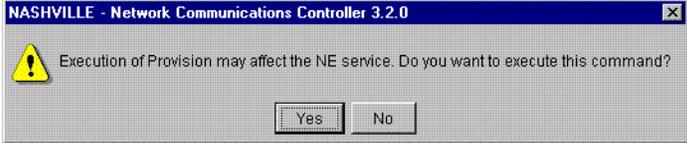
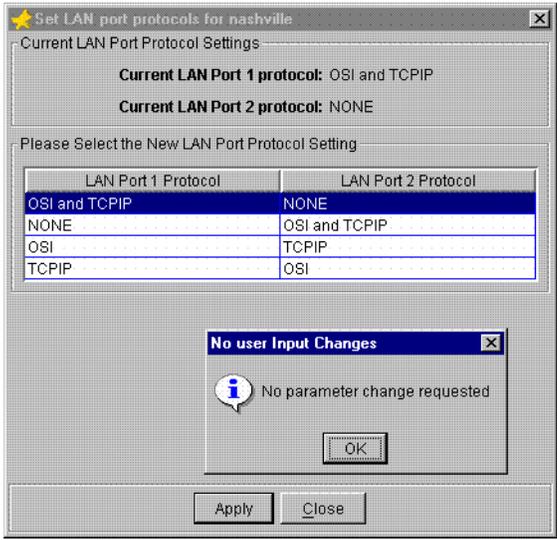
**Task Instructions, *continued***

**Task, *continued***

| Step                                 | Action  |
|--------------------------------------|---|
|                                      | <p>The Select LAN Port Protocol Screen appears. The top of the screen shows the current LAN port protocol settings.</p>  <p>The screenshot shows a dialog box titled "Set LAN port protocols for nashville". It displays "Current LAN Port Protocol Settings" with "Current LAN Port 1 protocol: OSI and TCPIP" and "Current LAN Port 2 protocol: NONE". Below this is a section titled "Please Select the New LAN Port Protocol Setting" containing a table with two columns: "LAN Port 1 Protocol" and "LAN Port 2 Protocol". The table lists four options: (OSI and TCPIP, NONE), (NONE, OSI and TCPIP), (OSI, TCPIP), and (TCPIP, OSI). At the bottom are "Apply" and "Close" buttons.</p> |
| 2                                    | <p>Click on a protocol setting for one of the two LAN ports. The protocol for the other LAN port is automatically selected. The four protocol selection options available for LAN port 1 and LAN port 2 respectively are: (ALL, NONE), (NONE, ALL), (OSI, TCP/IP), (TCP/IP, OSI) where all stands for OSI and TCP/IP on the same port.</p>  |
| <p><i>Continued on next page</i></p> |   |

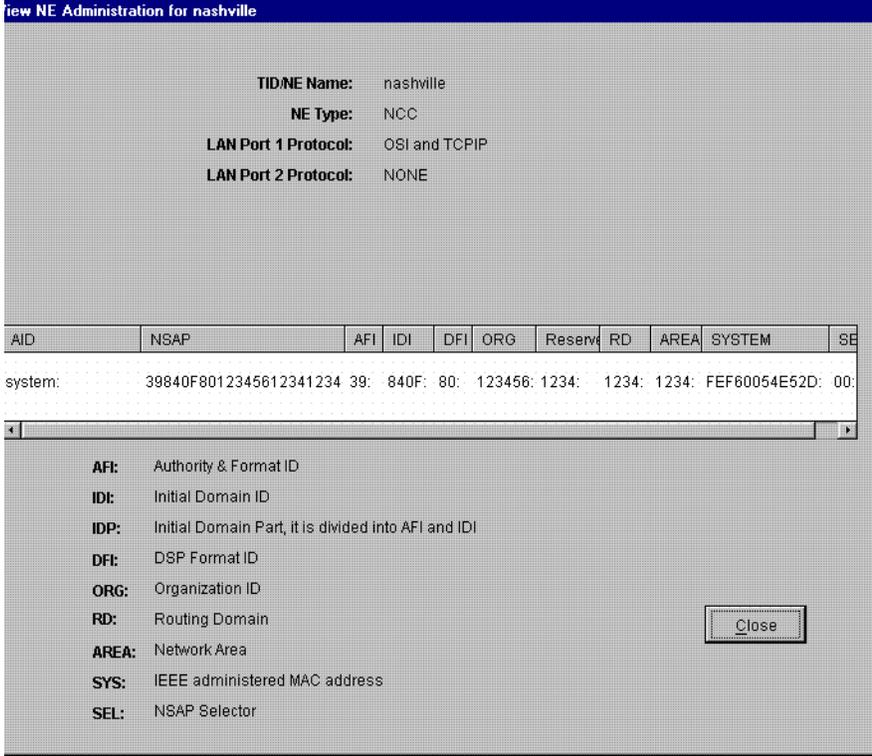
## Task Instructions, *continued*

### Task, *continued*

| Step                                 | Action  |
|--------------------------------------|---|
| 3                                    | <p>Click <b>Apply</b> to complete the assignment of communication protocols to the two LAN ports.</p> <p>A confirmation dialog box will appear.</p>   |
| 4                                    | <p>Click on <b>Yes</b> in the confirmation dialog box.</p>  |
| 5                                    | <p>If your protocol selection is identical to the existing LAN port protocol settings, a “No parameter change requested” message will appear.</p>  <p>Click <b>OK</b> to continue and repeat steps 2 and 3 if necessary.</p> |
| <p><i>Continued on next page</i></p> |   |

## Task Instructions, *continued*

### Task, *continued*

| Step | Action   |
|------|--|
| 6    | <p>Select <b>Administration&gt;View NE Administration</b> to verify whether the assignment of communication protocols completed successfully.</p>  <p>The View NE Administration Screen will appear.</p>  |

*Continued on next page*

---

**Task Instructions, *continued***

---

**Task, *continued***

| <b>Step</b>               | <b>Action</b>  |
|---------------------------|--|
| 7                         | Make sure that the LAN port 1 protocol and the LAN port 2 protocol fields specify the correct protocols. |
| 8                         | Click on <b>Close</b> to close the View NE Administration Screen.  |
| <b>Stop! End of Task.</b> |  |

---

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